Monarch
by INOVANCE

Advancing industrial technology,
for a better world



NICE3000^{new} Series
Integrated Elevator Controller

User Guide

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

Data code PS00006334C02

Legal Information

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Disclaimer of Liability

Due to continuous updates and improvements of products and technologies, the content of this documentation may not fully match the actual products. In the event of any discrepancies, the actual products shall prevail.

The contents are subject to change without notice due to product upgrade.

Waste Disposal

The storage, use, and disposal of this product (including optional accessories) must comply with local laws and regulations.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel can identify the risks of the product/system and prevent possible dangers.

Proper Use of the Product

Proper transportation, storage, assembly, installation, commissioning, operation, and maintenance are required to ensure the safe operation of the product without any problems. The required ambient conditions must be met. All operations must follow the guidelines provided in this documentation.

Preface

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

The NICE3000^{new} controller is an intelligent control system that integrates computer, automatic control, network communication, and motor vector drive technologies. Monarch is a proprietary elevator product brand of Inovance.

This guide package describes the system design and selection, installation and commissioning, function, and troubleshooting information. Read this guide carefully before using the product, and keep it properly for future maintenance reference.

Related Documents

Name	Doc. No.	Description
NICE3000^{new} Integrated Elevator Controller Hardware Guide	19011660	It covers the system components, technical specifications, dimensions, options selection, common EMC problems handling, and certifications and standards.
NICE3000^{new} Integrated Elevator Controller Quick Start Guide	19011978	It covers the installation (pre-installation preparation and mechanical and electrical installation) and system commissioning (tools and fault handling).
NICE3000^{new} Series Integrated Elevator Controller Function Application Guide	19011634	It covers the functional parameters, including parameter list, parameter description, application, typical functions and schemes.
NICE3000^{new} Integrated Elevator Controller Maintenance Guide	19011979	It covers maintenance, part replacement , troubleshooting and so on.
NICE3000^{new} Integrated Elevator Controller User Guide (This Guide)	**PS00006334**	**It covers the system design and selection, installation and commissioning, function, and troubleshooting information.**

Revision History

Date of revision	Version	Description
January 2026	C02	**Added sections:** • Structural information related to 220 V models. • Parameters and fault codes related to shorting motor stator pulse. **Revised sections:** • 220 V model numbers and model selection data of related components. • Parameters and fault codes. • MCB figure. • Minor error corrections.
May 2025	B01	**Added sections:** Information for the MCTC-PG-E6. **Revised sections:** • Model numbers and component selection data for the 220 V model. • The parameter setting description for time-based floor service and time-based door service. • The parameter FF-01 setting description for the 220 V model. • Minor error corrections.
October 2024	B00	**Revised sections:** Minor error corrections.
March 2023	A01	**Revised sections:** • Selection data for braking resistors in the 75 kW power range. • The front cover and back cover design.
June 2022	A00	First issue

Access to the Guide

The instructions are subject to change due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the manual.

This guide is not in the scope of delivery. If necessary, you can obtain the PDF file in the following ways:

- Visit *https://www.inovance.com/global*, choose Service&Support > Support > Documentation Download.
- Scan the QR code below to install the application **My Inovance**, where you can search for and download the guide.



Warranty Instructions

If your product becomes defective under normal use conditions, we will offer guaranteed repair services within the warranty period. Charges will be paid beyond the warranty listed in the purchase order.

The warranty does not cover any defect caused by:

- failure to operate the product in accordance with the user guide
- events beyond control, such as fire, flood and abnormal voltage
- function misuse
- out-of-range application
- other events of force majeure, including but not limited to lightning, earthquake and other extreme weather events

The maintenance fee is charged according to the latest Price List of Inovance. If otherwise agreed upon, the agreed terms and conditions shall prevail.

For details, see Product Warranty Card.

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1 General Safety Rules

1.1 Safety Instructions

Safety Disclaimer

- This section describes the safety precautions that help you use this product correctly. Before using this product, read the user guide thoroughly and correctly understand the related safety precautions. Failure to comply may result in severe personal injuries or even death or equipment damage.
- "DANGER", "WARNING", and "CAUTION" items in the user guide 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 death or severe personal injuries.



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



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

Safety Precautions

- Product illustrations in the user guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- Product illustrations in this guide are for reference only. Actual products may vary.
- Personnel must take mechanical precautions to protect personal safety. Wear necessary protective safety gear, such as anti-smashing shoes, clothing, glasses, gloves, and sleeves.

Unpacking
 • Do not proceed with installation if you find damage, rust, or indications of use on the product or accessories. • Do not proceed with installation 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.
 • Check whether the packaging is intact and whether there is damage, water seepage, damp, and deformation. • Unpack by following the correct sequence. Do not hit with force. • Check whether there is damage, rust, or injuries on the surface of the equipment or equipment accessories. • Check the materials and ensure all items are included.

Storage and Transportation



- Use professional loading and unloading equipment to carry large-scale or heavy equipment. Failure to comply may result in personal injuries or equipment damage.
- Before hoisting the equipment, ensure the equipment components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage.
- Never stand or stay below the equipment when the equipment is lifted by hoisting equipment.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.



- Handle the equipment with care during transportation and mind your step to prevent personal injuries or equipment damage.
- 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.
- Store and transport this product in strict accordance with the storage and transportation requirements. Failure to comply may result in damage to the product.
- Store and transport the product in environments free from water splashes, rain exposure, direct sunlight, strong electric and magnetic fields, and excessive vibration.
- Store the product for no more than 3 months. For longer storage periods, implement stricter protective measures and conduct necessary inspections.
- Before transportation, ensure the product is packed securely. For long-distance shipping, use airtight packaging.
- Always transport the product separately from any items or substances that could potentially damage or negatively affect its performance.

Installation



- Installation must be performed by only experienced personnel who have been trained with necessary electrical information. Operations by others are prohibited.



- Read through the guide and safety instructions before installation.
- Do not install the product in places with strong electric or magnetic fields.
- Before installation, ensure that the mechanical strength of the installation position is sufficient to support the weight of the equipment. Failure to comply may result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not modify this product.
- Do not rotate the equipment components or loosen fixed bolts (especially those marked in red) on equipment components.
- 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.
- Before installing equipment with strong electromagnetic interference, such as a transformer, install an electromagnetic shielding device for the product to prevent malfunctions.
- Install the equipment onto flame retardant materials, such as metal. Keep the equipment away from combustible objects. Failure to comply will result in a fire.



- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the cloth or paper for effective ventilation and cooling.
- Resonance may occur when the equipment operating at a constant speed executes variable speed operations. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring



- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- Before wiring, cut off all the power supplies. Wait as specified on the product warning sign before further operations because residual voltage exists after power-off. Measure the DC voltage of the main circuit and make sure that it is below the safety voltage. Failure to comply will result in an electric shock.
- Never perform wiring, remove the product cover, or contact the PCB at power-on. Failure to comply will result in an electric shock.
- Make sure that the equipment is reliably grounded. Failure to comply will result in an electric shock.



- Never connect the power cable to output terminals of the equipment. Failure to comply may cause equipment damage or even a fire.
- 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.
- The cables used for wiring must have the appropriate size and shielding type. The cable shield needs to be grounded reliably at both ends.
- Fasten screw terminals with the specified tightening torque. Insufficient or excessive torque may cause overheating, damage, and even a fire.
- After wiring, make sure that no screws are fallen and cables are exposed in the equipment. Failure to comply may result in an electric shock or equipment damage.



- 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.
- In wiring the control circuit, use shielded twisted pair cable and connect the shield to the PE terminal. Otherwise, the equipment may not function properly.

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.
- After power-on, do not open the cabinet door or protective cover of the equipment. Do not touch any terminals, or remove any part of the equipment at power-on. Failure to comply will result in an electric shock.



- Perform a trial run after wiring and parameter setting to ensure that the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, check that the rated voltage of the equipment is consistent with that of the power supply. Failure to comply may result in a fire. If the power supply voltage is used incorrectly, it will result in a fire.
- Before power-on, check that no one is near the equipment, motor, or other mechanical parts. Failure to comply may result in personal injuries or even death.

Operation



- The equipment must be operated only by professionals. Failure to comply will result in personal injuries or even death.
- Do not touch any terminals or 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.
- Prevent metal or other objects from falling into the device during operation. Failure to comply may result in fire or 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 as specified on the product warning sign.
- In case of a permanent magnet motor, do not touch the motor terminals even after power-off because there is still induced voltage generated during rotation. Failure to comply will result in an electric shock.



- 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 as specified on the product warning sign.

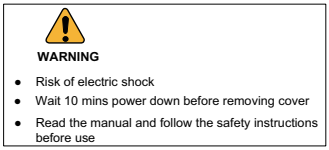


- Require for repair services according to the product warranty agreement.
- When the fuse is blown or the circuit breaker or earth leakage circuit breaker (ELCB) trips, wait as specified on the product warning sign before power-on or further operations. Failure to comply may result in personal injuries, equipment damage or even death.
- 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
WARNING • 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

To ensure safe operations, comply with safety signs on the device, and do not damage or remove the safety labels. The following table describes the safety signs.

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

1.2 Industrial Information Security

This product provides an interface to connect to the network and transmit data through the network interface. To protect factories, systems, machines, and networks from cyber attacks, appropriate industrial information security protection mechanisms need to be implemented to ensure the safe operation of factories, systems, machines, and networks.

The customer is responsible for providing and continuously ensuring a secure connection between the product and the customer's network or any other network, to prevent unauthorized access to their factory, systems, machines, and networks. The system or machine may only be connected to the corporate network or the Internet when a secure connection is established and proper security measures are in place (for example, using antivirus software and installing firewalls).

INOVANCE continuously develops and improves its products and solutions to enhance safety. It is strongly recommended that you update your products promptly and always use the latest product versions.



Malware (such as viruses, Trojans, and worms) can bring the device into an unsafe operating state, resulting in death, serious injury, and property damage. Observe the following precautions strictly:

- Always use the latest software version. If the product version is no longer supported or the latest program version is not applied, customers are at increased risk of cyberattacks.
- Implement and maintain appropriate security measures (including but not limited to deploying anti-virus software, firewall, WAF, IPS/IDS, situational awareness system, ID verification, and data encryption) to prevent files in the removable storage device from being damaged by malware and to protect products, networks, systems, and interfaces from unauthorized access, disruption, intrusion, data leakage, or information theft.
- Check all safety-related interfaces and settings after commissioning.

2 Product Information

2.1 Product Features

The main features of the NICE3000^{new} series elevator integrated controller are as follows:

Advanced Technology

- Distance-based direct travel ride, curves generated automatically
- Group control of up to 6 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, operating panel, and Monarch app
- Automatic balancing factor 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
- Fault 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

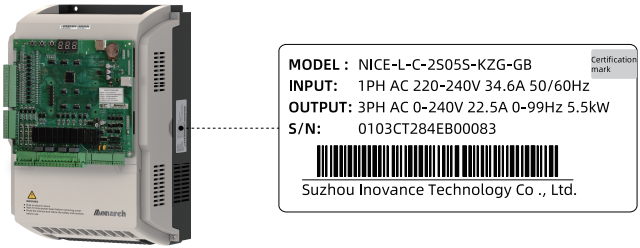
- Use of CANbus and Modbus communication for fewer traveling cables
- Flexible modular optional parts
- No additional group control board is required – parallel operation can be easily achieved with just two wires.

2.2 Model Number and Nameplate

Single/Three-phase 220 V

NICE - L - C - 2S 05 S - KZG - GB
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① **Product name** NICE: NICE series integrated elevator controller	⑤ **Power rating** 02: 2.2 kW 03: 3.7 kW 04: 4.0 kW 05: 5.5 kW 07: 7.5 kW ..... 37: 37.0 kW 45: 45.0 kW	⑥ **Configuration type** Null: Non-encrypted version S: Encrypted version
② **Controller type** L: For elevator use		⑦ **MCB type:** Null: MCTC-MCB-C2 KZG: MCTC-MCB-C3
③ **Motor type** C: Both asynchronous and synchronous motors		⑧ **Standard compliance** GB: Compliant with the new national standard
④ **Voltage class** 2S: Single-phase 220 V 20: Three-phase 220 V		



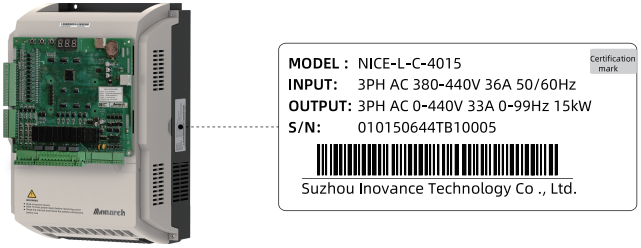
Three-phase 380 V and 480 V

NICE - L - C - 40 05 F
① ② ③ ④ ⑤ ⑥

① **Product name** NICE: NICE series integrated elevator controller	⑤ **Power rating** 03: 3.7 kW ..... 37: 37.0 kW 45: 45.0 kW ..... 280: 280.0 kW
② **Controller type** L: For elevator use	
③ **Motor type** C: Both asynchronous and synchronous motors	
④ **Voltage class** 40: Three-phase 380 V 50: Three-phase 480 V	⑥ **Enclosure material**[1] Blank: Plastic F: Sheet metal

Note

[1] For convenient product customization and iteration, this rule is provided for reference only. The specific material needs to be selected based on the actual requirements of the product and model differences.



S/N

01015064 4 EB 00083
① ② ③ ④

① Item code	③ Manufacturing date
② Manufacturer code	④ Serial number

Equipment code description:

Code: Item (8-bit) + Manufacturer code (1-bit) + Year (1-bit) + Month (1-bit) + Serial number (5-bit)

Expressed as: XXXXXXXX X X X XXXXX (an16, alphanumeric, fixed length of 16 bits)

bit	Description
1 to 8	Item code (in the product BOM)
9	Manufacturer code
10	Year: For example, 2009 is expressed as 9, 2010 as A, …Z and so on (I/L/O/Q forbidden)

bit	Description
11	Month: 1, 2, 3...9, A (10), B (11), and C (12)
12 to 16	5-bit decimal serial number (00001 to 99999)

2.3 Component Description

NICE-L-C-2S02 to NICE-L-C-2S04, NICE-L-C-2003 to NICE-L-C-2007, NICE-L-C-4002 to NICE-L-C-4015, NICE-L-C-5003 to NICE-L-C-5015

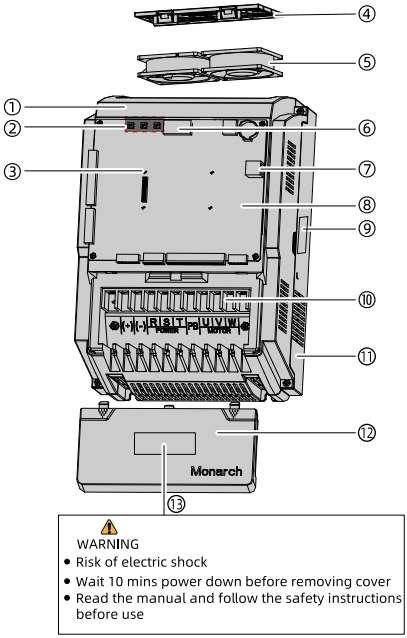


Figure 2-1 Component view of the plastic enclosure (NICE-L-C-2S02 to NICE-L-C-2S04, NICE-L-C-2003 to NICE-L-C-2007, NICE-L-C-4002 to NICE-L-C-4015, NICE-L-C-5003 to NICE-L-C-5015)

No.	Name	No.	Name
①	Equipment bar code	⑧	Control board
②	Keypad	⑨	Nameplate
③	Holes for fixing the PG card	⑩	Main circuit and grounding terminal
④	Fan cover	⑪	Enclosure
⑤	Cooling Fan	⑫	Terminal cover

No.	Name	No.	Name
⑥	LEDs	⑬	Warning sign
⑦	Interface for external operating panel	-	-

NICE-L-C-2S05 to NICE-L-C-2S11, NICE-L-C-2011 to NICE-L-C-2015, NICE-L-C-4018 to NICE-L-C-4022, NICE-L-C-5018 to NICE-L-C-5022

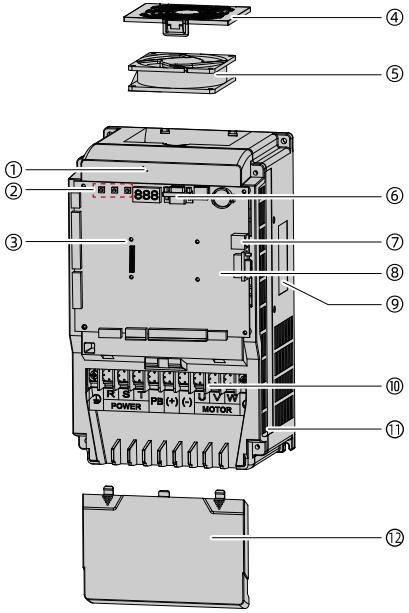


Figure 2-2 Component view of the plastic enclosure (NICE-L-C-2S05 to NICE-L-C-2S11, NICE-L-C-2011 to NICE-L-C-2015, NICE-L-C-4018 to NICE-L-C-4022, NICE-L-C-5018 to NICE-L-C-5022)

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

NICE-L-C-2S15 to NICE-L-C-2S18/NICE-L-C-2018 to NICE-L-C-2022/NICE-L-C-4030 to NICE-L-C-4037/NICE-L-C-5030 to NICE-L-C-5037

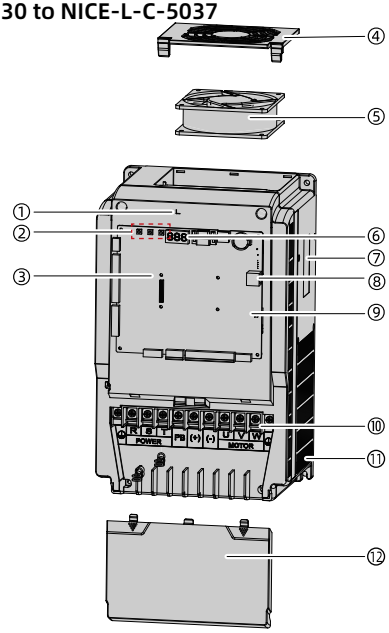


Figure 2-3 Component view of the plastic enclosure (NICE-L-C-2S15 to NICE-L-C-2S18, NICE-L-C-2018 to NICE-L-C-2022, NICE-L-C-4030 to NICE-L-C-4037, NICE-L-C-5030 to NICE-L-C-5037)

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

NICE-L-C-2030 to NICE-L-C-2037, NICE-L-C-4045F to NICE-L-C-4055F

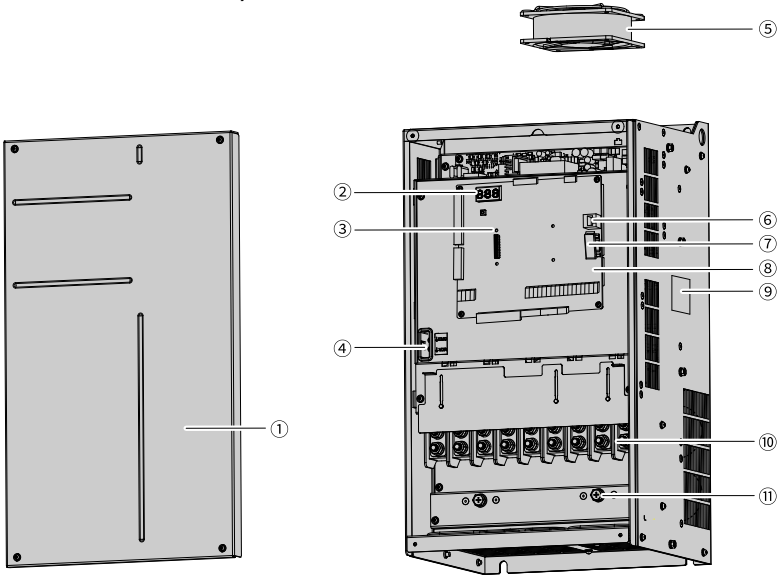


Figure 2-4 Component view of the sheet metal enclosure (NICE-L-C-4045F to NICE-L-C-4055F)

No.	Name	No.	Name
①	Cover	⑦	Software programming interface
②	LEDs	⑧	Control board
③	Holes for fixing the PG card	⑨	Nameplate
④	Safety capacitor, varistor with grounding screw selected	⑩	Main circuit and cable connection terminal
⑤	Fan	⑪	Grounding screw
⑥	Interface for external operating panel	-	-

NICE-L-C-2045\NICE-L-C-4075F to NICE-L-C-4110F

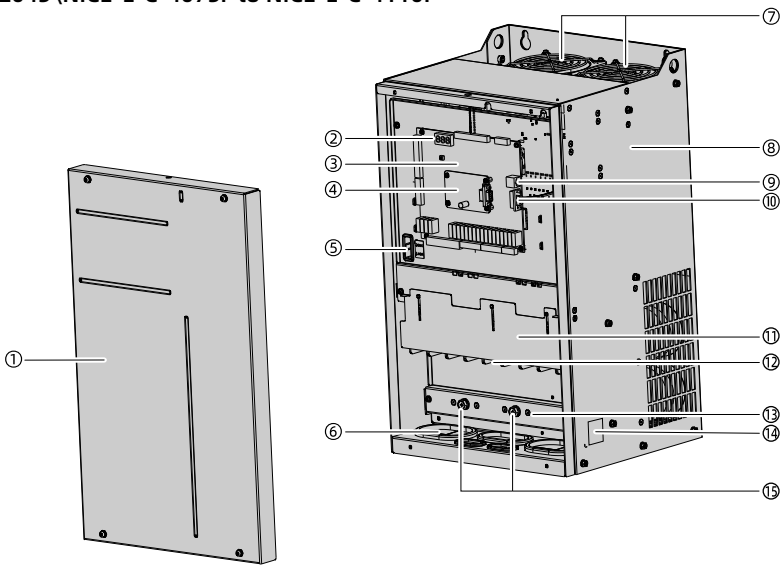


Figure 2-5 Component view of the sheet metal enclosure (NICE-L-C-2045, NICE-L-C-4075F to NICE-L-C-4110F)

No.	Name	No.	Name
①	Cover	⑨	Interface for external operating panel
②	LEDs	⑩	Software programming interface
③	Control board	⑪	Main circuit terminal protective cover
④	PG card	⑫	Main circuit terminals
⑤	Safety capacitor, varistor with grounding screw selected	⑬	Terminal bracket
⑥	Grommet	⑭	Nameplate
⑦	Fan and cover	⑮	Grounding screw
⑧	Chassis	-	-

NICE-L-C-4132F to NICE-L-C-4160F

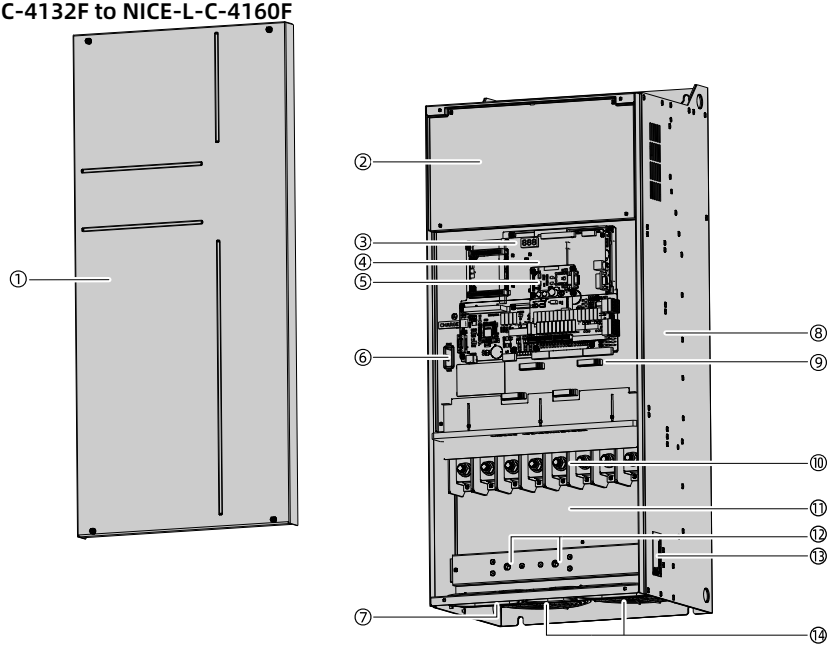


Figure 2-6 Component view of the sheet metal enclosure (NICE-L-C-4132F to NICE-L-C-4160F)

No.	Name	No.	Name
①	Cover	⑧	Chassis
②	Protective bracket	⑨	Cable tie
③	LEDs	⑩	Main circuit terminals
④	Control board	⑪	Main circuit terminal protective cover
⑤	PG card	⑫	Grounding screw
⑥	Safety capacitor, varistor with grounding screw selected	⑬	Nameplate
⑦	Grommet	⑭	Fan and cover

NICE-L-C-4200F to NICE-L-C-4280F

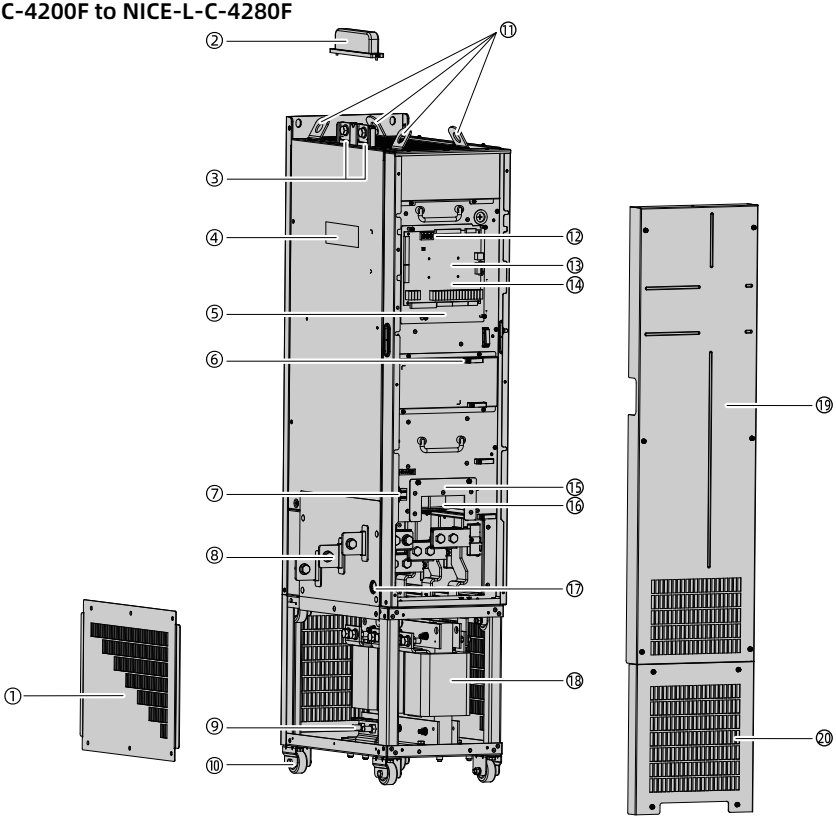


Figure 2-7 Component view of the sheet metal enclosure with the reactor (NICE-L-C-4200F to NICE-L-C-4280F)

No.	Name	No.	Name
①	Left blanking cover	⑪	Top lifting position
②	Positive and negative terminal protective cover	⑫	LEDs
③	Positive and negative terminal	⑬	Holes for fixing the PG card
④	Nameplate	⑭	Control board
⑤	MCB bracket	⑮	Fan tray
⑥	Cable tie	⑯	Fan and cover
⑦	Safety capacitor, varistor with grounding screw selected	⑰	Bottom lifting position
⑧	Main circuit input terminal	⑱	AC output reactor

No.	Name	No.	Name
⑨	Grounding terminal	⑲	Upper access cover
⑩	Bottom roller	⑳	Lower access cover

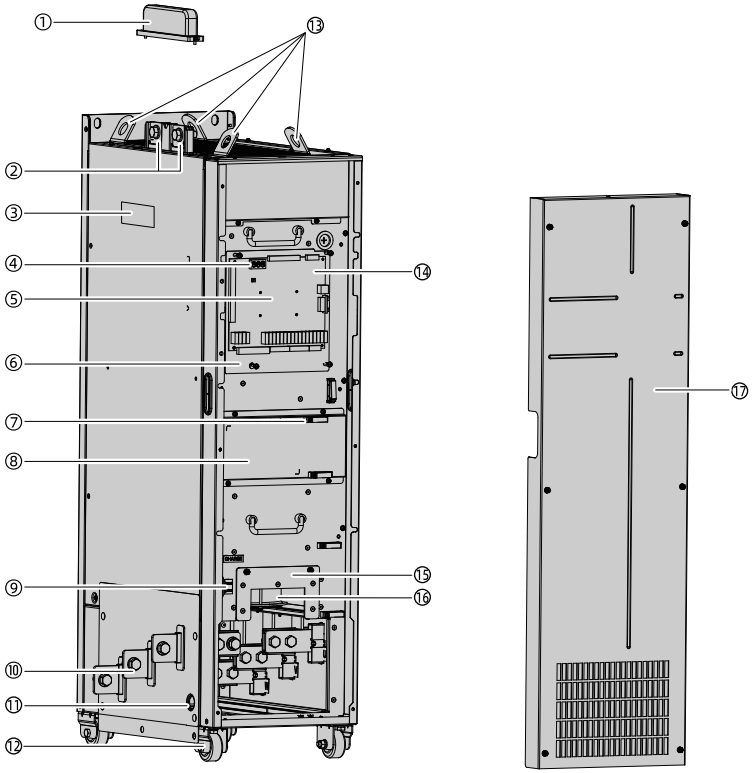


Figure 2-8 Component view of the sheet metal enclosure without the reactor (NICE-L-C-4200F to NICE-L-C-4280F)

No.	Name	No.	Name
①	Positive and negative terminal protective cover	⑩	Main circuit input terminal
②	Positive and negative terminal	⑪	Bottom lifting position
③	Nameplate	⑫	Bottom roller
④	LEDs	⑬	Top lifting position
⑤	Holes for fixing the PG card	⑭	Control board
⑥	MCB bracket	⑮	Fan tray
⑦	Cable tie	⑯	Fan and cover

No.	Name	No.	Name
⑧	Middle aluminum busbar baffle	⑰	Cover
⑨	Safety capacitor, varistor with grounding screw selected	-	-

2.4 Rated Data

Table 2–1 Rated data

Controller model	Power capacity (kVA)	Input current (A)	Output current (A)	Motor (kW)
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2S02	4.5	17.9	10.3	2.2
NICE-L-C-2S03	6.7	25.3	15.5	3.7
NICE-L-C-2S04	7.6	31.3	19.0	4.0
NICE-L-C-2S05	10.0	34.6	22.5	5.5
NICE-L-C-2S11	18.0	42.6	27.7	11.0
NICE-L-C-2S15	20.0	52.6	34.6	15.0
NICE-L-C-2S18	20.2	64.8	42.6	18.5
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2003	6.9	17.0	14.0	3.7
NICE-L-C-2004	7.6	20.5	18.0	4.0
NICE-L-C-2005	10.2	29.0	27.0	5.5
NICE-L-C-2007	13.5	36.0	33.0	7.5
NICE-L-C-2011	19.5	41.0	39.0	11.0
NICE-L-C-2015	25.0	49.0	48.0	15.0
NICE-L-C-2018	28.5	62.0	60.0	18.5
NICE-L-C-2022	23.5	76.4	74.0	22.0
NICE-L-C-2030	32.0	93.0	91.0	30.0
NICE-L-C-2037	39.5	113.0	112.0	37.0
NICE-L-C-2045	54.0	157.0	150.0	45.0
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz				
NICE-L-C-4003	8.0	10.5	9.0	3.7
NICE-L-C-4005	11.5	14.8	13.0	5.5
NICE-L-C-4007	15.0	20.5	18.0	7.5
NICE-L-C-4011	22.0	29.0	27.0	11.0
NICE-L-C-4015	29.7	36.0	33.0	15.0
NICE-L-C-4018F	37.6	41.0	39.0	18.5
NICE-L-C-4022F	45.0	49.5	48.0	22.0
NICE-L-C-4030F	53.0	62.0	60.0	30.0
NICE-L-C-4037F	40.8	77.0	75.0	37.0
NICE-L-C-4045F	52.0	93.0	91.0	45.0
NICE-L-C-4055F	62.5	113.0	112.0	55.0
NICE-L-C-4075F	83.0	157.0	150.0	75.0

Controller model	Power capacity (kVA)	Input current (A)	Output current (A)	Motor (kW)
NICE-L-C-4090F	97.5	180.0	176.0	90.0
NICE-L-C-4110F	120.0	214.0	210.0	110.0
NICE-L-C-4132F	231.0	240.0	253.0	132.0
NICE-L-C-4160F	280.0	287.0	304.0	160.0
NICE-L-C-4200F	343.0	365.0	377.0	200.0
NICE-L-C-4220F	386.0	410.0	426.0	220.0
NICE-L-C-4250F	428.0	441.0	465.0	250.0
NICE-L-C-4280F	483.0	495.0	520.0	280.0
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz				
NICE-L-C-5003	9.0	10.5	9.0	3.7
NICE-L-C-5005	13.0	14.8	13.0	5.5
NICE-L-C-5007	17.0	20.5	18.0	7.5
NICE-L-C-5011	25.0	29.0	27.0	11.0
NICE-L-C-5015	33.0	36.0	33.0	15.0
NICE-L-C-5018F	43.0	41.0	39.0	18.5
NICE-L-C-5022F	51.0	49.5	48.0	22.0
NICE-L-C-5030F	61.0	62.0	60.0	30.0
NICE-L-C-5037F	40.7	77.0	75.0	37.0

2.5 Technical Specifications

Item		Specification
Input power supply	Number of phases, voltage, and frequency	220 V class: Single/three-phase 220 VAC to 240 VAC, 50 Hz/60 Hz
		380 V class: Three-phase 380 VAC to 440 VAC, 50 Hz/60 Hz
		480 V class: Three-phase 440 VAC to 500 VAC, 50 Hz/60 Hz
	Allowable voltage change	-15% to +10%
	Allowable frequency change	-5% to +5%
	Instantaneous voltage capacity to withstand instantaneous voltage drop	• **220 V class:** The system continues to run at over 150 VAC. When the voltage is reduced to below 150 VAC from the rated input state, undervoltage protection is enabled after the system continues to run for 15 ms. • **380 V class:** The system continues to run at over 300 VAC. When the voltage is reduced to below 300 VAC from the rated input state, undervoltage protection is enabled after the system continues to run for 15 ms.
Basic features	Maximum number of floors	Floor 48
	Elevator running speed	≤ 10.00 m/s
	Number of elevators in group control	≤ 8
	Communication mode	CANbus and RS485 serial communication

Item		Specification
Drive features	Control mode	Vector control with a PG card
	Starting torque	Up to 200% rated torque, depending on the load
	Speed control range	1: 1000 (Vector control with a PG card)
	Speed control accuracy	±0.05% (Vector control with a PG card, 25±10℃)
	Torque limit	200% of the rated torque
	torque accuracy	±5%
	Frequency control range	0 Hz to 99 Hz
	Frequency accuracy	±0.1%
	Resolution of frequency setting	0.01 Hz/99 Hz
	Output frequency resolution (Calculated resolution)	0.01 Hz
	No-load startup compensation	In the event that the elevator load size is unknown, an appropriate torque is applied to the motor according to the elevator running direction, achieving smooth startup, minimizing rollback at the moment of startup and improving the riding comfort.
	Braking torque	150% rated torque (external braking resistor), built-in braking unit
	Acceleration/ Deceleration time	0.1s to 8.0s
	Carrier frequency	2 kHz to 16 kHz
	Battery running	Upon power failure, the elevator performs leveling at the nearest floor at a low speed using power supply from the battery.
PG interface	Type of PG card	Open collector, push-pull, differential type, sin/cos, and comunication type absolute encoder (Heidenhain 1313/ 413, Weton EA53)
	Frequency dividing output of PG card signal	OA orthogonal to OB

Item		Specification
I/O signal	Photocoupler input control power supply	Isolated 24 VDC
	Digital input	• Low-voltage input: 24-channel DI, photocoupler control signals are isolated 24 VDC power input signals • High-voltage input: 4-channel DI
	Relay output	6-channel NO contacts, single pole single throw, 5 A contact switchover capability, contact load (Resistive) of 5 A/250 VAC or 5 A/28 VDC
	USB interface	Commissioning Using Mobile Phone
	CAN communication interface	2 channels (Car top communication, parallel or group control)
	Modbus Communication	2 channels (hall call communication, elevator monitoring or IoT)
	Analog input (AI)	1 single-ended or differential input, input voltage range –10 V to +10 V, precision 0.1%

Item		Specification
Protection functions	Motor overload protection	A motor protection curve can be set
	AC drive overload	60s for 150% rated current, 10s for 200% rated current
	Short circuit protection	The drive controller is protected when any two-phase short circuit on the output side causes overcurrent.
	Phase loss protection	In case of input/output phase loss, the control system will report phase loss and stop the elevator to prevent accidents. The AC drive provides the phase loss detection function. The output phase loss detection function is enabled by setting F6-11 bit5 to 1.
	Overvoltage threshold	Bus voltage 800 VAC (for 380 V series) and 400 VAC (for 220 V series)
	Bus undervoltage threshold	Bus voltage 350 VAC (for 380 V series) and 200 V (for 220 V series)
	Compensation due to instantaneous power failure	Protection if instantaneous power failure time is more than 15 ms
	Heatsink overtemperature	The thermistor offers protection.
	Stall prevention	Stall protection is enabled when the speed deviation is greater than 15% of the rated speed during running
	The rotary encoder is abnormal.	The system performs protection immediately to prevent accidents when any of the following rotary encoder malfunctions occurs: phase loss, reverse direction, disconnection, and pulse interference.
	Braking unit protection	The braking unit is protected when malfunction is automatically detected.
	Module protection	Overcurrent, short circuit and overheat protection
	Current sensor protection	Self-test at power-on
	Speed abnormality protection	When the encoder feedback speed exceeds the limit or the deviation between the torque limit and the feedback speed is too large, the system will immediately perform protection, generate an alarm, and prohibit running, achieving quick protection against abnormal elevator speed.
	Output grounding protection	When any phase is short-circuited to ground during running, output is cut off to protect the controller.

Item		Specification
Protection functions	Output imbalance protection	When three-phase current output imbalance is detected during running, output is cut off to protect the controller.
	Braking resistor short circuit protection	Detection during braking
	Running time limiter protection	Protection is enabled if the time for moving through a floor exceeds the specified time during running.
	Leveling switch abnormality protection	Leveling switches are malfunctioned when they fail and are stuck. The system judges the malfunction type according to the change of leveling signal feedback. If the leveling signals have no change in the set time, the system will generate an alarm.
	EEPROM fault	Self-test at power-on
Display	Keypad	3-digit LED display, implementing certain commissioning functions
	Operating panel	5-digit LED display, querying/modifying most parameters and monitoring the system state
	Mobile app	Connect the system with the mobile phone app to view and modify the system state
Environment	Ambient temperature	–10℃ to +50℃ (Derated if the ambient temperature is above 40°C)
	Relative humidity	Below 95% RH, no condensation
	Vibration	Sinusoidal vibration: Up to 5.9 m/s^2 (0.6 g) at 2 Hz to 200 Hz
	Storage temperature	–40℃ to +60℃
	Operating site	Indoor, free of corrosive gases and dust
	Pollution degree	PD2
	IP level	IP20
	Power distribution system	TN/TT (For a IT grid, remove the VDR screw connected to the PE terminal)
	Altitude	1000 m or below (Derated by 1% for each 100 m higher if the altitude is above 1000 m)
	Cooling mode	Forced air cooling
	Installation Method	Cabinet assembly

3 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.

3.1 System Configuration

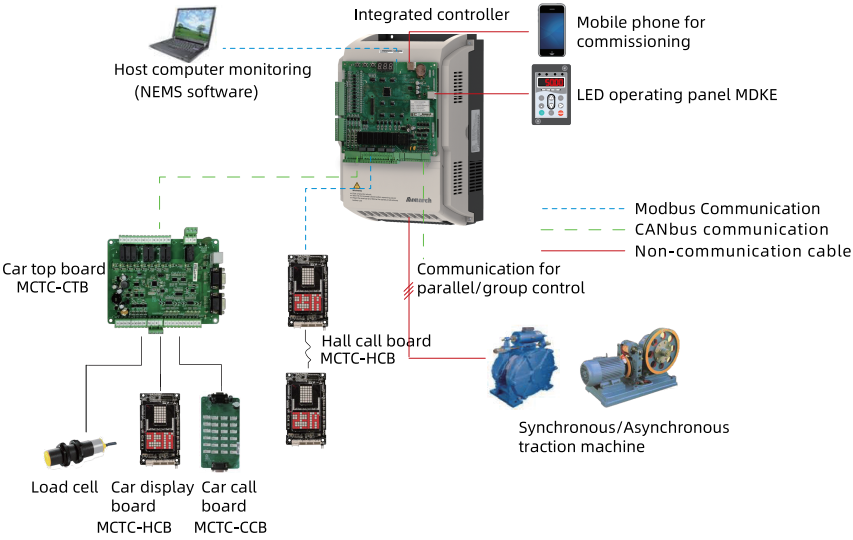


Figure 3-1 System components (MCTC-MCB-C2 as an example)

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.

- CTB controls and collects information about car-related components and communicates by means of CANbus with the controller.
- HCB registers and displays hall calls of all floors with easy address setting and communicates by means of Modbus with the controller.

3.2 System Schematic Diagram

The following figure shows the system working principle.

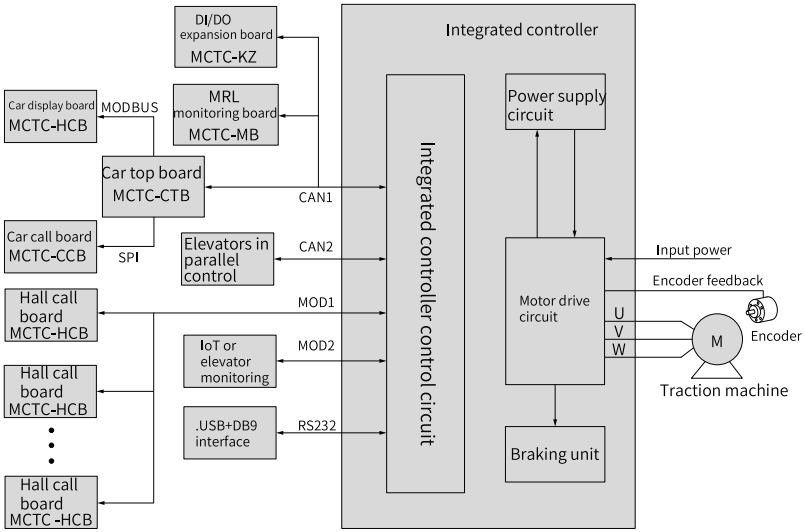


Figure 3-2 System schematic diagram

3.3 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.

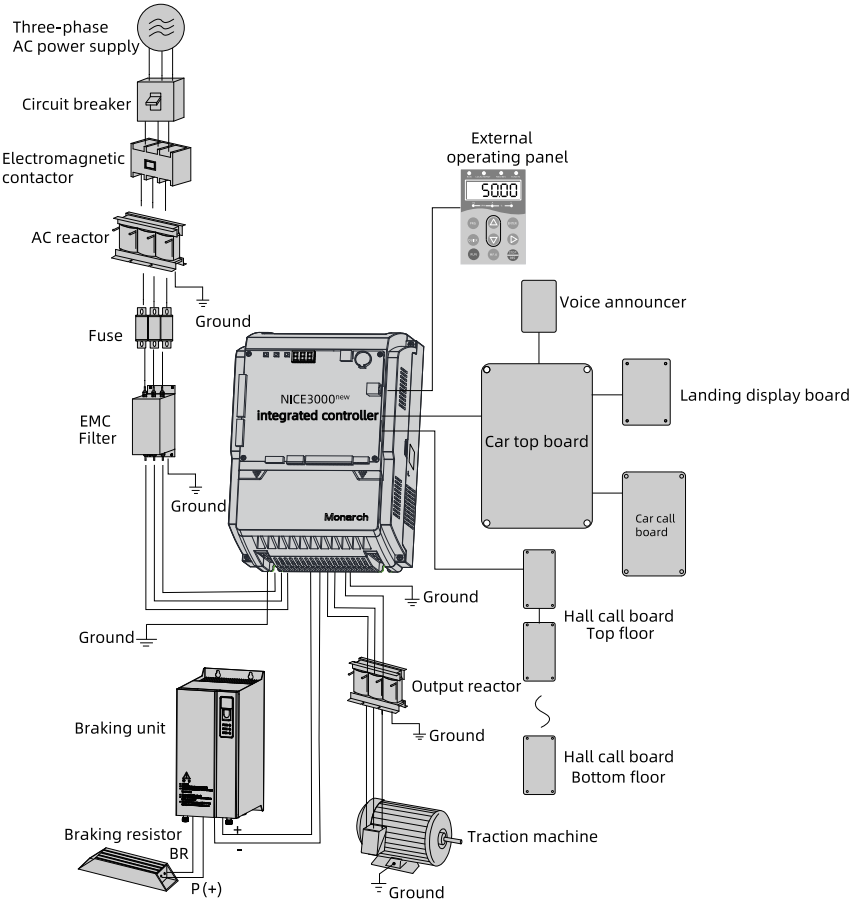


Figure 3-3 Peripheral components connection

Table 3–1 Peripheral components details

Peripheral device	Position	Function
Circuit breaker	Between power supply and controller input side	Short circuit breaker: Cuts off the power supply when overcurrent occurs on downstream devices to prevent accidents.
		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	• Improves the power factor of the input side. • Eliminate the harmonics of the input side effectively and prevent other devices from being damaged due to distortion of the voltage waveform. • Eliminate the input current unbalance due to power inter-phase unbalance.
Fuse	Between power supply and controller input side	Provides protection in case of short circuit and protects downstream semiconductor components.
EMC filter	Controller input side	• Reduce conduction and radiation interference generated by the controller. • 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 requires no braking resistor. • Consumes regenerative energy during motor deceleration.
Braking unit	For F-type models 75 kW and above,	• Use Inovance MDBUN and recommended braking resistor. • Consumes regenerative energy during motor deceleration.

Peripheral device	Position	Function
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, a subharmonic may generate resonance in the circuit due to large distributed capacitance in the line, having the following adverse effects: • Degrade the motor insulation performance and damage the motor in the long run. • Generate large leakage current and cause frequent controller protection trips. 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 an appropriate motor according to the recommendation.
DC reactor	For F-type models 30 kW and above, DC reactor is the standard option.	• Improves the power factor of the input side. • Improve efficiency and thermal stability of the controller. • 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/Outputs (main circuit) of the controller contain harmonics, which may interfere with the communication device connected to the controller. Therefore, install an anti-interference filter to minimize the interference.

3.4 List of Options

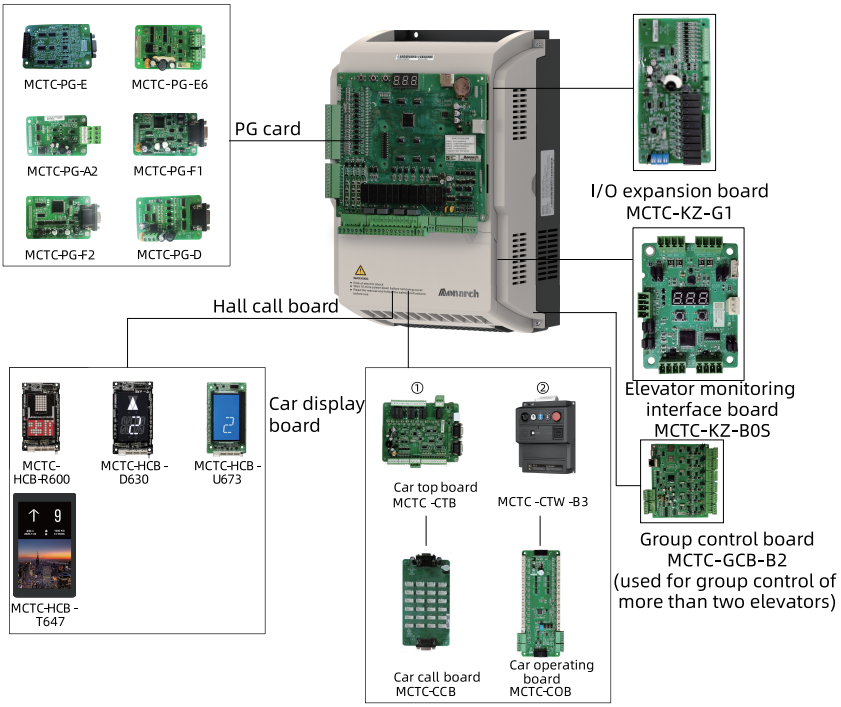


Figure 3-4 Options connection

Table 3–2 List of options

Name	Model	Function
External braking unit	MDBUN	It is provided for the models above 75 kW
PG card	MCTC-PG-A2	Compatible with 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-E6	
	MCTC-PG-F1	Compatible with absolute encoders (Endat: ECN413/ 1313)
	MCTC-PG-F2	Compatible with absolute encoders (Weton EA53)
Car top board (CTB)	MCTC-CTB	The MCTC-CTB is the car control board. It has eight DIs, one AI and seven relay outputs (nine relay outputs for customization). It can communicate with the CCB and HCB simultaneously.

Name	Model	Function
Car display board or 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 box	MCTC-CTW-B3	It integrates the car top interface board, car top board (CTB), car top inspection, intercom and lighting.
	MCTC-CTW-B6	
Car operating board	MCTC-COB	It is an RS485 communication-type 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.
Group control board	MCTC-GCB-B2	It is used together with the integrated controller to implement group control of up to 6 elevators.
I/O expansion card	MCTC-KZ-G1	If the control board or hall I/O terminals are not sufficient, more terminals can be provided by using MCTC-KZ-G1
Elevator monitoring interface 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	External LED display, keypad, and RJ45 port
Extension cable	MDCAB	Standard 8-core cable that connects to MDKE/MDKE6; comes with a standard length of 3 m.

4 Selection of Options

4.1 Cable, Circuit Breaker, and Contactor Selection

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

Table 4–1 Peripheral device selection of the NICE3000^{new}

Controller model	Fuse on the input side	Circuit breaker (A)	Contactor (A)	Main circuit cable (mm^2)	Control cable (mm^2)	Grounding cable (mm^2)
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz						
NICE-L-C-2S02	FWH-35B	32	25	2.5	0.75	2.5
NICE-L-C-2S03	FWH-45B	40	32	4	0.75	4
NICE-L-C-2S04	FWH-60B	50	38	6	0.75	6
NICE-L-C-2S05	FWH-70B	63	40	10	0.75	10
NICE-L-C-2S11	FWH-80B	80	50	10	0.75	10
NICE-L-C-2S15	FWH-100B	100	65	16	0.75	16
NICE-L-C-2S18	FWH-125B	100	80	25	0.75	16
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
NICE-L-C-2004	FWH-35B	32	25	2.5	0.75	2.5
NICE-L-C-2005	FWH-45B	40	32	4	0.75	4
NICE-L-C-2007	FWH-60B	50	38	6	0.75	6
NICE-L-C-2011	FWH-70B	63	40	10	0.75	10
NICE-L-C-2015	FWH-80B	80	50	10	0.75	10
NICE-L-C-2018	FWH-125B	80	65	16	0.75	16
NICE-L-C-2022	FWH-125B	80	65	16	0.75	16
NICE-L-C-2030	FWH-125B	80	65	16	0.75	16
NICE-L-C-2037	FWH-125B	100	80	25	0.75	16
NICE-L-C-2045	FWH-150B	125	95	35	0.75	16
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz						
NICE-L-C-4003	FWH-35B	16	12	2.5	0.75	2.5
NICE-L-C-4005	FWH-35B	25	18	2.5	0.75	2.5
NICE-L-C-4007	FWH-35B	32	25	2.5	0.75	2.5
NICE-L-C-4011	FWH-45B	40	32	4	0.75	4
NICE-L-C-4015	FWH-60B	50	38	6	0.75	6
NICE-L-C-4018F	FWH-70B	63	40	10	0.75	10
NICE-L-C-4022F	FWH-80B	80	50	10	0.75	10
NICE-L-C-4030F	FWH-100B	100	65	16	0.75	16
NICE-L-C-4037F	FWH-125B	100	80	25	0.75	16
NICE-L-C-4045F	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 x 25	0.75	35

Controller model	Fuse on the input side	Circuit breaker (A)	Contactor (A)	Main circuit cable (mm^2)	Control cable (mm^2)	Grounding cable (mm^2)
NICE-L-C-4090F	FWH-300A	250	205	95 or 2 x 35	0.75	50
NICE-L-C-4110F	FWH-350A	315	245	120 or 2 x 50	0.75	60
NICE-L-C-4132F	FWH-400A	350	300	120 or 2 x 50	0.75	60
NICE-L-C-4160F	FWH-500A	400	300	150	0.75	75
NICE-L-C-4200F	-	500	475	2 x 95	0.75	90
NICE-L-C-4220F	-	500	475	2 x 120	0.75	120
NICE-L-C-4250F	-	630	620	2 x 120	0.75	120
NICE-L-C-4280F	-	630	620	2 x 150	0.75	120
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz						
NICE-L-C-5003	FWH-35B	16	12	2.5	0.75	2.5
NICE-L-C-5005	FWH-35B	25	18	2.5	0.75	2.5
NICE-L-C-5007	FWH-35B	16	12	2.5	0.75	1.5
NICE-L-C-5011	FWH-45B	40	32	4	0.75	6
NICE-L-C-5015	FWH-60B	50	38	6	0.75	6
NICE-L-C-5018F	FWH-70B	63	40	10	0.75	10
NICE-L-C-5022F	FWH-80B	80	50	10	0.75	10
NICE-L-C-5030F	FWH-100B	100	65	16	0.75	16
NICE-L-C-5037F	FWH-125B	100	80	25	1.0	16

Note

The Bussmann FWH fuse recommended on the input side is UL certified.

4.2 AC Input Reactor Selection

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 harmonic requirements. The recommended Inovance AC input reactor models are listed in the following table.

Table 4–2 Recommended AC input reactor models

Controller model	Rated input current (A)	Rated Output Current (A)	Inovance AC input reactor model
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz			
NICE-L-C-2003	17.0	14.0	MD-ACL-20-1.4-4T-4%
NICE-L-C-2004	20.5	18.0	MD-ACL-20-1.4-4T-4%
NICE-L-C-2005	29.0	27.0	MD-ACL-30-0.93-4T-4%

Controller model	Rated input current (A)	Rated Output Current (A)	Inovance AC input reactor model
NICE-L-C-2007	36.0	33.0	MD-ACL-40-0,7-4T-4%
NICE-L-C-2011	41.0	39.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-2015	49.0	48.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-2018	62.0	60.0	MD-ACL-80-0.35-4T-4%
NICE-L-C-2022	76.4	74.0	MD-ACL-80-0.35-4T-4%
NICE-L-C-2030	93.0	91.0	MD-ACL-120-0.23-4T-4%
NICE-L-C-2037	113.0	112.0	MD-ACL-120-0.23-4T-4%
NICE-L-C-2045	157.0	150.0	MD-ACL-150-0.19-4T-4%
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz			
NICE-L-C-4003	10.5	9.0	MD-ACL-10-2.8-4T-4%
NICE-L-C-4005	14.8	13.0	MD-ACL-15-1.9-4T-4%
NICE-L-C-4007	20.5	18.0	MD-ACL-20-1.4-4T-4%
NICE-L-C-4011	29.0	27.0	MD-ACL-30-0.93-4T-4%
NICE-L-C-4015	36.0	33.0	MD-ACL-40-0.7-4T-4%
NICE-L-C-4018F	41.0	39.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-4022F	49.5	48.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-4030F	62.0	60.0	MD-ACL-80-0.35-4T-4%
NICE-L-C-4037F	77.0	75.0	MD-ACL-80-0.35-4T-4%
NICE-L-C-4045F	93.0	91.0	MD-ACL-120-0.23-4T-4%
NICE-L-C-4055F	113.0	112.0	MD-ACL-120-0.23-4T-4%
NICE-L-C-4075F	157.5	150.0	MD-ACL-200-0.14-4T-4%
NICE-L-C-4090F	180.0	176.0	MD-ACL-200-0.14-4T-4%
NICE-L-C-4110F	214.0	210.0	MD-ACL-250-0.11-4T-4%
NICE-L-C-4132F	240.0	253.0	MD-ACL-250-0.11-4T-4%
NICE-L-C-4160F	287.0	304.0	MD-ACL-330-0.042-4T-2%
NICE-L-C-4200F	365.0	377.0	MD-ACL-490-0.028-4T-2%
NICE-L-C-4220F	410.0	426.0	MD-ACL-490-0.028-4T-2%
NICE-L-C-4250F	441.0	465.0	MD-ACL-490-0.028-4T-2%
NICE-L-C-4280F	495.0	520.0	MD-ACL-660-0.021-4T-2%
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz			
NICE-L-C-5003	10.5	9.0	MD-ACL-10-2.8-4T-4%
NICE-L-C-5005	14.8	13.0	MD-ACL-15-1.9-4T-4%
NICE-L-C-5007	20.5	18.0	MD-ACL-20-1.4-4T-4%
NICE-L-C-5011	29.0	27.0	MD-ACL-30-0.93-4T-4%
NICE-L-C-5015	36.0	33.0	MD-ACL-40-0.7-4T-4%
NICE-L-C-5018F	41.0	39.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-5022F	49.5	48.0	MD-ACL-50-0.56-4T-4%
NICE-L-C-5030F	62.0	60.0	MD-ACL-80-0.35-4T-4%
NICE-L-C-5037F	77.0	75.0	MD-ACL-80-0.35-4T-4%

Model Number

MD-ACL - 50 - 0.56 - 4T - 4%
① ② ③ ④ ⑤

① **Product name** MD-ACL: Inovance AC input reactor	③ **Inductance** 0.56: 0.56mH	⑤ **Voltage Drop** 4%
② **Rated current** 50: 50 A	④ **Rated voltage** 4T: 380 V	

Outline Dimensions

- Dimensions of AC input reactors of 7 A to 10 A

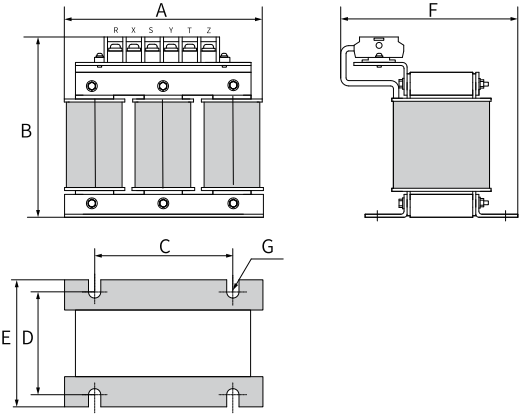


Figure 4-1 Dimensions of AC input reactors of 7 A to 10 A

Table 4–3 Dimensions of AC input reactors of 7 A to 10 A (unit: mm)

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

- Dimensions of AC input reactors of 15 A to 50 A

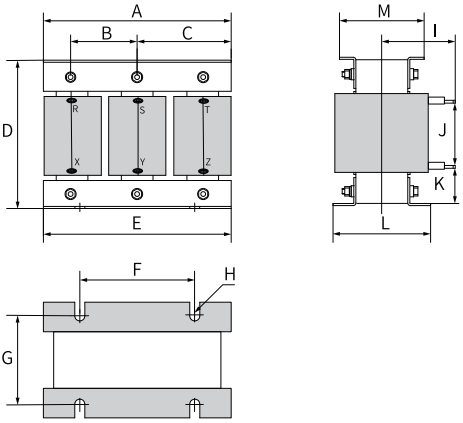


Figure 4-2 Dimensions of AC input reactors of 15 A to 50 A

Table 4–4 Dimensions of AC input reactors of 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 x 20	100±10	75±5	35±5	125max	100max
20	195max	64	94	165max	188	120±1	97±2	Φ8.5 x 20	100±10	75±5	35±5	125max	100max
30	195max	64	94	165max	188	120±1	102±2	Φ8.5 x 20	100±10	75±5	35±5	130 max	105max
40	195max	64	94	165max	188	120±1	102±2	Φ8.5 x 20	100±10	75±5	35±5	130 max	105max
50	195max	64	94	185max	188	120±1	107±2	Φ8.5 x 20	105±10	85±5	45±5	135max	-

- Physical dimensions of 60 A AC input reactor

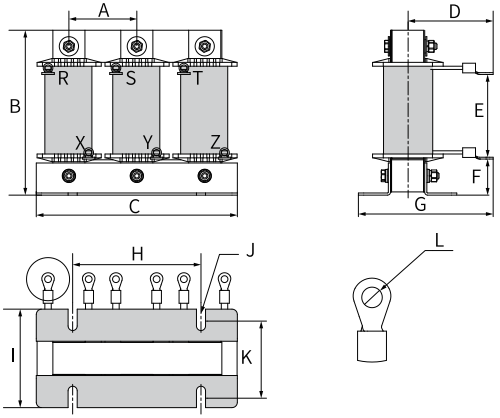


Figure 4-3 Dimensions of AC input reactors of 60 A

Table 4–5 Dimensions of AC input reactors of 60 A (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 x 20	72±2	Φ6.4

- Dimensions of AC input reactors of 90 A to 120 A

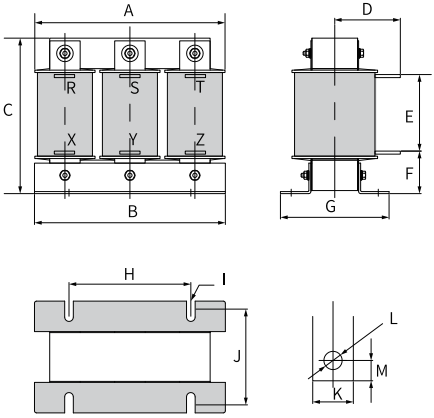


Figure 4-4 Dimensions of AC input reactors of 90 A to 120 A

Table 4–6 Dimensions of AC input reactors of 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 x 20	72±2	-	-	-
120	195	188±1	160	78±10	79±5	40±5	135	120±1	Φ8.5 x 20	92±2	20	Φ9	10

- Dimensions of AC input reactors of 150 A to 330 A

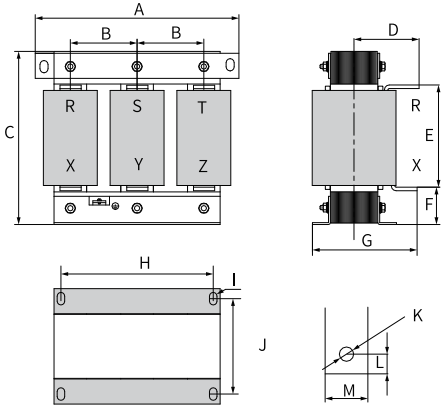


Figure 4-5 Dimensions of AC input reactors of 150 A to 330 A

Table 4–7 Dimensions of AC input reactors of 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 x 18	76±2	Φ11	13	25
200	250	81±5	230	102±10	145±5	40±5	175	182±1	Φ11 x 18	96±2	Φ11	13	25
250	250	81±5	260	102±10	160±5	50±5	175	182±1	Φ11 x 18	96±2	Φ11	13	25
330	290	95±5	275	107±10	160±5	60±5	180	214±1	Φ11 x 18	100±2	Φ12	15	30

- AC input reactors of 490 A to 660 A

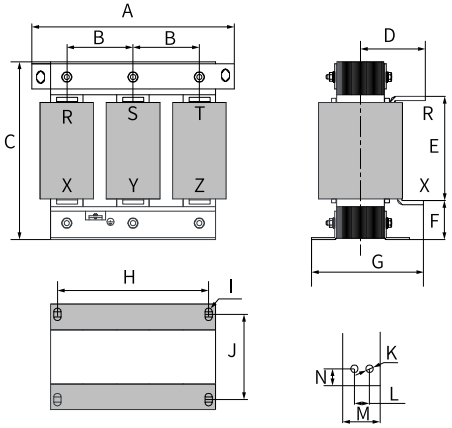


Figure 4-6 Dimensions of AC input reactors of 490 A to 660 A

Table 4–8 Dimensions of AC input reactors of 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 x 20	122±2	Φ12	22	50	23
660	320	106±1	305	145±10	203±5	50±5	240	243±1	Φ12 x 20	137±2	Φ12	22	50	23

Note

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

4.3 EMC Filter Selection

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.

Standard EMC Filter

Standard EMC filters meet the emission requirements of category C2 specified in EN 61800-3 and EN 12015. The filter must be grounded reliably and the cable connecting the filter and the controller must be shorter than 30 cm. See *"Table 4-1 " on page 46*.

SCHAFFNER and JIANLI filters are recommended, as listed in *"Table 4-9 " on page 54*.

Table 4–9 EMC filter model and appearance

Filter model		Appearance
JIANLI (JIANLI)	EBK series	
SCHAFFNER (SCHAFFNER)	FN3258 series	
	FN3359 series	
	FN3270 series	

Table 4–10 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 of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2S02	4.5	17.9	DL-25EBK5	FN 3258-30-33
NICE-L-C-2S03	6.7	25.3	DL-35EBK5	FN 3258-30-33
NICE-L-C-2S04	7.6	31.3	DL-35EBK5	FN 3258-42-33

Controller model	Power capacity (kVA)	Rated input current (A)	AC input filter model (JIANLI)	AC input filter model (SCHAFFNER)
NICE-L-C-2S05	10.0	34.6	DL-35EBK5	FN 3258-42-33
NICE-L-C-2S11	18.0	42.6	DL-50EBK5	FN 3258-55-34
NICE-L-C-2S15	20.0	52.6	DL-65EBK5	FN 3258-55-34
NICE-L-C-2S18	20.2	64.8	DL-65EBK5	FN 3258-75-34
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2003	6.9	17.0	DL-25EBK5	FN 3258-30-33
NICE-L-C-2004	7.6	20.5	DL-25EBK5	FN 3258-30-33
NICE-L-C-2005	10.2	29.0	DL-35EBK5	FN 3258-30-33
NICE-L-C-2007	13.5	36.0	DL-50EBK5	FN 3258-42-33
NICE-L-C-2011	19.5	41.0	DL-50EBK5	FN 3258-42-33
NICE-L-C-2015	25.0	49.0	DL-50EBK5	FN 3258-55-34
NICE-L-C-2018	28.5	62.0	DL-65EBK5	FN 3258-75-34
NICE-L-C-2022	23.5	76.4	DL-80EBK5	FN 3258-100-35
NICE-L-C-2030	32.0	93.0	DL-100EBK5	FN 3258-100-35
NICE-L-C-2037	39.5	113.0	DL-130EBK5	FN 3258-130-35
NICE-L-C-2045	54.0	157.0	DL-160EBK5	FN3258-180-40
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz				
NICE-L-C-4003	8	10.5	DL-16EBK5	FN 3258-16-44
NICE-L-C-4005	11.5	14.8	DL-16EBK5	FN 3258-16-44
NICE-L-C-4007	15	20.5	DL-25EBK5	FN 3258-30-33
NICE-L-C-4011	22	29	DL-35EBK5	FN 3258-30-33
NICE-L-C-4015	29.7	36	DL-50EBK5	FN 3258-42-33
NICE-L-C-4018F	37.6	41	DL-50EBK5	FN 3258-42-33
NICE-L-C-4022F	45	49.5	DL-50EBK5	FN 3258-55-34
NICE-L-C-4030F	53	62	DL-65EBK5	FN 3258-75-34
NICE-L-C-4037F	40.8	77	DL-80EBK5	FN 3258-100-35
NICE-L-C-4045F	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
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
NICE-L-C-4200F	343	365	DL-400EBK3	FN 3359-400-99
NICE-L-C-4220F	386	410	DL-600EBK3	FN 3359-600-99
NICE-L-C-4250F	428	441	DL-600EBK3	FN 3359-600-99
NICE-L-C-4280F	483	495	DL-600EBK3	FN 3359-600-99
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz				
NICE-L-C-5003	9	10.5	DL-16EBK5	FN 3258-16-44
NICE-L-C-5005	13	14.8	DL-16EBK5	FN 3258-16-44
NICE-L-C-5007	17	20.5	DL-25EBK5	FN 3258-30-33
NICE-L-C-5011	25	29	DL-35EBK5	FN 3258-30-33
NICE-L-C-5015	33	36	DL-50EBK5	FN 3258-42-33

Controller model	Power capacity (kVA)	Rated input current (A)	AC input filter model (JIANLI)	AC input filter model (SCHAFFNER)
NICE-L-C-5018F	43	41	DL-50EBK5	FN 3258-42-33
NICE-L-C-5022F	51	49.5	DL-50EBK5	FN 3258-55-34
NICE-L-C-5030F	61	62	DL-65EBK5	FN 3258-75-34
NICE-L-C-5037F	40.7	77	DL-80EBK5	FN 3258-100-35

Simple EMC Filter

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 4-7 Simple filter

Dimensions

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

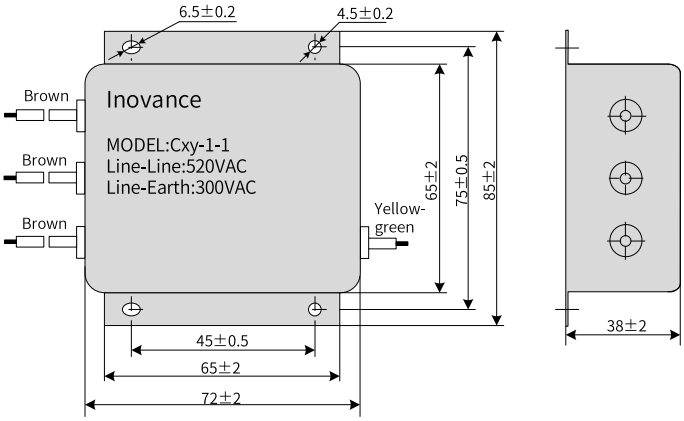
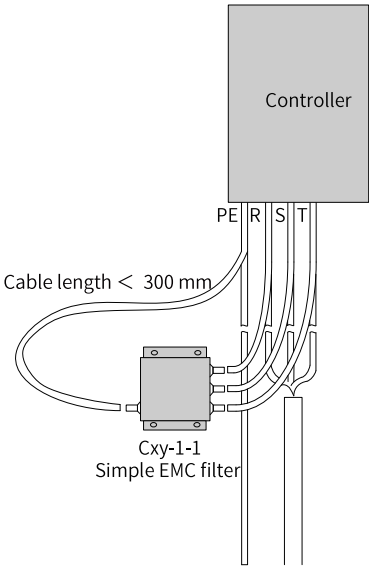


Figure 4-8 Outline dimensions of the simple filter (Unit: mm)

Installation Description



4.4 Braking Component Selection

Braking Resistor Resistance Selection

During braking, almost all regenerative energy of the motor is consumed by the braking resistor. The resistance of the braking resistor is calculated by the following formula: U x U/R = Pb

U: Braking voltage for stable system braking (The U value varies with the system. The default braking voltage of the NICE3000^{new} is 760 V.)

Pb: Braking power

Braking Resistor Power Selection

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 x Pr = Pb x 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 x Pr = Pb x D = U x U/R x D

Pr = (U x U x D)/(R x K)

You can then calculate the power of the braking resistor.

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

Table 4–11 Typical values of braking frequency in different applications

Application	Elevator
Braking frequency	20% to 30%

Note

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.

Selection Guide of the Braking Resistor

Table 4–12 Selection of braking components of the NICE3000^{new}

Controller model	Motor power (kW)	Max. resistance (Ω)	Min. resistance (Ω)	Power (W)	Braking unit
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz					
NICE-L-C-2S02	2.2	85	65	2500	Built-in
NICE-L-C-2S03	3.7	55	43	3500	
NICE-L-C-2S04	4	43	35	4500	
NICE-L-C-2S05	5.5	34	25	5500	
NICE-L-C-2S11	11	24	22	6500	
NICE-L-C-2S15	15	20	16	9000	
NICE-L-C-2S18	18.5	16	13	11000	
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz					
NICE-L-C-2003	3.7	54.0	50.0	1100	Built-in
NICE-L-C-2004	4.0	40.0	35.0	1200	
NICE-L-C-2005	5.5	29.0	25.0	1600	
NICE-L-C-2007	7.5	26.0	22.0	2500	
NICE-L-C-2011	11.0	14.5	13.0	3500	
NICE-L-C-2015	15.0	13.0	12.5	4500	
NICE-L-C-2018	18.5	12.5	12.0	5500	
NICE-L-C-2022	22.0	7.5	6.0	6500	
NICE-L-C-2030	30.0	5.0	4.5	9000	
NICE-L-C-2037	37.0	4.0	3.5	11100	
NICE-L-C-2045	45.0	3.5	3.0	13000	
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz					
NICE-L-C-4003	3.7	170	135	1100	Built-in
NICE-L-C-4005	5.5	115	90	1600	
NICE-L-C-4007	7.5	85	65	2500	
NICE-L-C-4011	11	55	43	3500	
NICE-L-C-4015	15	43	35	4500	
NICE-L-C-4018F	18.5	34	25	5500	
NICE-L-C-4022F	22	24	22	6500	
NICE-L-C-4030F	30	20	16	9000	
NICE-L-C-4037F	37	16	13	11000	
NICE-L-C-4045F	45	14	11	13500	
NICE-L-C-4055F	55	12	10	16500	
NICE-L-C-4075F	75	8	6.5	27000	
NICE-L-C-4090	90	14 x 2	13 x 2	18000 x 2	MDBUN-60-T x 2
NICE-L-C-4110	110	12 x 2	9 x 2	18000 x 2	MDBUN-90-T x 2
NICE-L-C-4132	132	13.5 x 2	10.5 x 3	14000 x 3	MDBUN-90-T x 3
NICE-L-C-4160	160	12 x 3	9 x 3	18000 x 3	MDBUN-90-T x 3
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz					

Controller model	Motor power (kW)	Max. resistance (Ω)	Min. resistance (Ω)	Power (W)	Braking unit
NICE-L-C-5003	3.7	210	180	1110	Built-in
NICE-L-C-5005	5.5	145	120	1650	
NICE-L-C-5007	7.5	105	90	2250	
NICE-L-C-5011	11	70	60	3300	
NICE-L-C-5015	15	53	45	4500	
NICE-L-C-5018F	18.5	43	36	5550	
NICE-L-C-5022F	22	35	30	6600	
NICE-L-C-5030F	30	26	22	9000	
NICE-L-C-5037F	37	21	18	11100	

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:x 2 indicates that two sets of corresponding accessories are required. For example, “13 x 2, 18000 x 2, MDBUN-60-T x 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.

Braking unit

"Figure 4-9 Braking unit outline and installation dimensions (unit: mm)" on page 60
shows outline dimensions of the MDBUN series braking unit.

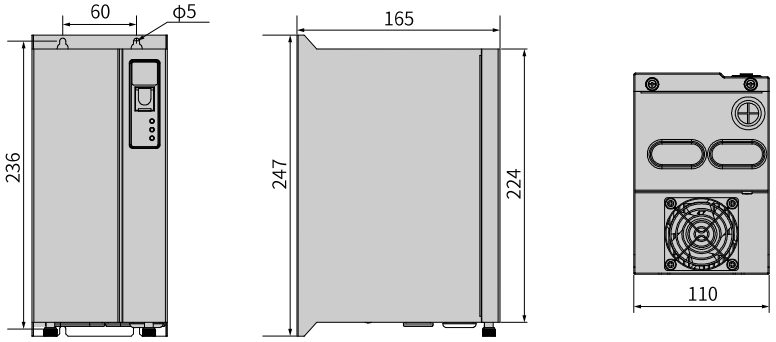


Figure 4-9 Braking unit outline and installation dimensions (unit: mm)

"Figure 4-10 Mounting clearances of the braking unit (unit: mm)" on page 61 shows installation dimensions of the MDBUN series braking unit.

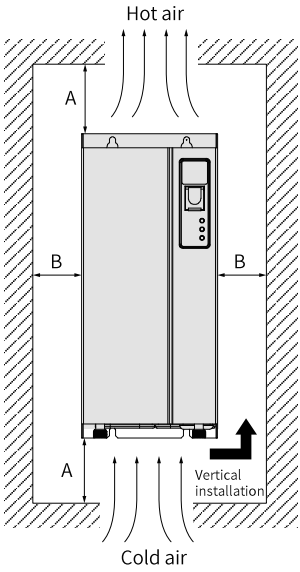


Figure 4-10 Mounting clearances of the braking unit (unit: mm)

4.5 AC Output Reactor Selection

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.

When the output cable is too long, an output reactor shall be configured. 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 4–13 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

Controller power (kW)	Rated voltage (V)	Min. cable length for output reactor configuration (m)
22	200 to 500	150
≧ 30	280 to 690	150

Recommended AC output reactor models:

Table 4–14 Recommended AC output reactor

Controller model	Rated output current (A)	Inovance AC output reactor model
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz		
NICE-L-C-2S02	10.3	MD-OCL-15-0.47-4T-1%
NICE-L-C-2S03	15.5	MD-OCL-20-0.35-4T-1%
NICE-L-C-2S04	19.0	MD-OCL-20-0.35-4T-1%
NICE-L-C-2S05	22.5	MD-OCL-30-0.23-4T-1%
NICE-L-C-2S11	27.7	MD-OCL-30-0.23-4T-1%
NICE-L-C-2S15	34.6	MD-OCL-40-0.18-4T-1%
NICE-L-C-2S18	42.6	MD-OCL-50-0.14-4T-1%
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz		
NICE-L-C-2003	14.0	MD-OCL-15-0.47-4T-1%
NICE-L-C-2004	18.0	MD-OCL-20-0.35-4T-1%
NICE-L-C-2005	27.0	MD-OCL-30-0.23-4T-1%
NICE-L-C-2007	33.0	MD-OCL-40-0.18-4T-1%
NICE-L-C-2011	39.0	MD-OCL-40-0.18-4T-1%
NICE-L-C-2015	48.0	MD-OCL-50-0.14-4T-1%
NICE-L-C-2018	60.0	MD-OCL-60-0.12-4T-1%
NICE-L-C-2022	74.0	MD-OCL-80-0.087-4T-1%
NICE-L-C-2030	91.0	MD-OCL-120-0.058-4T-1%
NICE-L-C-2037	112.0	MD-OCL-120-0.058-4T-1%
NICE-L-C-2045	150.0	MD-OCL-150-0.047-4T-1%
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz		
NICE-L-C-4003	9.0	MD-OCL-10-0.7-4T-1%
NICE-L-C-4005	13.0	MD-OCL-15-0.47-4T-1%
NICE-L-C-4007	18.0	MD-OCL-20-0.35-4T-1%
NICE-L-C-4011	27.0	MD-OCL-30-0.23-4T-1%
NICE-L-C-4015	33.0	MD-OCL-40-0.18-4T-1%
NICE-L-C-4018F	39.0	MD-OCL-50-0.14-4T-1%
NICE-L-C-4022F	48.0	MD-OCL-50-0.14-4T-1%
NICE-L-C-4030F	60.0	MD-OCL-60-0.12-4T-1%
NICE-L-C-4037F	75.0	MD-OCL-80-0.087-4T-1%
NICE-L-C-4045F	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%

Controller model	Rated output current (A)	Inovance AC output reactor model
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%
NICE-L-C-4200F	377.0	MD-OCL-490-0.014-4T-1%
NICE-L-C-4220F	426.0	MD-OCL-490-0.014-4T-1%
NICE-L-C-4250F	465.0	MD-OCL-490-0.014-4T-1%
NICE-L-C-4280F	520.0	MD-OCL-660-0.011-4T-1%
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz		
NICE-L-C-5003	9.0	MD-OCL-10-0.7-4T-1%
NICE-L-C-5005	13.0	MD-OCL-15-0.47-4T-1%
NICE-L-C-5007	18.0	MD-OCL-20-0.35-4T-1%
NICE-L-C-5011	27.0	MD-OCL-30-0.23-4T-1%
NICE-L-C-5015	33.0	MD-OCL-40-0.18-4T-1%
NICE-L-C-5018F	39.0	MD-OCL-40-0.18-4T-1%
NICE-L-C-5022F	48.0	MD-OCL-50-0.14-4T-1%
NICE-L-C-5030F	60.0	MD-OCL-60-0.12-4T-1%
NICE-L-C-5037F	75.0	MD-OCL-80-0.087-4T-1%

Model number:

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

① **Product name** MD-OCL: Inovance AC output reactor	③ **Inductance** 0.14: 0.14 mH	⑤ **Voltage Drop** 1%
② **Rated current** 50: 50 A	④ **Rated voltage** 4T: 380 V	

Dimensions of the AC output reactor:

- Dimensions of AC output reactors of 5 A to 10 A

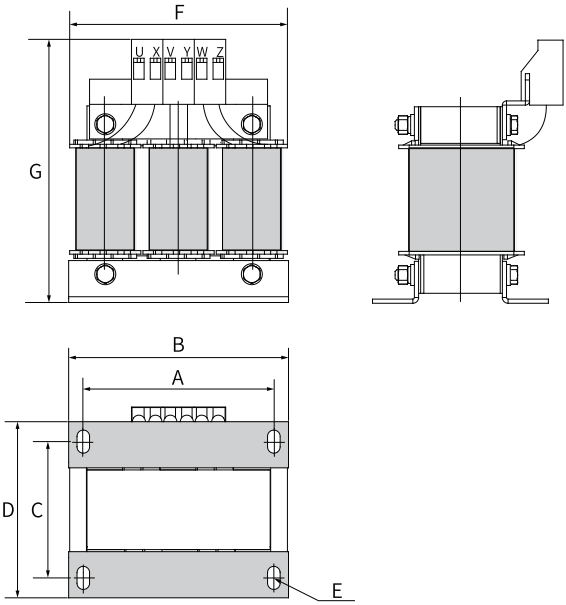


Figure 4-11 Dimensions of AC output reactors of 5 A to 10 A

Table 4–15 Dimensions of AC output reactors of 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 x Φ6 x 11	110 max	130 max
7							
10							

- Dimensions of AC output reactors of 15 A

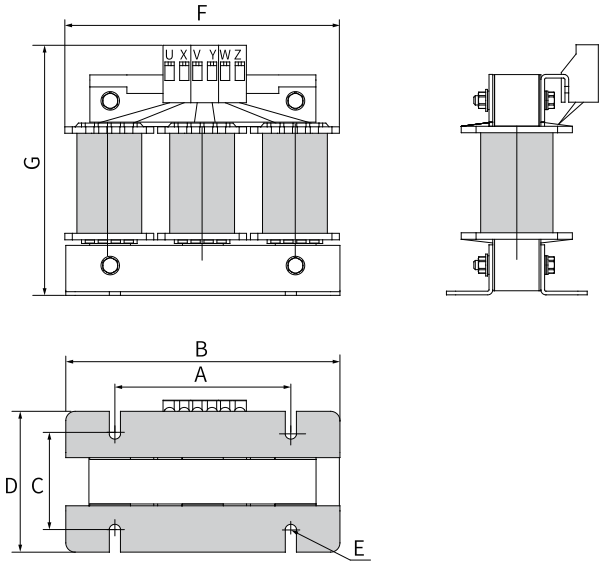


Figure 4-12 Dimensions of AC output reactors of 15 A

Table 4–16 Dimensions of AC output reactors of 15 A (unit: mm)

Rated current (A)	A	B	C	D	E	F	G
15	95±1	148±1	61±2	76±2	4 x Φ6 x 15	155max	140max

- Dimensions of AC output reactors of 20 A

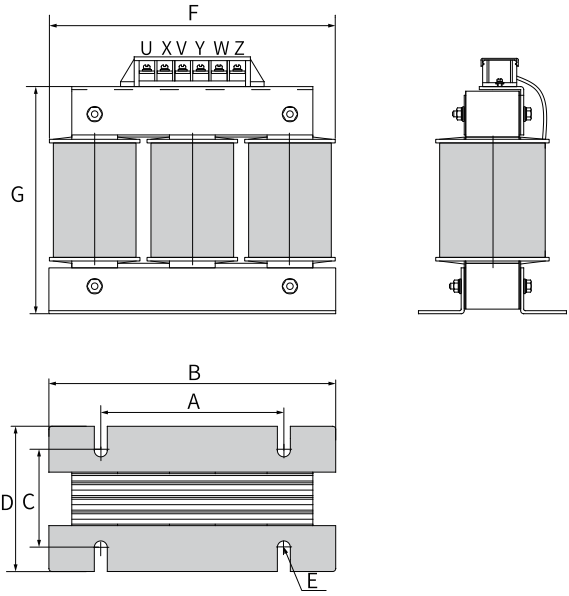


Figure 4-13 Dimensions of AC output reactors of 20 A

Table 4–17 Dimensions of AC output reactors of 20 A (unit: mm)

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

- Dimensions of AC output reactors of 50 A to 120 A

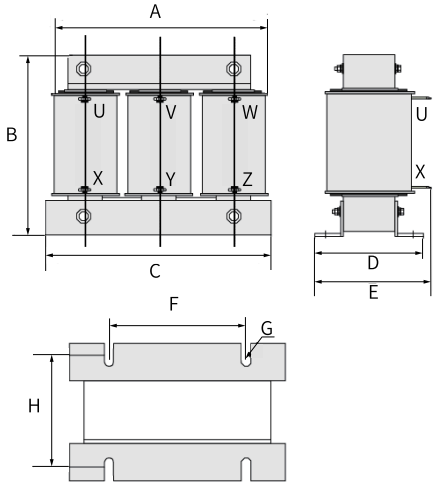


Figure 4-14 Dimensions of AC output reactors of 50 A to 120 A

Table 4–18 Dimensions of AC output reactors of 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 x 15	80
60	195	165	188	92	130	120	8.5 x 20	72
80	195	165	188	92	130	120	8.5 x 20	72
90	195	165	188	92	130	120	8.5 x 20	72
120	195	165	188	112	140	120	8.5 x 20	92

- Dimensions of AC output reactors of 150 A to 250 A

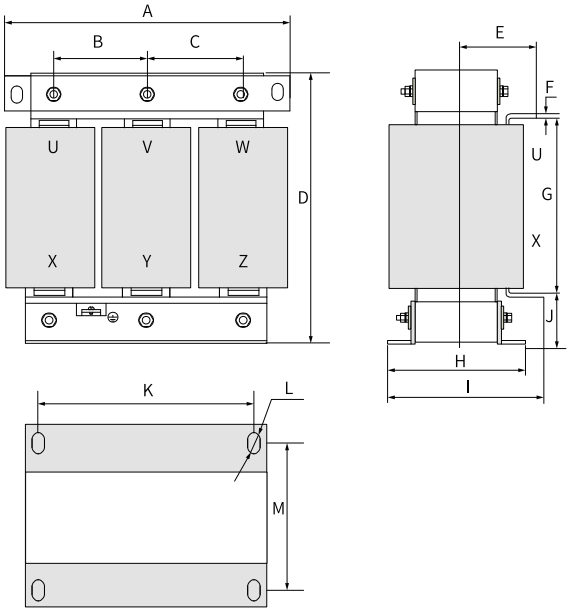


Figure 4-15 Dimensions of AC output reactors of 150 A to 250 A

Table 4–19 Dimensions of AC output reactors of 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 x 18	87
200	250	81	81	230	102	5	140	123	175	42	182	11 x 18	97
250	250	81	81	230	102	5	140	123	175	42	182	11 x 18	97

- Dimensions of AC output reactors of 330 A to 660 A

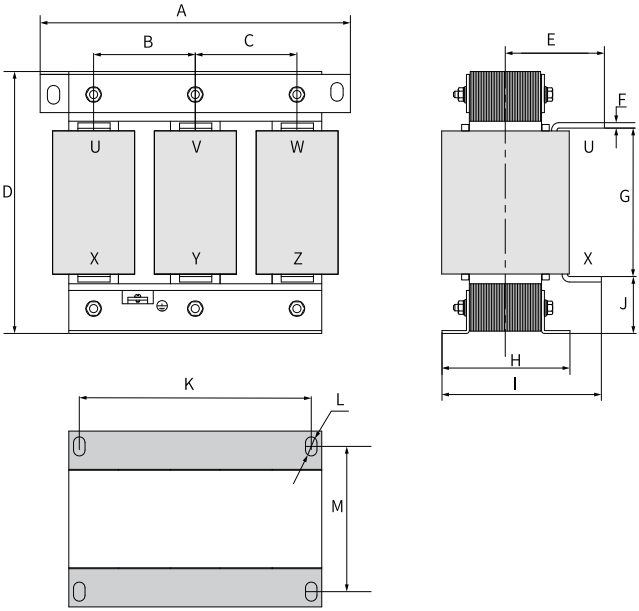


Figure 4-16 Dimensions of AC output reactors of 330 A to 660 A

Table 4–20 Dimensions of AC output reactors of 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 x 18	106
490	320	106	106	320	132	8	190	142	220	52	243	12 x 20	113
660	320	106	106	320	140	8	195	158	240	50	243	12 x 20	113

Note

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

4.6 Dv/dt Reactor Selection

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 4–21 Model selection of the dv/dt reactor (SCHAFFNER)

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

4.7 Selection of the Magnetic Ring and Magnetic Clamp

Magnetic rings are mainly used on the output side of the drive. Install them as close to the drive as possible. A magnetic ring on the output side is mainly used to reduce the external interference of the drive and reduce the bearing current.

For leakage current and other signal cable interference problems, magnetic rings or magnetic clamps can be used.

- Amorphous magnetic rings: These provide excellent suppression of interference in drives and are commonly used on power lines as well as the UVW lines.

- Ferrite magnetic clamps: These are frequently utilized for suppressing interference and noise in various signal lines and communication cables.

Table 4–22 Magnetic ring and magnetic clamp

Magnetic ring and magnetic clamp		Appearance
Magnetic ring	RH28.5 x 28.5 x 13.8	
	RH28 x 28 x 18	
	D5A T36*30*15	
Magnetic clamp	DYR-130-B	

Model of the magnetic ring

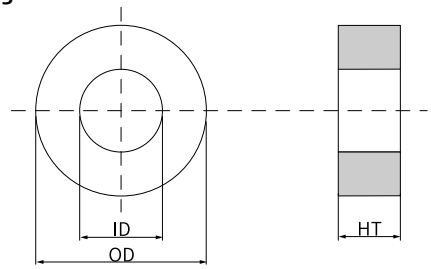


Figure 4-17 Size of the magnetic ring

Table 4–23 Specification for magnetic rings on output power cables

AC drive code	Rated current	Power	Model	Code	Dimensions (OD x ID x HT) (mm)
0103DD87	9 A	3.7 kW	RH28.5 x 28.5 x 13.8	11050378	28.5 x 13.8 x 28.5
0103DD86	13 A	5.5 kW	RH28 x 28 x 18	11050377	28.0 x 18.0 x 28.0
0103DD85	17 A	7.5kW			
0103DD89	25 A	11kW			
0103DD83	32 A	15kW			
0103DD82	37 A	18.5 kW	D5A T36*30*15	11050379	36.0 x 25.0 x 30.0

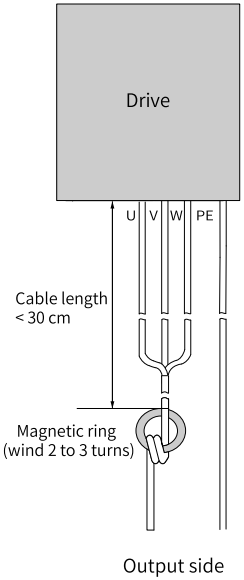


Figure 4-18 Installation of the magnetic ring

Model of the magnetic clamp

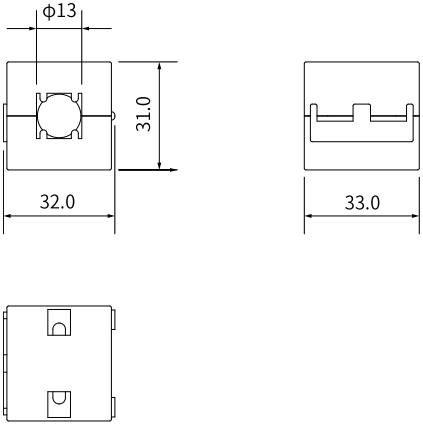


Figure 4-19 Size of the magnetic clamp

Table 4–24 Specifications of the ferrite magnetic clamp

Model	Dimensions (L x OD x ID) (mm)
7427122S	32.8 x 28 x 13

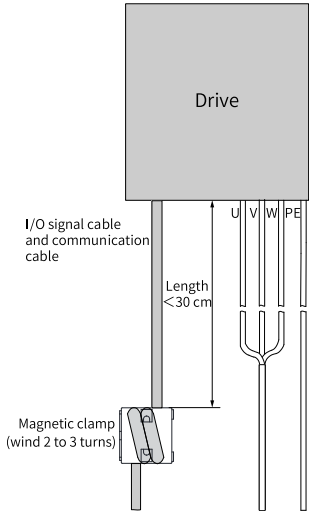


Figure 4-20 Installation of the magnetic clamp

4.8 Group Control Board (MCTC-GCB-B2)

As the core part of the group control system, MCTC-GCB-B2 is designed to achieve group control for a range of 2 to 6 elevators, providing a wide adaptability and meeting the

requirements of the vast majority of users. 4 DI ports are reserved. The dimensions are shown in *"Figure 4-21 " on page 74* .

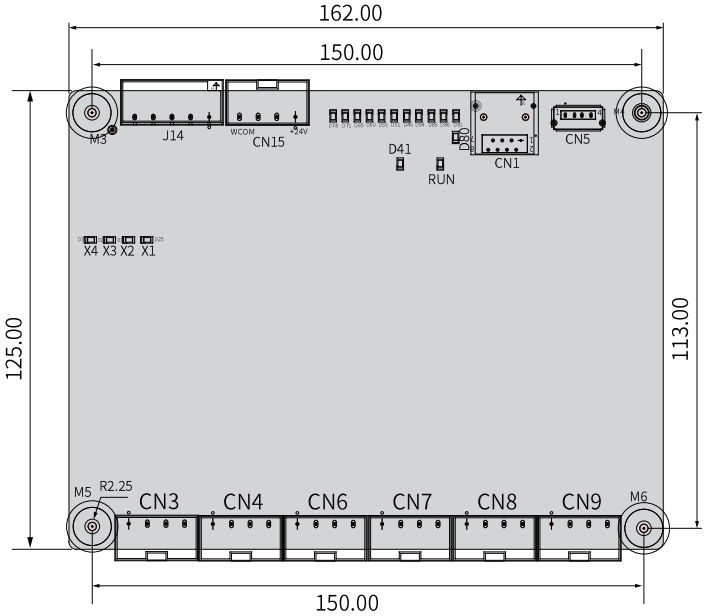


Figure 4-21 Outline dimensions of the group control board (unit: mm)

Table 4–25 Terminal description of the group control board

Terminal	Pin	Network	Signal function
CN3	1	24v1	CAN1 power supply
	2	CAN1+	CAN1 signal
	3	CAN1-	CAN1 signal
	4	COM1	CAN1 ground
CN4	1	24v2	CAN2 power supply
	2	CAN2+	CAN2 signal
	3	CAN2-	CAN2 signal
	4	COM2	CAN2 ground
CN6	1	24v3	CAN3 power supply
	2	CAN3+	CAN3 signal
	3	CAN3-	CAN3 signal
	4	COM3	CAN3 ground

Terminal	Pin	Network	Signal function
CN7	1	24v4	CAN4 power supply
	2	CAN4+	CAN4 signal
	3	CAN4-	CAN4 signal
	4	COM4	CAN4 ground
CN8	1	24v5	CAN5 power supply
	2	CAN5+	CAN5 signal
	3	CAN5-	CAN5 signal
	4	COM5	CAN5 ground
CN9	1	24v6	CAN6 power supply
	2	CAN6+	CAN6 signal
	3	CAN6-	CAN6 signal
	4	COM6	CAN6 ground
CN5	1	5V	5 V power supply
	2	232TX	USB 232 transmit
	3	232RX	USB 232 receive
	4	GND	Ground
CN15	1	24v	MCU power supply +
	2	485+	Signal
	3	485-	Signal
	4	WCOM	MCU power supply –
J14	1	X1	DI input
	2	X2	DI input
	3	X3	DI input
	4	X4	DI input
	5	WGND	DI input ground
D78 D71 D65 D60 D55 D51	-	CANbus communication indicator	• Indicating the CAN communication state of elevators 1 to 6. • The indicator flashes when the elevator is in automatic running state and CAN communication is normal. • The indicator is steady ON when the elevator is not in automatic running state but CAN communication is normal. • The indicator is steady OFF when the CAN communication of the elevator is interrupted.
D85 D86 D81 D80 D41	-	-	Reserved

Terminal	Pin	Network	Signal function
RUN	-	-	Operation indicator
D94	-	Fault indicator	Certain elevators disconnected from the group control system or abnormal communication

Note

- To prevent communication interference from external sources, it is recommended to use shielded twisted pair cables for the communication lines; parallel wires should be avoided wherever possible!
- For each CAN 24V power and ground connection on the group control board, it is advised to connect them to the corresponding 24V power and ground on the elevator main control board.

4.9 10-Channel 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 expansion board is connected to the CAN1 bus of the control board via the CANbus interface to implement I/O terminal expansion. The CAN1 bus supports up to two expansion boards, one of which is placed in the equipment room and the other at the top of the car. You can set the expansion board addresses using the DIP switches. 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 parameters FD-11 to FD-50.

Outline Dimensions

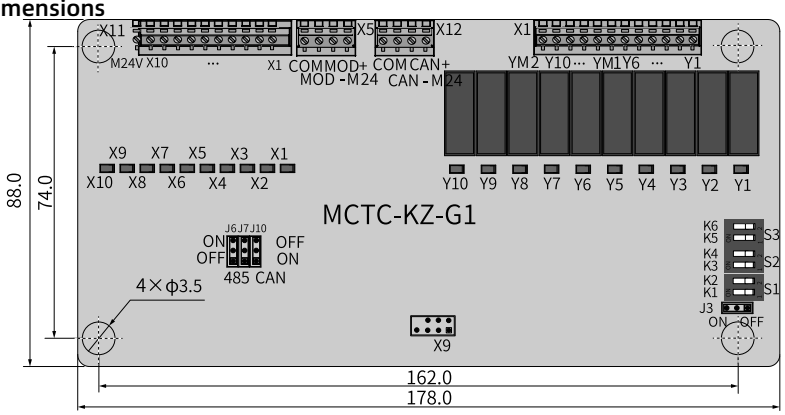
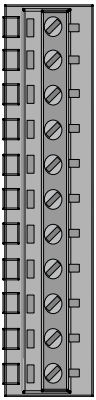
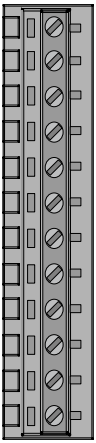
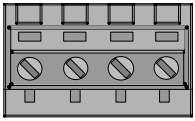
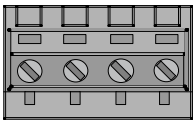
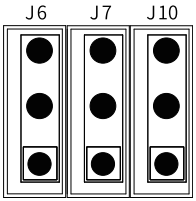
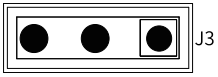
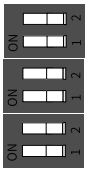
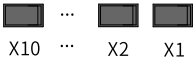


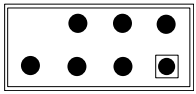
Figure 4-22 Appearance and dimensions of the MCTC-KZ-G1 (unit: mm)

Description

Table 4–26 Terminals of the MCTC-KZ-G1

Terminal ID		Terminal name	Function	Layout
Terminal X11	X1	Digital input 1	Digital signal inputs • Rated voltage: 24 V • 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 X1	Y1	Relay output Y1	Relay output terminals • Contact current capacity: 250 VAC, 5 A • Only connection with low voltage allowed	
	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 to the external 24 V power supply	
	CAN+/ CAN-	Reserved CAN communication interface	Connected to the NICE3000^{new} integrated controller MCB for CAN communication	

<table>
<tr><th colspan="2">Terminal ID</th><th>Terminal name</th><th>Function</th><th>Layout</th></tr>
<tr><td rowspan="2">Terminal X5</td><td>+24V/ COM</td><td>24 VDC voltage output</td><td>Connected to the external 24 V power supply</td><td rowspan="2"></td></tr>
<tr><td>MOD+/ MOD-</td><td>RS485 communication interface with the MCB</td><td>• 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 implement the through-type door control of 40 floors.</td></tr>
<tr><td colspan="2">J6/J7</td><td>Modbus termination resistor jumper</td><td>Connect the termination resistor to the ON position of J6/ J7 when using Modbus communication</td><td rowspan="2"></td></tr>
<tr><td colspan="2">J10</td><td>CAN termination resistor jumper</td><td>Connect the termination resistor to the ON position of J10 when using CAN communication</td></tr>
<tr><td colspan="2">J3</td><td>Reserved</td><td>Factory reserved</td><td></td></tr>
<tr><td colspan="2">S1/S2/S3</td><td>Address DIP switches</td><td>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.</td><td></td></tr>
<tr><td colspan="2">X1 to X10</td><td>DI indicator</td><td>Lights up (green) when corresponding external input signal is active.</td><td></td></tr>
</table>

Terminal ID	Terminal name	Function	Layout
Y1 to Y10	Relay output indicator	ON (green) when corresponding system output is active	
Terminal X9	Reserved	Do not short them randomly. Otherwise, the system may not work properly.	

4.10 Elevator Monitoring Interface 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 interface board MCTC-MIB-A.
- Allows the simultaneous use of MNK IoT module protocol, open protocol, and residential monitoring protocol, as well as the connection of multiple equipment.

Outline Dimensions

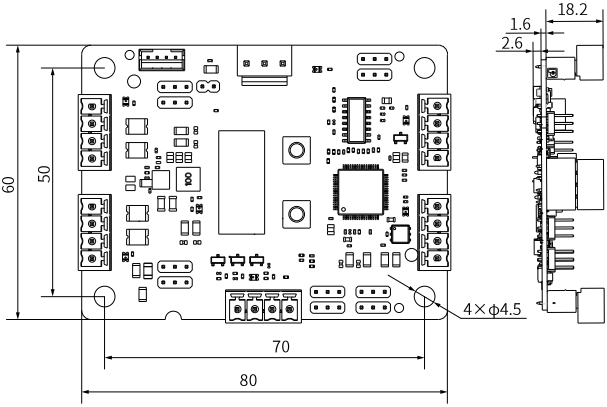


Figure 4-23 Outline dimensions of MCTC-KZ-B0S (unit: mm)

Description

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

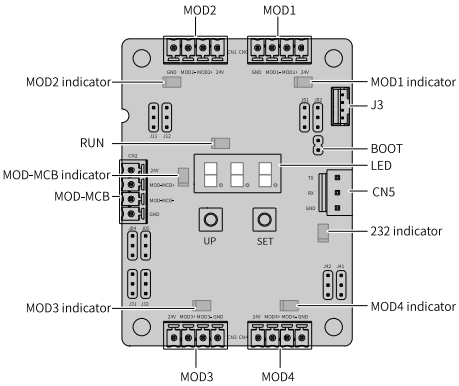


Figure 4-24 Terminal layout

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

Table 4–27 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
Communi-cation 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	Connects the external PC when the MCTC-KZ-B0S is used as the elevator monitoring interface 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.

Name	Status	Description
Running status (RUN) indicator	Flashing	The system is working properly.
	Steady ON/OFF	The system is not powered on or working improperly.
Communica tion 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

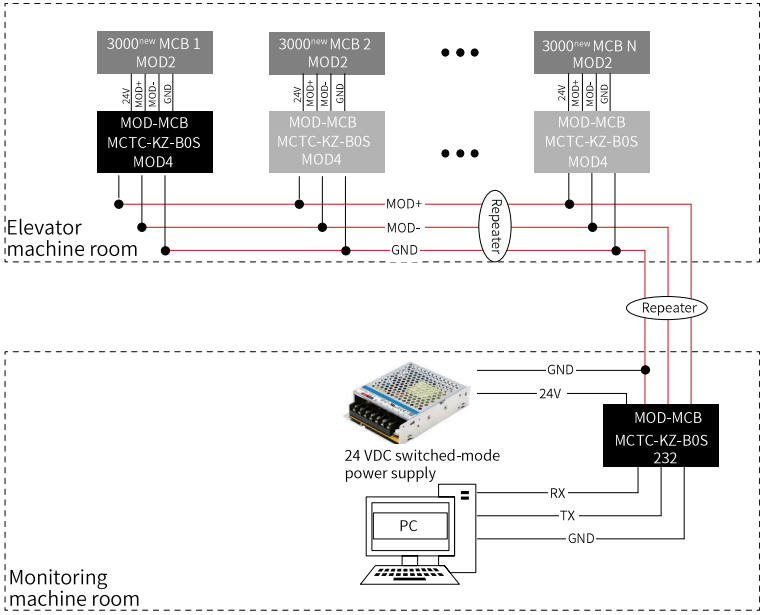
When an open master protocol is set for a port, data is being sent if the corresponding indicator flashes continuously.

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

Parameter setting:

Elevator No.	Address	Controller parameter	B0S parameter	B0S parameter on the host computer (PC) side	Host computer (PC)
1	1	FD-02 = 1	F05 = 0, MODn = 4 (n = 2, 3, 4)	F05 = 2 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)		

System wiring



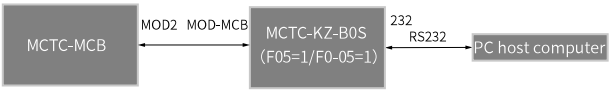
- Cable: RS485 bus (especially red long cables shown in the figure) must be shielded multi-conductor stranded wire. Use cables of item No. 15041138 (need to order separately) to connect the RS232 port in the monitoring machine room.
- Networking: It is recommended to connect several MCTC-KZ-B0S boards 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 jumpered (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 interfere. It is recommended to provide the MCTC-KZ-B0S in the monitoring machine room with 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 FD-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.

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

System Wiring



Parameter Setting

Param.	Value	Description
F05	1	Select B0S as the elevator monitoring interface board

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 connected to the controller MCB and PC host computer respectively. If you want to use both open protocol and elevator monitoring functions, see *" Monitoring of Multiple Elevators (F05 = 2 or F0-05 = 2)" on page 82*.

5 Mechanical Design

5.1 Mounting Dimensions

The NICE3000new series integrated controller features various physical designs across the product range. Taking the three-phase 380 V models as an example: models of 37 kW and below feature plastic enclosures, while models of 45 kW and above feature sheet metal enclosures. Appearance diagrams and mounting dimensions for all products are provided in the following sections.

Note

The depth dimensions specified below refer to models configured with the MCTC-MCB-C2. If a different MCB is used, the actual unit depth may vary.

Plastic Enclosure

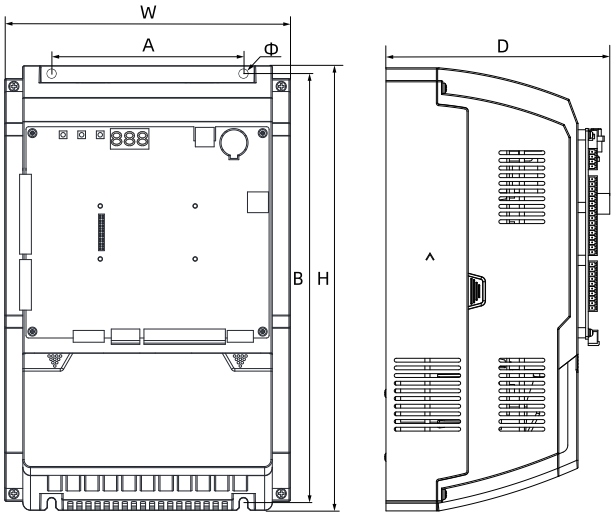


Figure 5-1 Mounting dimensions for model types of T1 and T2

Table 5–1 Mounting dimensions for model types of T1 and T2

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)		Diam. (mm)
	H	W	D	A	B	
NICE-L-C-2003	347	223	143	150	334.5	Φ6.5
NICE-L-C-2S02 NICE-L-C-2S03 NICE-L-C-2S04 NICE-L-C-2004 NICE-L-C-2005 NICE-L-C-2007	347	223	172.5	150	334.5	Φ6.5
NICE-L-C-4003 NICE-L-C-4005 NICE-L-C-5003 NICE-L-C-5005	347	223	143	150	334.5	Φ6.5
NICE-L-C-4007 NICE-L-C-4011 NICE-L-C-4015 NICE-L-C-5007 NICE-L-C-5011 NICE-L-C-5015	347	223	173.5	150	334.5	Φ6.5

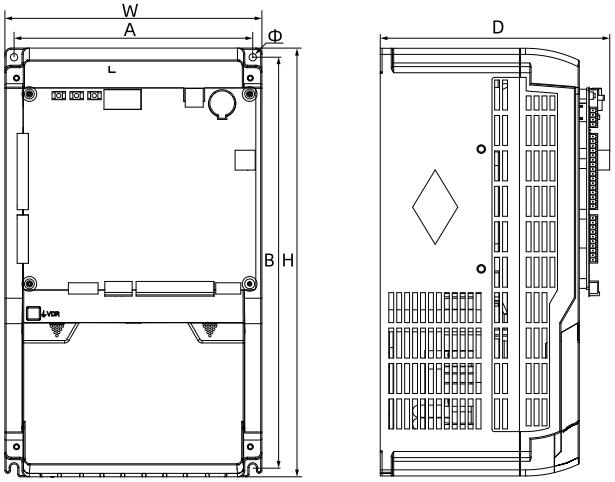


Figure 5-2 Mounting dimensions for model types of T3 and T4

Table 5–2 Mounting dimensions for model types of T3 and T4

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)		Diam. (mm)
	H	W	D	A	B	
NICE-L-C-2S05 NICE-L-C-2S11 NICE-L-C-2011 NICE-L-C-2015 NICE-L-C-4018F NICE-L-C-4022F NICE-L-C-5018F NICE-L-C-5022F	350	210	188	195	335	Φ6
NICE-L-C-2S15 NICE-L-C-2S18 NICE-L-C-2018 NICE-L-C-2022 NICE-L-C-4030F NICE-L-C-4037F NICE-L-C-5030F NICE-L-C-5037F	400	250	211.5	230	380	Φ7

Sheet Metal Enclosure

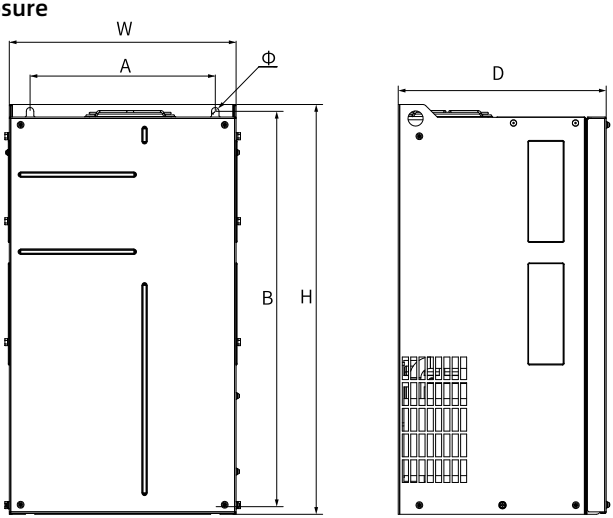


Figure 5-3 Mounting dimensions for model type of T5

Table 5–3 Mounting dimensions for model type of T5

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)		Diam. (mm)
	H	W	D	A	B	
NICE-L-C-2030 NICE-L-C-2037 NICE-L-C-4045F NICE-L-C-4055F	542	300	275.3	245	523	Φ10

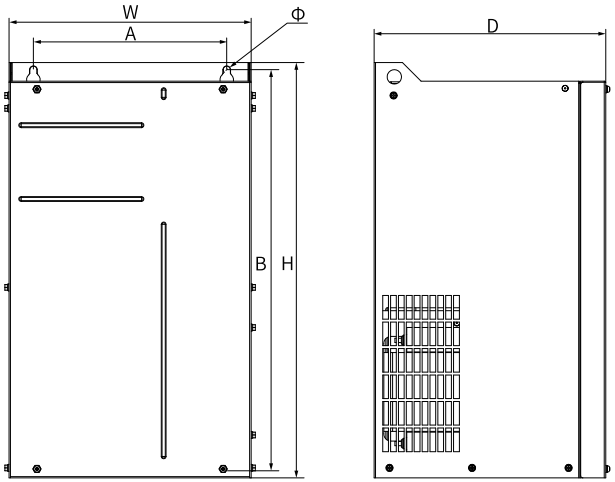


Figure 5-4 Mounting dimensions for model type of T6

Table 5–4 Mounting dimensions for model type of T6

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)		Diam. (mm)
	H	W	D	A	B	
NICE-L-C-2045 NICE-L-C-4075F NICE-L-C-4090F NICE-L-C-4110F	580	338	323.4	270	560	Φ10

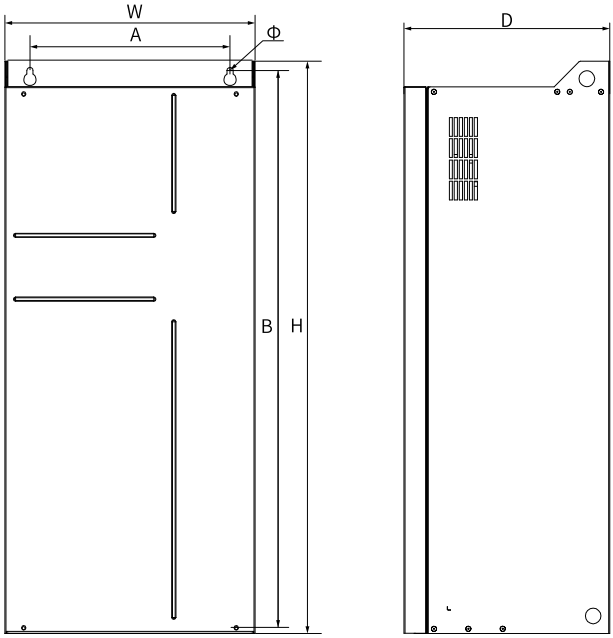


Figure 5-5 Mounting dimensions for model type of T7

Table 5–5 Mounting dimensions for model type of T7

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)		Diam. (mm)
	H	W	D	A	B	
NICE-L-C-4132F NICE-L-C-4160F	915	400	329.1	320	890	Φ10

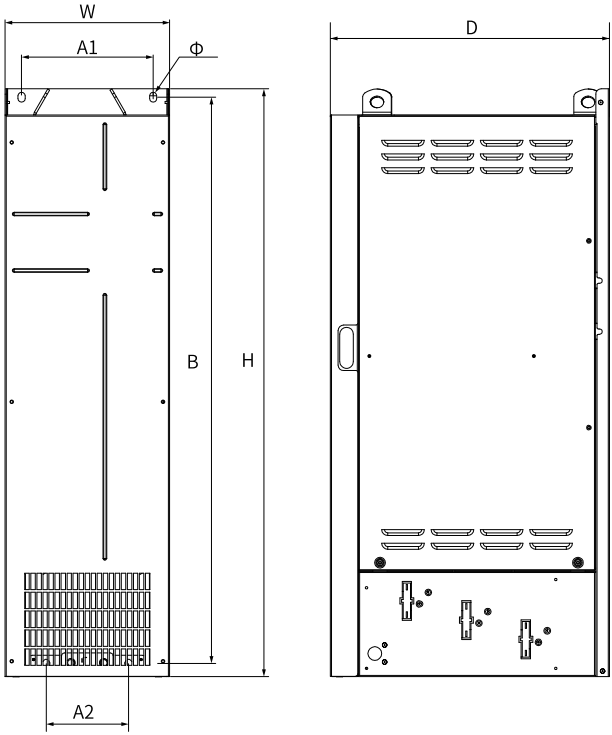


Figure 5-6 Mounting dimensions for model type of T8

Table 5–6 Mounting dimensions for model type of T8

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)			Diam. (mm)
	H	W	D	A1	A2	B	
NICE-L-C-4200F NICE-L-C-4220F	1072	300	508.9	240	150	1032.5	Φ13

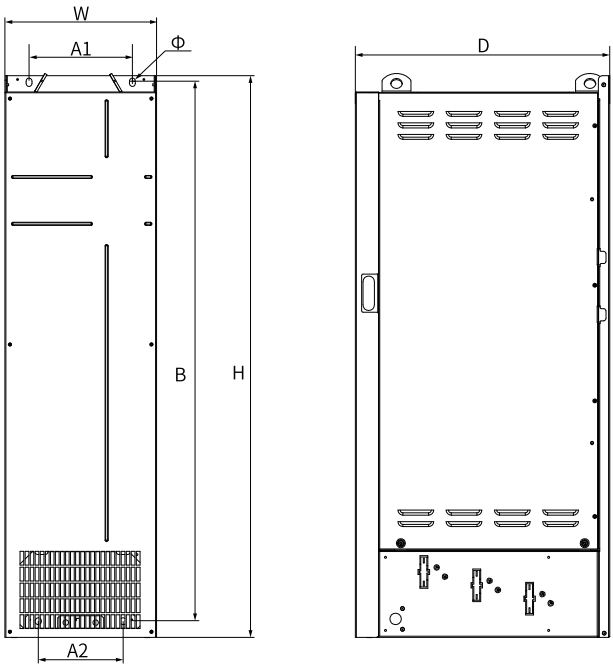


Figure 5-7 Mounting dimensions for model type of T9

Table 5–7 Mounting dimensions for model type of T9

Product model	Outline dimensions (mm)			Mounting hole spacing (mm)			Diam. (mm)
	H	W	D	A1	A2	B	
NICE-L-C-4250F NICE-L-C-4280F	1222	330	553.5	225	185	1172.5	Φ13

5.2 Installation Environment Requirements

Table 5–8 Installation environment requirements

Item	Requirement
Altitude	Below 1000 m (derated if the altitude is above 1000 m) Derating standard: derate by 1% for each 100 m increase in altitude; Maximum altitude: 2000 m
Ambient temperature	-10℃ to +50℃ The rated current derated by 1.5% for each 1℃ higher if the ambient temperature is above 40℃; Maximum temperature: 50℃; Temperature variation: < 0.5℃/min

Item	Requirement
Storage temperature	-40℃ to +60℃
Relative humidity	Less than 95% RH (non-condensing)
Vibration	Sinusoidal vibration: Up to 5.9 m/s^2 (0.6 g) at 2 Hz to 200 Hz
Degree of protection	IP20
Heat dissipation and ventilation	Install on the backplate, and ensure that there is sufficient space around for heat dissipation.
Mounting location	• Avoid direct sunlight • Free from over 95% humidity and condensation • No corrosive, explosive, or combustible gases • Free from oil dirt, dust and metal powder • Avoid excessive vibration (Vibration should be no greater than 0.6 g)
Protective enclosure	The product is intended for cabinet assembly for systems operating in the end-user environment. The end-user system shall provide enclosures for fireproof and electrical and mechanical protection in line with local laws and regulations and relevant IEC standards.

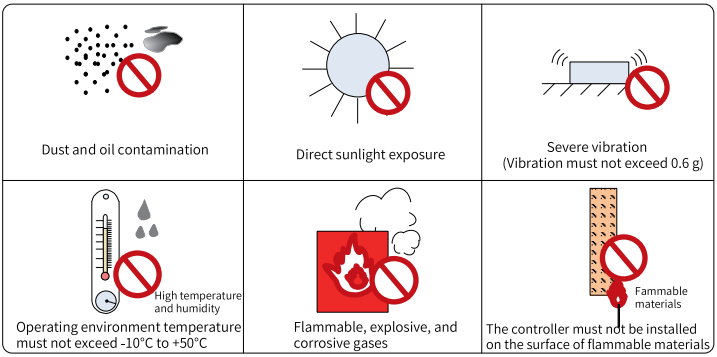


Figure 5-8 Installation environment requirements

5.3 Installation Direction Requirements

NICE-L-C-2S02, NICE-L-C-2S18, NICE-L-C-2004, NICE-L-C-2022, NICE-L-C-4003 to NICE-L-C-4037

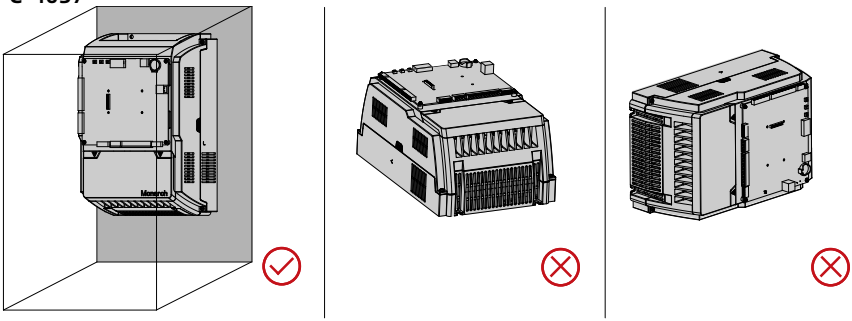


Figure 5-9 Installation direction for models of plastic enclosure

NICE-L-C-2030 to NICE-L-C-2045, NICE-L-C-4045 to NICE-L-C-4160

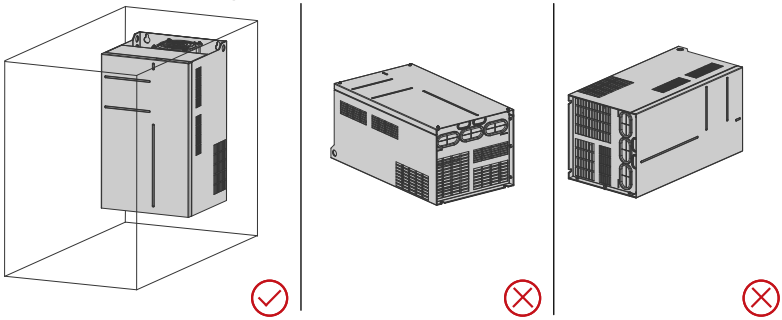


Figure 5-10 Installation direction for models of 45 kW to 160 kW (Sheet metal enclosure)

NICE-L-C-4200 to NICE-L-C-4280

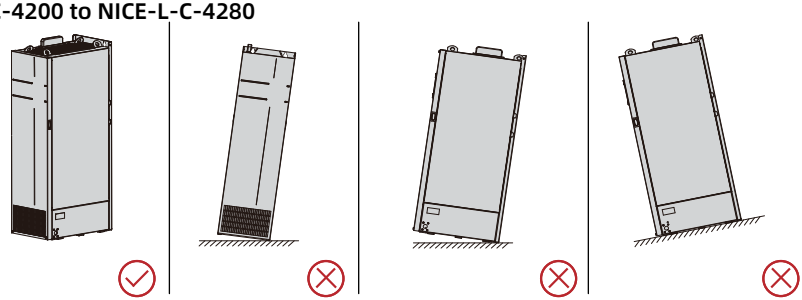


Figure 5-11 Installation direction for models of 200 kW to 280 kW (Sheet metal enclosure)

5.4 Installation Space Requirements

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

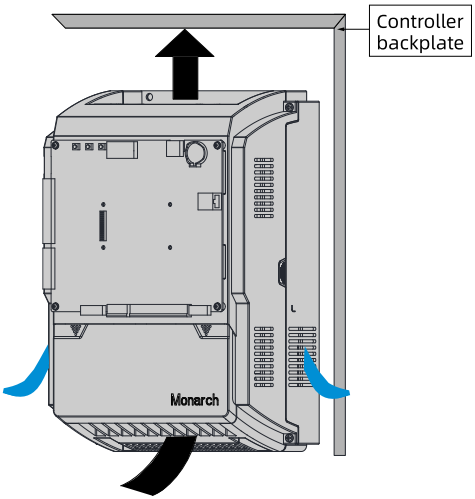


Figure 5-12 Controller heat dissipation (Plastic enclosure as an example)

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

Models of 37 kW and Below (Plastic Enclosure)

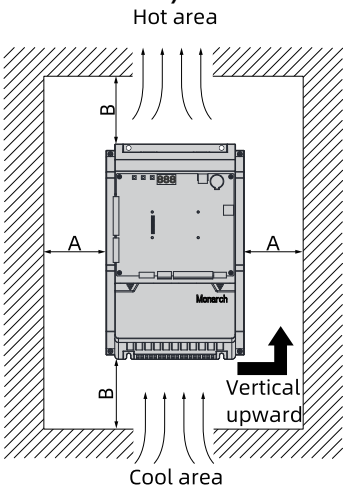


Figure 5-13 Mounting clearance of models of 37 kW and below (Plastic enclosure)

Size	Input power supply	Power rating	Mounting clearance requirements
T1 T2	Single-phase 220 VAC	2.2 kW to 4.0 kW	A ≥ 10 mm, B ≥ 100 mm
	Three-phase 220 VAC	3.7 kW to 7.5 kW	
	Three-phase 380 VAC	3.7 kW to 15.0 kW	
	Three-phase 480 VAC	3.7 kW to 15.0 kW	
T3 T4	Single-phase 220 VAC	5.5 kW to 18.5 kW	A ≥ 50 mm, B ≥ 100 mm
	Three-phase 220 VAC	11.0 kW to 22.0 kW	
	Three-phase 380 VAC	18.5 kW to 37.0 kW	
	Three-phase 480 VAC	18.5 kW to 37.0 kW	

Models of 30 kW to 160 kW (Sheet Metal Enclosure)

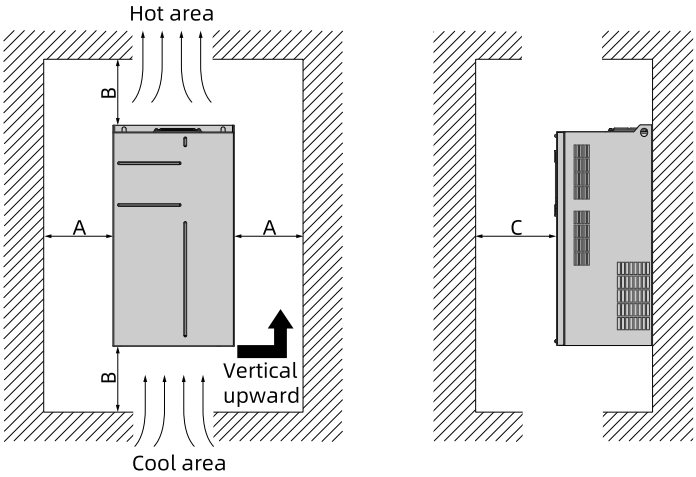
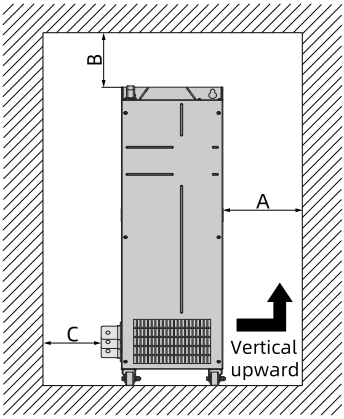
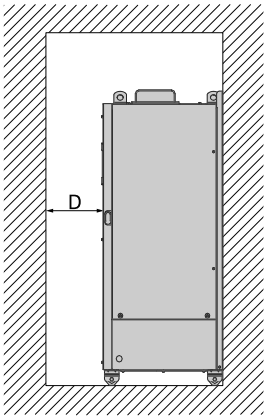


Figure 5-14 Mounting clearance of models of 30 kW to 160 kW (Sheet metal enclosure)

Size	Input power supply	Power rating	Mounting Clearance Requirements
T5	Three-phase 220 VAC	30.0 kW to 37.0 kW	A ≥ 50 mm, B ≥ 300 mm, C ≥ 40 mm
	Three-phase 380 VAC	45.0 kW to 55.0 kW	
T6	Three-phase 220 VAC	45.0kW	
	Three-phase 380 VAC	75.0 kW to 110.0 kW	
T7	Three-phase 380 VAC	132.0 kW to 160.0 kW	

Models of 200 kW to 280 kW (Sheet Metal Enclosure)





Size	Input power supply	Power rating	Mounting Clearance Requirements
T8	Three-phase 380 VAC	200.0 kW to 220.0 kW	A ≥ 10 mm, B ≥ 250 mm, C ≥ 20 mm, D ≥ 20 mm
T9	Three-phase 380 VAC	250.0 kW to 280.0 kW	

6 Electrical Design

6.1 Main Circuit Terminal Description

The terminal layout of the main circuit is shown in the following figure.

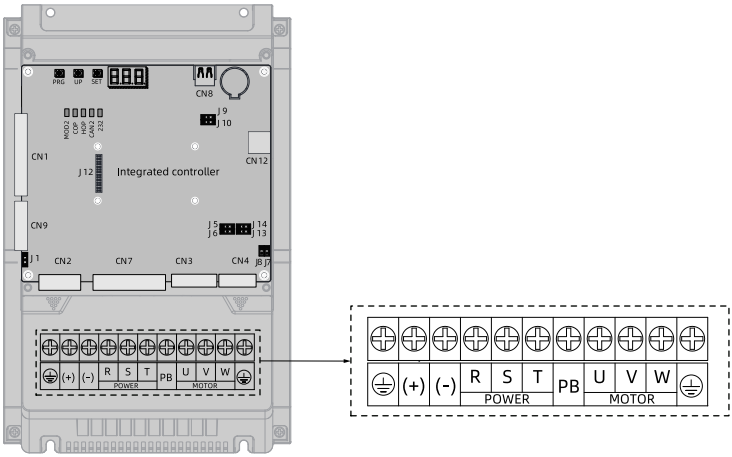


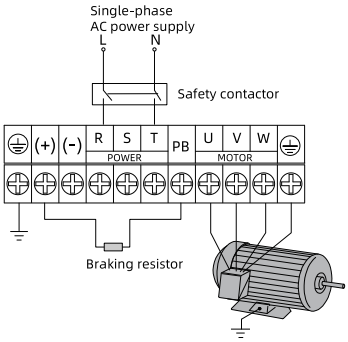
Figure 6-1 Terminal layout of the main circuit (models below 37 kW)

Table 6–1 Main circuit terminal description

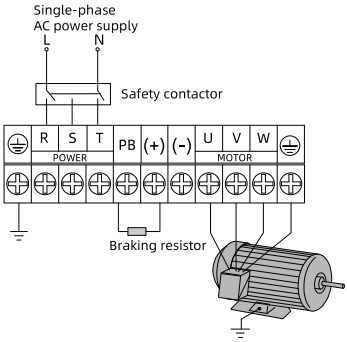
Symbol	Name	Description
R, S, T	three-phase power input terminals	Provide three-phase AC power supply
(+), (-)	Positive and negative terminals of DC bus	Connect the external braking unit and regenerative unit for controller models above 75 kW
+, PB (P)	Terminals for connecting braking resistor	• Connect the braking resistor for controller models below 75 kW • Connect the DC reactor for models above 75 kW • The two terminals are pre-assembled with the jumper bar. If you need not connect the DC reactor, do not remove the jumper bar.
U, V, W	Output terminals	Connect with the three-phase motor
⏚	Grounding terminal	-

6.2 Wiring of the Main Circuit

Single-phase 220 V Models



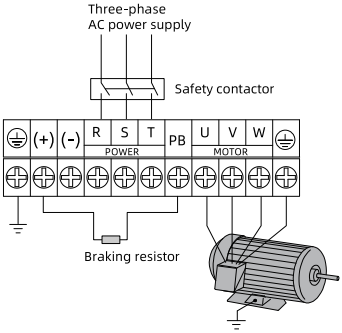
Main circuit wiring of models of 2.2 kW to 4.0 kW



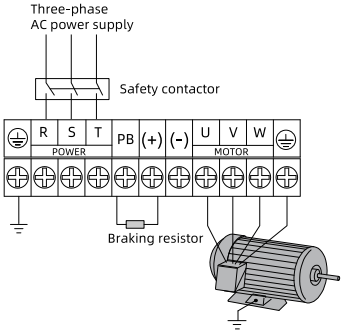
Main circuit wiring of models of 5.5 kW to 18.5 kW

Figure 6-2 Main circuit wiring of single-phase 220 V models

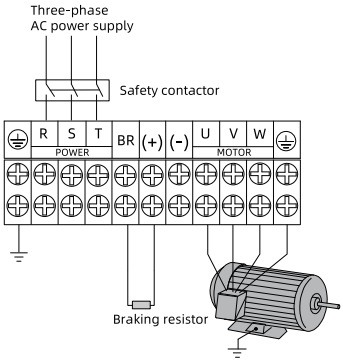
Three-phase 220 V Models



Main circuit wiring of models of 3.7 kW to 7.5 kW



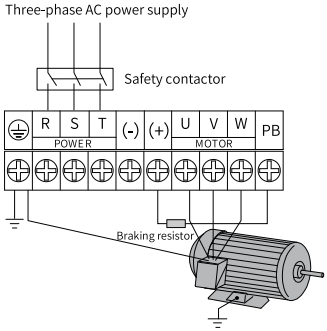
Main circuit wiring of models of 11.0 kW to 22.0 kW



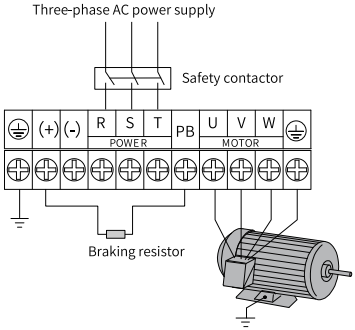
Main circuit wiring of models of 30.0 kW to 45.0 kW

Figure 6-3 Main circuit wiring of three-phase 220 V models

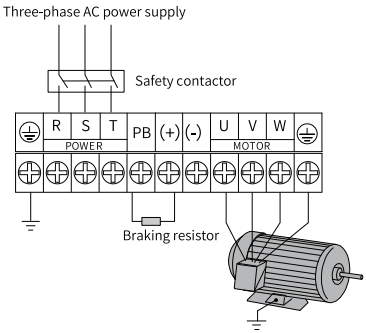
Three-phase 380 V Models



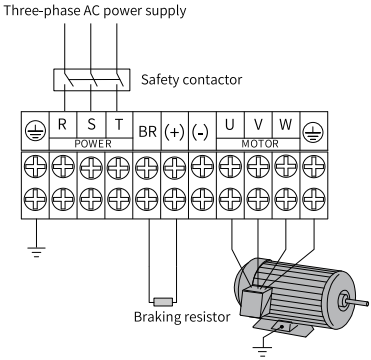
Main circuit wiring for models of 2.5 kW to 5.5 kW



Main circuit wiring for models of 7.5 kW to 15 kW

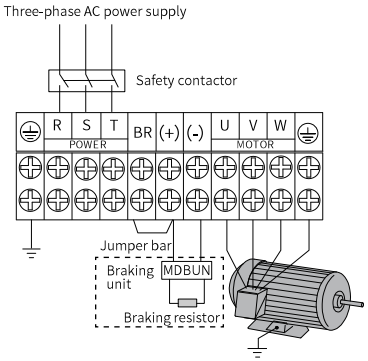


Main circuit wiring for models of 18 kW to 37 kW

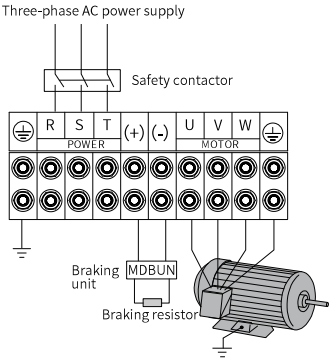


Main circuit wiring for models of 45 kW to 75 kW

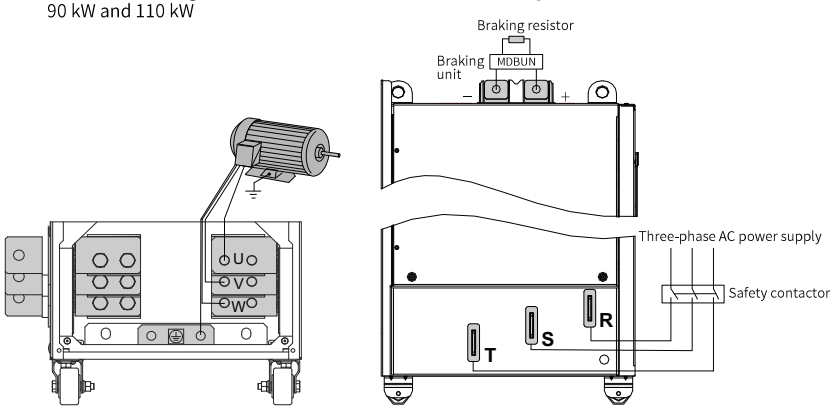
Figure 6-4 Main circuit wiring of three-phase 380 V models



Main circuit wiring for models of 90 kW and 110 kW



Main circuit wiring for models of 132 kW to 160 kW



Main circuit wiring for models of 200 kW and above

6.3 Main Circuit Wiring Requirements

Cable Selection

Table 6–2 Input specification

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2S02	17.9	4	2.5	GTNR4-5
NICE-L-C-2S03	25.3	6	2.5	GTNR6-5
NICE-L-C-2S04	31.3	6	2.5	GTNR6-5
NICE-L-C-2S05	34.6	10	4	GTNR16-6
NICE-L-C-2S11	42.6	16	4	GTNR16-6

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
NICE-L-C-2S15	52.6	16	4	GTNR16-6
NICE-L-C-2S18	64.8	25	4	GTNR16-6
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2003	17.0	2.5	1.2	GTNR2.5-4
NICE-L-C-2004	20.5	4	2.5	GTNR4-5
NICE-L-C-2005	29.0	6	2.5	GTNR6-5
NICE-L-C-2007	36.0	6	2.5	GTNR6-5
NICE-L-C-2011	41.0	10	4	GTNR16-6
NICE-L-C-2015	49.0	16	4	GTNR16-6
NICE-L-C-2018	62.0	16	4	GTNR16-6
NICE-L-C-2022	76.4	25	4	GTNR16-6
NICE-L-C-2030	93.0	35	10.5	TNR1.25-4
NICE-L-C-2037	113.0	50	10.5	GTNR2.5-4
NICE-L-C-2045	157.0	70	20	GTNR70-10
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz				
NICE-L-C-4003	10.5	2.5	1.2	GTNR2.5-4
NICE-L-C-4005	14.8	2.5	1.2	GTNR2.5-4
NICE-L-C-4007	20.5	4	2.5	GTNR4-5
NICE-L-C-4011	29.0	6	2.5	GTNR6-5
NICE-L-C-4015	36.0	6	2.5	GTNR6-5
NICE-L-C-4018F	41.0	10	4	GTNR16-6
NICE-L-C-4022F	49.5	16	4	GTNR16-6
NICE-L-C-4030F	62.0	16	4	GTNR16-6
NICE-L-C-4037F	62.0	25	4	GTNR16-6
NICE-L-C-4045F	93.0	35	10.5	TNR1.25-4
NICE-L-C-4055F	113.0	50	10.5	GTNR2.5-4
NICE-L-C-4075F	157.5	70	20	GTNR70-10
NICE-L-C-4090F	180.0	95	20	GTNR95-12
NICE-L-C-4110F	214.0	120	35.0	GTNR120-12
NICE-L-C-4132F	240.0	120	35.0	GTNR120-12
NICE-L-C-4160F	287.0	150	35.0	GTNR150-12
NICE-L-C-4200F	365.0	95 x 2	20.0	GTNR95-10
NICE-L-C-4220F	410.0	120 x 2	35.0	GTNR120-12
NICE-L-C-4250F	441.0	120 x 2	35.0	GTNR120-12
NICE-L-C-4280F	495.0	120 x 2	35.0	GTNR120-12
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz				
NICE-L-C-5003	10.5	2.5	1.2	GTNR2.5-4
NICE-L-C-5005	14.8	2.5	1.2	GTNR2.5-4
NICE-L-C-5007	20.5	4	2.5	GTNR4-5
NICE-L-C-5011	29.0	6	2.5	GTNR6-5
NICE-L-C-5015	36.0	6	2.5	GTNR6-5
NICE-L-C-5018F	41.0	10	4.0	GTNR16-6

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
NICE-L-C-5022F	49.5	16	4.0	GTNR16-6
NICE-L-C-5030F	62.0	16	4.0	GTNR16-6
NICE-L-C-5037F	77.0	25	4.0	GTNR16-6

The above recommended cable lug models are TNR and GTNR series from Suzhou Yuanli Metal Enterprise. For details, see *"6.4 Cable Lugs" on page 106*.

Precautions

- Power Input Terminals R, S, T
  The cable connection on the input side of the controller has no phase sequence requirement.

  The specification and installation method of external power cables must comply with the local safety regulations and related IEC standards.

  Use copper conductors of a proper size for power cables according to the recommended values in *"Table 4-1 " on page 46*.

  The filter must be installed close to the input terminal of the controller. The connection cable must be shorter than 30 cm. Ensure that the grounding terminals of the filter and the controller are connected together, and that both the filter and controller are installed on the same conductive plane that are connected to main grounding of the cabinet. The following figure shows details.

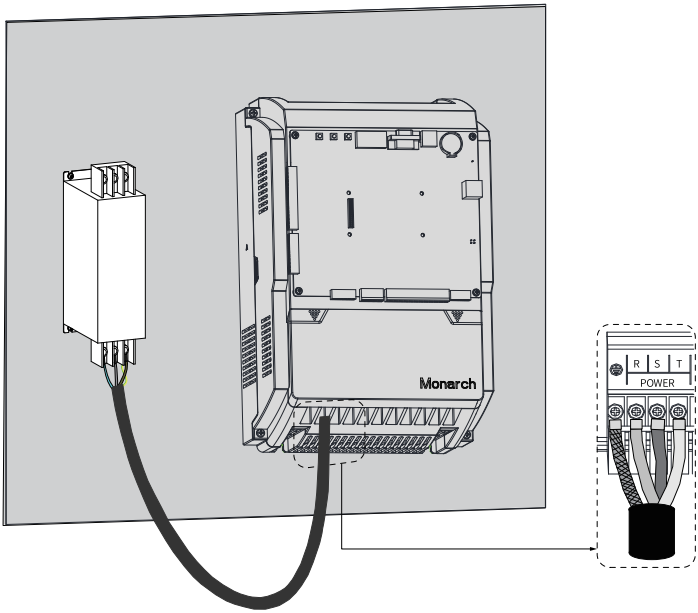
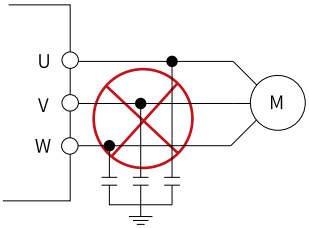


Figure 6-5 Installation on the conductive plane

- DC bus terminals (+) and (-)
  - Terminals (+) and (-) of the DC bus have residual voltage after the controller is switched off. Wait at least 10 minutes and ensure that the voltage is lower than 36 VDC before performing wiring. Failure to comply may result in electric shock.
  - When connecting external braking components for the controller of 75 kW and above, never reverse (+) and (-). Failure to comply may result in damage to the controller and components and even cause a fire.
  - The cable length of the braking unit must not exceed 10 m. Use twisted pair wires or closely routed pair wires for parallel connection.
  - Do not connect the braking resistor directly to the DC bus. Otherwise, it may damage the controller and even cause a fire.
- Terminals (+), PB for connecting regen. resistor
  - These terminals are valid only for the models below 75 kW that have the built-in braking unit.
  - Connect a braking resistor of the recommended model, and ensure that the cable length is shorter than 5 m. Otherwise, it may damage the controller.
- Terminals U, V, W
  - The specification and installation method of external power cables must comply with the local safety regulations and related IEC standards.

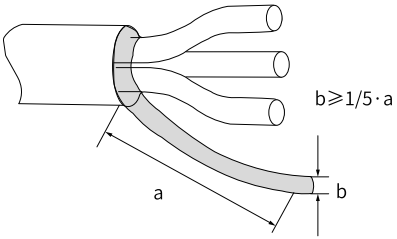
- Use copper conductors of a proper size for power cables according to the values in *"Table 4-1 " on page 46*.
- Do not connect a capacitor or surge protection device on the output side of the controller. Otherwise, it may cause overheating or even damage to the controller due to harmonics.



If the motor cable is too long, electrical resonance will be generated due to the impact of distributed capacitance. This will damage the motor insulation or generate higher leakage current, causing the controller to trip in overcurrent protection. If the motor cable is greater than 10 m long, an AC output reactor must be installed close to the controller.

Use the shielded cable as the output power cable connecting the motor. The shield is connected to the grounding cable.

Make the drain wire of the motor cable shield as short as possible, and ensure that the width is not less than 1/5 of its length.



- Grounding terminal (PE)
  The terminal should be reliably grounded, with the resistance of grounding cable smaller than 1 Ω. Otherwise, the controller may be abnormal or damaged.

  Do not connect this terminal to the neutral conductor of the power supply.

  Impedance of the PE conductor must be able to withstand the large short circuit current that may arise when a fault occurs.

  Select the size of the protective conductor according to the following table.

Table 6–3 Size of PE conductor

Cross-sectional area of the phase conductor (S)	Min. cross-sectional area of protective conductor (Sp)
$S \leq 16\ mm^2$	S
$16\ mm^2 < S \leq 35\ mm^2$	$16\ mm^2$
$S > 35\ mm^2$	S/2

Use a yellow/green cable as the PE conductor.

It is recommended that the controller be installed on the conductive metal plane. Ensure that the entire conductive bottom of the controller is in good contact with the metal plane.

Install the filter and controller on the same plane to ensure the desired filtering performance.

- Upstream Protective Device Requirements
  Install a proper protection device on the power input side to provide protections on overcurrent, short circuit and electrical isolation. For selection of protective devices, consideration should be given to such factors as the current capacity of power cables, the overload capacity requirement of the system, and the short circuit capacity of the upstream components.
- Shielded cable requirements
  See *"23.1 Shielded Cable Requirements" on page 602*.
- Cabling Requirements
  See *"23.2 Cabling Requirements" on page 603*.

6.4 Cable Lugs



Figure 6-6 TNR series cable lug

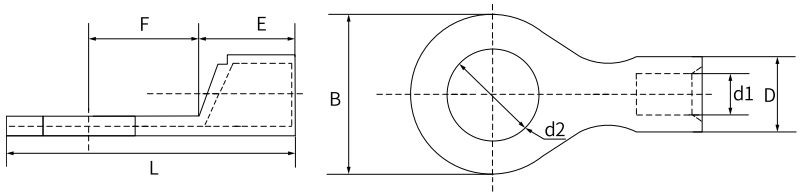


Figure 6-7 Dimensions of TNR series cable lugs

Model	Range		D	d1	E	F	B	d2	L	Current (A)	Crimping tool
	AWG/ MCM	mm^2									
TNR0.75-4	22 - 16	0.25 - 1.0	2.8	1.3	4.5	6.6	8.0	4.3	15.0	10	RYO-8 AK-1M
TNR1.25-4	22 - 16	0.25 - 1.65	3.4	1.7	4.5	7.3	8	5.3	15.8	19	



Figure 6-8 GTNR series cable lug

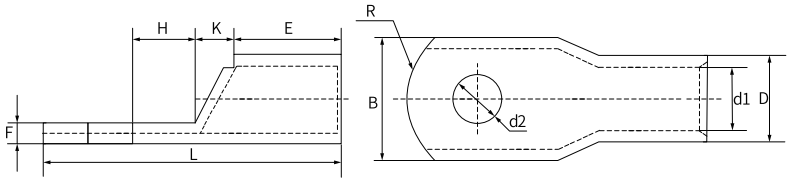


Figure 6-9 Dimensions of GTNR series cable lugs

Table 6–4 Models and dimensions of GTNR series cable lugs (mm)

Model	D	d1	E	H	K	B	d2	F	L	R	Crimping tool
GTNR1.5-5	4.0	2.2	5.0	5.0	2.0	8.0	5.3	1.0	16.0	5	RYO-8 YYT-8 RYO-14
GTNR2.5-4	4.5	2.9	7.0	5.0	2.0	8.0	4.3	1.0	18.0		
GTNR2.5-5				6.0			5.3		20.0	7	
GTNR2.5-6						10.2	6.4	0.8			
GTNR4-5	5.2	3.6	7.0	6.0	2.0	10.0	5.3	1.0	20.0		
GTNR4-6							6.4				
GTNR6-5	6.0	4.2	9.0	6.0	3.0	10.0	5.3	1.2	23.0		
GTNR6-6				7.5		12.0	6.4		26.0		
GTNR6-8							8.4	1.0			
GTNR10-6	7.0	5.0	9.0	8.0	3.5	12.4	6.4	1.3	26.5		
GTNR10-8							8.4		27.5		
GTNR16-6	7.8	5.8	12.0	8.0	4.0	12.4	6.4	1.3	31.0		CT-38 CT-100
GTNR16-8							8.4				
GTNR25-6	9.5	7.5	12.0	8.0	4.5	14.0	6.4	2.0	32.0	10	
GTNR25-8				9.0		15.5	8.4	1.6	34.0		
GTNR25-10				10.5		17.5	10.5	1.4	37.0		
GTNR35-6	11.4	8.6	15.0	9.0	5.0	15.5	6.4	2.8	38.0		
GTNR35-8							8.4				
GTNR35-10				10.5		17.5	10.5	2.5	40.5		

Model	D	d1	E	H	K	B	d2	F	L	R	Crimping tool
GTNR50-8	12.6	9.6	16.0	11.0	6.0	18.0	8.4	2.8	43.5	10	CT-100
GTNR50-10							10.5				
GTNR70-8	15.0	12.0	18.0	13.0	7.0	21.0	8.4	2.8	50.0	14	
GTNR70-10							10.5				
GTNR70-12							13.0				
GTNR95-10	17.4	13.5	20.0	13.0	9.0	25.0	10.5	3.9	55.0		
GTNR95-12							13.0				
GTNR120-12	19.8	15.0	22.0	14.0	10.0	28.0	13.0	4.7	60.0	16	RYC-150
GTNR120-16				16.0			17.0		64.0		
GTNR150-12	21.2	16.5	26.0	16.0	11.0	30.0	13.0	4.7	69.0	24	
GTNR150-16							17.0				
GTNR185-16	23.5	18.5	32.0	17.0	12.0	34.0	17.0	5.0	78.0		
GTNR240-16	26.5	21.5	38.0	20.0	14.0	38.0	17.0	5.5	92.0		
GTNR240-20							21.0				

Note

Reference for recommended cable lugs (Suzhou Yuanli Metal Enterprise Co., Ltd).

7 I/O Interface and Communication

7.1 Digital Input (DI)

Quantity	24
Code	X1 to X24
Param.	F5-01 to F5-24
Input impedance	4.7 kΩ
Effective voltage	10 VDC to 30 VDC
Electrical features	Photocoupler isolation

The 24 DI terminals provide inputs to the MCB in parallel for monitoring the elevator state. All the terminals share the common ground. After 24 V voltage is input to a terminal, the signal indicator of the terminal becomes ON.

7.2 Analog Differential Input (AI)

Quantity	2
Code	AI/M
Input voltage	–10 VDC to +10 VDC
Input impedance	33.9 kΩ

The two AI terminals are used for input of the analog load cell. Weak analog voltage signals are easy to suffer from external interference, and therefore the shielded cable must be used and the cable length must be less than 20 m. In applications where severe interference exists and impacts certain analog signals, install a filter capacitor or ferrite core at the analog signal source.

7.3 Relay Output (DO)

Relay	Quantity	Code	Param.
Y1/Y2/Y2A/ Y3	4	Y1/M1 to Y3/M3	F5-26/F5-27/F5-45/F5-28
Y4/Y5/Y6/Y7	4	Y4/M4 to Y7/M7	F5-29/F5-30/F5-31/F5-46

Relay characteristics:

Relay	Rated load	Maximum switching current	Response time
Y1/Y2/Y2A/ Y3	5 A, 250 VAC/30 VDC	10 A	10 ms
Y4/Y5/Y6/Y7	5 A, 250 VAC/30 VDC	5 A	10 ms

A total of six relay outputs are provided. The photocoupler isolated ARM I/O signals control the relay coil current. After it is energized, the corresponding signal indicator becomes ON. The relay outputs do not have the common ground.

The inductive load (relay, contactor, and motor) causes voltage spike after the current is removed. An RC snubber circuit is used for protection at the Y1/M1 to Y3/M3 contacts of the relay, so running, brake and shorting motor stator control must be configured on Y1/M1 to Y3/M3 correspondingly. In addition, XCOM on the high voltage detection terminal CN4 must be connected to the 110 V neutral line of the safety circuit. No absorption circuit needs to be configured at both ends of the external contactor coil.

7.4 Modbus Communication

Hardware Wiring

RS485 hardware connection:

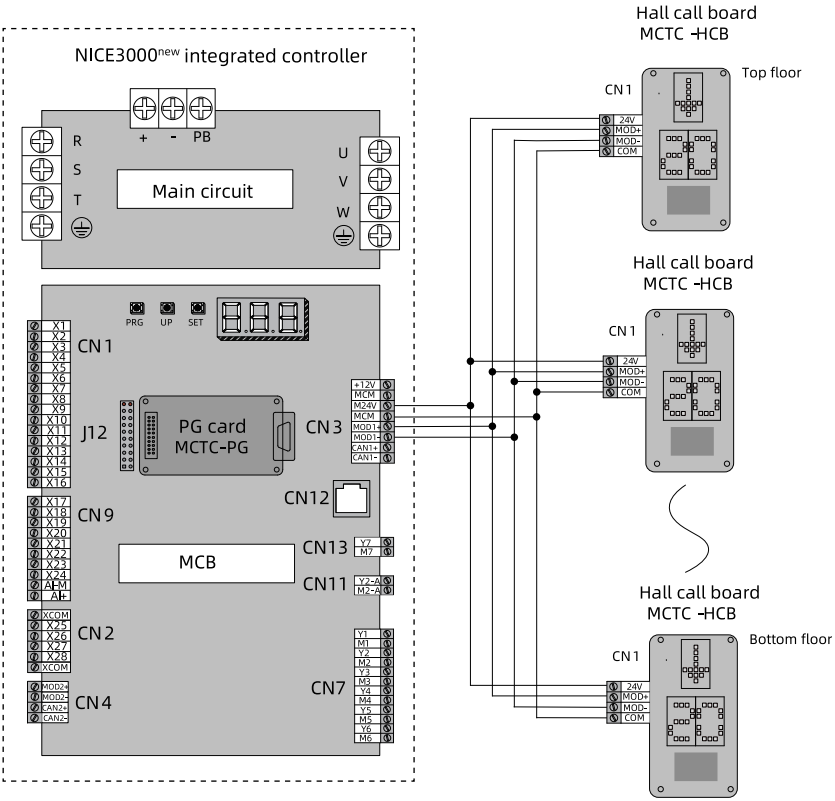


Figure 7-1 RS485 connection between the NICE3000new and the HCB

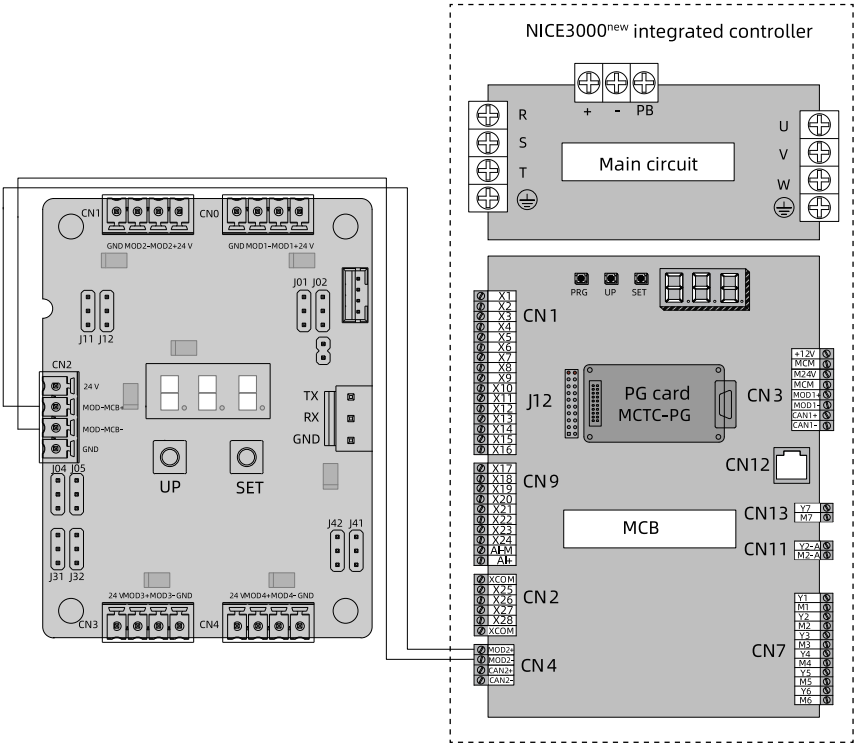


Figure 7-2 Connection between the NICE3000new and the elevator monitoring interface board B0S

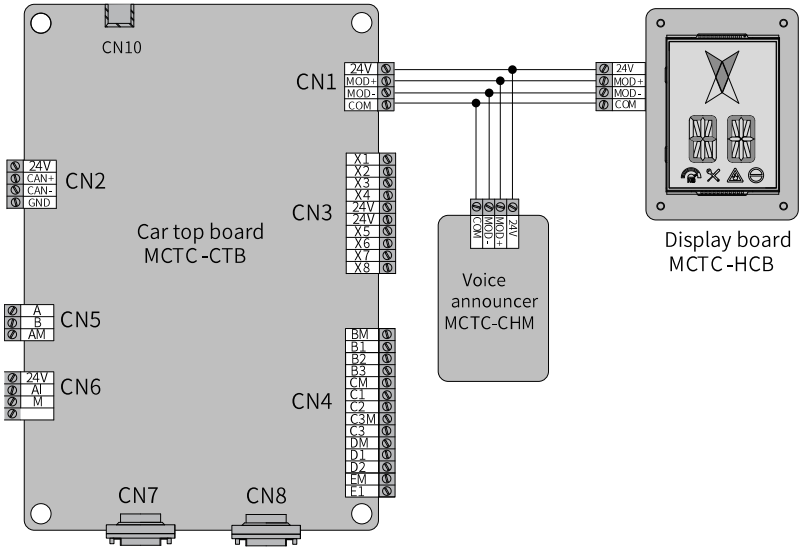


Figure 7-3 RS485 connection between the CTB, car display board, and voice announcer

Communication Address Setting of HCB and Car Display Board

When communicating with the MCB, each HCB must have a unique address. Otherwise, communication will fail.

When the CTB is in networking with the car display board and voice announcer, the car display board address is 0. The voice announcer does not need any address setting and can be directly used after being connected.

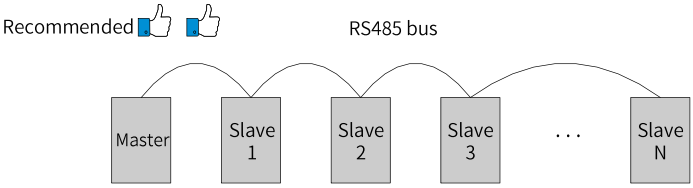
Address allocation principle: 0: car display board; 1 to 48: HCB.

The MCB exchanges information with the CTB through CAN protocol including the floor and running direction. The NICE3000^{new} system provides services for a maximum of 48 floors with the standard program (For 48 floors above, a customized program is required. For details, contact Inovance).

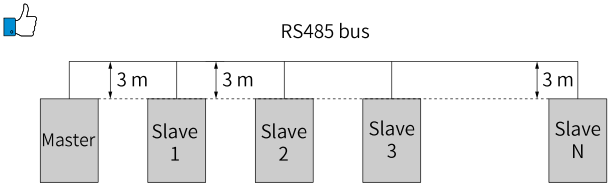
Topology Requirement

When there are many nodes, the RS485 bus structure can be in hand-in-hand connection or branch line connection. If the branch line connection is used, the branch line length is as short as possible. The recommended length is shorter than 3 m. The star connection is forbidden. The following figure shows the common bus structure.

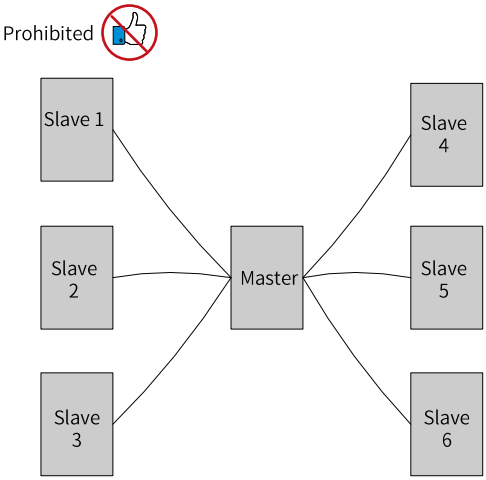
- Hand-in-hand connection structure



- Branch line connection structure



- Wrong structure of star connection



EMC Precautions

Note

- Shielded twisted-pair cables must be used for RS485 communication and the shield must be grounded at both ends.
- Separate the RS485 bus from other interfering cables during cabling.
- Maintain a distance of more than 20 cm between the RS485 bus and strong-current cables.
- Keep a distance of more than 50 cm between the RS485 bus and the motor U/V/W power lines.
- Keep a distance of more than 5 cm between the RS485 bus and the field grounding wire.
- Maintain a distance of more than 1 cm between the RS485 bus and the metal cabinet backplate.

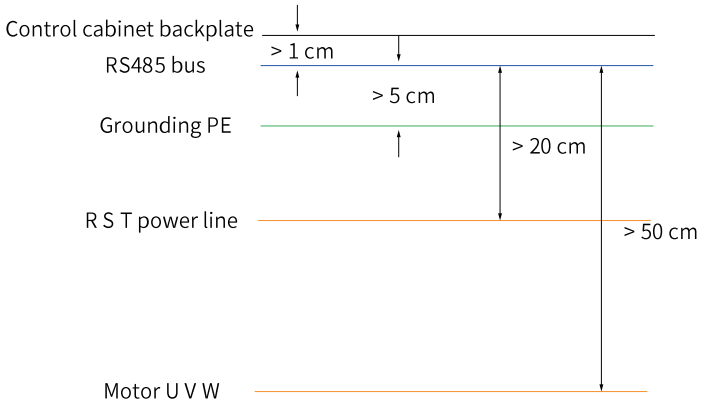


Figure 7-4 Cabling layout

Problems and Handling

1. External system interference

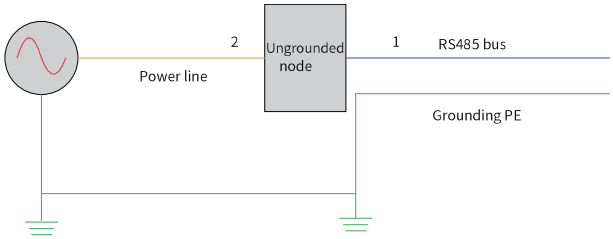


Figure 7-5 Suppressing external interference

Handling:

- Add the magnetic ring at position 1, which can effectively suppress external interference. This method is recommended.
- Adding the magnetic ring at position 2 can also suppress external interference.

2. Controller interference

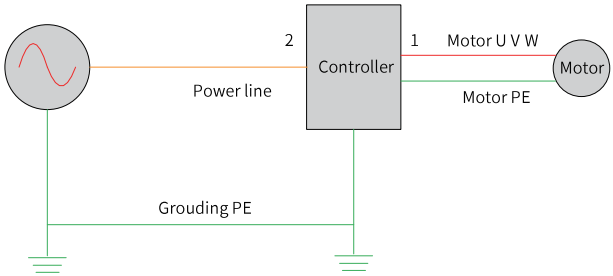


Figure 7-6 Suppressing controller interference

Handling:

- Add the filter magnetic ring at position 1, with the U, V, W cables (not including the PE cable) passing through the magnetic ring three times. This method is strongly recommended.
- Add the filter magnetic ring at position 2, with the U, V, W cables (not including the PE cable) passing through the magnetic ring three times.

3. MOD+/MOD- of the MCB connected inversely

Handling:

Check and rewire correctly.

7.5 CAN communication

Hardware Wiring

- CAN hardware connection

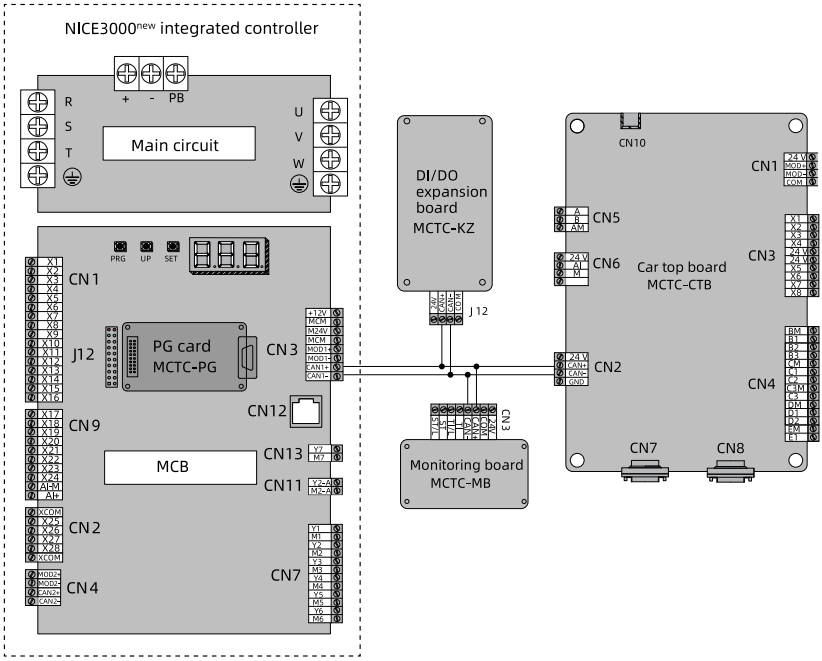


Figure 7-7 CAN connection between the NICE3000^{new}and the CTB, DI/DO expansion board and MRL monitoring board

- EMC precautions
  - Before power-on, check whether there is short circuit between the 24 V, COM, CAN +, CAN- cables and other cables.
  - Ensure that the communication cable is routed separately from the power cable. If the strong-current cables and weak-current cables are laid in parallel, they must be placed at opposite sides, and separated by a metal partition.
  - The traveling cable must be grounded.
  - Use a four-core cable as the communication cable, with one core connected to 24 VDC, two cores connected to CAN+ and CAN-, and the other core connected to COM.

Typical CAN Communication Problems and Handling

1. Too small termination resistor

Handling:

Power off all devices, and use a multimeter to measure the resistance between CAN+ and CAN-. The normal value is about 60 Ω. If the value is too small, it indicates that more

unnecessary termination resistors are used in addition to those at two ends. In this case, you need to disconnect them.

2. Incorrect selection or wiring of communication cable

Handling:

The communication cable must be twisted pair with metal shield. The cable cross-sectional area is 0.75 mm^2 at a minimum. All common terminals have COM connected together (not connected to the system ground). The power supply of all the nodes must be grounded reliably.

3. Incorrect protocol type

Handling:

Contact Inovance to confirm.

4. CAN communication interference

Handling:

Install the magnetic ring on CAN communication cable; install the magnetic ring on the UVW lines; install the filter or magnetic ring on the input side.

5. CAN+/CAN-connected inversely on the MCB

Handling:

Check and rewire correctly.

8 Unpacking and Handling

8.1 Inspection upon Unpacking

Upon unpacking, check the following items:.

Item	Description
Whether the delivered product is consistent with your order	Check whether the product model on the nameplate is consistent with that on your order.
Whether the product is damaged.	Check whether the product enclosure is damaged during transportation. If there is any omission or damage, contact Inovance or your supplier immediately.

8.2 Handling

8.2.1 Transportation Before Unpacking

Handling

- The following power ratings feature compact and lightweight designs suitable for manual handling:
  NICE-L-C-2S02 to NICE-L-C-2S18, NICE-L-C-2003 to NICE-L-C-2022, NICE-L-C-4003 to NICE-L-C-4037 (F), NICE-L-C-5003 to NICE-L-C-5037 (F)
- The following power ratings are heavy and must be handled using appropriate lifting equipment:
  NICE-L-C-2030 to NICE-L-C-2045, NICE-L-C-4045(F) to NICE-L-C-4280 (F)

The equipment must be carried on a wooden pallet when transported with fork-lift trucks. The equipment must be carried on a wooden pallet when transported with the crane.

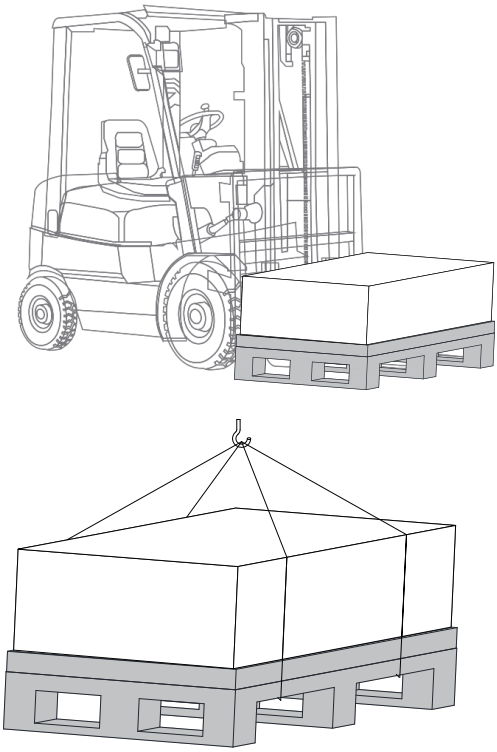


Figure 8-1 Transporting before unpacking

Storage

- The unit must be placed on a flat and firm ground that can bear its weight.
- The equipment must always be transported in the upright position indicated. Never transport it upside down or in a horizontal position.
- Models within the power ranges NICE-L-C-2030 to NICE-L-C-2045 and NICE-L-C-4045 (F) to NICE-L-C-4160 (F) are heavy and have a high center of gravity. Do not place the equipment on a surface with an incline greater than 5 degrees.

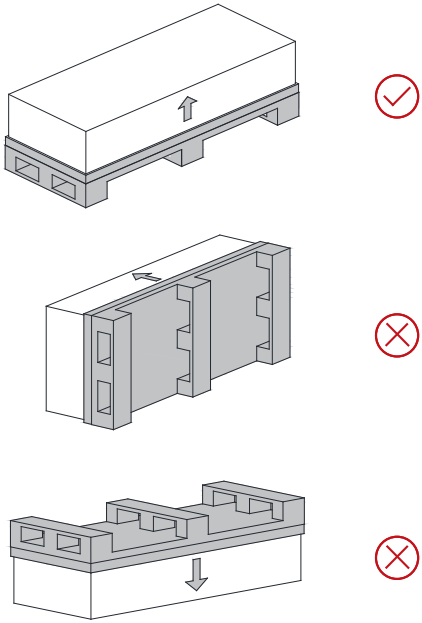


Figure 8-2 Equipment placement

8.2.2 Transportation After Unpacking

- The following power ratings feature compact and lightweight designs suitable for manual handling:
  NICE-L-C-2S02 to NICE-L-C-2S18, NICE-L-C-2003 to NICE-L-C-2022, NICE-L-C-4003 to NICE-L-C-4037 (F), NICE-L-C-5003 to NICE-L-C-5037 (F)
- Models within the following power ranges are heavy and must be handled using appropriate lifting equipment. The use of a crane is recommended, and the load capacity of the handling equipment must exceed the weight of the device.
  NICE-L-C-2030 to NICE-L-C-2045, NICE-L-C-4045(F) to NICE-L-C-4280 (F)

Note

- Use eyelets on the top of the load for lifting and handling, with the relief height not larger than 0.3 m.
- Straighten the flat-lying equipment before further handling.

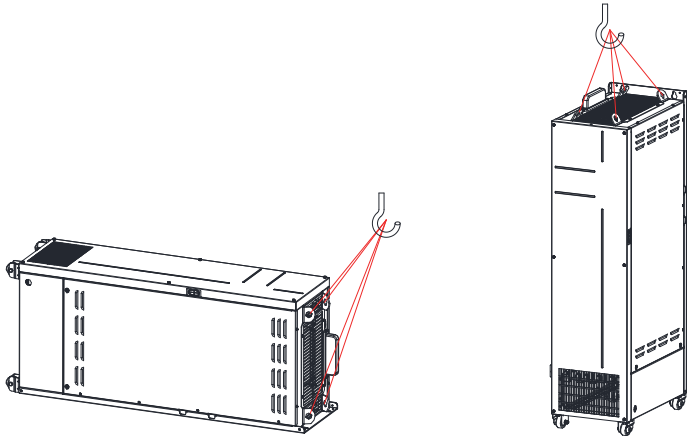


Figure 8-3 Lifting of models of NICE-L-C-2030 to NICE-L-C-2045, NICE-L-C-4045 (F) to NICE-L-C-4280 (F)

9 Mechanical installation

Backplate Mounting (Models of 160 kW and Below)

Controller models below 160 kW (both plastic and sheet metal enclosure) are installed on a backplate in the control cabinet.

The following figure shows the installation details.

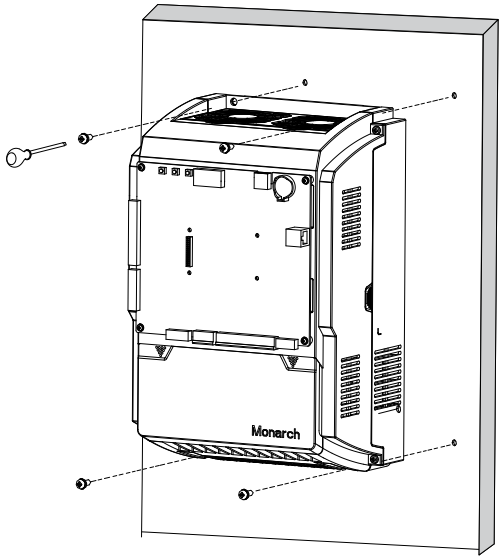


Figure 9-1 Installation of models of 37 kW and below (Plastic enclosure)

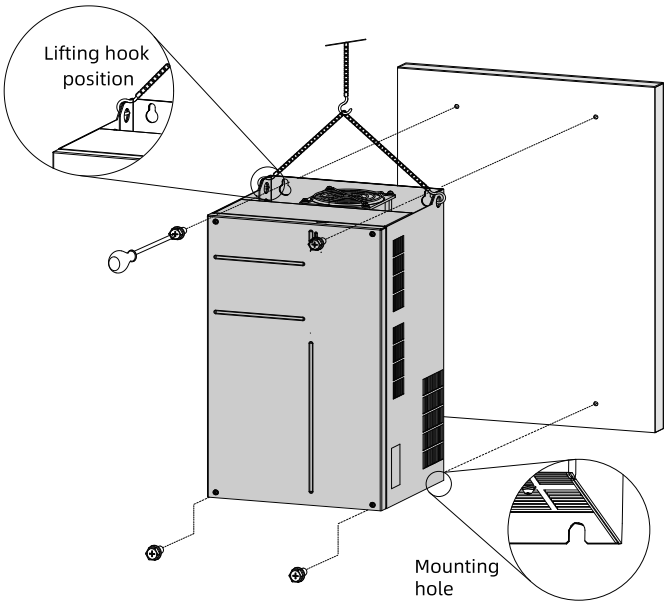


Figure 9-2 Installation of models of 45 kW to 160 kW (Sheet metal enclosure)

CAUTION

Note: Never fasten only the upper two screws, because the controller may fall and be damaged with long-term running. So ensure that all the four screws are fastened.

Pay attention to the following points when designing the control cabinet:

- The temperature difference inside and outside the cabinet shall not be over 10°C with temperature rise of the controller.
- A confined control cabinet must be configured with a fan (or other air cooling device such as air conditioner) to ensure air circulation.
- The air from the fan must not blow directly to the drive unit because this easily causes dust adhesion and further a fault on the drive unit.
- A vent must be available at the bottom of the control cabinet to form bottom-up air flow for effective heat transfer.
- If the fan cannot meet the cooling requirements, install an air conditioner in the cabinet or in the equipment room. Note that the temperature inside the cabinet must

not be too low. Otherwise, condensation may occur, causing short circuit of components.

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

Installation in the Cabinet (Models of 200 kW to 280 kW)

1. Install the crossbeams for fixing the AC drive inside the nine-fold profile cabinet (PS cabinet) and reserve mounting holes.
   It is recommended to use a nine-fold profile cabinet (PS cabinet); the cross-section of the nine-fold profile is shown in *"Figure 9-3 " on page 126* .

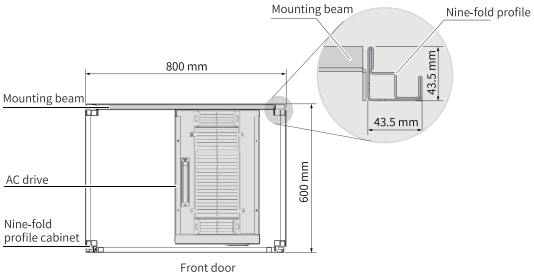


Figure 9-3 Top view of the cabinet for models of 200 kW to 280 kW (Sheet metal enclosure)

When installing 200 kW to 280 kW models into a 600 mm deep nine-fold profile cabinet, the back mounting plate must be bent inward as shown in *"Figure 9-4 " on page 127* to utilize the space of the vertical pillars (this restriction does not apply when using standard cabinets with a depth of 800 mm or more). If the cabinet features front and rear doors, the 200 kW to 280 kW models will not fit in a standard 600 mm deep cabinet; in this case, an 800 mm deep standard cabinet is recommended.

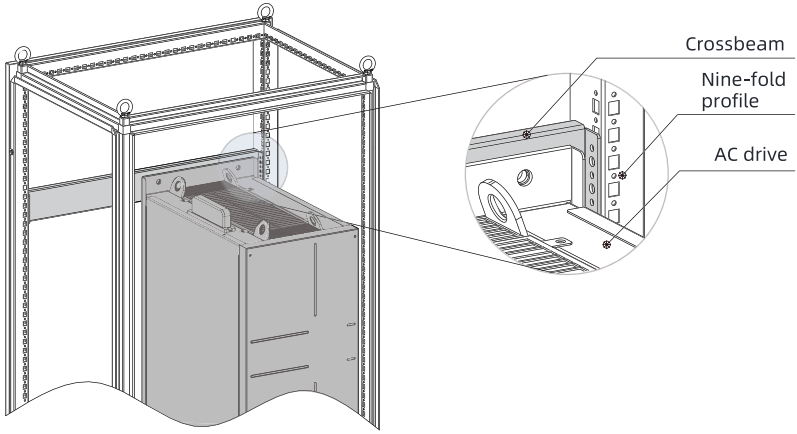


Figure 9-4 3D view of the cabinet for models of 200 kW to 280 kW

2. Secure the bottom mounting bracket inside the nine-fold profile cabinet.
   Use six M5 self-tapping screws to fix the mounting bracket to the base of the cabinet frame, as shown in *"Figure 9-5 " on page 127* .

Note

Drill holes for the mounting bracket and assemble the bracket on site if the cabinet is not a nine-fold profile one.

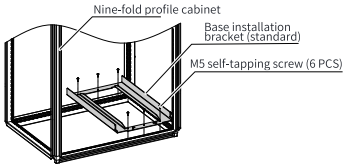


Figure 9-5 Installation of the bottom mounting bracket

3. Assemble the guide rails (Model: MD500-AZJ-A3T10) and install them into the cabinet.
   a. Assemble the guide rails as shown in *"Figure 9-6 " on page 128* .

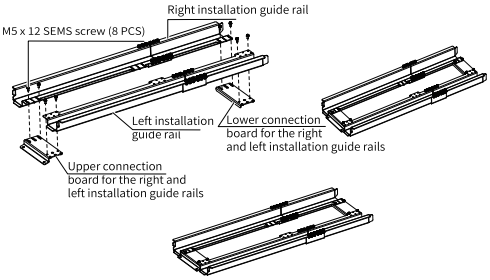


Figure 9-6 Assembly of the guide rails

b. Align the two round holes at the front of the guide rails with the screws on the mounting bracket. Lock them with two M6 nuts to secure the rails to the cabinet, as shown in *"Figure 9-7 " on page 128* .

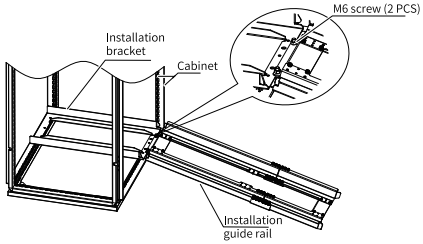


Figure 9-7 Installation of guide rails inside the cabinet

4. Remove the AC drive cover.

a. Unfasten the six fixing screws on the cover with a screwdriver.

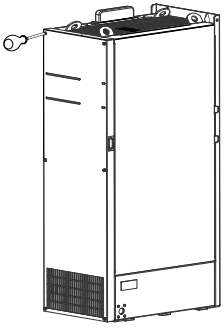


Figure 9-8

b. Withdraw the cover straight out.

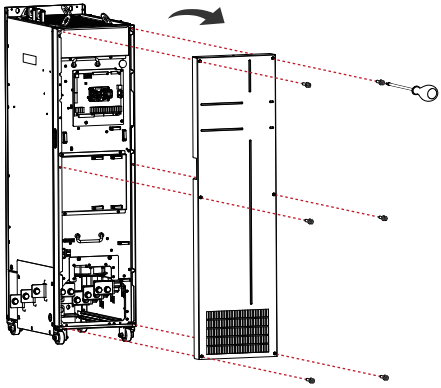


Figure 9-9

5. Align the AC drive casters with the guide rails and slowly push the unit into the cabinet.

Note

Use auxiliary strap during the installation process to prevent the AC drive from tipping over while it is being pushed in or pulled out. A two-person operation is recommended.

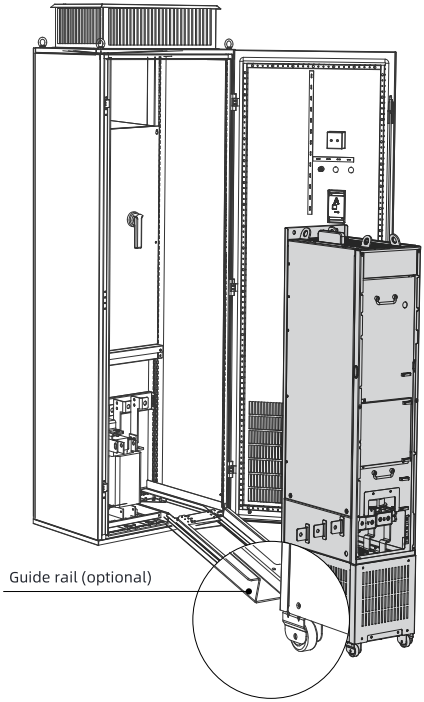


Figure 9-10 Aligning the AC drive casters with the guide rails

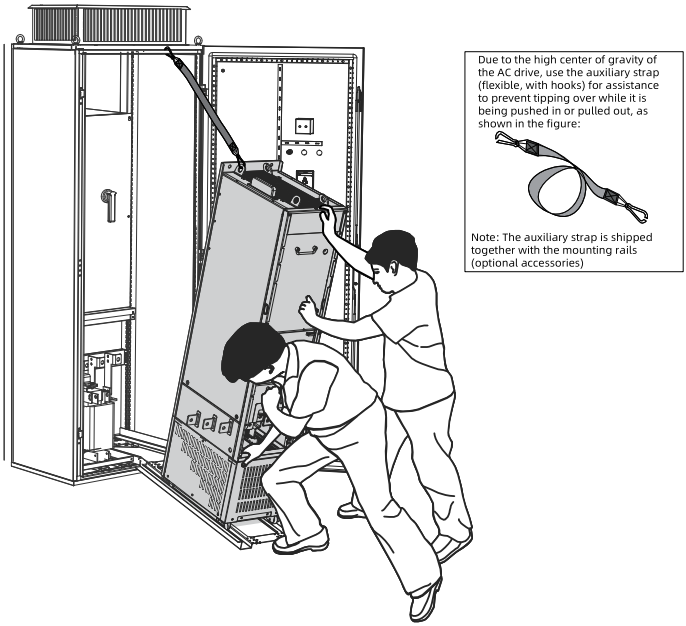


Figure 9-11 Pushing the unit into the cabinet

6. Remove the auxiliary strap. Secure the AC drive to the crossbeams inside the cabinet by tightening screws into the four mounting holes on the back of the unit.

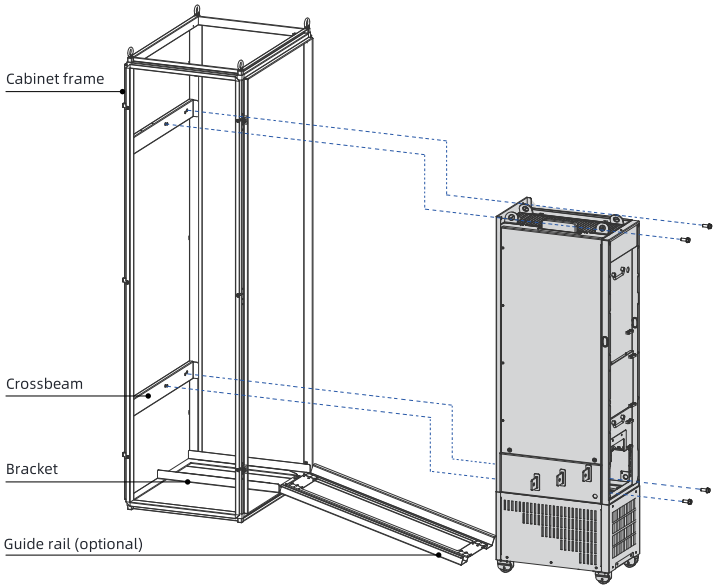


Figure 9-12 Securing the AC drive to the crossbeams

7. Once the installation is confirmed to be secure, remove the guide rails.
8. Remove the air duct baffle paper from the top of the AC drive. This baffle paper is intended to prevent foreign objects, such as screws, from falling into the air duct during the installation process.

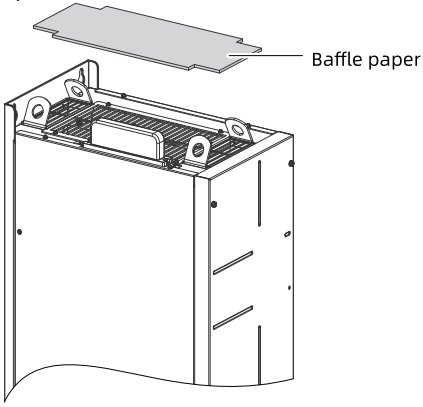


Figure 9-13 Removing the air duct baffle paper

10 Electrical Installation

10.1 Wiring Flowchart

The wiring flowchart is shown below:

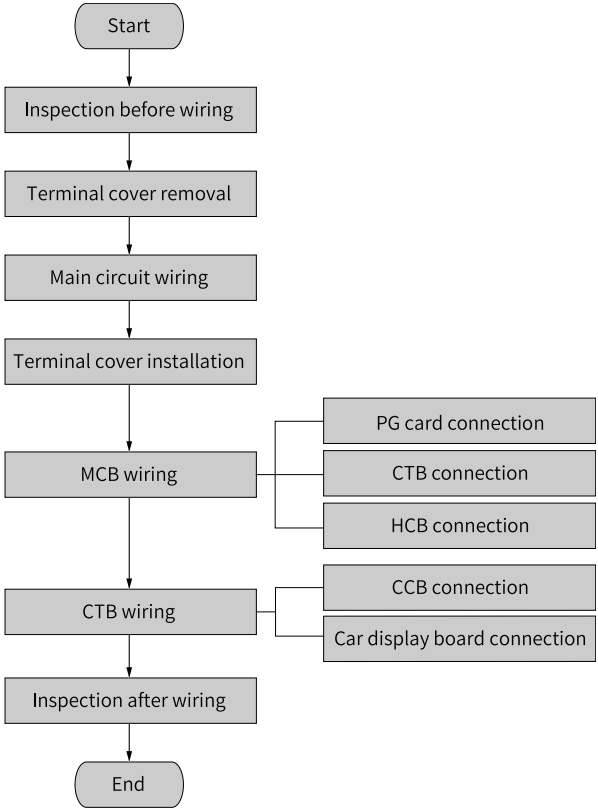


Figure 10-1 Wiring flowchart

Note

The wiring sequence described above is recommended but not mandatory.

10.2 Electrical Wiring Diagram

See *"Figure 14-1 " on page 215* .

10.3 Inspection Before Wiring

- Work on a disconnected device must be carried out with extreme caution because external supply voltages may be present. The main circuit and control circuit terminals may be live even when the motor is in the stop state.
- Do cut off input and output power, and wait at least 10 minutes until the power indicator is off before the checks.
- 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.
- If a fuse in a branch circuit trips, the fault current may have been cut off.
- To reduce the risk of fire or electric shock, the conductive parts and other components in the unit should be inspected and damaged parts replaced.
- When a protective device trips, the cause of the trip must be identified and rectified.

No.	Item	Tick
1	Ensure that no abnormal motor sound or vibration, abnormal mechanical connection, phase loss, or loose retaining screws exist.	☐
2	Ensure that cabinet units are in good condition.	☐
3	Ensure that accessories are complete.	☐
4	Ensure that the cable size is right for the controller model.	☐
5	Ensure that all safety devices are effective.	☐
6	Ensure that the controller and motor are grounded correctly.	☐
7	• Ensure that there is no inter-phase or phase to ground short circuit in input power supply terminals (R/S/T). • Ensure that there is no short circuit to ground on the output side of the transformer. • Ensure that there is no inter-phase or phase to ground short circuit in the 220 V power supply.	☐
8	Ensure that devices are installed on the power input side to offer electrical isolation and protection against overcurrent and short circuit.	☐

10.4 Terminal Cover Removal

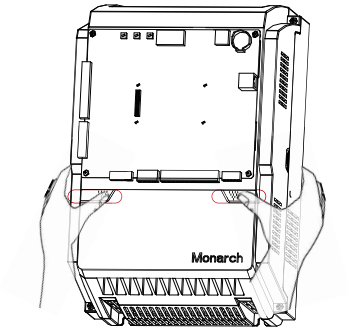
When performing control circuit wiring, such as setting jumpers or installing PG and expansion cards, the cover must be removed first. To remove the cover, hold it with both hands and carefully lift the bottom section. Ensure the cover does not drop, as this could result in damage or personal injury.

Note

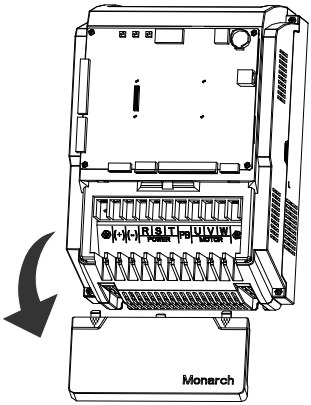
Ensure the drive power-off time exceeds 10 minutes before removing the cover.

Models of 37 kW and Below (Plastic Enclosure)

1. Put the thumbs on the positions shown in the figure, and press downward so that the cover is detached.



2. Push the cover in the arrow direction. Removal is completed.



Models of 45 kW to 55 kW (Sheet Metal Enclosure)

1. Unfasten the four fixing screws on the cover with a screwdriver.

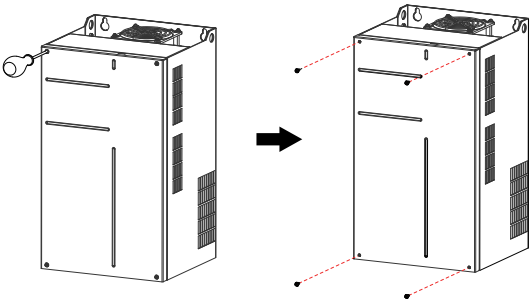


Figure 10-2

2. Lift the cover following the arrow direction.

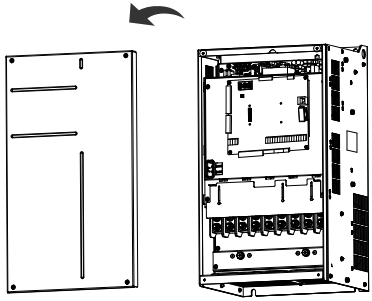


Figure 10-3

Models of 75 kW to 280 kW (Sheet Metal Enclosure)

1. Unfasten the six fixing screws on the cover with a screwdriver.

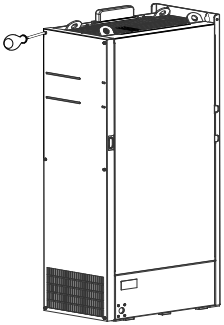


Figure 10-4

2. Withdraw the cover straight out.

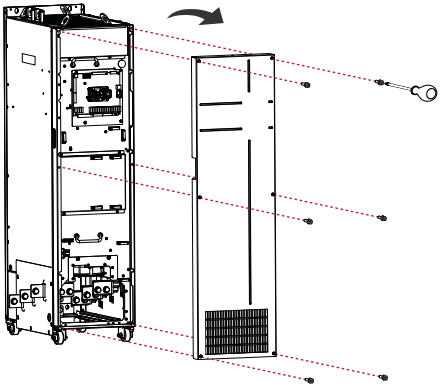


Figure 10-5

10.5 Wiring of the Main Circuit

10.5.1 Terminal Description

The terminal layout of the main circuit is shown in the following figure.

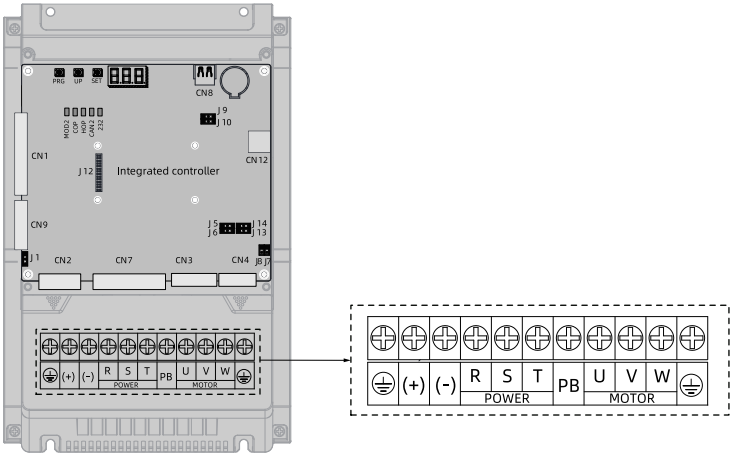


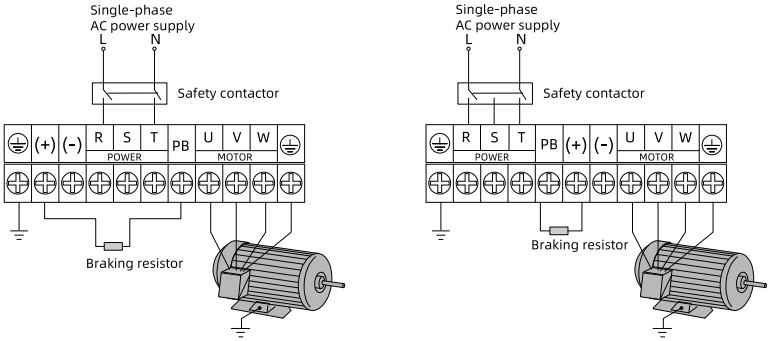
Figure 10-6 Terminal layout of the main circuit (models below 37 kW)

Table 10–1 Main circuit terminal description

Symbol	Name	Description
R, S, T	three-phase power input terminals	Provide three-phase AC power supply
(+), (-)	Positive and negative terminals of DC bus	Connect the external braking unit and regenerative unit for controller models above 75 kW
+, PB (P)	Terminals for connecting braking resistor	• Connect the braking resistor for controller models below 75 kW • Connect the DC reactor for models above 75 kW • The two terminals are pre-assembled with the jumper bar. If you need not connect the DC reactor, do not remove the jumper bar.
U, V, W	Output terminals	Connect with the three-phase motor
⏚	Grounding terminal	-

10.5.2 Wiring Connection

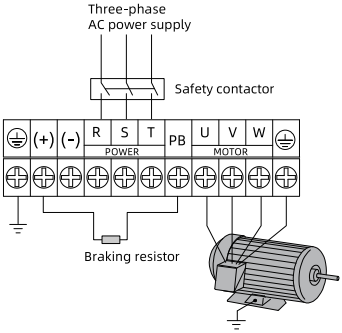
Single-phase 220 V Models



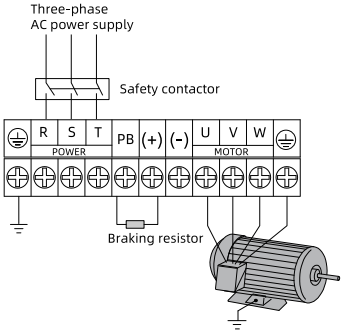
Main circuit wiring of models of 2.2 kW to 4.0 kW Main circuit wiring of models of 5.5 kW to 18.5 kW

Figure 10-7 Main circuit wiring of single-phase 220 V models

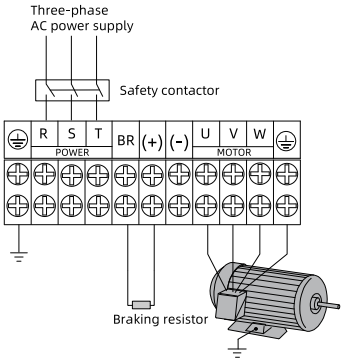
Three-phase 220 V Models



Main circuit wiring of models of 3.7 kW to 7.5 kW



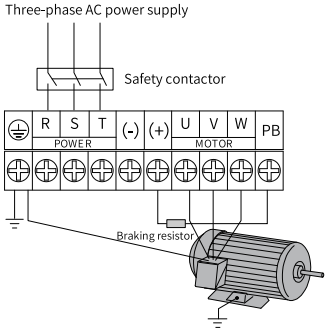
Main circuit wiring of models of 11.0 kW to 22.0 kW



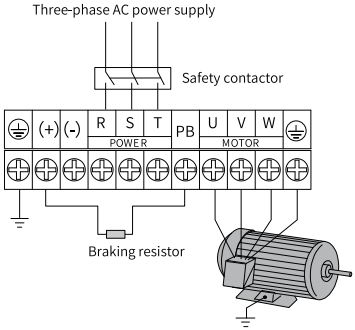
Main circuit wiring of models of 30.0 kW to 45.0 kW

Figure 10-8 Main circuit wiring of three-phase 220 V models

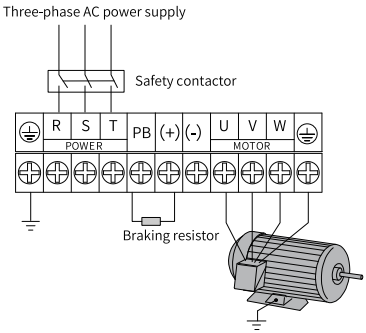
Three-phase 380 V Models



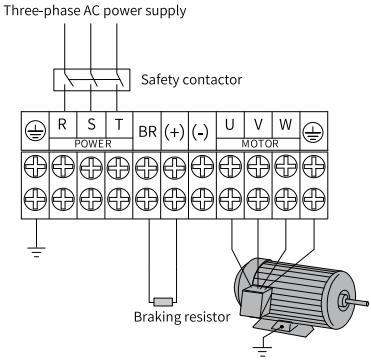
Main circuit wiring for models of 2.5 kW to 5.5 kW



Main circuit wiring for models of 7.5 kW to 15 kW

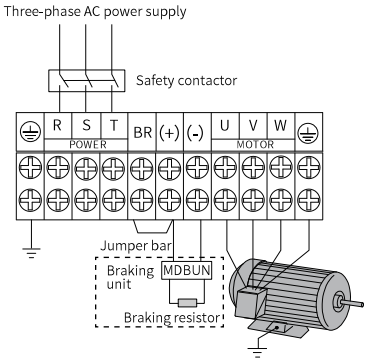


Main circuit wiring for models of 18 kW to 37 kW

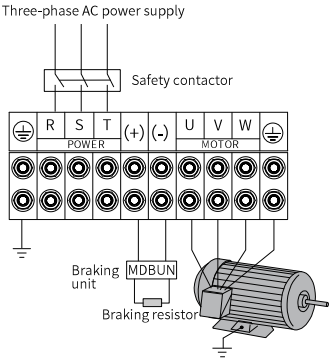


Main circuit wiring for models of 45 kW to 75 kW

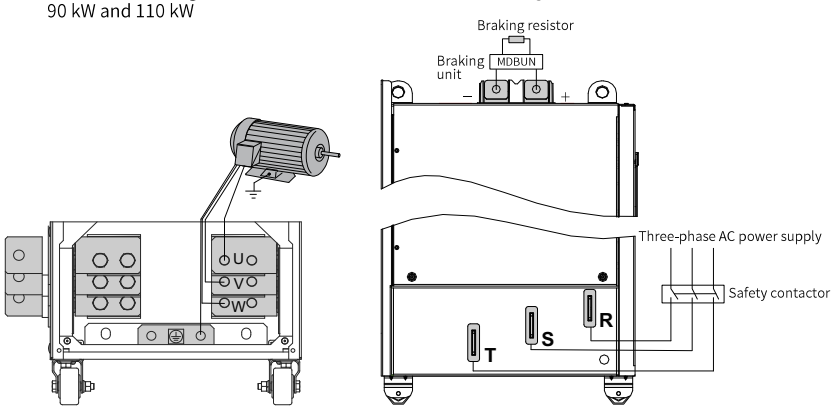
Figure 10-9 Main circuit wiring of three-phase 380 V models



Main circuit wiring for models of 90 kW and 110 kW



Main circuit wiring for models of 132 kW to 160 kW



Main circuit wiring for models of 200 kW and above

10.5.3 Wiring Requirements

Cable Selection

Table 10–2 Input specification

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
Single-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2S02	17.9	4	2.5	GTNR4-5
NICE-L-C-2S03	25.3	6	2.5	GTNR6-5
NICE-L-C-2S04	31.3	6	2.5	GTNR6-5
NICE-L-C-2S05	34.6	10	4	GTNR16-6
NICE-L-C-2S11	42.6	16	4	GTNR16-6
NICE-L-C-2S15	52.6	16	4	GTNR16-6

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
NICE-L-C-2S18	64.8	25	4	GTNR16-6
Three-phase 220 V (range of 220 V to 240 V), 50 Hz/60 Hz				
NICE-L-C-2003	17.0	2.5	1.2	GTNR2.5-4
NICE-L-C-2004	20.5	4	2.5	GTNR4-5
NICE-L-C-2005	29.0	6	2.5	GTNR6-5
NICE-L-C-2007	36.0	6	2.5	GTNR6-5
NICE-L-C-2011	41.0	10	4	GTNR16-6
NICE-L-C-2015	49.0	16	4	GTNR16-6
NICE-L-C-2018	62.0	16	4	GTNR16-6
NICE-L-C-2022	76.4	25	4	GTNR16-6
NICE-L-C-2030	93.0	35	10.5	TNR1.25-4
NICE-L-C-2037	113.0	50	10.5	GTNR2.5-4
NICE-L-C-2045	157.0	70	20	GTNR70-10
Three-phase 380 V (range of 380 V to 440 V), 50 Hz/60 Hz				
NICE-L-C-4003	10.5	2.5	1.2	GTNR2.5-4
NICE-L-C-4005	14.8	2.5	1.2	GTNR2.5-4
NICE-L-C-4007	20.5	4	2.5	GTNR4-5
NICE-L-C-4011	29.0	6	2.5	GTNR6-5
NICE-L-C-4015	36.0	6	2.5	GTNR6-5
NICE-L-C-4018F	41.0	10	4	GTNR16-6
NICE-L-C-4022F	49.5	16	4	GTNR16-6
NICE-L-C-4030F	62.0	16	4	GTNR16-6
NICE-L-C-4037F	62.0	25	4	GTNR16-6
NICE-L-C-4045F	93.0	35	10.5	TNR1.25-4
NICE-L-C-4055F	113.0	50	10.5	GTNR2.5-4
NICE-L-C-4075F	157.5	70	20	GTNR70-10
NICE-L-C-4090F	180.0	95	20	GTNR95-12
NICE-L-C-4110F	214.0	120	35.0	GTNR120-12
NICE-L-C-4132F	240.0	120	35.0	GTNR120-12
NICE-L-C-4160F	287.0	150	35.0	GTNR150-12
NICE-L-C-4200F	365.0	95 x 2	20.0	GTNR95-10
NICE-L-C-4220F	410.0	120 x 2	35.0	GTNR120-12
NICE-L-C-4250F	441.0	120 x 2	35.0	GTNR120-12
NICE-L-C-4280F	495.0	120 x 2	35.0	GTNR120-12
Three-phase 480 V (range of 440 V to 500 V), 50 Hz/60 Hz				
NICE-L-C-5003	10.5	2.5	1.2	GTNR2.5-4
NICE-L-C-5005	14.8	2.5	1.2	GTNR2.5-4
NICE-L-C-5007	20.5	4	2.5	GTNR4-5
NICE-L-C-5011	29.0	6	2.5	GTNR6-5
NICE-L-C-5015	36.0	6	2.5	GTNR6-5
NICE-L-C-5018F	41.0	10	4.0	GTNR16-6
NICE-L-C-5022F	49.5	16	4.0	GTNR16-6

Controller model	Rated input current (A)	I/O power cable (mm^2)	Torque of torque driver (N·m)	Cable lug model
NICE-L-C-5030F	62.0	16	4.0	GTNR16-6
NICE-L-C-5037F	77.0	25	4.0	GTNR16-6

The above recommended cable lug models are TNR and GTNR series from Suzhou Yuanli Metal Enterprise. For details, see *"6.4 Cable Lugs" on page 106*.

Precautions

- Power Input Terminals R, S, T
  The cable connection on the input side of the controller has no phase sequence requirement.

  The specification and installation method of external power cables must comply with the local safety regulations and related IEC standards.

  Use copper conductors of a proper size for power cables according to the recommended values in *"Table 4-1 " on page 46*.

  The filter must be installed close to the input terminal of the controller. The connection cable must be shorter than 30 cm. Ensure that the grounding terminals of the filter and the controller are connected together, and that both the filter and controller are installed on the same conductive plane that are connected to main grounding of the cabinet. The following figure shows details.

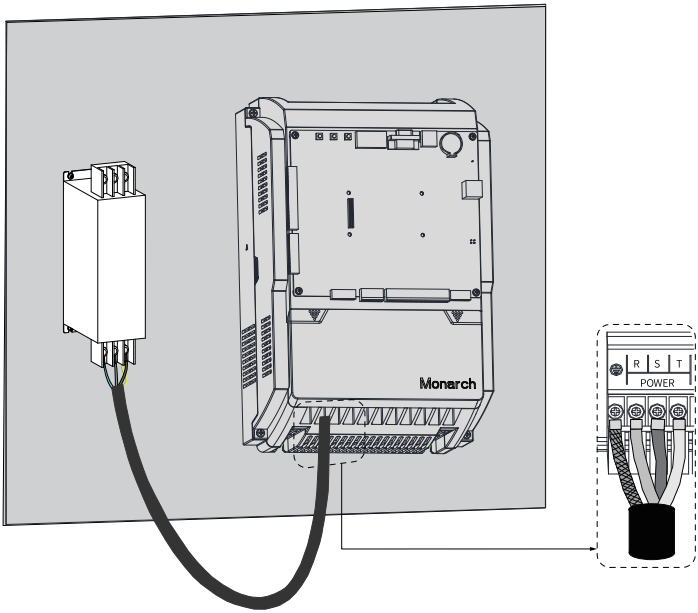
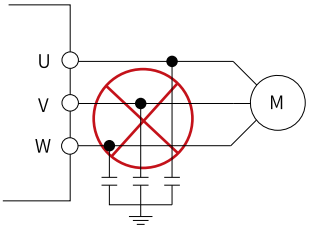


Figure 10-10 Installation on the conductive plane

- DC bus terminals (+) and (-)
  - Terminals (+) and (-) of the DC bus have residual voltage after the controller is switched off. Wait at least 10 minutes and ensure that the voltage is lower than 36 VDC before performing wiring. Failure to comply may result in electric shock.
  - When connecting external braking components for the controller of 75 kW and above, never reverse (+) and (-). Failure to comply may result in damage to the controller and components and even cause a fire.
  - The cable length of the braking unit must not exceed 10 m. Use twisted pair wires or closely routed pair wires for parallel connection.
  - Do not connect the braking resistor directly to the DC bus. Otherwise, it may damage the controller and even cause a fire.
- Terminals (+), PB for connecting regen. resistor
  - These terminals are valid only for the models below 75 kW that have the built-in braking unit.
  - Connect a braking resistor of the recommended model, and ensure that the cable length is shorter than 5 m. Otherwise, it may damage the controller.
- Terminals U, V, W
  - The specification and installation method of external power cables must comply with the local safety regulations and related IEC standards.

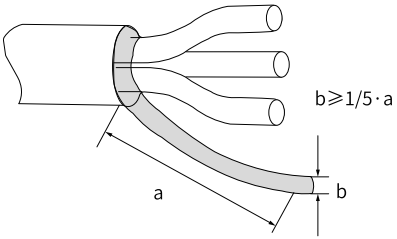
- Use copper conductors of a proper size for power cables according to the values in *"Table 4-1 " on page 46*.
- Do not connect a capacitor or surge protection device on the output side of the controller. Otherwise, it may cause overheating or even damage to the controller due to harmonics.



If the motor cable is too long, electrical resonance will be generated due to the impact of distributed capacitance. This will damage the motor insulation or generate higher leakage current, causing the controller to trip in overcurrent protection. If the motor cable is greater than 10 m long, an AC output reactor must be installed close to the controller.

Use the shielded cable as the output power cable connecting the motor. The shield is connected to the grounding cable.

Make the drain wire of the motor cable shield as short as possible, and ensure that the width is not less than 1/5 of its length.



- Grounding terminal (PE)
  The terminal should be reliably grounded, with the resistance of grounding cable smaller than 1 Ω. Otherwise, the controller may be abnormal or damaged.

  Do not connect this terminal to the neutral conductor of the power supply.

  Impedance of the PE conductor must be able to withstand the large short circuit current that may arise when a fault occurs.

  Select the size of the protective conductor according to the following table.

Table 10–3 Size of PE conductor

Cross-sectional area of the phase conductor (S)	Min. cross-sectional area of protective conductor (Sp)
$S \leq 16\ mm^2$	S
$16\ mm^2 < S \leq 35\ mm^2$	$16\ mm^2$
$S > 35\ mm^2$	S/2

Use a yellow/green cable as the PE conductor.

It is recommended that the controller be installed on the conductive metal plane. Ensure that the entire conductive bottom of the controller is in good contact with the metal plane.

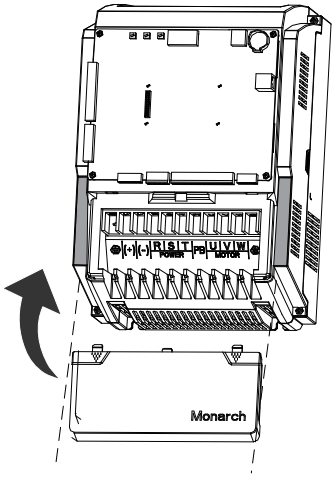
Install the filter and controller on the same plane to ensure the desired filtering performance.

- Upstream Protective Device Requirements
  Install a proper protection device on the power input side to provide protections on overcurrent, short circuit and electrical isolation. For selection of protective devices, consideration should be given to such factors as the current capacity of power cables, the overload capacity requirement of the system, and the short circuit capacity of the upstream components.
- Shielded cable requirements
  See *"23.1 Shielded Cable Requirements" on page 602*.
- Cabling Requirements
  See *"23.2 Cabling Requirements" on page 603*.

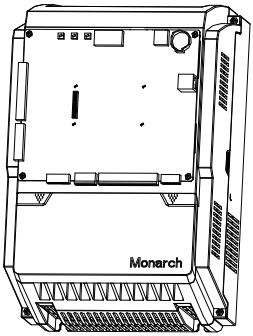
10.6 Terminal Cover Installation

- Installing the terminal cover of the plastic enclosure

1. Align the cover with the edges of the controller and push in the arrow direction.

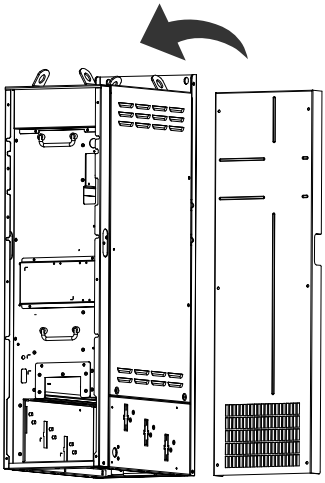


2. Hold the cover and insert the snap-fit joints on the cover into fixed holes.

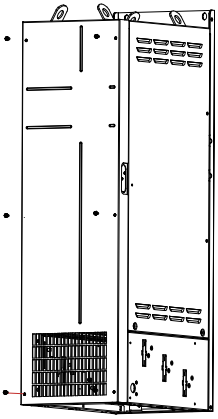


- Installing the terminal cover of the sheet metal enclosure

1. Hold the cover and latch the pins into fixed holes.



2. Tighten the 4 to 6 screws on the terminal cover with a screwdriver.



10.7 MCB Wiring

10.7.1Description of Terminals

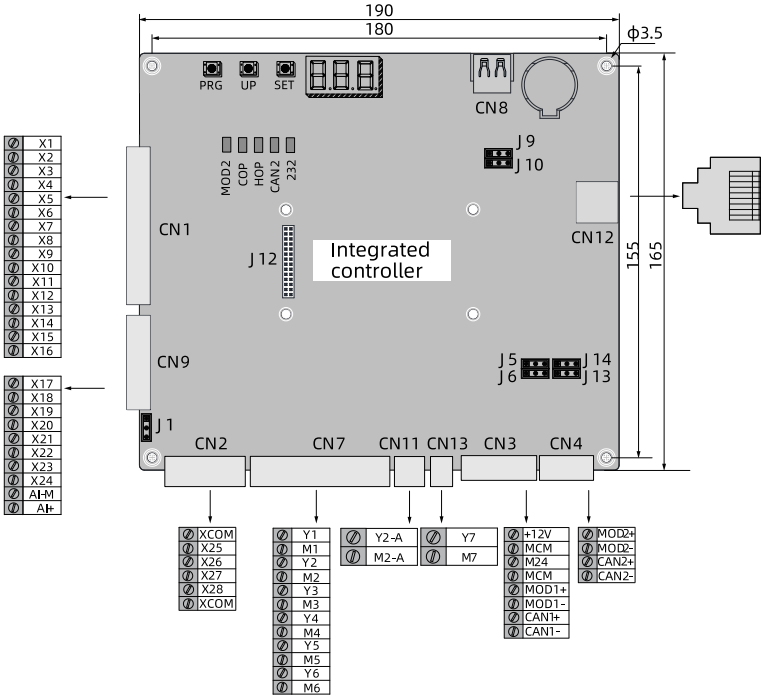
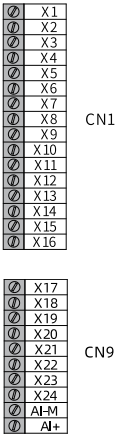
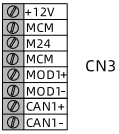
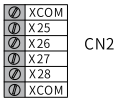
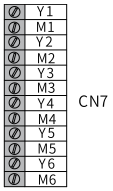
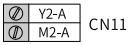
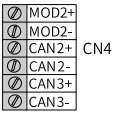
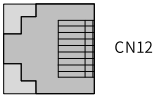
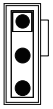


Figure 10-11 Control circuit terminal layout (unit: mm)

Table 10–4 Control circuit terminal description

<table>
<tr><th colspan="2">Terminal ID</th><th>Terminal name</th><th>Function</th><th>Layout</th></tr>
<tr><td>CN1</td><td>X1 to X16</td><td>Digital input</td><td rowspan="3">Input voltage range of 10 VDC to 30 VDC.
Input impedance of 4.7 kΩ, photocoupler isolation.
Input current limit of 5 mA.
DI terminal function is set by F5-01 to F5-24.</td><td rowspan="4">
</td></tr>
<tr><td rowspan="3">CN9</td><td>X17 to X24</td><td>Digital input</td></tr>
<tr><td>AI-M</td><td>-</td><td>-</td></tr>
<tr><td>AI+</td><td>AI</td><td>It is for the analog load cell.</td></tr>
<tr><td rowspan="4">CN3</td><td>+12V/MCM</td><td>External 12 VDC input</td><td>12 VDC power supply.</td><td rowspan="4">
</td></tr>
<tr><td>M24V/MCM</td><td>External 24 VDC input</td><td>24 VDC power supply.</td></tr>
<tr><td>MOD1+/ MOD1-</td><td>RS485 differential signals</td><td>Standard isolated RS485 communication interface for hall call and display.</td></tr>
<tr><td>CAN1+/ CAN1-</td><td>CANbus differential signals</td><td>CAN communication interface with the CTB, and for MRL monitoring board and DI/DO expansion board connection.</td></tr>
<tr><td>CN2</td><td>X25 to X28/ XCOM</td><td>High-voltage detection terminal</td><td>They are for the safety circuit and door lock circuit feedback loop (input from left XCOM of X25 and output from right XCOM of X28) with input voltage of 110 VAC±15%. The functions are set by F5-37 to F5-40.</td><td>
</td></tr>
</table>

Terminal ID		Terminal name	Function	Layout
CN7	Y1/M1 to Y6/M6	Relay output	Relay NO output of 5 A/ 250 VAC with functions set by F5-26 to F5-31.	
CN11	Y2-A/M2-A	Relay output	Relay NO output of 5 A/ 250 VAC with functions set by F5-45.	
CN13	Y7/M7	Relay output	Relay NO output of 5 A/ 250 VAC with functions set by F5-46.	
CN8	USB interface	RS232 communication interface	Mobile phone Bluetooth commissioning.	
CN4	MOD2+/ MOD2-	RS485 differential signals	MOD2 communication interface for remote elevator monitoring board and IoT connection.	
	CAN2+/ CAN2-	CAN2 differential signals	CAN2 communication interface for parallel/ group control.	
CN12	RJ45 interface	Operating panel interface	For connecting the operating panel.	
J12	PG card connection interface			
J1	Factory reserved, optional grounding terminal for AI. The pins marked with "COM" are not connected to the ground by default.			

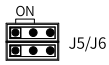
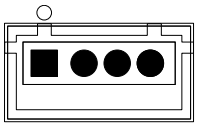
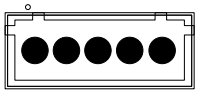
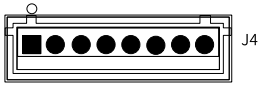
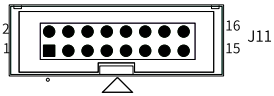
Terminal ID	Terminal name	Function	Layout
J5	Used by the manufacturer only, MOD2 termination resistor, and ON shorted by default.		
J6			
J13	Used by the manufacturer only, CAN2 termination resistor, and ON shorted by default.		
J14			
J2	They are for driver board connection.		
J3			
J4			
J11			
J9/J10	For use by the manufacturer only and short these terminals with extreme caution for normal use.		-

Table 10–5 Description of indicators on the MCB

Symbol	Terminal name	Function
MOD2	Modbus2 indicator	Flashing (green) for normal communication with IoT and MIB/remote monitoring board
COP	CAN1 indicator	Flashing (green) for normal communication between the MCB and CTB
HOP	Modbus1 indicator	Flashing (green) for normal communication between the MCB and HCB
CAN2	Group control indicator	Steady ON (green) for parallel/group control communication and flashing for normal running in parallel/group control mode
RS232	Serial communication indicator	Flashing (green) for normal communication with the host computer and MIB/remote monitoring board

Symbol	Terminal name	Function
X1 to X28	Input signal indicator	ON for active external input signals
Y1 to Y7/ Y2-A	Output signal indicator	ON for system output

10.7.2Description of Wiring

Connection with PG Card

J1 terminal of MCTC-PG card is inserted into the J12 terminal on the MCB.

Connection with CTB

Connect the CN3 port of the MCB with the CN2 port of the CTB. For CTB terminal layout, see *" CTB Wiring" on page 155*.

Table 10–6 MCB CN3 terminals

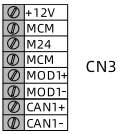
Terminal ID		Terminal name	Function	Layout
CN3	+12V/MCM	External 12 VDC input	12 VDC power supply.	
	M24V/MCM	External 24 VDC input	24 VDC power supply.	
	CAN1+/ CAN1-	CANbus differential signals	CAN communication interface with the CTB, and for MRL monitoring board and DI/DO expansion board connection.	

Table 10–7 CTB CN2 terminals

Terminal ID		Terminal name	Function	Layout
CN2	+24V/COM	External 24 VDC power supply	Terminals for connection with external 24 VDC power supply for the CTB	
	CAN+/ CAN-	CAN communication interface with the MCB	Terminals for CAN communication between the CTB and MCB	

Connection with HCB

Terminals for connection of the CN3 port of the MCB with the CN1 port of the HCB

Table 10–8 MCB CN3 terminals

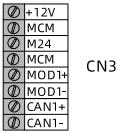
Terminal ID		Terminal name	Function	Layout
CN3	+12V/MCM	External 12 VDC input	12 VDC power supply.	
	M24V/ MCM	External 24 VDC input	24 VDC power supply.	
	MOD1+/ MOD1-	RS485 differential signals	They are the standard isolated RS485 communication interface for hall call and display.	

Table 10–9 HCB CN1 terminals

Terminal ID		Terminal name	Function definition	Wiring description
CN1	+24V/COM	External 24 VDC input	24 VDC power supply.	
	MOD+/ MOD-	RS485 differential signals	Modbus communication port for connection with the MCB.	

10.7.3Wiring Requirements

Cable Selection

Use the tubular terminal with the insulation sleeve. When the single cable or twisted pair is used, the cable end must be exposed by 6 mm.

See contents about peripheral electrical device selection in the *NICE3000^{new} Integrated Elevator Controller Hardware Guide* for proper copper cables.

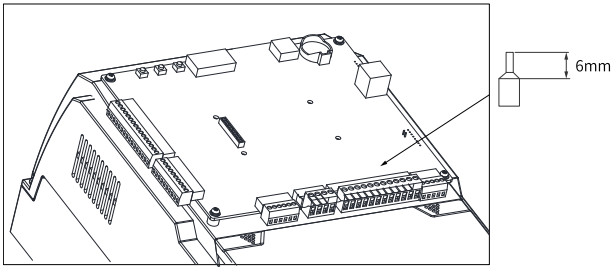


Figure 10-12 Control cable tubular terminal requirement

Table 10–10 Control cable specifications

Terminal name	Tightening torque (N·m)
Control circuit terminal block	0.565

Precautions

For wiring requirements, see contents about I/O interfaces and communication and system wiring requirements in *NICE3000^{new} Integrated Elevator Controller System Hardware Guide*.

10.8 CTB Wiring

The car top board (MCTC-CTB) is for car control. It has 8 DIs, 1 AI and 7 standard relay outputs (9 for non-standard customization).

Outline Dimensions

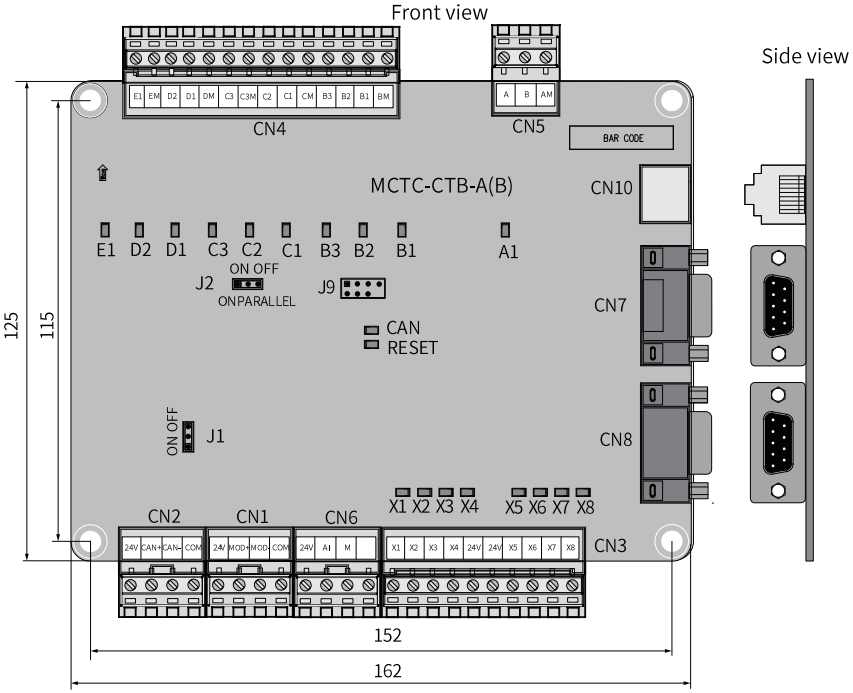


Figure 10-13 Outline dimensions of the CTB (unit: mm)

Installation Guide

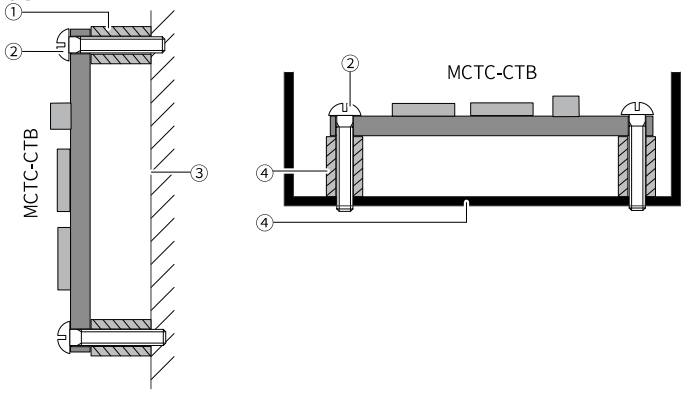
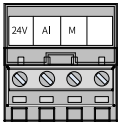
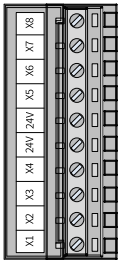


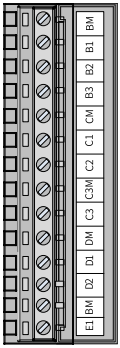
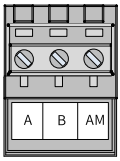
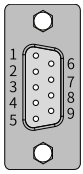
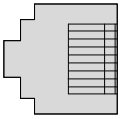
Figure 10-14 CTB installation

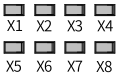
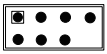
No.	Name	No.	Name
①	Plastic fitting (height no less than 1 cm)	③	Backplate
②	Self-taping screw (4-Φ4.9 × 30)	④	Control box

10.8.1Terminal Description

Table 10–11 Description of CTB terminals

Symbol		Terminal name	Function	Layout
CN2	+24V/ COM	External 24 VDC power supply	Terminals for connection with external 24 VDC power supply for the CTB Warning Do not connect safety circuit to the terminals here and avoid high voltage contact. Otherwise, burnout will happen.	
	CAN+/ CAN-	CAN communication interface with the MCB	Terminals for CAN communication between the CTB and MCB	
CN1	+24V/ COM	24 VDC voltage output	Terminals for 24 VDC power supply for the MCTC-HCB car display board	
	MOD+/ MOD-	Modbus communication interface with the car display board	Terminals for connecting the car display board of MCTC-HCB for Modbus communication	
CN6	AI-M	Analog load cell signal input	Input voltage range: 0 VDC to 10 VDC	
CN3	24V	+24 V power supply	DI common terminal	
	X1	Light curtain 1 input	DI terminal: • Photocoupler isolation, unipolarity input • Input impedance: 3.3 kΩ The MCTC-CTB signal is active with 24 VDC input	
	X2	Light curtain 2 input		
	X3	Door open limit 1 input		
	X4	Door open limit 2 input		
	X5	Door close limit 1 input		
	X6	Door close limit 2 input		
	X7	Full-load signal (100%) input		
	X8	Overload signal (110%) input		

Symbol		Terminal name	Function	Layout
CN4	B1-BM	Door open signal 1 output	Relay output terminal, contact drive capacity: 30 VDC, 1A	
	B2-BM	Door close signal 1 output		
	B3-BM	Forced door close 1 output		
	C1-CM	Door open signal 2 output		
	C2-CM	Door close signal 2 output		
	C3-C3M	Forced door close 2 output		
	D1-DM	Up arrival signal output		
	D2-DM	Down arrival signal output		
	E1-BM	Sound and light alarm output		
CN5	A-AM (NC contact) B-AM (NO contact)	Car fan/lighting control output	Relay output terminal, drive capacity: 250 VAC, 3 A or 30 VDC, 1 A **Warning** Do not connect safety circuit to the terminals here and avoid high voltage contact. Otherwise, burnout will happen.	
CN7/CN8		DB 9-pin connector for communication with the CCB	Terminals for connection with MCTC-CCB. CN7 mainly used for front door and ordinary calls; CN8 mainly used for rear door and disability calls	
CN10		RJ45 connector for external operating panel	Terminal for connection with the external LED operating panel or LCD operator	
J2		CTB address jumper in parallel control	Terminal for CTB address setting in parallel control. You can choose to (or not to) short OFF for a single elevator.	

Symbol	Terminal name	Function	Layout
CAN	CAN indicator	Communication indicator between the CTB and MCB (flashing for normal communication and steady ON for faulty communication)	
RESET	CAN fault indicator	Fault indicator flashing and CAN indicator steady ON for faulty communication between the CTB and MCB	
X1 to X8	Digital input indicator	ON (green) when corresponding external input signal is active	
A1 to E1	Relay output indicator	ON (green) when corresponding system output is active	
J9	Reserved	For use by the manufacturer only and do not short it to ensure normal use.	

10.8.2Wiring Connection

Connection with the MCB

See the connection with CTB in *"10.7.2 Description of Wiring" on page 153*.

Connection with the CCB

Table 10–12 CTB CN7/CN8 terminals

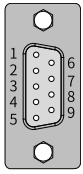
Symbol	Name	Function	Layout
CN7/CN8	DB9 connector for communication with the CCB	Terminals for connection with MCTC-CCB CN7 mainly used for front door and ordinary calls CN8 mainly used for rear door and disability calls	

Table 10–13 CCB CN2 terminals

Symbol	Name	Function	Layout
CN2	Terminals for CAN and power input	Terminals for connection with the CTB as the input ports of CAN and power supply	

CAUTION

- Perform correct and tight terminal wiring.
- The CCB has the same interfaces on both ends, and do not make wrong connection when connecting multiple boards in series.

Connection with the Car Display Board

Table 10–14 CTB CN1 terminals

Symbol		Name	Function
CN1	+24V/ COM	24 VDC voltage output	Terminals for 24 VDC power supply for the MCTC-HCB car display board
	MOD+/ MOD-	Modbus communication interface with the car display board	Terminals for connecting the car display board of MCTC-HCB for Modbus communication

Table 10–15 Car display board CN1 terminals

Symbol		Name	Function
CN1	+24V/ COM	24 VDC voltage output	Terminals for 24 VDC power supply for the MCTC-HCB car display board
	MOD+/ MOD-	Modbus communication interface with the car display board	Terminals for connecting the CTB for Modbus communication

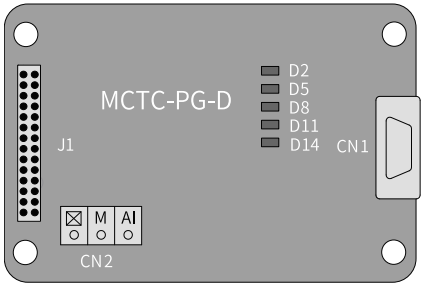
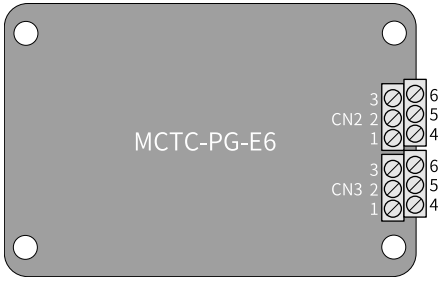
10.8.3Wiring Requirements

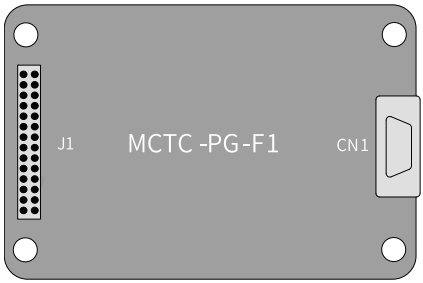
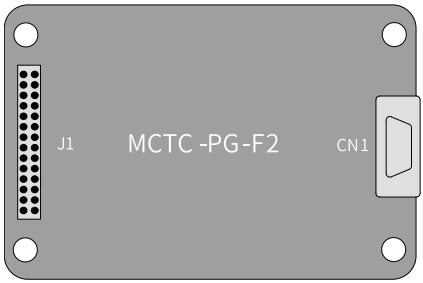
For wiring requirements, see contents about I/O interfaces and communication and system wiring requirements in *NICE3000^{new} Integrated Elevator Controller System Hardware Guide*.

10.9 PG Card Wiring

The controller can perform feedback vector control (FVC) only with use of the MCTC-PG card. The PG card models available for different encoder types are shown in *"Table 10-16 MCTC-PG card selection" on page 161*.

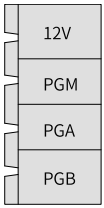
Table 10–16 MCTC-PG card selection

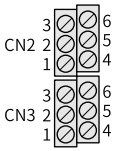
Encoder type	PG card	
Incremental encoder with push-pull/open-collector encoder output	MCTC-PG-A2	
ABZ/UVW encoder	MCTC-PG-D	
SIN/COS encoder	MCTC-PG-E	
	MCTC-PG-E6	

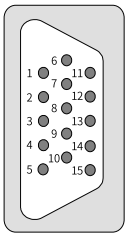
Encoder type	PG card	
Absolute encoder (ECN413/ECN1313)	MCTC-PG-F1	
Weton absolute encoder	MCTC-PG-F2	

10.9.1Terminal Description

Table 10–17 Definitions of the CN1 terminals of different PG card models

Pin	MCTC-PG-A2	CN1 terminal layout
1	12V	
2	PGM	
3	PGA	
4	PGB	

Pin		MCTC-PG-E6	CN2/CN3 terminal layout
CN2	1	A+	
	2	A-	
	3	B+	
	4	B-	
	5	Z+	
	6	Z-	
CN3	1	VCC	
	2	COM	
	3	C+	
	4	C-	
	5	D+	
	6	D-	

Pin	MCTC-PG-D	MCTC-PG-E	MCTC-PG-F1	MCTC-PG-F2	CN1 terminal layout
1	A+	B-	B-	B-	
2	A-	-	-	-	
3	B+	Z+	-	MOD+	
4	B-	Z-	-	MOD-	
5	-	A+	A+	A+	
6	-	A-	A-	A-	
7	Z+/U+	COM	GND	GND	
8	Z-/U-	B+	B+	B+	
9	V+	VCC	M5V	M5V	
10	V-	C+	CLK+	-	
11	W+	C-	CLK-	-	
12	W-	D+	DATA+	-	
13	VCC	D-	DATA-	-	
14	COM	-	-	-	
15	-	-	U5V	-	

10.9.2Wiring Connection

An FVC system is formed by connecting the J1 terminal of the MCTC-PG card to the J12 terminal on the MCB and by connecting the CN1 terminal with the traction machine encoder. The connection between different MCTC-PG cards and the MCB is the same, but the connection between the MCTC-PG cards and the encoder varies with the CN1 terminal type.

PG Card Connection with the MCB

J1 terminal of MCTC-PG card is inserted into the J12 terminal on the MCB.

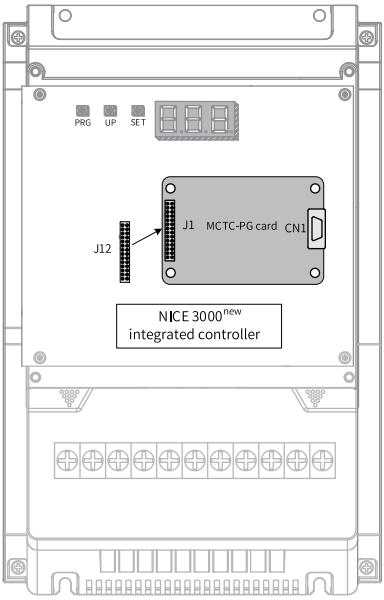


Figure 10-15 PG card connection with the MCB

PG Card Connection with the Motor Encoder

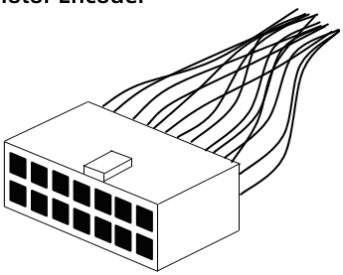


Figure 10-16 Motor encoder

- Connection between MCTC-PG-E and encoder ERN1387

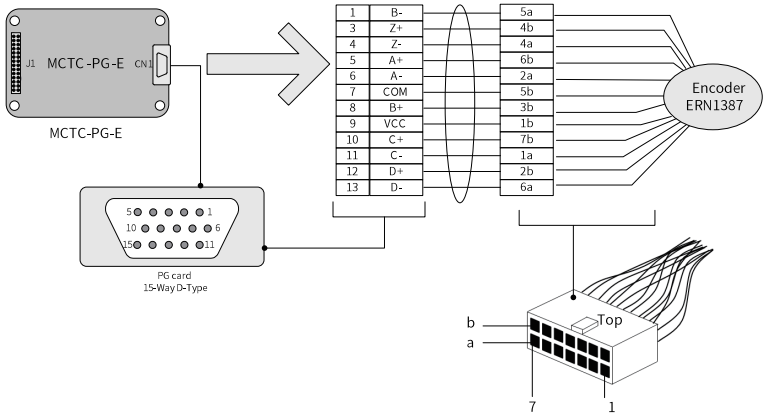


Figure 10-17 Connection between the PG card and encoder ERN1387

Table 10–18 Terminal definition of ERN1387

Signal	C-	A-	0V Thermistor	R-	B-	D-	Up Thermistor	VCC	D+	B+	R+	0V	A+	C+
Encoder terminal	1a	2a	3a	4a	5a	6a	7a	1b	2b	3b	4b	5b	6b	7b

- Connection between MCTC-PG-F1 and encoder ERN1313

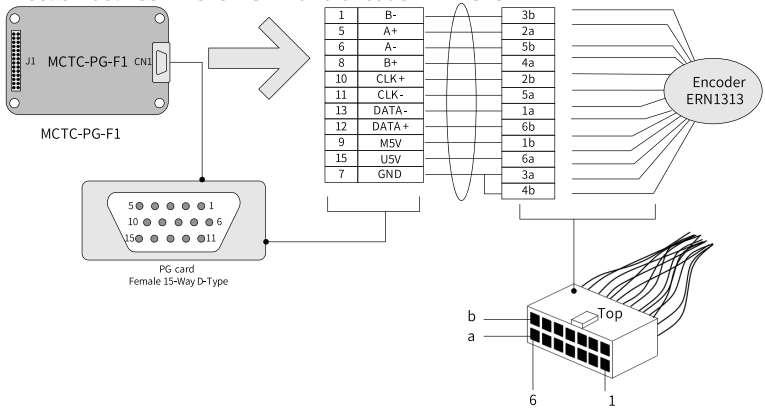


Figure 10-18 Connection between MCTC-PG-F1 and encoder ERN1313

Table 10–19 Terminal definition of ERN1313

Signal	DATA-	A+	GND	B+	CLK-	U5V	M5V	CLK+	B-	GND	A-	DATA+
Encoder terminal	1a	2a	3a	4a	5a	6a	1b	2b	3b	4b	5b	6b

Note

- Cables from the PG card to the encoder must be separated from those of the control circuit and the main circuit. Parallel cabling with close distance is forbidden.
- Shielded cables are required for PG card connection with the encoder. The shield must be connected to the PE on the controller side. To minimize interference, grounding at both ends is suggested.
- The cable from the MCTC-PG card to the encoder must run through a separate duct and the metal shell is reliably grounded.

10.10CCB Wiring

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. The MCTC-CCB has 24 user interfaces between JP1 and JP24, including 16 floor button interfaces and 8 other function signal interfaces. It can implement 24 input and 20 output functions. In addition, the MCTC-CCB is also designed with a cascade output port CN1. By using a cascading method, it can meet the usage requirements of up to 40 floors.

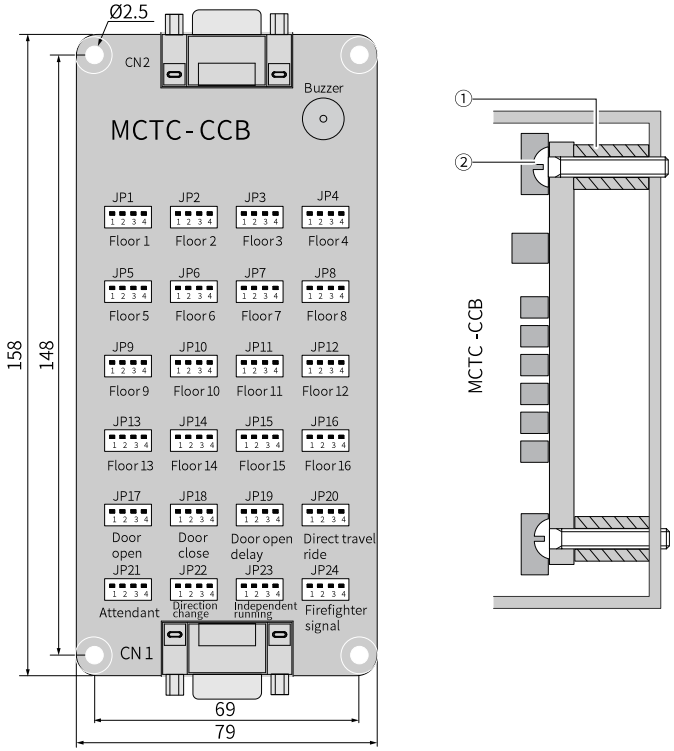


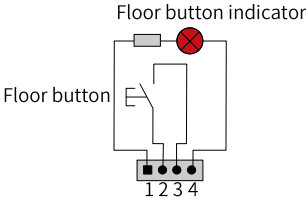
Figure 10-19 Appearance, structure and installation method of the CCB

No.	Name	No.	Name
①	Plastic fitting (height below 1 cm)	②	Self-taping screw (4-Φ4.9 × 30)

10.10.1Terminal Description

Table 10–20 CCB terminals

Symbol	Terminal name	Function
CN1	Cascaded output connector	For connection with the next CCB By using cascaded connection, the CCB can meet the needs for 40-floor elevator use.
CN2	CTB input connector	Connection with the CTB for signal input

Interface	Pins 2 and 3	Pins 1 and 4	Layout
JP1	Floor 1 button input	Floor 1 display output	 When the CCB is used for cascaded connection, the input signal of JPn corresponds to floor (16 + n) button input.
JP2	Floor 2 button input	Floor 2 display output	
JP3	Floor 3 button input	Floor 3 display output	
JP4	Floor 4 button input	Floor 4 display output	
JP5	Floor 5 button input	Floor 5 display output	
JP6	Floor 6 button input	Floor 6 display output	
JP7	Floor 7 button input	Floor 7 display output	
JP8	Floor 8 button input	Floor 8 display output	
JP9	Floor 9 button input	Floor 9 display output	
JP10	Floor 10 button input	Floor 10 display output	
JP11	Floor 11 button input	Floor 11 display output	
JP12	Floor 12 button input	Floor 12 display output	
JP13	Floor 13 button input	Floor 13 display output	
JP14	Floor 14 button input	Floor 14 display output	
JP15	Floor 15 button input	Floor 15 display output	
JP16	Floor 16 button input	Floor 16 display output	

Interface	Pins 2 and 3	Pins 1 and 4	Layout
JP17	Door open button input	Door open display output	When the CCB is used for cascaded connection, the terminals are invalid. When the cascaded CCB is used for rear door control, JP17 can be used for rear door open.
JP18	Door close button input	Door close display output	
JP19	Door open delay button input	Door open delay display output	
JP20	Direct travel ride input	Non-door zone stop output	
JP21	Attendant input	Reserved	
JP22	Direction change input	Reserved	
JP23	Independent running input	Reserved	
JP24	Firefighter operation input	Reserved	

Note

Note: Pins 1 and 2 are positive of power supply. The pin with white dot mark or that is rectangular is pin 1.

10.10.2Wiring Connection

For connection with the CTB, see the information about connection with the CCB in *" CTB Wiring" on page 155*.

10.11Wiring of HCB/Car Display Board

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

Note

Take MCTC-HCB-R600 as an example. If the types available cannot meet your requirements, you can use a parallel-serial conversion board (HCB-B) to make the board provided match your own. For more information, don't hesitate to contact Inovance.

Table 10–21 Display board model

Name	Feature	H x W x T (mm)
MCTC-HCB-R600	Dot-matrix display board (red)	130 x 72 x 4.6

10.11.1Terminal Description

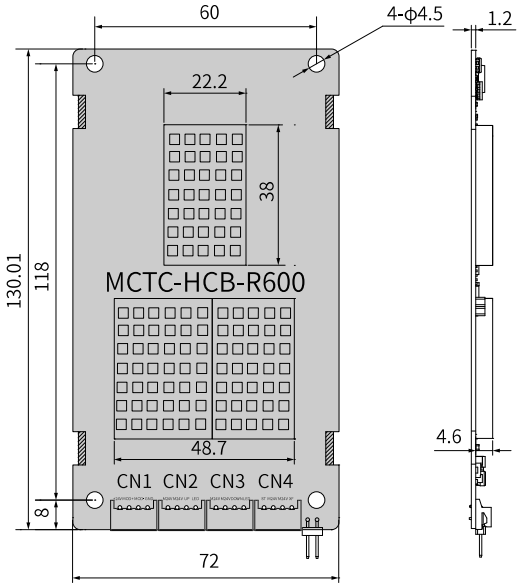


Figure 10-20 Outline dimensions and installation of MCTC-HCB-R600 (unit: mm)

Terminal description:

Table 10–22 Functions of I/O terminals

Symbol		CN1		CN2		CN3		CN4		CN5
Function		Modbus and power supply		Up call button		Down call button		Fire emergency and elevator lock inputs		Jumper for address setting
Pin definition	1	+24 V	24 VDC power supply	MP24	24 VDC power supply	MP24	24 VDC power supply	ST	Elevator lock button input	ON: Floor address setting with up and down call buttons pressed simultaneously after two pins of the jumper are shorted. OFF: No jumper.
	2	MOD+	Modbus communication cable	MP24	24 VDC power supply	MP24	24 VDC power supply	MP24	24 VDC power supply	
	3	MOD-	Modbus communication cable	U-IN	Up call button input	D-IN	Down call button input	MP24	24 VDC power supply	
	4	GND	Power ground	LED-UP	Up call button output	LED-DOWN	Down call button output	XF	Fire emergency button input	

Note

- 24 V power supply of voltage between 18 V and 26 V;
- RS485 communication with default baud rate of 38400 bps;
- Load current of the button indicator (≤ 25 mA) without jumpers by default.

10.11.2Wiring Connection

Connection between the HCB and MCB

See the connection with the HCB in *"10.7.2 Description of Wiring" on page 153*.

Connection between Car Display Board and CTB

See the connection with the car display board in *"10.8.2 Wiring Connection" on page 159*.

10.12Installation of Shaft Switches

In elevator control, to implement accurate landing and safe running, the car position needs to be identified based on shaft position signals. These shaft position signals include the leveling switches, up/down slow-down switches, up/down limit switches, and up/down final limit switches. These shaft position signals are directly transmitted by the shaft cables to the MCB of the controller.

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

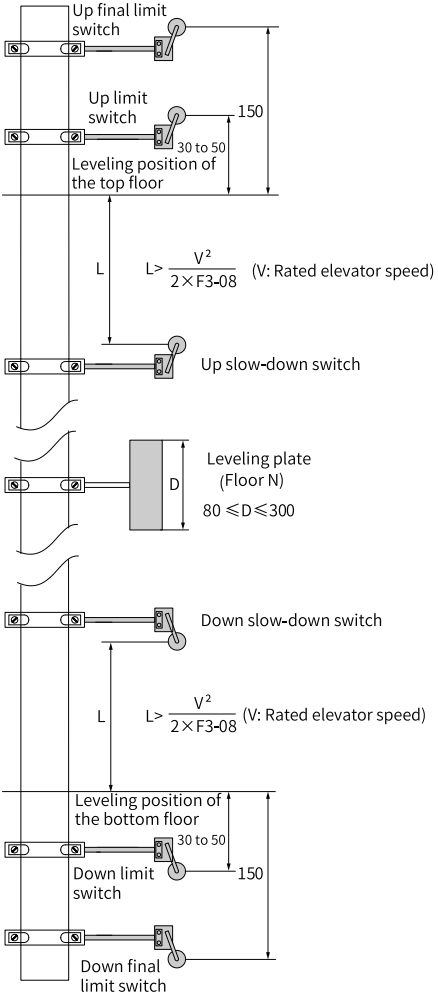


Figure 10-21 Arrangement of shaft position signals (unit: mm)

10.12.1Leveling Signals

Leveling signal devices, including the leveling switches and leveling plates, are connected to the input terminals of the controller. They enable the car to land on each floor accurately.

The leveling switches are installed on the top of the car. This controller supports the installation of four leveling switches. The leveling plate is installed on the guide rail in the

shaft. One leveling plate needs to be installed on each floor. Ensure that leveling plates at all floors are mounted with the same depth and verticality.

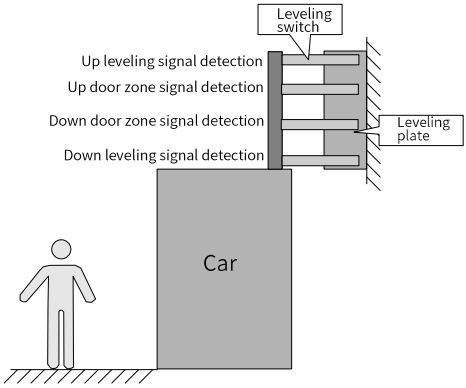
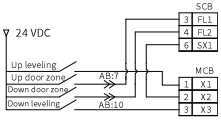
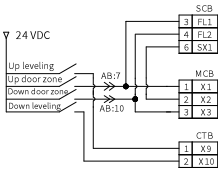


Figure 10-22 Installation of leveling signals

Table 10–23 Installation requirements of leveling switches

Hardware	Terminal wiring diagram	Parameter setting	State monitoring
Not connecting CTB MCTC-CTB		F5-01 = 1: up leveling signal NO F5-02 = 3: door zone signal NO F5-03 = 2: down leveling signal NO F6-52 bit6 = 0: CTB leveling signal input disabled	FA-26 bit1: up leveling state monitoring FA-26 bit2: down leveling state monitoring FA-26 bit3: door zone signal monitoring
Connecting CTB MCTC-CTB		F5-01 = 1: up leveling signal NO F5-02 = 3: door zone signal NO F5-03 = 2: down leveling signal NO F6-52 bit6 = 1: CTB leveling signal input enabled F5-25 bit9 = 1: CTB up leveling signal input enabled F5-25 bit10 = 1: CTB down leveling signal input enabled	FA-33 bit10: up leveling state monitoring FA-33 bit11: down leveling state monitoring FA-26 bit3: door zone signal monitoring FA-26 bit1: up door zone signal monitoring FA-26 bit2: down door zone signal monitoring

10.12.2Slow-down Switches

The slow-down switches are one of the key protective means of the elevator, protecting against top-hitting and bottom-clashing even at maximum speed when the elevator position is abnormal. This controller supports a maximum of three pairs of slow-down switches. The slow-down switch 1, slow-down switch 2 and slow-down switch 3 are installed from the two ends of the shaft to the middle floor one by one. Generally, only

one pair of slow-down switches is required for the low-speed elevator. Two or three pairs of slow-down switches are required for the high-speed elevator.

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

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

L: Slow-down distances

V: Rated elevator speed (F0-04)

F3-08: Special deceleration rate

The default value of F3-08 is 0.9 m/s^2. The following table lists the slow-down distances corresponding to different rated elevator speeds.

Table 10–24 Slow-down distances

Rated elevator speed (m/s)	0.25	0.4	0.5	0.63	0.75	1	1.5	1.6	1.75	2	2.5	3	3.5	4
Slow-down 1 distance (m)	0.4	0.4	0.4	0.4	0.4	0.7	1.5	1.7	2.0	2.0	2.0	2.0	2.0	2.0
Slow-down 2 distance (m)	/	/	/	/	/	/	/	/	/	2.5	4.0	4.0	4.0	4.0
Slow-down 3 distance (m)	/	/	/	/	/	/	/	/	/	/	/	6	8	11

- V < 1 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.1 m.
- 1 m/s ≤ V ≤ 2 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.2 m.
- 2 m/s < V ≤ 4 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.3 m.

Note

- The slow-down distances listed in the preceding table are calculated at the default special deceleration rate (0.9m/s^2).
- A lower acceleration/deceleration rate or higher special deceleration rate does not affect safety performance. However, a lower special deceleration rate may cause safety hazards. If a rate change is required, calculate the slow-down distance again according to the preceding formula.

10.12.3Limit Switches

The up limit switch and down limit switch protect the elevator against top-hitting and bottom-clashing when the elevator does not stop at the leveling position of the terminal floor.

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

10.12.4Final Limit Switches

The final limit switch is to protect the elevator against top-hitting and bottom-clashing when the elevator does not stop completely upon triggering the up/down limit switch.

- The up final limit switch is mounted above the up limit switch. It is usually 150 mm away from the top leveling position.
- The down final limit switch is mounted below the down limit switch. It is usually 150 mm away from the bottom leveling position.

10.13Inspection After Wiring

The following figure shows the flowchart of wiring safety checks.

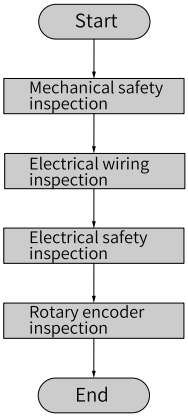


Figure 10-23 Inspection flowchart

Mechanical Safety Inspection

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.

Electrical Wiring Inspection

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	Tick
1	Ensure that the power input terminals (R/S/T/N) are connected correctly and securely.	□
2	Ensure that motor cables (U/V/W) are connected to the controller correctly and securely.	□
3	Ensure that the controller (control cabinet) and motor are grounded correctly.	□
4	The safety circuit is conducted, and the emergency stop buttons and switches in the control cabinet and the machine room can be enabled.	□
5	Ensure that the door lock circuit is energized and that the door lock circuit is disconnected when the car door or any landing door opens.	□

Note

To guarantee safe elevator running:

- Short the safety circuit with caution. If you start the elevator when the safety circuit is shorted, severe personal injuries or even death could be caused.
- Before commissioning, confirm that nobody is in the shaft. Failure to comply could result in personal injuries.
- Never perform running at normal speed when the safety circuit is shorted.
- Never start the elevator when the door lock circuit is shorted. Failure to comply could result in severe personal injuries or even death.

Electrical Safety Inspection

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	Tick
1	Ensure that the user power line voltage is within the range of 380 V to 440 V and that the phase unbalance degree does not exceed 3%.	☐
2	Ensure that the total lead-in wire gauge and total switch capacity meet requirements.	☐
3	Ensure that input power supply (R/S/T) is not short-circuited between phases or to ground.	☐
4	Ensure that the inter-phase short circuit or short circuit to ground does not occur in the UVW phases of the controller, and short circuit to ground does not occur in the UVW phases of the motor.	☐
5	Ensure that there is no short circuit to ground on the output side of the transformer.	☐
6	Ensure that there is no inter-phase or phase to ground short circuit in the 220 VAC power supply.	☐
7	Ensure that the 24 VDC switched-mode power supply has no short circuit to ground or between positive and negative output.	☐
8	Ensure that there is no short circuit between the CAN/Modbus communication cable and the ground or 24 VDC power supply.	☐

Rotary Encoder Inspection

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	Tick
1	Ensure that the encoder is installed reliably with correct wiring.	□
2	Ensure that the encoder signal cables and high-voltage 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 shielded and preferably welded to the encoder cables by using the soldering iron.	□
4	Ensure that the shield of the encoder is reliably grounded on the controller side (grounding at both ends is recommended to prevent interference).	□

11 Commissioning Tools

11.1 Overview

Use the following tools for system commissioning.

Tool	Function description	Notes
Keypad	Used to input the shaft commissioning commands and view the floor information.	Standard
LED operating panel MDKE	Used to view and modify parameters related to elevator drive and control.	Optional
LED operating panel MDKE6	Used to upload, download, view, and modify parameters.	Optional
Mobile phone commissioning software	An external Wi-Fi module is used to connect the MCB and the smartphone installed with commissioning software. Using the commissioning software, you can commission the elevator as well as upload and download parameters.	Optional

This document only describes the commonly-used keypad and LED operation panel (MDKE) in detail.

Note

You cannot use the MDKE6 and mobile phone commissioning software at the same time.

11.2 Keypad

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

- Keys and display

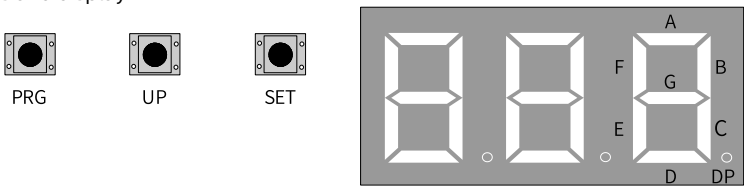


Figure 11-1 Layout of the keypad

The display area of the keypad includes three 7-segment LEDs and the three buttons that are defined as PRG, ADD, and SET.

Key	Function
PRG	It displays the current function menu No. in any state and exits the current operation.
UP	It increases the No. or value of the function menu. It is used as the door open command in F-6 menu.
SET	It enters the function menu editing mode as well as confirms and saves the current operation. It is used as the door close command in F-6 menu.

- Keypad operations

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

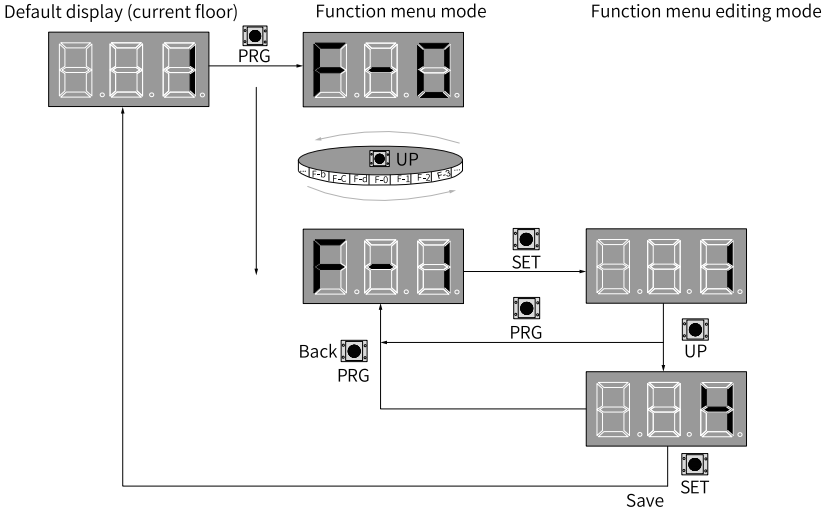


Figure 11-2 Setting the called floor

- Fault and alarm display

  When a fault occurs, the keypad displays the current fault code and subcode in scrolling mode, such as "E22-101" shown in the following figure.



Figure 11-3 Fault code and subcode display on the keypad

After F-2 is set to 2 on the keypad, the keypad will display the information about latest 10 faults, including fault code, subcode, and occurrence time.

After troubleshooting, reset the fault by setting F-2 to 1.

11.3 LED Operating Panel

11.3.1Component Description

The LED operating panel is used for viewing the operating status, setting parameters, and viewing fault information.

The following figure shows the operating panel.

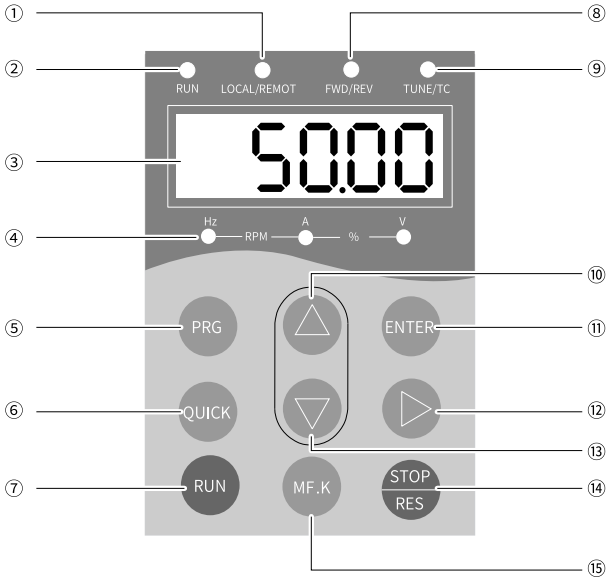


Figure 11-4 Operating panel

Table 11–1 Operating panel layout

No.	Name	No.	Name
①	Command source indicator	⑨	Auto-tuning/torque control/fault indicator
②	Operation indicator	⑩	Up key
③	Data display area	⑪	Enter key
④	Unit indicators	⑫	Shift key
⑤	Programming key	⑬	Down key
⑥	Menu key	⑭	Stop/reset key
⑦	RUN key	⑮	Multi-function key
⑧	Running direction indicator	-	-

Key Information

Table 11–2 Key information

Button	Name	Function
PRG	Programming key	Return to the previous menu of level I.
ENTER	Enter key	Enter the next screen, and confirm the mode, parameters and set values.
△	Up key	Change (increase) parameter No. and settings.
▽	Down key	Change (decrease) parameter No. and settings.
▷	Shift key	Shift to the left option for parameter display, parameter number and settings.
RUN	RUN key	Start the AC drive when using the operating panel control mode.
STOP RES	Stop/Reset	Stop the running state. Perform a reset operation when it is in the fault state.
MF.K	Multi-function key	Perform a function switchover according to the setting of F7-01.
QUICK	Menu key	Perform a menu mode switchover according to the setting of FP-03 (one menu mode by default).

Definition of Indicators

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

Table 11–3 Indicators on the operating panel

Status		Description
RUN Operation indicator	● RUN	OFF: Stop
	☀ RUN	ON: Running
FWD/REV Running direction indicator	● FWD/REV	OFF: Forward running
	☀ FWD/REV	ON: Reverse running

Status		Description
TUNE/TC Auto-tuning indicator	TUNE/TC	OFF: Not auto-tuning state
	TUNE/TC	ON: Auto-tuning state
Hz - RPM - A - % - V		Frequency unit: Hz
Hz - RPM - A - % - V		Current unit: A
Hz - RPM - A - % - V		Voltage unit: V
Hz - RPM - A - % - V		Unit of rotational speed: rpm
Hz - RPM - A - % - V		Percentage: %

Data Display

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

Table 11–4 LED display and actual data

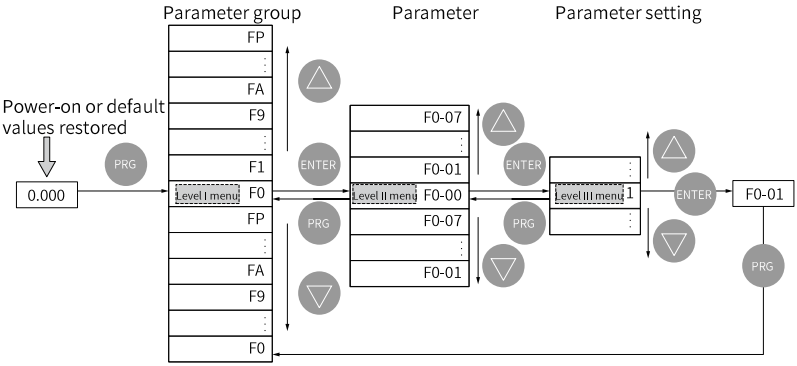
LED Display	Actual data	LED Display	Actual data	LED Display	Actual data	LED Display	Actual data
0	0	6	6	C	C	N	N
1	1	7	7	c	c	P	P
2	2	8	8	d	D	r	R
3	3	9	9	E	E	T	T

LED Display	Actual data	LED Display	Actual data	LED Display	Actual data	LED Display	Actual data
4	4	A	A	F	F	U	U
5	5, S	b	B	L	L	u	u

11.3.2Parameter Setting

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

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



After entering each level of menu, you can modify the flashing digit by pressing , , and .

Example: Change F1-04 from 10.00 Hz to 15.00 Hz.

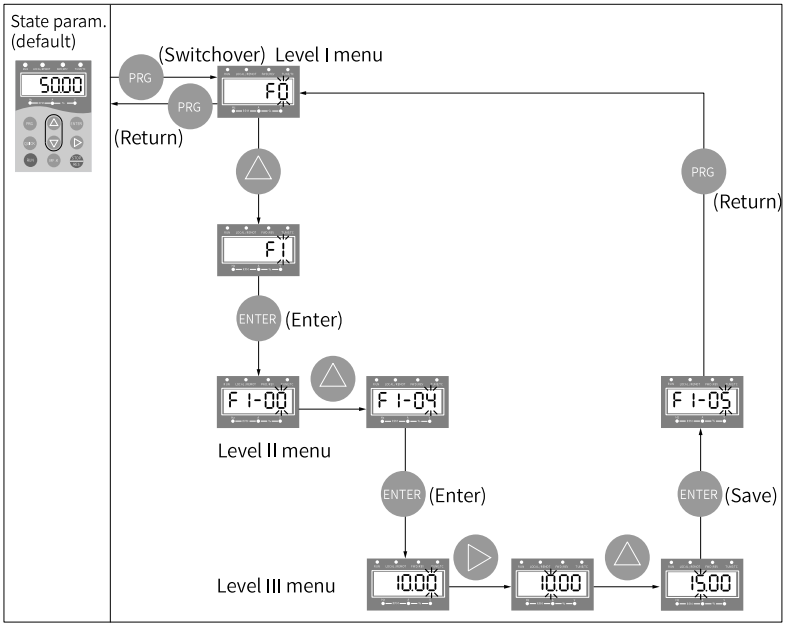


Figure 11-5 Parameter modification procedure

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

- By pressing ENTER, you will return to Level II menu after saving the set parameter, and move to the next parameter automatically.
- After you press PRG, the system directly returns to Level II menu without saving the current parameter modification and remains at the current parameter.

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

- This parameter is only readable, such as AC drive type, detected parameter and running record parameter.
- It can only be modified after the motor is shut down.

11.3.3Parameter Viewing

The following figure shows the operation procedure.

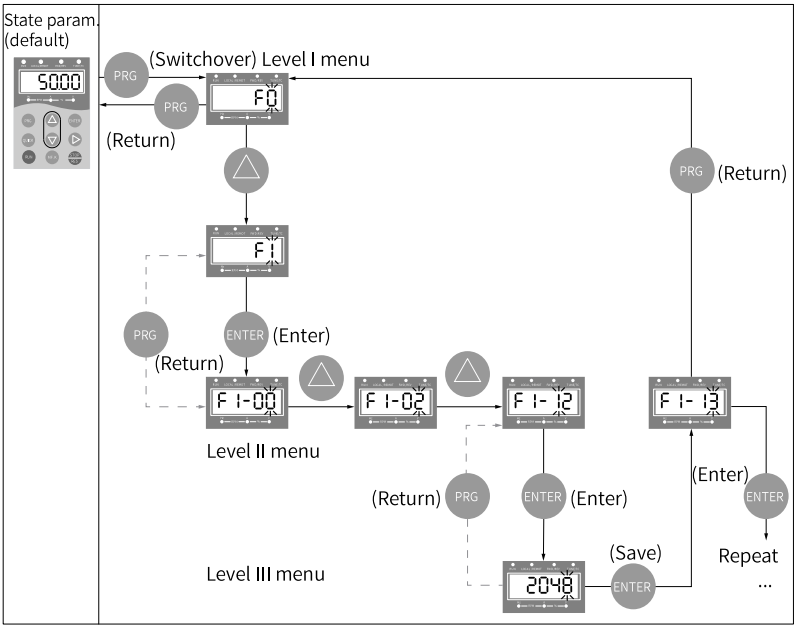


Figure 11-6 Parameter viewing procedure

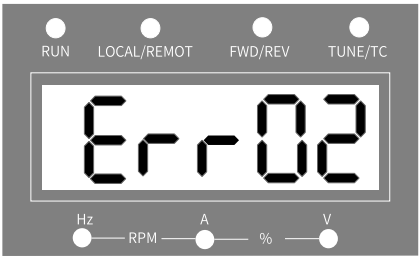
11.3.4State Parameter Display

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

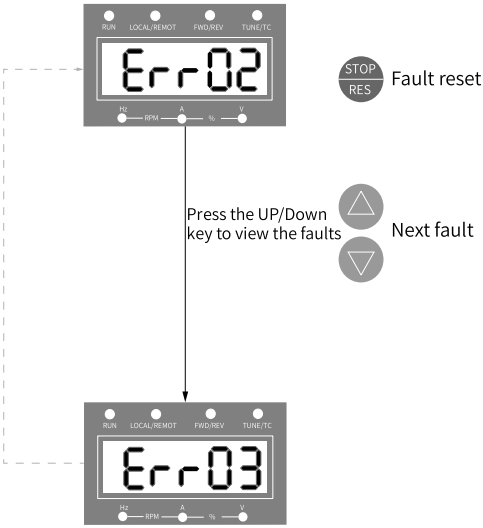
In the stop state, press to view the stop state parameters. The displayed parameters by default are rated speed and bus voltage. To view more stop state parameters, see the description of FA-02 (Parameter display at stop).

11.3.5Fault and Alarm Display

When a fault occurs, the operating panel will display the fault code shown in the following figure.



The controller stops outputting immediately, and the fault relay contact is closed. Find out the fault cause and solution according to the fault code displayed. Then the fault is reset.



11.4 Commissioning Using Mobile Phone

Monarch application is a software developed by Suzhou MONARCH, a subsidiary of Inovance for easy elevator debugging.

Operating Systems Supported

The application comes with Android and iOS systems. Users need to download the app for installation based on their own system version. Specifically, Android 4.4 or later and iOS 12 or later are supported.

Inovance engineers have actually tested Android brands (Huawei, Xiaomi and others) and iPhone. For any incompatibility with phone brands, contact the Monarch app system administrator.

Software Versions Supported

The app supports the debugging of NICE3000^{new} V20.00 or later, control cabinets (Tomorrow, Jiaolong, Honor and Mini series), standard NICE3000^{new} encrypted controller, and ARD, B6 (S), COB-B1 and other new product series developed in recent years. From 2021, it can be used to debug the newly developed Inovance whole units and components.

Software Installation

Users can scan the QR code shown below through QQ, WeChat, browser and other code scanning software to get the installation package.



Figure 11-7 QR code for installation

When the app is successfully installed on the smartphone, the icon below will appear.



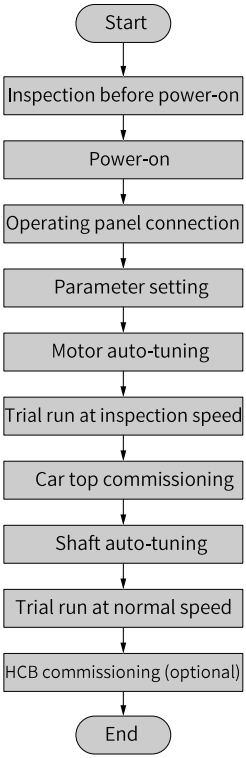
Figure 11-8 Icon after installation

Commissioning Using Mobile Phone

See *Monarch App for Elevator Debugging User Guide* for information about user sign-up and sign-in, Wi-Fi module, phone hotspot connection, remote assistance, programming, and upgrade.

12 System Commissioning

12.1 Commissioning Flowchart



12.2 Commissioning Procedure

12.2.1 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.

12.2.2 Power-on

Procedure

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.

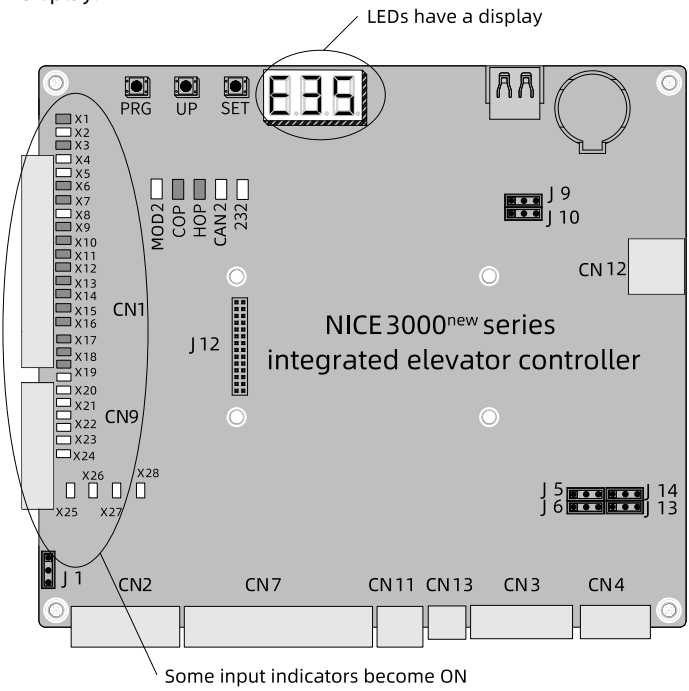


Figure 12-1 MCB display at normal power-on

Note: If E35, E51 or E52 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. For details about E35, E51 or E52, see *"Table 13-1 " on page 209*.

12.2.3Operating Panel Connection

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

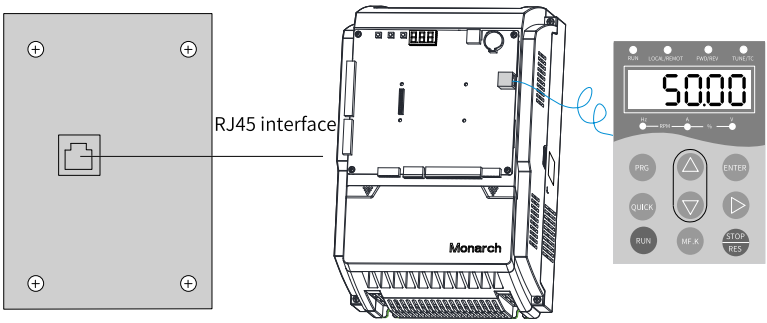


Figure 12-2 Operating panel connection

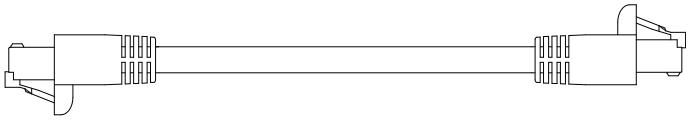


Figure 12-3 The 8-conductor flat cable

12.2.4Parameter Settings

Procedure

1. **Setting DI/DO Parameters**

a. 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.

Param.	Name	Range	Default
F5-01	X1 function selection	NO (0)/NC (0): Reserved NO (1)/NC (33): Up leveling NO (2)/NC (34): Down leveling NO (3)/NC (35): Door zone NO (4)/NC (36): Safety circuit 1 NO (5)/NC (37): Door lock circuit 1 NO (6)/NC (38): RUN contactor feedback NO (7)/NC (39): Brake contactor feedback NO (8)/NC (40): Inspection NO (9)/NC (41): Inspection/EEO (emergency electrical operation) up NO (10)/NC (42): Inspection/EEO (emergency electrical operation) down NO (11)/NC (43): Fire emergency	1
F5-02	X2 function selection		0
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

Param.	Name	Range	Default
F5-09	X9 function selection	NO (12)/NC (44): Up limit NO (13)/NC (45): Down limit NO (14)/NC (46): Overload NO (15)/NC (47): Full load NO (16)/NC (48): Up slow-down 1 NO (17)/NC (49): Down slow-down 1 NO (18)/NC (50): Up slow-down 2 NO (19)/NC (51): Down slow-down 2 NO (20)/NC (52): Up slow-down 3 NO (21)/NC (53): Down slow-down 3 NO (22)/NC (54): Shorting door lock circuit relay feedback NO (23)/NC (55): Firefighter NO (24)/NC (56): Door 1 light curtain NO (25)/NC (57): Door 2 light curtain NO (26)/NC (58): Brake travel switch 1 NO (27)/NC (59): Emergency evacuation at power failure NO (28)/NC (60): Elevator lock NO (29)/NC (61): Safety circuit 2 NO (30)/NC (62): Shorting motor stator contactor feedback NO (31)/NC (63): Door lock circuit 2 NO (65)/NC (97): Door 1 safety edge NO (66)/NC (98): Door 2 safety edge NO (67)/NC (99): Motor overtemperature NO (68)/NC (100): Earthquake NO (69)/NC (101): Rear door forbidden NO (70)/NC (102): Light load NO (71)/NC (103): Half load NO (72)/NC (104): Fire emergency floor switchover NO (73)/NC (105): Dummy floor NO (74)/NC (106): Auxiliary brake contactor 1 feedback NO (75)/NC (107): Auxiliary brake contactor 2 feedback NO (76)/NC (108): Door 1 open NO (77)/NC (109): Door 2 open NO (78)/NC (110): Brake travel switch 2 NO (79)/NC (111): External fault NO (80)/NC (112): Terminal floor signal NO (81)/NC (113): Door lock 1 shorting	116
F5-10	X10 function selection		9
F5-11	X11 function selection		10
F5-12	X12 function selection		0
F5-13	X13 function selection		0
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		58
F5-19	X19 function selection		0
F5-20	X20 function selection		99
F5-21	X21 function selection		0
F5-22	X22 function selection		110
F5-23	X23 function selection		0

Param.	Name	Range	Default
F5-24	X24 function selection	NO (82)/NC (114): Door lock 2 shorting NO (84)/NC (116): EEO NO (86)/NC (118): Door lock bypass NO (87)/NC (119): Fire emergency and firefighter common input terminal NO (88)/NC (120): Rope gripper feedback NO (89)/NC (121): Reserved NO (90)/NC (122): Manual shorting stator braking mode (Honor series control cabinet) NO (91)/NC (123): Inspection up limit (Honor series control cabinet) NO (92)/NC (124): Inspection down limit (Honor series control cabinet) NO (93)/NC (125): Relay Y8 feedback (Honor series control cabinet) NO (94)/NC (126): Electrical brake release (Honor series control cabinet) NO (95)/NC (127): Shaft auto-tuning input (Honor series control cabinet) NO (256)/NC (288): Triangle key input signal NO (257)/NC (289): Triangle key reset signal NO (259)/NC (291): Alarm filtered signal NO (261)/NC (293): Auxiliary brake contactor 3 feedback NO (262)/NC (294): Brake travel switch 3 feedback NO (268)/NC (300): Integrated shorting motor stator contactor pulse input NO (274)/NC (306): Auxiliary shorting motor stator contactor feedback NO (277)/NC (309): Fault reset Note: For the same signal, NC parameter setting = NO parameter setting + 32.	0

b. High-voltage DI input setting

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

Param.	Name	Range	Default
F5-37	X25 function selection	0: Reserved 4: Safety circuit signal 5: Door lock circuit signal 1 (high-voltage input detection point, multiplexing allowed) 6: Door lock circuit signal 2 (high-voltage input detection point, multiplexing allowed) 7: Door lock 1 shorting inspection 8: Door lock 2 shorting inspection	4
F5-38	X26 function selection		7
F5-39	X27 function selection		5
F5-40	X28 function selection		8

c. DO setting

Set parameters F5-26 to F5-31 and F5-45 to F5-46 based on relay output Y1 to Y7 and Y2A.

Param.	Name	Range	Default
F5-26	Y1 function selection	0: Reserved 1: RUN contactor output 2: Brake contactor output 3: Shorting door lock circuit contactor output 4: Fire emergency floor arrival signal feedback 5: Door machine 1 open 6: Door operator 1 close 7: Door machine 2 open 8: Door operator 2 close 9: Brake and RUN contactors healthy 10: Fault state 11: Running state output 12: Shorting PMSM stator contactor output 13: Emergency evacuation automatic switchover 14: System healthy 15: Emergency buzzer control 16: Brake pick voltage 17: Elevator running in up direction 18: Lighting/Fan output 19: Medical sterilization control output 20: Non-door zone stop 21: Electromagnetic lock control output 22: Non-service state indication 23: Emergency evacuation completed 25: Rope gripper reset 26: Braking transistor short circuit output 27: Alarm filtered output 28: Overspeed governor test output 29: Overspeed governor reset output 31: Shorting motor stator contactor output test completed 32: AGV status indicator output 33: Auxiliary brake contactor 1 output 34: Auxiliary brake contactor 2 output 39: Auxiliary synchronous motor self-locking output	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
F5-45	Y2A function selection		0
F5-46	Y7 function selection		0

Note

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

2. **Elevator Speed Setting**
   a. Set the rated elevator speed F0-04. See the speed on the motor nameplate.
   b. Set the actual maximum elevator running speed F0-03. The value must not be larger than the rated elevator speed (F0-04).

Param.	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.

Param.	Name	Range	Default
F6-00	Top floor of the elevator	F6-01 to F6-48	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.

Parameters	Name	Range	Value
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1
F1-01	Rated power	0.7 to 75.0	5.0kW
F1-02	Rated voltage	0 to 600	380 V
F1-03	Rated current	0.00 to 655.00	12.00 A
F1-04	Rated frequency	0.00 to Maximum 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.
   a. For a sin/cos encoder, set F1-00 to 0.

b. For the encoder with 2048 PPR, set F1-12 to 2048.

Parameters	Name	Range	Value
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder 4: Weton communication-type encoder	0
F1-12	Encoder PPR	100 PPR to 10000 PPR	2048

6. **Command Source Setting**

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

Parameters	Name	Range	Value
F0-01	Command source selection	0: Operating panel control 1: Distance control	1

Note

During with-load auto-tuning, F0-01 (Command source selection) must be 1.

12.2.5Motor Auto-tuning

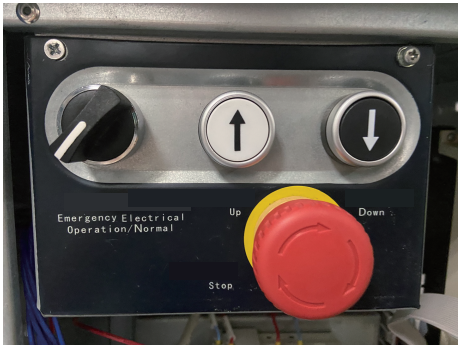
Note

To guarantee safe elevator running:

- Never start the elevator when the safety circuit is shorted. Failure to comply will result in severe personal injuries or even death.
- Before emergency electrical operation, confirm that nobody is in the shaft. Failure to comply may result in safety accidents.

Procedure

1. Set the switch to emergency electrical operation. Check that the X9 indicator on the MCB becomes OFF and the elevator enters the EEO state.



2. Auto-tuning preparation
   a. Before auto-tuning, check the motor parameters according to the formula: N = 60 x f/P, where:
      - f: F1-04 (rated frequency)
      - N: F1-05 (rated speed)
      - P: The number of pole pairs (total number of poles divided by 2), which is generally a positive integer and most often an even number

   b. 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. Rotate the EEO/Normal knob to the EEO position and keep pressing the Up/Down button for the auto-tuning process. RUN contactor closes and the motor has excitation 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 automatically 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 electrical operation to Normal.

Param.	Name	Range	Value
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Shaft auto-tuning 1, with parameters in group Fr not cleared 4: Shaft auto-tuning 2, with parameters in group Fr cleared 5: Synchronous motor static auto-tuning	1
F5-09	X9 function selection	0 to 309 116: EEO NC input	116

12.2.6Trial 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.

Param.	Name	Range	Default
F2-10	Elevator running direction	0: Running direction unchanged 1: Direction reversed	0
F3-25	Elevator speed in the EEO state	0.100 m/s to 0.300 m/s	0.250 m/s

Procedure

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.

12.2.7Car Top Commissioning

CAUTION

- During car top commissioning, ensure that car top inspection is enabled to guarantee safety.
- 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 E53 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 12–1 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

1. **Light Curtain Commissioning**

   Light curtain commissioning is performed to check whether the light curtain input/output and NC/NO settings are correct.

   a. Check whether the light curtain is installed properly and securely.

   b. Check the status of the X1 signal indicator on the CTB to ensure that the light curtain works normally. See *"Table 12-2 Light curtain judgment method" on page 199* for the light curtain judgment:

Table 12–2 Light curtain judgment method

	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

c. 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 correct. 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.

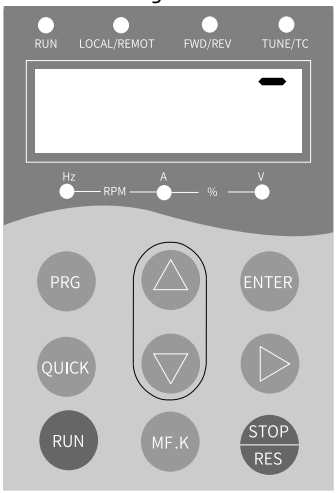


Figure 12-4 Light curtain signal valid display (segment A)

d. Light curtain commissioning is completed.

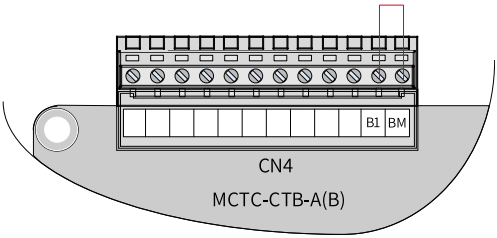
2. **Door operator controller commissioning**

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.

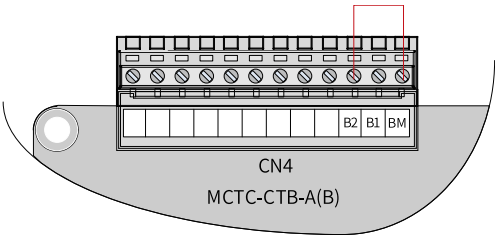
a. Check whether F7-05 is 0, the default value. If yes, it indicates that the door operator allows door open (You may choose to skip this step).

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

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



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



c. 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 *"Table 12-3 Door open/close limit feedback judgment" on page 201* for the judgment method.

Table 12-3 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

d. 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 12–4 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: • If the original value is 0, change it to 1. • If the original value is 1, change it to 0.
Door close limit signal (segment E)			Normal	No
			Abnormal	Set bit4 to the opposite state: • If the original value is 0, change it to 1. • If the original value is 1, change it to 0.

12.2.8Shaft Auto-tuning

Inspection Before Shaft Auto-tuning

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.

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	Tick
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: • Acting sequence for EEO up: up leveling switch → door zone switch → down leveling switch. • 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 E51 not reported). If CAN communication is abnormal, see E51 solutions in Chapter Fault List.	□

Conditions

1. The elevator is in EEO state.
2. 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).
3. The system is not in the fault state. If there is a fault, press 

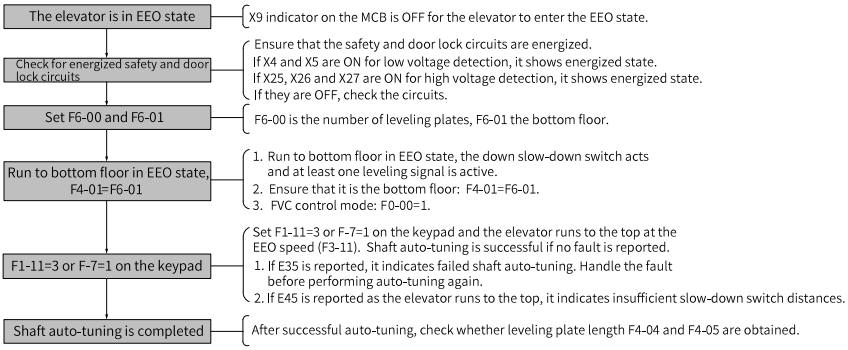
to reset the fault.

Related Parameters

The following table shows the related parameters.

Param.	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	-

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.

12.2.9Trial Run at Normal Speed

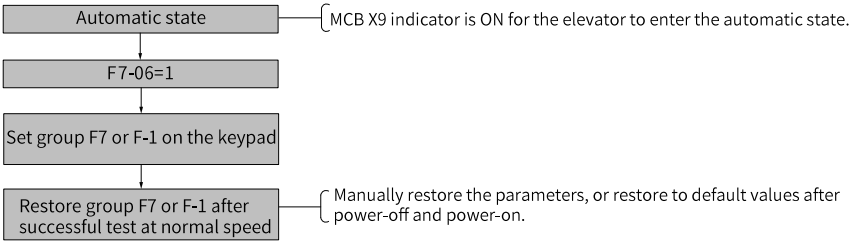
Perform trial run at normal speed to test whether the elevator runs properly in the normal state.

Parameters in group F7-00 (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.

Param.	Name	Description	Notes
F7-00	Register the car call	Set the car call floor	Same to F-1 on the keypad
F7-01	Up hall call floor registered	Set the hall up call floor	-
F7-02	Down hall call floor registered	Set the hall down call floor	-
F7-03	Random running times	Set the random running times	-

Param.	Name	Description	Notes
F7-04	Hall call	0: Hall call enabled 1: Hall call disabled	Set F-8 on the keypad to 1: hall call disabled
F7-05	Door open	0: Door open enabled 1: Door open disabled	Set F-8 on the keypad to 2: door open disabled
F7-06	Overload function	0: Overload disabled 1: Overload enabled	Set F-8 on the keypad to 3: overload disabled
F7-07	Limit function	0: Limit function enabled 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:



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 in group F7 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.

12.2.10HCB Commissioning (Optional)

Procedure

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.

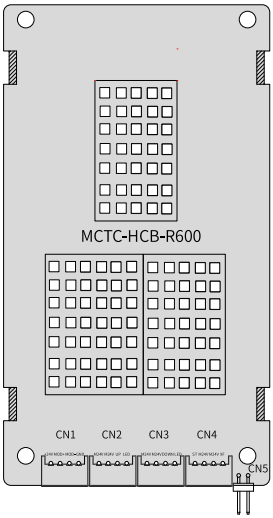


Figure 12-5 MCTC-HCB-R600

Note

- 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.

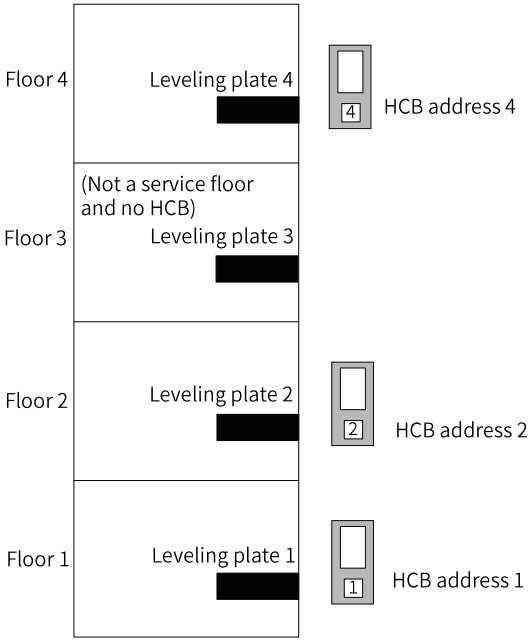


Figure 12-6 HCB installation and address setting

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

Note

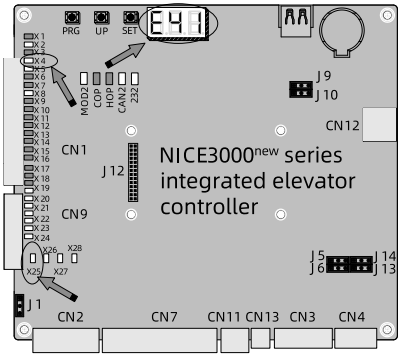
- Set a unique address for each HCB. Otherwise, the HCB cannot be used.
- When the display board is used inside the car, its address must be set to 0.

13 Commissioning Fault Troubleshooting

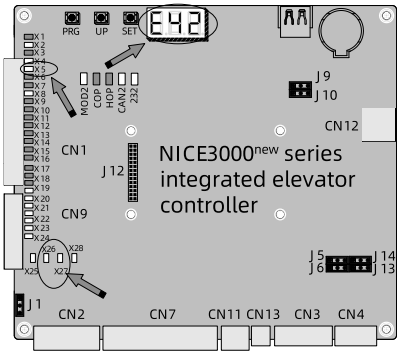
13.1 Fault Handling at Power-on

During commissioning, especially at first-time power-on, certain faults may occur because the conditions for automatic elevator running are not met or some peripheral signals are not connected. Such faults include E41, E42, E35, E51, E52, and E58. The following part describes the MCB state at fault and handling of these faults.

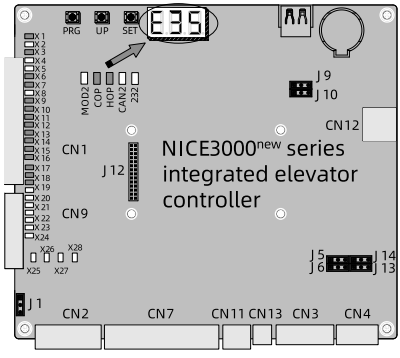
- MCB state at E41, E42, E35, E51, E52, and E58



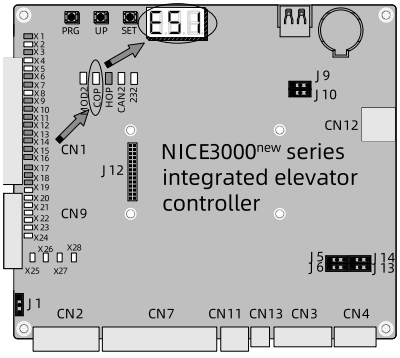
MCB fault E41 state



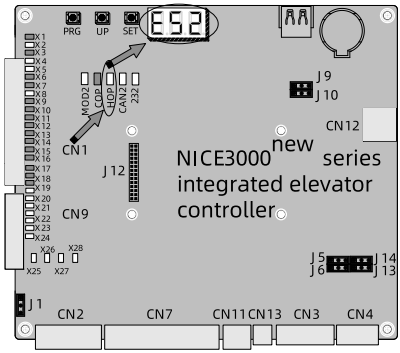
MCB fault E42 state



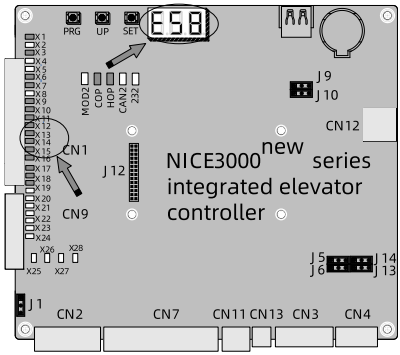
MCB fault E35 state



MCB fault E51 state



MCB fault E52 state



MCB fault E58 state

Figure 13-1 MCB state at faults during commissioning

- Handling of faults E41, E42, E35, E51, E52, and E58

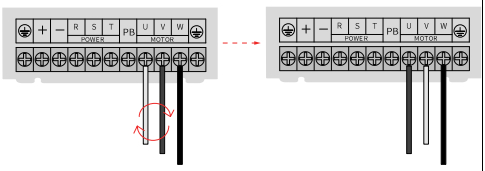
Table 13–1 Fault handling before commissioning at inspection speed

Fault	Fault Name	Description	Solution
E41	Safety circuit fault	At this fault, the elevator cannot run or be commissioned. By default, the safety circuit input signal is connected to terminals X4 and X25.	Observe whether the signal indicator of input terminals X4 and X25 is ON. If this indicator is OFF, the safety circuit is disconnected. In this case, you need to repair the safety circuit. Then, you can perform commissioning at inspection speed.
E42	Door lock circuit fault	At this fault, the elevator cannot run or be commissioned. By default, the door lock circuit signal is connected to terminals X5, X26, and X27.	Observe whether the signal indicator of terminals X5, X26, and X27 is ON. If this indicator is OFF, the door lock circuit is disconnected. In this case, you need to repair the door lock circuit. Then, you can perform commissioning at inspection speed. Never short the door lock circuit for commissioning.

Fault	Fault Name	Description	Solution
E35	Shaft auto-tuning data abnormal	This fault does not affect commissioning at inspection speed, and is reported at each power-on before shaft auto-tuning is performed.	Press  key on the LED operating panel to clear the fault code display, and then perform commissioning at inspection speed.
E51	CAN communication fault	This fault does not affect commissioning at inspection speed, and it affects only commissioning at normal speed. The COP indicator is OFF at this fault.	
E52	HCB communication abnormal	This fault does not affect motor auto-tuning or commissioning at inspection speed. The HOP indicator is OFF at this fault.	
E58	Shaft position switches abnormal	The elevator cannot run, You need to rectify the fault first and then perform commissioning at inspection speed. The fault cause may be: The feedback inputs of both up and down slow-down switches 1 are active; feedback inputs of both up and down limit switches are active simultaneously.	• Connect X14 and X15 to slow-down switches 1 (NC inputs), and check whether they are OFF simultaneously. Additionally, confirm whether slow-down switches 1 are connected to the MCB and act properly. • Terminals X12 and X13 are connected to the up and down limit switches (NC input). Observe whether the signal indicators of both X12 and X13 are OFF. Check whether limited switches act properly.

13.2 Motor Auto-tuning Fault Handling

Issue	Fault	Solution
Auto-tuning failure	Err19	• Check whether the encoder cable has wire breakage or replace a new PG card before auto-tuning again. • **Subcodes 1, 5 and 6** Check the three-phase motor cables and output contactor for tight connection.
	Err20	• **Subcode 3** Check the UVW power cables and interchange phases VW before auto-tuning. Check whether the brake is fully released. If not, check the brake power supply circuit. • **Subcode 9** Check whether group F1 motor parameters are correctly set. Set F8-01 to 0 and perform auto-tuning again. Check whether the encoder cable suffers interference because it is too close to the motor cables. Check whether the encoder is installed securely and not damaged. The low-power motor (such as P ≤ 5.5 kW) may jitter after auto-tuning starts. If this occurs, decrease F2-00 properly to a value within 10 to 40. • **Subcodes 12 and 13** Check whether the brake is released. • **Subcodes 19 and 55** Check whether the encoder signal suffers interference.

Issue	Fault	Solution
Incorrect motor wiring	Err20 and Err33	Change the motor wiring sequence and perform auto-tuning again. The following figure shows how to interchange motor phases.  Description of fault symptoms • **During no-load auto-tuning, if the motor wiring sequence is incorrect,** Err20 (E0-00) with fault subcode 3 (E0-01) will be reported. • **During with-load auto-tuning, if the motor wiring sequence is incorrect:** the synchronous motor will jitter abnormally during auto-tuning, Err33 is reported, and auto-tuning stops. For the asynchronous motor, there is no prompt during auto-tuning, but Err33 is reported during running at inspection speed.

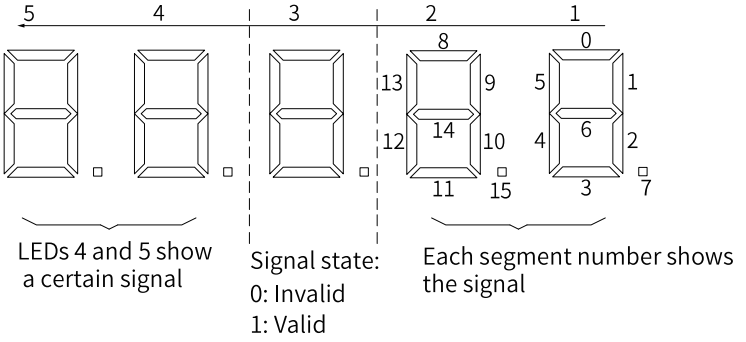
Note

- When the preceding two problems occur, change the sequence of motor cables connected to the controller.
- Adjustment principle of motor wiring sequence: interchange any two adjacent motor cables once.

13.3 Handling of Common Door Control Problems

- In the door close state, the system sends a door open command but the door does not open.

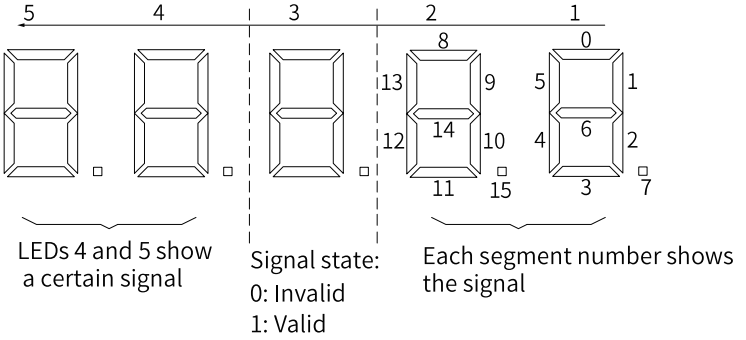
  1. Check whether the door open limit signal is normally active.
  2. Check whether there is door open output by viewing segment 1 of LED 1 in FA-34.



3. Check whether cable connection between the CTB and the door operator controller is correct and whether the door operator controller works properly.

- The door does not close with a close command after reaching the open limit position:

1. Check whether the light curtain signal is normally active.
2. Check whether there is door close output by viewing segment 2 of LED 1 in FA-34.



3. Check whether cable connection between the CTB and the door operator controller is correct and whether the door operator controller works properly.

13.4 Adjustment to Abnormal Motor Startup

F2-00/01/03/04 are used to adjust the speed dynamic response characteristics of the motor. The parameter description is as follows.

Param.	Name	Range	Default
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

Param.	Name	Range	Default
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

To achieve a faster system response, increase the proportional gain or reduce the integral time. However, too large proportional gain or too small integral time may lead to motor jitter due to oscillation.

Decreasing the proportional gain or increasing the integral time will slow the dynamic response of the motor. However, too small proportional gain or too large integral time may cause motor speed tracking abnormality, resulting in fault E33 or unstable leveling at stop.

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

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

14 Electrical Wiring Diagram

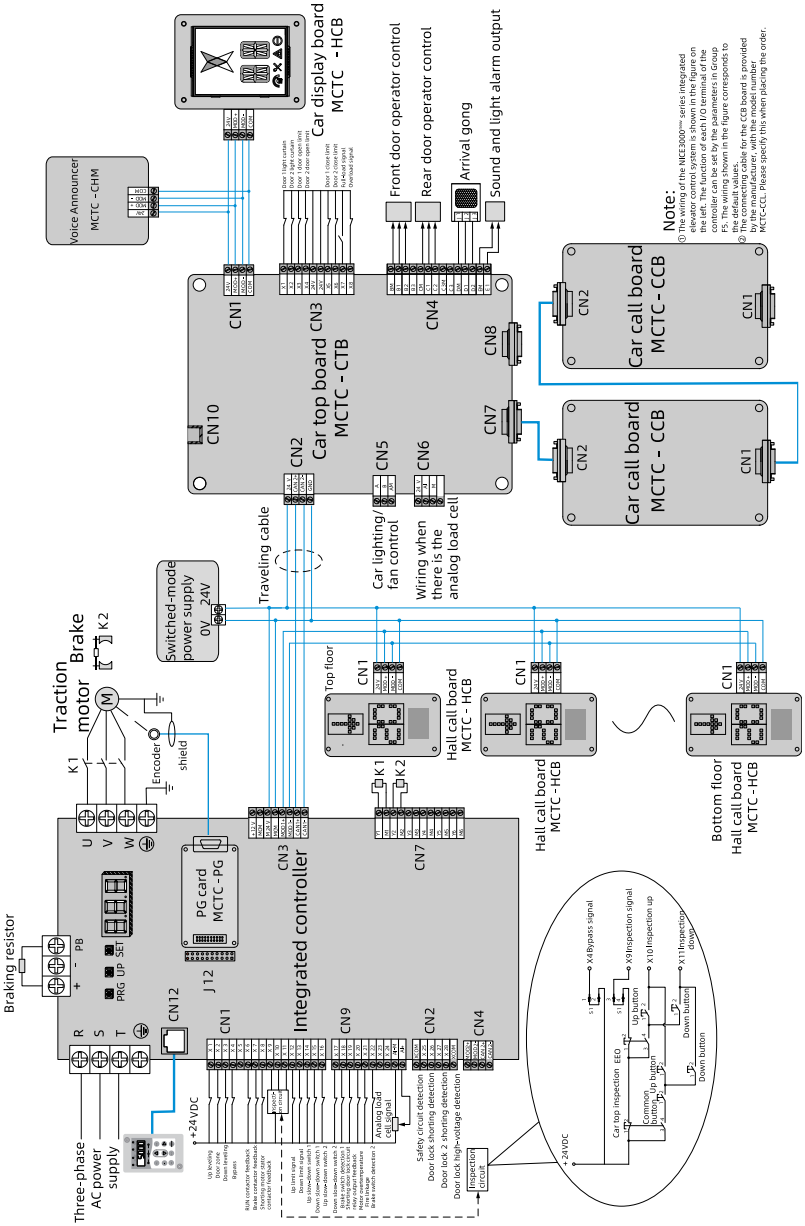


Figure 14-1 Standard wiring diagram

15 Parameter List

The parameters of the NICE3000^{new} system adopt a three-level menu structure.

- The parameter group is Level-I menu.
- Level II: parameters
- Level III: parameter value

Meaning of each column in the parameter table:

Param.	Name	Range	Default	Unit	Property [1]
Parameter number	Full name of the parameter	Effective value range of parameter	Factory setting of the parameter	Measurement unit of the parameter	Operation property of parameters (whether to allow modification and modification conditions)

Notes on [1]:

" ☆ ": The parameter can be modified when the NICE3000^{new} controller is in either stop or running state.

" ★ ": The parameter cannot be modified when the NICE3000^{new} controller is in the running state.

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

Note

For the property of each parameter, the system has established an automatic check constraint mechanism, which can help users avoid incorrect operations.

The LED operating panel connected with the controller allows the running state display, parameter setting, fault information viewing, and so on. The detailed parameters are as follows:

Param.	Name	Range	Default	Unit	Property
Group F0: Basic Parameters					
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Feedback vector control (FVC) 2: V/f control	1	-	★
F0-01	Command source selection	0: Operating panel control 1: Distance control	1	-	★
F0-02	Running speed under operating panel control	0.050 to F0-04	0.050	m/s	☆
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	★

Param.	Name	Range	Default	Unit	Property
F0-05	Rated load	300 to 9999	1000	kg	★
F0-06	Maximum frequency	F1-04 to 99.00	50.00	Hz	★
F0-07	Carrier frequency	0.5 to 16.0	6.0	kHz	★
Group F1: Motor Parameters					
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder 4: Weton communication-type encoder	0	-	★
F1-01	Rated power	0.7 to 75.0	Model dependent	kW	★
F1-02	Rated voltage	0 to 600	Model dependent	V	★
F1-03	Rated current	0.00 to 655.00	Model dependent	A	★
F1-04	Rated frequency	0.00 to F0-06	Model dependent	Hz	★
F1-05	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 signal check	0 to 65535	0	-	★
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Shaft auto-tuning 1, with parameters in group Fr not cleared 4: Shaft auto-tuning 2, with parameters in group Fr cleared 5: Synchronous motor static auto-tuning	0	-	★
F1-12	Encoder PPR	100 to 10000	2048	PPR	★
F1-13	Encoder disconnection detection time	0 to 10.0	2.1	s	★
F1-14	Stator resistance (asynchronous motor)	0.000 to 30.000	0.000	Ω	★

Param.	Name	Range	Default	Unit	Property
F1-15	Rotor resistance (asynchronous motor)	0.000 to 30.000	0.000	Ω	★
F1-16	Leakage inductance (asynchronous motor)	0.00 to 300.00	0.00	mH	★
F1-17	Mutual inductance (asynchronous motor)	0.0 to 3000.0	0.0	mH	★
F1-18	No-load current (asynchronous motor)	0.00 to 300.00	0.00	A	★
F1-19	Q-axis inductance (torque)	0.00 to 650.00	3	mH	★
F1-20	D-axis inductance (excitation)	0.00 to 650.00	3	mH	★
F1-21	Back EMF coefficient	0 to 65535	0	-	★
F1-22	Angle-free auto-tuning function	bit1 = 1, bit2 = 0: Semi-automatic angle-free auto-tuning bit1 = 1, bit2 = 1: Automatic angle-free auto-tuning	0	-	★
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★
Group F2: Vector Control Parameters					
F2-00	Speed loop proportional gain Kp1	0 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	Hz	★
F2-06	Current loop proportional gain Kp	10 to 500	60	-	★
F2-07	Current loop integral gain Ki	10 to 500	30	-	★
F2-08	Torque upper limit	0.0 to 200.0	200.0	%	★
F2-10	Elevator running direction	0: Running direction unchanged 1: Direction reversed	0	-	★
F2-11	Position lock current coefficient	2.0 to 50.0	15.0	%	★
F2-12	Zero servo speed loop Kp	0.00 to 2.00	0.50	-	★
F2-13	Zero servo speed loop Ti	0.00 to 2.00	0.60	-	★
F2-16	Torque acceleration time	1 to 500	1	ms	★
F2-17	Torque deceleration time	1 to 3000	350	ms	★
F2-18	Startup acceleration time	0.000 to 1.500	0.000	s	★
F2-24	Reduction ratio	1 to 100	10	-	★

Param.	Name	Range	Default	Unit	Property
F2-25	Program control word 3	0 to 65535	0	-	★
F2-26	Optimized position loop gain Kp of the position lock	0 to 30	3	-	★
F2-27	Optimized position loop gain Ki of the position lock	0 to 150	15	-	★
F2-28	Drive commissioning parameter 1	0 to 65535	0	-	☆
F2-29	Drive commissioning parameter 2	0 to 65535	0	-	☆
F2-30	Drive commissioning parameter 3	0 to 65535	0	-	☆
F2-31	Drive commissioning parameter 4	0 to 65535	0	-	☆
F2-32	Drive commissioning parameter 5	0 to 10	5	s	☆
F2-33	Torque amplitude	50 to 150	110	%	★
F2-34	Drive commissioning parameter 7	0 to 100	30	-	☆
F2-35	Drive commissioning parameter 8	0 to 20	0	°	☆
F2-36	Drive commissioning parameter 9	0 to 65535	0	-	☆
F2-37	Reserved auto-tuning parameter 1	0 to 65535	0	-	☆
F2-38	Reserved auto-tuning parameter 2	0 to 65535	0	-	☆
F2-39	Reserved auto-tuning parameter 3	0 to 65535	0	-	☆
F2-40	Reserved auto-tuning parameter 4	0 to 65535	0	-	☆
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	★
F3-02	Acceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-03	Acceleration end jerk time 1	0.300 to 4.000	1.500s	s	★
F3-04	Acceleration end jerk time 2	0.300 to 4.000	1.500s	s	★
F3-05	Deceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-06	Deceleration start jerk time 1	0.300 to 4.000	1.500s	s	★
F3-07	Deceleration start jerk time 2	0.300 to 4.000	1.500s	s	★
F3-08	Special deceleration rate	0.500 to 1.500	0.900	m/s^2	★
F3-09	Pre-deceleration distance	0 to 90.0	0.0	mm	★

Param.	Name	Range	Default	Unit	Property
F3-10	Re-leveling speed	0.020 to 0.080	0.040	m/s	★
F3-11	Inspection speed	0.100 to 0.630	0.250	m/s	★
F3-12	Position of up slow-down switch 1	0.00 to 300.00	0.00	m	★
F3-13	Position of down slow-down switch 1	0.00 to 300.00	0.00	m	★
F3-14	Position of up slow-down switch 2	0.00 to 300.00	0.00	m	★
F3-15	Position of down slow-down switch 2	0.00 to 300.00	0.00	m	★
F3-16	Position of up slow-down switch 3	0.00 to 300.00	0.00	m	★
F3-17	Position of down slow-down switch 3	0.00 to 300.00	0.00	m	★
F3-18	Zero-speed current output time	0.200 to 1.000	0.200	s	★
F3-19	Holding time of zero-speed torque current upon brake release	0.000 to 2.000	0.600	s	★
F3-20	Zero-speed control time at end	0.000 to 1.000	0.300	s	★
F3-21	Low-speed re-leveling speed	0.080 to F3-11	0.250	m/s	★
F3-22	Acceleration rate at emergency rescue	0.100 to 1.300	0.300	m/s^2	★
F3-23	Deceleration delay time upon hitting slow-down switch	0.00 to 10.00	0.00	s	★
F3-24	Program function selection	0: Reserved 1: Slip test 2: Manual test of UCMP 3: Overspeed governor test and reset 6: Balancing factor auto-tuning 18: Maintenance entry 19: Maintenance exit 20: Dynamic braking force test 24: Manual ascending car overspeed protection (ACOP) test 25: Manual time limiter test 26: Manual shorting motor stator braking test 29: Linkage test of car safety gear 30: Linkage test of counterweight safety gear 31: Shorting motor stator pulse test	0	-	★
F3-25	Elevator speed in the EEO state	0.100 to 0.300	0.250	m/s	★

Param.	Name	Range	Default	Unit	Property
F3-26	(Shaft auto-tuning speed)	0.100 to 0.630	0.250	m/s	★
F3-27	E33 overspeed margin	0.000 to 1.000	0.050	m/s	★
F3-28	Terminal floor verification speed	0.080 to F0-03	0.500	m/s	★
Group F4: Floor Parameters					
F4-00	Leveling adjustment	0 to 60	30	mm	★
F4-01	Current floor	F6-01 to F6-00	1	-	★
F4-02	High bits of current elevator position	0 to 65535	0	Pls	●
F4-03	Low bits of current elevator position	0 to 65535	0	Pls	●
F4-04	Leveling plate length 1	0 to 65535	0	Pls	★
F4-05	Leveling plate length 2	0 to 65535	0	Pls	★
F4-06	High bits of floor 1	0 to 65535	0	Pls	★
F4-07	Low bits of floor 1	0 to 65535	0	Pls	★
F4-08	High bits of floor 2	0 to 65535	0	Pls	★
F4-09	Low bits of floor 2	0 to 65535	0	Pls	★
F4-10	High bits of floor 3	0 to 65535	0	Pls	★
F4-11	Low bits of floor 3	0 to 65535	0	Pls	★
F4-12	High bits of floor 4	0 to 65535	0	Pls	★
F4-13	Low bits of floor 4	0 to 65535	0	Pls	★
F4-14	High bits of floor 5	0 to 65535	0	Pls	★
F4-15	Low bits of floor 5	0 to 65535	0	Pls	★
F4-16	High bits of floor 6	0 to 65535	0	Pls	★
F4-17	Low bits of floor 6	0 to 65535	0	Pls	★
F4-18	High bits of floor 7	0 to 65535	0	Pls	★
F4-19	Low bits of floor 7	0 to 65535	0	Pls	★
F4-20	High bits of floor 8	0 to 65535	0	Pls	★
F4-21	Low bits of floor 8	0 to 65535	0	Pls	★
F4-22	High bits of floor 9	0 to 65535	0	Pls	★
F4-23	Low bits of floor 9	0 to 65535	0	Pls	★
F4-24	High bits of floor 10	0 to 65535	0	Pls	★
F4-25	Low bits of floor 10	0 to 65535	0	Pls	★
High byte of floor 2 to low byte of floor 95					
F4-196	High bits of floor 96	0 to 65535	0	Pls	★
F4-197	Low bits of floor 96	0 to 65535	0	Pls	★
F4-198	High bits of floor 97	0 to 65535	0	Pls	★
F4-199	Low bits of floor 97	0 to 65535	0	Pls	★
Group F5: Terminal Function Parameters					
F5-00	Attendant/normal state switchover time	3 to 200	3	s	★

Param.	Name	Range	Default	Unit	Property
F5-01	X1 function selection	NO (0)/NC (0): Reserved NO (1)/NC (33): Up leveling NO (2)/NC (34): Down leveling NO (3)/NC (35): Door zone NO (4)/NC (36): Safety circuit 1 NO (5)/NC (37): Door lock circuit 1 NO (6)/NC (38): RUN contactor feedback NO (7)/NC (39): Brake contactor feedback NO (8)/NC (40): Inspection NO (9)/NC (41): Inspection/EEO (emergency electrical operation) up NO (10)/NC (42): Inspection/EEO (emergency electrical operation) down NO (11)/NC (43): Fire emergency	1	-	★
F5-02	X2 function selection		0	-	★
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		116	-	★
F5-10	X10 function selection		9	-	★
F5-11	X11 function selection		10	-	★
F5-12	X12 function selection		0	-	★
F5-13	X13 function selection		0	-	★
F5-14	X14 function selection	NO (12)/NC (44): Up limit NO (13)/NC (45): Down limit NO (14)/NC (46): Overload NO (15)/NC (47): Full load NO (16)/NC (48): Up slow-down 1 NO (17)/NC (49): Down slow-down 1 NO (18)/NC (50): Up slow-down 2 NO (19)/NC (51): Down slow-down 2 NO (20)/NC (52): Up slow-down 3 NO (21)/NC (53): Down slow-down 3	48	-	★
F5-15	X15 function selection	NO (22)/NC (54): Shorting door lock circuit relay feedback NO (23)/NC (55): Firefighter NO (24)/NC (56): Door 1 light curtain NO (25)/NC (57): Door 2 light curtain	49	-	★

Param.	Name	Range	Default	Unit	Property
F5-16	X16 function selection	NO (26)/NC (58): Brake travel switch 1 NO (27)/NC (59): Emergency evacuation at power failure NO (28)/NC (60): Elevator lock NO (29)/NC (61): Safety circuit 2 NO (30)/NC (62): Shorting motor stator contactor feedback NO (31)/NC (63): Door lock circuit 2 NO (65)/NC (97): Door 1 safety edge NO (66)/NC (98): Door 2 safety edge NO (67)/NC (99): Motor overtemperature NO (68)/NC (100): Earthquake NO (69)/NC (101): Rear door forbidden NO (70)/NC (102): Light load NO (71)/NC (103): Half load NO (72)/NC (104): Fire emergency floor switchover NO (73)/NC (105): Dummy floor NO (74)/NC (106): Auxiliary brake contactor 1 Feedback NO (75)/NC (107): Auxiliary brake contactor 2 Feedback NO (76)/NC (108): Door 1 open NO (77)/NC (109): Door 2 open NO (78)/NC (110): Brake travel switch 2 NO (79)/NC (111): External fault NO (80)/NC (112): Terminal floor signal NO (81)/NC (113): Door lock 1 shorting NO (82)/NC (114): Door lock 2 shorting	50	-	★
F5-17	X17 function selection		51	-	★
F5-18	X18 function selection		58	-	★
F5-19	X19 function selection		0	-	★
F5-20	X20 function selection		99	-	★
F5-21	X21 function selection		0	-	★

Param.	Name	Range	Default	Unit	Property
F5-22	X22 function selection	NO (84)/NC (116): EEO	110	-	★
F5-23	X23 function selection	NO (86)/NC (118): Door lock bypass	0	-	★
F5-24	X24 function selection	NO (87)/NC (119): Fire emergency and firefighter common input terminal NO (88)/NC (120): Rope gripper feedback NO (89)/NC (121): Reserved NO (90)/NC (122): Manual shorting stator braking mode (Honor series control cabinet) NO (91)/NC (123): Inspection up limit (Honor series control cabinet) NO (92)/NC (124): Inspection down limit (Honor series control cabinet) NO (93)/NC (125): Relay Y8 feedback (Honor series control cabinet) NO (94)/NC (126): Electrical brake release (Honor series control cabinet) NO (95)/NC (127): Shaft auto-tuning input (Honor series control cabinet) NO (256)/NC (288): Triangle key input signal NO (257)/NC (289): Triangle key reset signal NO (259)/NC (291): Alarm filtered signal NO (261)/NC (293): Auxiliary brake contactor 3 feedback NO (262)/NC (294): Brake travel switch 3 feedback NO (268)/NC (300): Integrated shorting motor stator contactor pulse input NO (274)/NC (306): Auxiliary shorting motor stator contactor feedback NO (277)/NC (309): Fault reset Note: For the same signal, NC parameter setting = NO parameter setting + 32.	0	-	★
F5-25	Car top board input signal type	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 overtemperature bit12: Door 1 safety edge bit13: Door 2 safety edge	1856	-	★

Param.	Name	Range	Default	Unit	Property
F5-26	Y1 function selection	0: Reserved 1: RUN contactor output 2: Brake contactor output 3: Shorting door lock circuit contactor output 4: Fire emergency floor arrival signal feedback 5: Door machine 1 open 6: Door operator 1 close 7: Door machine 2 open 8: Door operator 2 close 9: Brake and RUN contactors healthy 10: Fault state 11: Running state output 12: Shorting PMSM stator contactor output 13: Emergency evacuation automatic switchover 14: System healthy 15: Emergency buzzer control 16: Brake pick voltage 17: Elevator running in up direction 18: Lighting/Fan output 19: Medical sterilization control output 20: Non-door zone stop 21: Electromagnetic lock control output 22: Non-service state indication 23: Emergency evacuation completed 25: Rope gripper reset 26: Braking transistor short circuit output 27: Alarm filtered output 28: Overspeed governor test output 29: Overspeed governor reset output 31: Shorting motor stator contactor output test completed 32: AGV status indicator output 33: Auxiliary brake contactor 1 output 34: Auxiliary brake contactor 2 output 39: Auxiliary synchronous motor self-locking output	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	-	★
F5-45	Y2A function selection		0	-	★
F5-46	Y7 function selection		0	-	★
F5-32	Communication state	Communication state monitoring of CANbus and Modbus	0	-	●

Param.	Name	Range	Default	Unit	Property
F5-33	Program control selection	bit3: Elevator fire emergency requirements in Hong Kong bit4: Arrival gong disabled at night function bit6: Door lock disconnected once during switchover from the inspection state to the normal state bit7: Fault code not displayed on the keypad bit8: Door open command canceled immediately when receiving the door open limit signal bit9: Torque output holding at stop in the case of abnormal brake feedback bit15: Elevator fire emergency in Hong Kong SAR, masking elevator lock at door open and elevator lock message prompt	0	-	★
F5-34	Terminal State Display	Monitoring of I/O terminals on the MCB (main control board)	0	-	●
F5-35	Terminal State Display	Monitoring of I/O terminals on CTB (car top board), CCB (car call board), and HCB (hall call board)	0	-	●
F5-36	Load cell input selection	0: Main control board digital input 1: Car top board digital input 2: Car top board analog input 3: Main control board analog input	1	-	★
F5-37	X25 function selection	0: Reserved 4: Safety circuit signal 5: Door lock circuit signal 1 (high-voltage input detection point, multiplexing allowed) 6: Door lock circuit signal 2 (high-voltage input detection point, multiplexing allowed) 7: Door lock 1 shorting inspection 8: Door lock 2 shorting inspection	4	-	★
F5-38	X26 function selection		7	-	★
F5-39	X27 function selection		5	-	★
F5-40	X28 function selection		8	-	★
Group F6: Basic Elevator Parameters					
F6-00	Top floor of the elevator	F6-01 to F6-48	9	-	★
F6-01	Bottom floor of the elevator	1 to F6-00	1	-	★
F6-02	Parking floor	F6-01 to F6-00	1	-	★
F6-03	Fire emergency floor	F6-01 to F6-00	1	-	★
F6-04	Elevator lock floor	F6-01 to F6-00	1	-	★
F6-05	Service floor 1	0 to 65535 (floors 1 to 16)	65535	-	★
F6-06	Service floor 2	0 to 65535 (floors 17 to 32)	65535	-	★
F6-07	Number of elevators in group control	1 to 8	1	-	★
F6-08	Elevator No.	1 to 8	1	-	★

Param.	Name	Range	Default	Unit	Property
F6-09	Program selection	bit0: Dispersed waiting bit2: Monitoring port parallel connection bit3: CAN2 parallel/group control bit4: Group control compatibility mode bit6: Clearing the floor number and direction display in advance bit8: Unidirectional hall call (single hall call button) bit9: Analog disconnection not detected bit10: Re-leveling E30 cancellation bit13: Disability calls in parallel/group control bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s)	8	-	★
F6-10	Leveling switch delay	10 to 50	14	ms	★
F6-11	Elevator function selection	bit1: Canceling returning to base floor for verification bit2: Canceling automatic ordering of hall call addresses bit5: Starting current output phase loss detection of synchronous motor bit6: Reversing MCB lighting output bit7: Door open in the non-door zone in the inspection state bit8: Doors open and close once when inspection state switches to normal state at first-time power-on bit10: Buzzer not tweeting upon re-leveling bit11: Customized super-short floor function bit12: Automatic fault reset after an hour bit13: E53 fault auto reset bit14: Floor display not reset by up slow-down signal when super-short floor function is enabled bit15: Floor display not reset by down slow-down signal when super-short floor function is enabled	8448	-	★
F6-12	VIP floor	0 to F6-00	0	-	★
F6-13	Security floor	0 to F6-00	0	-	★
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	☆

Param.	Name	Range	Default	Unit	Property
F6-18	Start time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-19	End time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-20	Service floor 1 of time-based floor service 1 (floors 1 to 16)	0 to 65535	65535	-	☆
F6-21	Service floor 2 of time-based floor service 1 (floors 17 to 32)	0 to 65535	65535	-	☆
F6-22	Start time of time-based floor service 2	00.00 to 23.59	0	HH.MM	☆
F6-23	End time of time-based floor service 2	00.00 to 23.59	0	HH.MM	☆
F6-24	Service floor 1 of time-based floor service 2 (floors 1 to 16)	0 to 65535	65535	-	☆
F6-25	Service floor 2 of time-based floor service 2 (floors 17 to 32)	0 to 65535	65535	-	☆
F6-26	Peak 1 start time for parallel/group control	00.00 to 23.59	0	HH.MM	☆
F6-27	Peak 1 end time for parallel/group control	00.00 to 23.59	0	HH.MM	☆
F6-28	Peak 1 floor for parallel/group control	F6-01 to F6-00	1	-	★
F6-29	Peak 2 start time for parallel/group control	00.00 to 23.59	0	HH.MM	☆
F6-30	Peak 2 end time for parallel/group control	00.00 to 23.59	0	HH.MM	☆
F6-31	Peak 2 floor for parallel/group control	F6-01 to F6-00	1	-	★
F6-35	Service floor 3 (floors 33 to 48)	0 to 65535 (floors 33 to 48)	65535	-	☆
F6-36	Service floor 1 of time-based floor service 3 (floors 33 to 48)	0 to 65535	65535	-	☆
F6-37	Service floor 2 of time-based floor service 3 (floors 33 to 48)	0 to 65535	65535	-	☆
F6-38	Elevator lock start time	00.00 to 23.59	0	HH.MM	☆
F6-39	Elevator lock end time	00.00 to 23.59	0	HH.MM	☆

Param.	Name	Range	Default	Unit	Property
F6-40	Program control selection 1	bit0: Accessibility function selection bit1: Software limit function bit2: JP16 input used as rear door selection (button) bit3: JP16 input used as rear door open signal bit4: Opening only one door of through-type door under manual control bit5: Timed elevator lock function bit6: Manually operated door function selection bit7: Fire service or elevator lock through hall call from any floor bit8: Duplicated command used as accessibility function and duplicated hall call as rear door function bit9: Disabling reverse floor number clear bit10: Displaying the next arriving number bit11: Responding to car calls first bit12: Car call auxiliary command terminal used for accessibility function bit13: Duplicated command used as accessibility function and rear door function (0: rear door function; 1: accessibility function) bit14: Car call command duplication bit15: JP20 input used for switchover to rear door (switch)	0	-	★
F6-41	Program control selection 2	bit0: Not stop at the slow-down switch for car top inspection bit2: Decelerating to stop due to slow-down 1 in inspection state bit3: Car top communication inspection bit4: Buzzer tweet during door open delay bit5: Steel rope slip compensation bit6: Door open delay cancellation bit7: Buzzer prompt for active button input bit8: Elevator lock at door open bit9: Display available at elevator lock bit10: Elevator lock in the attendant state bit11: Flashing at arrival (within the time set in F6-47) bit12: Door re-open during door open delay bit13: Door re-open upon valid car call of current floor bit14: Electricity meter count 8 function bit15: Electricity meter count 6 function	0	-	★

Param.	Name	Range	Default	Unit	Property
F6-42	Program control selection 3	bit0: COB hall call scheme selection bit1: Canceling door open/close command at delay after door open/close limit bit2: Door lock state not judged at door close output bit3: Door close output during running bit4: Returning to terminal floor for verification at first-time power-on bit5: Clearing calls immediately at elevator lock bit6: Electromagnetic lock NC output bit7: Canceling E50 detection bit8: Canceling door open/close limit detection bit9: Canceling fault subcode scrolling display bit10: Door open energy saving bit11: Independent switch exiting from parallel control bit12: UCMP door lock detection enabled bit13: Door close quickly upon light curtain detecting obstacles bit14: Fault E53-103/106 auto reset enabled	18432	-	★
F6-43	Attendant function selection	bit0: Calls canceled after entering the attendant state bit1: No response to hall calls bit2: Attendant/normal state switchover bit3: Door close at jog bit4: Automatic door close bit5: Buzzer tweeting at intervals in attendant state bit6: Continuous buzzer tweeting in attendant state bit7: Car call button blinking to prompt	128	-	★

Param.	Name	Range	Default	Unit	Property
F6-44	Fire emergency function selection	bit3: Arrival gong output in the inspection or fire emergency state bit4: Multiple car calls registered in the fire emergency state bit5: Retentive at power failure in the fire emergency state bit6: Door close by holding down the door close button bit8: Door close at car call registration bit9: Display floor number upon hall call in the fire emergency state bit10: JP22 used for forced running input in the firefighter state bit11: Exiting the firefighter state upon arrival at fire emergency floor bit12: Not clearing car calls at reverse door open in firefighter running state bit13: Display board showing fault after fire emergency floor arrival bit14: Door open by holding down the door open button bit15: Automatic door open at fire emergency floor	16456	-	★
F6-45	Emergency evacuation function selection	bit0: Orientation mode 0 bit1: Orientation mode 1 (00: automatic computation of the direction; 01: determined by the load direction; 10: direction of the nearest landing floor; 11: defined direction) bit2: Stopping at the main floor (landing otherwise at the nearest floor) bit4: Startup compensation (valid or not during emergency evacuation) bit5: Direction set for controller drive evacuation (bit5 = 1: Up, bit5 = 0: Down) bit8: Emergency evacuation running time protection bit10: Emergency buzzer output bit11: HCB prompt bit12: Speed setting for shorting motor stator mode switched over to controller drive bit13: Shorting stator braking mode switched over to controller drive bit14: Emergency evacuation exit mode (bit14 = 1: Door close limit; bit14 = 0: Door open limit) bit15: Shorting motor stator function	16384	-	★

Param.	Name	Range	Default	Unit	Property
F6-46	VIP function selection	bit0: VIP enabled by hall call (at VIP floor) bit1: VIP enabled by terminal bit8: Number of VIP car calls limited	0	-	★
F6-47	Blinking advance time	0.0 to 15.0	1.0	s	☆
F6-48	Emergency evacuation switching speed	0.010 to 0.630	0.010	m/s	★
F6-49	Emergency evacuation parking floor	0 to F6-00	0	-	★
F6-50	Floor offset in parallel control	0 to 40	0	-	★
F6-51	Quiescent current	0.00 to 655.00	0.00	A	★
F6-52	Program function selection	bit1: Communication type-SCB enabled bit2: CAN communication supported by AFE bit3: External shaft reset device bit4: Inspection speed limit at terminal floors bit6: Enabling CTB leveling signal input bit7: Door operator overtemperature detection bit8: Safety edge signal input selection on the CTB bit9: Light curtain fault handling bit12: Disabling automatic output of shorting door lock circuit relay upon floor arrival bit13: Modification of pulse multiplication of asynchronous motor bit15: Forced inspection following interrupted communication	66	-	★

Param.	Name	Range	Default	Unit	Property
F6-54	Program function selection 5	bit0: Door open allowed for forced door close bit1: Door close supported for fault occurrence bit3: No light curtain detection during door close in inspection mode bit4: Not exit elevator parking upon door lock disconnection bit5: Disable hall calls to enter VIP parallel mode and independently optimize response to hall calls bit6: Overspeed protection for shorting stator braking evacuation bit8: Car top maintenance switch reuse of attendant signal bit9: Enable separate brake control bit10: Car top emergency power supply supported bit11: Communication type power supply board supported bit12: Display inspection state when the safety circuit is open during emergency electrical operation (EEO) bit14: Use of direction change switch for alarm bell signal input	0	-	★
F6-55	Function parameter selection	bit0: Door operator use of MOD serial communication bit1: Door operator use of MOD communication check bit2: Door operator use of CAN serial communication bit3: Door operator communication use of contract number verification bit4: Light curtain use of MOD serial communication bit5: Light curtain use of CAN communication bit6: ARD contract No. binding bit9: Change the upper limit setting for factory-specific customized input and output points bit11: Enable communication-type encoder function bit12: Communication-type encoder factory code verification bit13: Enable communication-type encoder contract No. binding bit14: Enable communication-type encoder contract No. binding delay function	0	-	★

Param.	Name	Range	Default	Unit	Property
F6-61	Terminal floor verification function selection	bit0: Disable terminal floor check for abnormal slow-down signals bit1: Enable returning to terminal floor for verification at power-on bit2: Enable terminal floor verification once for inspection switchover to normal state bit3: Disable passenger release before reaching terminal floor for abnormal slow-down signals bit4: Enable wrong floor landing detection bit5: Enable terminal floor verification in slow-down zone bit6: Enable software-simulated terminal floor function bit7 to bit15: Reserved	0	-	☆
F6-62	Number of door zones covered by up slow-down switch	1 to 5	1	-	★
F6-63	Number of door zones covered by down slow-down switch	1 to 5	1	-	★
F6-64	Alarm filter disabled time	5 to 30	10	s	☆
F6-68	Function switch 1	bit1: Integrated shorting motor stator function selection enable bit3: Shorting motor stator self-test function enable	8	-	☆
F6-73	Function switch 2	bit2: Automatic safety gear test enable bit3: Gradual current cancellation at stop (Asynchronous motor) enable bit4: Safety gear test; long press the button to enable the overspeed governor output (DO 38)	0	-	☆
F6-74	Destination floor for linkage test of car safety gear	F6-01 to F6-00	1	-	☆
F6-75	Target floor for linkage test of counterweight safety gear	F6-01 to F6-00	9	-	☆
F6-78	Maximum brake release time during safety gear interlock test	0 to 30	0	s	★
F6-79	Parking delay during safety gear interlock test	0 to 500	0	ms	☆

Param.	Name	Range	Default	Unit	Property
F6-80	Front door car call button not controlled (Floors 1 to 16)	bit0: Floor 1 front door car call button not controlled bit1: Floor 2 front door car call button not controlled bit2: Floor 3 front door car call button not controlled bit3: Floor 4 front door car call button not controlled bit4: Floor 5 front door car call button not controlled bit5: Floor 6 front door car call button not controlled bit6: Floor 7 front door car call button not controlled bit7: Floor 8 front door car call button not controlled bit8: Floor 9 front door car call button not controlled bit9: Floor 10 front door car call button not controlled bit10: Floor 11 front door car call button not controlled bit11: Floor 12 front door car call button not controlled bit12: Floor 13 front door car call button not controlled bit13: Floor 14 front door car call button not controlled bit14: Floor 15 front door car call button not controlled bit15: Floor 16 front door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-81	Front door car call button not controlled (Floors 17 to 32)	bit0: Floor 17 front door car call button not controlled bit1: Floor 18 front door car call button not controlled bit2: Floor 19 front door car call button not controlled bit3: Floor 20 front door car call button not controlled bit4: Floor 21 front door car call button not controlled bit5: Floor 22 front door car call button not controlled bit6: Floor 23 front door car call button not controlled bit7: Floor 24 front door car call button not controlled bit8: Floor 25 front door car call button not controlled bit9: Floor 26 front door car call button not controlled bit10: Floor 27 front door car call button not controlled bit11: Floor 28 front door car call button not controlled bit12: Floor 29 front door car call button not controlled bit13: Floor 30 front door car call button not controlled bit14: Floor 31 front door car call button not controlled bit15: Floor 32 front door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-82	Front door car call button not controlled (Floors 33 to 48)	bit0: Floor 33 front door car call button not controlled bit1: Floor 34 front door car call button not controlled bit2: Floor 35 front door car call button not controlled bit3: Floor 36 front door car call button not controlled bit4: Floor 37 front door car call button not controlled bit5: Floor 38 front door car call button not controlled bit6: Floor 39 front door car call button not controlled bit7: Floor 40 front door car call button not controlled bit8: Floor 41 front door car call button not controlled bit9: Floor 42 front door car call button not controlled bit10: Floor 43 front door car call button not controlled bit11: Floor 44 front door car call button not controlled bit12: Floor 45 front door car call button not controlled bit13: Floor 46 front door car call button not controlled bit14: Floor 47 front door car call button not controlled bit15: Floor 48 front door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-83	Front door car call button not controlled (Floors 49 to 64)	bit0: Floor 49 front door car call button not controlled bit1: Floor 50 front door car call button not controlled bit2: Floor 51 front door car call button not controlled bit3: Floor 52 front door car call button not controlled bit4: Floor 53 front door car call button not controlled bit5: Floor 54 front door car call button not controlled bit6: Floor 55 front door car call button not controlled bit7: Floor 56 front door car call button not controlled bit8: Floor 57 front door car call button not controlled bit9: Floor 58 front door car call button not controlled bit10: Floor 59 front door car call button not controlled bit11: Floor 60 front door car call button not controlled bit12: Floor 61 front door car call button not controlled bit13: Floor 62 front door car call button not controlled bit14: Floor 63 front door car call button not controlled bit15: Floor 64 front door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-84	Rear door car call button not controlled (Floors 1 to 16)	bit0: Floor 1 rear door car call button not controlled bit1: Floor 2 rear door car call button not controlled bit2: Floor 3 rear door car call button not controlled bit3: Floor 4 rear door car call button not controlled bit4: Floor 5 rear door car call button not controlled bit5: Floor 6 rear door car call button not controlled bit6: Floor 7 rear door car call button not controlled bit7: Floor 8 rear door car call button not controlled bit8: Floor 9 rear door car call button not controlled bit9: Floor 10 rear door car call button not controlled bit10: Floor 11 rear door car call button not controlled bit11: Floor 12 rear door car call button not controlled bit12: Floor 13 rear door car call button not controlled bit13: Floor 14 rear door car call button not controlled bit14: Floor 15 rear door car call button not controlled bit15: Floor 16 rear door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-85	Rear door car call button not controlled (Floors 17 to 32)	bit0: Floor 17 rear door car call button not controlled bit1: Floor 18 rear door car call button not controlled bit2: Floor 19 rear door car call button not controlled bit3: Floor 20 rear door car call button not controlled bit4: Floor 21 rear door car call button not controlled bit5: Floor 22 rear door car call button not controlled bit6: Floor 23 rear door car call button not controlled bit7: Floor 24 rear door car call button not controlled bit8: Floor 25 rear door car call button not controlled bit9: Floor 26 rear door car call button not controlled bit10: Floor 27 rear door car call button not controlled bit11: Floor 28 rear door car call button not controlled bit12: Floor 29 rear door car call button not controlled bit13: Floor 30 rear door car call button not controlled bit14: Floor 31 rear door car call button not controlled bit15: Floor 32 rear door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-86	Rear door car call button not controlled (Floors 33 to 48)	bit0: Floor 33 rear door car call button not controlled bit1: Floor 34 rear door car call button not controlled bit2: Floor 35 rear door car call button not controlled bit3: Floor 36 rear door car call button not controlled bit4: Floor 37 rear door car call button not controlled bit5: Floor 38 rear door car call button not controlled bit6: Floor 39 rear door car call button not controlled bit7: Floor 40 rear door car call button not controlled bit8: Floor 41 rear door car call button not controlled bit9: Floor 42 rear door car call button not controlled bit10: Floor 43 rear door car call button not controlled bit11: Floor 44 rear door car call button not controlled bit12: Floor 45 rear door car call button not controlled bit13: Floor 46 rear door car call button not controlled bit14: Floor 47 rear door car call button not controlled bit15: Floor 48 rear door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-87	Rear door car call button not controlled (Floors 49 to 64)	bit0: Floor 49 rear door car call button not controlled bit1: Floor 50 rear door car call button not controlled bit2: Floor 51 rear door car call button not controlled bit3: Floor 52 rear door car call button not controlled bit4: Floor 53 rear door car call button not controlled bit5: Floor 54 rear door car call button not controlled bit6: Floor 55 rear door car call button not controlled bit7: Floor 56 rear door car call button not controlled bit8: Floor 57 rear door car call button not controlled bit9: Floor 58 rear door car call button not controlled bit10: Floor 59 rear door car call button not controlled bit11: Floor 60 rear door car call button not controlled bit12: Floor 61 rear door car call button not controlled bit13: Floor 62 rear door car call button not controlled bit14: Floor 63 rear door car call button not controlled bit15: Floor 64 rear door car call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-88	Front door hall call button not controlled (Floors 1 to 16)	bit0: Floor 1 front door hall call button not controlled bit1: Floor 2 front door hall call button not controlled bit2: Floor 3 front door hall call button not controlled bit3: Floor 4 front door hall call button not controlled bit4: Floor 5 front door car call button not controlled bit5: Floor 6 front door hall call button not controlled bit6: Floor 7 front door hall call button not controlled bit7: Floor 8 front door hall call button not controlled bit8: Floor 9 front door hall call button not controlled bit9: Floor 10 front door hall call button not controlled bit10: Floor 11 front door hall call button not controlled bit11: Floor 12 front door hall call button not controlled bit12: Floor 13 front door hall call button not controlled bit13: Floor 14 front door hall call button not controlled bit14: Floor 15 front door hall call button not controlled bit15: Floor 16 front door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-89	Front door hall call button not controlled (Floors 17 to 32)	bit0: Floor 17 front door hall call button not controlled bit1: Floor 18 front door hall call button not controlled bit2: Floor 19 front door hall call button not controlled bit3: Floor 20 front door hall call button not controlled bit4: Floor 21 front door hall call button not controlled bit5: Floor 22 front door hall call button not controlled bit6: Floor 23 front door hall call button not controlled bit7: Floor 24 front door hall call button not controlled bit8: Floor 25 front door hall call button not controlled bit9: Floor 26 front door hall call button not controlled bit10: Floor 27 front door hall call button not controlled bit11: Floor 28 front door hall call button not controlled bit12: Floor 29 front door hall call button not controlled bit13: Floor 30 front door hall call button not controlled bit14: Floor 31 front door hall call button not controlled bit15: Floor 32 front door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-90	Front door hall call button not controlled (Floors 33 to 48)	bit0: Floor 33 front door hall call button not controlled bit1: Floor 34 front door hall call button not controlled bit2: Floor 35 front door hall call button not controlled bit3: Floor 36 front door hall call button not controlled bit4: Floor 37 front door hall call button not controlled bit5: Floor 38 front door hall call button not controlled bit6: Floor 39 front door hall call button not controlled bit7: Floor 40 front door hall call button not controlled bit8: Floor 41 front door hall call button not controlled bit9: Floor 42 front door hall call button not controlled bit10: Floor 43 front door hall call button not controlled bit11: Floor 44 front door hall call button not controlled bit12: Floor 45 front door hall call button not controlled bit13: Floor 46 front door hall call button not controlled bit14: Floor 47 front door hall call button not controlled bit15: Floor 48 front door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-91	Front door hall call button not controlled (Floors 49 to 64)	bit0: Floor 49 front door hall call button not controlled bit1: Floor 50 front door hall call button not controlled bit2: Floor 51 front door hall call button not controlled bit3: Floor 52 front door hall call button not controlled bit4: Floor 53 front door hall call button not controlled bit5: Floor 54 front door hall call button not controlled bit6: Floor 55 front door hall call button not controlled bit7: Floor 56 front door hall call button not controlled bit8: Floor 57 front door hall call button not controlled bit9: Floor 58 front door hall call button not controlled bit10: Floor 59 front door hall call button not controlled bit11: Floor 60 front door hall call button not controlled bit12: Floor 61 front door hall call button not controlled bit13: Floor 62 front door hall call button not controlled bit14: Floor 63 front door hall call button not controlled bit15: Floor 64 front door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-92	Rear door hall call button not controlled (Floors 1 to 16)	bit0: Floor 1 rear door hall call button not controlled bit1: Floor 2 rear door hall call button not controlled bit2: Floor 3 rear door hall call button not controlled bit3: Floor 4 rear door hall call button not controlled bit4: Floor 5 rear door car call button not controlled bit5: Floor 6 rear door hall call button not controlled bit6: Floor 7 rear door hall call button not controlled bit7: Floor 8 rear door hall call button not controlled bit8: Floor 9 rear door hall call button not controlled bit9: Floor 10 rear door hall call button not controlled bit10: Floor 11 rear door hall call button not controlled bit11: Floor 12 rear door hall call button not controlled bit12: Floor 13 rear door hall call button not controlled bit13: Floor 14 rear door hall call button not controlled bit14: Floor 15 rear door hall call button not controlled bit15: Floor 16 rear door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-93	Rear door hall call button not controlled (Floors 17 to 32)	bit0: Floor 17 rear door hall call button not controlled bit1: Floor 18 rear door hall call button not controlled bit2: Floor 19 rear door hall call button not controlled bit3: Floor 20 rear door hall call button not controlled bit4: Floor 21 rear door hall call button not controlled bit5: Floor 22 rear door hall call button not controlled bit6: Floor 23 rear door hall call button not controlled bit7: Floor 24 rear door hall call button not controlled bit8: Floor 25 rear door hall call button not controlled bit9: Floor 26 rear door hall call button not controlled bit10: Floor 27 rear door hall call button not controlled bit11: Floor 28 rear door hall call button not controlled bit12: Floor 29 rear door hall call button not controlled bit13: Floor 30 rear door hall call button not controlled bit14: Floor 31 rear door hall call button not controlled bit15: Floor 32 rear door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-94	Rear door hall call button not controlled (Floors 33 to 48)	bit0: Floor 33 rear door hall call button not controlled bit1: Floor 34 rear door hall call button not controlled bit2: Floor 35 rear door hall call button not controlled bit3: Floor 36 rear door hall call button not controlled bit4: Floor 37 rear door hall call button not controlled bit5: Floor 38 rear door hall call button not controlled bit6: Floor 39 rear door hall call button not controlled bit7: Floor 40 rear door hall call button not controlled bit8: Floor 41 rear door hall call button not controlled bit9: Floor 42 rear door hall call button not controlled bit10: Floor 43 rear door hall call button not controlled bit11: Floor 44 rear door hall call button not controlled bit12: Floor 45 rear door hall call button not controlled bit13: Floor 46 rear door hall call button not controlled bit14: Floor 47 rear door hall call button not controlled bit15: Floor 48 rear door hall call button not controlled	0	-	☆

Param.	Name	Range	Default	Unit	Property
F6-95	Rear door hall call button not controlled (Floors 49 to 64)	bit0: Floor 49 rear door hall call button not controlled bit1: Floor 50 rear door hall call button not controlled bit2: Floor 51 rear door hall call button not controlled bit3: Floor 52 rear door hall call button not controlled bit4: Floor 53 rear door hall call button not controlled bit5: Floor 54 rear door hall call button not controlled bit6: Floor 55 rear door hall call button not controlled bit7: Floor 56 rear door hall call button not controlled bit8: Floor 57 rear door hall call button not controlled bit9: Floor 58 rear door hall call button not controlled bit10: Floor 59 rear door hall call button not controlled bit11: Floor 60 rear door hall call button not controlled bit12: Floor 61 rear door hall call button not controlled bit13: Floor 62 rear door hall call button not controlled bit14: Floor 63 rear door hall call button not controlled bit15: Floor 64 rear door hall call button not controlled	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	-	☆
F7-03	Random running times	0 to 60000	0	-	☆
F7-04	Hall call	0: Hall call enabled 1: Hall call disabled	0	-	☆
F7-05	Door open	0: Door open allowed 1: Door open forbidden	0	-	☆
F7-06	Overload enable	0: Overload disabled 1: Overload allowed	0	-	☆
F7-07	Limit function	0: Limit switch enabled 1: Limit switch disabled	0	-	☆
F7-08	Random running interval	0 to 1000	0	s	☆

Param.	Name	Range	Default	Unit	Property
F7-09	Braking force detection result	0: Meaningless 1: Pass 2: Fail	0	-	●
F7-10	Countdown for braking force detection period	0 to 21600	1440	min	★
F7-13	Balancing factor	0 to 99.99	0	%	★
F7-14	Reference value of brake torque upper limit (dual-arm)	0 to 999	0	%	●
F7-15	Reference value of brake torque upper limit (single-arm)	0 to 999	0	%	●
F7-17	Torque setting (single-arm)	0 to 150	30	%	★
F7-25	Car top maintenance distance	0.000 to 5.000	2.000	m	★
F7-26	Start time of shorting motor stator braking test	00.00 to 23.59	00.00	-	☆
F7-27	End time of shorting motor stator braking test	00.00 to 23.59	02.00	-	☆
F7-28	Braking force detection start time	00.00 to 23.59	00.00	-	☆
F7-29	Braking force detection end time	00.00 to 23.59	00.00	-	☆
F7-30	Braking force detection time setting	0 to 21600	0	min	☆
F7-32	Ascending car overspeed protection (ACOP) speed percentage	100 to 150	130	%	★
F7-33	Parking holding time	0 to 120	15	s	★
F7-34	Parking slip distance detection setting	1 to 20	5	min	★
F7-35	Parking command delay time	0 to 100	30	ms	★
F7-37	Remaining days for auxiliary shorting motor stator braking test	0 to 65535	7	day	●
F7-38	Automatic trigger cycle for auxiliary shorting motor stator braking test	1 to 15	7	day	★
Group F8: Enhanced Function Parameters					
F8-00	Car load ratio during load cell auto-tuning	0 to 100	0	%	★

Param.	Name	Range	Default	Unit	Property
F8-01	Pre-torque selection	0: Disabled 1: Load cell pre-torque compensation enabled 2: Automatic pre-torque compensation enabled 3: Load cell pre-torque and automatic compensation both in effect	2	-	★
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	No-load measured by load cell	0 to 255	0	-	★
F8-07	Full-load measured by load cell	0 to 255	100	-	★
F8-08	Anti-nuisance function	bit0: Nuisance judged by load cell bit1: Nuisance judged by light curtain bit2: Nuisance judged by light-load signal	0	-	☆
F8-09	Emergency evacuation speed at power failure	0.020 to 0.300	0.150	m/s	★
F8-10	Emergency evacuation operation mode at power failure	0: Motor not running 1: UPS 2: 48 V battery power supply	1	-	★
F8-11	Holding time of zero-speed torque current upon brake close	0.200 to 1.500	0.6	s	★
F8-12	Fire emergency floor 2	0 to F6-00	0	-	★
F8-13	Steel rope slip compensation coefficient	0 to 100	50	-	★
F8-14	Hall call communication setting	bit0: Hall communication baud rate bit1: Baud rate setting bit4: Hall call energy-saving control bit5: VEGA communication protocol (for hall call) bit6: VEGA communication protocol (for car display) bit7: Expansion board MOD port function selection (0 for hall call, 1 for transparent transmission of host computer) bit9: Faint light control of HCB buttons bit10: Enable faint light function of car call buttons bit11: Car time synchronization protocol; distributes RTC time to the car display board	1	-	☆

Param.	Name	Range	Default	Unit	Property
F8-15	CAN communication setting	bit0: No delay of car call button indicator bit1: Disable IC card car call limit bit2: Car call cancellation by pressing button once bit3: IC card handshaking bit4: Enable touchscreen protocol bit5: Enable the communication command board bit6: Car call canceled by holding down the button bit8: Car baud rate selection bit9: IC card function of idle elevator returning to main floor bit10: Door open/close button not controlled by the IC card bit11: CCB and COB information viewing bit12: Communication-type SCB door zone selection bit13: Enable visitor access linkage cancellation with equipment offline bit14: Enable visitor access hall call linkage	0	-	☆
F8-16	Start address of hall call auxiliary command	0 to 40	0	-	☆
F8-17	Hall call address check	0: No check performed 1: Check performed	0	-	☆
F8-18	Communication initialization	0 to 1	0	-	★
F8-20	Display board function selection	bit0: Inspection display selection bit1: Fault display selection bit2: Elevator lock display selection bit3: Fire emergency display selection bit4: Firefighter display switch bit5: Firefighter display selection bit6: Emergency running display switch bit7: Emergency running display selection bit8: Status language display selection bit9: Scrolling floor display selection bit10: Arrow style selection 1 bit11: Arrow style selection 2	0	-	☆

Param.	Name	Range	Default	Unit	Property
F8-21	Function selection F8-21	bit0: Enable call re-registration for overload bit1: Enable door open forbidden for hall call of the floor with full load bit2: Enable stop after current cancellation of asynchronous motor bit3: Enable optimization of stop conditions bit4: Enable floor registration forbidden for reverse direction bit5: Enable the limit position fault judgment in shorting stator braking mode bit6: Disable elevator stop optimization upon blocking the light curtain bit7: Prohibit removal of the last call in double-press cancellation bit8: Disable double-press cancellation without door open bit9: Enable auto door open in special conditions bit10: Enable door close delay for hall call input bit11: Disable simulated hall calls at intervals bit12: Disable UPS and leveling compensation optimization bit13: Disable random service floor judgment bit14: Disable communication optimization for re-leveling error bit15: Disable re-leveling times protection	0	-	☆
F8-29	Communication-type encoder contract No. binding delay days	0 to 15	0	-	★
F8-33	Function selection F8-33	bit1: Enable safety circuit disconnection in EEO state bit2: Enable pit reset function by the MCB input terminal bit3: Enable pit reset by the pit inspection point bit4: Enable pit reset by the hall call input terminal bit5: Enable pit reset function by the hall call up button bit6: Enable inspection up/down limit function by the MCB input terminal bit6: Enable inspection up/down limit function by the MCB input terminal bit14: The shorting motor stator pulse test and original shorting motor stator braking mode can be selected	11	-	☆

Param.	Name	Range	Default	Unit	Property
F8-34	Function selection F8-34	bit0: Pit X1 inspection signal bit1: Pit X2 inspection up signal bit2: Pit X3 inspection down signal bit3: Pit X4 triangle key signal of front landing door (NC by default) bit4: Pit X5 triangle key signal of rear landing door (NC by default) bit5: Pit X6 record of pit inspection reset signal (NO by default) bit6: Pit input point not reset for the triangle key bit7: No reset operations after the elevator runs during pit inspection bit8: Conditions met for pit inspection reset bit10: Pit access signal on the control cabinet bit11: Pit reset signal on the control cabinet	0	-	●
F8-35	High bits of the RTC register	0 to 65535	0	-	☆
F8-36	Low bits of the RTC register	0 to 65535	0	-	☆
F8-37	High bits of agent No.	0 to 65535	0	-	☆
F8-38	Low bits of agent No.	0 to 65535	0	-	☆
F8-42	Function selection F8-42	bit0: EEO up/down button stuck protection disabled bit1: Car top X15/X16 multiplexing function disabled	0	-	☆
Group F9: Time Parameters					
F9-00	Maximum idle time before returning to main floor	0 to 240	10	min	☆
F9-01	Car energy-saving time	0 to 240	2	min	☆
F9-02	Running time protection	0 to 45	45	s	★
F9-03	Clock: year	2009 to 2100	2011	YYYY	☆
F9-04	Clock: month	1 to 12	1	MM	☆
F9-05	Clock: day	1 to 31	1	DD	☆
F9-06	Clock: hour	0 to 23	0	HH	☆
F9-07	Clock: minute	0 to 59	0	MM	☆
F9-09	Cumulative operation time	0 to 65535	0	h	●
F9-11	High bits of running times	0 to 9999	0	-	●
F9-12	Low bits of running times	0 to 9999	0	-	●
F9-13	Maintenance notification period	0 to 99	0	day	★
F9-15	Running days for maintenance viewing	0 to 99	0	day	●
Group FA: Keypad Setting Parameters					

Param.	Name	Range	Default	Unit	Property
FA-00	Keypad display selection	0: Reverse display of physical floors 1: Normal display of physical floors 2: Reverse display of hall call floors 3: Normal display of hall call floors	3	-	☆
FA-01	Parameter display in running state	0 to 65535	65535	-	☆
FA-02	Parameter display in the stop state	0 to 65535	65535	-	☆
FA-03	Current encoder angle	0.0 to 359.9	0.0	Degree (°)	●
FA-05	MCB board software	0 to 655.35	0.00	-	●
FA-06	Driver board software version	0 to 655.35	0.00	-	●
FA-07	Heatsink temperature	0 to 65535	0	℃	●
FA-08	Temporary version of the platform	0 to 65535	0	-	●
FA-09	Drive module software version	0 to 655.35	0.00	-	●
FA-10	Auxiliary DSP software version	0 to 65535	0	-	●
FA-11	Pre-torque current	0.0 to 999.9	0.0	%	●
FA-12	Logic information	0 to 65535	0	-	●
FA-13	Curve information	0 to 65535	0	-	●
FA-14	Speed reference	0.000 to 4.000	0.000	m/s	●
FA-15	Feedback speed	0.000 to 4.000	0.000	m/s	●
FA-16	Bus voltage	0 to 999.9	0.0	V	●
FA-17	Current position	0.0 to 300.0	0.0	m	●
FA-18	Output current	0 to 999.9	0.0	A	●
FA-19	Output frequency	0.00 to 99.99	0.00	Hz	●
FA-20	Torque current	0.0 to 999.9	0.0	A	●
FA-21	Output voltage	0.0 to 999.9	0.0	V	●
FA-22	Output torque	0 to 200	0	%	●
FA-23	Output power	0.00 to 99.99	0.00	kW	●
FA-24	Communication interference	0 to 65535	0	-	●
FA-25	Eliminate encoder 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	-	●

Param.	Name	Range	Default	Unit	Property
FA-33	Car input state	0 to 65535	0	-	●
FA-34	Car output state	0 to 65535	0	-	●
FA-35	Hall call state	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 interval	0 to 200	0	s	●
FA-39	Position lock rollback distance	0 to 9999	0	-	●
FA-44	Temporary version of MCB software	0 to 655.35	0.00	-	●
FA-45	Manufacturer version of MCB software	0 to 655.35	0.00	-	●
FA-46	HCB communication state 1	0 to 65535 (floors 1 to 16)	0	-	●
FA-47	HCB communication state 2	0 to 65535 (floors 17 to 32)	0	-	●
FA-48	HCB communication state 3	0 to 65535 (floors 33 to 48)	0	-	●
FA-50	Communication state 1 of HCB connected to expansion board	0 to 65535 (floors 1 to 16)	0	-	●
FA-51	Communication state 2 of HCB connected to expansion board	0 to 65535 (floors 17 to 32)	0	-	●
FA-52	Communication state 3 of HCB connected to expansion board	0 to 65535 (floors 33 to 48)	0	-	●
FA-54	Input state 6	0 to 65535	0	-	●
FA-55	Input state 7	0 to 65535	0	-	●
FA-56	Input state 3	bit0: AGV indication output bit1: Left brake output bit2: Right brake output bit3: Quick shorting motor stator output bit4: Auxiliary brake contactor 3 output bit7: Auxiliary shorting motor stator contactor output bit8: Overspeed protection in shorting stator braking mode	0	-	●
FA-57	Input state 4	0 to 65535	0	-	●

Param.	Name	Range	Default	Unit	Property
FA-58	Version display selection	0: Machine-room-less monitoring board version 1: Machine room expansion board version 2: Car expansion board version 3: ARD version 4: AFE master version 5: AFE slave version 6: Villa elevator ARD version 7: SCB version 8: Communication-mode SBC version 9: Communication-mode SBC2 version 10: Door operator 1 version 11: Door operator 2 version 12: Power supply module version 13: Pit inspection board version 110: Front door COB1 version 111: Front door COB2 version 112: Front door CCB1 version 113: Front door CCB2 version 120: Rear door COB1 version 121: Rear door COB2 version and so on	0	-	☆
FA-59	Software main version	0 to 655.35	0	-	●
FA-60	Temporary software version	0 to 655.35	0	-	●
FA-61	Manufacturer software version	0 to 655.35	0	-	●
FA-62	X input terminal status of the expanded CTB	bit1: Alarm button input bit2: Door operator overtemperature 2 bit3: Light curtain 1 fault bit4: Light curtain 2 fault	0	-	●
FA-63	Inspection state monitoring	0 to 65535 bit0: CTB forced inspection signal bit1: Pit forced inspection signal bit2: Forced door lock bypass bit3: Shaft auto-tuning not performed bit4: Reserved bit13: Forced inspection for braking force detection bit14: Inspection running allowed during emergency evacuation	0	-	●
FA-64	Temporary car top board version	0 to 655.35	0	-	●
FA-65	Manufacturer car top board version	0 to 655.35	0	-	●
FA-66	Function specification version	0 to 655.35	0	-	●

Param.	Name	Range	Default	Unit	Property
Group Fb: Door Function Parameters					
Fb-00	Quantity of door operator(s)	1: Single entrance car 2: Through-type door	1	-	★
Fb-01	CTB software version	0.00 to 655.35	0	-	●
Fb-02	Door operator 1 service floor 1 (floors 1 to 16)	0 to 65535	65535	-	☆
Fb-03	Door operator 1 service floor 2 (floors 17 to 32)	0 to 65535	65535	-	☆
Fb-04	Door operator 2 service floor 1 (floors 1 to 16)	0 to 65535	65535	-	☆
Fb-05	Door operator 2 service floor 2 (floors 17 to 32)	0 to 65535	65535	-	☆
Fb-06	Door open protection time	5 to 99	10	s	☆
Fb-07	Arrival gong output delay	0.00 to 10.00	0.00	s	☆
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 main floor 1: Waiting with door open at main floor 2: Waiting with door open at each floor	0	-	☆
Fb-11	Door open holding time for hall call	1 to 1000	5	s	☆
Fb-12	Door open holding time for car call	1 to 1000	3	s	☆
Fb-13	Door open holding time at main floor	1 to 1000	10	s	☆
Fb-14	Duration of door open holding delay	10 to 1000	30	s	☆
Fb-15	special door open holding time	10 to 1000	30	s	☆
Fb-16	Manual door open holding time	1 to 60	5	s	☆
Fb-17	Waiting time for forced door close	5 to 180	120	s	☆
Fb-18	Door operator 1 service floor 3 (floors 33 to 48)	0 to 65535	65535	-	☆
Fb-19	Door operator 2 service floor 3 (floors 33 to 48)	0 to 65535	65535	-	☆
Fb-20	Manually operated door lock waiting time	0 to 60	0	-	☆
Fb-21	Door open holding time after rescue completion	10 to 20	10	-	☆
Fb-23	Major version of the platform	0 to 655.35	0	-	●
Fb-24	UCMP software version	0 to 65535	1	-	●

Param.	Name	Range	Default	Unit	Property
Fb-27	Door open duration at fault occurrence	0 to 60000	60	s	☆
Fb-28	Door open/close protection time at fault occurrence	0 to 60000	60	s	☆
Fb-29	Rescue exit time after evacuation and door close limit	3 to 999	15	s	☆
Fb-30	Power-on duration for UPS evacuation	0 to 600	10	s	☆
Fb-31	Automatic door open time under special conditions	0 to 600	20	s	☆
Fb-32	Protection time for forced door close	0 to 600	20	s	☆
Fb-33	Warning time for door close	0 to 1000	0	s	☆
Fb-34	Door open delay trigger time	0 to 10	2	s	☆
Fb-35	VIP exit delay	0.00 to 600.00	30.00	s	☆
Fb-39	NO/NC selection of CTB input DI	0 to 65535	30	-	☆
Fb-40	CTB X15 signal selection	0 to 121	100	-	★
Fb-41	CTB X16 signal selection	0 to 121	0	-	★
Fb-43	High bits of front door open times	0 to 9999	0	-	☆
Fb-44	Low bits of front door open times	0 to 9999	0	-	☆
Fb-45	High bits of rear door open times	0 to 9999	0	-	☆
Fb-46	Low bits of rear door open times	0 to 9999	0	-	☆
Fb-47	High bits of accumulative running distance	0 to 65535	0	-	☆
Fb-48	Low bits of accumulative running distance	0 to 65535	0	-	☆
Fb-49	Accumulative running time: Seconds	0 to 3599	0	-	☆
Group FC: Protection Function Parameters					
FC-00	Program control selection	bit0: Detection of short circuit to ground at power-on bit1: Disabling overcurrent detection at inspection startup bit2: Decelerating to stop at valid light curtain bit9: Mode without door open/close limit signal	0	-	★

Param.	Name	Range	Default	Unit	Property
FC-01	Function selection	bit0: Overload protection bit1: Canceling output phase loss protection bit2: Overmodulation function selection bit4: Light curtain judgment upon door close limit bit5: Canceling SPI communication detection bit14: Canceling input phase loss protection	65	-	★
FC-02	Overload protection coefficient	0.50 to 10.00	1	-	★
FC-03	Overload pre-warning coefficient	50 to 100	80	%	★
FC-04	Through-type door control selection	0: Simultaneous control for door open/close 1: Simultaneous control for hall calls and independent control for car calls 2: Independent control for door open/close for hall calls, and manual control for car calls 3: Independent control for hall calls and car calls	0	-	★
FC-11	11th fault	0 to 9999	0	-	●
FC-12	11th fault subcode	0 to 65535	0	-	●
FC-13	Month and day upon 11th fault	0 to 12.31	0	MM.DD	●
FC-14	Hour and minute upon 11th fault	0 to 23.59	0	HH.MM	●
FC-15	12th fault	0 to 9999	0	-	●
FC-16	12th fault subcode	0 to 65535	0	-	●
FC-17	Month and day upon 12th fault	0 to 12.31	0	MM.DD	●
FC-18	Hour and minute upon 12th fault	0 to 23.59	0	HH.MM	●
FC-19	13th fault	0 to 9999	0	-	●
FC-20	13th fault subcode	0 to 65535	0	-	●
FC-21	Month and day upon 13th fault	0 to 12.31	0	MM.DD	●
FC-22	Hour and minute upon 13th fault	0 to 23.59	0	HH.MM	●
FC-23	14th fault	0 to 9999	0	-	●
FC-24	14th fault subcode	0 to 65535	0	-	●
FC-25	Month and day upon 14th fault	0 to 12.31	0	MM.DD	●
FC-26	Hour and minute upon 14th fault	0 to 23.59	0	HH.MM	●
FC-27	15th fault	0 to 9999	0	-	●
FC-28	15th fault subcode	0 to 65535	0	-	●
FC-29	Month and day upon 15th fault	0 to 12.31	0	MM.DD	●

Param.	Name	Range	Default	Unit	Property
FC-30	Hour and minute upon 15th fault	0 to 23.59	0	HH.MM	●
FC-31	16th fault	0 to 9999	0	-	●
FC-32	16th fault subcode	0 to 65535	0	-	●
FC-33	Month and day upon 16th fault	0 to 12.31	0	MM.DD	●
FC-34	Hour and minute upon 16th fault	0 to 23.59	0	HH.MM	●
…					
FC-207	60th fault	0 to 9999	0	-	●
FC-208	60th fault subcode	0 to 65535	0	-	●
FC-209	Month and day upon the 60th fault	0 to 12.31	0	MM.DD	●
FC-210	Hour and minute upon the 60th fault	0 to 23.59	0	HH.MM	●
Group FD: Communication parameters					
FD-00	Baud rate setting	0: 9600 1: 38400	1	bps	●
FD-02	Local address	0 to 127 (0: broadcast address)	1	-	★
FD-03	Response delay	0 to 20	0	ms	★
FD-07	HCB-JP1 input selection	NO (0)/NC (0): Reserved	1	-	★
FD-08	HCB-JP2 input	NO (1)/NC (33): Elevator lock NO (2)/NC (34): Fire emergency NO (3)/NC (35): Current floor forbidden NO (4)/NC (36): VIP signal NO (5)/NC (37): Security signal NO (6)/NC (38): Door close button NO (7)/NC (39): Fire emergency floor 2 NO (8)/NC (40): Delayed door close signal	2	-	★
FD-09	HCB-JP1 output selection	0: Reserved	1	-	★
FD-10	HCB-JP2 output	2: Down arrival indicator 1: Up arrival indicator 3: Fault 4: Non-door zone stop 5: Non-service state 6: Door close button indicator 7: Interface output 9: Door close delay signal output	2	-	★

Param.	Name	Range	Default	Unit	Property
FD-11	Expansion board 1: X1 input	NO (0)/NC (0): Reserved NO (1)/NC (33): Fire emergency NO (2)/NC (34): Overload NO (3)/NC (35): Full load NO (4)/NC (36): Firefighter NO (5)/NC (37): Door 1 light curtain NO (6)/NC (38): Door 2 light curtain NO (7)/NC (39): Brake travel switch 1 feedback NO (8)/NC (40): Emergency evacuation at power failure NO (9)/NC (41): Elevator lock NO (10)/NC (42): Safety circuit NO (11)/NC (43): Shorting motor stator contactor feedback NO (12)/NC (44): Door lock circuit NO (13)/NC (45): Door 1 safety edge NO (14)/NC (46): Door 2 safety edge NO (15)/NC (47): Motor overtemperature NO (16)/NC (48): Earthquake NO (17)/NC (49): Rear door forbidden NO (18)/NC (50): Light load NO (19)/NC (51): Half load NO (20)/NC (52): Fire emergency floor switchover NO (21)/NC (53): Dummy floor NO (22)/NC (54): Door 1 open NO (23)/NC (55): Door 2 open NO (24)/NC (56): Brake travel switch 2 feedback NO (25)/NC (57): External fault NO (26)/NC (58): Terminal floor signal NO (27)/NC (59): Door 1/2 selection NO (28), NC (60): Single/double door selection	0	-	★
FD-12	Expansion board 1: X2 input		0	-	★
FD-13	Expansion board 1: X3 input		0	-	★
FD-14	Expansion board 1: X4 input		0	-	★
FD-15	Expansion board 1: X5 input		0	-	★
FD-16	Expansion board 1: X6 input		0	-	★
FD-17	Expansion board 1: X7 input		0	-	★
FD-18	Expansion board 1: X8 input		0	-	★
FD-19	Expansion board 1: X9 input		0	-	★
FD-20	Expansion board 1: X10 input		0	-	★
FD-21	Expansion board 2: X1 input		0	-	★
FD-22	Expansion board 2: X2 input		0	-	★
FD-23	Expansion board 2: X3 input		0	-	★
FD-24	Expansion board 2: X4 input		0	-	★
FD-25	Expansion board 2: X5 input		0	-	★
FD-26	Expansion board 2: X6 input		0	-	★
FD-27	Expansion board 2: X7 input		0	-	★
FD-28	Expansion board 2: X8 input		0	-	★
FD-29	Expansion board 2: X9 input		0	-	★
FD-30	Expansion board 2: X10 input		0	-	★

Param.	Name	Range	Default	Unit	Property
FD-31	Expansion board 1: Y1 output	0: Reserved 1: Door open by door operator 1 2: Door close by door operator 1 3: Door open by door operator 2 4: Door close by door operator 2 5: Brake and RUN contactors healthy (no E36 or E37) 6: Fault state (output for level 3/4/5 faults) 7: NICE3000^{new} operation state monitoring 8: Shorting motor stator contactor 9: Controller healthy 10: Emergency evacuation buzzer 11: Brake pick voltage 12: Up running 13: Lighting and fan 14: Medical sterilization 15: Non-door zone stop 16: Electromagnetic lock of the manually operated door 17: Non-service state 18: Emergency evacuation completed 19: Fire emergency output 20: Emergency state at power failure 21: Door lock active 22: Night output signal 23: Alarm filtered output	0	-	★
FD-32	Expansion board 1: Y2 output		0	-	★
FD-33	Expansion board 1: Y3 output		0	-	★
FD-34	Expansion board 1: Y4 output		0	-	★
FD-35	Expansion board 1: Y5 output		0	-	★
FD-36	Expansion board 1: Y6 output		0	-	★
FD-37	Expansion board 1: Y7 output		0	-	★
FD-38	Expansion board 1: Y8 output		0	-	★
FD-39	Expansion board 1: Y9 output		0	-	★
FD-40	Expansion board 1: Y10 output		0	-	★
FD-41	Expansion board 2: Y1 output		0	-	★
FD-42	Expansion board 2: Y2 output		0	-	★
FD-43	Expansion board 2: Y3 output		0	-	★
FD-44	Expansion board 2: Y4 output		0	-	★
FD-45	Expansion board 2: Y5 output		0	-	★
FD-46	Expansion board 2: Y6 output		0	-	★
FD-47	Expansion board 2: Y7 output		0	-	★
FD-48	Expansion board 2: Y8 output		0	-	★
FD-49	Expansion board 2: Y9 output		0	-	★
FD-50	Expansion board 2: Y10 output		0	-	★
Group FE: Display Setting Parameters					
FE-00	Collective selective mode	0: Full collective selective 1: Down collective selective 2: Up collective selective	0	-	★

Param.	Name	Range	Default	Unit	Property
FE-01	Floor 1 display	The two high digits indicate the display code in the tens position, and the two low digits indicate the display code in the ones position. The correlation between the code and the display is as follows: 00: "0" 01: "1" 02: "2" 03: "3" 04: "4" 05: "5" 06: "6" 07: "7" 08: "8" 09: "9" 10: "A" 11: "B" 12: "G" 13: "H" 14: "L" 15: "M" 16: "P" 17: "R" 18: "-" 19: No display 20: "12" 21: "13" 22: "23" 23: "C" 24: "D" 25: "E" 26: "F" 27: "I" 28: "J" 29: "K" 30: "N" 31: "O" 32: "Q" 33: "S" 34: "T" 35: "U" 36: "V" 37: "W" 38: "X" 39: "Y" 40: "Z" 41: "15" 42: "17" 43: "19"	1901	-	☆
FE-02	Floor 2 display		1902	-	☆
FE-03	Floor 3 display		1903	-	☆
FE-04	Floor 4 display		1904	-	☆
FE-05	Floor 5 display		1905	-	☆
FE-06	Floor 6 display		1906	-	☆
FE-07	Floor 7 display		1907	-	☆
FE-08	Floor 8 display		1908	-	☆
FE-09	Floor 9 display		1909	-	☆
FE-10	Floor 10 display		100	-	☆
FE-11	Floor 11 display		101	-	☆
FE-12	Floor 12 display		102	-	☆
FE-13	Floor 13 display		103	-	☆
FE-14	Floor 14 display		104	-	☆
FE-15	Floor 15 display		105	-	☆
Floor 16 to 30 display			...		
FE-31	Floor 31 display		301	-	☆
FE-35	Floor 32 display		302	-	☆
FE-36	Floor 33 display		303	-	☆
FE-37	Floor 34 display		304	-	☆
FE-38	Floor 35 display		305	-	☆
FE-39	Floor 36 display		306	-	☆
FE-40	Floor 37 display		307	-	☆
FE-41	Floor 38 display		308	-	☆
FE-42	Floor 39 display		309	-	☆
FE-43	Floor 40 display		400	-	☆
FE-44	Floor 41 display		401	-	☆
FE-45	Floor 42 display		402	-	☆
FE-46	Floor 43 display		403	-	☆
FE-47	Floor 44 display		404	-	☆
FE-48	Floor 45 display		405	-	☆
FE-49	Floor 46 display		406	-	☆
FE-50	Floor 47 display		407	-	☆
FE-51	Floor 48 display		408	-	☆

Param.	Name	Range	Default	Unit	Property
FE-52	Most significant bit selection 1	0 to 9699	0	-	☆
FE-53	Most significant bit selection 2		0	-	☆
FE-54	Most significant bit selection 3		0	-	☆
FE-55	Most significant bit selection 4		0	-	☆
FE-56	Most significant bit selection 5		0	-	☆
FE-32	Elevator function selection 1	bit0: Time-based floor service selection for front and rear door bit2: Re-leveling function bit3: Advance door opening function bit4: Stuck hall call cancellation bit5: Night security floor function bit6: Peak service for down collective selective bit7: Peak service for parallel/group control bit8: Time-based floor service bit9: VIP function bit11: Car call cancellation bit12: Hall call cancellation bit13: Shorting stator braking mode switched over to controller drive evacuation when timeout occurs bit15: Door lock short circuit detection active	34816	-	☆
FE-33	Elevator function selection 2	bit1: Door open holding upon door open limit bit2: Door close command not output upon door close limit bit4: Auto reset for stuck contacts bit5: Slow-down switch stuck detection bit7: Forced door close bit8: Self-locking contactor NC output bit9: Immediate elevator stop upon re-leveling bit13: High-speed protection function bit14: Enable hall call door open delay bit15: Independent control of through-type door	36	-	☆
Group FF: Factory parameters					
Group FJ: Factory parameters					
Group FP: User Parameters					
FP-00	User password	0 to 65535	0	-	☆

Param.	Name	Range	Default	Unit	Property
FP-01	Parameter update	0: Disabled 1: Restore factory setting 2: Clear recorded information 3: Clear shaft data	0	-	★
FP-02	User parameter check	0: Disabled 1: Valid	0	-	★
FP-03	Level 2 password	0 to 65535	0	-	☆
FP-04	Level 3 password	0 to 65535	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 mode	0: Disabled 1: Car leveling adjustment enabled 2: Load cell auto-tuning	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	★
Group E0 to E9: Fault record parameters					
E0-00	Latest fault	0 to 9999	0	-	●
E0-01	Latest fault subcode	0 to 65535	0	-	●
E0-02	Latest fault month and day	0 to 12.31	0	MM.DD	●
E0-03	Latest fault time	0 to 23.59	0	HH.MM	●
E0-04	Logic information upon latest fault	0 to 65535	0	-	●
E0-05	Curve information upon latest fault	0 to 65535	0	-	●
E0-06	Speed reference upon latest fault	0.000 to 4.000	0	m/s	●
E0-07	Feedback speed upon latest fault	0.000 to 4.000	0	m/s	●
E0-08	Bus voltage upon latest fault	0 to 999.9	0	V	●
E0-09	Current position upon latest fault	0.0 to 300.0	0	m	●
E0-10	Output current upon latest fault	0.0 to 999.9	0	A	●
E0-11	Output frequency upon latest fault	0.00 to 99.99	0	Hz	●
E0-12	Torque current upon latest fault	0.0 to 999.9	0	A	●
E0-13	Output voltage upon latest fault	0 to 999.9	0	V	●
E0-14	Output torque upon latest fault	0 to 200.0	0	%	●

Param.	Name	Range	Default	Unit	Property
E0-15	Output power upon latest fault	0.00 to 99.99	0	kW	●
E0-16	Communication interference upon latest fault Refer to FA-24 description	0 to 65535	0	-	●
E0-17	Encoder interference upon latest fault	0 to 65535	0	-	●
E0-18	Input state 1 upon latest fault See FA-26 description	0 to 65535	0	-	●
E0-19	Input state 2 upon latest fault Refer to FA-27 description	0 to 65535	0	-	●
E0-20	Input state 3 upon latest fault Refer to FA-28 description	0 to 65535	0	-	●
E0-21	Input state 4 upon latest fault Refer to FA-29 description	0 to 65535	0	-	●
E0-22	Input state 5 upon latest fault Refer to FA-30 description	0 to 65535	0	-	●
E0-23	Output state 1 upon latest fault Refer to FA-31 description	0 to 65535	0	-	●
E0-24	Output state 2 upon latest fault Refer to FA-32 description	0 to 65535	0	-	●
E0-25	Car input state upon latest fault Refer to FA-33 description	0 to 65535	0	-	●
E0-26	Car output state upon latest fault Refer to FA-34 description	0 to 65535	0	-	
E0-27	Hall call state upon latest fault Refer to FA-35 description	0 to 65535	0	-	
E0-28	System state 1 upon latest fault Refer to FA-36 description	0 to 65535	0	-	
E0-29	System state 2 upon latest fault Refer to FA-37 description	0 to 65535	0	-	
...					
E9-00	10th fault	0 to 9999	0	-	●

Param.	Name	Range	Default	Unit	Property
E9-01	10th fault subcode	0 to 65535	0	-	●
E9-02	Month and day upon 10th fault	0 to 1231	0	MM.DD	●
E9-03	10th fault time	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	Feedback speed 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	-	●
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	-	●

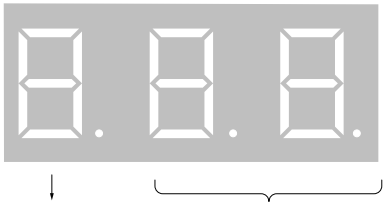
Param.	Name	Range	Default	Unit	Property
E9-25	Car input state upon 10th fault	0 to 65535	0	-	●
E9-26	Car output state upon 10th fault	0 to 65535	0	-	●
E9-27	Hall call state upon 10th fault	0 to 65535	0	-	●
E9-28	System state 1 upon 10th fault	0 to 65535	0	-	●
E9-29	System state 2 upon 10th fault	0 to 65535	0	-	●

16 Parameter Description

16.1 Keypad Parameter Description

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

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



- F-1: Command input of the running floor
  After you enter the F-1 menu by pressing the PRG, UP or SET key, the LEDs display the bottom floor of the elevator (F6-01). Use the UP key to set your destination floor in the range from Bottom floor to Top floor and press the SET key to save the setting. Then, the elevator runs to the destination floor, and the display automatically switches to the F-0 menu.

- F-2: Fault reset and fault time display
  After you enter the F-2 menu by pressing the PRG, UP or SET key, the LEDs display "0". You can press the UP key to change the parameter value within the range from 0 to 2.
  - 1: If you select this value and press the SET key, the system fault is cleared. Then, the display automatically switches to the F-0 menu.
  - 2: If you select this value and press the SET key, the LEDs display the codes and occurrence time of 10 faults. You can press the PRG key to exit.

- F-3: Time display
  After you enter the F-3 menu by pressing the PRG, UP or SET key, the LEDs display the current system time circularly.

- F-4: Contract number display
  After you enter the F-4 menu, the LEDs display the user's contract number.
- F-5: Running times display
  After you enter the F-5 menu, the LEDs display the elevator running times.
- F-6: Door open/close control
  After you enter the F-6 menu, the LEDs display "1-1", and UP and SET control the door open and close respectively. You can press the PRG key to exit.
- F-7: Floor auto-tuning command input
  After you enter the F-7 menu, the LEDs display 0. You can choose from 0 to 2 using UP. 1 and 2 indicate the floor auto-tuning command (1: Clear no leveling adjustment parameters in group FR; 2: Clear leveling adjustment parameters in group FR). After you press SET, shaft auto-tuning is implemented if the conditions are met. Meanwhile, the display switches over to the F-0 menu. After shaft auto-tuning is completed, 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 by pressing the PRG, UP or SET key, the LEDs display "0". The setting values of F-8 are as follows:

7-segment LED display	Function
1	Maintenance
2	Door open forbidden
3	Overload forbidden
4	Limit switches disabled
6	Slip test
7	Manual UCMP test
8	Manual braking force test
11	Balancing Factor Auto-tuning
20	Dynamic braking force test (MRL)
24	Ascending Car Overspeed Protection (ACOP) Test
25	Time limiter test
26	Shorting Motor Stator Braking Test

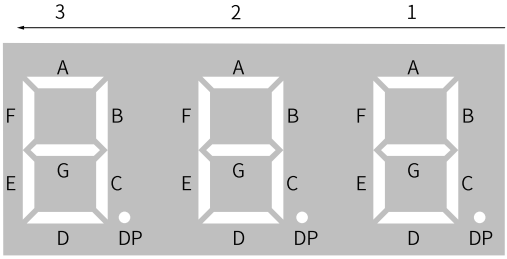
  After the setting from 0 to 30 is completed, press the SET key. The LEDs flash "E88", indicating the elevator is under test. When you press the PRG key to exit, F-8 restores to 0 automatically.

- F-9: Reserved
- F-A: Auto-tuning
  After you enter the F-A menu by pressing the PRG, UP or SET key, the LEDs display "0". The setting range of F-A is 0 to 2, described as follows:

7-segment LED display	Function
1	With-load auto-tuning
2	No-load Auto-tuning

After the setting is completed, press the SET button. Then the 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 completed, the LEDs display the present angle for 2s, and then switch over to the F-0 menu. You can press the PRG button to exit the auto-tuning state.

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



LED segments ON: valid signal

LED segments OFF: invalid signal

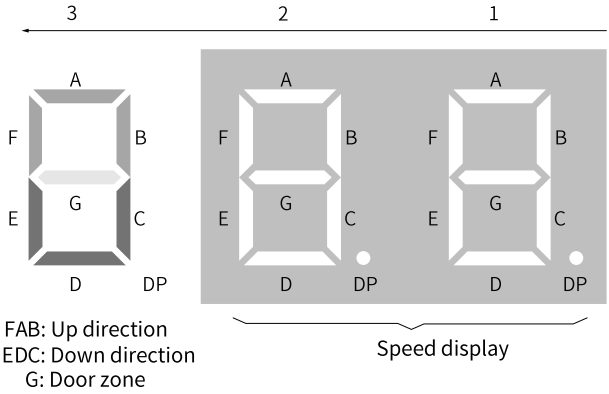
Table 16–1 CTB state display

Segment	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	-	Door close 2 output
F	Door close limit 2	-	Forced door close 2 output
G	Full-load input	-	Up arrival gong output
DP	Overload input	-	Down arrival gong output

- F-C: Elevator direction change (do not change the value arbitrarily, as its function is the same as F2-10)
  0: Direction unchanged

  1: Direction reversed

- F-d: Emergency and test operation
  After you enter the F-d menu, the LEDs display the car state under emergency and test operation. The following figure shows the meaning of each segment of the LEDs.



  The system automatically displays this interface in the emergency evacuation, 12 V supply or shorting stator braking (for PMSM) state.

Note

When the elevator speed is below 1.000 m/s, ".xx m/s" is displayed. When the speed is greater than or equal to 1 m/s, "x.x m/s" is displayed. Therefore, the position of the decimal point is different.

16.2 Operating Panel Parameter Description

16.2.1 Function Parameter Groups

Press PRG and then press △ / ▽ to display the function parameter groups. The following table shows the details:

Param.	Name	Param.	Name
F0	Basic parameters	FA	Keypad setting parameters
F1	Motor parameters	FB	Door function parameters
F2	Vector control parameters	FC	Protection function parameters
F3	Running control parameters	FD	Communication Parameters
F4	Floor parameters	FE	Display setting parameters
F5	Terminal function parameters	FF	Factory parameters (reserved)

Param.	Name	Param.	Name
F6	Basic elevator parameters	FP	User Parameters
F7	Intelligent commissioning parameters	Fr	Leveling adjustment parameters
F8	Enhanced function parameters	E0 to E9	Fault record parameters
F9	Time parameters	FJ	Factory parameters (reserved)

16.2.2Group F0: Basic Parameters

Param.	Name	Range	Default	Unit	Property
F0-00	Control mode	0: Sensorless vector control (SVC) 1: Feedback vector control (FVC) 2: V/f control	1	-	★

It is used to set the control mode of the system, as described in the following table.

Value	Control mode	Function	Encoder needed?
0	SVC	It is applicable to: Low-speed running during no-load commissioning and fault judgment at inspection of the asynchronous motor; Synchronous motor running under special operating conditions (used only by professional engineers)	No
1	Voltage/ Frequency (V/F) control	It is applicable to normal running under distance control	Yes
2	V/ f control	It has limited sensing capabilities (Almost fixed voltage/frequency ratio, simple control, and poor low-frequency torque performance)	No

Param.	Name	Range	Default	Unit	Property
F0-01	Command source selection	0: Operating panel control 1: Distance control	1	-	★

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

Value	Operation mode	Working mode		Application	Note
		X input	Y output		
0	Operating panel control	X input signals not detected	No output (During motor auto-tuning, the relay controlling the RUN contactor has an output.)	Applies only to motor test or no-load auto-tuning	• Control by pressing the RUN and STOP keys on the operating panel. • The running speed is set by F0-02 (Running speed under operating panel control).
1	Distance control	X input signals detected	Output	Used during normal elevator running	• During inspection, the elevator runs at the speed set in F3-11. • During normal running, the control system automatically computes the speed (within the rated elevator speed) and running curve for the elevator based on the distance between the current floor and the destination floor, and it implements direct travel ride.

Param.	Name	Range	Default	Unit	Property
F0-02	Running speed under operating panel control	0.050 to F0-04	0.050	m/s	☆
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	★

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

F0-03 is used to set the actual maximum running speed of the elevator. The value is not greater than the rated elevator speed (F0-04).

F0-04 is used to set the nominal rated speed of the elevator. The value of this parameter depends on the elevator mechanism and the traction motor.

Example:

If the elevator with a rated speed of 1 m/s runs at the maximum speed of 0.95 m/s, F0-04 shall be set at 1.000 m/s and F0-03 at 0.950 m/s.

Param.	Name	Range	Default	Unit	Property
F0-05	Rated load	300 to 9999	1000	kg	★

The rated elevator load is used in the anti-nuisance function.

Param.	Name	Range	Default	Unit	Property
F0-06	Maximum frequency	F1-04 to 99.00	50.00	Hz	★

It is used to set the maximum output frequency of the system. This value must be larger than the rated motor frequency.

Param.	Name	Range	Default	Unit	Property
F0-07	Carrier frequency	0.5 to 16.0	6.0	kHz	★

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

The carrier frequency is closely related to the motor noise during running. When it is generally set above 6 kHz, silent operation is achieved. It is recommended to set the carrier frequency to a much lower value within the allowable noise range, which reduces the controller loss and radio frequency interference.

- When the carrier frequency is low, high-order harmonic components of output current, motor power loss and temperature rise increase.

- When the carrier frequency increases: ● Motor power loss and temperature rise declines. ● Power loss, system temperature rise and interference increase.

The correlation between the carrier frequency and the system performance is shown in the following table.

Performance	Severity
Carrier frequency	Small/high
Motor noise	Large/poor
Output current waveform	Bad/good
motor temperature rise	Large/poor
Controller temperature rise	Small/high
Leakage current	Small/high
external radiation interference	Small/high

16.2.3Group F1: Motor Parameters

Param.	Name	Range	Default	Unit	Property
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder 4: Weton communication encoder	0	-	★

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

- When F1-25 is set to 1 (Synchronous motor), set this parameter correctly before auto-tuning; otherwise, the motor cannot run properly.
- When F1-25 is set to 0 (Asynchronous motor), this parameter is automatically changed to 2 (ABZ encoder). You need not modify it manually.

Param.	Name	Range	Default	Unit	Property
F1-01	Rated power	0.7 to 75.0	Model dependent	kW	★
F1-02	Rated voltage	0 to 600	Model dependent	V	★
F1-03	Rated current	0.00 to 655.00	Model dependent	A	★

Param.	Name	Range	Default	Unit	Property
F1-04	Rated frequency	0.00 to F0-06	Model dependent	Hz	★
F1-05	Rated speed	0 to 3000	Model dependent	rpm	★

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

Param.	Name	Range	Default	Unit	Property
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	-	★

These parameters are obtained by means of motor auto-tuning.

F1-06 specifies the encoder angle at zero point. After multiple times of auto-tuning, compare the obtained values, and the value deviation of F1-06 shall be within ±5°.

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

F1-08 specifies the motor wiring mode, that is, whether the output phase sequence of the driver board is consistent with the UVW phase sequence of the motor. If the value obtained by means of no-load auto-tuning is an even number, the phase sequence is correct. If the value is an odd number, the sequence is incorrect; in this case, interchange any two phases.

F1-06 and F1-08 can be modified only when F0-01 is set to 0.

Param.	Name	Range	Default	Unit	Property
F1-09	Current filter time (synchronous motor)	0.0 to 359.9	0	-	★
F1-10	Encoder signal check	0 to 65535	0	-	★

F1-10 is used to set encoder signal check. This parameter is set by the manufacturer, and you need not modify it generally.

Param.	Name	Range	Default	Unit	Property
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Shaft auto-tuning 1, with parameters in group Fr not cleared 4: Shaft auto-tuning 2, with parameters in group Fr cleared 5: Synchronous motor static auto-tuning	0	-	★

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

- 0: No operation;
- 1: With-load auto-tuning: static auto-tuning for asynchronous motor and rotary auto-tuning for synchronous motor;
- 2: No-load auto-tuning;
- 3: Shaft auto-tuning 1, with parameters in group Fr not cleared;
- 4: Shaft auto-tuning 2, with parameters in group Fr cleared.
- 5: Synchronous motor static auto-tuning.

Param.	Name	Range	Default	Unit	Property
F1-12	Encoder PPR	100 to 10000	2048	PPR	★

F1-12 is used to set the pulses per revolution of the encoder (according to the encoder nameplate).

Param.	Name	Range	Default	Unit	Property
F1-13	Encoder disconnection detection time	0 to 10.0	2.1	s	★

F1-13 is used to set the time that a wire-break fault lasts before being detected.

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

Param.	Name	Range	Default	Unit	Property
F1-14	Stator resistance (asynchronous motor)	0.000 to 30.000	0.000	Ω	★
F1-15	Rotor resistance (asynchronous motor)	0.000 to 30.000	0.000	Ω	★
F1-16	Leakage inductance (asynchronous motor)	0.00 to 300.00	0.00	mH	★
F1-17	Mutual inductance (asynchronous motor)	0.0 to 3000.0	0.0	mH	★
F1-18	No-load current (asynchronous motor)	0.00 to 300.00	0.00	A	★

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

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

Param.	Name	Range	Default	Unit	Property
F1-19	Q-axis inductance (torque)	0.00 to 650.00	3.00	mH	★
F1-20	D-axis inductance (excitation)	0.00 to 650.00	3.00	mH	★
F1-21	Back EMF coefficient	0 to 65535	0	-	★

F1-19 to F1-21 are used to display the D-axis and Q-axis inductances and the back EMF coefficient of the synchronous motor obtained by means of motor auto-tuning.

Param.	Name	Range	Default	Unit	Property
F1-22	Angle-free auto-tuning function (synchronous motor)	bit1 = 1, bit2 = 0: Semi-automatic angle-free auto-tuning bit1 = 1, bit2 = 1: Automatic angle-free auto-tuning	0	-	★

Settings of bit1 and bit2 are used to select the angle-free auto-tuning mode of the synchronous motor.

- bit1 = 1, bit2 = 0: Semi-automatic angle-free auto-tuning
  After the controller power fails and then is restored, the system automatically performs the encoder angle auto-tuning only during trial inspection running. After auto-tuning is successful, the system does not perform auto-tuning again before the next power-off.

Note

Note: During running at inspection speed, the fault Err19 is reported if the system power is back on for normal running after power-off without finishing the process of auto-tuning.

- bit1 = 1, bit2 = 1: Automatic angle-free auto-tuning
  After power-off and power-on again, the system automatically performs encoder angle auto-tuning during the elevator running at inspection/normal speed. After auto-tuning is successful, the system does not perform auto-tuning again before the next power-off.

Param.	Name	Range	Default	Unit	Property
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor	1	-	★

This parameter is used to select the motor type. The values are as follows:

- 0: Asynchronous motor
- 1: Synchronous motor

16.2.4Group F2: Vector Control Parameters

Param.	Name	Range	Default	Unit	Property
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	-	★

Param.	Name	Range	Default	Unit	Property
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	★

- F2-00 and F2-01 are PI regulation parameters when the running frequency is smaller than the value of F2-02.
- F2-03 and F2-04 are PI regulation parameters when the running frequency is larger than the value of F2-05.

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

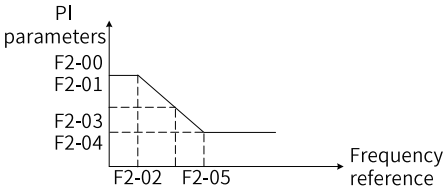


Figure 16-1 Relationship between running frequencies and PI parameters

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 or reduce the integral time. Be aware that a too large proportional gain or too small integral time may lead to system oscillation.

The recommended adjustment method is as follows:

If the default setting cannot meet the requirements, do some fine-tuning: 1. Decrease the proportional gain to make sure that the system does not oscillate; 2. Reduce the integral time to make sure that the system has a quick response while maintaining a 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.

Param.	Name	Range	Default	Unit	Property
F2-06	Current loop proportional gain Kp	10 to 500	60	-	★
F2-07	Current loop integral gain Ki	10 to 500	30	-	★

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

Note

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

Param.	Name	Range	Default	Unit	Property
F2-08	Torque upper limit	0.0 to 200.0	200.0	%	★

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

Param.	Name	Range	Default	Unit	Property
F2-10	Elevator running direction	0: Running direction unchanged 1: Direction reversed	0	-	★

It is used to set the elevator running direction. The values are as follows:

0: Direction unchanged

1: Direction reversed

You can modify F2-10 to reverse the motor running direction without changing motor wiring. 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.

Pay attention to the setting of this parameter when restoring the factory parameters.

Param.	Name	Range	Default	Unit	Property
F2-11	Position lock current coefficient	2.0 to 50.0	15.0	%	★
F2-12	Zero servo speed loop Kp	0.00 to 2.00	0.50	-	★
F2-13	Zero servo speed loop Ti	0.00 to 2.00	0.60	-	★

It is used for no-load-cell startup pre-torque self-adaption. The no-load-cell startup function is enabled when F8-01 is set to 2 or 3.

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

Param.	Name	Range	Default	Unit	Property
F2-16	Torque acceleration time	1 to 500	1	ms	★
F2-17	Torque deceleration time	1 to 3000	350	ms	★

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

At stop, take following possible measures due to the differences of motor characteristics:

- If some abnormal sound occurs when the current increases from zero at startup, increase the value of F2-16 to eliminate the sound.
- If some abnormal sound occurs when the current decreases to zero at stop, increase the value of F2-17 to eliminate the sound.

Param.	Name	Range	Default	Unit	Property
F2-18	Startup acceleration time	0.000 to 1.500	0.000	s	★

Param.	Name	Range	Default	Unit	Property
F2-33	Torque amplitude	50% to 150%	110	%	★

16.2.5Group F3: Running Control Parameters

Param.	Name	Range	Default	Unit	Property
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	★

F3-00 and F3-01 are used to set the startup speed and startup speed holding time of the system respectively. See *"Figure 16-2 " on page 287* .

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

Param.	Name	Range	Default	Unit	Property
F3-02	Acceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-03	Acceleration end jerk time 1	0.300 to 4.000	1.500s	s	★
F3-04	Acceleration end jerk time 2	0.300 to 4.000	1.500s	s	★

F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator, *"Figure 16-2 " on page 287* and *"Figure 16-3 " on page 288* show the details.

- F3-02 is the acceleration of the elevator speed curve (uniform acceleration).
- F3-03 sets the time for the acceleration rate to change from 0 to the value set in F3-02 in the speed curve (increasing acceleration). The larger the value is, the smoother the speed curve is.
- F3-04 is the time for the acceleration to decrease from the value set in F3-02 to 0 in the speed curve (increasing deceleration). The larger the value is, the smoother the speed curve is.

Param.	Name	Range	Default	Unit	Property
F3-05	Deceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-06	Deceleration start jerk time 1	0.300 to 4.000	1.500s	s	★
F3-07	Deceleration start jerk time 2	0.300 to 4.000	1.500s	s	★

F3-05, F3-06, and F3-07 are used to set the running curve during deceleration of the elevator, *"Figure 16-2 " on page 287* and *"Figure 16-3 " on page 288* show the details.

- F3-05 is the acceleration of the elevator speed curve (constant deceleration).

- F3-06 is the time for the acceleration to decrease from the value set in F3-05 to 0 in the speed curve (increasing deceleration). The larger the value is, the smoother the speed curve is.
- F3-07 is the time for the acceleration to decrease from 0 to the value set in F3-05 in the speed curve (increasing deceleration). The larger the value is, the smoother the speed curve is.

The following figure shows the settings of the entire running curve.

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

F3-03 (F3-07) is the time for the acceleration (deceleration) rate to change from 0 to the value set in F3-02 (F3-05) in the start jerk segment. The larger the value is, the smoother the jerk is.

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

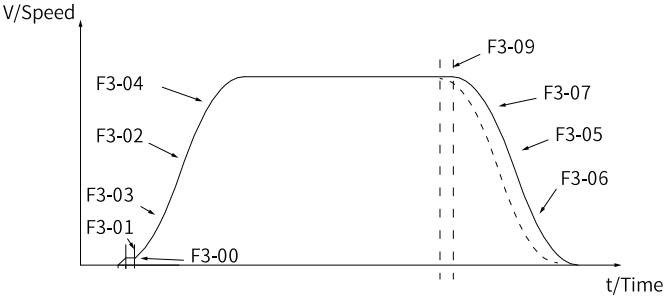


Figure 16-2 Running speed curve

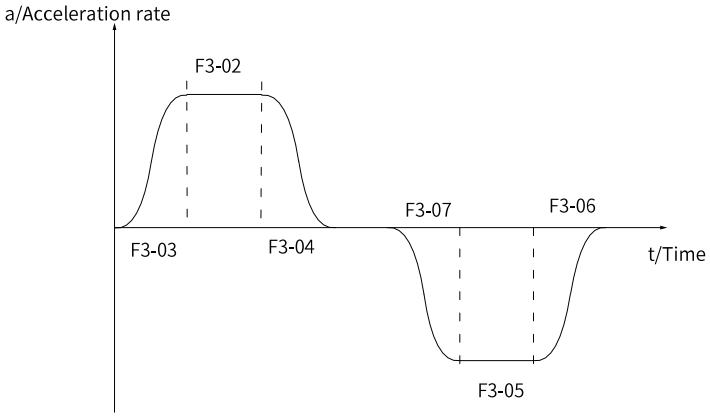


Figure 16-3 Acceleration/Deceleration curve

Param.	Name	Range	Default	Unit	Property
F3-08	Special deceleration rate	0.500 to 1.500	0.900	m/s^2	★

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

This parameter is not used during normal running. It is used only when the elevator position is abnormal or the slow-down signal is abnormal, preventing the elevator from overshooting the top or bottom floor.

Param.	Name	Range	Default	Unit	Property
F3-09	Pre-deceleration distance	0 to 90.0	0.0	mm	★

F3-09 is used to set the pre-deceleration distance of the elevator in distance control, as shown in *"Figure 16-2 " on page 287*. This function is to eliminate the effect of encoder signal loss or leveling signal delay.

Param.	Name	Range	Default	Unit	Property
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 when the advance door opening module (MCTC-SCB) is added for the re-leveling function (set in FE-32).

Param.	Name	Range	Default	Unit	Property
F3-11	Inspection speed	0.100 to 0.630	0.250	m/s	★

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

Param.	Name	Range	Default	Unit	Property
F3-12	Position of up slow-down switch 1	0.00 to 300.00	0.00	m	★
F3-13	Position of down slow-down switch 1	0.00 to 300.00	0.00	m	★
F3-14	Position of up slow-down switch 2	0.00 to 300.00	0.00	m	★
F3-15	Position of down slow-down switch 2	0.00 to 300.00	0.00	m	★
F3-16	Position of up slow-down switch 3	0.00 to 300.00	0.00	m	★
F3-17	Position of down slow-down switch 3	0.00 to 300.00	0.00	m	★

F3-12 to F3-17 specify the positions of all slow-down switches relative to the bottom leveling position, and the positions are automatically recorded during shaft auto-tuning.

The NICE3000^{new} supports a maximum of three pairs of slow-down switches. From two sides of the shaft to the middle, slow-down 1, slow-down 2, and slow-down 3 are installed in order; that is, slow-down 1 is installed near the terminal floor. There may be only one pair of slow-sown switches for the low-speed elevator, and two or three pairs of slow-down switches for the high-speed elevator.

The system automatically detects the speed when the elevator approaches 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 the elevator from overshooting the top or bottom floor.

Param.	Name	Range	Default	Unit	Property
F3-18	Zero-speed current output time	0.200 to 1.000	0.200	s	★
F3-19	Holding time of zero-speed torque current upon brake release	0.000 to 2.000	0.600	s	★
F3-20	Zero-speed control time at end	0.000 to 1.000	0.300	s	★

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

- F3-18 specifies the time from output of the RUN contactor to output of the brake contactor, during which the controller performs excitation on the motor and outputs zero-speed current with large startup torque.
- F3-19 is the time that the system maintains the zero-speed torque current output from the moment when it sends a brake release command to prevent rollback.
- F3-20 is the zero-speed current output time after the running curve ends.

The following figure shows the running timing.

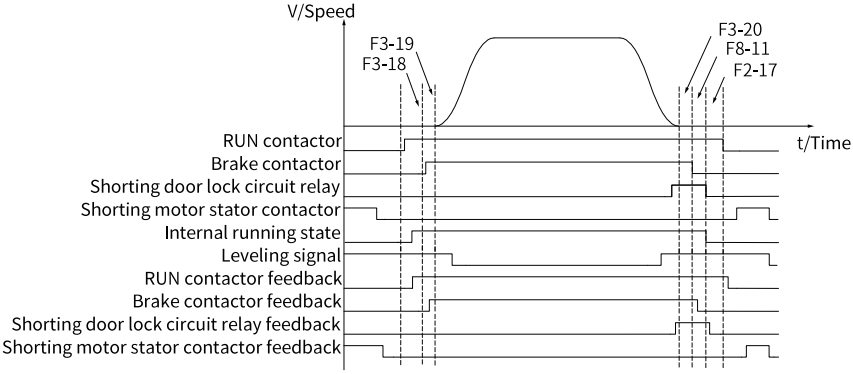


Figure 16-4 Operation timing diagram

Note

F8-11 specifies the time from the moment the system sends a brake close command. Within the set time range, the system maintains the zero-speed torque current output to prevent rollback.

Param.	Name	Range	Default	Unit	Property
F3-21	Low-speed releveling speed	0.080 to F3-11	0.250	m/s	★

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

Param.	Name	Range	Default	Unit	Property
F3-22	Acceleration rate at emergency rescue	0.100 to 1.300	0.300	m/s^2	★

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

Param.	Name	Range	Default	Unit	Property
F3-23	Deceleration delay time upon hitting slow-down switch	0.00 to 10.00	0	s	★

F3-23 indicates that the speed is reduced to 0.1 m/s within this time in case of slow-down delay during inspection, re-leveling, terminal floor verification and shaft auto-tuning.

Param.	Name	Range	Default	Unit	Property
F3-24	Program function selection	0: Reserved 1: Slip test 2: Manual test of UCMP 3: Overspeed governor test and reset 6: Balancing factor auto-tuning 18: Maintenance entry 19: Maintenance exit 20: Dynamic braking force test 24: Manual ascending car overspeed protection (ACOP) test 25: Manual time limiter test 26: Manual shorting motor stator braking test 29: Linkage test of car safety gear 30: Linkage test of counterweight safety gear 31: Shorting motor stator pulse test	0	-	★

This parameter is used when the motor slip experiment is performed during elevator acceptance. If the slip experiment on site is not successful, set this parameter to 1 to enable the slip experiment function. After the experiment is completed, set F3-24 to 0 to disable the function.

Param.	Name	Range	Default	Unit	Property
F3-25	Elevator speed in the EEO state	0.100 to 0.300	0.250	m/s	★

F3-25 is used to set the elevator speed in emergency electrical operation state.

Param.	Name	Range	Default	Unit	Property
F3-26	(Shaft auto-tuning speed)	0.100 to 0.630	0.250	m/s	★

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

Param.	Name	Range	Default	Unit	Property
F3-27	E33 overspeed margin	0.000 to 1.000	0.050	m/s	★

This margin represents the difference between the actual feedback speed and the predefined maximum running speed.

Param.	Name	Range	Default	Unit	Property
F3-28	Terminal floor verification speed	0.080 to F0-03	0.500	m/s	★

F3-28 is used to set the speed of the elevator during terminal floor verification.

16.2.6Group F4: Floor Parameters

Param.	Name	Range	Default	Unit	Property
F4-00	Leveling adjustment	0 to 60	30	mm	★

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

If over-leveling occurs on all floors when the elevator stops, decrease this parameter properly. If under-leveling occurs on all floors when the elevator stops, increase this parameter properly. The leveling of all floors will change once this parameter is modified. Therefore, if the leveling of a single floor is inaccurate, it is recommended to adjust the position of the leveling plate or adjust the leveling accuracy following the descriptions in group Fr. The NICE3000^{new} has the advanced distance control algorithm and adopts many methods to ensure reliability of direct travel ride. Generally you need not modify this parameter.

Param.	Name	Range	Default	Unit	Property
F4-01	Current floor	F6-01 to F6-00	1	-	★

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

The system automatically changes the value of this parameter during running and corrects it 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.

Param.	Name	Range	Default	Unit	Property
F4-02	High bits of current elevator position	0 to 65535	0	Pls	●
F4-03	Low bits of current elevator position	0 to 65535	0	Pls	●

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

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.

Param.	Name	Range	Default	Unit	Property
F4-04	Leveling plate length 1	0 to 65535	0	Pls	★
F4-05	Leveling plate length 2	0 to 65535	0	Pls	★

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

F4-05 indicates the distance from each end of the leveling plate to either the up or down leveling switch in terms of pulses.

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

Param.	Name	Range	Default	Unit	Property
F4-06	High bits of floor 1	0 to 65535	0	Pls	★
F4-07	Low bits of floor 1	0 to 65535	0	Pls	★
High byte of floor 2 to low byte of floor 96					
F4-198	High bits of floor 97	0 to 65535	0	Pls	★
F4-199	Low bits of floor 97	0 to 65535	0	Pls	★

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

16.2.7Group F5: Terminal Function Parameters

Param.	Name	Range	Default	Unit	Property
F5-00	Attendant/normal state switchover time	3 to 200	3	s	★

If there is a hall call from another floor in attendant state, the system automatically switches over to the automatic (normal) state after the time set in F5-00. After this running is completed, the system automatically restores to the attendant state (F6-43 bit2 must be enabled and set to 1). When F5-00 is smaller than 5, this function is disabled and the system is in the normal attendant state.

Param.	Name	Range	Default	Unit	Property
F5-01	X1 function selection	0 to 309	1	-	★
F5-02	X2 function selection		3	-	★
F5-03	X3 function selection		0	-	★
…			…		
F5-23	X23 function selection		00	-	★
F5-24	X24 function selection		00	-	★

F5-01 to F5-24 are used to set the signals input to DI terminals X1 to X24. Select corresponding input parameters according to different functions of input signals.

The NICE3000^{new} provides 24 low-voltage DIs (X1 to X24), 3 high-voltage DIs (X25 to X27), and 1 AI (AI/M). All low-voltage inputs share the COM terminal. When the 24 VDC is applied, the corresponding input indicator becomes ON.

If a certain function cannot be set, check whether this function is operating or has been assigned to other terminals.

Note

The parameter values that can be set repeatedly include:

- 04/36: Safety circuit feedback NO/NC
- 05/37: Door lock circuit feedback NO/NC
- 06/38: RUN contactor feedback NO/NC
- 07/39: Brake feedback NO/NC
- 26/58: Brake travel switch 1 NO/NC

The NO setting of each function is as follows (NC value = NO value + +32).

00: Reserved

Even if there is signal input to the terminal, the system has no response. You can set unassigned terminals to invalid state to prevent malfunction.

01: Up leveling signal

02: Down leveling signal

03: Door zone signal

The NICE3000^{new} system determines the elevator leveling position based on the leveling switch signal. The system supports three types of leveling configurations: single door zone switch, up and down leveling switches, and door zone switch plus the up and down leveling switches. If three switches are used, the system successively receives "up leveling signal -> door zone signal -> down leveling signal" during up running and "down leveling signal -> door zone signal -> up leveling signal" during down running. If two switches are used, the system successively receives "up leveling signal -> down leveling signal" during up running and "down leveling signal -> up leveling signal" during down running. If the leveling signal is abnormal (stuck or disconnected), the system reports fault E22.

04: Safety circuit feedback

05: Door lock circuit 1 feedback

29: Safety circuit 2 feedback

31: Door lock circuit 2 feedback

The safety circuit is an important guarantee of safe and reliable elevator running, and the door lock circuit ensures that the landing door and car door have been closed when the elevator starts to run. Active feedback signals from the safety circuit and door lock circuit are necessary to elevator running. It is recommended to set these signals to NO inputs. If they are set to NC inputs, the system considers the signal input active when the NC signal input is not connected. In this case, the actual state of the safety circuit cannot be detected, which may cause safety risks.

06: RUN contactor feedback signal

07: Brake contactor feedback signal

26: Brake travel switch 1 NO input signal

78: Brake travel switch 2 NO input signal

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

08: Inspection signal

09: Inspection/EEO up signal

10: Inspection/EEO down signal

84: EEO function

- When 08/40 (inspection signal) is allocated to input terminal X, the inspection switch signal is transmitted to the system in the DI form. When 08/40 (inspection signal) is not allocated to input terminal X, the inspection switch signal is transmitted to the system through CAN communication (MCTC-CTW-A is required on the car top).
- When the inspection or EEO switch is active, the elevator enters the inspection or EEO state, and the system cancels all automatic running including the automatic door operations. When the up/down signal is active, the elevator runs at the speed set in F3-25 (Shaft auto-tuning speed) in the EEO state and at the speed set in F3-11 (Inspection speed) in the inspection state.
- The inspection signal overrides the EEO signal. When both signals are active, the elevator runs in the inspection state.

11: Fire emergency signal

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

12: Up limit signal

13: Down limit signal

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

14: Overload signal

During normal use, the elevator enters the overload state when the elevator load exceeds 110% of the rated load. In this case, the overload buzzer sounds, the overload indicator in the car lights up, and the elevator doors keep open. The overload signal becomes inactive after the door lock is closed. If the running with 110% of the rated load is required during inspection, you can set F7-06 to 1 to allow overload running (Note that this function has potential safety risks and use it with caution).

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

15: Full-load signal

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

16: Up slow-down 1 signal

17: Down slow-down 1 signal

18: Up slow-down 2 signal

19: Down slow-down 2 signal

20: Up slow-down 3 signal

21: Down slow-down 3 signal

These parameters are used to set corresponding input terminals to slow-down switch signals. The slow-down signals are used to enable the elevator to stop at the slow-down speed when the car position is abnormal, which is an important method to guarantee elevator safety. The NICE3000^{new} system automatically records the positions of the switches in group F3 during shaft auto-tuning.

22: Shorting door lock circuit relay feedback

It is the door lock shorting feedback signal when the advance door opening (ADO) or re-leveling at door open function of elevators is enabled. This is to ensure safe elevator running.

23: Firefighter signal

It is the firefighter switch signal and is used to enable the firefighter operation. After the elevator returns to the fire emergency floor, the NICE3000^{new} system enters the firefighter operation state if the firefighter signal is active.

24: Door operator 1 light curtain

25: Door operator 2 light curtain

They are used to detect the light curtain signals of door 1 and door 2 (if the elevator has double-door configuration).

26: Brake travel switch 1

27: Emergency evacuation signal at power failure

If the signal is active, it indicates that the elevator is running for emergency evacuation at power failure.

28: Elevator lock signal

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

30: Shorting motor stator contactor feedback signal

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

65: Door operator 1 safety edge feedback signal

66: Door operator 2 safety edge feedback signal

They are used to detect the safety edge signal state of door 1 and door 2 (if the elevator has double-door configuration).

67: Motor overheat input signal

It is used for the motor thermal protection switch signal input. If this signal remains active for more than 2s, the control system stops output and reports E39 to protect the motor. When this signal becomes inactive, E39 is reset automatically and the system restores the normal operation.

68: Earthquake signal

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

69: Rear door forbidden signal

If there are two doors, this signal is used to prohibit the use of the rear door.

70: Light-load signal

This signal is used for nuisance judgment when the anti-nuisance function is enabled. If F8-08 bit2 is set to 1, the light-load switch is used for nuisance judgment. The load below 30% of the rated load is regarded as a light load.

71: Half-load signal

It is mainly used for judgment of the emergency running direction at power failure.

72: Fire emergency floor switchover signal

The NICE3000^{new} supports two fire emergency floors. By default, the elevator stops at fire emergency floor 1 in fire emergency state. If this signal is active, the elevator stops at fire emergency floor 2 in fire emergency state.

73: Dummy floor input

The dummy floor signal is required if the maximum running time between two adjacent floors of the elevator exceeds the minimum values set in F9-02 and FA-38. This is done to enable the elevator control system to identify such a floor as one with increased elevation (high floor).

74: Auxiliary brake contactor 1 feedback

This signal is used to set auxiliary brake contactor 1 feedback when two brake contactors are mandated under the new China National Standards.

75: Auxiliary brake contactor 2 feedback

This signal is used to set auxiliary brake contactor 2 feedback when two brake contactors are mandated under the new China National Standards.

76: Door 1 open input

77: Door 2 open input

79: External fault input

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

80: Terminal floor verification signal

The terminal floor signal is used with slow-down 1 to determine the terminal floor position when some terminal floors are short.

81: Door lock 1 shorting

Door lock 1 shorting detection is used to detect any door lock 1 short circuit faults.

82: Door lock 2 shorting

Door lock 2 shorting detection is used to detect any door lock 2 short circuit faults.

83: EEO (Emergency Electrical Operation)

86: Door lock bypass

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

87: Fire emergency one-key input

After the fire emergency one-key input signal is active, the system first returns to the fire emergency floor and then enters the firefighter state.

88: Rope gripper feedback signal input

Parameter value "88" (rope gripper feedback signal input) is added to the MCB.

90: Manual shorting stator braking mode (Honor series control cabinet)

91: Inspection up limit (Honor series control cabinet)

92: Inspection down limit (Honor series control cabinet)

93: Relay Y8 feedback (Honor series control cabinet)

94: Electrical brake release signal (Honor series control cabinet)

95: Shaft auto-tuning input (Honor series control cabinet)

256: Triangle key input signal

257: Triangle key reset signal

259: Alarm filtered signal

261: Auxiliary brake contactor 3 feedback

262: Brake travel switch 3 feedback

268: Integrated shorting motor stator contactor pulse input

274: Auxiliary shorting motor stator contactor feedback

277: Fault reset

- In the normal or inspection state, the elevator reports E68 and stops running immediately when the rope gripper feedback signal is inactive. At the same time, the system detects whether the UCMP fault occurs. If the car moves unexpectedly, the elevator reports E65 (UCMP fault), which overrides E68.
- Reset E68 by pressing the RES/STOP key on the LCD operator, setting F-2 to 1 through the MCB keypad, or making the rope gripper feedback signal remain active for 1s or above. If the roper gripper feedback signal is inactive after the fault reset, the elevator continues to report E68.

Param.	Name	Range	Default	Unit	Property
F5-25	Car top board input signal type	0 to 65535	1856	-	★

For example, you can set the CTB input signals of an elevator as follows.

bit	Name	Default	bit	Name	Default
bit0	Door 1 light curtain	0	bit8	Light-load signal (digital)	1
bit1	Door 2 light curtain	0	bit9	Up leveling signal	1
bit2	Door 1 open limit	0	bit10	Down leveling signal	1
bit3	Door 2 open limit	0	bit11	Door operator overtemperature detection	0
bit4	Door 1 close limit	0	bit12	Door 1 safety edge	0
bit5	Door 2 close limit	0	bit13	Door 2 safety edge	0
bit6	Full-load signal (digital)	1	bit14	Reserved	-
bit7	Overload signal (digital)	0	bit15	Reserved	-
0: NC input, 1: NO input					

Param.	Name	Range	Default	Unit	Property
F5-26	Y1 function selection	0 to 39	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	-	★
F5-45	Y2A function selection		0	-	★
F5-46	Y7 function selection		0	-	★

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

00: Reserved

01: RUN contactor output

02: Main brake contactor output

03: Shorting door lock circuit contactor output

The system relays control the opening and closing of the circuit contacts.

04: Fire emergency floor arrival signal feedback

In the fire emergency state, the system sends the feedback signal for monitoring after the elevator returns to the fire emergency floor and reaches the door open limit.

05: Door operator 1 open

06: Door operator 1 close

07: Door machine 2 open

08: Door operator 2 close

The terminal parameters are used for the opening and closing of door 1 or 2.

09: Brake and RUN contactors normal

When the brake and RUN contactors operate properly (E36 or E37 does not occur), the system sends a feedback signal for monitoring.

10: Fault state

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

11: Running state output

The controller has output when it is running.

12: Shorting PMSM stator contactor output

When the shorting motor stator contactor is applied in synchronous motor, the corresponding terminal is used for the opening and closing of the contactor.

13: Emergency evacuation automatic switchover

After the main power supply is disconnected, the controller outputs an emergency evacuation automatic switchover signal when detecting that the bus voltage declines to a certain value. The battery is used to power up the elevator to implement emergency evacuation.

Note

Only Y6/M6 can be used when the relay needs to be driven by the residual power of the controller after the external power supply is cut off.

14: System healthy

The terminal has output when the system operates properly.

15: Emergency buzzer control

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

16: Brake pick voltage

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

17: Elevator running in up direction

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

18: Lighting/Fan output

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

19: Medical sterilization output

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

20: Non-door zone stop

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

21: Electromagnetic lock control output

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

22: Non-service state indication

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

23: Emergency evacuation completed

The output is used to notify that ARD emergency evacuation is completed.

25: Rope gripper reset

Conditions of the rope gripper reset output (either of the following is acceptable):

1. The system does not report E65 (UCMP fault) and E41 (safety circuit fault) 5s (power-on time for the rope gripper) after the first-time power-on.
2. The system reports E68 rather than E65. In the inspection state, the safety circuit is disconnected (E41 is reported) and then reconnected.

Requirements for the rope gripper reset output:

1. Check that the rope gripper reset output signal and the feedback signal are active.
   a. Reset E68 if the rope gripper feedback signal remains active for 1s or above. When the rope gripper reset output signal becomes inactive, the elevator restores the normal running.

   b. If the rope gripper feedback signal is still inactive after 22s (the rope gripper action time), the system continues to report E68. When the rope gripper reset output signal becomes inactive, the elevator cannot be made to run.

2. The elevator cannot perform door open/close or running operations when the rope gripper reset output signal is active.
   Set F6-52 bit14 to 1 to enable this function (disabled by default).

26: Braking transistor short circuit output

It has output when the braking transistor is short-circuited.

27: Alarm filtered output

In the non-inspection state, the alarm is filtered when the system is operating or the door open limit is reached.

28: Overspeed governor test output

31: Shorting motor stator contactor output test completed

32: AGV status indicator output

33: Auxiliary brake 1 output

When separate control of the brake is required according to the new national standard, this function should be set to output control for the brake contactor 1.

34: Auxiliary brake 2 output

When separate control of the brake is required according to the new national standard, this function should be set to output control for the brake contactor 2.

39: Auxiliary synchronous motor self-locking output

Param.	Name	Range	Default	Unit	Property
F5-32	Communication state	Communication state monitoring of CANbus and Modbus	-	-	●

F5-32 is used to monitor the communication state of the car top CANbus and the hall call Modbus.

After users enter the F5-32 interface, the state of LEDs indicates current communication state of hall calls. For the convenience of description, the LEDs are numbered 5, 4, 3, 2, and 1 respectively from left to right. The definition of each segment of the LEDs is as follows.

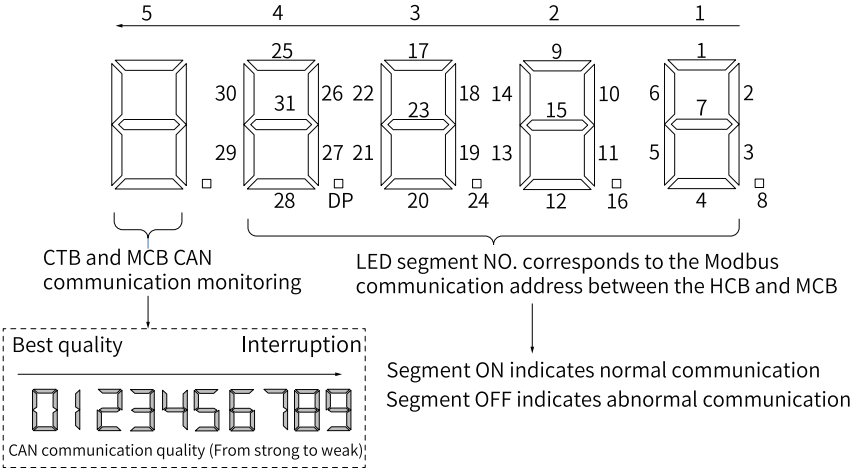


Figure 16-5 F5-32 Communication state monitoring

Example: Communication state displayed by the LEDs:

If the LEDs are as follows, 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 that of other addresses is normal. CAN communication state displayed by the LEDs is 3, indicating slight interference.

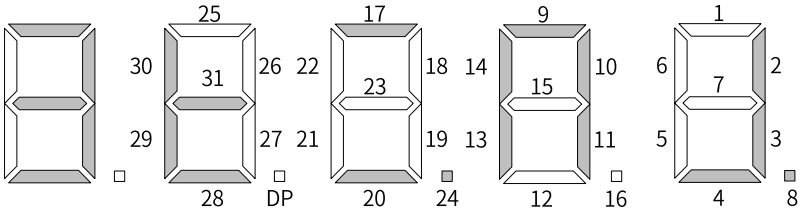


Figure 16-6 Example of LEDs display indicating the communication state

Param.	Name	Range	Default	Unit	Property
F5-33	Program control selection	0 to 65535	0	-	★

F5-33 is used to select the elevator functions.

The parameter is used to set the functions required by a user. Each function is controlled using one binary bit.

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

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

F5-33 Program control selection			
bit	Function definition	Description	Default
bit3	Elevator fire emergency requirements in Hong Kong SAR	If it is enabled, the fire emergency functions in F6-44 applying to Hong Kong SAR become enabled automatically.	0
bit4	Arrival gong disabled at night	The arrival gong is disabled from 22:00 to 7:00.	0
bit6	Door lock disconnection during switchover from the inspection state to the normal state	The door lock is disconnected once when the inspection state is switched to the normal running state.	0
bit7	Fault code not displayed on the keypad	The keypad does not flash the fault code.	0
bit8	Door open command canceled immediately when receiving the door open limit signal	The system immediately cancels the door open command after receiving the door open limit signal.	0

F5-33 Program control selection			
bit	Function definition	Description	Default
bit9	Torque output holding at stop in the case of abnormal brake feedback	When the brake travel switch feedback is abnormal, the elevator stops at the door zone position. 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 car slippage may occur in this case. Be cautious of using this function.	0
bit15	Elevator fire emergency in Hong Kong SAR	When enabled, the system masks elevator lock at door open and elevator lock message prompt	0

Param.	Name	Range	Default	Unit	Property
F5-34	Terminal State Display	Monitoring of I/O terminals on the MCB (main control board)	-	-	●
F5-35	Terminal State Display	Monitoring of I/O terminals on CTB (car top board), CCB (car call board), and HCB (hall call board)	-	-	●

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

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

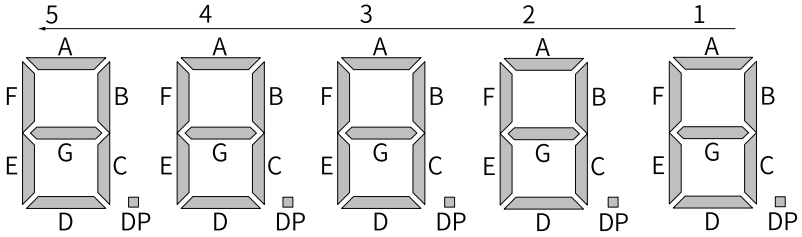


Figure 16-7 Terminal state monitoring

F5-34 Terminal state display					
Segment	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	RUN contactor output
C	Down leveling signal	Inspection down signal	Up slow-down 2 signal	Brake output feedback 2	Brake contactor output
D	Door zone signal	Fire emergency signal	Down slow-down 2 signal	UPS input	Shorting door lock circuit relay output
E	Safety circuit feedback 1	Up limit signal	Up slow-down 3 signal	Elevator lock input	Fire emergency floor arrival signal
F	Door lock circuit feedback 1	Down limit signal	Down slow-down 3 signal	Safety circuit feedback 2	-
G	RUN contactor output feedback	Overload signal	Shorting door lock circuit relay output feedback	Synchronous motor self-locking feedback	-
DP	Brake output feedback 1	Full-load signal	Firefighter operation signal	Door lock circuit feedback 2	-

F5-35 Terminal state display					
Segment	1	2	3	4	5
A	Light curtain 1	Door open button	Door open output 1	Door open button display	System light curtain state 1
B	Light curtain 2	Door close button	Door close output 1	Door close button display	System light curtain state 2
C	Door open limit 1	Door open delay button	Door lock signal	Door open delay button display	Hall call elevator lock input

F5-35 Terminal state display					
Segment	1	2	3	4	5
D	Door open limit 2	Direct travel ride signal	Door open output 2	Non-door zone stop output	Hall call fire emergency input
E	Door close limit 1	Attendant signal	Door close output 2	Reserved	Full-load signal
F	Door close limit 2	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	-

Param.	Name	Range	Default	Unit	Property
F5-36	Load cell input selection	0 to 3	1	-	★

It is used to set the channel of setting the elevator load cell signal. When a load cell device is used, set this parameter correctly first. The values are as follows:

0: Main control board digital input

1: Car top board digital input

2: Car top board analog input

3: Main control board analog input

Param.	Name	Range	Default	Unit	Property
F5-37	X25 function selection	0: Reserved 4: Safety circuit signal 5: Door lock circuit signal 1 6: Door lock circuit signal 2 7: Door lock 1 shorting inspection 8: Door lock 2 shorting inspection	4	-	★
F5-38	X26 function selection		7	-	★
F5-39	X27 function selection		5	-	★
F5-40	X28 function selection		8	-	★

F5-37 to F5-40 are used to set signals input to heavy-current detection input terminals X25 to X28. The possible values to be set:

0: Reserved

4: Safety circuit signal

5: Door lock circuit signal 1

6: Door lock circuit signal 2

7: Door lock 1 shorting inspection

8: Door lock 2 shorting inspection

16.2.8Group F6: Basic Elevator Parameters

Param.	Name	Range	Default	Unit	Property
F6-00	Top floor of the elevator	F6-01 to F6-48	9	-	★
F6-01	Bottom floor of the elevator	1 to F6-00	1	-	★

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

Param.	Name	Range	Default	Unit	Property
F6-02	Parking floor	F6-01 to F6-00	1	-	★

When the idle time of the elevator exceeds the value set in F9-00, the elevator returns to the parking floor set in F6-02 automatically.

Param.	Name	Range	Default	Unit	Property
F6-03	Fire emergency floor	F6-01 to F6-00	1	-	★

When the elevator enters the state of returning to fire emergency floor, the elevator will return to the set floor.

Param.	Name	Range	Default	Unit	Property
F6-04	Elevator lock floor	F6-01 to F6-00	1	-	★

After entering the elevator lock state, the elevator returns to the floor set in F6-04.

When the elevator lock switch operates or it is the time for preset elevator lock in the running state, the elevator clears all hall calls registered, responds to all car calls registered and returns to the elevator lock floor. After arrival, it stops running and turns off the lighting and fan in the car. The hall call is not displayed after door close.

Param.	Name	Range	Default	Unit	Property
F6-05	Service floor 1	0 to 65535 (floors 1 to 16)	65535	-	★
F6-06	Service floor 2	0 to 65535 (floors 17 to 32)	65535	-	★
F6-35	Service floor 3	0 to 65535 (floors 33 to 48)	65535	-	★

These parameters are used to set the service floors among floors 1 to 48.

F6-05 corresponds to floors 1 to 16, F6-06 floors 17 to 32 and F6-35 floors 33 to 40.

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

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

Set the value of these bits one by one. Convert the binary values to decimal values and then set the sum for display on the operating panel, as shown in the following figure.

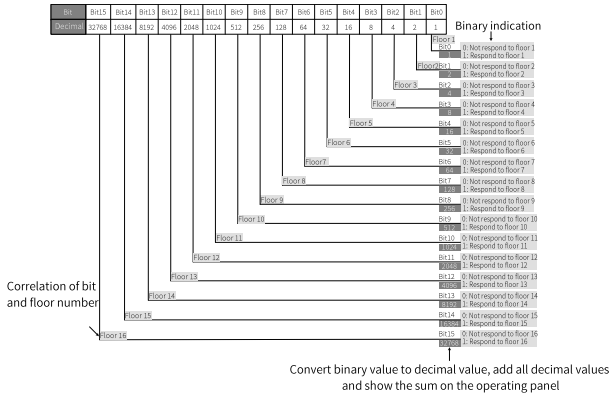
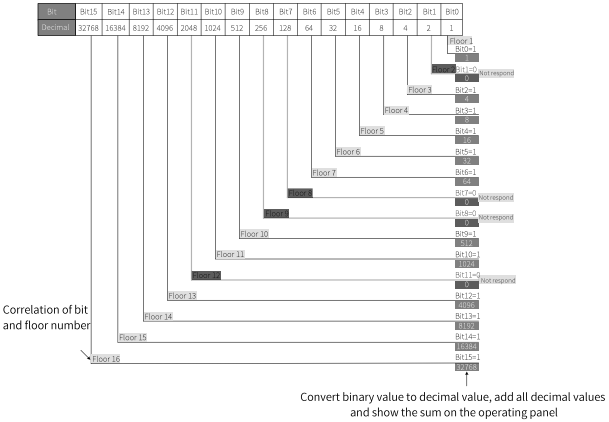


Figure 16-8 Converting binary value of F6-05 to decimal value

For a 16-floor elevator, if it does not respond to the calls at floors 2, 8, 9, and 12, set bit1, bit7, bit8, and bit11 to 0 and other bits to 1, as shown in the following figure.



Add all decimal values to get a sum:

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

Then, set F6-05 to 63101 on the operation panel.

The setting method for F6-06 and F6-35 is the same as that for F6-05.

Param.	Name	Range	Default	Unit	Property
F6-07	Number of elevators in group control	1 to 8	1	-	★
F6-08	Elevator No.	1 to 8	1	-	★
F6-09	Program selection	bit0: Dispersed waiting bit2: Reserved bit3: CAN2 parallel/group control bit4: Compatibility mode (group control) bit6: Clearing the floor number and direction display in advance bit8: Unidirectional hall call (single hall call button) bit9: Analog disconnection not detected bit10: Re-leveling E30 cancellation bit13: Disability calls in parallel/group control bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s)	8	-	★

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

F6-09 bit0 to bit4 are used to set the parallel/group control mode.

Param.	Name	Range	Default	Unit	Property
F6-10	Leveling switch delay	10 to 50	14	ms	★

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

Param.	Name	Range	Default	Unit	Property
F6-11	Elevator function selection	0 to 65535	8448	-	★

F6-11 is used to select the elevator functions. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

F6-11 Elevator function selection			
bit	Function definition	Description	Default
bit1	Canceling main floor verification when the pulse is too large	The function of returning to main floor for verification due to large deviation of the car position is disabled.	0
bit2	Canceling automatic ordering of hall call addresses	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. This bit is used to cancel this function.	0
bit5	Starting current output phase loss detection of synchronous motor	The controller performs output current detection when the synchronous motor is started up. If the current is abnormal, the output will be locked and the running will be forbidden.	0
bit6	Reversing MCB lamp output	The MCB lighting output logic is reversed.	0
bit7	Door open valid in the non-door zone in the inspection state	In the inspection state, you can open/close the door by pressing the door open/close button at the non-door zone.	0
bit8	Door open once when inspection state switches to normal state at first-time power-on	The elevator door opens and closes once after the system turns from first-time inspection to normal running.	1
bit10	Buzzer not tweeting upon re-leveling	The buzzer inside the car does not tweet upon re-leveling.	0
bit11	Super-short floor function	The controller cannot perform shaft auto-tuning if the floor height is less than 500 mm. After this function is enabled, shaft auto-tuning can be performed normally.	0
bit12	Automatic fault reset after an hour	The controller automatically resets the faults once every hour.	0
bit13	E53 fault auto reset	When E53-101 is reported, the controller resets the fault automatically on the conditions of valid door open limit and door lock disconnection. A maximum of three times of auto reset is allowed.	1

F6-11 Elevator function selection			
bit	Function definition	Description	Default
bit14	Floor display not reset by up slow-down signal when super-short floor function is enabled	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 customized super-short floor function is enabled.	0
bit15	Floor display not reset by down slow-down signal when super-short floor function is enabled	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 customized super-short floor function is enabled.	0

Param.	Name	Range	Default	Unit	Property
F6-12	VIP floor	0 to F6-00	0	-	★

F6-12 is used to set the VIP floor.

Param.	Name	Range	Default	Unit	Property
F6-13	Security floor	0 to F6-00	0	-	★

F6-13 is used to set the security floor.

During the night security period or when the security signal is active, the elevator runs to the security floor first and opens and closes the doors once every time before it goes to the destination floor.

Enter the security state in either of the following methods:

- Set FD-07/FD-08 to 5. When the security signal is active, the elevator enters the security state.
- The night security floor function is enabled (FE-32 bit5 = 1) and the elevator enters the security state from 22:00 to 6:00.

Param.	Name	Range	Default	Unit	Property
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	☆

Param.	Name	Range	Default	Unit	Property
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	☆

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

Note

To enable the peak service of down collective selective control, set FE-32 bit6 to 1.

Param.	Name	Range	Default	Unit	Property
F6-18	Start time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-19	End time of time-based floor service 1	00.00 to 23.59	00.00	HH.MM	☆
F6-20	Service floor 1 of time-based floor service 1	0 to 65535	65535	-	☆
F6-21	Service floor 2 of time-based floor service 1	0 to 65535	65535	-	☆
F6-36	Service floor 3 of time-based floor service 1	0 to 65535	65535	-	☆
F6-22	Start time of time-based floor service 2	00.00 to 23.59	00.00	HH.MM	☆
F6-23	End time of time-based floor service 2	00.00 to 23.59	00.00	HH.MM	☆
F6-24	Service floor 1 of time-based floor service 2	0 to 65535	65535	-	☆
F6-25	Service floor 2 of time-based floor service 2	0 to 65535	65535	-	☆
F6-37	Service floor 3 of time-based floor service 2	0 to 65535	65535	-	☆

The above parameters set the time range and service floors of two groups of time-based floor services.

Floor services 1, 2 and 3 correspond to floors 1 to 16, floors 17 to 32 and floors 33 to 48 respectively. For example, in the period of time-based floor service 1 (set by F6-18 and F6-19), the elevator responds only to the service floors set by F6-20, F6-21, and F6-36. The setting of time-based service floors is the same as that of service floors in F6-05.

Note

- To enable the time-based service floor function, set bit8 of FE-32 to 1. Then, you can set the time range and service floors.
- To enable the time-based door service, set bit0 of FE-32 to 1. Then, you can set the time range and service doors.

Param.	Name	Range	Default	Unit	Property
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 for parallel/group control	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 for parallel/group control	F6-01 to F6-00	1	-	★

F6-26 to F6-28 are used to set peak service time period 1 and corresponding service floors.

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

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

Note

To enable the peak service for parallel/group control, set bit7 of FE-32 to 1. To disable this function, set bit7 of FE-32 to 0.

Param.	Name	Range	Default	Unit	Property
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	☆

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

The elevator can switch to the lock state in the following two ways:

- Set F6-40 bit5 to 1 to enable the timed elevator lock function. F6-38 and F6-39 set the elevator lock time period when the system will automatically lock the elevator.
- Set FD-07/08 to 1 to activate the hall elevator lock key switch.

Param.	Name	Range	Default	Unit	Property
F6-40	Program control selection 1	0 to 65535	0	-	★
F6-41	Program control selection 2	0 to 65535	0	-	★
F6-42	Program control selection 3	0 to 65535	0	-	★

These parameters are used for program control selection. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

F6-40 Program control selection 1			
bit	Function definition	Description	Default
bit0	Accessibility function selection	Enable or disable the accessibility function	0
bit1	Soft limit function	When the up slow-down and down leveling signals are active (up leveling inactive), the system assumes that the up limit is performed When the down slow-down and up leveling signals are active (down leveling inactive), the system assumes that the down limit is performed	0
bit2	JP16 input used as rear door selection (button)	JP16 is used for the input of the rear door selection. This function is enabled if FC-04 is set to 2. When JP16 has button input, the elevator opens only the rear door with the button indicator ON. When the button indicator is OFF, 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 through-type door control modes 3 and 4. In this case, only one door opens each time while the other door must stay in the door close limit state Note: In group FD, the extended input includes "Single/Double door selection". If this input is active in the through-type door control mode 3, 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 for on-site elevator use	0
bit7	Fire service or elevator lock through hall call from any floor	-	0
bit8	Hall call commands as rear door when duplicated commands are used as accessibility function	-	0
bit9	Disabling reverse floor number clear	The system clears all the current car calls by default every time the elevator changes the direction. When this function is enabled, clearing reverse floor numbers is disabled.	0

F6-40 Program control selection 1			
bit	Function definition	Description	Default
bit10	Displaying next arriving floor number	The next floor the elevator is to arrive 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 auxiliary command terminal used for accessibility function	You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls: 0: Consistent with CN7 for the single door, and rear door for the double door 1: CN8 calls are the disability calls	0
bit13	Duplicated commands used as accessibility function and rear door function	It is valid only when the function of bit14 is enabled: 1: Accessibility function 0: Rear door function	0
bit14	car call command duplication	Car call command duplication: A. Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for rear door calls or disability calls B. Function enabled: For CN7 and CN8, floors 1 to 16 are for front door calls or ordinary calls, and floors 17 to 32 for rear door calls or disability calls	0
bit15	JP20 input used for switchover to rear door (switch)	JP20 is used for input of switchover between the front door and the rear door	0

F6-41 Program control selection 2			
bit	Function definition	Description	Default
bit0	Not stop at the slow-down switch for car top inspection	Conditions for decelerating to stop due to slow-down 1: • bit0 = 1: Slow-down signal active and car top inspection disabled • bit0 = 0: Slow-down signal active and both EEO and inspection disabled	0
bit2	Decelerate to stop in the inspection state	During inspection, the system decelerates to stop if the terminal floor slow-down 1 acts	0
bit3	Car top inspection communication	Forcibly enable the car top inspection communication and operation is allowed for active car top inspection signal	0

F6-41 Program control selection 2			
bit	Function definition	Description	Default
bit4	Buzzer tweeting during door open delay	The buzzer will tweet when the door open delay time set in FB-14 is reached	0
bit6	Door open delay cancellation	Door open delay is canceled when the door open delay button is pressed again	0
bit7	Buzzer prompt for active button input	-	
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 can be locked properly in the attendant state	0
bit11	Flashing at arrival	The car display blinks when the elevator arrives at the floor. The blinking advance time is set through 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 upon valid car call of current floor	The door re-opens if the car call of the current floor is valid during door close	0
bit14	Electricity meter count 8 function	-	0
bit15	Electricity meter count 6 function	-	0

F6-42 Program control selection 3			
bit	Function definition	Description	Default
bit0	COB hall call scheme selection	-	-
bit1	Canceling door open/ close command at delay after door open/close limit	The door open/close command is canceled at the delay of 1s after door open/close limit	0
bit2	Not judging door lock state at door close output	In normal conditions, the system determines that the door is completely closed only when the door close limit signal is active and the door lock is applied. If this function is enabled, the system does not judge the door lock state	0

F6-42 Program control selection 3			
bit	Function definition	Description	Default
bit3	Door close signal output during operation	There is continuous door close output as the elevator runs	0
bit4	Returning to base floor for verification at first-time power-on	The elevator runs to the bottom floor for verification at power-on for the first time	0
bit5	Clearing calls immediately at elevator lock	0: After the elevator lock signal becomes active, the elevator clears hall calls and responds to the current car call, and then enters elevator lock state 1: After the elevator lock signal becomes active, the elevator clears all calls and enters elevator lock state	0
bit6	Electromagnetic lock NC output	After the NC output is selected, the lock signal is not output during door open and is output during door close	0
bit7	Canceling fault E50 detection	When bit7 is set to 1, fault E50 is not detected	0
bit8	Door open/close limit detection cancellation	When this function is enabled, the fault detection of the door open/close limit signal is canceled	0
bit9	Canceling fault subcode scrolling display	When this function is enabled, the keypad will not have a scrolling display of the fault	0
bit10	Door open energy saving	In the case of waiting with the door open, the system closes the lighting and fan as specified by the time set in F9-01 in door open limit state	0
bit11	Independent switch exiting from parallel control	When this function is enabled, switching a single elevator to independent mode will exit from parallel control and the single elevator will operate in normal mode. When this function is disabled, switching a single elevator to independent mode will exit from parallel control and the single elevator will enter VIP operation mode	1
bit12	UCMP door lock detection enabled	-	0
bit13	Door close quickly upon light curtain detecting obstacles	If the light curtain is blocked as the door closes, the door will be reopened and closed quickly upon reaching the close limit	0
bit14	Fault E53-105/106 auto reset enabled	-	1

Param.	Name	Range	Default	Unit	Property
F6-43	Attendant function selection	0 to 65535	128	-	★

F6-43 is used to select the attendant-related elevator functions. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled. You can view and set this function code using the bits.

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

F6-43 Attendant function selection			
bit	Function definition	Description	Default
bit0	Clearing calls after entering attendant state	All calls are canceled after the elevator enters attendant state for the first time	0
bit1	Not responding to hall calls	The car blinks inside if there is a hall call, but the system does not respond to it automatically	0
bit2	Attendant/Normal state switchover	If this function is enabled, the setting of F5-00 is valid	0
bit3	Door close at jog	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 the attendant state	When there is a registered hall call, the buzzer tweets 2.5s at intervals	0
bit6	Continuous buzzer tweeting in the attendant state	When there is a registered hall call, the buzzer tweets continuously until there is a car registration of the hall call floor	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	1

Param.	Name	Range	Default	Unit	Property
F6-44	Fire emergency function selection	0 to 65535	16456	-	★

F6-44 is used to select the fire emergency-related functions. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

F6-44 Fire emergency function selection			
bit	Function definition	Description	Default
bit0 to bit2	Reserved	-	-
bit3	Arrival gong output in inspection or fire emergency state	The arrival gong is output in the inspection or fire emergency state	1
bit4	Multiple car calls registered in the fire emergency state	Multiple car calls can be registered in the fire emergency state. If this function is disabled, only one car call can be registered	0
bit5	Retentive at power failure in the fire emergency state	In the fire emergency state, the current system and car state will be recorded at power failure and resumed after the system is powered on again	0
bit6	Door close by holding down the door close button	In the fire emergency state, the door close process can be completed only by holding down the door close button until the door close limit is reached. Otherwise, it will be automatically switched over to door open	1
bit7	Reserved	-	-
bit8	Door close at car call registration	The car call button can help close the door	0
bit9	displaying hall calls in the fire emergency state	Hall call floors are displayed in the fire emergency state	0
bit10	Forced running in the firefighter state	JP22 used for forced running input in the firefighter state When the JP22 input switch and the door close button are enabled simultaneously in the firefighter running state, 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 board).	0

F6-44 Fire emergency function selection			
bit	Function definition	Description	Default
bit11	Exiting fire emergency state	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 the firefighter state	In the firefighter running state, the car calls that have been registered are not cleared at reverse door open	0
bit13	Reserved	-	-
bit14	Door open by holding down the door open button	In the fire emergency state, the door open process can be completed only by holding down the door open button until the door open limit is reached. Otherwise, it will be switched over to door close automatically.	1
bit15	Automatic door open at fire emergency floor	The door opens automatically after the elevator arrives at the fire emergency floor	0

Param.	Name	Range	Default	Unit	Property
F6-45	Emergency evacuation function selection	0 to 65535	0	-	★

F6-45 is used to select the emergency evacuation-related elevator functions. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

- If F6-45 bit2 is set to 1, the elevator stops at the emergency evacuation parking floor set in F6-49.
- If F6-45 bit2 is set to 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.

<table>
<tr><th colspan="11">F6-45 Emergency evacuation function selection</th></tr>
<tr><th>bit</th><th>Function definition</th><th colspan="8">Description</th><th>Default</th></tr>
<tr><td>bit0</td><td rowspan="2">Orientation mode</td><td>0</td><td>Automatic computation of the direction (The elevator runs in heavy-load direction. It is for no-load-cell mode selection)</td><td>0</td><td>Nearest landing floor direction</td><td>1</td><td>Load-based direction control (The elevator runs in heavy-load direction. It is for load-cell mode selection)</td><td>1</td><td>Designated load operation direction</td><td>0</td></tr>
<tr><td>bit1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>bit2</td><td>Stop at the base floor</td><td colspan="9">During evacuation running, the elevator arrives at the evacuation parking floor set in F6-49 (It must be a service floor of a non-zero value). Otherwise, the elevator stops at the nearest floor</td><td>0</td></tr>
<tr><td>bit3</td><td>Door open upon one leveling signal</td><td colspan="9">During evacuation running, the elevator arrives at the destination floor. When a leveling signal is active, the elevator decelerates to stop</td><td>0</td></tr>
<tr><td>bit4</td><td>Startup compensation</td><td colspan="9">No-load-cell startup is still valid in emergency evacuation running</td><td>0</td></tr>
<tr><td>bit5</td><td>Evacuation in defined direction</td><td colspan="9">bit5 = 1: Rescue in the up direction
bit5 = 0: Rescue in the down up direction</td><td>0</td></tr>
<tr><td>bit6 to bit7</td><td>Reserved</td><td colspan="9">-</td><td>-</td></tr>
<tr><td>bit8</td><td>Emergency evacuation running time protection</td><td colspan="9">If the elevator does not arrive at the required floor after 50s emergency evacuation running, E33 is reported. And the shorting stator braking mode cannot be switched over to the controller drive within the set time limit</td><td>0</td></tr>
</table>

F6-45 Emergency evacuation function selection			
bit	Function definition	Description	Default
bit10	Emergency buzzer tweeting	The buzzer has output at intervals during emergency evacuation running	0
bit11	HCB output	-	0
bit12	Shorting stator braking mode switched to controller drive	If the speed is still lower than the value set in F6-48 after the elevator is in shorting stator braking mode for 10s, the mode is switched over to controller drive	0
bit14	Emergency evacuation exit mode	0: The system exits emergency evacuation when receiving the door open limit signal from the elevator that arrives at the destination floor	0
		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	Enable the function to make it act	0

F6-46 is used to select the elevator VIP function.

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

Param.	Name	Range	Default	Unit	Property
F6-46	VIP function selection	0 to 65535	0	-	★

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

F6-46 VIP function selection			
bit	Function definition	Description	Default
bit0	VIP enabled by hall call at VIP floor	After this function is enabled, the system enters VIP running	0
bit1	VIP enabled by terminal	After the terminal for VIP hall call becomes ON, the system enters VIP running	0
bit2 to bit 7	Reserved	-	-
bit8	Number of VIP car calls limited	If this function is enabled, only one car call can be selected simultaneously in the VIP state	0

Param.	Name	Range	Default	Unit	Property
F6-47	Blinking advance time	0.0 to 15.0	1.0	s	☆

Param.	Name	Range	Default	Unit	Property
F6-48	Emergency evacuation switching speed	0.010 to 0.630	0.010	m/s	★

F6-48 is used to set the switching speed for the switchover of the shorting stator braking mode to controller drive.

Param.	Name	Range	Default	Unit	Property
F6-49	Emergency evacuation parking floor	0 to F6-00	0	s	★

If F6-45 bit2 is set to 1, the elevator stops at the emergency evacuation parking floor set in F6-49.

Param.	Name	Range	Default	Unit	Property
F6-50	Floor offset in parallel control	0 to 40	0	-	★

F6-50 is used when the bottom floors of two elevators in parallel control are inconsistent. Direct parallel control can be implemented by setting this parameter, without the necessity of readjusting the top and bottom floors and repeating shaft auto-tuning.

Param.	Name	Range	Default	Unit	Property
F6-51	Quiescent current	0.00 to 655.00	0	A	★

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

Param.	Name	Range	Default	Unit	Property
F6-52	Program function selection	0 to 65535	66	-	★

F6-52 is used for program function selection. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

F6-52 Program function selection			
bit	Function definition	Description	Default
bit1	Enable communication type SCB	Enable communication-type SCB	1
bit2	AFE use of CAN communication supported	Enable the AFE communication function	0
bit3	External shaft reset device	To enable the function,set F6-52 bit3 to 1 and the pit interface board is used for inspection Disconnect the door lock twice to exit the inspection state and get the elevator back to the normal state	0
bit4	Inspection speed limit at terminal floors	This function allows the elevator to stop first and then run at a speed not exceeding 0.3 m/s when the elevator is within 2 m away from the terminal floor	0
bit6	Enabling CTB leveling signal input	It is used to enable the transmission of up leveling and down leveling signals through CTB CAN communication	1
bit7	Door operator overtemperature detection	It is used to enable the door operator overheat detection function	0
bit8	CTB safety edge input	This function is enabled by setting F6-52 bit8 to 1. It is used for the safety edge input selection on the CTB.	0

F6-52 Program function selection			
bit	Function definition	Description	Default
bit9	Light curtain fault handling	• Disable the light curtain fault handling function • The light curtain action remains undetected in 5 consecutive car call operations and will be considered abnormal. Forced door close will be output accompanied by buzzer prompt. After the light curtain acts, it returns to normal. • Disable the function by setting F6-52 bit9 to 1	0
bit12	Shorting door lock circuit relay output upon arrival	Disable automatic shorting door lock circuit relay output upon floor arrival by setting F6-52 bit12 to 1	0
bit13	Pulse multiplication setting	It is for setting pulse multiplication of the asynchronous motor when E35 is reported during shaft auto-tuning	0
bit15	Forced inspection following interrupted communication	Enable forced inspection following interrupted communication CTB (only keep running for emergency electrical operation)	0

Param.	Name	Range	Default	Unit	Property
F6-54	Program function selection 5	bit0: Door open allowed for forced door close bit1: Door close supported for fault occurrence bit3: No light curtain detection during door close in inspection mode bit4: Not exit elevator parking upon door lock disconnection bit5: Disable hall calls to enter VIP parallel mode and independently optimize response to hall calls bit6: Overspeed protection for shorting stator braking evacuation bit8: Car top maintenance switch reuse of attendant signal bit9: Enable separate brake control bit10: Car top emergency power supply supported bit11: Communication type power supply board supported bit12: Display inspection state when the safety circuit is open during emergency electrical operation (EEO) bit14: Use of direction change switch for alarm bell signal input	0	-	★

Param.	Name	Range	Default	Unit	Property
F6-55	Function parameter selection	bit0: Door operator use of MOD serial communication bit1: Door operator use of MOD communication check bit2: Door operator use of CAN serial communication bit3: Door operator communication use of contract number verification bit4: Light curtain use of MOD serial communication bit5: Light curtain use of CAN communication bit6: ARD contract No. binding bit9: Change the upper limit setting for factory-specific customized input and output points bit11: Enable communication-type encoder function bit12: Communication-type encoder factory code verification bit13: Enable communication-type encoder contract No. binding bit14: Enable communication-type encoder contract No. binding delay function	0	-	★

16.2.9Group F7: Test Function Parameters

The parameters in this group are provided to facilitate elevator commissioning.

Before the elevator running test at normal speed is performed, check that the shaft is unimpeded and the parameters have been set. Let the elevator run to the middle floor of the entire travel to prevent any elevator running direction error. Run the single-floor call and enter the multi-floor call to perform commissioning. After commissioning is completed, check whether the parameters in this group are set correctly.

Param.	Name	Range	Default	Unit	Property
F7-00	Car call floor registered	0 to F6-00	0	-	☆
F7-01	Up call floor registered	0 to F6-00	0	-	☆
F7-02	Down call floor registered	0 to F6-00	0	-	☆

The three parameters are used to set the destination floors during commissioning or repair. F7-00, F7-01, and F7-02 are respectively used as the car call button, up hall call button, and down hall call button. After the parameters are set, the settings remain effective until the they are changed to 0 or a power failure occurs.

Param.	Name	Range	Default	Unit	Property
F7-03	Random running times	0 to 60000	0	-	☆

F7-03 is used to set the random running times of the system.

The NICE3000^{new} has the random automatic running function. If the setting of F7-03 is greater than 60000, the system keeps implementing random automatic running until you set F7-03 to 0. You can set the random running interval in F7-08.

Param.	Name	Range	Default	Unit	Property
F7-04	Hall call enable	0: Hall call enabled 1: Hall call disabled	0	-	☆

F7-04 is used to forbid the hall calls. The possible values to be set:

0: Hall call enabled

1: Hall call disabled

Param.	Name	Range	Default	Unit	Property
F7-05	Door open enable	0: Door open allowed 1: Door open forbidden	0	-	☆

F7-05 is used to forbid door open. The possible values to be set:

0: Door open allowed

1: Door open forbidden

Note

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

Param.	Name	Range	Default	Unit	Property
F7-06	Overload enable	0: Overload disabled 1: Overload allowed	0	-	☆

F7-06 is used to set the overload function. The possible values to be set:

0: Disabled (overload forbidden)

1: Enabled (overload allowed)

Note

Note that overload is enabled (F7-06 = 1) only in the heavy-load test. Once the test is completed, disable overload running immediately.

Param.	Name	Range	Default	Unit	Property
F7-07	Limit switch enable	0: Limit switch enabled 1: Limit switch disabled	0	-	☆

F7-07 is used to set limit switches. The possible values to be set:

0: Limit switch enabled

1: Limit switch disabled

Note

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

Param.	Name	Range	Default	Unit	Property
F7-08	Random running interval	0 to 1000	0	s	☆

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

Param.	Name	Range	Default	Unit	Property
F7-09	Braking force detection result	0: Meaningless 1: Pass 2: Fail	0	-	●
F7-10	Countdown for braking force detection period	0 to 21600	1440	min	★

F7-09 indicates braking force test results performed by the system. The possible values to be set:

0: Braking force detection has not been performed yet.

1: It indicates that it has passed the braking force detection.

2: It indicates that braking force test fails and the system reports the fault E66. The brake must be inspected after any fault and the fault can be reset only after the braking force detection succeeds.

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

The default is 1440 minutes (24 hours). The braking force detection is automatically triggered if the system receives no call within 12 hours (the stop time exceeds the energy saving time). When it is less than ten 10 minutes to 24 hours, the system clears car calls without any response to hall calls, the doors automatically close, and the buzzer tweets. After 30s of tweeting, the system forcibly performs braking force detection once.

Param.	Name	Range	Default	Unit	Property
F7-13	Balancing factor result	0.00 to 99.99	0	%	★
F7-14	Upper limit reference value of brake torque (double-arm)	0 to 999	0	%	●

F7-13 shows the result of system balancing factor.

Param.	Name	Range	Default	Unit	Property
F7-15	Reference value of brake torque upper limit (single-arm)	0 to 999	0	%	●
F7-17	Braking torque setting (single-arm)	0 to 50	15	%	★

Param.	Name	Range	Default	Unit	Property
F7-25	Car top maintenance distance	0.000 to 5.000	2.000	m	★

F7-25 sets the programmed descent distance for the elevator car top during the process of initiating a car-top maintenance routine.

Param.	Name	Range	Default	Unit	Property
F7-26	Start time of shorting motor stator braking test	00.00 to 23.59	00.00	-	☆
F7-27	End time of shorting motor stator braking test	00.00 to 23.59	02.00	-	☆
F7-28	Braking force detection start time	00.00 to 23.59	00.00	-	☆
F7-29	Braking force detection end time	00.00 to 23.59	00.00	-	☆
F7-30	Braking force detection time setting	0 to 21600	0	min	☆
F7-32	Ascending car overspeed protection (ACOP) speed percentage	100 to 150	130	%	★
F7-33	Parking holding time	0 to 120	15	s	★
F7-34	Parking slip distance detection setting	1 to 20	5	min	★
F7-35	Parking command delay time	0 to 100	30	ms	★
F7-37	Remaining days for auxiliary shorting motor stator braking test	0 to 65535	7	day	●
F7-38	Automatic trigger cycle for auxiliary shorting motor stator braking test	1 to 15	7	day	★

16.2.10Group F8: Enhanced Function Parameters

Param.	Name	Range	Default	Unit	Property
F8-00	Car load ratio during load cell auto-tuning	0 to 100	0	%	★

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

1. Ensure that F8-01 is set to 0 and F5-36 (Load cell input selection) is set to 2 (CTB analog input) or 3 (MCB analog input) to make the system allow load cell auto tuning.
2. Stop the elevator at any floor, with the car in the no-load state. Set F8-00 to 0 and press ENTER.
3. Put N% load in the car. Then set F8-00 to N and press ENTER. For example, if you put 500 kg load in the elevator with rated load of 1000 kg, set F8-00 to 50.

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

Param.	Name	Range	Default	Unit	Property
F8-01	Pre-torque selection	0 to 3	2	-	★
F8-02	Pre-torque offset	0.0 to 100.0	50.0	%	★

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

0: Pre-torque disabled and load cell auto-tuning is allowed.

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

2: Automatic pre-torque compensation. The system automatically adjusts the pre-torque compensation at startup without a load cell.

3: Both load cell pre-torque compensation and automatic pre-torque compensation valid. When automatically adjusting the pre-torque compensation, the system makes a correction together with the load cell to achieve better startup results.

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

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

It is actually the balancing factor of the elevator, indicating the percentage of the car load out of the rated load when the counterweight and the car weight are balanced.

Param.	Name	Range	Default	Unit	Property
F8-03	Drive gain	0.00 to 2.00	0.60	-	★
F8-04	Brake gain	0.00 to 2.00	0.60	-	★

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

Param.	Name	Range	Default	Unit	Property
F8-05	Current car load	0 to 255	0	-	●

F8-05 is readable and reflects the load condition in the car. The value is sampled by the NICE3000^{new} by using a load cell to judge overload or full-load, or calculate the torque current for load cell pre-torque compensation.

Param.	Name	Range	Default	Unit	Property
F8-06	No-load measured by load cell	0 to 255	0	-	★
F8-07	Full-load measured by load cell	0 to 255	100	-	★

Param.	Name	Range	Default	Unit	Property
F8-08	Anti-nuisance function	0: Disabled 1: Nuisance judged by load cell 2: Nuisance judged by light curtain 4: Nuisance judged by light-load signal	0	-	☆

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

F8-08 is used to judge nuisance. The possible values to be set:

0: Disabled

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

2: Nuisance judged by light curtain. The system determines that nuisance exists when the light curtain does not act after the elevator stops at arrival floor for three consecutive times.

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

When the system determines that the elevator is in the nuisance state, it cancels all car calls. In this case, call calls need to be registered again.

Param.	Name	Range	Default	Unit	Property
F8-09	Emergency evacuation speed at power failure	0.020 to 0.300	0.150	m/s	★
F8-10	Emergency evacuation power supply at power failure	0 to 2	1	-	★

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

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

The possible values to be set:

0: Motor not running

1: UPS

2: 48 V battery power supply

Param.	Name	Range	Default	Unit	Property
F8-11	Holding time of zero-speed torque current upon brake close	0.200 to 1.500	0.600	s	★

This parameter is used to set the time during which the system retains the zero-speed torque current output.

Param.	Name	Range	Default	Unit	Property
F8-12	Fire emergency floor 2	0 to F6-00	0	-	★

This parameter is used to set fire emergency floor 2. After the fire emergency floor switchover signal set on the MCB is active, the elevator enters the fire emergency running state and returns to the fire emergency floor.

Param.	Name	Range	Default	Unit	Property
F8-13	Steel rope slip compensation coefficient	0 to 100	50	-	★

Param.	Name	Range	Default	Unit	Property
F8-14	Hall call communication setting	bit0: Hall communication baud rate bit1: Baud rate setting bit4: Hall call energy-saving control bit5: VEGA communication protocol (for hall call) bit6: VEGA communication protocol (for car display) bit7: Expansion board MOD port function selection (0 for hall call, 1 for transparent transmission of host computer) bit9: Faint light control of HCB buttons bit10: Enable faint light function of car call buttons bit11: Car time synchronization protocol; distributes RTC time to the car display board	1	-	☆

Param.	Name	Range	Default	Unit	Property
F8-15	CAN communication setting	bit0: No delay of car call button indicator bit1: Disable IC card car call limit bit2: Car call cancellation by pressing button once bit3: IC card handshaking bit4: Enable touchscreen protocol bit5: Enable the communication command board bit6: Car call canceled by holding down the button bit8: Car baud rate selection bit9: IC card function of idle elevator returning to main floor bit10: Door open/close button not controlled by the IC card bit11: CCB and COB information viewing bit12: Communication-type SCB door zone selection bit13: Enable visitor access linkage cancellation with equipment offline bit14: Enable visitor access hall call linkage	0	-	☆
F8-16	Start address of hall call auxiliary command	0 to 40	0	-	★
F8-17	Hall call address check	0: No check performed 1: HCB address check	0	-	★

Param.	Name	Range	Default	Unit	Property
F8-18	Communication initialization	0 to 1	0	-	★
F8-20	Display board function selection	bit0: Inspection display selection bit1: Fault display selection bit2: Elevator lock display selection bit3: Fire emergency display selection bit4: Firefighter display switch bit5: Firefighter display selection bit6: Emergency running display switch bit7: Emergency running display selection bit8: Status language display selection bit9: Scrolling floor display selection bit10: Arrow style selection 1 bit11: Arrow style selection 2	0	-	☆

Param.	Name	Range	Default	Unit	Property
F8-21	Function selection F8-21	bit0: Enable call re-registration for overload bit1: Enable door open forbidden for hall call of the floor with full load bit2: Enable stop after current cancellation of asynchronous motor bit3: Enable optimization of stop conditions bit4: Enable floor registration forbidden for reverse direction bit5: Enable the limit position fault judgment in shorting stator braking mode bit6: Disable elevator stop optimization upon blocking the light curtain bit7: Prohibit removal of the last call in double-press cancellation bit8: Disable double-press cancellation without door open bit9: Enable auto door open in special conditions bit10: Enable door close delay for hall call input bit11: Disable simulated hall calls at intervals bit12: Disable UPS and leveling compensation optimization bit13: Disable random service floor judgment bit14: Disable communication optimization for re-leveling error bit15: Disable re-leveling times protection	0	-	☆
F8-29	Communication-type encoder contract No. binding delay days	0 to 15	0	-	★

F8-14 bit0 = 0: The communication baud rate between the MCB and HCB is 9600 bps.

F8-14 bit0 = 1: The communication baud rate between the MCB and HCB is 38400 bps. Note that only the NICE3000^{new} product series supports 38400 bps, and the old product series supports only 9600 bps.

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

F8-16 is used to set the HCB start address of the rear door for through-type door applications. HCB address of rear door = HCB address of front door at the same floor + F8-16

If F8-17 is set to 1, the HCB no longer displays the current floor information of the car but displays the set address of itself, convenient for inspection in the case of wrong floor address setting. This function is valid only when the communication baud rate is 38400 bps.

Param.	Name	Range	Default	Unit	Property
F8-33	Function selection F8-33	bit1: Enable safety circuit disconnection in EEO state bit2: Enable pit reset function by the MCB input terminal bit3: Enable pit reset by the pit inspection point bit4: Enable pit reset by the hall call input terminal bit5: Enable pit reset function by the hall call up button bit6: Enable inspection up/down limit function by the MCB input terminal bit14: The shorting motor stator pulse test and original shorting motor stator braking mode can be selected	11	-	☆

Param.	Name	Range	Default	Unit	Property
F8-34	Function selection F8-34	bit0: Pit X1 inspection signal bit1: Pit X2 inspection up signal bit2: Pit X3 inspection down signal bit3: Pit X4 triangle key signal of front landing door (NC by default) bit4: Pit X5 triangle key signal of rear landing door (NC by default) bit5: Pit X6 record of pit inspection reset signal (NO by default) bit6: Pit input point not reset for the triangle key bit7: No reset operations after the elevator runs during pit inspection bit8: Conditions met for pit inspection reset bit10: Pit access signal on the control cabinet bit11: Pit reset signal on the control cabinet	0	-	●
F8-35	High bits of the RTC register	0 to 65535	0	-	☆
F8-36	Low bits of the RTC register	0 to 65535	0	-	☆
F8-37	High bits of agent No.	0 to 65535	0	-	☆
F8-38	Low bits of agent No.	0 to 65535	0	-	☆
F8-42	Function selection F8-42	bit0: EEO up/down button stuck protection disabled bit1: Car top X15/X16 multiplexing function disabled	0	-	☆

16.2.11 Group F9: Time Parameters

Param.	Name	Range	Default	Unit	Property
F9-00	Maximum idle time before returning to main floor	0 to 240	10	min	☆

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

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

Param.	Name	Range	Default	Unit	Property
F9-01	Car energy-saving time	0 to 240	2	min	☆

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

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

Param.	Name	Range	Default	Unit	Property
F9-02	Running time protection	0 to 45	45	s	★

It is used to set the running time limit of the motor.

In the normal running state, the system will perform protection 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. This parameter is mainly used for timeout protection in the case of steel rope slipping on the traction sheave.

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

Param.	Name	Range	Default	Unit	Property
F9-03	Clock: year	2009 to 2100	Current time	YYYY	☆
F9-04	Clock: month	1 to 12	Current time	MM	☆
F9-05	Clock: day	1 to 31	Current time	DD	☆

Param.	Name	Range	Default	Unit	Property
F9-06	Clock: hour	0 to 23	Current time	HH	☆
F9-07	Clock: minute	0 to 59	Current time	MM	☆

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

These parameters are to control internal time of the system. Time keeping is supported at power failure. You need to set the current system time correctly so that functions related to the time can be implemented.

Param.	Name	Range	Default	Unit	Property
F9-09	Cumulative operation time	0 to 65535	0	h	●
F9-11	High bits of running times	0 to 9999	0	-	●
F9-12	Low bits of running times	0 to 9999	0	-	●

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

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

Param.	Name	Range	Default	Unit	Property
F9-13	Maintenance notification period	0 to 99	0	day	☆

It is the forced maintenance notification function.

When this parameter is set to a non-zero value, this function is enabled, and the system starts to count the days. If there is no power-off operation during the counting and the counted days reaches the value of this parameter, the elevator enters the parking state and the system reports Err08, notifying that the elevator must be maintained and cannot run. The maintenance personnel need to power off and enter the elevator into inspection state, after which the system resets the counting and commences a fresh count. If this parameter is set to 0, this function is disabled.

Param.	Name	Range	Default	Unit	Property
F9-15	Running days for maintenance viewing	0 to 99	0	day	●

16.2.12Group FA: Keypad Setting Parameters

Param.	Name	Range	Default	Unit	Property
FA-00	Keypad display selection	0 to 3	3	-	☆

The MCB of this product has three LED displays. Users can change the displayed content based on this parameter. Detailed settings are as follows.

The possible values to be set:

0: Reverse display of physical floors

1: Normal display of physical floors

2: Reverse display of hall call floors

3: Normal display of hall call floors

Param.	Name	Range	Default	Unit	Property
FA-01	Parameter display in running state	1 to 65535	1 to 65535	-	☆

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

FA-01 includes 5 binary bits. A total of 5 parameters can be displayed during running. You can press the Shift key to view different parameters. Every parameter is controlled by a binary bit. If a bit is set to 1, the parameter indicated by this bit is displayed; if this bit is set to 0, the parameter is not displayed. You can modify this parameter for your own convenience.

The correlation between the parameters and binary bits is as follows.

Binary bit	Name	Default
bit0	Running speed	1
bit1	(Rated speed)	1
bit2	Bus voltage	1
bit3	Output voltage	1
bit4	Output current	1
bit5	Output frequency	1
bit6	Low bits of input terminals	1
bit7	High bits of input terminals	1
bit8	Output terminal	1
bit9	Current floor	1
bit10	Current position	1

Binary bit	Name	Default
bit11	Car load	1
bit12	CTB input state	1
bit13	CTB output state	1
bit14	System state	1
bit15	Pre-torque current (%)	1

The method of viewing FA-01 is as follows.

In the running state, FA-01 is displayed as a decimal value. You can press the Shift key to view the parameter indicated by each bit circularly.

Param.	Name	Range	Default	Unit	Property
FA-02	Parameter display in the stop state	1 to 65535	1 to 65535	-	☆

FA-02 is used to set the state parameters displayed on the operation panel when the elevator is in the stop state.

This parameter includes 16 bits corresponding to 2 stop state parameters.

The following table shows details.

Binary bit	Name	Default	Binary bit	Name	Default
bit0	(Rated speed)	1	bit8	Slow-down distance at rated speed	1
bit1	Bus voltage	1	bit9	CTB input state	1
bit2	Low bits of input terminals	1	bit10	CTB output state	1
bit3	High bits of input terminals	1	bit11	System state	1
bit4	Output terminal	1	bit12	Reserved	1
bit5	Current floor	1	bit13	Reserved	1
bit6	Current position	1	bit14	Reserved	1
bit7	Car load	1	bit15	Reserved	1

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

The running and stop parameters are the important references for engineers to perform commissioning on site. The parameters are described as follows.

- Running speed: indicates the actual running speed of the elevator (m/s). Its peak value is the maximum elevator speed (F0-03).
- Rated speed: indicates the allowed maximum running speed (m/s) in the current elevator state.

- Bus voltage: indicates the DC bus voltage (V).
- Output voltage: indicates the effective equivalent voltage of the PWM wave output (V).
- Output current: indicates the effective current as the AC drive drives the motor (A).
- Output frequency: indicates the actual frequency of the running motor (Hz). It is proportional to the running speed.

Param.	Name	Range	Default	Unit	Property
FA-03	Current encoder angle	0.0 to 359.9	0.0	°	●

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

Param.	Name	Range	Default	Unit	Property
FA-05	MCB board software	0 to 65535	0	-	●
FA-06	Driver board software version	0 to 65535	0	-	●

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

The following part describes the example of viewing the integrated controller version information.

MCB version: V20.17-F15.00 -L02.01.

When you view FA-05, the LED operating panel displays the customer No. "F15.00" for 3s first and the major and minor version information "20.17".

Press STOP RES, and the LED operating panel displays the customized and temporary version information "L02.01".

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

Press STOP RES, and it displays the minor version L01.06.

The method of viewing FA-06 is similar to that of FA-05.

Param.	Name	Range	Default	Unit	Property
FA-07	Heatsink temperature	0 to 65535	0	℃	●

FA-07 displays the current temperature of the heatsink.

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

Param.	Name	Range	Default	Unit	Property
FA-08	Temporary version of the platform	0 to 65535	0	-	●
FA-09	Drive module software version	0 to 655.35	0	-	●
FA-10	Auxiliary DSP software version	0 to 65535	0	-	●

Param.	Name	Range	Default	Unit	Property
FA-11	Pre-torque current	0.0 to 999.9	0	%	●

FA-11 displays the percentage of pre-torque current out of the rated current (with positive/negative sign display, motor driving or regenerative state).

Param.	Name	Range	Default	Unit	Property
FA-12	Logic information	0 to 65535	0	-	●

Displays the elevator state.

As shown in the following figure, five LEDs are expressed as 1, 2, 3, 4, and 5 from the right to the left. 1 indicates door 1 state. 2 and 3 are reserved. The combination of 4 and 5 indicates elevator state. The following table shows the specific contents of the numbers:

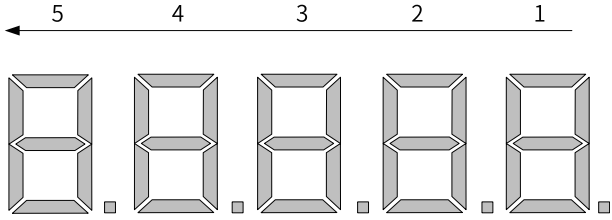


Figure 16-9 LED display

5		4		3	2	1	
Elevator status				Reserved	Reserved	Car state	
0	Inspection state	8	Elevator lock	Reserved	Reserved	0	Waiting state
1	Shaft auto-tuning	9	Idle elevator parking			1	Door open state
2	Micro-leveling	10	Low-speed re-leveling			2	Door open limit
3	Returning to Fire Emergency Floor	11	Rescue operation			3	Door close state
4	Fireman Operation	12	Motor Auto-tuning			4	Door close limit
5	Fault status	13	Keypad control			5	Running state
6	Attendant	14	Main floor verification			-	-
7	Automatic	15	VIP state			-	-

Param.	Name	Range	Default	Unit	Property
FA-13	Curve information	0 to 65535	0	-	●

FA-13 displays the system running curve information. As shown in the following table, LEDs 1 and 2 indicate the timing information and LEDs 4 and 5 curve information.

5	4	3	2	1
Curve information		No display	Timing information	
0	Standby state	-	0	Stop state
1	Startup speed stage		1	Shorting door lock circuit relay output
02, 03	Acceleration start segment		2	Output of shorting motor stator and RUN contactors
4	Linear acceleration segment		3	Zero-speed torque current holding
05, 06, 07	Acceleration end segment		4	Brake contactor output
8	Steady-speed running segment		5	Curve running
09, 10, 11	Deceleration start segment		6	Stop zero-speed
12	Linear deceleration segment		7	Brake contactor OFF
13, 14	Deceleration end segment		8	Stop timing
15	Curve stop		-	-

Param.	Name	Range	Default	Unit	Property
FA-14	Speed reference	0.000 to 65.535	0	m/s	●
FA-15	Feedback speed	0.000 to 65.535	0	m/s	●
FA-16	Bus voltage	0 to 6553.5	0	V	●
FA-17	Current position	0.00 to 6553.5	0	m	●
FA-18	Output current	0 to 6553.5	0	A	●
FA-19	Output frequency	0.00 to 655.35	0	Hz	●
FA-20	Torque current	0 to 999.9	0	A	●
FA-21	Output voltage	0 to 6553.5	0	V	●
FA-22	Output torque	0 to 999.9	0	%	●
FA-23	Output power	0.00 to 99.99	0	kW	●

FA-14 to FA-23 display the current performance state of the system (the output torque and output power support positive/negative sign display).

Param.	Name	Range	Default	Unit	Property
FA-24	Communication interference	0 to 65535	0	-	●

FA-24 displays the current quality of different system communication types, as described in the following table.

5		4		3		2		1	
Inverter SPI communication quality		Rectifier SPI communication quality		CAN2 communication quality		MOD communication quality		CAN1 communication quality	
0	High	0	High	0	High	0	High	0	High
↓	↑	↓	↑	↓	↑	↓	↑	↓	↑
9	Interrupted completely	9	Interrupted completely	9	Interrupted completely	9	Interrupted completely	9	Interrupted completely

0 to 9 indicates the communication quality, where a larger value indicates stronger interference and lower communication quality.

Param.	Name	Range	Default	Unit	Property
FA-25	Eliminate encoder 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-29	Input state 4	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-26 to FA-32 display the system input and output states.

- Description of FA-26 input state 1 display
  As shown in the following figure, five LEDs are numbered 1, 2, 3, 4, and 5 from right to left. 5 and 4 indicate an input or output terminal function. 3 indicates that this function is enabled (1) or disabled (0). 1 and 2 display the overall state of 16 functions contained in this parameter using 16-segment LEDs.

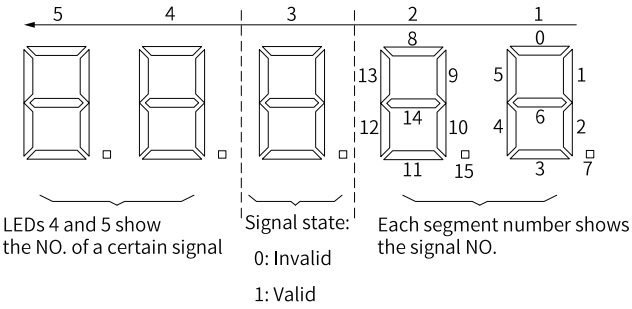


Figure 16-10 FA-26 input state 1 display

No.	Description	No.	Description
0	Reserved	8	Inspection signal
1	Up leveling signal	9	Inspection up signal
2	Down leveling signal	10	Inspection down signal
3	Door zone signal	11	Fire emergency signal
4	Safety circuit feedback	12	Up limit signal
5	Door lock circuit feedback	13	Down limit signal
6	RUN contactor feedback	14	Overload signal
7	Brake contactor feedback	15	Full-load signal

The system input and output states are displayed:

According to the following figure, 5, 4 and 3 indicate that signal 10 (Inspection down) is 1 (Active); Also, 1 and 2 indicate that besides signal 10, signals 4 (Safety circuit feedback), 5 (Door lock circuit feedback), 6 (RUN contactor feedback), 7 (Brake contactor feedback), and 8 (Inspection signal) are active.

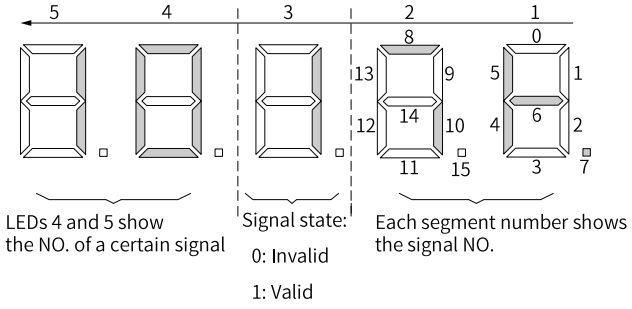


Figure 16-11 Example of FA-26 input state

No.	Description	No.	Description
0	Reserved	8	Inspection signal
1	Up leveling signal	9	Inspection up signal
2	Down leveling signal	10	Inspection down signal
3	Door zone signal	11	Fire emergency signal
4	Safety circuit feedback	12	Up limit signal
5	Door lock circuit feedback	13	Down limit signal
6	RUN contactor feedback	14	Overload signal
7	Brake contactor feedback	15	Full-load signal

- Description of FA-27 input state 2 display

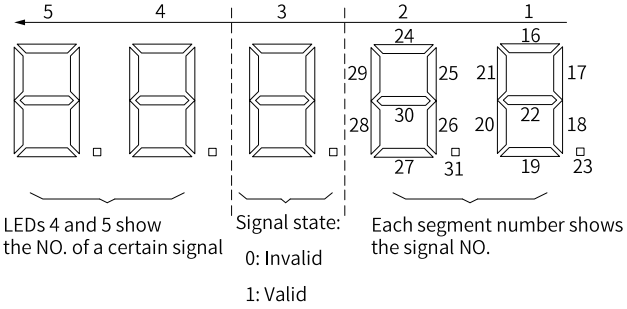


Figure 16-12 FA-27 input state 2 display

No.	Description	No.	Description
16	Up slow-down 1 signal	24	Door operator 1 light curtain
17	Down slow-down 1 signal	25	Door operator 2 light curtain
18	Up slow-down 2 signal	26	Brake travel switch 1 feedback
19	Down slow-down 2 signal	27	Emergency evacuation input
20	Up slow-down 3 signal	28	Elevator lock input
21	Down slow-down 3 signal	29	Safety circuit 2 feedback
22	Shorting door lock circuit relay output feedback	30	Shorting PMSM stator feedback
23	Firefighter operation signal	31	Door lock circuit 2 feedback

- Description of FA-28 input state 3 display

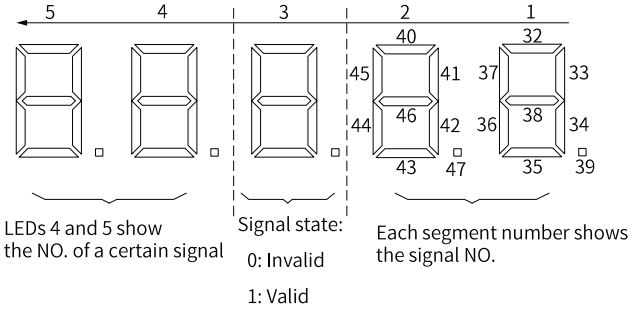


Figure 16-13 FA-28 input state 3 display

No.	Description	No.	Description
32	Reserved	40	Fire emergency floor switchover signal
33	Door 1 safety edge signal	41	Dummy floor input
34	Door 2 safety edge signal	42	Reserved
35	Motor overtemperature input	43	Reserved
36	Earthquake signal input	44	Door 1 open signal
37	Rear door forbidden signal	45	Door 2 open signal
38	Light-load	46	Brake travel switch 2 feedback
39	Half-load	47	External fault signal

- Description of FA-29 input state 4 display

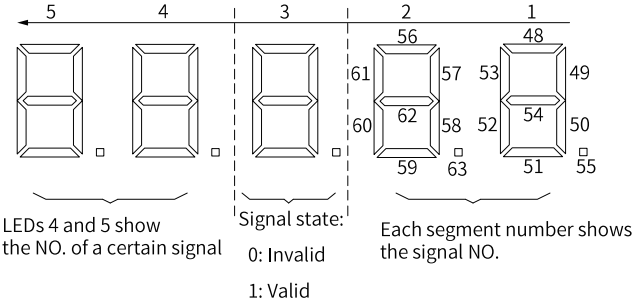


Figure 16-14 FA-29 input state 4 display

No.	Description	No.	Description
48	Terminal floor signal	56	Reserved
49	Door lock shorting signal	57	Reserved
50	Reserved	58	Reserved
51	Reserved	59	Reserved
52	Reserved	60	Reserved

No.	Description	No.	Description
53	Reserved	61	Reserved
54	Reserved	62	Reserved
55	Reserved	63	Reserved

- Description of FA-30 input state 5 display

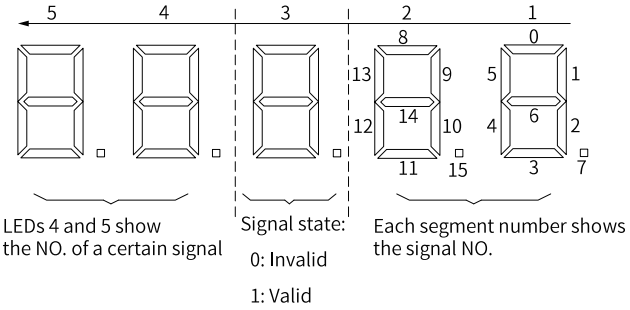


Figure 16-15 FA-30 input state 5

No.	Description	No.	Description
0	Reserved	8	Reserved
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	High-voltage safety circuit	12	Reserved
5	High-voltage door lock 1 signal	13	Reserved
6	High-voltage door lock 2 signal	14	Reserved
7	High-voltage door lock shorting	15	Reserved

- Description of FA-31 output state 1 display

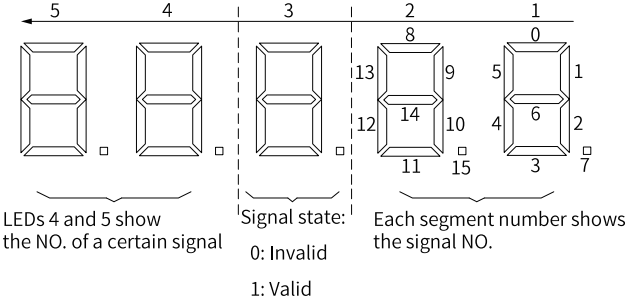


Figure 16-16 FA-31 input state 1

No.	Description	No.	Description
0	Reserved	8	Door close by door operator 2
1	RUN contactor output	9	Brake and RUN contactors Normal
2	Brake contactor output	10	State of fault above level 3
3	Shorting door lock circuit relay output	11	Running state
4	Fire emergency floor arrival signal feedback	12	Shorting motor stator contactor
5	Door open by door operator 1	13	Emergency evacuation output at power failure
6	Door close by door operator 1	14	System healthy
7	Door open by door operator 2	15	Buzzer tweet

- Description of FA-32 output state 2 display

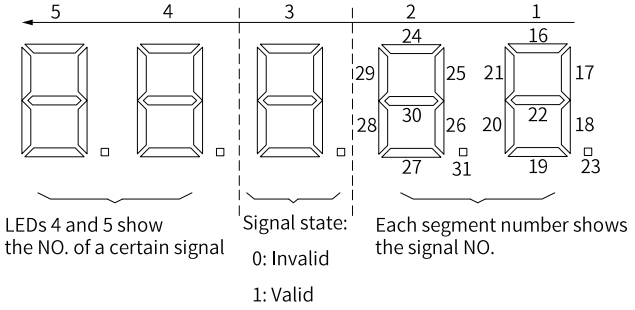


Figure 16-17 FA-32 input state 2

No.	Description	No.	Description
16	Pull-in voltage startup of brake	24	Reserved
17	UP running signal	25	Reserved
18	Lamp/Fan running	26	Reserved
19	Medical sterilization output	27	Reserved
20	Non-door zone stop	28	Reserved
21	Electric lock	29	Reserved
22	Non-service state	30	Reserved
23	Emergency rescue finished	31	Reserved

Param.	Name	Range	Default	Unit	Property
FA-33	Car input state	0 to 65535	0	-	●
FA-34	Car output state	0 to 65535	0	-	●

FA-33 and FA-34 are used to display the car input and output states. Their operating instructions are the same as the MCB input and output display.

- Description of FA-33 car input display

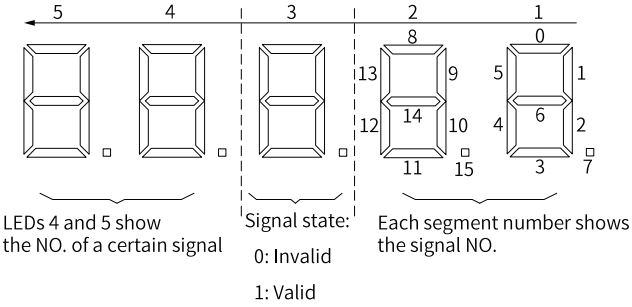


Figure 16-18 FA-33 car input state

No.	Description	No.	Description
0	Reserved	8	Overload input
1	Door 1 light curtain	9	Light-load signal
2	Door 2 light curtain	10	Up leveling communication signal
3	Door 1 open limit	11	Down leveling communication signal
4	Door 2 open limit	12	Reserved
5	Door 1 close limit	13	Inspection signal
6	Door 2 close limit	14	Up signal input
7	Full-load input	15	Down signal input

- Description of FA-34 car output display

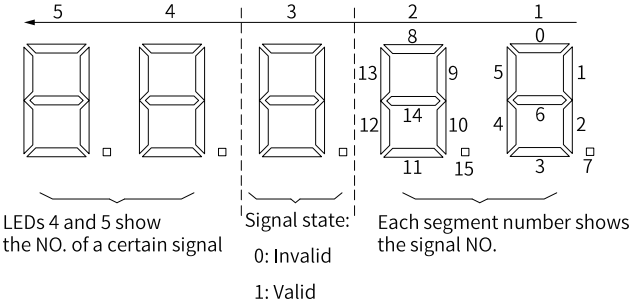


Figure 16-19 FA-34 car output state

No.	Description	No.	Description
0	Reserved	8	Down arrival gong
1	Door 1 open	9	Reserved
2	Door 1 close	10	Reserved
3	Forced door close 1	11	Reserved
4	Door 2 open	12	Reserved
5	Door 2 close	13	Reserved
6	Forced door close 2	14	Reserved
7	Up arrival gong	15	Reserved

Param.	Name	Range	Default	Unit	Property
FA-35	Hall call state	0 to 65535	0	-	●
FA-36	System state 1	0 to 65535	0	-	●
FA-37	System state 2	0 to 65535	0	-	●

These parameters are used to display the hall and system states. Their operating instructions are the same as the MCB input and output display.

- Description of FA-35 hall state display

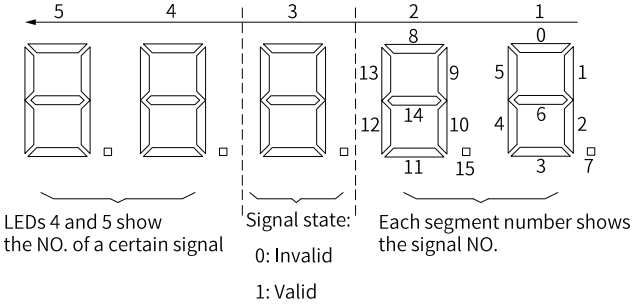


Figure 16-20 FA-35 hall state

No.	Description	No.	Description
0	Reserved	8	Reserved
1	Elevator lock signal	9	Reserved
2	Fire emergency signal	10	Reserved
3	Current floor forbidden	11	Reserved
4	VIP signal	12	Reserved
5	Security signal	13	Reserved
6	Door close button input	14	Reserved
7	Reserved	15	Reserved

- Description of FA-36 system state 1 display

Table 16–2 FA-36 system state 1

No.	Description	No.	Description
0	Door open 1 button	8	Door open 2 button
1	Door close 1 button	9	Door close 2 button
2	Door open delay 1	10	Door open delay 2
3	Direct travel ride switch	11	Reserved
4	Attendant switch	12	Reserved
5	Direction change switch	13	Reserved
6	Independent switch	14	Reserved
7	Fire emergency 2 switch	15	Reserved

- Description of FA-37 system state 2 display

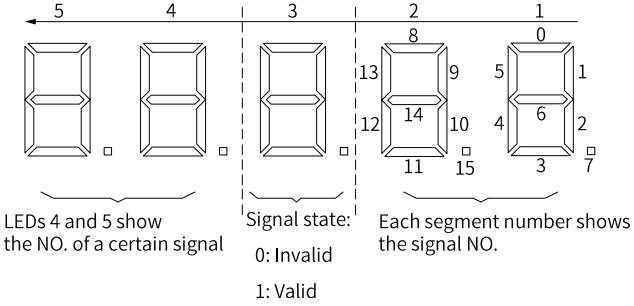


Figure 16-21 FA-37 system state 2 display

No.	Description	No.	Description
0	Up direction display	8	Reserved
1	Down direction display	9	Reserved
2	Running state	10	Reserved
3	System full-load	11	Reserved
4	System overload	12	Reserved
5	System half-load	13	Reserved
6	System light-load	14	Reserved
7	Reserved	15	Reserved

Param.	Name	Range	Default	Unit	Property
FA-38	Maximum floor running time interval	0 to 200	0	s	●

This parameter indicates time required for the elevator to run from the bottom floor to the top floor at normal speed. The smaller value of FA-38 + 10s and F9-02 is the reference

time for motor running protection. If the leveling signal does not change within the reference time in running, the system reports the fault E30 and the elevator stops running.

Param.	Name	Range	Default	Unit	Property
FA-46	HCB communication state 1	0 to 65535	0	-	●
FA-47	HCB communication state 2	0 to 65535	0	-	●
FA-48	HCB communication state 3	0 to 65535	0	-	●
FA-50	HCB and expansion board communication state 1	0 to 65535	0	-	●
FA-51	HCB and expansion board communication state 2	0 to 65535	0	-	●
FA-52	HCB and expansion board communication state 3	0 to 65535	0	-	●

These parameters display the communication state between HCBs of all floors and the MCB.

Parameters FA-46 to FA-48 display the communication state between the control board Modbus interface and the HCB.

Parameters FA-50 to FA-52 display the communication state between the machine room expansion board and the HCB. The expansion board Modbus interface can be connected to the rear door HCB of the through-type door.

States 1, 2 and 3 respectively correspond to the hall call communication state of floors 1 to 16, 17 to 32 and 33 to 48. The following figure shows the state description.

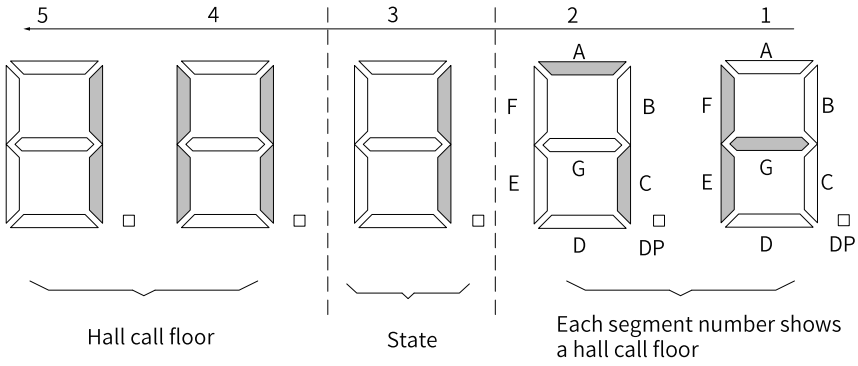


Figure 16-22 Hall call communication state

As shown in the preceding figure, LEDs 3 to 5 indicate hall call communication at floor 11 is normal. You can view hall calls at other floors by shifting LEDs 4 and 5 tubes. It can be seen from LEDs 1 and 2 that hall call communication at floors 5, 6, 7, 8, 9, and 11 is normal.

Param.	Name	Range	Default	Unit	Property
FA-54	Input state 6	0 to 65535	0	-	●
FA-55	Input state 7	0 to 65535	0	-	●

FA-54 and FA-55 are used together to display the signals of input state 6 and input state 7.

Example: To view I/O state display:

- Set FA-53 to 0. View FA-54 for function information from numbers 128 to 143. View FA-55 for function information from numbers 144 to 159.
- Set FA-53 to 1. View FA-54 for function information from numbers 192 to 207. View FA-55 for function information from numbers 208 to 223. If an input function is active, the corresponding LED will light up.

Param.	Name	Range	Default	Unit	Property
FA-56	Input state 3	bit0: AGV indication output bit1: Left brake output bit2: Right brake output bit3: Quick shorting motor stator output bit4: Auxiliary brake contactor 3 output bit7: Auxiliary shorting motor stator contactor output bit8: Overspeed protection in shorting stator braking mode	0	-	●
FA-57	Input state 4	0 to 65535	0	-	●

Param.	Name	Range	Default	Unit	Property
FA-58	Version display selection	0: Machine-room-less monitoring board version 1: Machine room expansion board version 2: Car expansion board version 3: ARD version 4: AFE master version 5: AFE slave version 6: Forced drive operation box version 7: SCB software version 8: SBC board version 9: MRL monitoring board (GB/T-2020) 10: Door operator 1 (integrated with car top box) 11: Door operator 2 12: Car top emergency power supply 110: Front door COB1 version 111: Front door COB2 version 112: Front door CCB1 version 113: Front door CCB2 version 120: Rear door COB1 version 121: Rear door COB2 version and so on 201: Pit inspection board version	0	-	☆
FA-59	Major software version	0 to 65535	0	-	●
FA-60	Temporary software version	0 to 65535	0	-	●
FA-61	Manufacturer software version	0 to 65535	0	-	●

FA-58 and FA-59 are used together to display the expansion board software version.

Example: To view the software version of machine room expansion board, do as follows:.

Set FA-58 to 1 and then view FA-59 to obtain the software version of machine room expansion board. See "FA-05" on FA-59 software version viewing method.

If you need to view COB and accessories, you should first enable F8-15 bit11 to obtain the system accessory versions, and then view the corresponding versions according to the above table.

Param.	Name	Range	Default	Unit	Property
FA-63	Inspection state monitoring	0 to 65535 bit0: CTB forced inspection signal bit1: Pit forced inspection signal bit2: Forced door lock bypass bit3: Shaft auto-tuning not performed bit4: Reserved bit13: Forced inspection for braking force detection bit14: Inspection running allowed during emergency evacuation	0	-	●

16.2.13 Group FB: Door function parameters

Param.	Name	Range	Default	Unit	Property
Fb-00	Quantity of door operator(s)	1 to 2	1	-	★

Fb-00 is used to set the number of door operator(s).

Set it to 1 if there is only one door, and 2 if there are double doors.

Param.	Name	Range	Default	Unit	Property
Fb-01	CTB software version	0.00 to 655.35	0	-	●

When the controller is connected to the CTB, this parameter displays the CTB software version. See "FA-05" for Fb-01 software version viewing method.

Param.	Name	Range	Default	Unit	Property
Fb-02	Service floor 1 of door operator 1	0 to 65535	65535	-	☆
Fb-03	Service floor 2 of door operator 1	0 to 65535	65535	-	☆
Fb-18	Service floor 3 of door operator 1	0 to 65535	65535	-	☆
Fb-04	Service floor 1 of door operator 2	0 to 65535	65535	-	☆
Fb-05	Service floor 2 of door operator 2	0 to 65535	65535	-	☆
Fb-19	Service floor 3 of door operator 2	0 to 65535	65535	-	☆

These parameters are used to set the service floors of door operator 1 and door operator 2:

Service floor 1 corresponds to floors 1 to 16;

Service floor 2 corresponds to floors 17 to 32;

Service floor 3 corresponds to floors 33 to 48;

These parameters are used to set the service floors of door operators 1 and 2. The setting of door machine service floors is the same as that of service floors in F6-05.

Param.	Name	Range	Default	Unit	Property
Fb-06	Door open protection time	5 to 99	10	s	☆
Fb-07	Arrival gong output delay	0 to 10.00	0.00	ms	☆
Fb-08	Door close protection time	5 to 99	15	s	☆

Fb-06 is used to set the door open protection time.

After outputting the door open command, if the system does not receive the door open limit signal after the time set in this parameter, the system re-opens the door. When the door open/close times reach the value set in Fb-09, the system reports fault E48.

Fb-07 is used to set the arrival gong output delay.

When the value of this parameter is larger than 10 and the car display is switched over to the destination floor, the system outputs the arrival gong after the time set in this parameter. If the value is smaller than 10, the system outputs the arrival gong at stop.

Fb-08 is used to set the door close protection time.

After outputting the door close command, if the system does not receive the door close limit signal after the time set in this parameter, the system re-closes the door. When the door open/close times reach the value set in Fb-09, the system reports fault E49.

Param.	Name	Range	Default	Unit	Property
Fb-09	Door open/close protection times	0 to 20	0	-	☆
Fb-10	Door state of standby elevator	0 to 2	0	-	☆

Fb-09 is used to set the door re-open/re-close times allowed when door open/close is abnormal.

Fb-10 is used to set the door state when the elevator is in stop and waiting state. The possible values to be set:

0: Closing the door as normal at main floor

1: Waiting with door open at main floor

2: Waiting with door open at each floor

Param.	Name	Range	Default	Unit	Property
Fb-11	Door open holding delay upon arrival for hall call	1 to 1000	5	s	☆
Fb-12	Door open holding delay upon arrival for car call	1 to 1000	3	s	☆
Fb-13	Door open holding time at main floor	1 to 1000	10	s	☆
Fb-14	Duration of door open holding delay	10 to 1000	30	s	☆

Fb-11 is used to set the door open holding time when there is a hall call. The elevator closes the door immediately after receiving a door close command.

Fb-12 is used to set the door open holding time when there is a car call. The elevator closes the door immediately after receiving a door close command.

Fb-13 is used to set the door open holding time after the elevator arrives at the base floor. The elevator closes the door immediately after receiving a door close command.

Fb-14 is used to set the door open holding time when there is door open delay input. The elevator closes the door immediately after receiving a door close command.

Param.	Name	Range	Default	Unit	Property
Fb-15	special door open holding time	10 to 1000	30	s	☆
Fb-16	Manually operated door lock waiting time	1 to 60	5	s	☆
Fb-17	Holding time for forced door close	5 to 180	120	s	☆

Fb-15 is used to set the door open holding time when there is a disability call.

FB-16 is used to set the door open limit delay in the case of manual door. This parameter is valid when the manually operated door function is used.

FB-17 is used to set the holding time before forced door close is implemented.

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

Param.	Name	Range	Default	Unit	Property
Fb-20	Manually operated door lock waiting time	0 to 60	0	s	☆

This parameter is used to set interval time from door lock circuit disconnection to the next running startup after reconnection.

Param.	Name	Range	Default	Unit	Property
Fb-23	Major version of the platform	0.00 to 655.35	0	-	●

Fb-23 represents the software version of the platform.

Param.	Name	Range	Default	Unit	Property
Fb-24	UCMP software version	0 to 65535	1	-	●

Fb-24 is the program version of the UCMP test program module.

Param.	Name	Range	Default	Unit	Property
Fb-27	Door open duration at fault occurrence	0 to 60000	60	s	☆
Fb-28	Door open/close protection time at fault occurrence	0 to 60000	60	s	☆
Fb-29	Rescue exit time after evacuation and door close limit	3 to 999	15	s	☆
Fb-30	Power-on duration for UPS evacuation	0 to 600	10	s	☆
Fb-31	Automatic door open time under special conditions	0 to 600	20	s	☆
Fb-32	Protection time for forced door close	0 to 600	20	s	☆
Fb-33	Warning time for door close	0 to 1000	0	s	☆
Fb-34	Door open delay trigger time	0 to 10	2	s	☆
Fb-35	VIP exit delay	0.00 to 600.00	30.00	s	☆

16.2.14Group FC: Protection Function Parameters

Param.	Name	Range	Default	Unit	Property
FC-00	Program control selection	0 to 65535	0	-	★

These parameters are used for program control selection.

“1” indicates that the function is enabled

“0” indicates that the function is disabled

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

FC-00 function selection			
bit	Function definition	Description	Default
bit0	Detection of short circuit to ground 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	Disabling overcurrent detection at inspection startup	-	0
bit2	Decelerating 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 to former state. This function is mainly used for manually operated door.	0
bit9	Mode without door open/close limit signal	In this mode, the system automatically judges the door open/close limit without door open/close limit signal. It determines that the door open limit is reached 3s after the door open signal output and the door close limit is reached 3s after the door close signal output.	0

Param.	Name	Range	Default	Unit	Property
FC-01	Function selection	0 to 65535	65	-	★

These parameters are used for program control selection.

"1" indicates that the function is enabled

"0" indicates that the function is disabled

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

FC-01 Function selection			
bit	Function definition	Description	Default
bit0	Overload protection	0: Motor overload detection enabled 1: Motor overload detection disabled	1
bit1	Canceling output phase loss protection	It cancels fault protection at output phase loss	0
bit2	Overmodulation function selection	-	0

FC-01 Function selection			
bit	Function definition	Description	Default
bit4	Light curtain judgment upon door close limit	At door close limit, the door re-opens if the light curtain is valid.	0
bit5	Canceling SPI communication detection	It cancels wire breakage detection on SPI communication between the MCB and the driver board	0
bit14	Canceling input phase loss protection	Canceling input phase loss protection	0

Param.	Name	Range	Default	Unit	Property
FC-02	Overload protection coefficient	0.50 to 10.00	1.00	-	★
FC-03	Overload pre-warning coefficient	50 to 100	80	%	★

The FC-02 reference quantity is motor overload current. After detecting that the output current reaches the value (FC-02 x Rated motor current) and the duration lasts the time specified in the inverse time lag curve, the controller outputs fault E11 indicating motor overload.

The FC-03 reference quantity is motor overload current. After detecting that the output current exceeds the value (FC-03 x Rated motor current) and the duration lasts the time specified in the inverse time lag curve, the controller outputs a pre-warning signal.

Param.	Name	Range	Default	Unit	Property
FC-04	Through-type door control mode	0 to 3	0	-	★

FC-04 is used to set the through-type door control mode. The possible values to be set:

0: Simultaneous control for door open/close

1: Independent control for door open/close for hall calls, and simultaneous control for car calls

2: Independent control for door open/close for hall calls, and manual control for car calls

3: Independent control for hall calls and car calls

Param.	Name	Range	Default	Unit	Property
FC-11	11th fault	0 to 9999	0	-	●
FC-12	11th fault subcode	0 to 65535	0	-	●
FC-13	Month and day upon 11th fault	0 to 12.31	0	MM.DD	●

Param.	Name	Range	Default	Unit	Property
FC-14	Hour and minute upon 11th fault	0.00 to 23.59	0	HH.MM	●
FC-15	12th fault	0 to 9999	0	-	●
FC-16	12th fault subcode	0 to 65535	0	-	●
FC-17	Month and day upon 12th fault	0 to 1231	0	MM.DD	●
FC-18	Hour and minute upon 12th fault	0.00 to 23.59	0	HH.MM	●
…					
FC-207	60th fault	0 to 9999	0	-	●
FC-208	60th fault subcode	0 to 65535	0	-	●
FC-209	Month and day upon the 60th fault	0 to 1231	0	MM.DD	●
FC-210	Hour and minute upon the 60th fault	0.00 to 23.59	0	HH.MM	●

If the storage space for 10 detailed fault records is full, the earliest detailed fault record will be moved to the most recent entry in the brief fault record storage area. For example, if a new fault occurs, the fault code, subcode and time information of the first fault recorded in group E9 (fault information) will be moved to location from FC-11 to FC-14.

The brief fault record is a 4-digit number. The two high digits indicate the floor where the car is located when the fault occurs, and the two low digits indicate the fault code. For example, the 1st fault record is 0835, indicating that when the latest brief fault record (fault E35) occurs, the car is near floor 8.

The fault subcode is used to locate the causes of the fault. Fault month and day and fault hour and minute record accurate occurrence time of the fault.

16.2.15 Group FD: Communication parameters

Param.	Name	Range	Default	Unit	Property
FD-00	Baud rate setting	0: 9600 1: 38400	1	-	☆
FD-02	Local address	0 to 127 (0: broadcast address)	1	-	☆
FD-03	Communication response delay	0 to 20	0	ms	☆

These parameters are used to configure the RS232 serial communication settings for the NICE3000^{new} controller, enabling communication with host computer monitoring software.

- FD-00 specifies the baud rate for serial communication.

- FD-02 specifies the address of the controller. For successful and normal communication between the controller and the serial port with which it communicates, these two parameters must be consistently configured.
- FD-03 specifies the delay for the controller to send data by means of the serial port.

Param.	Name	Range	Default	Unit	Property
FD-07	HCB-JP1 input selection	NO (0)/NC (0): Reserved NO (1)/NC (33): Elevator lock NO (2)/NC (34): Fire emergency NO (3)/NC (35): Current floor forbidden NO (4)/NC (36): VIP signal NO (5)/NC (37): Security signal NO (6)/NC (38): Door close button NO (7)/NC (39): Fire emergency floor 2 NO (8)/NC (40): Delayed door close signal	1	-	★
FD-08	HCB-JP2 input		2	-	★

FD-07 and FD-08 are the input parameters of pins 2 and 3 of JP1 and JP2 on the HCB. The setting is effective to the HCBs for all floors.

Param.	Name	Range	Default	Unit	Property
FD-09	HCB-JP1 output selection	0: Reserved 1: Up arrival indicator 2: Down arrival indicator 3: Fault 4: Non-door zone stop 5: Non-service state 6: Door close button indicator 7: Interface output 9: Door close delay signal output	1	-	★
FD-10	HCB-JP2 output		2	-	★

FD-09 and FD-10 are the output parameters of pins 1 and 4 of JP1 and JP2 on the HCB. The setting is effective to the HCBs for all floors.

Param.	Name	Range	Default	Unit	Property
FD-11	Expansion board 1: X1 input	NO (0)/NC (0): Reserved NO (1)/NC (33): Fire emergency NO (2)/NC (34): Overload NO (3)/NC (35): Full load NO (4)/NC (36): Firefighter NO (5)/NC (37): Door 1 light curtain NO (6)/NC (38): Door 2 light curtain NO (7)/NC (39): Brake travel switch 1 feedback NO (8)/NC (40): Emergency evacuation at power failure NO (9)/NC (41): Elevator lock NO (10)/NC (42): Safety circuit NO (11)/NC (43): Shorting motor stator contactor feedback NO (12)/NC (44): Door lock circuit NO (13)/NC (45): Door 1 safety edge NO (14)/NC (46): Door 2 safety edge NO (15)/NC (47): Motor overtemperature NO (16)/NC (48): Earthquake NO (17)/NC (49): Rear door forbidden NO (18)/NC (50): Light load NO (19)/NC (51): Half load NO (20)/NC (52): Fire emergency floor switchover NO (21)/NC (53): Dummy floor NO (22)/NC (54): Door 1 open NO (23)/NC (55): Door 2 open NO (24)/NC (56): Brake travel switch 2 feedback NO (25)/NC (57): External fault NO (26)/NC (58): Terminal floor signal NO (27)/NC (59): Door 1/2 selection NO (28), NC (60): Single/double door selection	0	-	★
FD-12	Expansion board 1: X2 input		0	-	★
FD-13	Expansion board 1: X3 input		0	-	★
FD-14	Expansion board 1: X4 input		0	-	★
FD-15	Expansion board 1: X5 input		0	-	★
FD-16	Expansion board 1: X6 input		0	-	★
FD-17	Expansion board 1: X7 input		0	-	★
FD-18	Expansion board 1: X8 input		0	-	★
FD-19	Expansion board 1: X9 input		0	-	★
FD-20	Expansion board 1: X10 input		0	-	★
FD-21	Expansion board 2: X1 input		0	-	★
FD-22	Expansion board 2: X2 input		0	-	★
FD-23	Expansion board 2: X3 input		0	-	★
FD-24	Expansion board 2: X4 input		0	-	★
FD-25	Expansion board 2: X5 input		0	-	★
FD-26	Expansion board 2: X6 input		0	-	★
FD-27	Expansion board 2: X7 input		0	-	★
FD-28	Expansion board 2: X8 input		0	-	★
FD-29	Expansion board 2: X9 input		0	-	★
FD-30	Expansion board 2: X10 input		0	-	★

These parameters are used to set the functions of input terminal X on the expansion card. The NICE3000^{new}system supports up to two expansion cards that are used to expand the input terminal functions in the control cabinet or on the car.

Param.	Name	Range	Default	Unit	Property
FD-31	Expansion board 1: Y1 output	0: Reserved 1: Door open by door operator 1 2: Door close by door operator 1 3: Door open by door operator 2 4: Door close by door operator 2 5: Brake and RUN contactors healthy (no E36 or E37) 6: Fault state (output for level 3/4/5 faults) 7: NICE3000^{new} operation state monitoring 8: Shorting motor stator contactor 9: Controller healthy 10: Emergency evacuation buzzer 11: Brake pick voltage 12: Up running 13: Lighting and fan 14: Medical sterilization 15: Non-door zone stop 16: Electromagnetic lock of the manually operated door 17: Non-service state 18: Emergency evacuation completed 19: Fire emergency output 20: Emergency state at power failure 21: Door lock active 22: Night output signal 23: Alarm filtered output	0	-	★
FD-32	Expansion board 1: Y2 output		0	-	★
FD-33	Expansion board 1: Y3 output		0	-	★
FD-34	Expansion board 1: Y4 output		0	-	★
FD-35	Expansion board 1: Y5 output		0	-	★
FD-36	Expansion board 1: Y6 output		0	-	★
FD-37	Expansion board 1: Y7 output		0	-	★
FD-38	Expansion board 1: Y8 output		0	-	★
FD-39	Expansion board 1: Y9 output		0	-	★
FD-40	Expansion board 1: Y10 output		0	-	★
FD-41	Expansion board 2: Y1 output		0	-	★
FD-42	Expansion board 2: Y2 output		0	-	★
FD-43	Expansion board 2: Y3 output		0	-	★
FD-44	Expansion board 2: Y4 output		0	-	★
FD-45	Expansion board 2: Y5 output		0	-	★
FD-46	Expansion board 2: Y6 output		0	-	★
FD-47	Expansion board 2: Y7 output		0	-	★
FD-48	Expansion board 2: Y8 output		0	-	★
FD-49	Expansion board 2: Y9 output		0	-	★
FD-50	Expansion board 2: Y10 output		0	-	★

These parameters are used to set the functions of 10 relay outputs on MCTC-KZ-G1. The system supports up to two I/O expansion cards with up to 20 output terminals.

16.2.16 Group FE: Display Setting Parameters

Param.	Name	Range	Default	Unit	Property
FE-00	Collective selective mode	0 to 2	0	-	★

FE-00 is used to set the collective selective mode of the control system. The possible values to be set:

- 0: Full collective selective: The elevator responds to both up and down hall calls.
- 1: Down collective selective: The elevator only responds to down hall calls.
- 2: Up collective selective: The elevator only responds to up hall calls.

Param.	Name	Range	Default	Unit	Property
FE-01	Floor 1 display	00: "0" 22: "23" 01: "1" 23: "C" 02: "2" 24: "D" 03: "3" 25: "E" 04: "4" 26: "F" 05: "5" 27: "I" 06: "6" 28: "J" 07: "7" 29: "K" 08: "8" 30: "N" 09: "9" 31: "O" 10: "A" 32: "Q" 11: "B" 33: "S" 12: "G" 34: "T" 13: "H" 35: "U" 14: "L" 36: "V" 15: "M" 37: "W" 16: "P" 38: "X" 17: "R" 39: "Y" 18: "-" 40: "Z" 19: No display 41: "15" 20: "12" 42: "17" 21: "13" 43: "19"	1901	-	☆
FE-02	Floor 2 display		1902	-	☆
FE-03	Floor 3 display		1903	-	☆
FE-04	Floor 4 display		1904	-	☆
FE-05	Floor 5 display		1905	-	☆
FE-06	Floor 6 display		1906	-	☆
FE-07	Floor 7 display		1907	-	☆
FE-08	Floor 8 display		1908	-	☆
FE-09	Floor 9 display		1909	-	☆
FE-10	Floor 10 display		0100	-	☆
Floor 11 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	-	☆
Floor 41 to floor 46 display			…		
FE-50	Floor 47 display		0407	-	☆
FE-51	Floor 48 display	00: "0" 22: "23" 01: "1" 23: "C" 02: "2" 24: "D" 03: "3" 25: "E" 04: "4" 26: "F" 05: "5" 27: "I" 06: "6" 28: "J" 07: "7" 29: "K" 08: "8" 30: "N" 09: "9" 31: "O" 10: "A" 32: "Q" 11: "B" 33: "S" 12: "G" 34: "T" 13: "H" 35: "U" 14: "L" 36: "V" 15: "M" 37: "W" 16: "P" 38: "X" 17: "R" 39: "Y" 18: "-" 40: "Z" 19: No display 41: "15" 20: "12" 42: "17" 21: "13" 43: "19"	0408	-	☆

These parameters are used to set the display of each floor. The setting range is 0000 to 9999, where the two high bits indicate the display code of tens position of the floor number, and the two low bits indicate the display code of ones position.

Param.	Name	Range	Default	Unit	Property
FE-52	Most significant bit selection 1	0 to 5699	0	-	☆
FE-53	Most significant bit selection 2		0	-	☆
FE-54	Most significant bit selection 3		0	-	☆
FE-55	Most significant bit selection 4		0	-	☆
FE-56	Most significant bit selection 5		0	-	☆

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

When the 2-digit floor display cannot meet your requirements, add the third digit display by setting the most significant bit selection.

Set the floor address that requires a special display in two high digits and the display content in two low digits.

For example, if you want floor 18 to be displayed as "17A", do as follows: 1. Set FE-18 to 0710 (displays "7A"). 2. Set FE-65 to 1801, indicating that the highest digit display of floor 18 is "1".

Set F8-14 bit0 to 1. The system gets re-powered after power-off.

Param.	Name	Range	Default	Unit	Property
FE-32	Elevator function selection 1	0 to 65535	34816	-	☆

The parameter is used to set the functions required by a user.

Each function is controlled using one binary bit.

“1” indicates that the function is enabled

“0” indicates that the function is disabled

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

FE-32 Elevator function selection 1			
bit	Function definition	Description	Default
bit0	Time-based floor service selection for front and rear door	To enable the function, see "18.5 Time-based Floor Service" on page 446.	0
bit2	Re-leveling	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	Advance door opening	When the elevator speed is smaller than a certain value and the door zone signal is active during normal operation, the system shorts the door lock circuit contactor and outputs the door open signal for advance door opening. 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 22:00 to 6:00, the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor.	0
bit6	Peak service for down collective selective	Enable the peak service for down collective selective mode.	0
bit7	Peak service for parallel/group control	Enable the peak service for parallel/ group control mode.	0
bit8	Time-based service floor function	To enable the function, see "18.5 Time-based Floor Service" on page 446.	0
bit9	VIP function	The VIP function is used.	0
bit11	car call cancellation	A call can be deleted by pressing the button twice.	1
bit12	Hall call cancellation	-	0
bit13	Shorting stator braking mode switched over to controller drive evacuation when timeout occurs	-	0
bit15	Door lock short circuit detection	-	1

Param.	Name	Range	Default	Unit	Property
FE-33	Elevator function selection 2	0 to 65535	36	-	☆

The parameter is used to set the functions required by a user.

Each function is controlled using one binary bit.

"1" indicates that the function is enabled

"0" indicates that the function is disabled

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

FE-33 Elevator function selection 2			
bit	Function definition	Description	Default
bit1	Door open holding upon door 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	Automatic reset for stuck RUN and brake contactors	If the feedback of the RUN and brake contactors is abnormal, faults E36 and E37 are reported, and you need to manually reset the system. With this function, the system resets automatically after the fault 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 it is stuck, the system instructs the elevator to slow down immediately and reports a 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. The light curtain becomes invalid and the buzzer tweets.	0
bit8	Self-locking contactor NC output	-	0
bit9	Immediate elevator stop upon re-leveling	-	0

FE-33 Elevator function selection 2			
bit	Function definition	Description	Default
bit13	High-speed protection function	A maximum allowable speed is set when the car is in the slow-down switch position. When the elevator exceeds the speed, the system outputs a protection signal.	0
bit14	Enable hall call door open delay	-	0
bit15	Independent control of through-type door	-	0

16.2.17Group FP: User Parameters

Param.	Name	Range	Default	Unit	Property
FP-00	User password	0 to 65535	0	-	☆

FP-00 is used to set the user password. 0 indicates no password.

The password prohibits unauthorized personnel from viewing and modifying parameters. When entering parameter setting the next time, you must enter the correct password to view and modify parameters. To remove the password, set FP-00 to 00000.

Remember the password that you set. If the password is set incorrectly or forgotten, contact the manufacturer to replace the control board.

Param.	Name	Range	Default	Unit	Property
FP-01	Parameter update	0: No update 1: Restore factory setting 2: Clear recorded information 3: Clearing shaft data	0	-	★

FP-01 is used to reset some system parameters.

The values are as follows:

0: No operation.

1: Restore factory settings. Choosing this value resets all system parameters (except group F1) to their factory settings. Use this function with caution.

2: Clear fault records. Fault records are cleared. FC-11 to FC210 and parameters in groups E0 to E9 are set to 0.

3: Clear shaft information: Floor pulse data in the shaft is cleared. Shaft pulses of F3-12 to F3-17 and group F4 are set to 0. The leveling adjustment parameters in group Fr are set to 30030. Shaft auto-tuning must be performed again after clearing.

Param.	Name	Range	Default	Unit	Property
FP-02	User parameter check	0: Disabled 1: Valid	0	-	★

FP-02 is used to view the parameters that are different from the default setting. When it is set to 1, you can view the parameters that are different from the default setting.

Param.	Name	Range	Default	Unit	Property
FP-03	Level 2 password	0 to 65535	0	-	☆
FP-04	Level 3 password	0 to 65535	0	-	☆
FP-05	Contract No. 2	0 to 65535	0	-	★
FP-06	Contract No. 1	0 to 65535	5555	-	★

FP-05 and FP-06 are used to set manufacturer contract No. Contract No. is used in the HCB or door operator software requiring contract No. check. If the contract No. check fails, the system cannot work properly.

16.2.18Group Fr: Leveling Adjustment Parameters

Param.	Name	Range	Default	Unit	Property
Fr-00	Leveling adjustment mode	0: Disabled 1: Car leveling adjustment enabled 2: Load cell auto-tuning	0	-	★

Fr-00 is used to set whether to enable the leveling adjustment function.

Param.	Name	Range	Default	Unit	Property
FR-01	Leveling adjustment record 1	00000 to 60060	30030	mm	★
Fr-02	Leveling adjustment record 2		30030	mm	★
. . .	. . .		. . .	. . .	. . .
Fr-24	Leveling adjustment record 24		30030	mm	★

These parameters are used to record the leveling adjustment values. Each parameter records the adjustment information of two floors, and therefore, 56 floor adjustment records are supported totally. The method of viewing the record is shown in the following figure.

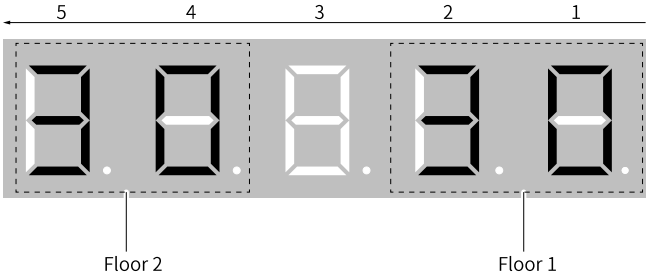


Figure 16-23 Viewing the leveling adjustment record

As shown in the preceding figure, the rightmost two LEDs and the leftmost two LEDs respectively show the adjustment base of floor 1 and floor 2. If the displayed value is greater than 30, upward leveling adjustment is performed. If the value is smaller than 30, downward leveling adjustment is performed. The default value "30" indicates that there is no leveling adjustment. Maximum adjustment range is ±30 mm.

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

1. Ensure that shaft auto-tuning has been completed successfully, and the elevator runs properly at normal speed.
2. After you set Fr-00 to 1, the elevator shields hall calls, automatically runs to the top floor and keeps the door open after arrival. In this case, the elevator does not respond to any hall calls, automatically runs to the top floor, and keeps the door open after arrival. If the elevator is currently at the top floor, it directly keeps the door open.
3. Go into the car, press the top floor button once, and the leveling position is changed 1 mm upward; press the bottom floor button once, and the leveling position is changed 1 mm downward. The value is displayed in the car. Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm.
4. After completing the adjustment, press the top floor button and bottom floor button in the car at the same time to save the adjustment result. The car display restores to the normal state. If the leveling position of the current floor need not be adjusted, you also need to press the top floor button and bottom floor button in the car at the same time to exit the leveling adjustment state. Otherwise, you cannot register the car call.
5. Press the door close button, and press the button for the next floor. The elevator runs to the next floor and keeps the door open after arrival.
6. After the leveling adjustment is completed, ensure to set Fr-00 to 0 to disable the leveling adjustment function for normal elevator use.

17 Parameter Application Types

17.1 Motor Auto-tuning Parameter Setting

Param.	Name	Description
F1-25	Motor type	0: Asynchronous motor 1: Synchronous motor
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder 4: Weton communication type encoder
F1-12	Encoder pulses per revolution	100 to 10000
F101 to F1-05	Rated motor power/voltage/current/frequency/speed	Model dependent, manually input
F0-01	Command source selection	0: Operating panel control 1: Distance control
F1-11	Auto-tuning mode	0: No operation 1: With-load auto-tuning 2: No-load auto-tuning 3: Shaft auto-tuning 1 4: Shaft auto-tuning 2 5: Synchronous motor static auto-tuning
F1-22	Auto-tuning function selection	F1-22 = 2: Semi-automatic angle-free auto-tuning Perform auto-tuning at first-time running after power-off and power-on again, only in the inspection or EEO state. F1-22 = 6: Automatic angle-free auto-tuning Perform auto-tuning at first-time running after power-off and power-on again (without differentiating elevator states).

17.1.1 Synchronous Motor Auto-tuning

1. Synchronous motor with-load auto-tuning (traction machine connected with car)

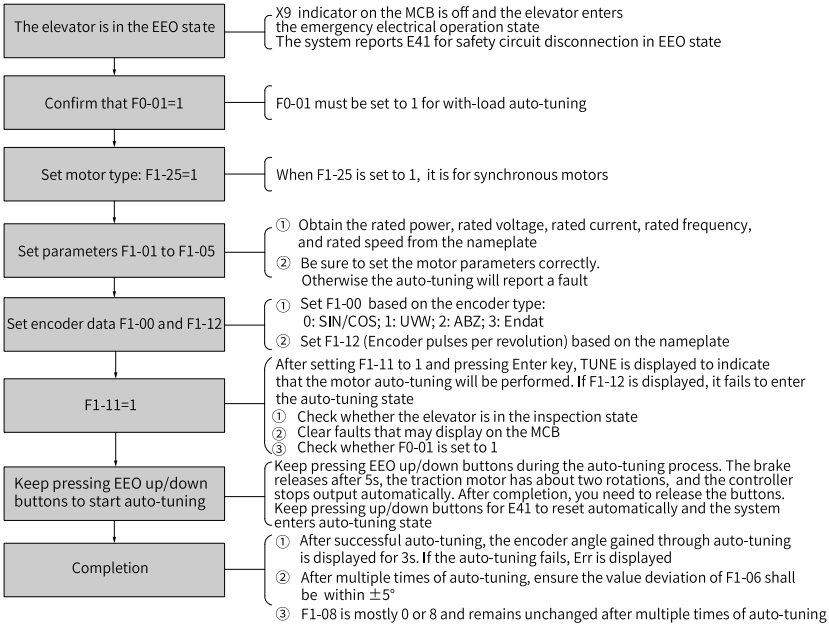


Figure 17-1 Synchronous Motor With-load Auto-tuning

2. Synchronous Motor Static Auto-tuning (with Motor Driving Car, Brake Not Released and Motor Not Rotating)

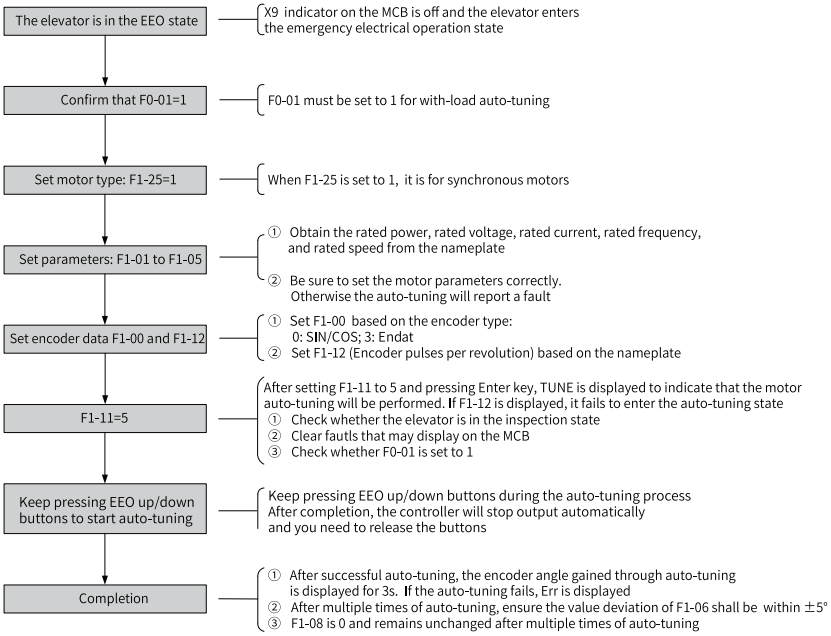


Figure 17-2 Synchronous Motor Static Auto-tuning

Note

- Static auto-tuning only supports the sin-cos encoder and absolute encoder of the synchronous motor. Also, ensure that the output power line phase sequence of the integrated controller is consistent with that of the encoder.
- Set F1-08 to 0 during auto-tuning. If the actual phase sequence of the encoder is 8, you need to set F1-24 bit6 to 1 and set F1-08 to 0.
- In no-load auto-tuning, you must manually open the brake. The system does not output brake control.
- If the E20 fault is reported after the brake is released, set F8-01 to 0 and perform auto-tuning again. After the auto-tuning is completed, restore the original setting. The system reports E41 if the safety circuit is disconnected during emergency electrical operation. If the up and down running buttons are pressed continuously, E41 will be automatically reset, and the system will enter the tuning state.

3. Semi-automatic angle-free auto-tuning of synchronous motor

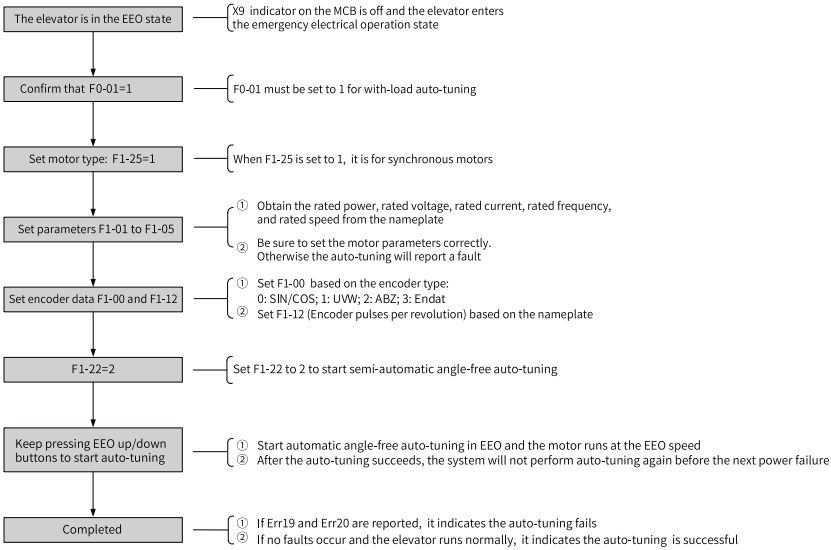


Figure 17-3 Semi-automatic angle-free auto-tuning of synchronous motor

4. Automatic angle-free auto-tuning

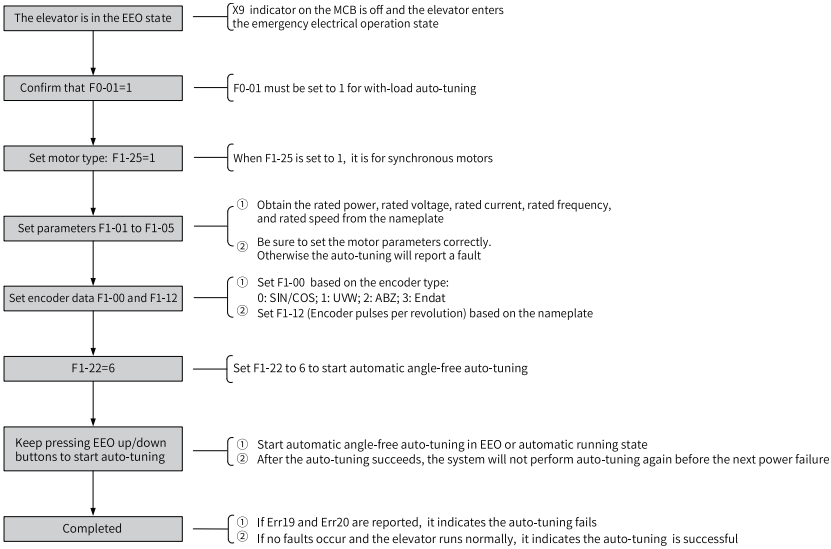


Figure 17-4 Automatic angle-free auto-tuning of synchronous motor

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

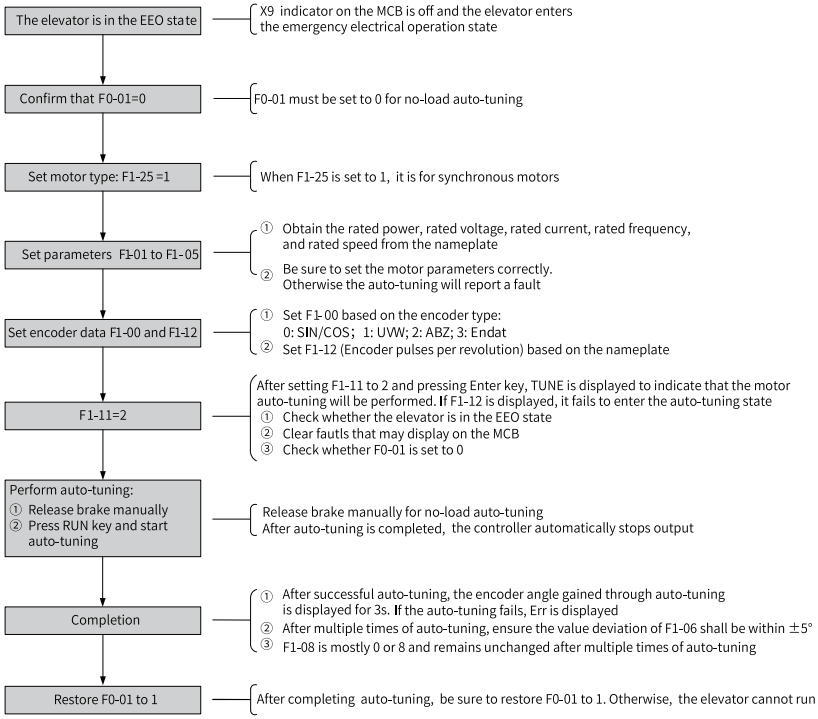


Figure 17-5 Synchronous Motor No-load Auto-tuning

CAUTION

Synchronous motor auto-tuning:

- Synchronous motor auto-tuning obtains motor initial pole angle, encoder initial angle, motor wiring mode, and inductances in d-q axis.
- Perform three or more times of auto-tuning. Compare the obtained values of F1-06 (Encoder initial angle), and ensure a difference of within ±5°.
- Each time the encoder, encoder cable connection or motor wiring sequence as well as rated motor current, frequency and speed is changed, perform motor auto-tuning again.
- You can modify F1-06 manually. The modification takes effect immediately. After replacing the MCB, therefore, you can directly run the controller by manually setting F1-06 to the previous value, without performing motor auto-tuning.

17.1.2Asynchronous Motor Auto-tuning

1. Asynchronous motor with-load auto-tuning (motor driving the car supported)

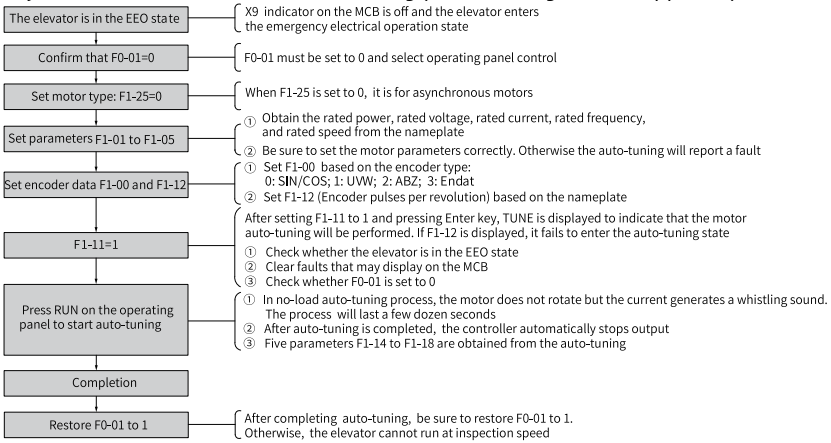


Figure 17-6 Asynchronous motor with-load auto-tuning

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

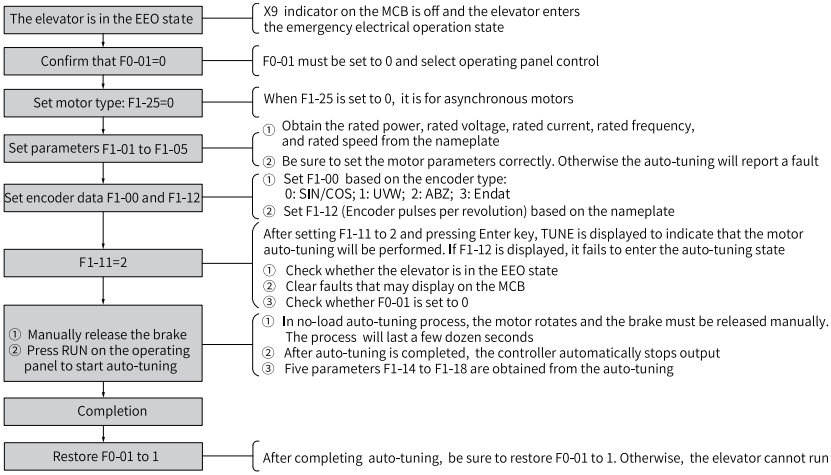


Figure 17-7 Asynchronous motor no-load auto-tuning

17.2 Vector Control Parameter Setting

17.2.1Speed loop setting

Table 17–1 Speed loop setting

Param.	Name	Range	Default	Unit	Property
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	★

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

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

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

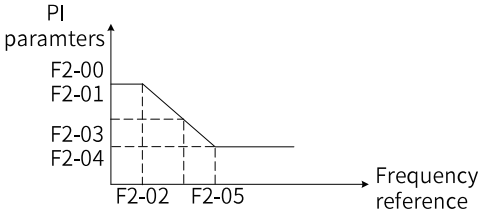


Figure 17-8 Relationship between running frequencies and PI parameters

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 or reduce the integral time. Be aware that a too large proportional gain or too small integral time may lead to system oscillation.

The recommended adjustment method is as follows:

- If the default setting cannot meet the requirements, do some fine-tuning: 1. Decrease the proportional gain to make sure that the system does not oscillate; 2. Reduce the integral time to make sure that the system has a quick response while maintaining a 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.

17.2.2Current Loop PI Setting

Table 17–2 Current Loop PI Setting

Param.	Name	Range	Default	Unit	Property
F2-06	Current loop proportional gain Kp	10 to 500	60	-	★
F2-07	Current loop integral gain Ki	10 to 500	30	-	★

Current loop proportional gain Kp1 and current loop integral gain Ki1 are the regulation parameters for the torque axis current loop.

Note

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

17.2.3Position Lock PI Setting

Table 17–3 Position Lock PI Setting

Param.	Name	Range	Default	Unit	Property
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	-	★

It is used for no-load-cell startup pre-torque self-adaption. You can enable the no-load-cell startup function by setting F8-01 to 2.

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

17.3 Running Control Parameter Setting

17.3.1Running Speed Curve Setting

Table 17–4 Running speed curve setting

Param.	Name	Range	Default	Unit	Property
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	★
F3-02	Acceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-03	Acceleration end jerk time 1	0.300 to 4.000	1.500	s	★
F3-04	Acceleration end jerk time 2	0.300 to 4.000	1.500	s	★
F3-05	Deceleration rate	0.200 to 1.500	0.700	m/s^2	★
F3-06	Deceleration start jerk time 1	0.300 to 4.000	1.500	s	★
F3-07	Deceleration start jerk time 2	0.300 to 4.000	1.500	s	★
F3-09	Pre-deceleration distance	0.0 to 90.0	0.0	mm	★

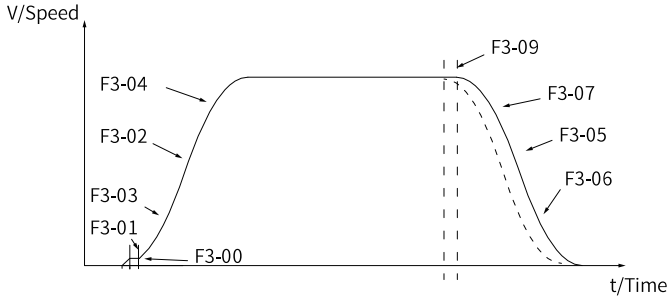


Figure 17-9 Speed curve

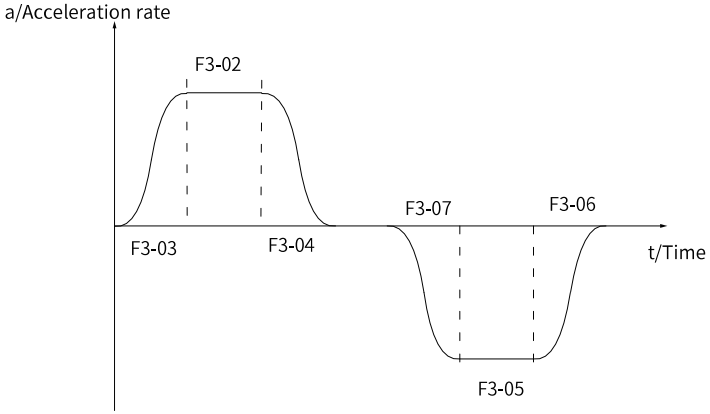


Figure 17-10 Acceleration/deceleration speed curve

- F3-00 and F3-01 are used to set the acceleration time and holding time of the startup speed. Proper setting of these parameters can reduce the startup jerks caused by static friction between guide rails and guide shoes.
- F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator:
  - F3-02 is the acceleration of the elevator speed curve (uniform acceleration).
  - F3-03 sets the time for the acceleration rate to change from 0 to the value set in F3-02 in the speed curve (increasing acceleration). The larger the value is, the smoother the speed curve is.
  - F3-04 is the time for the acceleration rate to change from the value set in F3-02 to 0 in the speed curve (increasing deceleration). The larger the value is, the smoother the speed curve is.
- F3-05, F3-06, and F3-07 are used to set the running curve during deceleration of the elevator:
  - F3-05 is the acceleration of the elevator speed curve (constant deceleration).

- F3-06 is the time for the acceleration rate to change from 0 to the value set in F3-05 in the speed curve (decreasing acceleration). The larger the value is, the smoother the speed curve is;
- F3-07 is the time for the acceleration rate to change from the value set in F3-05 to 0 in the speed curve (decreasing deceleration). The larger the value is, the smoother the speed curve is.

- F3-09 is used to set the pre-deceleration distance of the elevator. This function is to eliminate the effect of encoder signal loss or leveling signal delay.

17.3.2Car Start/Stop Timing Parameter Setting

Table 17–5 Car start/stop timing parameter setting

Param.	Name	Range	Default	Unit	Property
F3-18	Zero-speed current output time	0.200 to 1.000	0.200	s	★
F3-19	Holding time of zero-speed torque current upon brake release	0.000 to 2.000	0.600	s	★
F3-20	Zero-speed control time at end	0.000 to 1.000	0.300	s	★
F8-11	Holding time of zero-speed torque current upon brake close	0.200 to 1.500	0.600	s	★

The zero-speed current output holding time and the braking action delay time are set.

- F3-18 specifies the time from output of the RUN contactor to output of the brake contactor. The controller performs excitation on the motor and outputs zero-speed current with large starting torque.
- F3-19 specifies the time from the moment the system sends a brake release command. Within the set time range, the system maintains the zero-speed torque current output to prevent rollback.
- F8-11 specifies the time from the moment the system sends a brake close command. Within the set time range, the system maintains the zero-speed torque current output to prevent rollback.
- F3-20 specifies the zero-speed output time when the running curve ends.

The following figure shows the running timing.

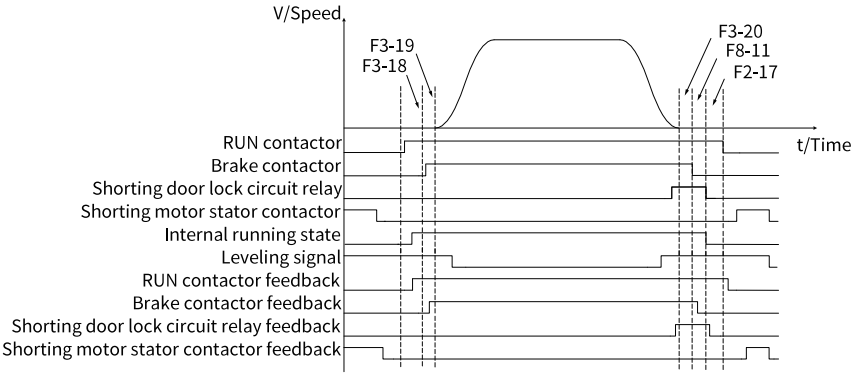


Figure 17-11 Running timing diagram

17.4 Communication State Parameter Display Description

17.4.1MCB Communication State Display

Param.	Name	Range	Default	Unit	Property
F5-32	Communication state	Communication state monitoring of CANbus and Modbus	-	-	●

F5-32 is used to monitor the communication state of the car top CANbus and the hall call Modbus.

After users enter the F5-32 interface, the state of LEDs indicates the current communication state of hall calls. For the convenience of description, the LEDs are numbered 5, 4, 3, 2, and 1 respectively from left to right. The definition of each segment of the LEDs is as follows.

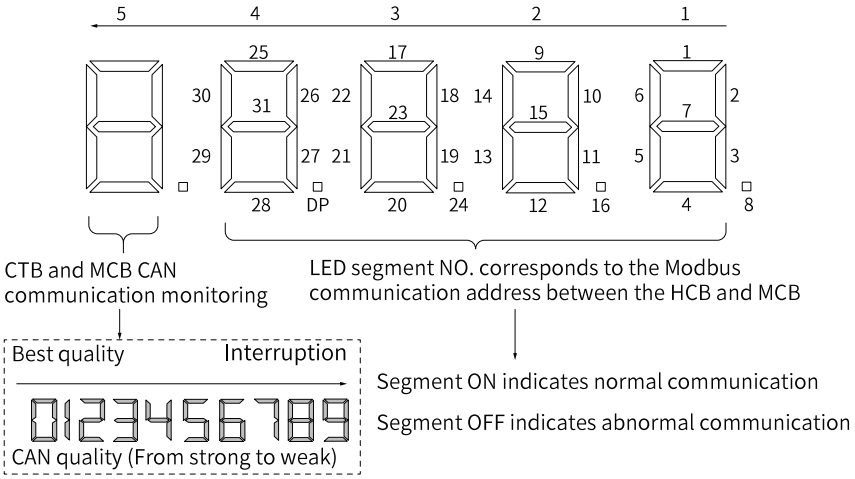


Figure 17-12 F5-32 Communication state monitoring

If the LEDs are as follows, 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 that of other addresses is normal. CAN communication state displayed by the LEDs is 3, indicating a little interference.

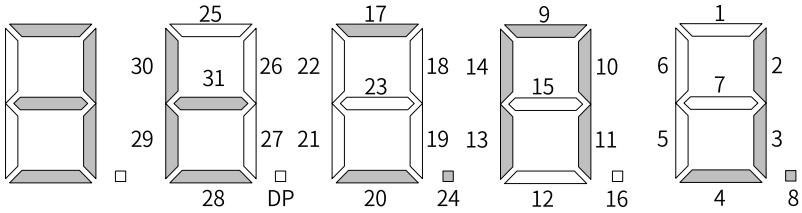


Figure 17-13 Example of LEDs display indicating the communication state

17.4.2Hall Call Communication State Display

Param.	Name	Range	Default	Unit	Property
FA-46	HCB communication state 1	0 to 65535	0	-	●
FA-47	HCB communication state 2	0 to 65535	0	-	●
FA-48	HCB communication state 3	0 to 65535	0	-	●

Param.	Name	Range	Default	Unit	Property
FA-50	HCB and expansion board communication state 1	0 to 65535	0	-	●
FA-51	HCB and expansion board communication state 2	0 to 65535	0	-	●
FA-52	HCB and expansion board communication state 3	0 to 65535	0	-	●

These parameters display the communication state between HCBs of all floors and the MCB.

Parameters FA-46 to FA-48 display the communication state between the control board Modbus interface and the HCB.

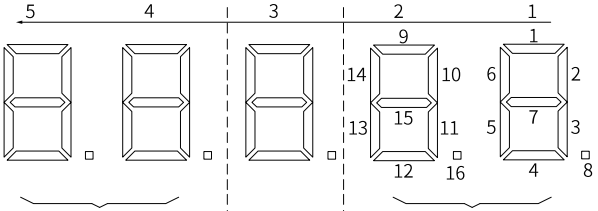
Parameters FA-50 to FA-52 display the communication state between the machine room expansion board and the HCB. The expansion board Modbus interface can be connected to the rear door HCB of the through-type door.

Five LEDs are numbered 1, 2, 3, 4, and 5 from right to left. There are two methods for checking the hall call communication state:

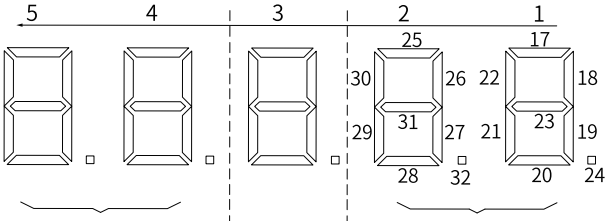
Method 1: Check through LEDs 5, 4 and 3. LEDs 5 and 4 indicate the floor address, and LED 3 indicates that the hall call communication of this address is normal (display 1) or disconnected (display 0);

Method 2: LEDs 2 and 1 indicate the communication state. The 16 segments indicate the communication state of 16 floor addresses. If an LED is ON, communication is normal. If this LED is OFF, communication is disconnected.

- FA-46/FA-50 corresponds to floors 1 to 16, as shown in the following figure.



- FA-47/FA-51 corresponds to floors 17 to 32, as shown in the following figure.

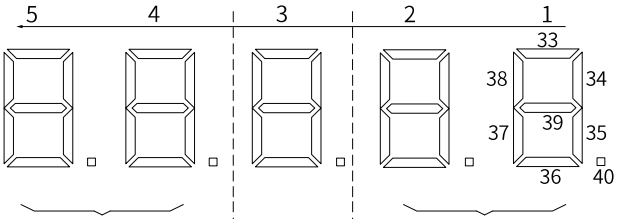


LEDs 4 and 5 show a certain address

Address state
0: Invalid
1: Valid

Each segment number corresponds to the hall call communication address
Segment ON indicates normal communication
Segment OFF indicates abnormal communication

- FA-48/FA-52 corresponds to floors 33 to 40, as shown in the following figure.



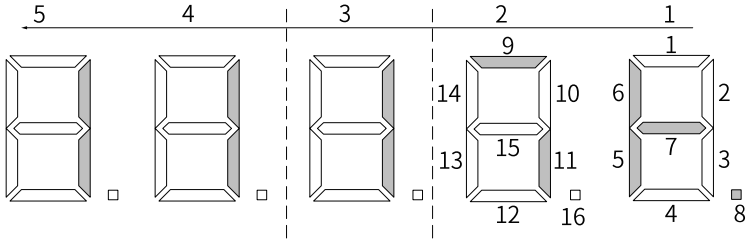
LEDs 4 and 5 show a certain address

Address state
0: Invalid
1: Valid

Each segment number corresponds to the hall call communication address
Segment ON indicates normal communication
Segment OFF indicates abnormal communication

Example:

As shown in the following figure, LEDs 3 to 5 indicate hall call communication at floor 11 is normal. You can view hall calls at other floors by shifting LEDs 4 and 5. It can be seen from LEDs 1 and 2 that hall call communication at floors 5, 6, 7, 8, 9, and 11 is normal.



Hall call floor

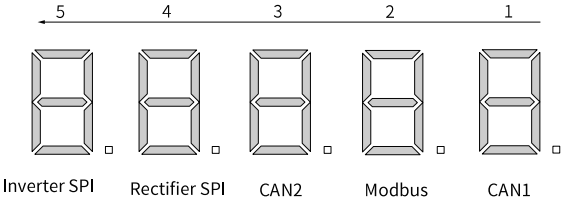
State valid

Each segment number shows a hall call floor

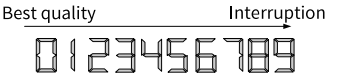
17.4.3Communication Interference Display

Param.	Name	Range	Default	Unit	Property
FA-24	Communication interference	0 to 65535	0	-	●

The parameter displays the current quality of different system communication types, as described in the following figure.



Each LED segment shows a number, indicating the current communication quality:



Communication quality (From strong to weak)

17.5 Terminal State Display

17.5.1MCB I/O State

Param.	Name	Range	Default	Unit	Property
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-29	Input state 4	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	-	●

Parameters FA-26 to FA-32 display the system input and output states.

Description of FA-26 input state 1 display.

As shown in *"Figure 17-14 " on page 402* , five LEDs are numbered 1, 2, 3, 4, and 5 from right to left.

- Numbers 4 and 5 indicate an input or output terminal function.
- Number 3 indicates that this function is enabled (1) or disabled (0).
- Numbers 1 and 2 display the overall state of 16 functions contained in this parameter using 16-segment LEDs.

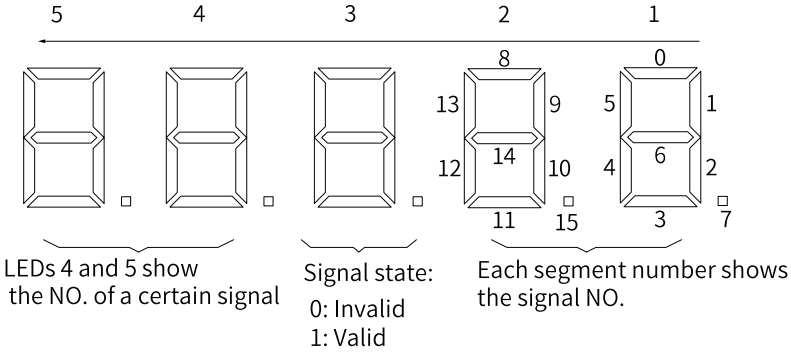


Figure 17-14 FA-26 input state 1 display

No.	Definition	No.	Definition
0	Reserved	8	Inspection signal
1	Up leveling signal	9	Inspection up signal
2	Down leveling signal	10	Inspection down signal
3	Door zone signal	11	Fire emergency signal
4	Safety circuit feedback	12	Up limit signal
5	Door lock circuit feedback	13	Down limit signal
6	RUN contactor feedback	14	Overload signal
7	Brake contactor feedback	15	Full-load signal

Input state display example:

According to the following figure, 5, 4 and 3 indicate that signal 10 (Inspection down) is 1 (Active); Also, 1 and 2 indicate that besides signal 10, signals 4 (Safety circuit feedback), 5 (Door lock circuit feedback), 6 (RUN contactor feedback), 7 (Brake contactor feedback), and 8 (Inspection signal) are active.

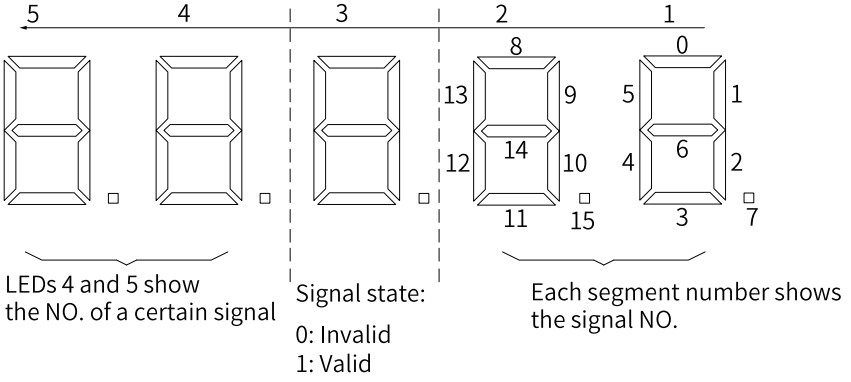


Figure 17-15 Example of FA-26 input state

Description of FA-27 input state 2 display.

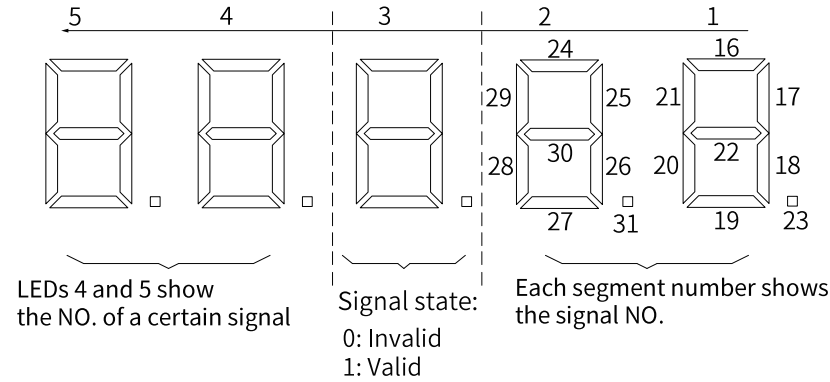


Figure 17-16 FA-27 input state 2 display

No.	Definition	No.	Definition
16	Up slow-down 1 signal	24	Door operator 1 light curtain
17	Down slow-down 1 signal	25	Door operator 2 light curtain
18	Up slow-down 2 signal	26	Brake travel switch 1 feedback
19	Down slow-down 2 signal	27	UPS input
20	Up slow-down 3 signal	28	Elevator lock input
21	Down slow-down 3 signal	29	Safety circuit 2 feedback
22	Shorting door lock circuit relay output feedback	30	Shorting motor stator contactor feedback input
23	Firefighter operation signal	31	Door lock circuit 2 feedback

Description of FA-28 input state 3 display.

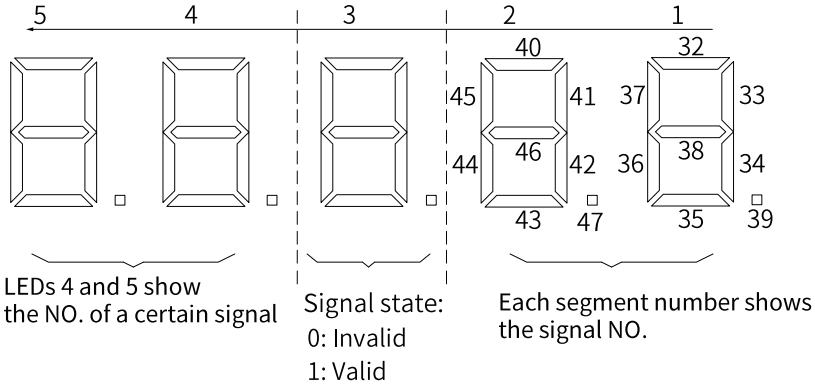


Figure 17-17 FA-28 input state 3 display

No.	Definition	No.	Definition
32	Reserved	40	Fire emergency floor switchover
33	Door 1 safety edge input	41	Dummy floor input
34	Door 2 safety edge input	42	Reserved
35	Motor overheat input	43	Reserved
36	Earthquake signal input	44	Door 1 open signal
37	Rear door forbidden signal	45	Door 2 open signal
38	Light-load	46	Brake travel switch 2 feedback
39	Half-load	47	External fault input

Description of FA-29 input state 4 display.

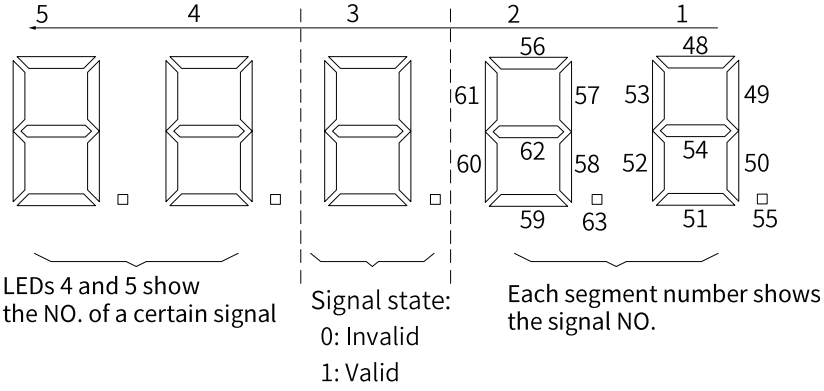


Figure 17-18 FA-29 input state 4 display

No.	Definition	No.	Definition
48	Terminal floor signal	56	Reserved
49	Door lock shorting signal	57	Reserved
50	Reserved	58	Reserved
51	Reserved	59	Reserved
52	Reserved	60	Reserved
53	Reserved	61	Reserved
54	Reserved	62	Reserved
55	Reserved	63	Reserved

Description of FA-30 input state 5 display.

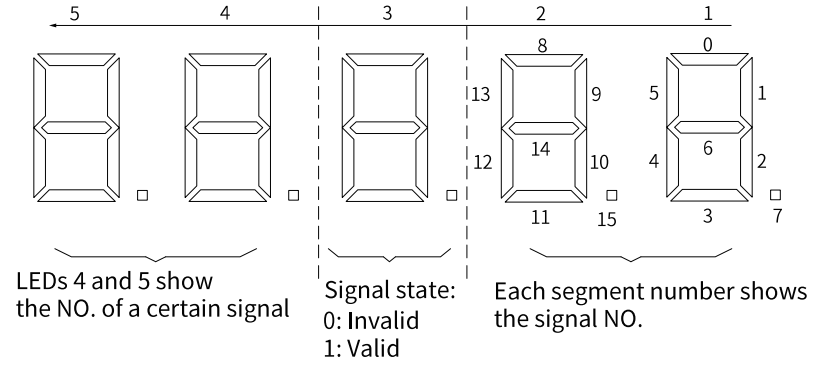


Figure 17-19 FA-30 input state 5 display

No.	Definition	No.	Definition
0	Reserved	8	Reserved
1	Reserved	9	Reserved

No.	Definition	No.	Definition
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	High-voltage safety circuit	12	Reserved
5	High-voltage door lock 1 signal	13	Reserved
6	High-voltage door lock 2 signal	14	Reserved
7	High-voltage door lock shorting	15	Reserved

Description of FA-31 output state 1 display.

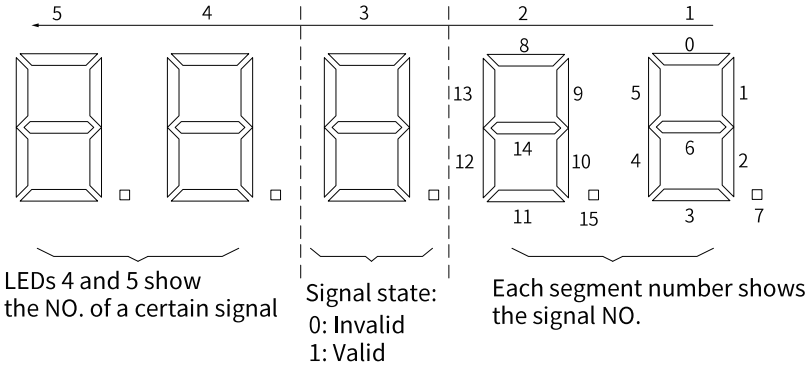


Figure 17-20 FA-31 output state 1 display

No.	Definition	No.	Definition
0	Reserved	8	Door close by door operator 2
1	RUN contactor output	9	Brake and RUN contactors Normal
2	Brake contactor output	10	State of fault above level 3
3	Shorting door lock circuit relay output	11	Running state
4	Fire emergency floor arrival signal feedback	12	Shorting motor stator contactor output
5	Door open by door operator 1	13	Emergency evacuation output at power failure
6	Door close by door operator 1	14	Controller normal output
7	Door open by door operator 2	15	Emergency buzzer output

Description of FA-32 output state 2 display.

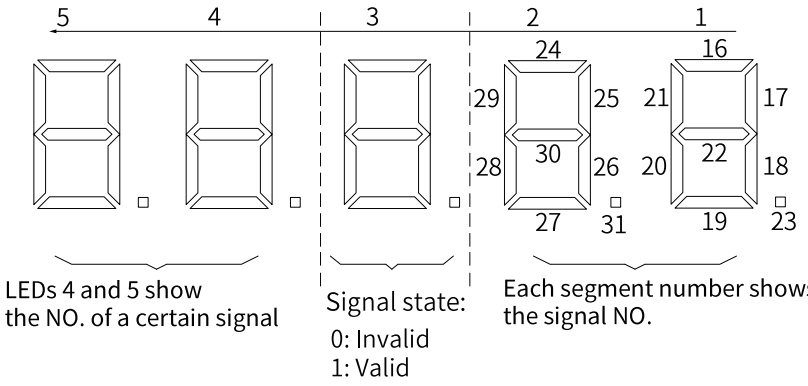


Figure 17-21 FA-32 output state 2 display

No.	Definition	No.	Definition
16	High-voltage startup of brake	24	Reserved
17	UP running signal	25	Rope gripper reset
18	Lighting/fan output	26	Braking transistor short circuit output
19	Medical sterilization output	27	Alarm filtered output
20	Non-door zone stop	28	Reserved
21	Electromagnetic lock output	29	Reserved
22	Non-service state	30	Reserved
23	Emergency evacuation completed	31	Reserved

17.5.2Car Input/Output State

Param.	Name	Range	Default	Unit	Property
FA-33	Car input state	0 to 65535	0	-	●
FA-34	Car output state	0 to 65535	0	-	●

FA-33 and FA-34 are used to display the car input and output states. The way they are set is the same as the MCB input and output display.

Description of FA-33 car input display

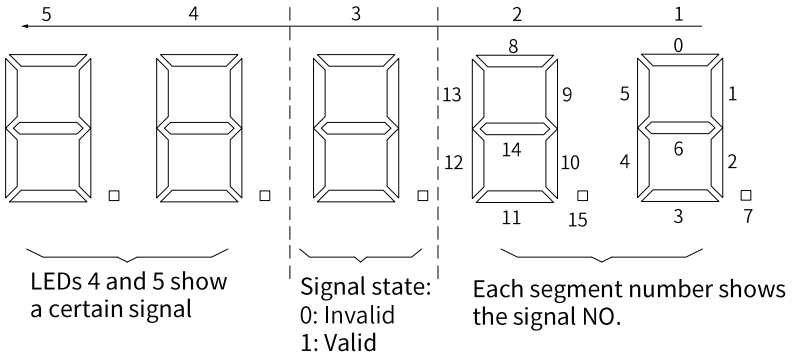


Figure 17-22 FA-33: Car input state display

No.	Definition	No.	Definition
0	Reserved	8	Overload input
1	Door 1 light curtain	9	Light-load input
2	Door 2 light curtain	10	Up leveling communication signal
3	Door 1 open limit	11	Down leveling communication signal
4	Door 2 open limit	12	Reserved
5	Door 1 close limit	13	Inspection signal
6	Door 2 close limit	14	Up signal input
7	Full-load input	15	Down signal input

Description of FA-34 car output display

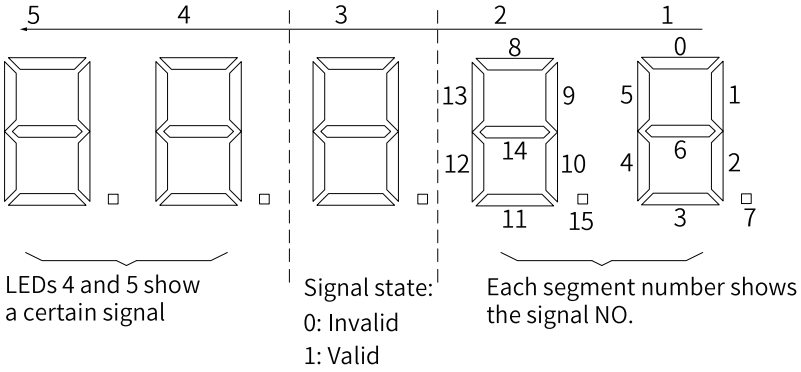


Figure 17-23 FA-34 Car output state display

No.	Definition	No.	Definition
0	Reserved	8	Down arrival gong
1	Door 1 open	9	Reserved
2	Door 1 close	10	Reserved
3	Forced door close 1	11	Sound and light alarm output
4	Door 2 open	12	Reserved
5	Door 2 close	13	Reserved
6	Forced door close 2	14	Reserved
7	Up arrival gong	15	Reserved

17.5.3Hall state

Description of FA-35 hall state display

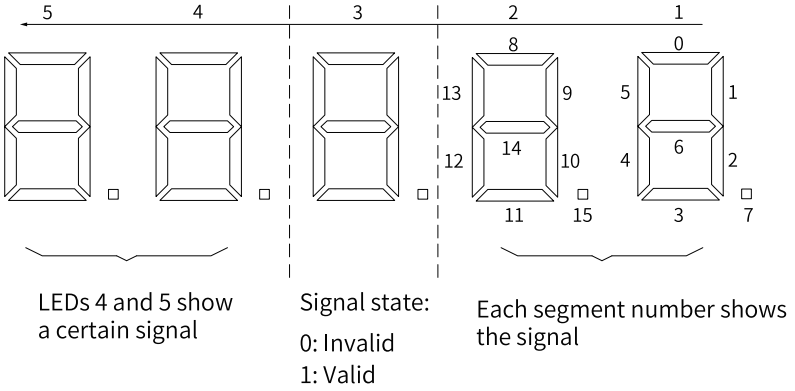


Figure 17-24 FA-35 hall state display

No.	Definition	No.	Definition
0	Reserved	8	Reserved
1	Elevator lock signal	9	Reserved
2	Fire emergency signal	10	Reserved
3	Current floor forbidden	11	Reserved
4	VIP signal	12	Reserved
5	Security signal	13	Reserved
6	Door close button input	14	Reserved
7	Reserved	15	Reserved

17.5.4System State

Description of FA-36 system state 1 display

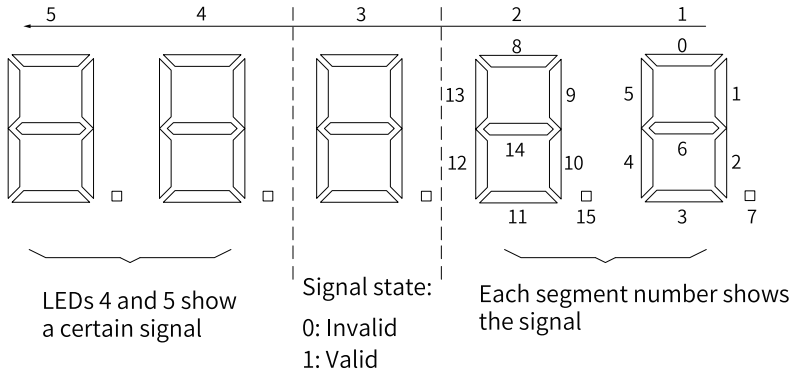


Figure 17-25 FA-36 system state 1 display

No.	Definition	No.	Definition
0	Door open 1 button	8	Door open 2 button
1	Door close 1 button	9	Door close 2 button
2	Door open delay 1	10	Door open delay 2
3	Direct travel ride switch	11	Reserved
4	Attendant switch	12	Reserved
5	Direction change switch	13	Reserved
6	Independent switch	14	Reserved
7	Fire emergency 2 switch	15	Reserved

Description of FA-37 system state 2 display

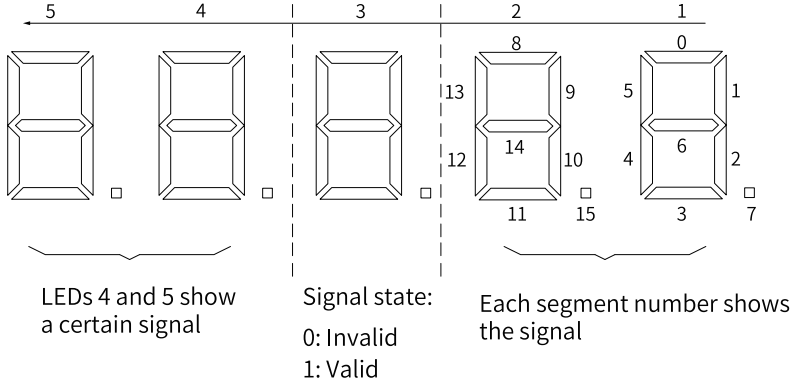


Figure 17-26 FA-37 system state 2 display

No.	Definition	No.	Definition
0	Up direction display	8	Reserved
1	Down direction display	9	Reserved
2	Running state	10	Reserved
3	System full-load	11	Reserved
4	System overload	12	Reserved
5	System half-load	13	Reserved
6	System light-load	14	Reserved
7	Reserved	15	Reserved

17.6 Terminal State Monitoring

Param.	Name	Range	Default	Unit	Property
F5-34	Terminal state display	Monitoring of I/O terminals on the MCB	-	-	●
F5-35	Terminal state display	Monitoring of I/O terminals on the CTB, CCB, and HCB	-	-	●

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

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

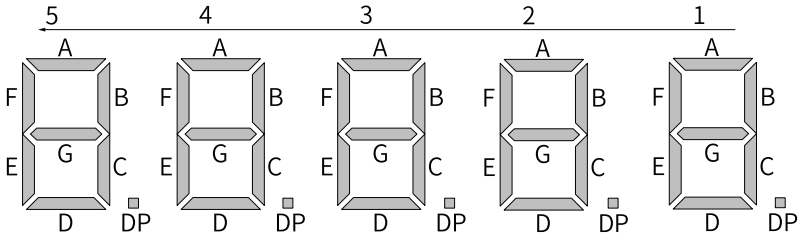


Figure 17-27 Terminal State Monitoring

F5-34 Terminal state display					
Segment	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	RUN contactor output

F5-34 Terminal state display					
Segment	1	2	3	4	5
C	Down leveling signal	Inspection down signal	Up slow-down 2 signal	Brake output feedback 2	Brake contactor output
D	Door zone signal	Fire emergency signal	Down slow-down 2 signal	UPS input	Shorting door lock circuit relay output
E	Safety circuit feedback 1	Up limit signal	Up slow-down 3 signal	Elevator lock input	Fire emergency floor arrival signal
F	Door lock circuit feedback 1	Down limit signal	Down slow-down 3 signal	Safety circuit feedback 2	-
G	RUN contactor output feedback	Overload signal	Shorting door lock circuit relay output feedback	Synchronous motor self-locking feedback	-
DP	Brake output feedback 1	Full-load signal	Firefighter operation signal	Door lock circuit feedback 2	-

F5-35 Terminal state display					
Segment	1	2	3	4	5
A	Light curtain 1	Door open button	Door open output 1	Door open button display	System light curtain state 1
B	Light curtain 2	Door close button	Door close output 1	Door close button display	System light curtain state 2
C	Door open limit 1	Door open delay button	Door lock signal	Door open delay button display	Hall call elevator lock input
D	Door open limit 2	Direct travel ride signal	Door open output 2	Non-door zone stop output	Hall call fire emergency input
E	Door close limit 1	Attendant signal	Door close output 2	Reserved	Full-load signal

F5-35 Terminal state display					
Segment	1	2	3	4	5
F	Door close limit 2	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	-

17.7 Service Floor Parameter Setting

Param.	Name	Range	Default	Unit	Property
F6-05	Service floor 1	0 to 65535 (floors 1 to 16)	65535	-	★
F6-06	Service floor 2	0 to 65535 (floors 17 to 32)	65535	-	★
F6-35	Service floor 3	0 to 65535 (floors 33 to 40)	65535	-	★

These parameters are used to set the service floors among floors 1 to 48.

F6-05 corresponds to floors 1 to 16, F6-06 floors 17 to 32 and F6-35 floors 33 to 40.

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

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

Set the value of these bits one by one. Convert the binary values to decimal values and then set the sum for display on the operating panel, as shown in the following figure.

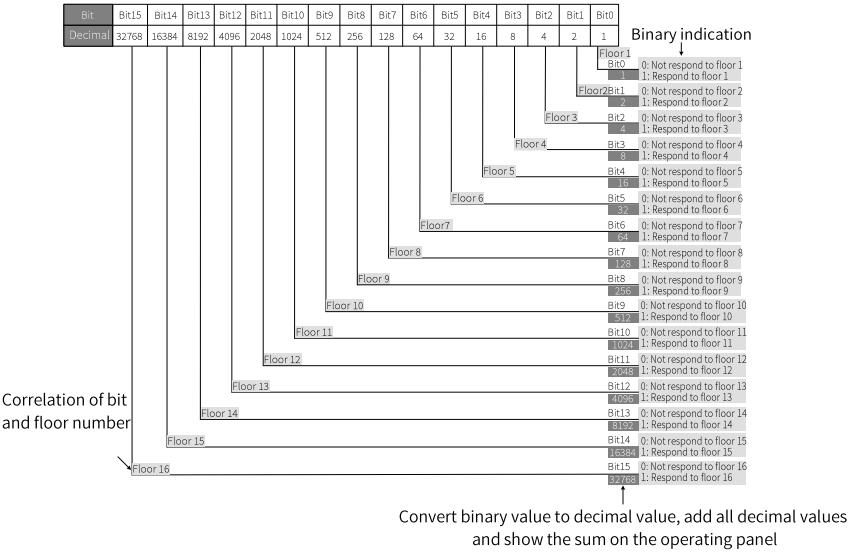
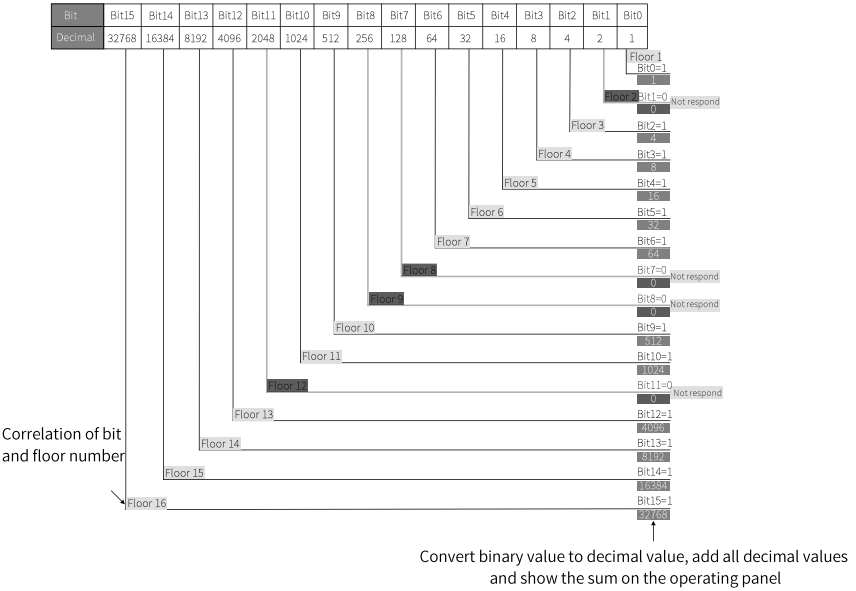


Figure 17-28 Converting binary value of F6-05 to decimal value

Example:

For a 16-floor elevator, if it does not respond to the calls at floors 2, 8, 9, and 12, set bit1, bit7, bit8, and bit11 to 0 and other bits to 1, as shown in the following figure.



Add all decimal values to get a sum:

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

Then, enter 63101 on the operation panel.

The setting method for F6-06 and F6-35 is the same as that for F6-05.

17.8 Program Control Selection Parameter Setting

Param.	Name	Range	Default	Unit	Property
F6-40	Program control selection 1	0 to 65535	0	-	★
F6-41	Program control selection 2	0 to 65535	0	-	★
F6-42	Program control selection 3	0 to 65535	0	-	★

These parameters are used for program control selection. Each bit defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

F6-40 Program control selection 1			
bit	Function	Definition	Default
bit0	Accessibility function selection	Enable the accessibility function	0
bit1	Soft limit function	When the up slow-down and down leveling are active and the up leveling is inactive, the system assumes that the up limit is performed. When the down slow-down and up leveling are active and the down leveling is inactive, the system assumes that the down limit is performed.	0
bit2	JP16 input used as rear door selection (button)	JP16 is used for the input of the rear door selection. This function is enabled if FC-04 is set to 2. When JP16 has button input, the elevator opens only the rear door with the button indicator ON. When the button indicator is OFF, the elevator opens only the front door	0
bit3	JP16 input used as the rear door open signal	JP16 is used for the input of the back door open signal	0

F6-40 Program control selection 1			
bit	Function	Definition	Default
bit4	Open only one door of the through-type door under manual control	This function is enabled only in the through-type door control modes 3 and 4. In this case, only one door opens each time while the other door must stay in the door close limit state Note: In group FD, the extended input includes "Single/Double door selection". If this input is active in the through-type door control mode 3, 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	Manually operated door function	This function is for on-site elevator use	0
bit7	Reserved	-	-
bit8	Reserved	-	-
bit9	Disabling reverse floor number clear	The system clears all the current car calls by default every time the elevator changes the direction. When this function is enabled, clearing reverse floor numbers is disabled.	0
bit10	Display the next arriving floor number	The next floor the elevator is to arrive 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 auxiliary command terminal used for accessibility function	You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls: 0: Consistent with CN7 for the single-door configuration, and rear door for double-door configuration 1: CN8 calls are the disability calls	0
bit13	Duplicated commands used as accessibility function and rear door function	It is valid only when the function of bit14 is enabled: 0: Rear door function 1: Accessibility function	0

F6-40 Program control selection 1			
bit	Function	Definition	Default
bit14	Car call command duplication	Car call command duplication: A. Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for rear door calls or disability calls B. Function enabled: For CN7 and CN8, inputs 1 to 16 are for front door calls or ordinary calls, and inputs 17 to 32 for rear door calls or disability calls	0
bit15	JP20 input used for switchover to rear door (switch)	JP20 is used for input of switchover between the front door and the rear door	0

F6-41 Program control selection 2			
bit	Function	Definition	Default
bit0	Reserved	-	-
bit1	Reserved	-	-
bit2	Decelerate to stop in the inspection state	During inspection, the system decelerates to stop if the terminal floor slow-down 1 acts	0
bit3	Car top inspection communication	Forcibly enable the car top inspection communication and operation is allowed for active car top inspection signal	-
bit4	Buzzer tweeting during door open delay	The buzzer will tweet when the door open delay time set in FB-14 is reached	0
bit5	Reserved	-	-
bit6	Door open delay cancellation	Door open delay is canceled when the door open delay button is pressed again	0
bit7	Reserved	-	-
bit8	Elevator lock at door open	In the elevator lock state, the elevator keeps the door open at the elevator lock floor	0
bit9	Display available at elevator lock	In the elevator lock state, hall calls are displayed normally	0
bit10	Elevator lock in the attendant state	The elevator can be locked properly in the attendant state	0
bit11	Flashing at arrival	The car display blinks when the elevator arrives at the floor. The blinking advance time is set through F6-47	0

F6-41 Program control selection 2			
bit	Function	Definition	Default
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 upon valid car call of current floor	The door re-opens if the car call of the current floor is valid during door close	0

F6-42 Program control selection 3			
bit	Function	Definition	Default
bit0	Reserved	-	-
bit1	Canceling door open/ close command at delay after door open/close limit	The door open/close command is canceled at the delay of 1s after door open/close limit	0
bit2	Door lock state not judged at door close output	In normal conditions, the system determines that the door is completely closed only when the door close limit signal is active and the door lock is applied. If this function is enabled, the system does not judge the door lock state	0
bit3	Door close output during running	There is continuous door close output as the elevator runs	0
bit4	Returning to terminal floor for verification at first-time power-on	The elevator runs to the bottom floor for verification at power-on for the first time	0
bit5	Clearing calls immediately at elevator lock	0: After the elevator lock signal becomes active, the elevator clears hall calls and responds to the current car call, and then enters elevator lock state 1: After the elevator lock signal becomes active, the elevator clears all calls and enters elevator lock state	0
bit6	Electromagnetic lock NC output	After the NC output is selected, the lock signal is not output during door open and is output during door close	0
bit7	Canceling fault E50 detection	When bit7 is set to 1, fault E50 is not detected	0
bit8	Door open/close limit detection cancellation	When this function is enabled, the fault detection of the door open/close limit signal is canceled	0
bit9	Canceling fault subcode scrolling display	When this function is enabled, the keypad will not have a scrolling display of the fault	0

F6-42 Program control selection 3			
bit	Function	Definition	Default
bit10	Door open energy saving	In the case of waiting with the door open, the system closes the lighting and fan as specified by the time set in F9-01 in door open limit state	0
bit11	Independent switch exiting from parallel control	When this function is enabled, individual elevators will be independent and separated from parallel control and be in normal running mode. When this function is disabled, the elevator will be independent and separated from parallel control and enter the VIP running mode	1

17.9 Load Cell Auto-tuning Parameter Setting

Param.	Name	Range	Default	Unit	Property
F8-00	Car load ratio during load cell auto-tuning	0 to 100	0	%	★
F8-01	Pre-torque selection	0 to 3	2	-	★
F8-02	Pre-torque offset	0.0 to 100.0	50	%	★
F8-05	Current car load	0 to 255	0	-	●
F8-06	No-load measured by load cell	0 to 255	0	-	★
F8-07	Full-load measured by load cell	0 to 255	100	-	★

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

1. Ensure that F8-01 is set to 0 and F5-36 (Load cell input selection) is set to 2 (CTB analog input) or 3 (MCB analog input) to make the system allow load cell auto tuning.
2. Stop the elevator at any floor, with the car in the no-load state. Set F8-00 to 0 and press ENTER.
3. Put N% load in the car. Then set F8-00 to N and press ENTER. For example, if you put 500 kg load in the elevator with rated load of 1000 kg, set F8-00 to 50.

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

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

0: Pre-torque disabled and load cell auto-tuning is allowed.

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

2: Automatic pre-torque compensation. The system automatically adjusts the pre-torque compensation at startup without a load cell.

3: Both load cell pre-torque compensation and automatic pre-torque compensation valid. When automatically adjusting the pre-torque compensation, the system makes a correction together with the load cell to achieve better startup results.

When pre-torque compensation is used with the load cell, the system outputs the torque matching the load in advance to ensure the riding comfort at startup. The output torque is limited by the torque upper limit (F2-08). When the load torque exceeds the set torque upper limit, the system outputs the torque upper limit.

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

It is actually the balancing factor of the elevator, indicating the percentage of the car load out of the rated load when the counterweight and the car weight are balanced.

F8-05 is a read-only parameter and reflects the load condition in the car. The value is sampled by the NICE3000^{new} by using a load cell to judge overload or full-load, or calculate the torque current for load cell pre-torque compensation.

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

17.10 Riding Comfort Adjustment During Running

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

17.10.1 Riding Comfort Adjustment at Startup/Stop

Adjustment to Abnormal Motor Startup

Param.	Name	Range	Default
F2-00	Speed loop proportional gain Kp1	0 to 100	40
F2-01	Speed loop integral time Ti1	0.01 to 10.00	0.60s

Param.	Name	Range	Default
F2-03	Speed loop proportional gain Kp2	0 to 100	35
F2-04	Speed loop integral time Ti2	0.01 to 10.00	0.80s

F2-00/01/03/04 are used to adjust the speed dynamic response characteristics of the motor:

- To achieve a faster system response, increase the proportional gain or reduce the integral time. However, too large proportional gain or too small integral time may lead to motor jitter due to oscillation.
- Decreasing the proportional gain or increasing the integral time will slow the dynamic response of the motor. However, too small proportional gain or too large integral time may cause motor speed tracking abnormality, resulting in fault E33 or unstable leveling at stop.

The default factory settings are proper for most motors, and you need not modify these parameters. These parameters need to be adjusted only for small-power motors (such as P ≤ 5.5 kW) because they may have oscillation.

To eliminate oscillation, do as follows:

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

Adjustment to Elevator Startup for Riding Comfort

1. Adjustment for no-load-cell startup

Param.	Name	Range	Default	Notes
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque and automatic compensation both in effect	2	Set this parameter to 2 (Automatic pre-torque compensation) when the no-load-cell startup function is enabled.
F2-11	Position lock current coefficient	2.0% to 50.0%	15.0%	Position lock adjustment parameters (F2-11, F2-12 and F2-13 are valid only when F8-01 is set to 2 or 3.)
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	

Notes:

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

The factory settings of F2-11, F2-12 and F2-13 are proper for most motors, and you need not modify these parameters. For the small-power motor (P ≤ 5.5 kW), the motor may have oscillation or noise at with-load startup, and passengers in the car may have a strong feeling of car lurch.

To eliminate oscillation, do as follows:

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

2. Adjustment for load cell startup

Param.	Name	Range	Default	Notes
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque and automatic compensation both in effect	2	When a load cell is used, set F8-01 to 1. Load cell pre-torque compensation
F8-02	Pre-torque offset	0.0% to 100.0%	50.0%	Load cell pre-torque compensation regulation parameters
F8-03	Drive gain	0.00 to 2.00	0.60	
F8-04	Brake gain	0.00 to 2.00	0.60	

Notes:

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

The methods of adjustment are as follows:

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

Additional information:

F8-02 (Pre-torque offset) is actually the elevator balancing factor, namely, the percentage of the car load out of the rated load when the car and counterweight are balanced. This parameter must be set correctly. F8-03 (Drive gain) and F8-04 (Brake gain) indicate the current pre-torque coefficient when the motor runs at the driving and braking sides respectively. A higher gain requires a larger startup pro-torque compensation.

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

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

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

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

Param.	Name	Range	Default	Notes
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Load cell pre-torque compensation 2: Automatic pre-torque compensation 3: Load cell pre-torque and automatic compensation both in effect	2	Set this parameter to 3 when a load cell is used and the inconsistency of startup effects at different loads is caused by improper load cell linearity
F8-02	Pre-torque offset	0.0% to 100.0%	50.0%	Load cell pre-torque compensation regulation parameters
F8-03	Drive gain	0.00 to 2.00	0.60	
F8-04	Brake gain	0.00 to 2.00	0.60	
F2-11	Position lock current coefficient	2.0% to 50.0%	15.0%	Automatic pre-torque compensation regulation parameters
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	

Notes:

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

Adjust the riding comfort at startup based on the methods used in "adjustment for no-load-cell startup" and "adjustment for load cell startup".

Handling of Rollback at Elevator Startup and Stop

Param.	Name	Range	Default
F3-19	Holding time of zero-speed torque current upon brake release	0.000 to 2.000	0.600s
F8-11	Holding time of zero-speed torque current upon brake close	0.200 to 1.500	0.600s

F3-19 specifies the time from the moment the system sends a brake release command. Within the set time range, the system maintains the zero-speed torque current output to prevent rollback. If there is obvious rollback at elevator startup, increase this parameter properly.

F8-11 specifies the time from the moment the system sends a brake close command. Within the set time range, the system maintains the zero-speed torque current output to prevent rollback. If there is obvious rollback at elevator stop, increase this parameter properly.

Handling of current noise at motor startup and stop

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

Param.	Name	Range	Default
F2-16	Torque acceleration time	1 to 500	1
F2-17	Torque deceleration time	1 to 3000	350

Adjustment of Large Mechanical Static Friction

Param.	Name	Range	Default
F3-00	Startup speed	0.000 to 0.050	0.000 m/s
F3-01	Holding time	0.000 to 5.000	0.000s

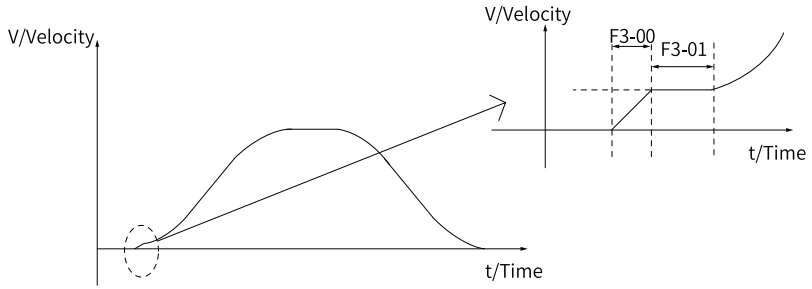


Figure 17-29 Startup timing diagram for countering static friction

Terrible riding experience due to static friction may often exist in villa elevators. Great static friction is generated at the moment of startup out of the large friction between the guide shoes and the guide rails. You need to start the elevator at a specified speed by setting the parameters to counter static friction for riding comfort.

17.10.2Running Curve Adjustment for Riding Comfort

Param.	Name	Range	Default
F3-02	Acceleration rate	0.200 to 1.500	0.700
F3-03	Acceleration end jerk time 1	0.300 to 4.000	1.500
F3-04	Acceleration end jerk time 2	0.300 to 4.000	1.500
F3-05	Deceleration rate	0.200 to 1.500	0.700
F3-06	Deceleration start jerk time 1	0.300 to 4.000	1.500
F3-07	Deceleration start jerk time 2	0.300 to 4.000	1.500

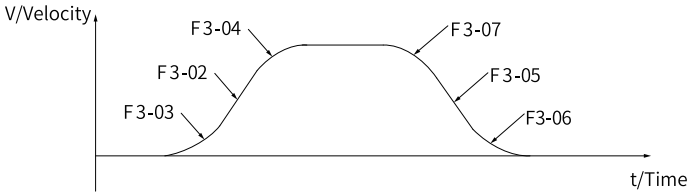


Figure 17-30 Running curve

F3-02, F3-03, and F3-04 are used to set the running curve during which the elevator accelerates from zero at startup to the maximum speed. If the acceleration is abrupt, decrease the value of F3-02 and increase the values of F3-03 and F3-04 to make the acceleration curve smoother. If the acceleration is found too slow, increase F3-02 and decrease F3-03 and F3-04.

Similarly, adjust F3-05, F3-06 and F3-07 properly to make the deceleration process more acceptable.

17.10.3Mechanical Factors Affecting Riding Comfort

The mechanical factors affecting the riding comfort include guide rails, guide shoes, steel rope, brake, car balancing level, as well as the vibration resonance. For asynchronous motors, gearbox wear or installation errors may also lead to poor riding experience.

No.	Mechanical factor	Description
1	Guide rail	The installation of guide rails mainly involves the verticality and surface flatness of guide rails, smoothness of guide rail connections, and parallelism between two guide rails (including guide rails on the counterweight side).
2	Guide shoe	The tightness of guide shoes (including those on the counterweight side) will influence the riding comfort. The guide shoes must not be too loose or tight.

No.	Mechanical factor	Description
3	Steel rope	The motor drives the car totally through the steel rope. Large flexibility of the steel rope and irregular resistance during elevator running may result in curly oscillation of the car. In addition, unbalanced stress of multiple steel ropes may cause the car to jitter during running.
4	Brake	The riding comfort during running may be worsened if the brake arm is installed too tightly or released incompletely.
5	Car balancing level	If the car weight is unbalanced, it will cause uneven stress of the guide shoes that connect the car and guide rails. As a result, the guide shoes will rub with the guide rails during running, affecting the riding comfort.
6	Gearbox	For asynchronous motors, gearbox wear or installation errors may affect the riding comfort.
7	Vibration resonance	Reduce the vibration resonance by adjusting the car weight or counterweight and adding isolators at component connections (for example, placing rubber gasket under the traction machine).

17.11 Leveling Accuracy Adjustment

17.11.1 Description of Leveling Components

- The length of the leveling plate needs to match the leveling switch.
  Generally, When the leveling switch runs across the middle of the leveling plate, there is at least 10 mm distance between the leveling switch and each end of the leveling plate. All leveling plates must have roughly the same length, with deviation smaller than 5 mm.
- Leveling switch:
  The leveling plate must be perpendicular to the leveling switch.

  When the car arrives at the floor, the leveling plate must be into the leveling switch by 2/3 of its own length.
- The NO-type photoelectric switches are recommended to improve signal sensing stability.

17.11.2 Leveling Accuracy Adjustment Description

- All-floor adjustment

Param.	Name	Range	Default
F4-00	Leveling adjustment	0 to 60	30

F4-00 is used to adjust the leveling position at all floors. The landing position at all floors will change after F4-00 is modified.

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

- Single-floor adjustment
  Adjust the car landing position at each floor separately by setting group Fr parameters.

  Leveling adjustment parameters in group Fr:

Param.	Name	Range	Default	Unit
Fr-00	Leveling adjustment mode	0 to 1	0	-
Fr-01	Leveling adjustment record 1	00000 to 60060	30030	mm
Fr-02	Leveling adjustment record 2		30030	mm
-	-		-	-
Fr-28	Leveling adjustment record 28		30030	mm

- Leveling adjustment method

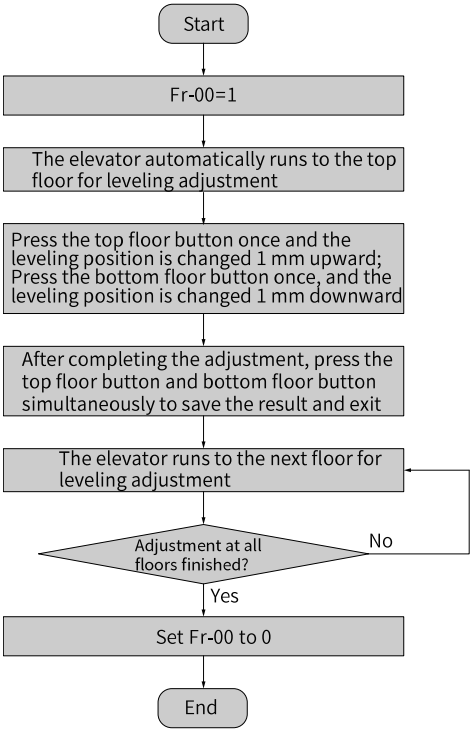


Figure 17-31 Single-floor leveling accuracy adjustment

- Ensure that shaft auto-tuning has been completed successfully, and the elevator runs properly at normal speed.
- After Fr-00 (Leveling adjustment function) is set to 1, the elevator does not respond to hall calls any more. It automatically runs to the top floor and keeps the door open after arrival.
- During adjustment, the car display board displays "00" or the value after adjustment. Positive value: up arrow + value, negative value: down arrow + value, adjustment range: ±30 mm.
- After you save the adjustment result, the CCB displays the present floor.

Note

Note that if the leveling accuracy at a certain floor needs no adjustment, you also need to save the data once. Otherwise, the car calls cannot be registered.

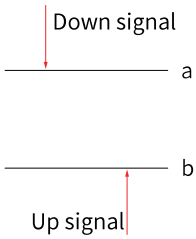
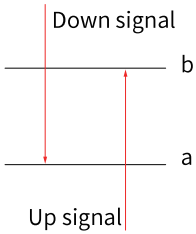
17.11.3Leveling Adjustment Guidelines

If the stop positions when the elevator arrives at each floor are fixed and the same in up and down directions and the car is not leveled with the sill, make adjustment for related floors by setting group Fr parameters.

If the stop positions when the elevator arrives at each floor are fixed but different in up and down directions, make adjustment by setting both F4-00 and group Fr parameters.

The specific adjustment methods are as follows:

1. Adjust the overall leveling error of all floors by setting F4-00 (Leveling adjustment). Assume that the car landing positions in down and up directions are "a" and "b" respectively. The values to be adjusted and the adjustment methods are shown in the following table.

Type	Name	Value to be adjusted	Adjustment method
Under-leveling		H = (a - b)/2	(F4-00) + H
Over-leveling		H = (b - a)/2	(F4-00) - H

2. Adjust the stop positions of related floors by setting group Fr parameters.
3. Additional information:

- Prevent over-adjustment in group Fr parameters when the leveling deviation is too large.
  Assume that after the car arrives at the leveling zone, the distance between the edge of the leveling switch and the edge of the leveling plate is A, and the height deviation between the car sill and the landing sill is B (see *"Figure 17-32 " on page 431*). If B ≥ A for a certain floor, you need to adjust the leveling plate position of this floor first to ensure that B ≤ A upon arrival. Otherwise, the elevator may still

stop outside the leveling zone even if you have adjusted the leveling accuracy of this floor by setting parameters in group Fr.

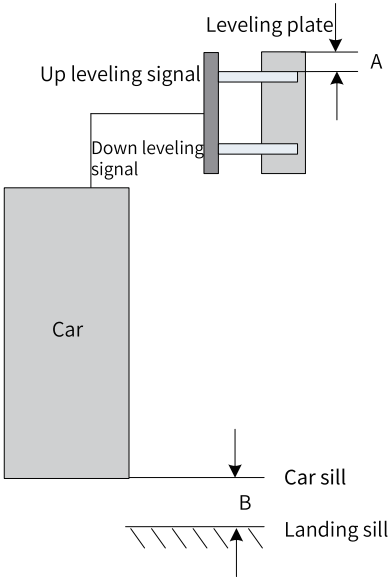


Figure 17-32 Leveling distance

- If the elevator stop position or leveling is not consistent for different travels or loads, it may be caused by improper speed loop parameters. To solve the problem, increase the speed loop proportional gain or reduce the speed loop integral time properly.

18 Typical Functions and Schemes

18.1 Attendant Function

Function

- The elevator responds to hall calls.
- The elevator does not close the door automatically. You need to hold down the door close button to close the door. If you release the door close button during door close, the elevator doors will open again automatically.
- Direct travel ride and direction change can be implemented by respectively using JP20 and JP22 on the CCB. When the direct travel ride signal is active, the elevator does not respond to hall calls. After the direction change signal becomes active once, the elevator responds to calls in the reverse direction.
- If the elevator that enters the attendant state is under parallel/group control, the hall calls of this elevator is responded to by other elevators in the system.

Note

The system offers the function by default. Certain actions can be modified by parameter setting.

Wiring

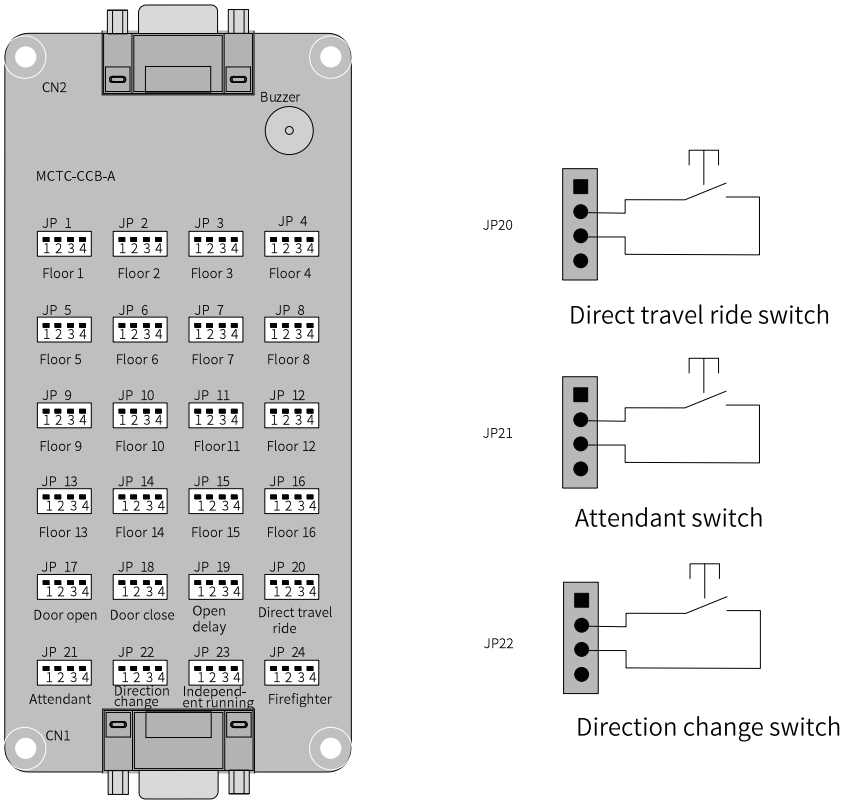


Figure 18-1 Wiring for attendant mode

- After pins 2 and 3 of JP21 of the CCB are ON, the elevator enters the attendant state.
- After pins 2 and 3 of JP20 of the CCB are ON, the elevator enters the direct travel ride state.
- When pins 2 and 3 of JP22 on the CCB operate, the elevator in the attendant state changes its running direction once.

Parameters

Param.	Name	Range	Default
F5-00	Attendant/normal state switchover time	3 to 200	3
F6-41	Program control selection 2	bit10: Elevator lock in the attendant state	0
F6-43	Attendant function selection	bit0: Calls canceled after entering the attendant state bit1: No response to hall calls bit2: Attendant/normal state switchover bit3: Door close at jog bit4: Automatic door close bit5: Buzzer tweeting at intervals in the attendant state bit6: Continuous buzzer tweeting in the attendant state bit7: Car call button blinking to prompt	128

Attendant/Automatic state switchover: If there is a hall call from another floor in attendant state, the system automatically switches over to the automatic (normal) state after the time set in F5-00. After this running is completed, the system automatically restores to the attendant state (enable through F6-43 bit2). When F5-00 is smaller than 5, the attendant/automatic switchover function is disabled.

18.2 Fire Emergency Function

Function

Returning to fire emergency floor:

- The elevator clears car calls and hall calls automatically.
- The elevator stops at the nearest floor without opening the door, and then directly runs to the fire emergency floor.
- The elevator keeps the door open after arriving at the fire emergency floor.
- If the elevator is under parallel/group control, it will exit automatically after entering the fire emergency running state.

Firefighter operation:

- The elevator responds only to car halls, and only one call can be registered.
- The elevator does not open/close the door automatically. You need to press (jog) the button for door open/close control.
- The light curtain signal input is inactive, and safety edge signal input is active.

Note

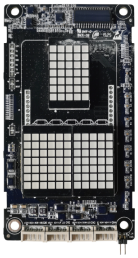
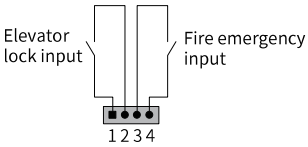
The system offers the function by default. Certain actions can be modified by parameter setting.

Wiring

State of returning to fire emergency floor

1. Fire emergency input on the HCB

Table 18–1 Fire emergency signal input on the HCB

HCB	Terminal name	Description	Layout
MCTC-HCB-R600  MCTC-HCB-D630 	XF/ST	Interface for the fire emergency and elevator lock switches: Pins 1 and 2 are for elevator lock input; Pins 3 and 4 are for fire emergency input.	

2. Fire emergency input on the MCB

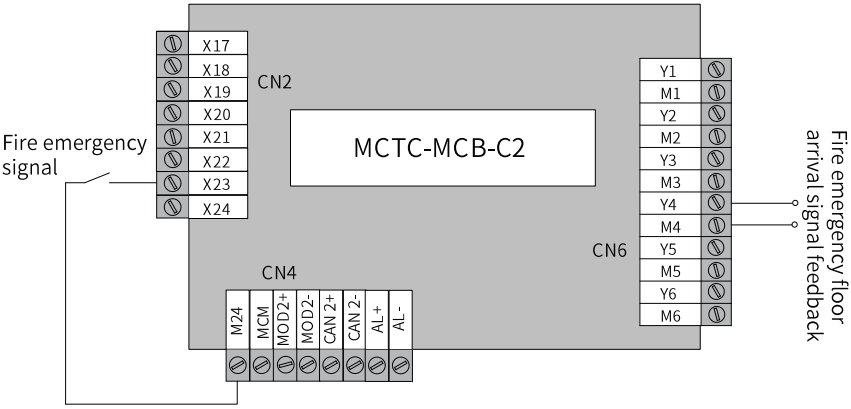


Figure 18-2 Wiring of fire emergency input signal on the MCB

Param.	Name	Range
F5-23	X23 input function selection	11: Fire emergency signal NO 43: Fire emergency signal NC
F5-29	Y4 output function setting	Fire emergency floor arrival signal feedback

Firefighter operation state

1. Enter firefighter operation on the CCB

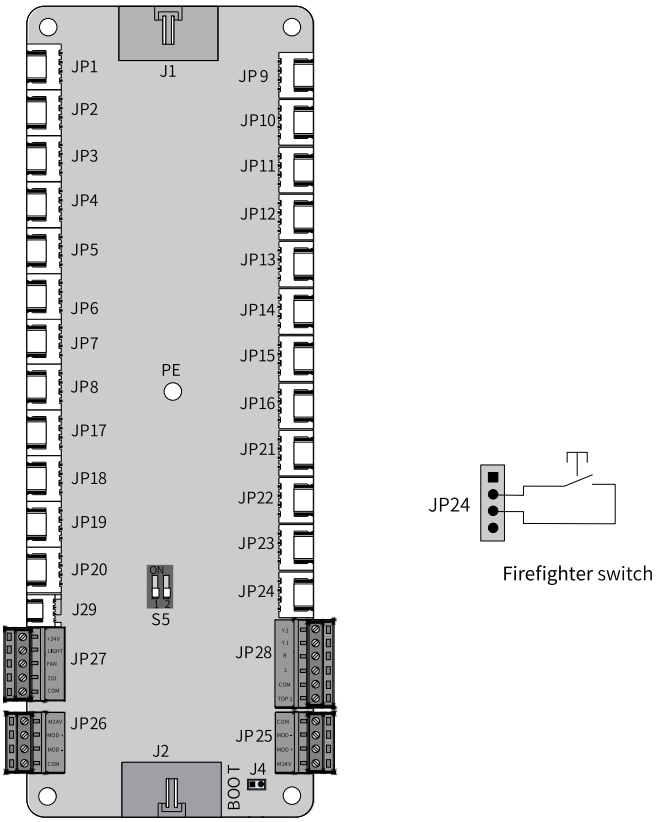


Figure 18-3 Wiring of firefighter operation signal on the CCB

2. Enter firefighter operation state on the MCB

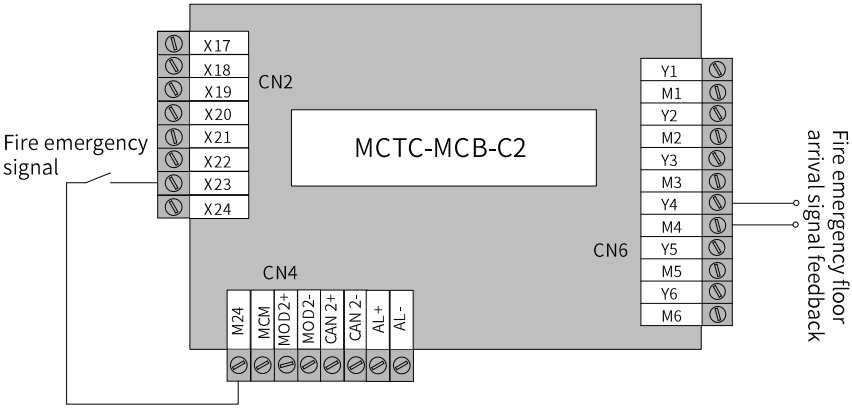


Figure 18-4 Wiring of firefighter operation signal on the MCB

Param.	Name	Range
F5-24	X24 input function selection	23: Firefighter operation signal NO 55: Firefighter operation signal NC
		87 (NO signal) or 119 (NC signal): Switchover from fire emergency floor arrival to firefighter operation state

Parameters

Param.	Name	Range	Default
F6-44	Fire emergency function selection	bit3: Arrival gong output in inspection or fire emergency state bit4: Multiple car calls registered in fire emergency state bit5: Retentive at power failure in the fire emergency state bit6: Door close by holding down the door close button bit7: Reserved bit8: Door close at car call registration bit9: Display floor number upon hall call in the fire emergency state bit10: Forced running in the firefighter state bit11: Exiting the firefighter state upon arrival at fire emergency floor bit12: Not clearing car calls at reverse door open in the firefighter state bit14: Door open by holding down the door open button bit15: Automatic door open at fire emergency floor	16456
F5-a	Xa input	11/43: Fire emergency signal NO/NC	0
F5-b	Xb input	23/55: Firefighter operation signal NO/NC	0
F5-c	Xc input	40/72: Fire emergency floor switchover signal NO/NC	0
F5-29	Y4 output	4: Fire emergency floor arrival signal feedback	0
F6-03	Fire emergency floor	F6-01 to F6-00	0
F8-12	Fire emergency floor 2	0 to F6-00	0

Input setting

The fire emergency signal is input via the fire emergency switch on the HCB at any floor, and the firefighter signal is input via JP24 on the CCB. If you input the signal through the MCB, set the parameters according to the preceding table (input through Xa and Xb).

The elevator controller supports switchover between two fire emergency floors and the switchover signal is input via the MCB (Let Xc be the input terminal).

Output setting

The fire emergency floor arrival signal is output through output terminal Y on the MCB (Let Y4 be the output terminal).

18.3 Elevator Lock Function

Elevator Lock Steps

1. After responding to all registered car calls, the elevator returns to the elevator lock floor.
2. After arriving at the elevator lock floor, the elevator door opens and then closes to stop.
3. After stopping, the elevator cancels all hall call displays and turns off the lighting and fan in the car.

Note

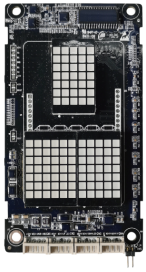
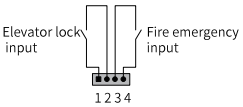
The system offers the function by default. Certain actions can be modified by parameter setting.

Wiring

The elevator lock signal input and corresponding parameter settings

1. Elevator lock input on the HCB

Table 18–2 Elevator lock signal input on the HCB

HCB	Terminal name	Description	Layout
MCTC-HCB-R600  MCTC-HCB-D630 	XF/ST	Interface for the fire emergency and elevator lock switches: Pins 1 and 2 are for elevator lock input, Pins 3 and 4 are for fire emergency input.	

2. Elevator lock input on the MCB

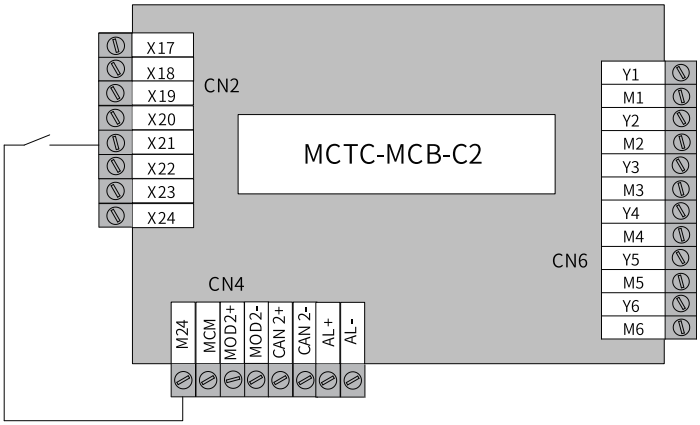


Figure 18-5 Wiring of elevator lock signal input from MCB

Param.	Name	Range
F5-21	X21 input function selection	28: Elevator lock signal NO 60: Elevator lock signal NC

Parameters

Generally, the elevator lock signal is input through the elevator lock switch on the HCB of any floor. If this signal needs to be input on the MCB, perform parameter setting (takes input terminal Xd as an example) according to the following table.

Param.	Name	Range	Default
F6-04	Elevator lock floor	F6-01 to F6-00	1
F6-38	Elevator lock start time	00.00 to 23.59	0
F6-39	Elevator lock end time	00.00 to 23.59	0
F6-40	Program control selection 1	bit5: Timed elevator lock	0
F6-41	Program control selection 2	bit8: Elevator lock at door open bit9: Display available at elevator lock bit10: Elevator lock in the attendant state	0
F6-42	Program control selection 3	bit5: Clearing calls immediately at elevator lock	0

18.4 Full-load/Overload Function

Function

Overload:

- The buzzer tweets.
- The door cannot close, even if you press the door close button.
- The car display board displays overload state with OL or OVERLOAD.
- The full-load indication or FL is displayed at the hall.

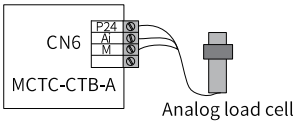
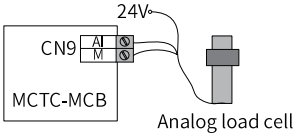
Full-load:

- The full-load indication or FL is displayed at the hall.
- Elevator car calls operate normally.
- The elevator registers hall calls but not respond to them.

The elevator overload and full-load switches are classified into analog and digital types. The following part describes their parameter settings.

Wiring

Wiring and parameter setting of analog overload/full-load switch.

Type	Wiring	Parameter Settings
Analog signal connected to the CTB	Terminals P24 and M are connected to the positive and negative poles of the load cell power cable respectively, and terminal AI is connected to the load cell signal cable. 	F5-36 = 2
Analog signal connected to the MCB	Terminal 24 V of the system is connected to the positive of the analog load cell power cable. Pins M and AI of terminal CN9 on the MCB are connected to the negative of the power cable and signal cable of the analog load cell respectively. 	F5-36 =3

When the analog load cell is used, load cell auto-tuning must be performed; otherwise, the analog load cell cannot be used. Perform overload/full-load auto-tuning process in the following flowchart.

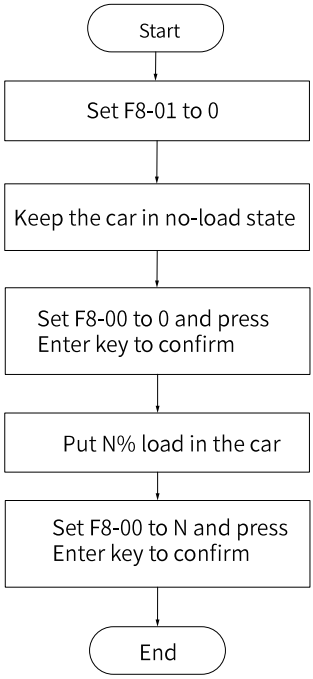


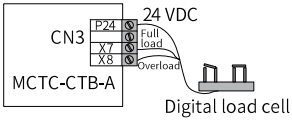
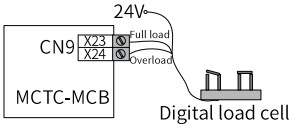
Figure 18-6 Analog full-load/overload auto-tuning flowchart

F8-06 and F8-07 record the obtained no-load and full-load data respectively after the auto-tuning has been completed. You can monitor the current car load by viewing F8-05 (Current car load). When the current load exceeds 110% of the rated load, the system reports overload warning.

Note

F8-05, F8-06 and F8-07 record the binary data indicating the car load condition rather than the actual car load or the ratio of the actual car load to the rated load.

Wiring and parameter setting of digital full-load/overload switch.

Type	Wiring	Parameter Settings
Digital signals connected to the CTB	The full-load signal and overload signal must be connected to X7 and X8 respectively 	F5-36 =1
Digital signal connected to the MCB	In this figure, pins X23 and X24 on the MCB are used for overload and full-load signal inputs respectively. 	F5-36 =0

Parameters

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

Param.	Name	Range	Description
F8-00	Car load ratio during load cell auto-tuning	0 to 100	Set the load ratio of the car properly during analog load cell auto-tuning.
F8-01	Pre-torque selection	0: Disabled 1: Load cell pre-torque compensation enabled 2: Automatic pre-torque compensation enabled 3: Both load cell pre-torque compensation and automatic pre-torque compensation in effect	Set this parameter to 0 before starting analog load cell auto-tuning
F8-05	Current car load	0 to 255	It displays the current load condition in the car.
F8-06	No-load measured by load cell	0 to 255	It records the obtained no-load condition.
F8-07	Full-load measured by load cell	0 to 255	It records the obtained full-load condition.

Parameter settings for digital overload/full-load switch.

Type	Param.	Name	Range	Value
Setting of input type	F5-36	Load cell input selection	0: Main control board digital input 1: Car top board digital input	0
MCB input	F5-e	Xe function selection	0 to 309	14/46: Overload signal NO/NC
	F5-f	Xf function selection	0 to 309	15/47: Overload signal NO/NC
	F5-g	Xg function selection	0 to 309	38/60: Light-load signal NO/NC
CTB input	F5-25 bit6	Full-load signal NO/NC	0 to 65535	bit6 = 1 (Default: NO)
	F5-25 bit7	Overload signal NO/NC	0 to 65535	bit7 = 0 (Default: NC)

Monitoring of overload/full-load signal.

You can view F5-35 to check whether the overload/full-load signal of the system is active. Segment G indicates the full-load signal state, and DP indicates the overload signal state.

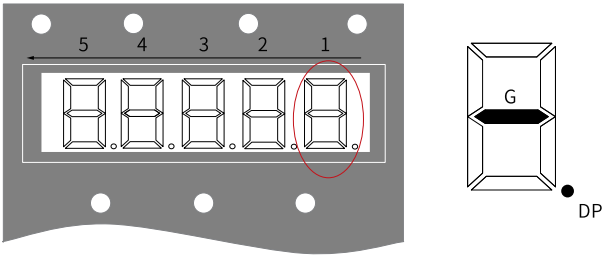


Figure 18-7 Monitoring of full-load/overload signal in F5-35

18.5 Time-based Floor Service

Function

The elevator only responds to car/hall calls of specified service floors during certain periods.

Parameters

To enable the time-based floor service, set bit0 of FE-32 to 0 (default value) and bit8 to 1.

F6-18 to F6-25 set the time range and service floors of two groups of time-based floor services.

During non-time-based floor service periods, the elevator responds to the service floors defined in F6-05, F6-06, and F6-35. Where,

Service floor 1 corresponds to floors 1 to 16.

Service floor 2 corresponds to floors 17 to 32.

Service floor 3 corresponds to floors 33 to 48.

For example, in the period of time-based floor service 1 (set by F6-18 and F6-19), the elevator responds only to the service floors set by F6-20, F6-21, and F6-36.

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

Param.	Name	Range	Default
FE-32	Elevator function selection 1	bit8 = 1, bit0 = 0	For FE-32 description, see *"16.2.16 Group FE: Display Setting Parameters" on page 378*
F6-18	Start time of time-based floor service 1	00.00 to 23.59	00.00
F6-19	End time of time-based floor service 1	00.00 to 23.59	00.00
F6-20	Service floor 1 of time-based floor service 1	0 to 65535	65535
F6-21	Service floor 2 of time-based floor service 1	0 to 65535	65535
F6-36	Service floor 3 of time-based floor service 1	0 to 65535	65535
F6-22	Start time of time-based floor service 2	00.00 to 23.59	00.00
F6-23	End time of time-based floor service 2	00.00 to 23.59	00.00
F6-24	Service floor 1 of time-based floor service 2	0 to 65535	65535
F6-25	Service floor 2 of time-based floor service 2	0 to 65535	65535
F6-37	Service floor 3 of time-based floor service 2	0 to 65535	65535

18.6 Time-based Door Service

To enable the time-based door service, set bit0 of FE-32 to 1 and bit8 to 0 (default value).

The service floors of time-based door service 1 (set by F6-20, F6-21, and F6-36) are set for front door, and those of time-based service 2 for rear door (set by F6-24, F6-25, and F6-37).

Param.	Name	Range	Default
FE-32	Elevator function selection 1	bit0 = 1, bit8 = 0	For FE-32 description, see "16.2.16 Group FE: Display Setting Parameters" on page 378
F6-18	Start time of time-based floor service 1	00.00 to 23.59	00.00
F6-19	End time of time-based floor service 1	00.00 to 23.59	00.00
F6-20	Service door 1 of time-based floor service 1	0 to 65535	65535
F6-21	Service door 2 of time-based floor service 1	0 to 65535	65535
F6-36	Service door 3 of time-based floor service 1	0 to 65535	65535
F6-22	Start time of time-based floor service 2	00.00 to 23.59	00.00
F6-23	End time of time-based floor service 2	00.00 to 23.59	00.00
F6-24	Service door 1 of time-based floor service 2	0 to 65535	65535
F6-25	Service door 2 of time-based floor service 2	0 to 65535	65535
F6-37	Service door 3 of time-based floor service 2	0 to 65535	65535

18.7 Test Function

Function

The running test parameters are set to facilitate elevator commissioning and maintenance, involving:

- Car/Hall call test
- Random running test
- Running test with certain functions disabled (hall call, door open, overload, and limit)

Before the running test at normal speed, ensure that the shaft is unobstructed and the safety circuits, door lock circuits, and shaft switches are all normal.

Parameters

The following group F7 running test parameters are set on the MCB.

Param.	Name	Range	Default
F7-00	Car call floor registered	0 to F6-00	0
F7-01	Up call floor registered	0 to F6-00	0
F7-02	Down call floor registered	0 to F6-00	0
F7-03	Random running times	0 to 60000	0
F7-04	Hall call	0: Hall call enabled 1: Hall call disabled	0
F7-05	Door open	0: Door open enabled 1: Door open disabled	0
F7-06	Overload function	0: Overload disabled 1: Overload enabled	0
F7-07	Limit function	0: Limit function enabled 1: Limit function disabled	0

Description of parameter setting:

- F7-00 = 6: The car call registered is floor 6.
- F7-01= 3: The up hall call registered is floor 3.
- F7-02= 5: The down hall call registered is floor 5.

After the parameters are set, the settings remain effective until the they are changed to 0 or a power failure occurs.

Set F-8 on the keypad, and E88 is displayed.

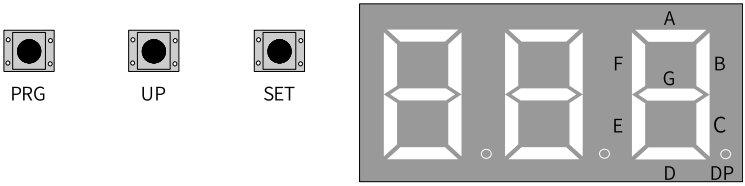


Figure 18-8 Layout of the keypad

F-1: Command input of the running floor

After you enter the F-1 menu by pressing the **PRG**, **UP** or **SET** key, the LEDs display the bottom floor of the elevator (F6-01). Use the **UP** key to set your destination floor in the range from Bottom floor to Top floor and press the **SET** key to save the setting. Then, the elevator runs to the destination floor, and the display automatically switches to the F-0 menu.

F-8: Test function

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

LED display	Function
1	Maintenance
2	Door open forbidden

LED display	Function
3	Overload forbidden
4	Limit switches disabled
6	Slip test
7	Manual UCMP test
8	Manual braking force test
11	Balancing factor auto-tuning
20	Dynamic braking force test (MRL)
24	Ascending car overspeed protection (ACOP) test
25	Time limiter test
26	Shorting motor stator braking test

After the setting from 0 to 30 is completed, press the **SET** key. The LEDs flash "E88", indicating the elevator is under test. When you press the **PRG** key to exit, F-8 restores to 0 automatically.

Maintenance operation mode description: The system is in normal and parking states.

- Set F-8 to 1 to enter the maintenance operation mode.
  - Display E88, clear hall call registration, and respond to all car calls.
  - The door closes and door open/close is prohibited after reaching the door close limit.
  - Prohibit hall calls and the remote call commands.
  - Long press **UP** on the keypad to register the top car call and **SET** to register the bottom car call (rising edge 2s).
  - As the elevator runs to the top floor, the current floor and T01 are displayed in the car. As the elevator runs to the bottom floor, the current floor and T02 are displayed alternately. At stop, E88 is flashed.
- When the elevator normal state switches to the EEO state or inspection mode, it exits the maintenance operation mode.

18.8 Anti-nuisance Function

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.

There are three judging methods:

- Nuisance judged by load cell. The system determines that nuisance exists when the number of car calls exceeds the number of passengers in the car plus 3 (assuming the average weight of each passenger is 70 kg).

- Nuisance judged by light curtain. The system determines that nuisance exists when the light curtain signal is not received after the elevator stops in normal running for three consecutive times.
- Nuisance judged by light-load signal. If the light-load signal is active, the system determines that nuisance exists when the number of car calls is greater than 3.

Parameters

Param.	Name	Range	Default
F0-05	Rated load	300 to 9999	1000
F8-08	Anti-nuisance function	0: Disabled 1: Nuisance judged by load cell 2: Nuisance judged by light curtain 4: Nuisance judged by light-load signal	0

F0-05 sets the rated elevator load to be used in the anti-nuisance function.

When F8-08 = 4, the light-load signal is used for judging nuisance. Below 30% of the rated load is considered as light load.

18.9 Accessibility Function

Function

This function, which allows wheelchair passengers to use the elevator conveniently, is implemented using the operation box and the hall call box for the disabled.

- If there is a call at this floor from the disability operation box, the door open holding time is prolonged.
- If there is a door open command from the operation box for the disabled, the door open holding time is prolonged.
- If there is a call registered using the hall call box for the disabled, the door open holding time is prolonged.

Wiring

Disability operation box inside the car:

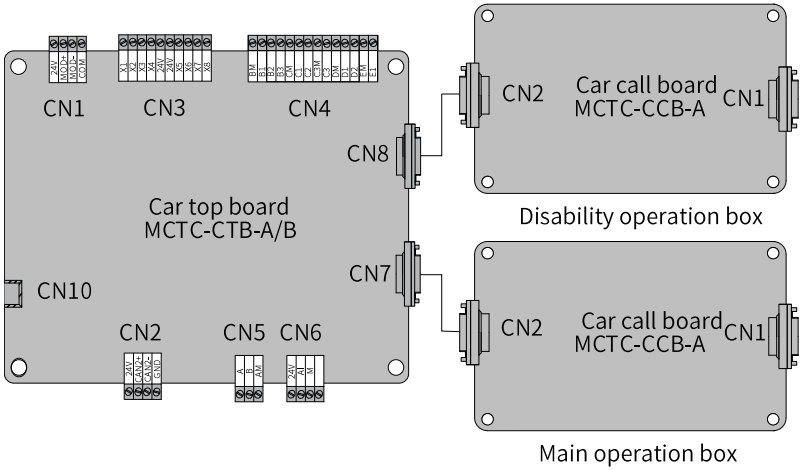


Figure 18-9 Wiring of disability operation box 1

CN8 as the interface for the disability operation box (enable through F6-40 bit12)

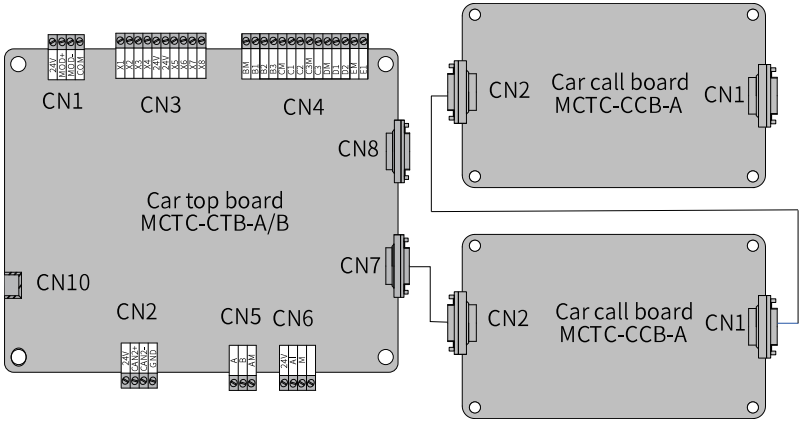


Figure 18-10 Wiring of disability operation box 2

The second CCB in cascade connection as the interface for the disability operation box (enable through F6-40 bit13 and bit14)

Disability function enabled by HCB-B:

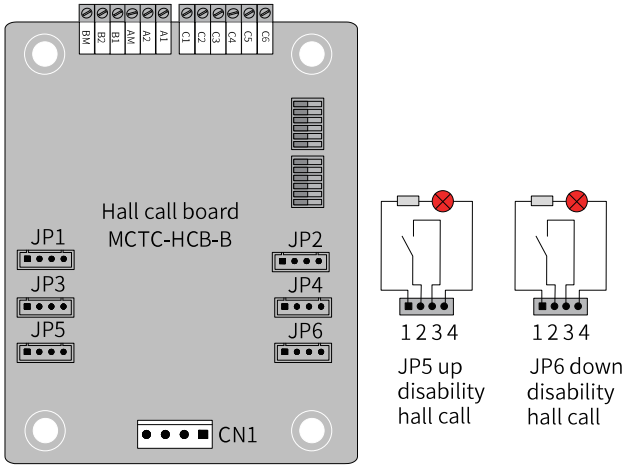


Figure 18-11 Wiring of accessibility function enabled by MCTC-HCB-B

Parameters

Param.	Name	Range	Default
F6-40	Program control selection 1	bit0: Accessibility function selection bit12: Car call auxiliary command terminal used for accessibility function bit13: Duplicated command used as accessibility and rear door functions (0: rear door function; 1: accessibility function) bit14: Car call command duplication	0
FB-19	special door open holding time	10 to 1000	30

FB-15 is used to set the door open holding time when there is a disability call.

The following table describes the setting of F6-40.

bit	Function definition	Description
bit0	Accessibility function selection	Enable the accessibility function
bit12	Car call auxiliary command terminal used for accessibility function	Used to set the CTB auxiliary command terminal (CN8) as input of calls from the disabled (command duplication is not required).

bit	Function definition	Description
bit13	Duplicated commands used as accessibility function and rear door function	It is valid only when the function of bit14 is enabled: 1: Accessibility function 0: Rear door function
bit14	car call command duplication	Car call command duplication: A. Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for rear door calls or disability calls B. Function enabled: For CN7 and CN8, floors 1 to 16 are for front door calls or ordinary calls, and floors 17 to 32 for rear door calls or disability calls

18.10VIP Running Function

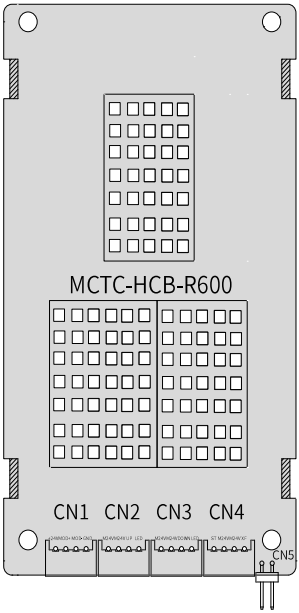
Function

After the VIP function of the NICE3000^{new} system is enabled, the elevator directly runs to the VIP floor as a priority service.

- The elevator responds only to car calls. Registered hall calls are cleared automatically.
- The elevator does not close the door automatically. You need to hold down the door close button to close the door. If you release the door close button during door close, the elevator doors will open again automatically.
- The VIP running times is set in F6-46 bit8.
- When this parameter is enabled, the elevator responds to only one car call at a time, with the most recent call taking precedence. The system automatically exits VIP mode after completing a single trip. If this parameter is disabled, there is no limit on the number of car calls; a timer starts after each stop, and the elevator proceeds to the next car call after a 30-second delay (provided there is no manual door operation). Once all registered car calls are serviced, the system automatically exits VIP mode. Additionally, if the system enters VIP mode but no car call is registered, it will automatically exit the VIP service after 30s.

Wiring

VIP enabled by HCB terminal:



Input of JP1 and JP2 on the HCB

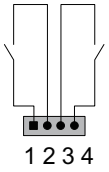


Figure 18-12 Wiring of VIP enabled by HCB

Parameters

Param.	Name	Range	Default
F6-12	VIP floor	0 to F6-00	8
F6-59	Program function selection 5	bit9: VIP function	bit9 =1
F6-46	VIP function selection	bit0: VIP enabled by hall call (at VIP floor) bit1: VIP enabled by terminal bit8: Number of VIP car calls limited	0

Example: Using VIP service and setting VIP floor

1. Parameter setting (for example, set floor 8 as the VIP floor out of elevator floors from 1 to 20)

Param.	Name	Range	Value	Note
F6-00	Top floor	F6-01 to 47	20	Set the top floor and bottom floor of the elevator, determined by the number of actually installed leveling plates
F6-01	Bottom floor	1 to F6-00	1	
F6-12	VIP floor	0 to F6-00	8	Set floor 8 as the VIP floor
FE-32	Elevator function selection 1	bit9: VIP function	bit9 =1	Enables the VIP function.
F6-46	VIP function selection	bit8: Number of VIP car calls limited	-	If this function is enabled, only one car call can be selected simultaneously in the VIP state. When the parameter is set invalid, the number of car calls is not limited in the VIP state.

2. Methods of enabling VIP

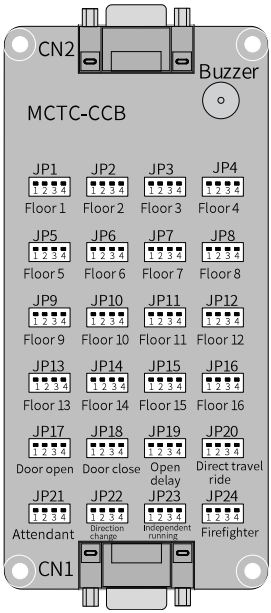
- VIP enabled by hall call at VIP floor: The elevator enters the VIP state only when there is a hall call (input by the up/down hall call button) at the VIP floor. The parameters to be set are as follows.

Param.	Name	Range	Value	Note
F6-46	VIP function selection	bit0: VIP enabled by hall call at VIP floor	bit0 = 1	The elevator enters the VIP state when there is an active hall call at the VIP floor.

- VIP enabled by terminal: Make the elevator enter the VIP state through the terminal for VIP hall call at any floor. After the VIP becomes active in this mode , the elevator directly runs to the VIP floor and automatically opens the doors for passengers. The parameters to be set are as follows.

Param.	Name	Range	Value	Note
FD-07	HCB: JP1 input selection	Elevator lock signal NO 2: Fire emergency signal NO 3: Present floor NO forbidden 4: VIP signal NO 5: Security signal NO 6: Door close button input NO	FD-07 = 4	The parameters are used to set the input functions of JP1 and JP2 on the HCB. The settings are effective for all HCBs. You can use either of JP1 and JP2 for VIP input.
FD-08	HCB: JP2 input selection		FD-08 = 4	
F6-46	VIP function selection	bit1: VIP enabled by hall calls at VIP floor	bit1 = 1	After any terminal for VIP hall call becomes active, the elevator enters the VIP state.

- Enter VIP state in the car (independent operation function).



The CCB JP23 operates independently.

Param.	Name	Range	Value	Note
F6-42	Program control selection 3	bit11: Independent switch exiting from parallel control	0, 1	• When it is set to 1, switching a single elevator to independent mode will exit from parallel control and the elevator will operate in normal mode • When it is set to 0, switching a single elevator to independent mode will exit from parallel control and the elevator will operate in VIP mode

18.11 UCMP Function

Function (Default) Description

When the landing door is unlocked and the car door is not closed, accidents may be caused by unintended car movement at the landing level if any component guaranteeing safe running fails. The UCMP device will stop the elevator to ensure the passengers' safety.

Table 18–3 Selection of the detection component

Item	Synchronous motor		Asynchronous motor
Model	MCTC-SCB-A4 (single door)	MCTC-SCB-D4 (through-type door)	MCTC-SCB-D4

Note

Use MCTC-SCB-D and MCTC-SCB-D4 for the synchronous motor and through-type door.

Installation of Leveling and Door Zone Switches

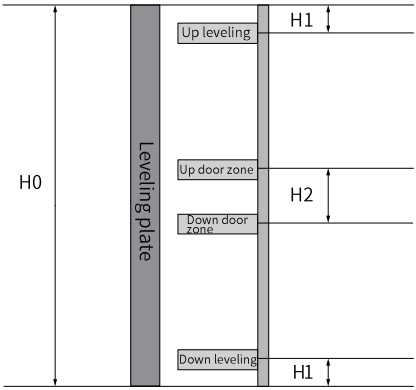


Figure 18-13 Recommended installation of UCMP switches

Requirements for UCMP switch installation:

- H1 ≤ 20 mm, H2 = 60 mm
- The leveling plate length H0 cannot exceed 300 mm. The recommended length is 300 mm.
- Two door zone switches are required. The length of leveling plates is determined by the actual door open area (door vane length) of the elevator.
- Door zone switches of NO type must be used.

Parameters

Param.	Name	Range
F-8	Test Function	7: Enter the UCMP test using the keypad
F3-24	Program function selection	0: Reserved 1: Slip experiment enabled 2: Manual test of UCMP

Param.	Name	Parameter Settings
F5-01	X1 function selection	01: Up leveling signal NO
F5-03	X3 function selection	02: Down leveling signal NO

Test method:

1. Stop the car in the door zone, with the car door closed and emergency electrical operation (EEO) mode enabled.
2. Set parameters on the keypad or operating panel to enable the UCMP test function by setting F-8 to 7 or F3-24 to 2. The MCB displays E88 when the elevator enters the UCMP test state.

3. Unplug the UCMP terminal (on interface board for machine room type and monitoring board for machine-room-less type).
4. Operate the EEO device for the elevator to run in the up direction.
5. In case of the elevator car move away from the door zone unexpectedly, it automatically triggers the UCMP module to stop the elevator. Also, the E65 fault is reported for possible movement prevention.
6. Use the triangle key to open the landing door that concerns, and measure whether the car moving distance meets the requirements of a type test.
7. Reset: E65 cannot be reset through power-off. It must be reset manually:
   - For elevators without an auxiliary brake, press the STOP key on the operator to reset E65. The elevator restores automatic running for re-leveling.
   - For elevators with an auxiliary brake, reset the auxiliary brake first and press the STOP key on the operator to reset E65. The elevator restores automatic running for re-leveling.

Note

- When the elevator is not in the inspection state or the door zone, the setting of F-8 to 7 or F3-24 to 2 is invalid.
- After F-8 is set to 7 or F3-24 is set to 2, clearing is automatically performed after one running and after power failure.
- In the UCMP test mode, the elevator linearly accelerates to the inspection speed at the acceleration rate set by F3-08 after startup.

18.12 Braking Force Detection

Function

To prevent motor brake failure for safe running, check whether the braking force meets the requirements periodically. The control system will monitor the braking force regularly.

Note

The system offers the function by default. Certain actions can be modified by parameter setting.

Parameters

Param.	Function	Range	Default	Note
F2-32	Torque output duration	1s to 10s	5	When it is set to 0, the torque output lasts for 5s by default.
F2-33	Torque amplitude	1% to 150% of rated motor torque	110	When it is set to 0, 80% of the rated motor torque is used by default
F2-34	Number of pulses for abnormality detection	1 to 100 encoder feedback pulses	0	When it is set to 0, 30 encoder feedback pulses are used by default
F2-35	Threshold of excessive slip distance	1° to 20° (mechanical motor rotation angle)	0	When it is set to 0, the system uses 5° for synchronous motors and 10° for asynchronous motors by default
F-8	Test function	8: Manual test on braking force	0	Use the keypad to start the braking force test
F7-09	Braking force detection result	0 to 2	0	-
F7-10	Countdown time for braking force detection	0 to 1440	1440	The countdown time is automatically restored to 1440 after the test finishes

Manual Test

1. The system is in inspection state and the inspection switch is active.
2. The elevator stops in the door zone with the door lock closed.
3. Set F-8 (Test function) to 8 using the keypad.
4. When the system enters the test state, the MCB displays E88.
5. The shorting motor stator and RUN contactors have output, and the brake contactor has no output.
6. The system starts testing according to the output torque related to the braking force.
7. E88 disappears on the MCB and the test is completed. F7-09 indicates the test result. If F7-09 is 2, E66 is reported immediately for test failure, then the elevator stops running, and the fault cannot be reset.

Automatic Test

After the test condition 1 is met for braking force detection, the system automatically enters the test state. The steps are the same as steps 4, 5, 6, and 7 of the manual test.

Fault E66 cannot be reset through power-off and can be automatically reset only when a new braking force test is performed with qualified results.

Countdown function: After 12 hours pass, the system starts to judge whether the following condition 1 is met. If the braking force test has been performed, the countdown parameter (F7-10) restores to 24 hours. If not, the system proceeds to condition 2 (forced test).

During the automatic braking force test, no fault is reported for hall calls. The keypad displays E88 to indicate the test state. Hall calls can be registered, but the elevator does not respond to them. After the test is completed, the system returns to normal state and responds to registered hall calls, but the car calls are canceled. The elevator doors cannot be opened or closed.

Test Conditions:

Condition 1: Under the condition of no car and hall calls, the braking force test is performed after the elevator energy-saving time is reached or after 3 minutes.

Condition 2: The system makes a judgment 10 minutes ahead. When the time set in F7-10 is 10 minutes or below, the buzzer tweets for 30s. You can disable the buzzer by setting F8-19 bit13. In this case, the registered hall calls are kept, but the car calls are canceled. The elevator doors can be opened or closed. The system starts the forced braking force test after door close.

Single-arm Test

- Use relays Y2 and Y2A for left and right brake arm control.

Param.	Function	Range	Default	Note
F6-54 bit9	Single-arm braking force detection	0 to 1	0	Set to 1 to enable the detection
F5-27	MCB Y2 output function setting	33	2	Left brake output
F5-45	MCB Y2A output function setting	34	0	Right brake output
F5-07	X7 input function setting	74 for NO and 106 NC	106	Left brake contactor feedback
F5-05	X5 input function setting	75 for NO and 107 NC	107	Right brake contactor feedback
F2-32	Torque output duration	1s to 10s	5	When it is set to 0, the torque output lasts for 5s by default.
F7-17	Single-arm torque amplitude	1% to 150% of the rated motor torque	30	When it is set to 0, 30% of the rated motor torque is used by default

Param.	Function	Range	Default	Note
F2-34	Number of pulses for abnormality detection	1 to 100 encoder feedback pulses	0	When it is set to 0, 30 encoder feedback pulses are used by default
F2-35	Threshold of excessive slip distance	1° to 20° (mechanical motor rotation angle)	0	When it is set to 0, the system uses 5° for synchronous motors and 10° for asynchronous motors by default
F-8	Test function	8: Manual test on braking force	0	Use the keypad to start the braking force test
F7-09	Braking force detection result	0 to 2	0	-
F7-10	Countdown time for braking force detection	0 to 1440	1440	The countdown time is automatically restored to 1440 after the test finishes

Manual Test

1. The system is in inspection state and the inspection switch is active.
2. The elevator stops in the door zone with the door lock closed.
3. Set F-8 (Test function) to 8 using the keypad.
4. When the system enters the test state, the MCB displays E88.
5. The shorting motor stator and RUN contactors have output, and the brake contactor has the left brake control output first.
6. The system starts testing according to the output torque related to the braking force.
7. After the left brake test, it has right brake control output.
8. E88 disappears on the MCB and the test is completed. F7-09 indicates the test result. If F7-09 is 2, E66 is reported immediately for test failure, then the elevator stops running, and the fault cannot be reset.

Automatic Test

After the test condition 1 is met for braking force detection, the system automatically enters the test state. The steps are the same with the manual test.

Fault E66 cannot be reset through power-off and can be automatically reset only when a new braking force test is performed with qualified results.

Countdown function: After 12 hours pass, the system starts to judge whether the following condition 1 is met. If the braking force test has been performed, the countdown parameter (F7-10) restores to 24 hours. If not, the system proceeds to condition 2 (forced test).

During the automatic braking force test, no fault is reported for hall calls. The keypad displays E88 to indicate the test state. Hall calls can be registered, but the elevator does not respond to them. After the test is completed, the system returns to normal

state and responds to registered hall calls, but the car calls are canceled. The elevator doors cannot be opened or closed.

Test conditions:

Condition 1: Under the condition of no car and hall calls, the braking force test is performed after the elevator energy-saving time is reached or after 3 minutes.

Condition 2: The system makes a judgment 10 minutes ahead. When the time set in F7-10 is 10 minutes or below, the buzzer tweets for 30s. You can disable the buzzer by setting F8-19 bit13. In this case, the registered hall calls are kept, but the car calls are canceled. The elevator doors can be opened or closed. The system starts the forced braking force test after door close.

- Use PCB-D1 brake power supply board in communication mode
  Control the left and right brake output independently through the power supply board.

Param.	Function	Range	Default	Note
F6-54 bit11	Communication-type brake power supply board	0 to 1	bit9 =0	Enable the brake power supply board in communication mode function
F6-54 bit9	Single-arm braking force detection	0 to 1	0	Set to 1 to enable the detection
F5-27	Y2 output setting	2	2	Only set one brake output
F5-07	X7 input function setting	74 for NO and 106 NC	106	Left brake contactor feedback
F5-05	X5 input function setting	75 for NO and 107 NC	107	Right brake contactor feedback
F2-32	Torque output duration	1s to 10s	5	When it is set to 0, the torque output lasts for 5s by default.
F7-17	Single-arm torque amplitude	1% to 150% of the rated motor torque	30	When it is set to 0, 30% of the rated motor torque is used by default
F2-34	Number of pulses for abnormality detection	1 to 100 encoder feedback pulses	0	When it is set to 0, 30 encoder feedback pulses are used by default
F2-35	Threshold of excessive slip distance	1° to 20° (mechanical motor rotation angle)	0	When it is set to 0, the system uses 5° for synchronous motors and 10° for asynchronous motors by default
F-8	Test function	8: Manual test on braking force	0	Use the keypad to start the braking force test

Param.	Function	Range	Default	Note
F7-09	Braking force detection result	0 to 2	0	1: Pass 2: Fail
F7-10	Countdown time for braking force detection	0 to 1440	1440	The countdown time is automatically restored to 1440 after the test finishes

18.13 Shorting PMSM Stator Scheme

Background

Shorting PMSM stator means shorting phases U, V and W of the PMSM and creates a star connection, which produces resistance to restrict movement of the elevator car. This prevents car slip during brake failure and ensures safety.

Overview

An independent contactor for shorting PMSM stator is installed. The NO contact of the contactor is connected in series with the coil circuit of the RUN contactor, to ensure that output short circuit does not occur when the parameter setting is incorrect.

- Scheme 1: for AC shorting option
- Scheme 2: for DC shorting option

Scheme 1

Wiring

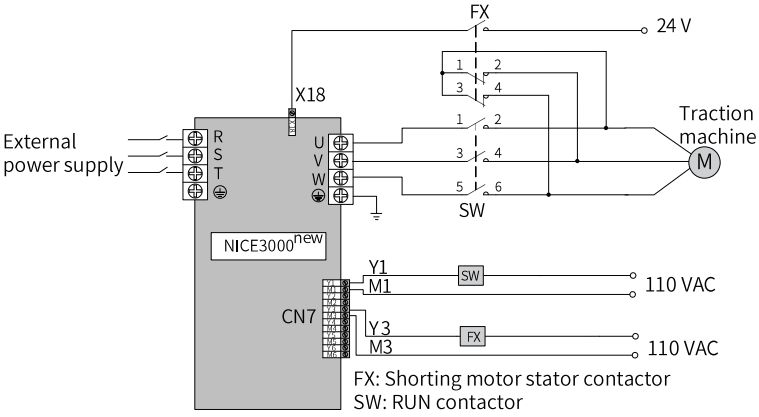


Figure 18-14 Wiring of the independent shorting motor stator contactor

Parameters

The parameter setting is described in the following table.

Param.	Name	Value	Description
F5-18	X18 function selection	30	Allocate X18 with output of shorting PMSM stator feedback signal
F5-28	Y3 function selection	12	Allocate Y3 with output of shorting PMSM stator contactor control
FE-33	Elevator function selection	-	bit8 = 0: NC output contactor bit8 = 1: NO output contactor

Scheme 2

Wiring

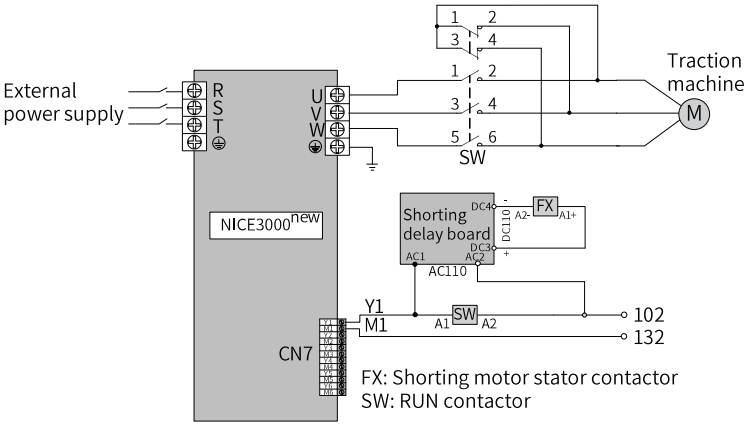


Figure 18-15 Wiring of shorting stator delay board

Parameters

No parameter configuration is required, as delay control is managed by a shorting stator delay board. Upon a running output, the board 110 VAC input is energized, providing power to the 100 VDC control coil; the FX (shorting stator) contactor and SW (RUN) contactor then pick up, and the elevator begins operation. When the elevator stops, the SW contactor releases. After a 1s to 2s delay provided by the board, the FX contactor releases, achieving the delayed shorting stator function.

18.14Automatic Emergency Evacuation at Power Failure

Background

Passengers may be trapped in the car if the power fails during the use of an elevator. Therefore, an emergency evacuation device that can automatically release passengers at power failure is required.

Overview

Working principle:

After the failure of mains power supply, the standby power supply is activated to power up the control system. The controller drives the motor to move the car to the leveling zone where passengers can go out.

There are mainly two backup power supply systems in the industry:

Backup power supply	Description
Emergency evacuation by Uninterruptible Power Supply (UPS)	The UPS serves as a backup power supply device. The UPS RUN contactor and UPS control circuit are added in the control cabinet.
Automatic Rescue Device (ARD)	The ARD is used for emergency evacuation with its backup battery. It does not require any additional costs. However, you must reserve the input terminal within the control cabinet specifically for the emergency evacuation signal feedback. The ARD control system is designed to constantly monitor the mains power supply status. If it detects a failure, it immediately switches to the backup battery and executes the emergency evacuation routine.

UPS (220 V)

Parameters

Parameter setting:

Param.	Value	Description	Note
F8-10	1: UPS	Emergency evacuation mode selection	-
F5-20 (X20)	59	Emergency evacuation signal	Assume that X20 is used as the NC input of emergency evacuation signal
F5-31 (Y6)	13	Emergency evacuation output at power failure	Only Y6 can be used for emergency evacuation output.

The UPS capacity recommended for the controller power rating is listed in the following table.

UPS capacity (kW)	Controller power (kW)
1 kVA (0.7 to 0.8)	P ≤ 5.5
2 kVA (1.4 to 1.6)	5.5 < P ≤ 11
3 kVA (2.1 to 2.4)	15 ≤ P ≤ 22

18.15 Elevator Emergency Automatic Rescue Device (ARD)

Wiring

The following figure shows the wiring of the ARD.

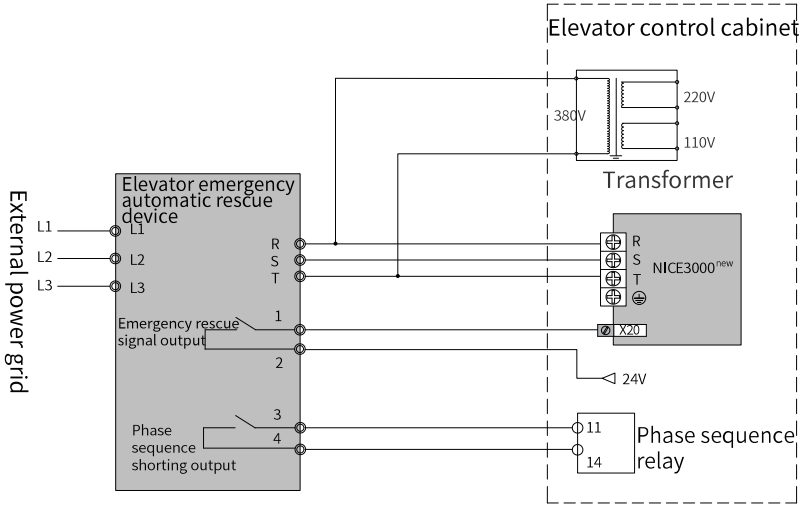


Figure 18-16 Wiring of three-phase (380 V) elevator ARD

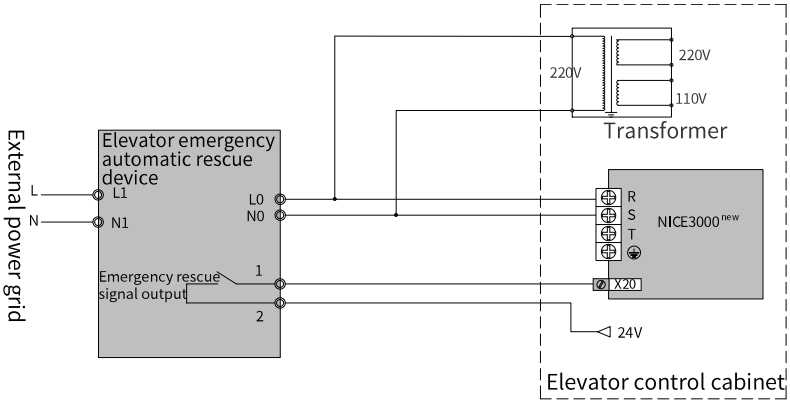


Figure 18-17 Wiring of single-phase (220 V) elevator ARD

Parameters

Parameter setting:

Param.	Value	Description	Note
F8-10	1: UPS	Emergency evacuation mode selection	-
F5-20 (X20)	27	Emergency evacuation signal (NO)	Assume that X20 is used as the NO input of emergency evacuation signal.

Note

- Select an ARD with nominal output power equal to or higher than the rated motor power.
- For the 380 V ARD, only two phases are used for emergency evacuation output. Therefore, ensure the correct wiring on the controller side. The output is single-phase 380 V power supply. Ensure that the input side of the transformer match this power.

Other parameters related to emergency evacuation:

Param.	Range	Description
F3-22	0.300 m/s^2 to 1.300 m/s^2	Acceleration rate at emergency rescue
F6-48	0.010 m/s to 0.630 m/s	Emergency evacuation switching speed
F6-49	0 to F6-00	Emergency evacuation parking floor
F8-09	0.020 m/s to 0.300 m/s	Emergency evacuation speed at power failure

18.16 Parallel Connection and Group Control

Background

The integrated controller provides parallel and group control of elevators (from 2 up to 6 elevators), thereby improving running efficiency and saving energy.

Overview

The NICE3000^{new} provides the function of elevator parallel and group control:

- Parallel control of two elevators implemented by directly using the CAN2 communication ports
- Group control of elevators together with the group control board MCTC-GCB-B2

18.16.1Parallel Control

The parallel control is for controlling two elevators, and group control board is needed for controlling three or more elevators.

Up to 48 floors are supported on the standard parallel control software. Also, it supports parallel and independent control of through-type door elevators.

Parallel control (CAN2 port connection of CN4)

Wiring (Twisted pair is recommended for CAN2 communication and proper MCM connection must be ensured)

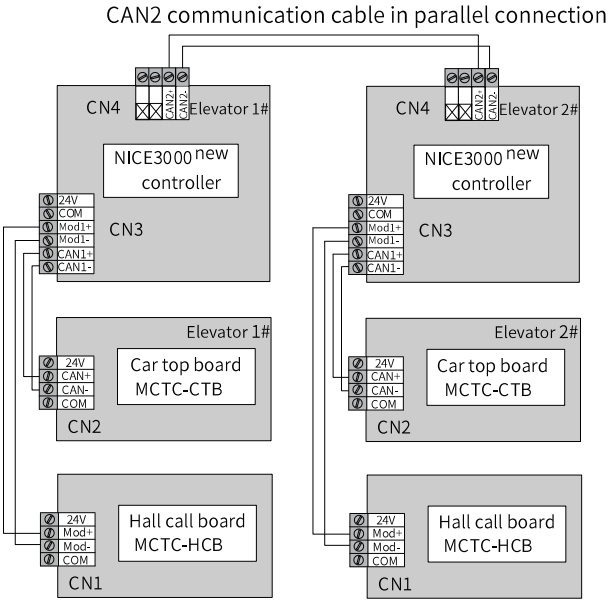


Figure 18-18 Wiring diagram of parallel control (CN4)

Before using the elevators in parallel control, set the floor offset (F6-50 ≠ 0).

User floor: the actual floor of the building

Physical floors: the floors which any elevator stops at and provides service for, or the floors installed with a leveling plate.

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

Set the HCB addresses for each elevator according to its physical floors. The physical floors of different elevators may vary.

Set the top floor (F6-00) and bottom floor (F6-01) of each elevator based on actual physical floors.

Parameters

Param.	Description	Range	Setting in parallel connection	Note
F6-07	Number of elevators in group control	1 to 8	2	-
F6-08	Elevator No.	1 to 8	Master elevator: 1 Slave elevator: 2	-
F6-09	Program selection	-	bit3 = 1: Parallel/Group control implemented at CAN2	Set bit3 to 1 when the CAN2 communication port of terminal CN4 is used for parallel control

Two elevators in parallel connection:

Elevator 1 has one basement user floor and four above-ground user floors, but it stops only at floors B1, 1, 2, and 3.

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

The following figure shows the floor layout of the two elevators in parallel control.

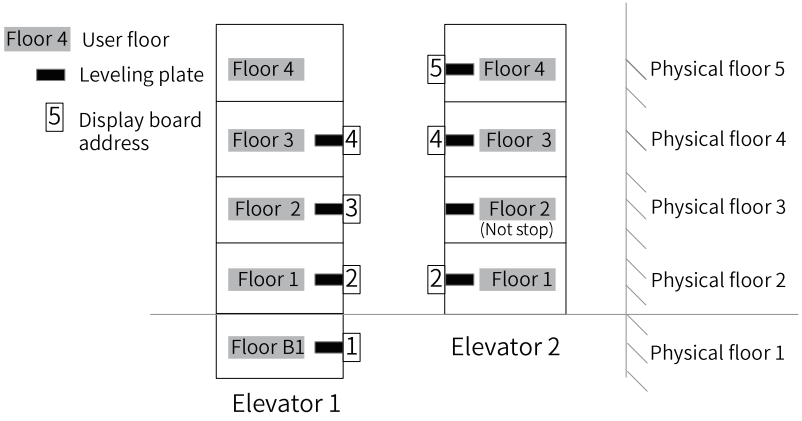


Figure 18-19 Floor layout of two elevators in parallel control

Corresponding parameter settings are as follows.

Table 18–4 Floor address setting for elevators in parallel control

Elevator		Elevator 1		Elevator 2#	
Number of elevators in group control (F6-07)		2		2	
Elevator No. (F6-08)		1		2	
User floor	Physical Floors	HCB address	HCB display	HCB address	HCB display
B1	1	1	FE-01 = 1101	1	FE-01 =1901
1	2	2	FE-02 =1901	Non-stop floor, no hall call, but leveling plate required	-
2	3	3	FE-03 =1902	3	FE-03 =1903
3	4	4	FE-04 =1903	4	FE-04 =1904
4	5	No hall call	No hall call	-	-
Bottom floor of the elevator (F6-01)		1		1	
Top floor of the elevator (F6-00)		4		4	
Service floors (F6-05)		65535		65533 (does not stop at physical floor 2)	
Floor offset (F6-50)		0		1	

After commissioning is completed, the floor offset function can be set with F6-50 (the value being the lowest floor difference of elevators) on the elevator with the much larger lowest floor value.

After the setting, there is no need to reset the hall calls or car calls.

18.16.2Group Control

A group control board (MCTC-GCB-B2) is additionally required to implement group control of more than two elevators.

- One GCB supports group control of up to six elevators.
- If group control of more than 6 elevators is required, two GCBs need to be installed. This scheme is customized. For details, consult the manufacturer.

Wiring

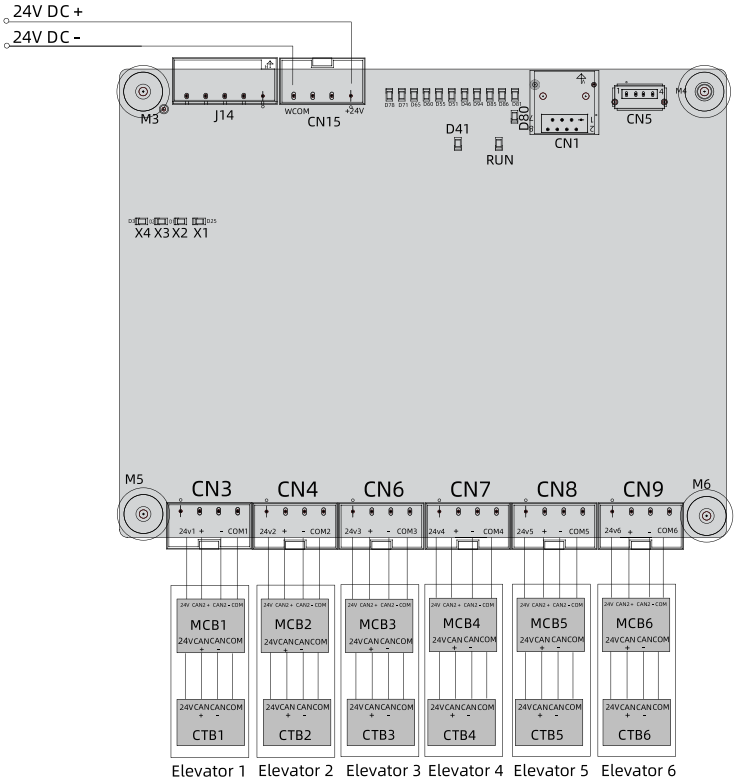


Figure 18-20 Wiring of group control

Parameters

Param.	Description	Range	Setting in group control	Note
F6-07	Number of elevators in group control	1 to 8	1 to 8	Actual number of elevators in group control
F6-08	Elevator No.	1 to 8	1 to 8	1: Elevator 1 2: Elevator 2 3: Elevator 3 4: Elevator 4

GCB Group Control Mode Setting:

Function	Param.	Description
Destination floor group control/ Hybrid group control	F5-00 bit3 = 1	-
Conventional group control	F5-00 bit3 = 0	Default value:0

Individual Elevator Group Control Function Setting:

To coordinate with the group control board mode, individual elevator settings are adjusted as follows:

Function	Param.
Destination floor group control/ Hybrid group control	F6-07 = 8, F6-08 = 1/2/3/4/5/6/7/8 F6-09 bit3= 1, bit15= 1
Conventional group control	F6-07 = 2, F6-08 = 2 F6-09 bit3= 1, bit15= 0

18.17Through-type Door

Background

The through-type door solution is applied when separate control on two doors of an elevator is required.

Overview

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

Table 18–5 Through-type door control modes

Type	Door control mode	Function
Method 1	Simultaneous control of the front and rear doors	The front and rear doors open simultaneously upon arrival for any calls
Method 2	Door open on one side for hall calls, and door open on both sides for car calls	Hall call: The front door opens upon arrival for hall calls from the front door, and the rear door opens upon arrival for hall calls from the rear door Car call: The front and rear doors open simultaneously upon arrival for car calls

Type	Door control mode	Function
Mode 3	Door open on one side for hall calls, and manual door open control for car calls	Hall call: The front door opens upon arrival for hall calls from the front door, and the rear door opens upon arrival for hall calls from the rear door Car call: The door open mode for car calls is controlled by the switch in the car Two open modes are available: only the front door opens and only the rear door opens
Mode 4	Door open on one side for both hall calls and car calls	Hall call: The front door opens upon arrival for hall calls from the front door, and the rear door opens upon arrival for hall calls from the rear door Car call: The front door opens upon arrival for car calls from the front door, and the rear door opens upon arrival for car calls from the rear door

These through-type door control modes can be implemented by using two methods:

- 1: Application suitable for NICE3000^{new} only.
- 2: Application suitable for NICE3000^{new} and NICE3000.

Through-type Door Control Scheme (Recommended)

These door control modes in the preceding table can be implemented through the following schemes. Take 20 -floor through-type door as an example.

Wiring

COB wiring:

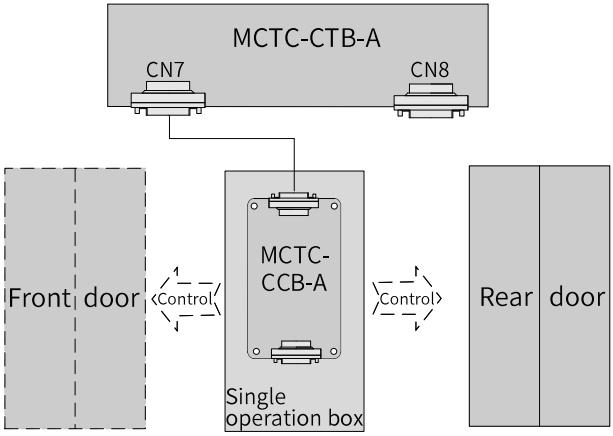


Figure 18-21 Wiring of the car CCB for single operation box

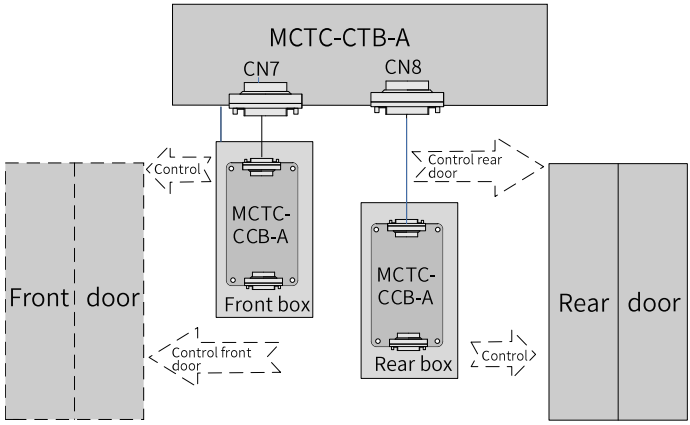


Figure 18-22 Wiring of the car CCB for dual operation boxes

Hall call setting:

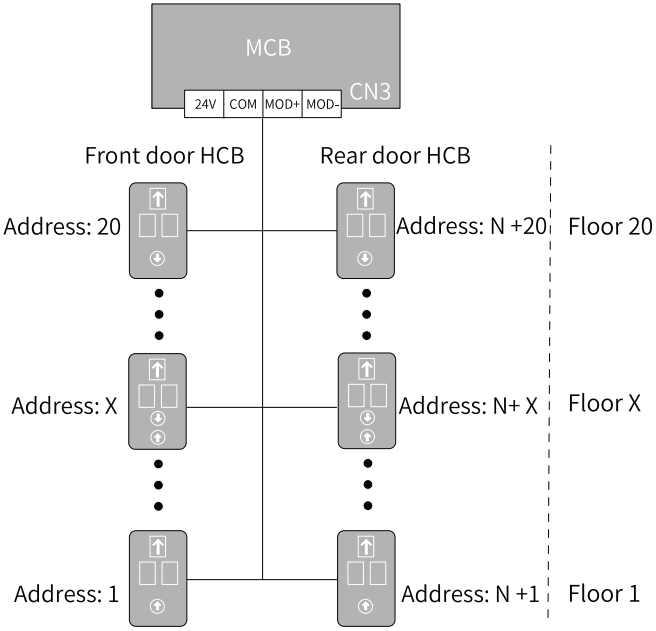


Figure 18-23 Hall call setting 1

HCB addresses of the front door: 1 to 20; HCB addresses of the rear door: N + 1 to N + 20; F8-16 = N (N ≥ F6-00).

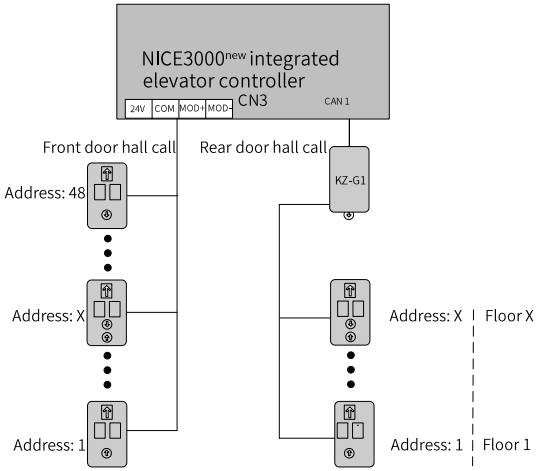
Parameters

Type	Door control mode	Parameter settings		service floor	Wiring of operation box COB	Hall call address settings
		Mode selection	Other parameters			
Mode 1	Simultaneous control of the front and rear doors	FC-04 =0	FB-00 =2 F8-16 = N (N≥ F6-00)	20	The CCB of front door is connected to CN7 on the CTB The CCB of the rear door is connected to CN8 on the CTB	Front door: (1 to 20) Rear door: (N+1 to N+20)
Mode 2	Door open on one side for hall calls, and door open on both sides for car calls	FC-04 =1	Same as mode 1	20		
Mode 3	Door open on one side for hall calls, and manual door open control for car calls	FC-04 =2 F6-40 bit4 = 1	Same as mode 1	20		
Mode 4	Door open on one side for both hall calls and car calls	FC-04 =3	Same as mode 1	20		

Note: In mode 3, the car front/rear door open/close is controlled as follows.
Control by button:
Connect the button to JP16 on the CCB, and set F6-40 bit2 to 1. When this button is steady ON, only the front door opens. When this button is steady OFF, only the rear 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 rear door opens.

This scheme can support doors with 48 addresses.

When there are more than 48 doors for through-type use, an MCTC-KZ-G1 expansion board must be equipped. And rear door hall calls need a separate Modbus line connected to the Modbus terminal of the KZ-G1 expansion board and its HCB addresses need to be set starting from 1.



18.18Application Scheme of Emergency Operation and Dynamic Test Device of MRL Elevator

Background

The emergency and dynamic test operating panel should provide the following functions:

- A control device for dynamic test that can be accessible and operated safely and conveniently from outside the shaft under any conditions;
- A display device or a window for direct observation of the drive motor to obtain car running direction, car arrival at the unlocking zone and car speed.

That is, you can, directly or through the display device, observe car movement direction, speed and whether the car is located in the unlocking zone. The device has permanent lighting fittings and stop mechanism or main switch.

Overview

Software implementation scheme

The MCB LEDs are used to monitor car direction, speed and door zone position.

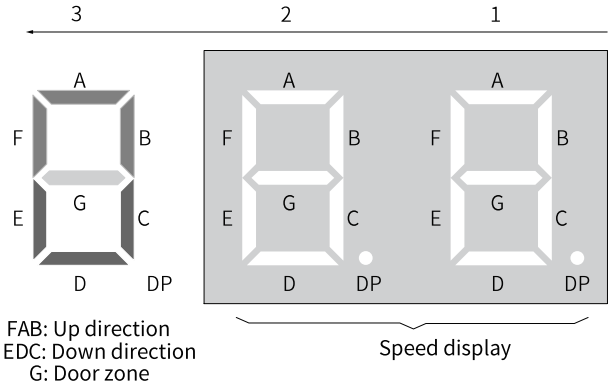
- Emergency and test operating panel triggered
  by operating the keypad to enter the F-D interface;

  by emergency state;

  by pulse change in stop state;

  or by the 12 V input in case of 24 V system power failure (MCB hardware F01 or later version).

- Description of emergency and test operating panel



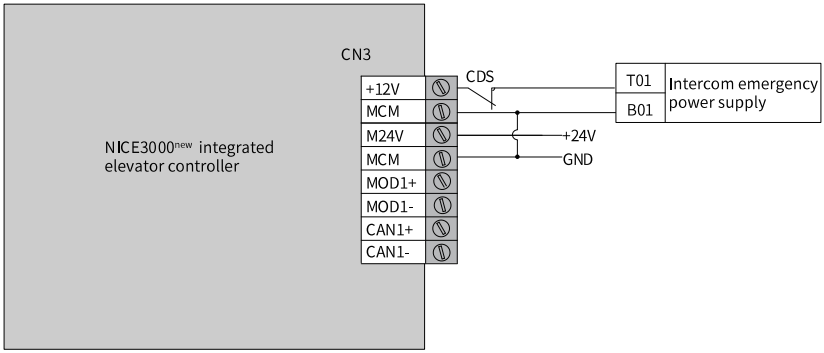
Note

When the elevator speed is below 1.000 m/s, ".xx m/s" is displayed. When the speed is greater than 1 m/s, "x.x m/s" is displayed. The decimal places are different.

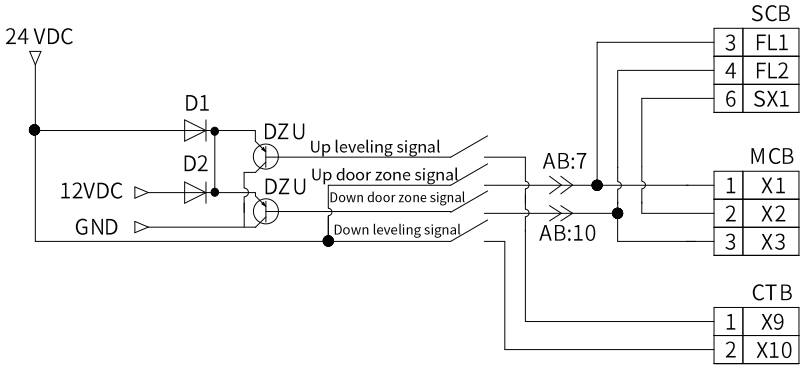
Electrical implementation

In case of power failure, this function can be enabled by using the 12 V power supply of the intercom system or electric brake release device to power the MCB.

- As 12 V input in case of power failure, 12V and MCM terminals are added on the MCB to supply power to PG card and other parts. This helps provide direction and speed feedback during emergency evacuation by shorting stator braking;
- CDS (MRL control cabinet door switch) is added. When the cabinet door is open, the switch contact is ON and 12 V power is supplied to terminal CN3;
- The switch above helps prevent insufficient voltage of emergency power supply due to long-term 12 V input to the system in case of power failure.
- 12 V and 24 V require common ground connection.



- 12 V input is added to the up and down leveling optoelectronic signals and power supply side. The 12 V power supply comes from the intercom emergency lighting. The action of the optoelectronic switch is driven by the emergency lighting upon power failure.
- The leveling optoelectronic switch must have a wide voltage range of 10 V to 30 V (Weton SGD31 optoelectronic switches can be a choice).
- A 1N4007 diode with 1 A rated current, 1000 V reverse breakdown voltage must be used for mutual separation on the optoelectronic power supply side.



18.19Multiple Operation Boxes

Dual Operation Boxes

Function

There are several dual operation box uses: single-door main and auxiliary operation boxes; main operation box and operation box for the disabled and front and rear door operation boxes.

In these cases, the operation box is usually connected to CN7, and the auxiliary control box (for the disabled or rear door) is connected to CN8.

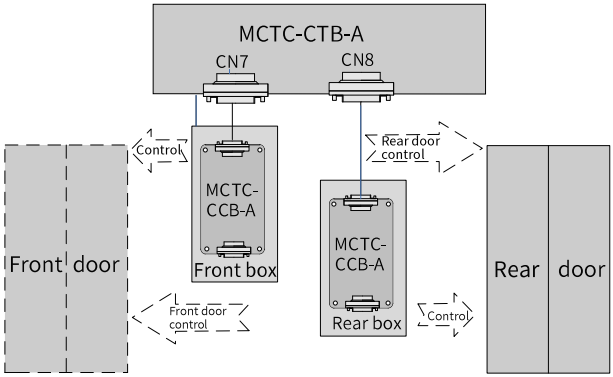


Figure 18-24 Dual operation boxes

Note

For the cases mentioned above, the standard software can support 48 landing doors.

Parameters

If the auxiliary operation box is for the single-door use or rear door car call, no additional parameters need to be set.

If it is for the disabled, F6-40 needs to be set and bit12 is set to 1 for commands from the disabled:

Param.	Name	Description
bit12	Car call auxiliary command terminal used for accessibility function	You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls: 0: Consistent with CN7 for the single-door configuration, and rear door for double-door configuration 1: CN8 is for the single-door disability calls

Three/Four Operation Boxes

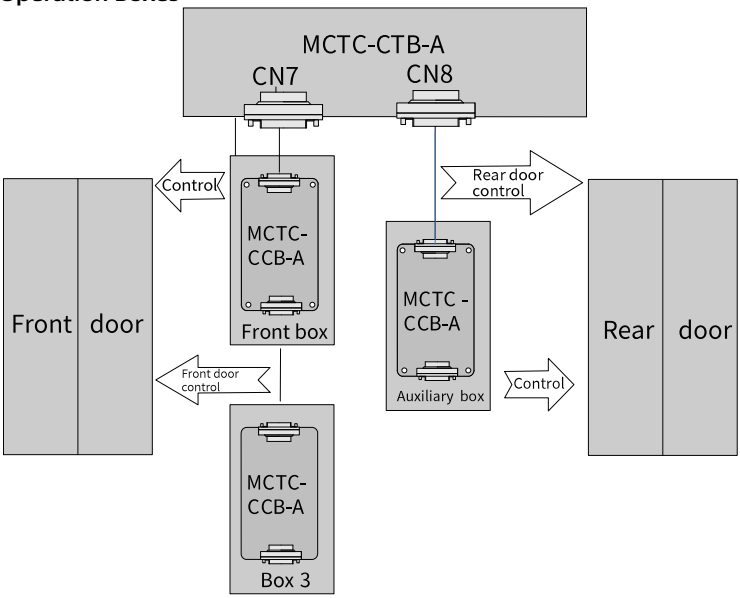


Figure 18-25 Three/Four operation boxes

Parameters

Set F6-40, bit14 to 1. Use the command board of the front or rear door to enter the floor of the disability call. The maximum number of floors supported is 16.

If it is over 16, please consult the manufacturer.

Param.	Name	Description
bit14	Car call command duplication	Car call command duplication: • Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for rear door calls or disability calls; • Function enabled: For CN7 and CN8, floors 1 to 16 are for front door calls or ordinary calls, and floors 17 to 32 for rear door calls or disability calls.

18.20Balancing Factor Auto-tuning

Conditions:

The system is in the normal, locking or parking mode and there is no fault above level 3.

Parameter Setting

Set F-8 to 11 or F3-24 to 6 using the keypad. Ensure that the rated load F0-05 is set correctly.

Running Process

Hall calls are not registered. The elevator executes all car calls and ensures that the door close limit is reached. After the door lock is applied and remains active for 3s, the elevator enters the test mode and the HCB displays "θ".

Display

- If the result falls within the normal range, balancing factor F7-13 and brake torque upper limit F7-14 are saved and the keypad has a scrolling display of Pxx.xx Txxx for 8s.
- If the result is not within the normal range, the result is not saved.
- Display the calculation result Pxx.xx Txxx (P represents the balancing factor, T represents the recommended value of braking force test).

19 Daily Inspection Items

The influence of the ambient temperature, humidity, dust and vibration will cause the aging of the components inside the controller, which may cause potential faults or reduce the service life of the controller. Therefore, it is necessary to carry out routine and periodic maintenance. Cycles and intervals of regular checks shall also be shortened especially in environments or situations where temperature is high, frequent starting and stopping happens, AC powers and load fluctuation exist, huge shake or impact occurs, or dust or metal powder or corrosives such as hydrochloric acid exist.

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.

Item	Criteria	Troubleshooting	Tick
Motor	Ensure that no abnormal sound or vibration exists.	• Ensure normal mechanical connection. • Ensure no motor phase loss. • Ensure that motor screws are tightened.	□
Cooling fan	Ensure that the cooling fans of the controller and the motor work normally.	• Ensure normal cooling fan of the controller. • Ensure normal cooling fan of the motor. • Ensure unobstructed air filter. • Ensure that the ambient temperature is within the allowable range.	□
Installation	Ensure normal power cabinet and cable trays.	• Ensure that the controller cable insulation is intact. • Ensure that the mounting bracket stands firm. • Ensure that the copper busbar and terminals are tightened and not corroded.	□
Load	Ensure that the controller current does not exceed the controller rating and motor rating.	• Ensure correctly set motor parameters. • Ensure no motor overload. • Ensure no excessive mechanical vibration (typically below 0.6 g).	□
Input voltage	Ensure normal power voltage between the main circuit and control circuit.	• Ensure that the input voltage is within the allowable range. • Ensure that there is no starting of heavy load.	□

20 Periodic Inspection Items

Regularly inspect the components. Keep the controller clean all the time. Remove the dust on the surface of controller, especially metal dust, to prevent it from entering into the controller. Clear the oil stain on the cooling fan of the controller.



- To prevent electric shock, never perform inspection at power-on.
- Before inspection, cut off all power supplies and wait for at least 10 minutes before further operations to avoid danger caused by the residual voltage in the capacitor of the controller.

Item	Item	Notes	Tick
Whole unit	Ensure that there are no wastes, dirt, or dust on the surface.	• Confirm that the controller is powered off. • Use a vacuum cleaner (rather than directly touch components) to suck up wastes and dust. • Wipe the surface dirt difficult to clean with alcohol and wait until the surface becomes dry.	□
Cable	• Ensure that no power cables or connections discolor. • Ensure that the insulation layer does not age or crack.	• Replace the cracked cable. • Replace the damaged terminals.	□
Peripheral devices, such as electromagnetic contactor	• Ensure that the contactor can be fully closed and has no abnormal sound when it operates. • Ensure that no short circuit, water stain, expansion or cracking occurs on any peripheral device.	• Replace the abnormal components.	□

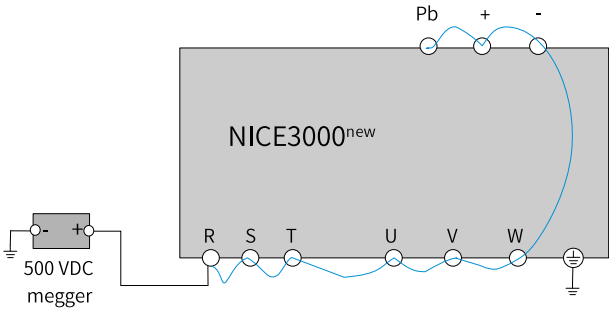
Item	Item	Notes	Tick
Air vent	• Ensure that the air filter and heatsink are not clogged. • Ensure that the fan is not damaged.	• Clean the air filter. • Replace the fan.	□
Control circuit	• Ensure that no control components are in poor contact. • Ensure that the terminal screws are tightened. • Ensure that the insulation of control cables is in good condition.	• Remove foreign objects on the surface of control cables and terminals. • Replace the damaged or corroded control cables.	□

20.1 Main Circuit Insulation Test

Note

The high voltage (> 500 V) test need not be performed again because it has been completed before delivery.

- Before the test, remove the VDR screws and disconnect the VDR.
- Before measuring the insulation resistance with megger (500 VDC megger recommended), disconnect the main circuit cables from the controller. Do not use the insulation resistance meter to test the insulation of the control circuit. See the following figure.



- The measured insulation resistance must be greater than 1 MΩ.

20.2 Controller Drive Module

The NICE3000^{new} controller consists of an MCB and a drive unit, as shown in the following figure.

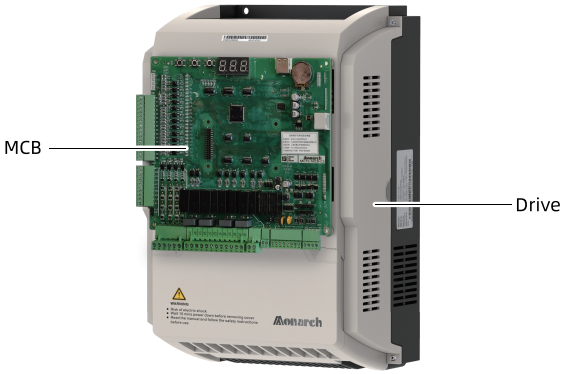


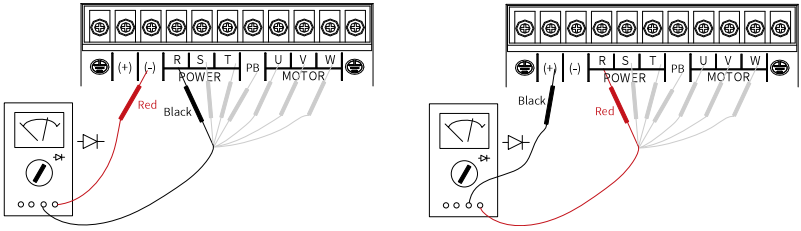
Figure 20-1 NICE3000^{new} integrated controller

If overcurrent faults (E02, E03 and E04) occur, check whether the driver board is damaged with the following methods.

Methods:

- Check whether the lower bridge is conductive.
  Use the digital multimeter to test diodes. Have the red lead on the negative (-) side of the bus, and the black lead on R, S, T, U, V, W and PB.

  The driver board is normal for the same or similar R, S and T readings and the same or similar U, V and W readings (between 0.4 and 0.6). If it shows infinite values or short circuit, the driver board is damaged.



- Check whether the upper bridge is conductive.
  Use the digital multimeter to test diodes. Have the black lead on the positive (+) side of the bus, and the red lead on R, S, T, U, V, W and PB.

  The driver board is normal for the same or similar R, S and T readings and the same or similar U, V and W readings (between 0.4 and 0.6). If it shows infinite values or short circuit, the driver board is damaged.

21 Part Replacement

21.1 Cooling Fan

Inspection Standard

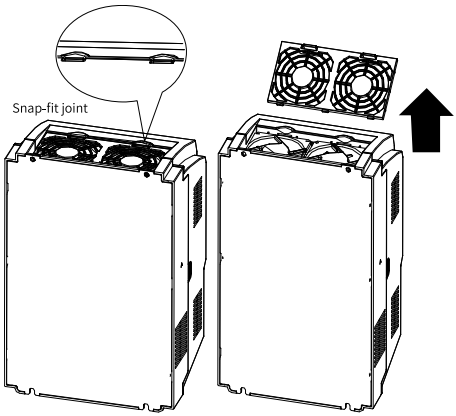
Ensure that there is no crack on the blade and no abnormal fan vibration noise upon startup. Also, ensure that the fan blades run properly.

Models of 37 kW and Below (Plastic Enclosure)

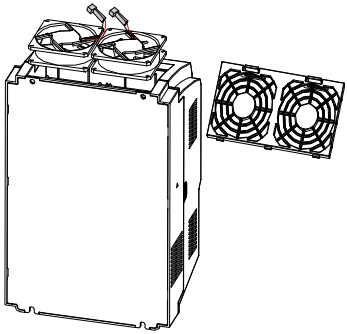
Keep the airflow direction upward after the replacement.

Fan Removal

1. Press the snap-fit joint on the fan cover to remove the cover.



2. Pull the fan upwards and disconnect the power plug.



Fan Installation

Reinstall the fan in reverse order:

1. Connect the fan power cable to the socket.

2. Put the fan into the controller and ensure mounting hole alignment. Pay attention to the direction arrow on the fan, and lay the fan in the specified direction to ensure upward air flow direction.
3. Engage the two fixing snap-fit joints on the fan cover with the grooves on the edge of the unit to secure the fan cover. Keep the airflow direction upward after the replacement.

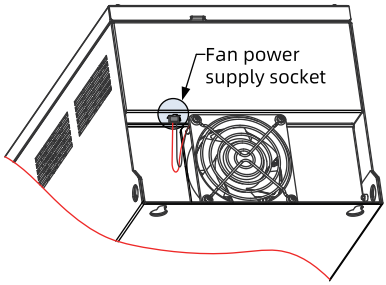
Models of 45 kW to 55 kW (Sheet Metal Enclosure)

Note

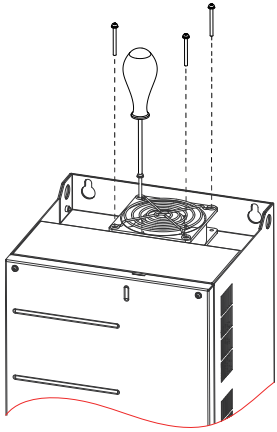
The number and location of cooling fans vary with product models, but the fans are removed and installed in the same way.

Fan Removal

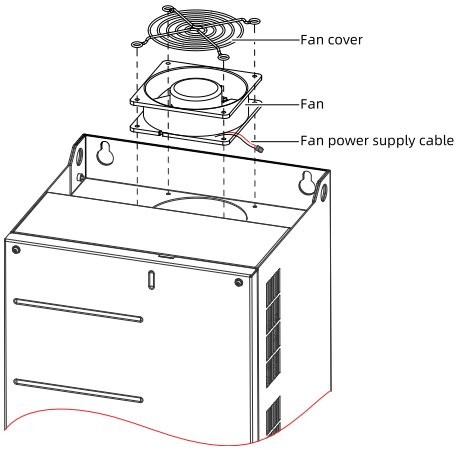
1. Disconnect the fan power plug (top view).



2. Remove the four fixing screws on the fan cover with a screwdriver.



3. Remove the fan cover and fan.



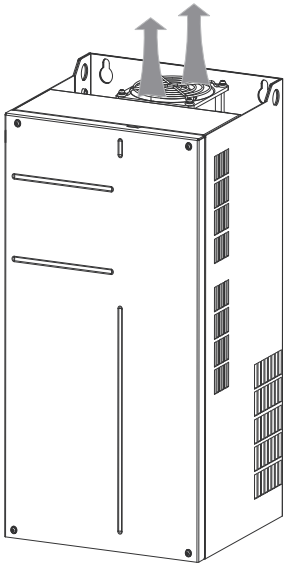
Fan Installation

1. Reinstall the fan in reverse order. Ensure the correct direction of the fan.

2. Align the mounting holes on the fan with the mounting positions inside the controller.

3. Keep the airflow direction upward after the replacement.

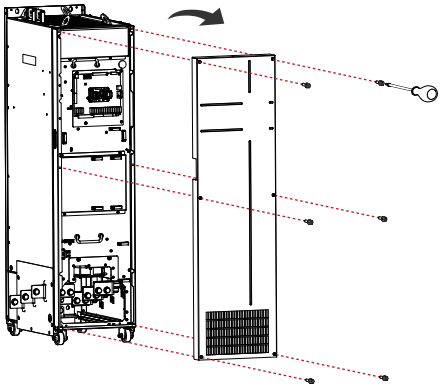
Keep the fan airflow direction upward



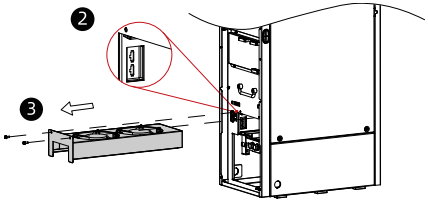
Models of 75 kW to 280 kW (Sheet Metal Enclosure)

Fan Removal

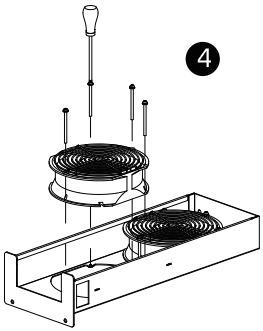
1. Remove the six fixing screws from the cover plate. Grip the cover with both hands and lift it in the direction of the arrow to remove the cover. Remove the four securing screws from each fan guard to complete the fan removal.



2. As shown in the detail view, disconnect the fan power connectors (one connector per fan). Then, remove the three fixing screws from the fan box and pull the fan box out in the direction of the arrow.



3. Remove the four fixing screws from each fan cover to complete removal.

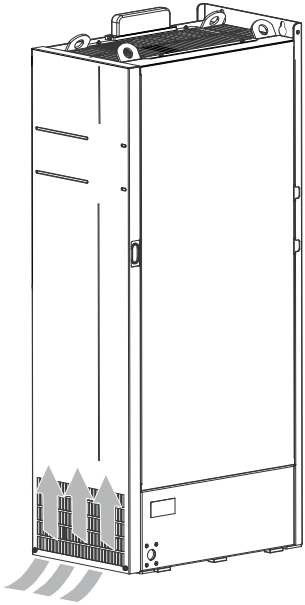


Fan Installation

1. Reinstall the fan in reverse order. Ensure the correct direction of the fan.

2. When installing the fan box into the chassis, ensure the fan box aligns with the mounting rails, then push the box into the chassis.

3. Connect the power cable plugs before securing the fan box. Keep the airflow direction upward after the replacement.



21.2 Electrolytic Capacitor for Filtering

Possible Cause

Input power supply in poor quality, high ambient temperature, frequent load fluctuations and electrolytic aging.

Judging Criteria

Check whether there is liquid leakage and whether the safety valve has projected. Measure the static capacitance and the insulation resistance.

Replacement

If electrolytic capacitor replacement is required, contact Inovance.

22 Troubleshooting

22.1 Part 1 Questions

This guide mainly introduces the NICE3000^{new} controller common questions and troubleshooting of common faults to facilitate commissioning and fault handling.

22.1.1Synchronous Motor Angle-free Auto-tuning

Requirements

- The field power supply and wiring are normal, and the safety circuit and door lock circuit are connected.
- Meet inspection running conditions (The slow-down and limit switch signals are inactive).
- Encoder installation is completed.
- Level 3 faults or above are not reported (except faults E51 and E52). Fault E35 is resettable.
- The guide rail installation is completed for normal running.

Parameter Settings

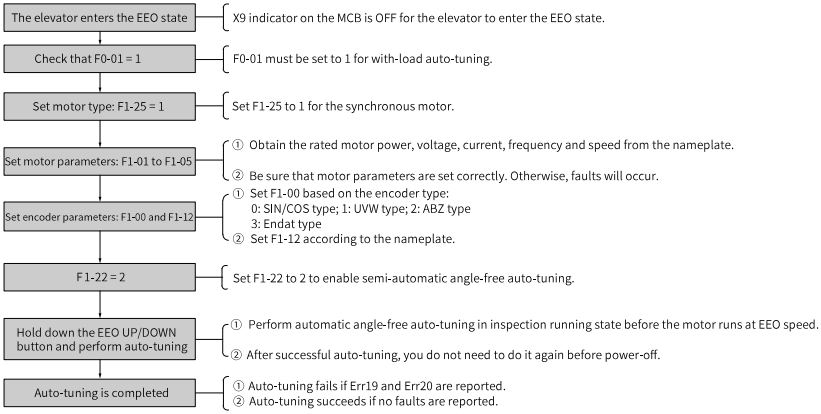
Parameters	Name	Description
F1-25	Motor type	1: Synchronous motor
F1-00	Encoder type	0: Sin/Cos encoder 1: UVW encoder 2: ABZ encoder 3: Endat absolute encoder 4: Weton communication-type encoder
F1-12	Encoder PPR	Refer to encoder nameplate
F1-01 to F1-05	Rated motor power/ voltage/current/ frequency/speed	These parameters are model dependent, and you need to manually input them according to the nameplate.

Parameters	Name	Description
F0-01	Command source selection	1: Distance control
F1-22	Auto-tuning function selection	F1-22 = 2: Semi-automatic angle-free auto-tuning Perform auto-tuning at first-time running after power-off and power-on again, only in the inspection or EEO state. F1-22 = 6: Automatic angle-free auto-tuning Perform auto-tuning at first-time running after power-off and power-on again (without differentiating elevator states).

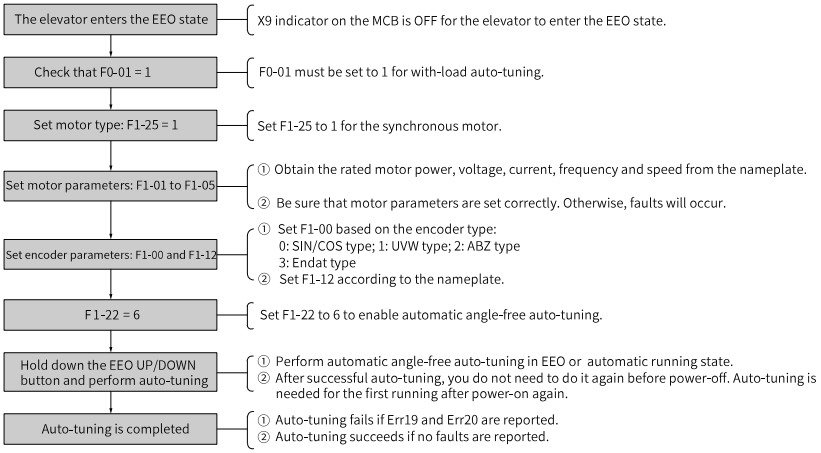
Operation Flowchart

Angle-free auto-tuning: When the wiring and parameters are correct on site, enable F1-22 parameter (angle-free auto-tuning). Magnetic poles will be located at the first-time running of the elevator. There is no need for commissioning personnel to confirm angle on site.

- Semi-automatic angle-free auto-tuning



- Automatic angle-free auto-tuning



22.1.2Hall Call Address and Display Setting

Question 1: How to set the HCB address?

The HCB address and the leveling plate are one-to-one relationship. It means that the HCB address is numbered according to the leveling plate numbered from bottom to top on the same floor. However, if a leveling plate is installed on the non-service floor, a hall call address must be reserved in advance.

Question 2: How to set a 3-digit display?

Take the display of 17A for floor 18 (18th leveling plate) as an example:

Method 1: Set FE-18 to 4210 (42 displays 17 and 10 displays A).

Method 2: Set through the most significant bit and lowest bit combinations.

1. Set FE-18 to 0710 (to display 7) for the lowest 2 bits and set FE-52 to 1801 for the most significant bit (to display most significant bit 1 for HCB address 18).
2. Enable 3-digit floor number display: Set F8-14 bit0 to 1 and baud rate to 38400 bps.
3. Power cycle the system.

Parameter Description

Param.	Name	Range	Default	Unit	Property
F8-14	Hall call communication setting	Set bit0 to 1 to enable 3-digit floor number display	-	-	-
FE-01	Floor 1 display	00: "0" 01: "1" 02: "2" 03: "3" 04: "4" 05: "5" 06: "6" 07: "7" 08: "8" 09: "9" 10: "A" 11: "B" 12: "G" 13: "H" 14: "L" 15: "M" 16: "P" 17: "R" 18: "-" 19: No display 20: "12" 21: "13" 22: "23" 23: "C" 24: "D" 25: "E" 26: "F" 27: "I" 28: "J" 29: "K" 30: "N" 31: "O" 32: "Q" 33: "S" 34: "T" 35: "U" 36: "V" 37: "W" 38: "X" 39: "Y" 40: "Z" 41: "15" 42: "17" 43: "19"	1901	-	☆
FE-02	Floor 2 display		1902	-	☆
FE-03	Floor 3 display		1903	-	☆
FE-04	Floor 4 display		1904	-	☆
FE-05	Floor 5 display		1905	-	☆
FE-06	Floor 6 display		1906	-	☆
FE-07	Floor 7 display		1907	-	☆
FE-08	Floor 8 display		1908	-	☆
FE-09	Floor 9 display		1909	-	☆
FE-10	Floor 10 display		100	-	☆
Floor 11 to floor 30 display			...		
FE-31	Floor 31 display		301	-	☆
FE-35	Floor 32 display		302	-	☆
FE-36	Floor 33 display		303	-	☆
FE-37	Floor 34 display		304	-	☆
FE-38	Floor 35 display		305	-	☆
FE-39	Floor 36 display		306	-	☆
FE-40	Floor 37 display		307	-	☆
FE-41	Floor 38 display		308	-	☆
FE-42	Floor 39 display		309	-	☆
FE-43	Floor 40 display		400	-	☆
FE-52	Most significant bit selection 1	0 to 4099	0	-	☆
FE-53	Most significant bit selection 2		-	-	☆
FE-54	Most significant bit selection 3		-	-	☆
FE-55	Most significant bit selection 4		-	-	☆
FE-56	Most significant bit selection 5		-	-	☆

22.1.3Service Floor Setting

Question:

- How to set an elevator that serves 8 floors with 7 landing floors and 7 doors (1 to 8, but not land on floor 3)?

Set F6-05 through the equation (F6-05 = 65535 - 2^2 = 65531).

- How to set an elevator that serves 3 floors with 3 landing floors and 4 doors (through-type door on floor 1 and door 1 open on floors 2 and 3)?
  Set FB-02 and FB-04 through the equations (FB-02 = 65535, FB-04 = 2^0 = 1).

Parameter Settings

Parameters	Name	Description
F6-05	Service floor 1	0 to 65535 (floors 1 to 16)
F6-06	Service floor 2	0 to 65535 (floors 17 to 32)
F6-35	Service floor 3	0 to 65535 (floors 33 to 40)
FB-02	Service floor 1 of door operator 1	0 to 65535 (floors 1 to 16)
FB-03	Service floor 2 of door operator 1	0 to 65535 (floors 17 to 32)
FB-18	Service floor 3 of door operator 1	0 to 65535 (floors 33 to 40)
FB-04	Service floor 1 of door operator 2	0 to 65535 (floors 1 to 16)
FB-05	Service floor 2 of door operator 2	0 to 65535 (floors 17 to 32)
FB-19	Service floor 3 of door operator 2	0 to 65535 (floors 33 to 40)

The parameter calculation above is based on decimal number and binary number conversion.

Method to convert binary to decimal number:

- Take F6-05 as an example. F6-05 = 65535 = ^{20}+ 2^1 +..... + 2^{15} = 1 +2 +4 +8 +..... +32768, where N in 2^N corresponds to the Nth + 1 leveling plate from bottom to top. If F6-05 = 3 = 2^0+ 2^1, it indicates the first and second leveling plate for elevator running from bottom to top.
- F6-20 (time-based floor service), F5-25 (CTB input type), and F6-40 (program function selection) bits are calculated in the same method as above.
- The service floor can be set easily through the Monarch app. On the app, set the non-service floor directly to OFF.

22.1.4Elevator Lock and Timed Lock Setting

Question:

1. How to connect the elevator lock signal?
   - Connect the elevator lock signal with the hall call board (R1/U1 series: JP1; D630/R600 series: ST).

- Connect the elevator lock signal with the MCB, and set the parameter to 28 (NO) and 60 (NC).
  For example, connect to the MCB input terminal X22, set F5-22 to 28 (for NO switch) and set F5-22 to 60 (for NC switch).

2. How to set the elevator lock time from 23:00 to 6:00 in an office building?

- Enable the timed elevator lock function and set F6-40 bit5 to 1. Set F6-38 to 23: 00 (start) and F6-39 to 6: 00 (end).
- Set elevator lock floor in F6-04.
- The time of the control system should be set according to the local time, set the actual date and time in F9-03 to F9-07.

Parameter Description

Param.	Name	Description	Unit
Group F5	Definition	28/60: Elevator lock signal NO/NC	-
F6-40	Program function selection	Timed elevator lock enabled by setting bit5 to 1	-
F6-38	Elevator lock start time	00.00 to 23.59	HH.MM
F6-39	Elevator lock end time	00.00 to 23.59	HH.MM
F6-04	Elevator lock floor	F6-01 to F6-00	-
F9-03	year	2000 to 2100	YYYY
F9-04	month	01 to 12	MM
F9-05	day	1 to 31	DD

Note

For NICE3000^{new} controller, you can set F6-04 to any floor as the elevator lock floor. That is, F6-04 may not be strictly consistent with the HCB address.

22.1.5How to set the elevator fire linkage system?

Question 1: How to set elevator fire emergency protection?

- Method 1: Connect the fire emergency signal with the standby input terminal on the MCB and set the corresponding parameters to 11/43 for fire emergency signal NO/NC setting. Connect the feedback signal with the output terminal on the MCB and set the Y terminal to 4 for fire emergency floor arrival signal feedback.

- Method 2: Connect the fire emergency signal with the display board JP1 or JP2 pins 2 and 3 or XF terminal. Connect the feedback signal with the output terminal on the MCB and set the terminal to 4 for fire emergency floor arrival signal feedback.

Parameter Description

Product series	Parameters	Name	Description
NICE3000	F6-03	Fire emergency floor	F6-01 to F6-00
NICE3000^{new}	F6-03	Fire emergency floor	F6-01 to F6-00
	F6-44	Fire emergency function selection	bit3: Arrival gong output in inspection or fire emergency state bit4: Multiple car calls registered in fire emergency state bit5: Retentive at power failure in the fire emergency state bit6: Door close by holding down the door close button bit7: Reserved bit8: Door close at car call registration bit9: Display floor number upon hall call in the fire emergency state bit10: JP22 used for forced running input in the firefighter state bit11: Exiting the firefighter state upon arrival at fire emergency floor bit12: Not clearing car calls at reverse door open in firefighter running state bit14: Door open by holding down the door open button bit15: Automatic door open at fire emergency floor
	FD-07	HCB: JP1 input	2/34: Fire signal NO/NC
	FD-08	HCB: JP2 input	

Note

For NICE3000^{new} controller, you can set F6-03 the fire emergency floor in consistence with the HCB address (fire emergency signal).

Question 2: How to set elevator firefighter signal?

- Method 1: Connect the firefighter signal with the standby input terminal on the MCB and set the corresponding parameters to 23/55 for firefighter signal NO/NC setting.
- Method 2: Connect the firefighter signal with JP24 pins 2 and 3 of the car call board MCTC-CCB.

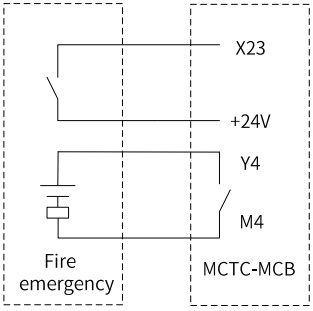
Parameter Description

Parameters	Name	Description
Group F5	Input terminal definition	23/55 (Firefighter signal NO/NC)

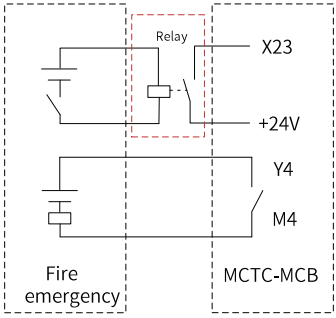
Question 3: How to set the fire linkage system?

Connect the fire emergency signal with the standby input terminal on the MCB and set the corresponding parameters to 11/43 for fire emergency signal NO/NC setting. Connect the feedback signal with the output terminal on the MCB and set the terminal to 4 for fire emergency floor arrival signal feedback.

The fire emergency settings involve active (24 V power supply) signal and passive (digital) signal. Add fire relays for the active signal to protect the input terminals from being burned. The following figure shows connection details.



Passive (digital) signal wiring



Active signal wiring

Parameter Description

Parameters	Name	Description
Group F5	Input terminal definition	11/43 (Fire emergency signal NO/NC)
Group F5	Output terminal definition	4 (Fire emergency floor arrival signal feedback)

22.1.6How to Distinguish NICE3000 from NICE3000^{new}

Item	NICE3000	NICE3000^{new}
Controller model	NICE-L-A supports asynchronous motor NICE-L-B supports synchronous motor	NICE-L-C integrates synchronous and asynchronous motor
MCB model	MCTC-MCB-B	MCTC- MCB-C integrates synchronous and asynchronous motor
I/O port	24 input ports and 6 output ports	24 input ports, 6 output ports, and 4 high-voltage input ports
CANbus channel	1	2: CAN and CAN2 (for parallel connection)
Encoder interface	Yes and the asynchronous motor requires no PG card	No and the asynchronous motor requires MCTC-PG-A2 card
USB interface	No	Yes: Commissioning using the mobile phone
Modbus channel	1: Hall call communication	2: Hall call communication and IoT

Note

- The three high-voltage input terminals of NICE3000^{new} are connected with safety circuit and door lock circuit, and the power supply is 110 VAC.
- An extra set of CANbus channels of NICE3000^{new} over NICE3000 is for parallel/ group control.
- For NICE3000 series, MCTC-MCB-B1 is used for synchronous motors and MCTC-MCB-B2 is for asynchronous motors.

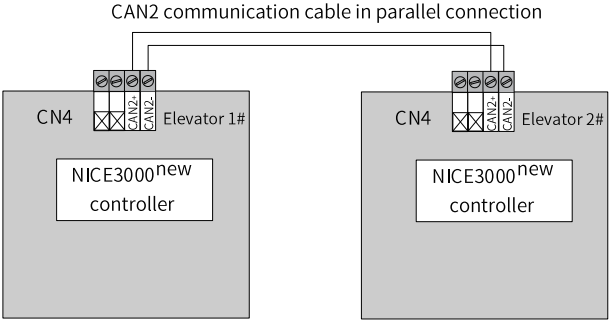
22.1.7Two NICE3000new Controllers in Parallel Control

Parameter Settings

Parameters	Name	Description
F6-07	Number of controllers in parallel control	2 for the two elevators
F6-08	Elevator No.	1 for the master elevator and 2 for the slave elevator
F6-09	Program selection	bit3 = 1 for the two elevators It indicates the use of CAN2 for parallel connection/group control

- Skip the CTB setting if CAN2 is used for parallel control.
- Leveling plates must be installed for both elevators on the same floor. Even if one of the elevators does not stop (by setting F6-05), the leveling plate must be installed on this floor too.
- The HCB address is the same as the leveling plate No. on the same floor.
- The top floor (F6-00) and bottom floor (F6-01) take the lowest floor as the reference.

Wiring Method



Note

When the MCB of NICE3000^{new} is used with NICE3000 drive board, CAN2 port is invalid and the parallel connection can only be made through serial communication (the same way as the parallel connection of two NICE3000 controllers).

22.1.8How to Achieve Parallel Connection of one NICE3000^{new} and one NICE3000

Parameter Settings

Parameters	Name	Description
F5-30	Y5 terminal definition	14 for the two elevators
F6-07	Number of elevators in group control	2 for the two elevators
F6-08	Elevator No.	1 for the master elevator and 2 for the slave elevator
F6-09	Program function selection	bit3 =1 bit4 =1 **Note**: This parameter is used for NICE3000^{new} settings and invalid for NICE3000 settings.

- CTB setting: For J2 jumper on the CTB, short J2 OFF on the master elevator CTB and short J2 ON on the slave elevator CTB. For SW DIP switch on the CTB, set the first bit of SW1 on the master elevator CTB to OFF and the first bit of SW1 on the slave elevator CTB to ON.
- Leveling plates must be installed for both elevators on the same floor. Even if one of the elevators does not stop (by setting F6-05), the leveling plate must be installed on this floor too.
- The HCB address is the same as the leveling plate No. on the same floor.
- The top floor (F6-00) and bottom floor (F6-01) take the lowest floor as the reference.

Wiring Method

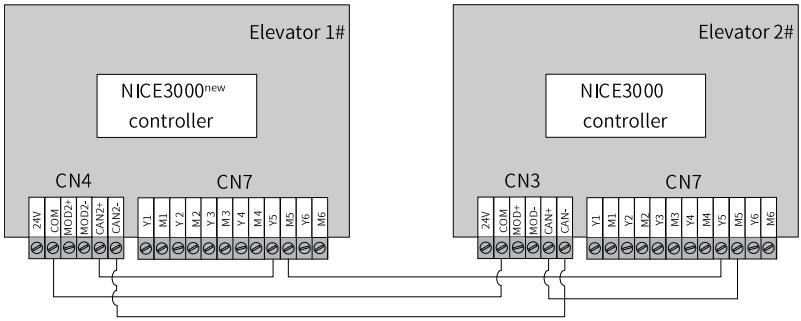


Figure 22-1 NICE3000 and NICE3000^{new} parallel connection on the MCB

Example

Two NICE3000^{new} controllers are in parallel connection. The elevator 1 is for floors B1 to 4 and lands on floors B1, 1, 2, and 3. The elevator 2 is for floors 1 to 4 and lands on floors 1, 3, and 4.

Corresponding parameter settings are as follows.

Floor parameters		Elevator 1		Elevator 2#	
Number of elevators in group control (F6-07)		2		2	
Elevator No. (F6-08)		1		2	
User floor	Physical Floors	HCB address	HCB display	HCB address	HCB display
B1	1	1	FE-01 = 1101	Not applicable	-
1	2	2	FE-02 =1901	2	FE-02 =1901

Floor parameters		Elevator 1		Elevator 2#	
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	Non-stop floor, no hall call,	-	5	FE-05 =1904
Bottom floor of the elevator (F6-01)		1		2	
Top floor of the elevator (F6-00)		4		5	
Service floors (F6-05)		65535		65531 (not stop at physical floors 1 and 2)	

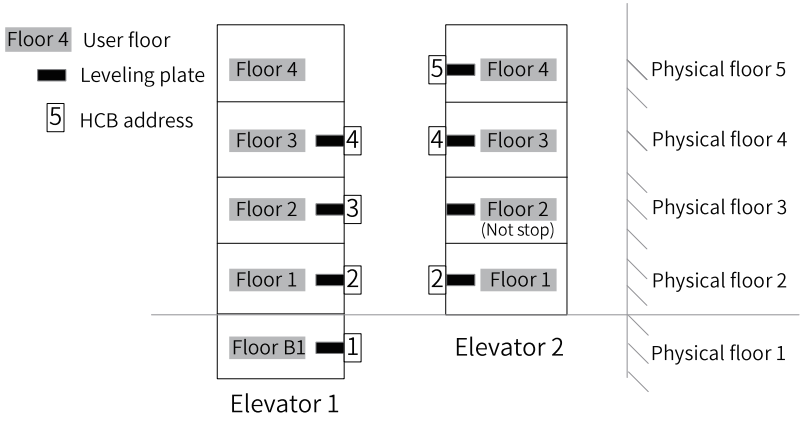


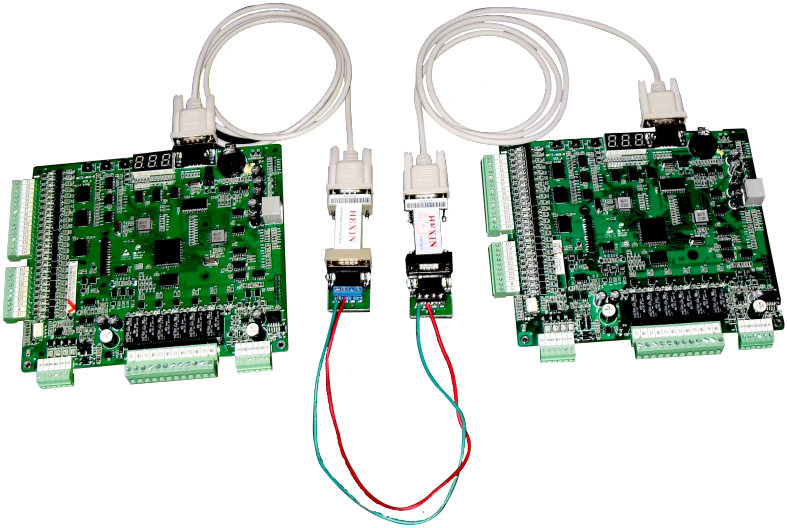
Figure 22-2 Floor layout of two elevators in parallel connection

Parallel Connection Through RS485 Communication Protocol

This scheme is for two NICE3000 controllers (model NICE-L-A or NICE-L-B), and it uses RS485 communication protocol through the MCB monitoring port.

In this process, two additional converter interfaces are needed for RS232 communication conversion to RS485 (UOTEK mini RS232 to RS485 converter model: UT-2201).

For actual use, connect the converter with CN2 of the MCB and then connect the two signals (T/R+, T/R-) at the RS485 end of the converter. Set F6-09 to 4 (bit2 = 1).



The following parameters need to be set.

Param.	Description	Range	Setting in parallel connection
F6-07	Number of elevators in group control	1 to 8	2
F6-08	Elevator No.	1 to 2	Master elevator: 1 Slave elevator: 2
F6-09	Port selection for parallel connection	1 to 4	4 (bit2 = 1)

Product: RS232 to RS485 converter

Model: UT-2201

You can choose DB9 extension cable for easy installation.

22.1.9MCB Replacement

Perform commissioning after a new MCB is used.

1. Set parameters in groups F0 and F1 according to the motor nameplate.
2. Set the input and output parameters (group F5) according to the electrical schematic diagram.
3. Perform motor auto-tuning, shaft auto-tuning, and commissioning on other functions again.

Question 1: How to replace the MCB without motor auto-tuning again?

1. Manually input parameters in groups F0, F1, and F5 of the original MCB.
2. Change F1-06 and F1-08 and set F0-01 to 0 (operating panel control).
3. Power off and on and restore F0-01 to 1 (distance control).

Question 2: What are the things that need your attention in replacing NICE3000 MCB with NICE3000^{new} MCB?

1. Wiring: Do not connect the 5-pin terminal of NICE300^{new} MCB.
2. Parameter: Set the motor type of F1-25 (1 for synchronous motor and 0 for asynchronous motor).
3. For use with asynchronous motor, it requires PG card of MCTC-PG-A2.
4. Use NICE3000 mode for parallel connection if CAN2 terminal can not be used.

Question 3: How to handle the following problems in replacing NICE3000 MCB with NICE3000^{new} MCB (use with asynchronous motor)?

1. Interchange the AB phase for severe jitter or fault E38.
2. Interchange any two phases of UVW for fault E10 or E16.

Question 4: How to handle faults E51, E52 and E57 (communication with CTB, HCB and driver board) after replacing the MCB?

1. Check for correct wiring of the CTB, HCB and driver board.
2. They may be caused by communication protocol incompatibility. Contact the elevator manufacturer for part replacement.

22.2 Part 2 Fault Phenomena

22.2.1No Display at Power-on

Symptom

After the user powers on the system, the LED segment displays show nothing.

Fault Handling

Symptom	Possible cause	Handling	Solution	Note
No Display at Power-on	The controller out of power	Measure whether the input voltage is normal.	Check the circuit and input power supply.	①
		Check whether the inlet contactor closes.	Ensure energized safety circuit, normal transformer power supply, and closed inlet contactor.	-
	MCB power supply abnormal	Use a multimeter to measure pin 4 and pin 5 of J4.	Replace or repair controller driver board.	②

Note

See contents below for details about ①②.

Detailed Handling

① Check the input voltage

Take the input three-phase 380 V as an example.

1. Remove the lower access cover of the controller and expose main circuit terminals.
2. Use a multimeter to measure whether the main circuit voltage of the three-phase input (RST) power source is 380 V.

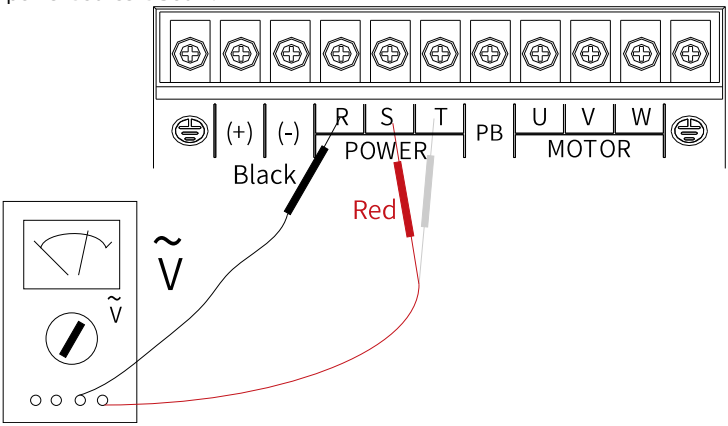


Figure 22-3 Measuring the three-phase input voltage

Check whether the measured input voltage is 220 V if the nominal input voltage is 220 V.

② Check the power supply voltage for the MCB

Take the 5 VDC power supply voltage as an example:

1. Unplug the J4 terminal block on the MCB back, and ensure that the other end is well connected with the driver board J3.
2. Use a multimeter to measure the voltage between pin 4 and pin 5 of J4. Replace or repair controller driver board if the value is below 4.8 V.

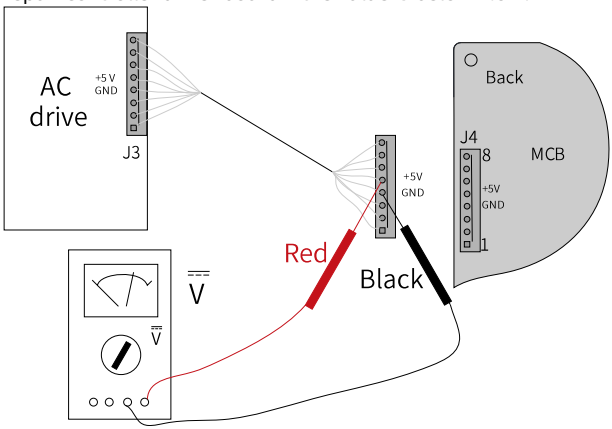


Figure 22-4 Measuring the MCB power supply voltage

22.2.2Abnormal Display at Power-on

Fault Symptom

After the user powers on the system, the LED segment displays "888" or is garbled.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
Abnormal display at power-on	Jumper	Check the J9 and J10 positions.	Short the J9 pin 2 and pin 3. You do not need to short J10 pins.	①
	Hardware	Check whether the MCB is damaged.	Replace the MCB.	-

Note

See contents below for details about ①.

Detailed Handling

① Jumper position

1. Ensure that J10 pins are not shorted.
2. Short the J9 pin 2 and pin 3.

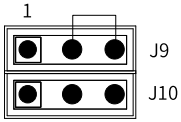


Figure 22-5 Shorting connection

22.2.3Elevator not running in inspection state

Symptom

Press the inspection up/down switch buttons and the elevator does not run.

Fault Handling

Symptom	Possible cause	Handling	Solution	Note
Elevator not running in inspection state	Door lock circuit disconnected	Check whether the door lock circuit is conductive.	Wire correctly according to the schematic diagram	①
	Parameter setting error	Check whether it is the distance control mode.	Set F0-01 (Pre-torque selection) to 1.	-
		Check whether the door lock feedback parameter setting is correct.	• If the car door lock and landing door lock are detected at high voltage, set F5-38 to 5, F5-39 to 5 and F5-05 to 0. • For low-voltage detection, set F5-38 to 0, F5-39 to 0 and F5-05 to 5.	-
	Inspection state invalid	Check FA-12. If the parameter begins with 00, it indicates inspection state. If not, it is not in inspection state.	Get the disconnect switch in inspection state.	②
	Inspection up and down signal invalid	Check whether inspection up and down signals are valid by observing F5-34 LED segments.	Replace inspection up and down switch buttons.	③
	Door not closed in inspection state	Check whether the light curtain is active.	Negate the value of F5-25 bit0 (light curtain 1) or replace the light curtain.	④
		Check whether the door operator control system wiring is correct.	Check the door operator control system wiring according to the electrical schematic diagram.	-
	Limit switch	Check whether the limit switch is functioning normally.	Replace the limit switch.	-
	Y (Output relay) operating voltage abnormal	Measure whether the 24 VDC input of MCB CN3 terminal is normal.	Replace the 24 VDC power supply box.	⑤

Note

See contents below for details about ①②③④⑤.

Detailed Handling

① Door lock circuit

1. Cut off the power supply to ensure that the tested circuit is not energized.
2. Set the digital multimeter to ohm level and measure whether the car door lock and landing door lock circuits are conductive. If the measured value is infinite, it means the line is not conductive. Connect as per the following figure.

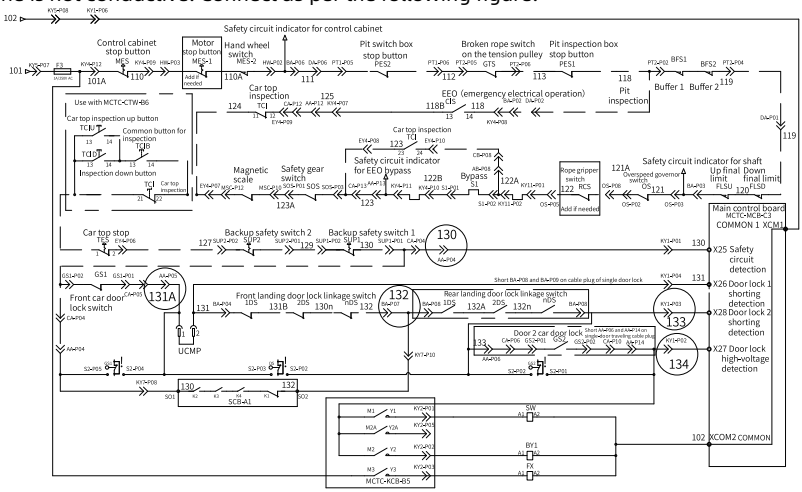


Figure 22-6 Door lock circuit and detection

② Inspection state

1. LED segments are numbered 5, 4, 3, 2 and 1 in turn from left to right. Monitor whether the No.5 and 4 segments of FA-12 are 00. If not, the inspection state is invalid.
2. Ensure that the inspection position on the disconnect switch is labeled correctly. Then get the disconnect switch in inspection state.

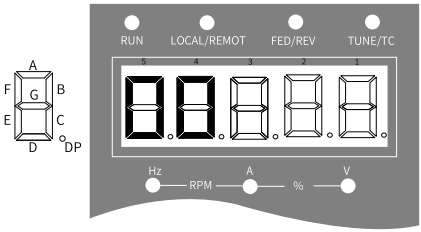
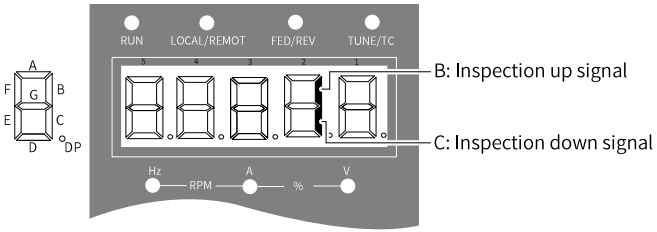


Figure 22-7 Inspection state invalid display

③ Inspection up and down signals

1. Press the inspection up and down switch buttons. If the up and down signal indicators on MCB are off, it indicates invalid inspection up and down signals.
2. Monitor whether the No.2 B and C segments of F5-34 are flashing. If not, it indicates invalid inspection up and down signals and switch button replacement is needed.

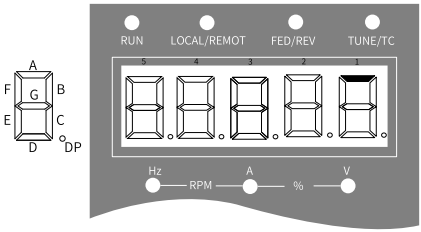


④ Light curtain signal

1. Parameter setting for light curtain being not blocked:
   If X1/X2 is on, it means that the light curtain signal is an NC input, and bit0/bit1 of F5-25 is set to 0

   If X1/X2 is off, it means that the light curtain signal is an NO input, and bit0/bit1 of F5-25 is set to 1.

2. Parameter F5-35: LED segments are numbered 5, 4, 3, 2 and 1 in turn from left to right. Monitor whether the No.1 A segment of F5-35 is on.
3. If the CTB X1/X2 input has an on and off change, and the F5-35 segments remain unchanged before and after the light curtain is blocked, it indicates that the CTB is faulty. If both the CTB and F5-35 remain unchanged, it indicates that the light curtain is faulty.



⑤ 24 VDC input of MCB CN3 terminal

Use a multimeter to measure the voltage level of 24V-COM at MCB CN3 terminal. If the measured value is lower than 24 V (-15%), it indicates that the input 24 VDC voltage is abnormal. Replace the 24 VDC power supply box.

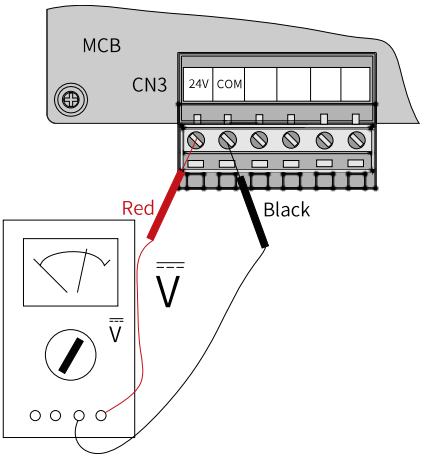


Figure 22-8 Measuring the MCB input voltage

22.2.4Inspection Running Reversed

Fault Symptom

Press the inspection up button, but the elevator goes down (The elevator runs opposite to what the inspection command indicates).

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
Inspection running reversed	The inspection circuit is faulty	Check the inspection circuit	Wire correctly according to the schematic diagram	①
	Parameter setting error	Check whether the inspection up and down input signals match the parameter settings in group F5	Inspection signal NC: F5-09 = 40 Inspection up NO: F5-10 = 9 Inspection down NO: F5-11 = 10	-
	Right for machine room inspection button direction and opposite for the car top inspection button direction	Up and down buttons are labeled wrongly	Ensure correct labeling of the buttons	-
	Running direction reversed	Ensure that causes above are eliminated	Reverse F2-10 values (0 and 1) to change the elevator running direction	-

Note

See contents below for details about ①.

Detailed Handling

① Checking the inspection circuit

1. Ensure that the X9 indicator on the MCB is off (Set F5-09 to 40 for inspection NC).
2. Press the up button and observe whether the inspection up signal indicator X10 on the MCB is on. If not, it shows that the inspection up circuit is abnormal. Perform correct wiring according to the following figure.
3. Press the down button and observe whether the inspection down signal indicator X11 on the MCB is on. If not, it shows that the inspection down circuit is abnormal. Perform correct wiring according to the following figure.

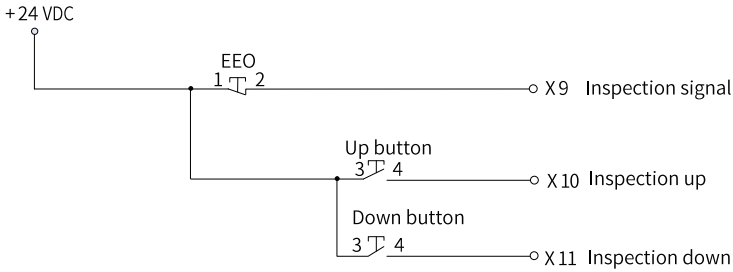


Figure 22-9 Inspection circuit

22.2.5Tripping During Operation

Symptom

Once the elevator starts running, the user's residual current device trips.

Fault Handling

Symptom	Possible cause	Handling	Solution	Note
Tripping During Operation	Model selection	Check whether the residual current value displayed on the user's residual current device nameplate is too small.	A device of above 200 mA is recommended.	-
	Application	Check whether one residual current device is used by multiple electrical equipment.	Advise the user to have a separate residual current device circuit for the elevator.	-
	Excessive leakage current of the integrated controller	Use a multimeter to detect the current value between the PE terminal of the controller and PE line of the power supply system for leakage current. See figure 1.	Install an EMC filter at the input side of the integrated controller.	-
			Wind the R, S and T lines with a magnetic ring.	①
			Wind the U, V and W lines with a magnetic ring.	-
			Use power lines with lower distributed capacitance or shorten the motor lines.	-
			Use the isolation transformer to power the integrated controller.	-
	Others	Check whether the wiring of the machine room on site meets the requirements.	Avoid parallel cabling to prevent interference.	-

Note

See contents below for details about ①.

Detailed Handling

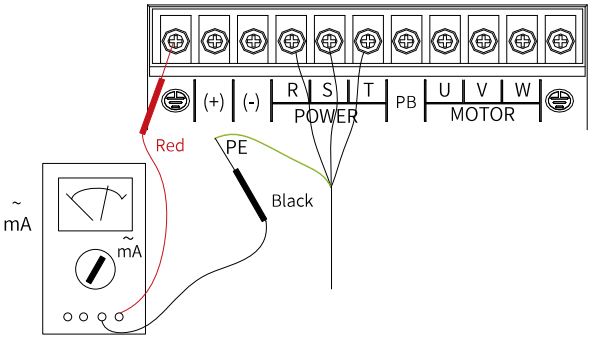


Figure 22-10 Leakage current detection

Use a multimeter to detect the current value between the PE terminal of the controller and PE line of the power supply system.

① Use of the magnetic ring

- See the following figure for the use of magnetic rings for power input cables and motor power cables.

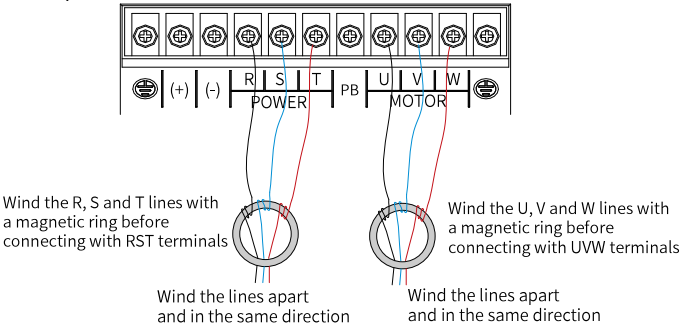


Figure 22-11 Use of magnetic rings for power input cables and motor power cables (three turns at least)

Use of the magnetic ring for power input cables first is recommended. Never wind the PE line with the magnetic ring.

- Magnetic rings of different specifications can be selected.



Figure 22-12 Three specifications of magnetic ring

Recommended magnetic rings:

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

22.2.6No Automatic Elevator Running

Fault Symptom

The elevator does not run automatically to respond to the registered hall calls.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
No automatic elevator running	Door problems: • Door not closed • Door close limit not reached • Door lock circuit disconnected	Check whether the light curtain is active (F5-35).	Check the light curtain circuit and replace the light curtain if necessary.	①
		Check whether the overload signal is active (F5-35).	Check the load weighing device and replace the device if necessary.	
		Check whether the door close limit signal acts.	Check the door close limit signal circuit of the door operator. Change or adjust the relevant parameters.	
		Check whether the buttons are stuck.	Ensure that buttons for door open, car call, and hall call work well.	
		Check whether the door lock circuit is disconnected or loosely connected.	Ensure that it is in good condition.	
	Wrong elevator states	FA-12 monitors elevator states.	Ensure that the elevator in the normal state.	②
		Normal state		
		Attendant state		
		Fire emergency state		
		Elevator lock state		
		Direct travel ride with full-load		
	Full-load, direct travel ride, independent running signal action	Door opens and closes normally on the current floor. The elevator responds to car calls and does not respond automatically to hall calls for other floors.	Cancel the independent running, direct travel ride, and full-load signals through the operating panel.	-
	System fault state	Check whether the MCB reports fault that disrupts normal operation.	Handle the fault.	-

Note

See contents below for details about ①②.

Detailed Handling

① F5-35 state monitoring

See *" Appendix 1: Status Monitoring Parameters" on page 608* for more information.

② FA-12 state monitoring

See *" Appendix 1: Status Monitoring Parameters" on page 608* for more information.

22.2.7No Door Open

Fault Symptom

Before the elevator starts running, the door operator does not open the door with no fault or E53 reported.

Note

The door open limit signal is abnormal and the elevator lands on the wrong floor (Passengers in the landing zone on the right floor assume that the door does not open).

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
No door open	Door operator controller not executing door open	Short the input side door open command and common wire of door operator controller to confirm whether door operator executes door open.	Replace the door operator controller, perform commissioning and conduct tests.	①
	Wrong door operator controller and CTB wiring	Short car top board BM and B1 and check whether the door opens.	Wire correctly.	②
	No door open command output from the integrated controller	Check whether F7-05 is set to 1.	Set F7-05 (Pre-torque selection) to 0.	-
	No door open command output from CTB with E53 reported	When the MCB outputs door open command, use a multimeter to measure BM and B1 conductivity to confirm whether the relay is damaged.	Repair or replace the CTB.	③
	Elevator in firefighter operation state	Press the door open button. If the door opens and closes upon release automatically, it indicates firefighter operation state.	Turn the firefighter's key switch to disable the firefighter operation state on the operation box. Set F6-44 bit14 to 0 (NICE3000^{new}).	-
	Foreign objects blocking door sill Door machinery blocking	After cutting off power supply, open the door manually and check whether mechanical blocking exits.	Clean up the foreign objects in the door sill. Adjust the mechanical construction.	-
	Door open limit signal abnormal	Check whether the door open/close limit signal is consistent with the actual door state through monitoring F5-35.	Set the F5-25 NO/NC feature according to field wiring or drawings.	-
	Wrong Floor Display	Check the consistency between the car position and floor display.	For more details, see *"22.2.15 Wrong Floor Display" on page 545*	-

Note

See contents below for details about ①②③.

Detailed Handling

① Door operator controller door open command execution

Short the input side door open command and common wire of door operator controller to confirm whether door operator executes door open. If not, replace or debug the door operator controller.

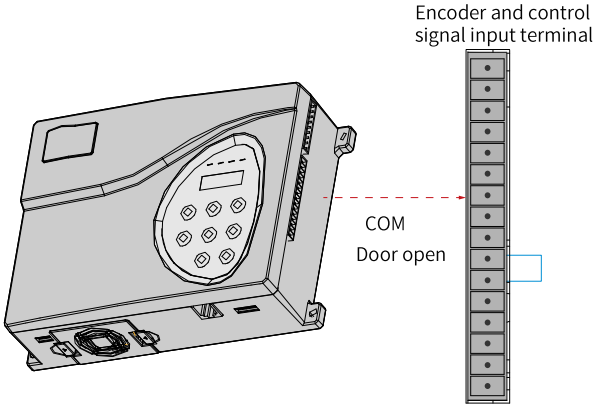
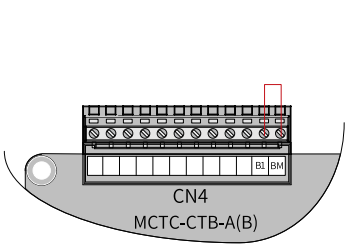


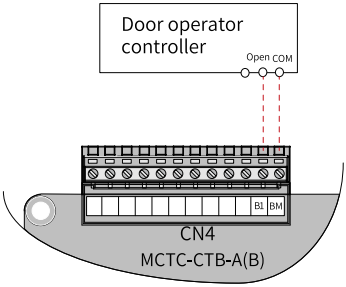
Figure 22-13 Door operator controller door open execution detection (Take NICE900 door operator as an example)

② Door operator controller and CTB wiring

Short the BM-B1 terminal of the CTB CN4, and observe whether the door opens. If not, wire correctly.



Door operator controller and CTB wiring detection



Correct wiring

③ Door open relay

1. Ensure that the MCB outputs door open command:
2. Set the multimeter to ohm level and measure whether the BM-B1 terminal of the CTB CN4 is conductive. If the measured value is infinite, it means the line is not conductive and the door open relay is damaged.

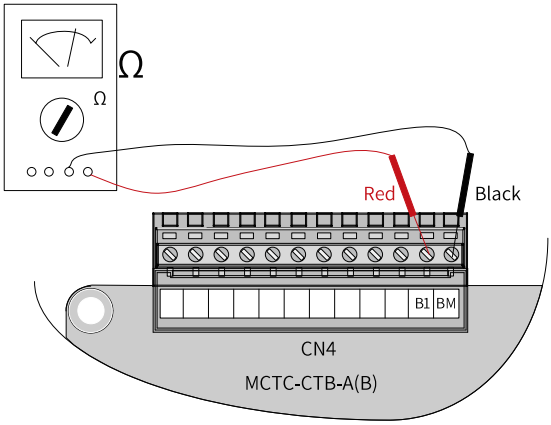


Figure 22-14 Door open relay detection

22.2.8No Door Close

Fault Symptom

Before the elevator starts running, the door operator does not close the door and no fault is reported.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
No door close	Door operator controller not executing door close	Short the input side door close command and common wire of door operator controller to confirm whether door operator executes door close.	Replace the door operator controller, perform commissioning and conduct tests.	①
	Wrong door operator controller and CTB wiring	Short CTB BM-B2 and confirm whether door operator executes door close.	Wire correctly.	②
	No door close command output from the integrated controller	• Check whether the light curtain signal is active or operates. • Monitor the light curtain through F5-35.	Negate the value of F5-25 bit 0 (light curtain 1).	③
	• Overload signal malfunction • Buzzer sound	Monitor whether the overload signal of F5-35 is valid by LCD operator. If it is valid, check whether the load cell works normally.	• Check overload wiring. • Replace the load cell.	-
	No door close command output from CTB	When the MCB outputs door close command, use a multimeter to measure BM and B2 conductivity, and confirm whether the relay is damaged.	Replace the CTB.	④
	The elevator in the attendant state	Press the door close button. If the door closes and opens automatically after releasing it, it indicates valid attendant state.	Disable the attendant state on the operation box.	-
	• Button blocking • Foreign objects blocking door sill • Door machinery blocking	• Remove the door open button, hall call button and car call button to confirm whether the door can close. • After cutting off power supply, close the door manually and check whether mechanical blocking exits.	• Replace door open button. • Clean up the foreign objects in the door sill. • Adjust the mechanical construction.	-

Note

See contents below for details about ①②③④.

Detailed Handling

① Door operator controller door close execution

Short the input side door close command and common wire of door operator controller to confirm whether door operator executes door close. If not, replace the door operator controller.

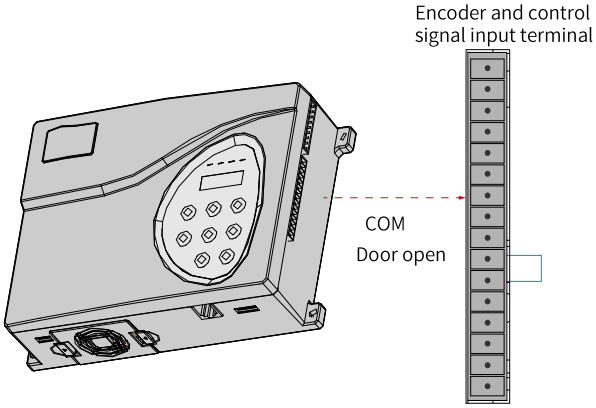
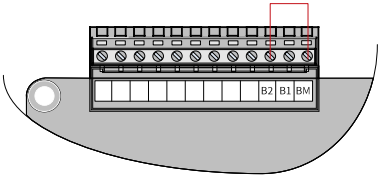


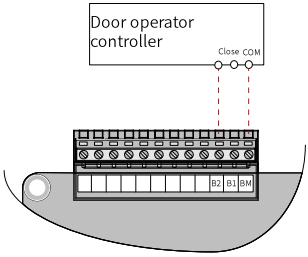
Figure 22-15 Door operator controller door close execution detection (Take NICE900 door operator as an example)

② Door operator controller and CTB wiring

Short the BM-B2 terminal of the CTB CN4, and observe whether the door closes. If not, wire correctly.



Door operator controller and CTB wiring detection



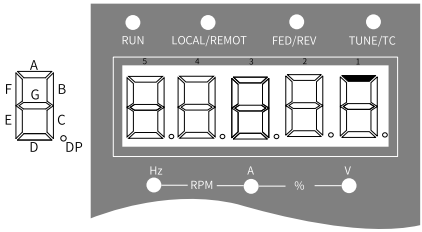
Correct wiring

③ Light curtain signal

1. Parameter setting for light curtain being not blocked:

- If X1/X2 is on, it means that the light curtain signal is an NC input, and bit0/bit1 of F5-25 is set to 0.
- If X1/X2 is off, it means that the light curtain signal is an NO input, and bit0/bit1 of F5-25 is set to 1.

2. Parameter F5-35: LED segments are numbered 5, 4, 3, 2 and 1 in turn from left to right. Monitor whether the No.1 A segment of F5-35 is on.
3. If the CTB X1/X2 input has an on and off change, and the F5-35 segments remain unchanged before and after the light curtain is blocked, it indicates that the CTB is faulty. If both the CTB and F5-35 remain unchanged, it indicates that the light curtain is faulty.



④ Door close relay

1. Ensure that the MCB outputs door close command.
2. Set the multimeter to ohm level and measure whether the BM-B2 terminal of the CTB CN4 is conductive. If the measured value is infinite, it means the line is not conductive and the door close relay is damaged.

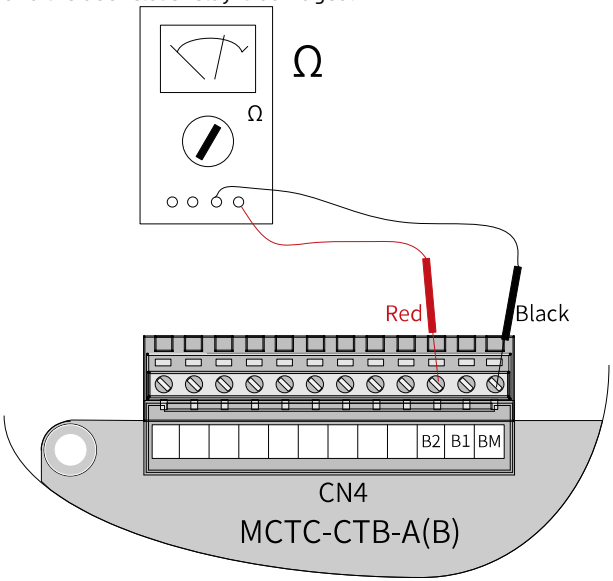


Figure 22-16 Door close relay detection

22.2.9Repeated Door Open/Close

Symptom

After successful call registration, the elevator opens and closes the door repeatedly in the door zone and fails to operate normally.

Fault Handling

Symptom	Possible cause		Handling	Solution	Note
Repeated door open/ close	Door re-open during door close	Malfunctioned light curtain	• Check whether the light curtain signal is active or operates. • Monitor F5-35 for the light curtain signal state during door close. • Check whether the light curtain has dust buildup.	Ensure the light curtain is properly aligned during installation. Clean the light curtain strips.	①
		Door machinery blocking	After cutting off power supply, close the door manually and check whether mechanical blocking exits.	Adjust the mechanical construction.	-
		Incorrect door operator parameter setting	Parameters for judging the door close hindrance are set incorrectly. Find details about the setting from the door operator manufacturer.	The output torque of the door operator controller is smaller than the torque for the door close hindered.	-
	Door open the minute it closes	Disconnected door lock circuit contact	Check whether the door lock feedback indicators (X5, X26, X27) are flashing.	Replace the door lock circuit contact.	②
	Door open 2s to 3s after it closes	Door lock circuit disconnected	Check whether the door lock circuit is conductive.	Replace the door lock circuit contact.	③

Note

See contents below for details about ①②③.

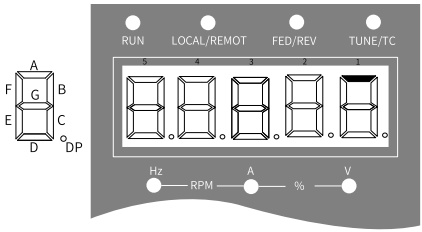
Detailed Handling

① Light curtain signal

1. Parameter setting for light curtain being not blocked:
   If X1/X2 is on, it means that the light curtain signal is an NC input, and bit0/bit1 of F5-25 is set to 0

   If X1/X2 is off, it means that the light curtain signal is an NO input, and bit0/bit1 of F5-25 is set to 1.

2. Parameter F5-35: LED segments are numbered 5, 4, 3, 2 and 1 in turn from left to right. Monitor whether the No. 1 A segment of F5-35 is on.
3. If the CTB X1/X2 input has an on and off change, and the F5-35 segments remain unchanged before and after the light curtain is blocked, it indicates that the CTB is faulty. If both the CTB and F5-35 remain unchanged, it indicates that the light curtain is faulty.



② Door lock circuit contact

Check whether the door lock feedback indicators (X5, X26, X27) on the MCB are flashing. If flashing occurs, it means that the door lock contacts are disconnected. Check all door lock contacts and replace if necessary.

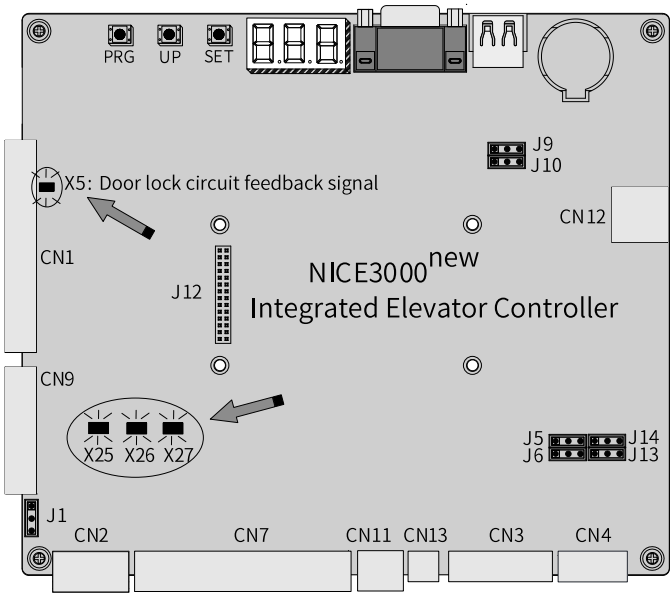


Figure 22-17 Door lock feedback indicators flashing

③ Door lock circuit

1. Cut off the power supply to ensure that the tested circuit is not energized.
2. Set the digital multimeter to ohm level and measure whether the car door lock and landing door lock circuits are conductive. If the measured value is infinite, it means the line is not conductive. Connect as per the following figure.

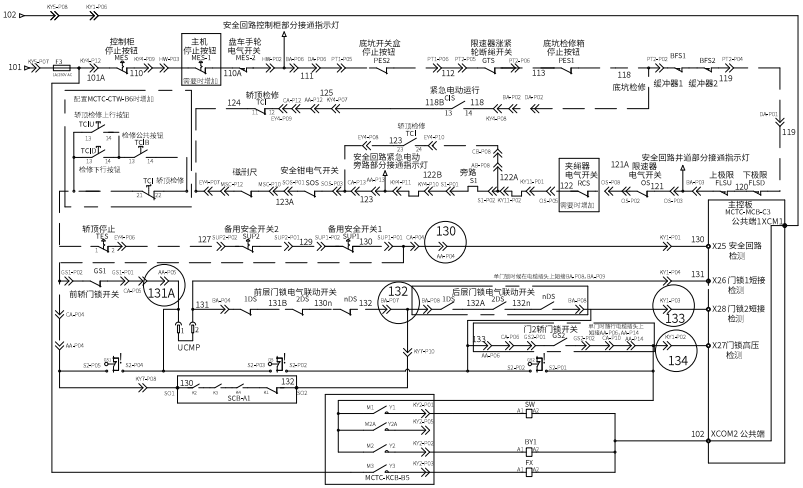


Figure 22-18 Door lock circuit and detection

22.2.10Car Startup Rollback

Symptom

When the elevator starts, the car rolls back and causes unpleasant riding comfort.

Fault Handling

<table>
<tr><th>Symptom</th><th colspan="2">Possible cause</th><th>Handling</th><th>Solution</th><th>Note</th></tr>
<tr><td rowspan="7">Car startup rollback</td><td colspan="2">Pre-torque parameter set incorrectly</td><td rowspan="2">Judge through F3-19 whether jerks are caused at startup or the beginning section of S curve.</td><td>Adjust F2-11, F2-12 and F2-13. Enable F1-23 position lock optimization.</td><td rowspan="2">①</td></tr>
<tr><td colspan="2">Excessive mechanical friction</td><td>• Adjust the gap between guide shoe and guide rail.
• F3-00 and F3-01 constant acceleration helps reduce startup friction.</td></tr>
<tr><td rowspan="3">Parame ter setting</td><td>Pre-torque disabled</td><td>Check whether pre-torque parameters are set correctly.</td><td>Set parameters correctly.</td><td>②</td></tr>
<tr><td>Running with brake not totally released</td><td>Observe whether the elevator starts with brake not totally released.</td><td>Adjust the brake clearance.</td><td>③</td></tr>
<tr><td>Tracking response</td><td>Observe the startup performance.</td><td>Enhance PI control at a low speed.</td><td>④</td></tr>
<tr><td colspan="2">Guide shoes too tight</td><td>Rock the car and feel the gap between the guide shoe and the guide rail.</td><td>• Adjust the gap.
• Lubricate the guide rail if needed.</td><td>-</td></tr>
<tr><td colspan="2">Excessive static friction</td><td>-</td><td>Adjust F3-00 and F3-01.</td><td>⑤</td></tr>
</table>

Note

See contents below for details about ①②③.

Detailed Handling

① Judge whether jerks are caused by pre-torque or at the beginning section of S curve.

Set F3-19 to the maximum, and then run the elevator to record the time when the jerks occur:

- If the jerks occur at no-load-cell startup, the elevator will first hold at zero speed for several seconds as specified by F3-19, and then start running.
- If the jerks occur at the beginning section of S curve, the elevator will wait in the static state for several seconds as specified by F3-19 after the brake opens.

② Pre-torque parameters settings

Response time of brake release is different and can be affected by the ambient temperature. The higher the temperature, the slower the brake release response. Try to increase F3-19 to see if riding discomfort is caused by delayed release of brakes.

Table 22–1 Pre-torque parameters setting

Param.	Name	Range	Default	Description
F8-01	Pre-torque selection	0: Pre-torque disabled 1: Weighing pre-torque compensation 2: Pre-torque automatic compensation 3: Load cell pre-torque compensation and automatic pre-torque compensation both enabled	0	Select pre-torque compensation function as needed. Function
F3-19	Holding time of zero-speed torque current upon brake release	0.000s to 2.000s	0.600s	• Time needed for brake release • F3-19 specifies the time the system maintains the zero-speed torque current output to prevent rollback.
F2-11	Position lock current coefficient	0.20% to 50.0%	15.0%	Position lock adjustment parameters (F8-01 = 2)
F2-12	Zero servo speed loop Kp	0.00 to 2.00	0.50	
F2-13	Zero servo speed loop Ti	0.00 to 2.00	0.60	

Note

For startup rollback of small-power villa elevators, reduce F2-11, F2-12 and F2-13 to the range of 0.1 to 0.2.

③ Brake clearance

1. Confirm that the brake power supply and circuit are error-free to ensure normal brake release.
2. Check for proper brake clearance so that no rubbing occurs.
3. Check whether the brake shoes are synchronized in movement. If not, adjust for synchronization.
4. Check whether F1-13 is too small. If the fault is reported without receiving pulse change within F1-13, increase F1-13 to a proper level (2.1s is recommended).

④ Setting PI parameters

Param.	Name	Range	Default	Description
F2-00	Speed loop proportional gain 1	0 to 100	40	• F2-00 and F2-01 are PI regulation parameters when the running frequency is smaller than the value of F2-02. F2-03 and F2-04 are PI regulation parameters when the running frequency is larger than the value of F2-05. • If the running frequency is between switchover frequency 1 and 2, the PI regulation parameters are the weighted average of F2-00, F2-01, F2-03 and F2-04.
F2-01	Speed loop integral time 1	0.01s to 10.00s	0.60s	
F2-02	Switchover frequency 1	0.00 to F2-05	2.00Hz	
F2-03	Speed loop proportional gain 2	0 to 100	35	
F2-04	Speed loop integral time 2	0.01s to 10.00s	0.80s	
F2-05	Switchover frequency 2	F2-02 to F0-06	5.00Hz	

Notes on parameter setting:

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

The recommended adjustment method is as follows:

1. If the default setting cannot meet the requirements, do some fine-tuning.
2. Decrease the proportional gain to make sure that the system does not oscillate; Reduce the integral time to make sure that the system has a quick response while maintaining a small overshoot.

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

⑤ Excessive friction

Param.	Name	Range	Default	Description
F3-00	Startup speed	0.000 m/s to 0.050 m/s	0	-
F3-01	Startup holding time	0.000s to 0.500s	0	

1. By setting the startup speed, the system can expect to be more static friction resistant, but a too high value will cause the car to lurch at elevator startup.
2. The parameters may reduce the terrace feeling at startup due to static friction between the guide rail and the guide shoes.

22.2.11 Car Stop Rollback

Symptom

Passengers experience unexpected jerks and rollback when the elevator stops.

Fault Handling

Symptom	Possible cause	Handling	Solution	Note
Car stop rollback	Door lock disconnected upon elevator stop	Check the clearance between the door vane and door roller	Ensure that door rollers are right in the middle of the door vane structure	-
	Fault status	View the fault record and handle it according to the fault code	Choose the proper solution based on the fault code	-
	Failed or delayed elevator stop tracking	Observe tracking performance	Increase PI value	①
	Slow brake close	Adjust the braking force	Adjust the braking force and ensure that the brake closes smoothly without any obstructions	-
		Cancel follow current delay	Ensure that the brake power supply is immediately disconnected upon brake close	-
		Observe whether rollback occurs during elevator stop	Increase F8-11 (Holding time of zero-speed torque current upon brake close)	②

Note

See contents below for details about ①②.

Detailed Handling

① Setting PI parameters

See *"22.2.10 Car Startup Rollback" on page 531*③ for information on how to set PI-related parameters.

② Increasing holding time of zero-speed torque current upon brake close

Due to the brake coil heat, the brake does not completely close even after the main contactor is disconnected, resulting in jerky stop. In this case, increase the holding time of zero-speed torque current upon brake close.

Param.	Name	Range	Default	Description
F8-11	Holding time of zero-speed torque current upon brake close	0.200s to 1.500s	0.200s	Recommended value: 0.600s

22.2.12Elevator Running Jerks

Fault Symptom

The running elevator suffers jerks or buzzing sounds.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
Elevator running jerks	Rotating mechanical parts	Check whether the jerks happen regularly and whether it is the weak PI value tracking response that leads to this phenomenon. Conduct a PMT vibration analysis.	Replace the encoder, car top wheel, or car bottom wheel. Use PMT or backend data to further identify the cause.	①
	Jerks during acceleration/ deceleration		Adjust F2-00, F2-01, F2-03, and F2-04.	
	Jerks during high-speed operation		Perform harmonic analysis by capturing relevant data through backend systems, PMT, and Spectroid software.	
	Guide rail installation	Elevator runs to a fixed position and jerks happen.	Polish the guide rail joint.	-

Note

See contents below for details about ①.

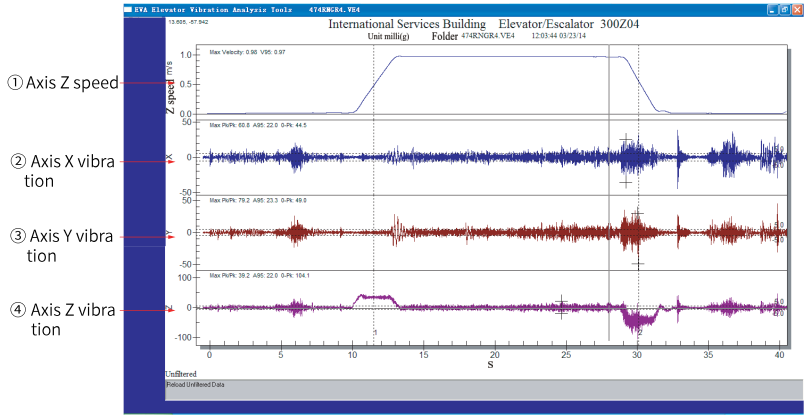
Note

The riding comfort is closely related to the machinery. If there is jitter in operation, check first for right mechanical installation and then electrical installation.

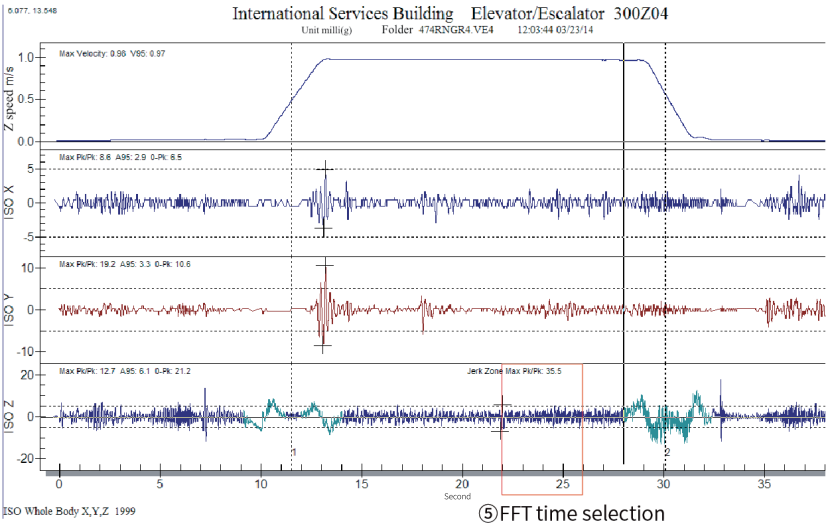
Detailed Handling

① PMT vibration analysis

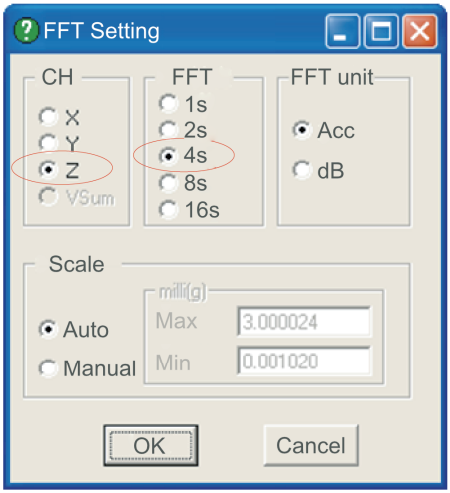
1. Open the PMT file with the general format of XXXX.VE3 and XXXX.VE4. As shown in the following figure, there are vibration curves showing running speed①, X②, Y③ and Z④ axes. The X and Y axes indicate the front-back and left-right vibration levels of the car. If the amplitude is large, it is the guide rail installation and joint that cause jerks. Z axis indicates the vibration of the car in the up-down direction, which is reflected in the riding comfort.



2. Select the "ISO" option, as shown in the following figure. Generally, the vibration amplitude of Z axis is within ±5, and basically good riding comfort can be ensured.

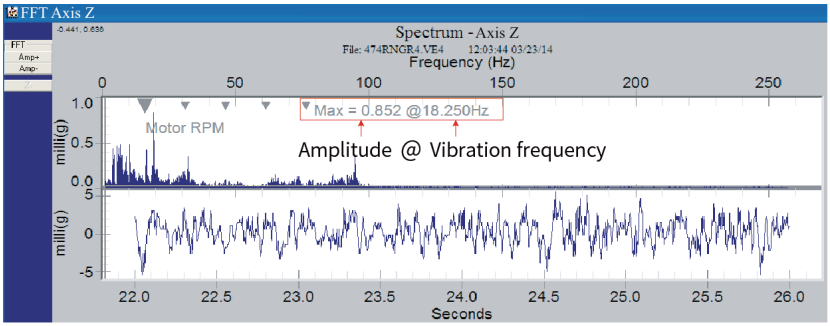


3. For further analysis, Fourier analysis can be carried out through the "FFT" option, as shown in the above figure, and the time period can be selected as required⑤. With FFT settings, select "Z Channel" and "FFT Length", as shown in the following figure.



FFT setting

4. From the FFT analysis in the following figure, the amplitude and vibration frequency can be obtained. The amplitude is 0.852 (a value smaller than 5 meeting the national standard) and the vibration frequency is 18.250 Hz.



FFT curve

5. Based on the PMT analysis results and professional judgment, the main vibration frequencies and possible vibration sources can be identified.

22.2.13Terrace Feeling

Fault Symptom

As the elevator runs to the top or bottom terminal floor and causes the slow-down switches to act, it experiences abrupt speed change in creeping to the door zone.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
Terrace feeling for terminal floor parking	Slow-down signal malfunction	Check the slow-down switch.	Replace the switch.	-
		Check whether the slow-down signal has loose connection.	Tighten the wiring terminal.	-
	Slow-down distance	Measure the distance.	Ensure that the distance matches the speed.	①
		The slow-down distance is above half of the floor height.	Make the distance below half of the floor height.	-

Note

See contents below for details about ①.

Detailed Handling

① Slow-down distance calculation

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

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

L: Slow-down distance; V: Rated elevator speed (F0-04); F3-08: Special deceleration rate

The default value of F3-08 is 0.9 m/s^2. The following table lists the slow-down distances corresponding to different rated elevator speeds.

Table 22–2 Recommended slow-down distances

Rated elevator speed (m/s)	0.25	0.4	0.5	0.63	0.75	1	1.5	1.6	1.75	2	2.5	3	3.5	4
Slow-down 1 distance (m)	0.4	0.4	0.4	0.4	0.4	0.7	1.5	1.7	2.0	2.0	2.0	2.0	2.0	2.0
Slow-down 2 distance (m)	/	/	/	/	/	/	/	/	/	2.5	4.0	4.0	4.0	4.0
Slow-down 3 distance (m)	/	/	/	/	/	/	/	/	/	/	/	6	8	11

Notes:

- V ≤ 1 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.1 m.
- 1 m/s ≤ V ≤ 2 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.2 m.
- 2 m/s ≤ V ≤ 4 m/s: Compared with the values recommended in this table, the actual installation distances of slow-down switches are allowed to have an error of ±0.3 m.
- A lower acceleration/deceleration rate or higher special deceleration rate does not affect safety performance. However, a lower special deceleration rate may cause safety hazards. If a rate change is required, calculate the slow-down distance again according to the preceding formula.

22.2.14Leveling Failure

Fault Symptom

An elevator is considered misleveled if the elevator car sill is not level with the landing sill.

Fault Handling

<table>
<tr><th>Fault Symptom</th><th colspan="2">Possible cause</th><th>Handling</th><th>Solution</th><th>Notes</th></tr>
<tr><td rowspan="10">Leveling failure</td><td rowspan="4">Parameter setting</td><td>All floors over-leveling</td><td rowspan="10">The elevator runs automatically floor by floor. Measure and record the height difference between the elevator car sill and the landing sill. If the leveling plate is adjusted, perform shaft auto-tuning again.</td><td>Decrease F4-00 for over-leveling.</td><td rowspan="2">①</td></tr>
<tr><td>All floors under-leveling</td><td>Increase F4-00 for under-leveling.</td></tr>
<tr><td>Certain floors over-leveling</td><td>Decrease FR-XX for over-leveling.</td><td rowspan="2">②</td></tr>
<tr><td>Certain floors under-leveling</td><td>Increase FR-XX for under-leveling.</td></tr>
<tr><td rowspan="6">Leveling plate installation</td><td>Too high for all floors up/down running</td><td rowspan="2">Adjust the leveling switch position.</td><td>-</td></tr>
<tr><td>Too low for all floors up/down running</td><td>-</td></tr>
<tr><td>Too high for certain floors up/down running</td><td rowspan="2">Perform shaft auto-tuning again for adjusting leveling plate position.</td><td>-</td></tr>
<tr><td>Too low for certain floors up/down running</td><td>-</td></tr>
</table>

Fault Symptom	Possible cause		Handling	Solution	Notes
Leveling failure	Fault occur rence	Re-leveling failure occurs after the fault is reset.	View fault records FC-60 and FC-61.	Handle the fault.	-
	Switch over from the inspection state to the normal state	Re-leveling failure	Observe the height difference between the elevator car sill and the landing sill during operation.	Increase FD-05.	-
	Occasional leveling failure	Verify whether the steel rope slips.		Confirm the balancing factor and increase the steel rope tension and angle of contact.	③
		PI tracking		Increase F2-00 and decrease F2-01 properly for leveling inconsistency under light load and heavy load.	-
	Load change	Steel rope tensioning change		Re-leveling function is recommended (MCTC-SCB).	-

Detailed Handling

① Leveling adjustment through F4-00

Par am.	Description	Range	Default	Unit
F4-00	Leveling adjustment	0 to 60	30	mm

1. For under-leveling (as shown in *"Figure 22-19 " on page 544*), add H (H = (a + b)/2) to F4-00.
2. For over-leveling (as shown in *"Figure 22-20 " on page 544*), subtract H (H = (a + b)/2) from F4-00.

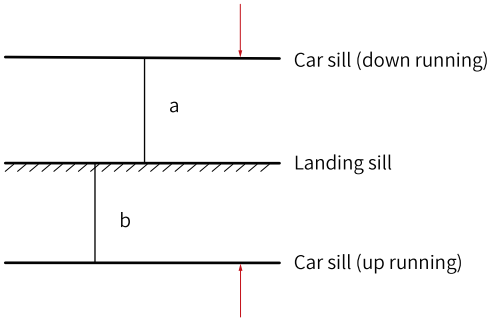


Figure 22-19 Under-leveling

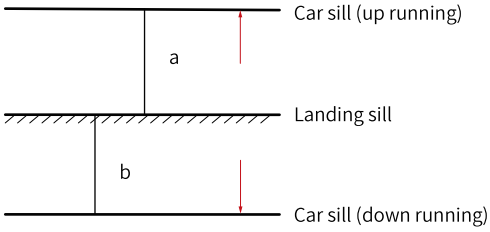
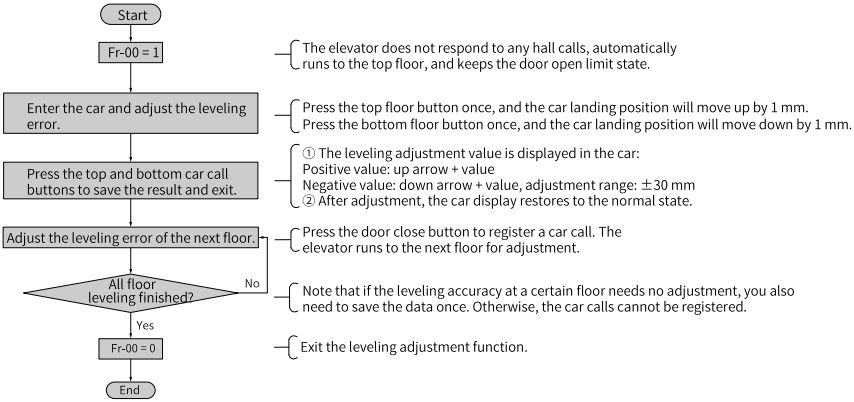


Figure 22-20 Over-leveling

② Fine-tuning through parameters in group Fr

For leveling failure on certain floors, you can either adjust leveling plate or distance (as shown in the figure above) through the following parameters.

Param.	Description	Range	Default	Unit
Fr-00	Leveling adjustment mode	0 to 1	0	-
Fr-01	Leveling adjustment record 1	00000 to 60060	30030	mm
Fr-02	Leveling adjustment record 2		30030	mm
. . .	. . .		. . .	. . .
Fr-20	Leveling adjustment record 20		30030	mm



Note

- During shaft auto-tuning, set F1-11 to 3 or F-7 to 1 to retain all parameters for leveling adjustment. Set F1-11 to 4 or F-7 to 2 to clear these parameters.
- When using the re-leveling function, the leveling adjustment function will be automatically shielded.

③ The steel rope slip

See *"22.2.15 Wrong Floor Display" on page 545* ①.

22.2.15Wrong Floor Display

Fault Symptom

The floor display of the elevator in operation is inconsistent with the actual floor.

Fault Handling

Fault Symptom	Possible cause	Handling	Solution	Notes
Wrong floor display in running state	Group FE parameters set incorrectly	Check group FE parameters	Change group FE parameters as needed.	-
	Steel rope slip	Verify whether the steel rope slips.	Confirm the balancing factor and increase the steel rope tension and angle of contact.	①
	Signal malfunction	Check whether the slow-down switch and limit switch are damaged and cause the position switch to malfunction	Replace the slow-down switch and limit switch and ensure correct wiring.	-
		Check whether the leveling switch is damaged and causes the leveling switch to malfunction	Replace the leveling switch and ensure correct wiring.	
	Communication interference	Check the circuit routing.	Rework the wiring.	②
	Hall call addresses of the same floor inconsistent in parallel connection	Check whether the hall call addresses of the same floor are consistent	Change the hall call address to ensue consistency.	-

Note

See contents below for details about ①②.

Detailed Handling

① The steel rope slip

1. When the elevator is at the leveling position on a certain floor, mark it where the rope and traction sheave meet with A on the rope and A' on the sheave. Then run the elevator to other floors before returning to this very floor to observe the marks.
2. Compare the distance change and ensure that it is within the normal range of below 10 cm. If not, it indicates steel rope slip. Confirm that the balancing factor is within the

range of 0.4 to 0.5 first before increasing both the steel rope tension and the angle of contact. Clear the stain on the rope, if any, with kerosene.

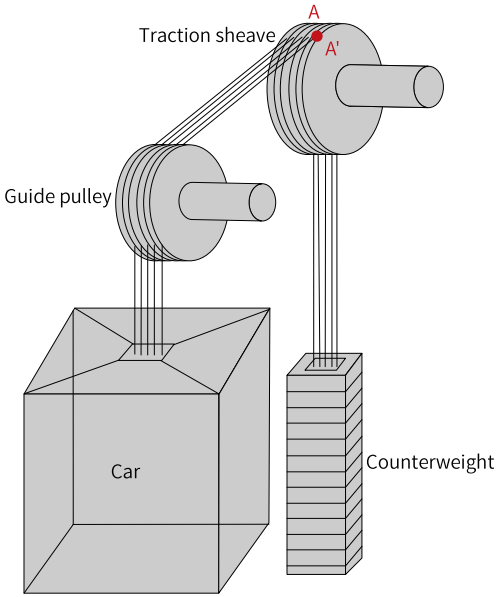
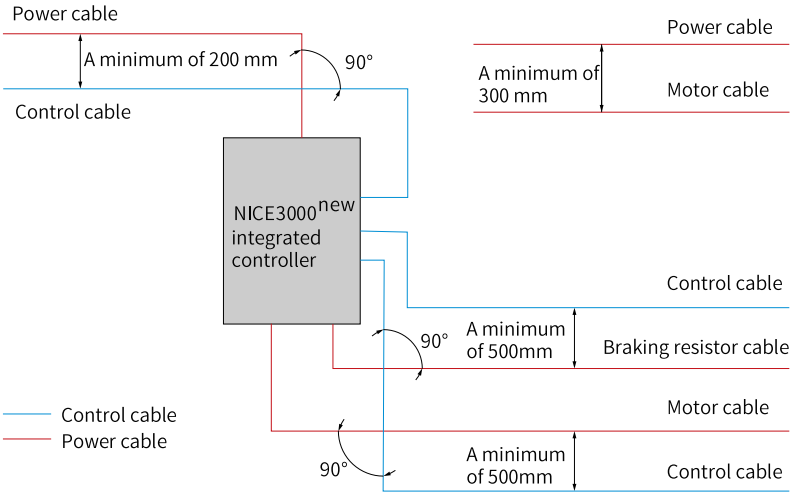


Figure 22-21 Steel rope marking

② Cabling requirements

1. The motor cables must be far away from other cables. Recommended distance is greater than 0.5 m. Motor cables for several controllers can be laid in parallel.
2. To avoid electromagnetic interference caused by rapid change of the output voltage of the controller, the motor cables and other cables must not be laid side by side for a long distance. It is recommended that the motor cables, power input cables and control cables be laid in different ducts. The cable duct must be in good connection and well grounded.
3. If the control cable must run across the power cable, make sure they are arranged at an angle of close to 90°. Other cables must not run across the drive.
4. The power input and output cables of the controller and weak-current signal cables (such as control wires) should be laid vertically (if possible) rather than horizontally.
5. The cable duct must be in good connection and well grounded. Aluminum ducts can be used to improve equipotentiality.
6. The filter and controller must be connected with the system as specified. Apply coatings properly and ensure good conductivity.
7. The motor must be connected with the system parts as specified. Apply coatings properly and ensure good conductivity.



22.3 Part 2 Fault Alarms

22.3.1 Output Overcurrent E02, E03 and E04

Fault Report



The MCB reports faults E02, 03 and 04 for drive overcurrent and failure to run.

Fault Handling

Fault code	Possible cause		Solution	Notes
E02 E03 E04	Circuit	Check power cable terminals for tight connection.	Tighten the possible loose terminals.	-
		Check whether the power cable is short-circuited using a multimeter.	Replace the power cable.	①
		Check whether the power cable from the controller to motor is broken.	Replace the power cable.	-
		Check the controller drive module.	See *"20.2 Controller Drive Module" on page 487* for more details.	-
E02 E03 E04	Motor auto-tuning	If the MCB has been replaced on site, confirm whether the FF-01 (controller model) is set correctly.	Set FF-01 correctly.	②
		Motor auto-tuning jitter due to mismatch between the controller UVW phase sequence output and motor	Interchange any two phases.	-
E02 E03 E04	Encoder signal interference exists.	Check whether the connection is loose.	Fasten the encoder connection.	-
		Check the encoder snap-fit joint.	• If the joint is not in place, fasten it. • If the joint is in perfect place, remove it.	-
		Check the encoder grounding interference.	• The encoder housing and encoder cable should be grounded at both ends. • Alternatively, metal hoses can be used for separation, and they must be grounded. And magnetic rings should be installed on the encoder. • Add magnetic rings at the input and output sides of the integrated controller for better interference-resistant performance. See *"22.2.5 Tripping During Operation" on page 516* ①	-

Fault code	Possible cause		Solution	Notes
E02 E03 E04	Shorting PMSM stator function	The auxiliary contact of the RUN contactor can be used for shorting motor stator function. Remove the function to observe whether the fault reoccurs.	If door lock fault E42 occurs, it shows that overcurrent is caused by door lock disconnection. An independent shorting motor stator contactor or MG-BF series contactor is recommended.	-
		In the case of an independent shorting motor stator contactor, check whether F5-28 (Y3 output) is set to 12.	-	-
E02 E03 E04	Output abnormal	Connect the motor to the U, V, W terminals of the controller, and observe whether the fault is reported.	• If the fault is not reported, it indicates the RUN contactor is faulty and replacement is needed. • If the fault is reported, use an ammeter to measure whether there is short circuit inside the motor. Make replacement if possible.	③
		• Check whether the MCB relay controlling the brake has output. • Check whether the brake contactor functions properly. • Check whether the brake power supply has 110 VDC output to the brake contactor. • If yes but the brake is not opened, contact the manufacturer.	• MCB relay is damaged and replace the MCB. • Replace the faulty brake contactor. • Brake power supply does not output 110 VDC and replace the power supply if possible. • If the brake is not opened at 110 VDC, contact the manufacturer.	-
		Check whether the braking circuit connection and braking resistor is of the right model.	Confirm the connection and replace the resistor if possible.	-

Subcode	Possible causes	Solution
1	The main circuit output is grounded or short-circuited or the motor insulation performance degrades.	• Check whether the motor and grounding cables are connected correctly. • Check whether the shorting motor stator contactor causes a short circuit at the controller output side. • Check whether motor cables have a damaged jacket.
	Motor auto-tuning is not performed or motor parameter setting errors occur.	Set motor parameters according to the motor nameplate and perform motor auto-tuning again.
	The encoder signal is incorrect.	• Check whether encoder pulses per revolution (PPR) is set correctly. • Check whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently or is too long, and whether the shield is grounded at both ends. • Check whether the encoder is installed reliably, whether it is connected to the motor shaft securely, and whether the encoder is stable during high-speed running. • Check whether the encoder is connected correctly and securely. For the asynchronous motor, perform SVC and compare the current in FVC mode to judge whether the encoder works properly.
	The phase sequence of the motor is incorrect.	Interchange the motor UVW phase sequence or manually set FF-10 to adjust the sequence.
	The acceleration time is too short.	Reduce the acceleration rate.
	The braking resistor is short-circuited.	Check whether the braking resistor and braking unit are connected correctly. Make sure that there is no short circuit.
	Power hardware fault	In V/f control mode without releasing the brake, it indicates hardware fault with overcurrent reported at power-on.
2 11 12	Same as subcode 1	Same as subcode 1
15	Overcurrent occurs in the detection of inter-phase short circuit.	Check whether there is three-phase short circuit.

Note

See contents below for details about ①②③.

Detailed Handling

① Check whether the power cable connection is short-circuited or loose

To check for short circuit, disconnect the power cable from the controller and motor and measure the resistance between PE and each of the U, V, W phases with a multimeter. If the measured value is not infinite, it indicates a short circuit.

② Check whether the controller model is set correctly

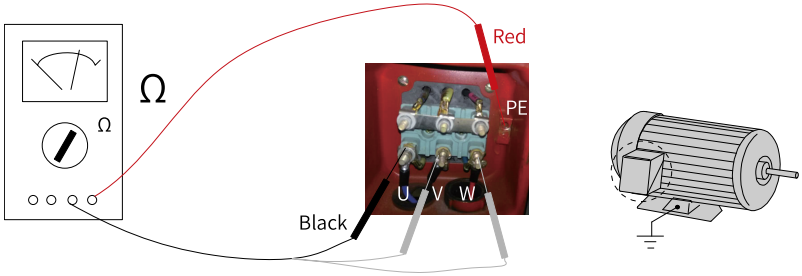
The correlation between the NICE3000^{new} controller model and FF-01 is shown in the following table.

Table 22–3 Correlation between the model and FF-01 setting

Controller model	FF-01 Setting	Controller model	FF-01 Setting
NICE-L-A/B/C-4002	10	NICE-L-C-4015 NICE-L-C-2007	15
NICE-L-C-4003	11	NICE-L-C-4018F NICE-L-C-2011	16
NICE-L-C-4005	12	NICE-L-C-4022F NICE-L-C-2015	17
NICE-L-C-4007 NICE-L-C-2004	13	NICE-L-C-4030F NICE-L-C-2018	18
NICE-L-C-4011 NICE-L-C-2005	14	NICE-L-C-4037F NICE-L-C-2022	19

③ Check whether motor U, V, W terminals are short-circuited to PE

Measure the resistance between PE and each of the U, V, W phases with a multimeter. If any measured value is not at the megohm level, it indicates a short circuit.



22.3.2Bus Overvoltage E05, E06 and E07

Fault Report



The MCB reports faults E05, E06 and E07 with drive overvoltage and failure to run.

Fault Handling

Fault code	Possible cause		Solution	Notes
E05 E06 E07	Subcode 1	Bus voltage is too high.	• The correction coefficient of FF-08 bus voltage is too large. • The bus voltage hardware mismatches with software, especially for the 380 V and 220 V. • Check the input power supply. • During operation under generator power, the braking resistance is too large. • Deceleration time is too short.	-
	The input voltage is too high.	Measure whether the input voltage is normal.	Replace or adjust the power supply.	①
		Monitor bus voltage (FA-16).	Replace the controller.	②
	Braking resistor mismatch	The braking regenerative energy is too large to be fully absorbed by the built-in resistor.	Confirm the power supply specifications and check whether a built-in braking resistor is used in the controller. If an external braking resistor is used, select a proper model.	-
		External braking resistor resistance too high	Measure the braking resistance between the main circuit terminals PB and (+). Compare it with the recommended value to choose the proper resistor.	-
		The braking resistor failed (disconnected)	Measure whether the braking resistance between the main circuit terminals PB and (+) is infinite. Replace the braking resistor if needed.	-
	Others	Excessive acceleration and deceleration	Smooth the running curve by setting parameters.	③
		System overshoot	Set group F2 PI parameters.	④
		Overload resulting in excessive regenerative energy	Confirm whether overload occurs. Use a braking resistor of higher power.	-

Note

See contents below for details about ①②③④.

Detailed Handling

① Input voltage

Take the input three-phase 380 V as an example.

1) Remove the lower access cover of the controller and expose main circuit terminals;

2) Use a multimeter to measure the main circuit voltage of the three-phase input (RST) power source.

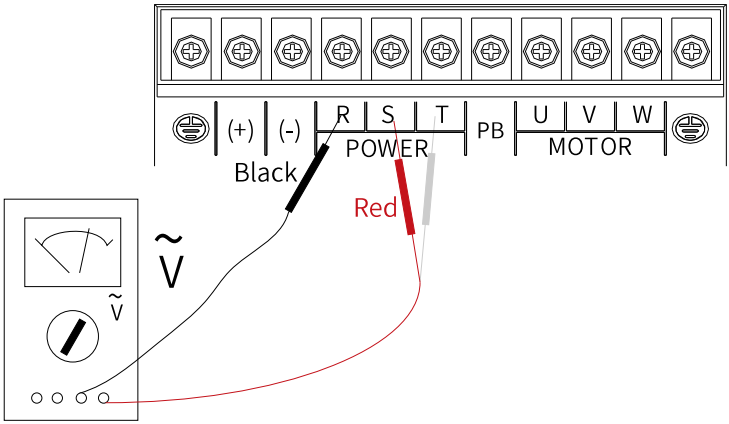


Figure 22-22 Measuring the three-phase input voltage

Check whether the measured input voltage is 220 V if the nominal input voltage is 220 V.

Table 22–4 Power supply specifications

Voltage class	Effective input voltage	Tolerance range	Allowable RMS value
220V	220 V to 240 V	-7% to +7%	204.6 V to 256.8 V
380V	380 V to 440 V	-7% to +7%	353.4 V to 470.8 V

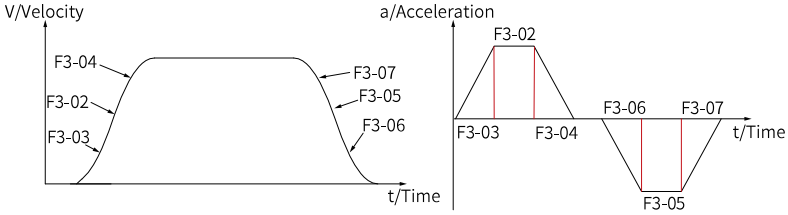
② Bus voltage

Bus voltage is monitored by FA-16. For input voltage of 380 V, FA-16 is generally between 540 V and 560 V. If it is obviously higher than the general range and the input voltage falls into the tolerance range, the controller needs to be replaced.

- If the bus voltage of the controller exceeds 800 V and 400 V for input voltage of 380 V and 220V respectively, bus overvoltage occurs and faults E05/06/07 are reported.

- If the 220 V controller is connected to the 380 V power supply, it will cause the controller to be damaged. Never make such mistakes.

③ Parameter setting and running curve adjustment



F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator.

- F3-02 is the acceleration of the elevator speed curve (constant acceleration).
- F3-03 is the time for the acceleration rate to change from 0 to the value set in F3-02 in the speed curve (increasing acceleration). The larger the value is, the smoother the speed curve is.
- F3-04 is the time for the acceleration rate to change from the value set in F3-02 to 0 in the speed curve (increasing deceleration). The larger the value is, the smoother the speed curve is.

F3-05, F3-06, and F3-07 are used to set the running curve during deceleration of the elevator.

- F3-05 is the deceleration of the elevator speed curve (constant deceleration).
- F3-06 is the time for the acceleration rate to change from 0 to the value set in F3-05 in the speed curve (decreasing acceleration). The larger the value is, the smoother the speed curve is.
- F3-07 is the time for the acceleration rate to change from the value set in F3-05 to 0 in the speed curve (decreasing deceleration). The larger the value is, the smoother the speed curve is.

④ Group F2 PI parameters

See *"22.2.10 Car Startup Rollback" on page 531* ③.

22.3.3Input Undervoltage E09

Fault Report



The MCB reports fault E09 with elevator undervoltage and failure to run normally. During emergency running, check whether the emergency input signal is active and you can run the elevator at low speed.

Fault Handling

Fault code	Possible cause		Solution	Notes
E09	Power supply	Too low controller input voltage	Use a multimeter to measure RST input voltage. If it is lower than 250 V, change or adjust the power supply.	-
		Unstable power supply	Monitor the controller input voltage. If the power supply of the main circuit drives more devices than it could be, it may overstretch the power capacity and cause voltage drop. Replace or adjust the power supply.	-
		Input power supply phase loss	Check whether the main circuit wiring is correct. If phase loss occurs, change the cable and ensure correct main circuit power connection.	-
	Emergency running	Check whether the emergency input signal at power failure is active.	Check the emergency running line and set emergency switchover of input terminals in group F5.	-
		Check for sufficient emergency power capacity and total energy.	Perform trial run after charging the emergency battery.	-
	Subcode 1	FF-08 set too small	Change FF-08 bus voltage correction coefficient to 100.0%.	-
		An instantaneous input power failure	Check the input power line.	-
		Too low input voltage	Check the power supply system.	-
		AC drive power mismatch with the motor	Replace with an AC drive of higher power.	-
		The drive control board malfunctions.	Replace the drive hardware.	-

22.3.4AC Drive Overload E10

Fault Report



MCB shows E10 fault for prolonged AC drive overload. And runs for 60s at 150% the rated current. You can monitor output current through FA-18.

Fault Handling

Fault code	Possible cause		Solution	Notes
E10	Parameter setting error	E10 is reported during commissioning at inspection speed.	Check parameters F1-04, F1-05, and F1-12. Speed = (Rated frequency × 60)/Number of pole pairs	-
	Controller and synchronous motor phase sequence mismatch	For the unit installation with the elevator, the system reports E10 in inspection running after wiring. The system reports E10 during motor auto-tuning.	Perform motor auto-tuning after interchanging motor phase sequence.	-
	Synchronous motor auto-tuning failed	The controller output current is very large during no-load inspection or operation at normal speed.	Perform motor auto-tuning again.	-
		The controller output current is then obviously reduced after motor auto-tuning is performed again.		-
	Damaged asynchronous motor encoder or MCB encoder interface	No fault is reported for inspection running in SVC mode and E10 is reported for inspection running in FVC mode.	See encoder nameplate to set PPR. Replace the encoder or MCB.	-
	Slip test influence	Parameter setting error	Set F3-24 to 1 to enable the slip test. Increase F2-08 for torque boost. If necessary, check the elevator traction system for right angle of contact or friction force.	-
	Too heavy load	E10 is reported during acceleration.	Reduce the load.	-
	Balancing factor error	When the car load is reduced, the output current of the controller will decrease.	Check the balancing factor. The recommended range is 0.4 to 0.5.	-
	Mechanical blocking	When the elevator is running, the output current of the controller is greater than the rated current of the motor.	• Check for centered safety gear wedge block, released brake, proper gap, and appropriate running resistance. • Check whether the brake coil voltage conforms to the specification. • Check for no mechanical blocking.	

Fault code	Possible cause		Solution	Notes
E10	Subcode 1	The mechanical resistance is too large.	• Check whether the brake is released and whether the brake power supply is normal. • Check whether the guide shoes are too tight.	Over load curve: Take 180% of rated AC drive current as the upper over load limit to calcu late the time of over load capaci ty. If it is not 180%, adjust the over load time propor tional ly.
		The balancing factor is improper.	Check the balancing factor.	
		The encoder feedback signal is abnormal.	• Check whether the feedback signal and parameter setting (F1-00 and F1-12) are correct. • For synchronous motors, check whether the starting angle of the encoder is correct.	
		Motor auto-tuning is not performed properly.	Check the motor parameter setting and perform motor auto-tuning again. If this fault is reported during the slip experiment, perform the slip experiment by enabling the slip function set in F3-24 (Program function selection).	
		The phase sequence of the motor is incorrect.	Adjust the UVW phase sequence.	
		The AC drive model is of too low power class.	If the current has exceeded the rated current of the AC drive during stable-speed running of the elevator with an empty car, replace with an AC drive of higher power.	

22.3.5Current Control Fault E16

Fault Report



The MCB shows E16 for current control fault.

Note

The fault is non-resettable.

Fault Handling

Fault code	Possible cause		Solution	Notes
E16	Subcode 1	The excitation current control is abnormal.	• Motor parameters are set incorrectly. • Output phase loss occurs. • The RUN contactor is not closed. • The brake circuit is abnormal. • The input voltage is low.	-
	Subcode 1 Subcode 2	Output phase loss occurs.	Check for normal motor and controller UVW connection.	-
		The RUN contactor close does not function well, resulting in insufficient motor current.	Check whether the door lock safety circuit has intermittent disconnection. Check whether the voltage of the RUN contactor coil is normal. Check whether the RUN contactor close is blocked. Take corrective measures when the voltage is below 10% of the rated coil voltage.	-
		When it reports E16 in the drive state during high-speed operation, the input voltage is low.	If the input voltage measured during operation is low, the possible reasons are as follows: • Ask the power supplier to adjust the voltage. • Replace the power cable if necessary.	①
		PG card damaged or encoder damaged	Check whether the encoder signal is normal and replace the PG card or encoder if necessary.	②
		Motor design failure	Reduce elevator running speed F0-03.	-
	Subcode 2	Torque current control fault	• Motor parameters are set incorrectly. • Output phase loss occurs. • The RUN contactor is not closed. • The brake circuit is abnormal. • The input voltage is low.	-
	Subcode 3	The torque reaches the upper limit and the speed is very low.		-
		Motor auto-tuning not performed	Perform motor auto-tuning again.	-
		Too heavy load	Check the balancing factor. Check for no brake rubbing.	-
		At low temperature, it reports E16 for asynchronous motor start-up due to excessive resistance caused by lubricant viscosity increase.	Perform asynchronous motor auto-tuning again. Increase F2-08 (torque upper limit), F3-18, and F3-19.	-

Note

See contents below for details about ①②.

Detailed Handling

① Power supply voltage detection:

See *"22.3.2 Bus Overvoltage E05, E06 and E07" on page 553* ①.

② Abnormal encoder signal:

See *"22.3.6 Motor Auto-tuning Fault E19" on page 562* ①.

22.3.6Motor Auto-tuning Fault E19

Fault Report



The MCB shows fault E19 for unfinished or unsuccessful motor auto-tuning.

Fault Handling

Fault code	Possible cause		Solution	Notes
E19	Subcode 1	-	• The RUN contactor is not closed. • Output phase loss occurs. • The target current obtained through auto-tuning needs to be adjusted. You can reduce the rated motor current to a proper value.	-
	Subcode 5	The output circuit is open during magnetic pole position auto-tuning.	Check whether open circuit occurs in the UVW output.	-
		The motor power is way below that of the AC drive.	Replace with an AC drive of lower power.	-
	Subcode 6	See subcode 5.	See subcode 5.	-
	Subcode 8	Motor type F1-25 mismatches with encoder type F1-00.	• Check the motor type setting. • Check the encoder type setting.	-
	Subcode 9	The encoder CD signal is unstable.	• Check the motor rotation direction. • Eliminate encoder interference.	-
	Subcode 10	Parameter setting error	The encoder phase sequence is set incorrectly.	-
	Subcode 11	-	-	-
E19	Subcode 12	F1-22 bit0 or bit1 is enabled, and the encoder zero position angle is not obtained during inspection operation.	Perform angle-free auto-tuning and ensure that the motor makes three rotations before power-off and power-on again.	Ensure that the angle auto-tuning in the inspection mode is completed after the motor makes three rotations. If power failure occurs before auto-tuning is completed, the system reports the fault when switching to normal speed mode after power-on.
	Subcode 13	Synchronous motor rotor magnetic pole position auto-tuning failure	Check whether the group F1 parameters are set correctly.	-
	Subcode 14	The encoder type is set incorrectly.	In static auto-tuning, F1-00 needs to be set to 0 or 3.	-

Fault code	Possible cause		Solution	Notes
E19	Sub code 15	Encoder CD signal error	Check that the encoder is of sin/cos type, and that F1-00 settings are correct.	-
	Sub code 19		Replace the encoder.	-
	Output phase loss and motor excitation failure	Subcodes 1, 5, and 6	Check for tight controller connection with the motor.	-
	The encoder type is set incorrectly.	Subcode 8 for synchronous motor static auto-tuning (F1-11 = 5)	Set F1-00 according to the actual encoder type.	-
	Wiring method setting non 0	Subcode 10 for synchronous motor static auto-tuning	Ensure that the encoder circuit conforms to the specification, and then set F1-08 to 0.	-
	Angle-free auto-tuning failed	E19 with subcode 11 is reported and the fault can be reset.	Perform the auto-tuning again.	-
	Abnormal encoder signal	Measure encoder signal line with multimeter.	Replace the encoder, PG card or the connection line between them.	①
	Motor auto-tuning timeout	E19 for asynchronous motor with-load auto-tuning (F1-11 = 1)	Set F1-23 to 64 and restore F1-23 to the initial value after auto-tuning again.	-

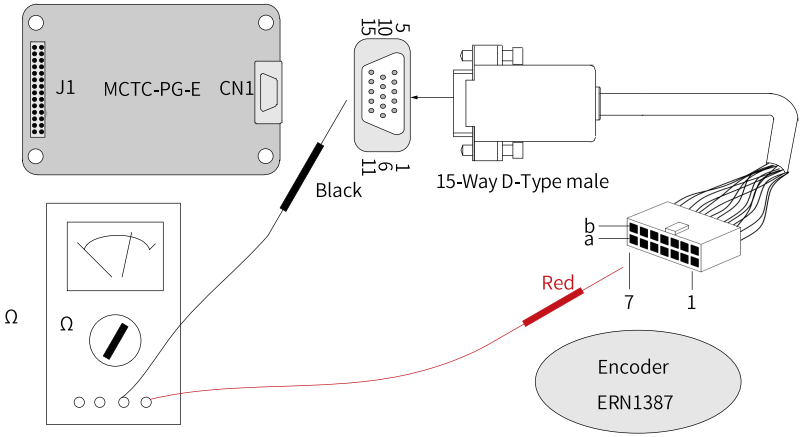
Note

See contents below for details about ①.

Detailed Handling

① Abnormal encoder signal

After unplugging the encoder cable, use the multimeter to check for disconnected or abnormal encoder and PG card connection.



22.3.7Speed Feedback Incorrect E20

Fault Report



The MCB reports E20 fault with abnormal encoder signal or speed feedback.

Fault Handling

Fault code	Possible cause		Solution	Notes
E20	Subcode 1: Encoder signals abnormal and no encoder AB signals detected at no-load auto-tuning after one full rotation	• If E20 is reported at power-on, it indicates encoder signal cable disconnected. • If E20 is reported during auto-tuning or running, it indicates abnormal encoder signal. Use a multimeter to measure the encoder signal cable. • As the traction sheave rotates, F4-03 remains unchanged.	• Check the encoder, PG card or the connection between them. Make replacement as needed. • The motor may not rotate in auto-tuning. • The brake is not released or the current is low. • AB phase interference exists. • AB phases are not connected correctly.	-
	Subcode 3: • Motor phase sequence error • Encoder AB phase sequence incorrect	• Adjust the output phase sequence of the controller for auto-tuning. • The motor may not rotate in auto-tuning. The brake is not released and check the brake circuit and the brake itself. • Loose brake power cable connection results in excessive current during phase sequence change. • Motor parameter F1-05 is set incorrectly. • Encoder hardware fault.	• Adjust the output phase sequence of the controller for auto-tuning. • The motor may not rotate in auto-tuning. The brake is not released or the current is low. • Loose brake power cable connection results in excessive current during phase sequence change. • Motor parameter F1-05 is set incorrectly. • Encoder hardware fault. • AB phase interference exists. • Set encoder PPR correctly. • Modify FF-10.	-

Fault code	Possible cause		Solution	Notes
E20	Subcode 9: Motor runaway protection	• Speed loop or current loop parameters (including position lock parameters) are out of range, making motor startup hard to control. • Encoder interference, especially in case of fault reported occasionally. • Encoder phase sequence and output phase sequence are reversed. • Motor parameters or encoder PPR are wrong. • Output phase loss (Loose safety or door lock circuit connection leads to occasional contactor closing failures). • Mechanical blocking leads to large deviation of starting torque. • For non-mechanical factors, perform auto-tuning again and observe the value of F2-06/07 gained. • Change F2-11/12/13 based on F2-06/07 (For low-power motors, F2-11 equals to F2-06 divided by 10).	• Adjust the group F2 speed loop parameters to a normal range. • Change the output UVW sequence and perform auto-tuning again. • Check the motor parameters. • Check the safety or door lock circuit connection. • Eliminate possible mechanical blocking factors. • Check whether the no-load-cell startup parameter is abnormal. Change F2-11/12/13 based on F2-06/07 (For low-power motors, F2-11 equals to F2-06 divided by 10). • Check for correct phase sequence and speed measurement parameter settings. • Set encoder PPR correctly. • Check for correct rated motor speed setting. • Eliminate encoder interference. • Check for correct brake release.	-

Fault code	Possible cause		Solution	Notes
E20	Subcode 12: The brake not released at startup	• The output torque reaches the upper limit but the motor does not rotate. • Check for stable brake voltage, normal brake clearance, and correct brake control circuit connection.	• Make sure that the brake voltage is normal, the brake clearance proper, and the connection of the brake control circuit correct. • Check whether the brake is fully released. • Obtain the magnetic pole angle through auto-tuning and check consistency. • Check the encoder wiring.	-
	Subcode 13: The brake not released during running	• Check for stable brake voltage, normal brake clearance, and correct brake control circuit connection. • AB signal disconnection during running.	• Make sure that the brake voltage is normal, the brake clearance proper, and the connection of the brake control circuit correct. • Check whether the brake acts unexpectedly. • Check whether the encoder feedback signal is updated.	

Other E20 faults that may not be common:

- Encoder wiring disconnection:
  If E20 is reported at power-on (subcode 5: CD signal disconnection of sin/cos encoder; 7: UVW disconnection of UVW encoder), check for correct encoder cable connection (including cable connection from motor to controller) and for correct PG card installation (including the encoder wiring between the MCB and the drive board).
- The encoder signal abnormal:
  - Fault reported during motor auto-tuning:
    Subcode 1: The encoder AB signals lost during running

    Subcode 3: AB signals reversed during motor auto-tuning

    Subcode 4: Z signal not detected during motor auto-tuning

    Subcode 55: CD signals error or Z signal serious interference during motor auto-tuning
  - Fault reported during running:
    Subcodes 10 and 11: Sin-Cos encoder AB or CD signals serious interference

Subcode 13: AB signals lost during running

Subcode 14: Signal Z is lost during running

Subcode 19: AB analog signals disconnected during low-speed running

Subcode 9: Overspeed or excessive speed deviation

Check for correct and tight encoder connection and reliable grounding.

22.3.8Leveling Signal Abnormal E22

Fault Report



The MCB shows fault E22 for abnormal leveling signal or excessive slip amount of steel rope and traction sheave during operation.

Fault Handling

Code	Possible cause		Solution	Note
E22	Subcode 101	The leveling signal is stuck.	• Check whether the leveling and door zone switches work properly. • □ Check the installation verticality and depth of the leveling plates. • Check the leveling signal input points of the MCB.	-
	Subcode 102	Loss of leveling signals		-
	Subcode 103	The leveling position pulse deviation is too large in the automatic running state	Check whether the steel rope slips.	-
		For the steel rope slip, the system often reports the fault during elevator full-load up and no-load down operation.	Check the slip and ensure proper balancing factor. Increase the steel rope friction force and angle of contact.	①
	Subcode 104	Reserved	Contact the agent or manufacturer.	-
	Subcode 105	Leveling signal not detected in communication mode	Check the connection of the leveling switch and CTB.	-

Note

See contents below for details about ①.

Detailed Handling

① The steel rope slip verification

1. When the elevator is at the leveling position on a certain floor, mark it where the rope and traction sheave meet with A on the rope and A' on the sheave. Then run the elevator to other floors before returning to this very floor to observe the marks.

Note

To ensure better result, perform multiple tests and observe the marks by running the elevator to different floors before returning to the very floor.

2. Compare the distance change and ensure that it is within the normal range of below 10 cm. If not, it indicates steel rope slip. Confirm that the balancing factor is within the range of 0.4 to 0.5 first before increasing both the steel rope tension and the angle of contact. Clear the stain on the rope, if any, with kerosene.

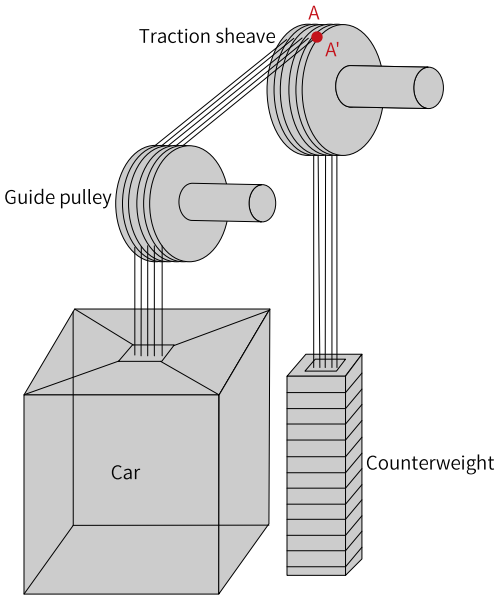


Figure 22-23 Steel rope slip verification

Enable the **slip test function** through the integrated controller.

Use the keypad to set F-8 (Test function) to 10 to enable the steel rope slip experiment. The HCB displays "⊙".

1. The elevator automatically moves to the bottom floor and starts the slip experiment.
2. The elevator automatically moves to the top floor and then returns to the bottom floor.
3. The keypad automatically displays the amount of slip "⌐XXX" or "¬XXX" (unit: cm) for 10s and displays "E88" on completion of the experiment. You can press the PRG key on the keypad to exit the experiment.

If the slip amount exceeds 10 cm, the elevator may have leveling deviation or fault occurrence during operation.

Note

- During the slip amount test, car calls and hall calls are not registered.
- If the elevator is not in normal running state, the system will exit the test.

22.3.9Elevator Position Abnormal E30

Fault Report



The MCB shows fault E30 with abnormal elevator position.

Fault Handling

Fault code	Possible cause		Solution	Notes
E30	Subcode 101	Up leveling signal has no change within a certain period of running	• Check whether the leveling signal cables are connected reliably, touch the ground, or are shorted with other signal cables. • Check whether the floor-to-floor height is too large or the re-leveling speed (F3-21) is too low, causing overlong re-leveling time.	-
	Subcode 102	Down leveling signal has no change within a certain period of running		-
	Subcode 103	Door zone signal has no change within a certain period of running	• Check whether the door zone signal cables are connected reliably, touch the ground, or are shorted with other signal cables. • Check whether the floor-to-floor height is too large or the re-leveling speed (F3-21) is too low, causing overlong re-leveling time.	-

22.3.10Elevator Speed Abnormal E33

Fault Report



The MCB displays E33, indicating abnormal elevator speed.

Fault Handling

Fault code	Possible cause		Solution	Notes
E33	Subcode 101: The detected speed during normal speed running exceeds the limit.	Inappropriate setting of PI value leads to oscillation. Model parameters are mismatched.	Decrease both the PI proportional (P) and integral (I) values. Confirm that FF-01 matches the model. Confirm that the encoder PPR F1-12 is set correctly.	①
	Subcode 102: Overspeed during inspection or shaft auto-tuning.	Check whether the inspection circuit is loosely connected. Reduce the inspection speed if it is set too high.	Ensure that the inspection circuit is well connected and that the switch functions normally.	-
	Subcode 103: Overspeed in shorting stator braking mode.	Check whether the shorting motor stator contactor is wired correctly.	Check whether the shorting motor stator contactor is wired correctly.	-
	Subcodes 104: Emergency running overspeed.	The emergency evacuation speed exceeds the rated elevator speed by 50%. Check whether the speed is set correctly.	• Reduce the speed set in F8-09. • Check whether the emergency power capacity meets the requirements. • Check whether the emergency running speed is set properly.	-
	Subcode 105: • The emergency evacuation lasts over 50s. • The emergency running speed exceeds the limit.	The emergency evacuation speed is too low, or the floor-to-floor height is large.	• Increase the evacuation speed, or add leveling plates. • Check whether the emergency power capacity meets the requirements. • Check whether the emergency running speed is set properly.	①
	Subcode 106: The MCB speed measuring deviation is too large	Check whether SPI communication between the MCB and the drive board is in good condition.	• Check the wiring of the rotary encoder. • Check for quality SPI communication between the MCB and the drive board.	-

Note

See contents below for details about ①.

Detailed Handling

① PI adjustment in group F2

See *"22.2.10 Car Startup Rollback" on page 531* ③.

22.3.11 Shaft Auto-tuning Data Abnormal E35

Fault Report



The MCB reports E35 fault. It indicates that the shaft auto-tuning is not performed, is not ready to be performed or has failed.

Fault Handling

Code	Possible cause		Solution	Note
E35	Subcode 101: The elevator not at the bottom floor for auto-tuning	The elevator is not at the bottom floor or the down slow-down switch 1 is inactive upon shaft auto-tuning.	Ensure that the down slow-down switch 1 and down limit switch are active and that the current floor is the bottom one.	-
	Subcode 102: Inspection switch disconnected during shaft auto-tuning	Check the inspection or EEO wiring.	Ensure that the inspection or EEO wiring is correct.	-
	Subcode 103: Shaft auto-tuning is not performed through power-on judgment.	The fault will be prompted for no shaft auto-tuning data on MCB. It is quite natural to have this fault before commissioning at normal speed.	Perform shaft auto-tuning again.	-
	Subcode 104	In distance control mode, it is judged at running startup that shaft auto-tuning is not performed.	Perform shaft auto-tuning again.	-
	Subcode 105	The elevator running direction and the pulse change direction are inconsistent.	Check whether the elevator running direction is consistent with the pulse change in F4-03. That is, F4-03 increases when the elevator runs up and decreases when the elevator runs down.	
	Subcode 106: The leveling plate length sensed by the up leveling signal is abnormal.	Check group F5: 01/33: Up leveling signal NO/NC 02/34: Down leveling signal NO/NC 03/35: Door zone signal NO/NC F6-00 and F6-01: Top and bottom floor setting Check leveling plate length.	● Set F6-00 and F6-01 based on the number of leveling plates. ● After all, you can try to set F6-52 bit13 to 1. ● Check whether the leveling switch NO/NC is set correctly. ● If the leveling switch signal flashes, check whether the leveling plates are installed properly and whether there is high-voltage interference.	①
	Subcode 107: The leveling plate length sensed by the down leveling signal is abnormal.			
	Subcode 109: Excessive leveling plate length sensed by the leveling switch	Check group F5: 01/33: Up leveling signal NO/NC 02/34: Down leveling signal NO/NC 03/35: Door zone signal NO/NC F6-00 and F6-01: Top and bottom floor setting Check leveling plate length.		

Code	Possible cause		Solution	Note
E35	Subcodes 108 and 110: No leveling signal is received within 45s during auto-tuning.	No leveling signal is received beyond the FA-38 +10s range.	• Ensure that the leveling switch parameters are set correctly. • 1 leveling switch is set for door zone. • 2 leveling switches are set for up and down leveling signal. • Check whether the auto-tuning speed F3-26 is set too low. • Check whether the leveling switches are connected correctly. • Check whether the floor-to-floor height is too large, causing running timeout. You can increase the auto-tuning speed so that auto-tuning of the longest floor can be completed within 45 seconds, and then perform shaft auto-tuning again.	-
	Subcodes 111 and 115	The floor height saved or obtained from auto-tuning is smaller than 50 cm.	• Enable the super-short floor function if the floor height is less than 50 cm. • With no such floor height, check the installation of the leveling plate at this floor as well as the leveling switch and its wiring.	-
	Subcode 112: The floor where auto-tuning is finished is not the top floor.	F6-00 (Top floor of the elevator) is incorrectly set, or the leveling plate is missing.	• Check whether F6-00 is set correctly. • Check whether the leveling plate is not installed in place. Monitor whether 1 is added to the current floor of F4-01 when the elevator travels between floors during auto-tuning.	-
	Subcodes 113 and 114	In distance control mode, it is judged at running startup that shaft auto-tuning is not performed.	Perform shaft auto-tuning again.	-
	Subcode 116: The up and down leveling signals are connected inversely.	Incorrect NO/NC settings of up and down leveling signals connected to the CTB in communication mode	• Check whether the leveling switch malfunctions. • Check whether the up and down leveling switches are connected correctly. • Check whether the distance between the up and down leveling switches is proper. • Check leveling switch NO/NC settings in F5-25 bit9 and bit10 in communication mode.	-

Code	Possible cause		Solution	Note
E35	Subcode 117	The leveling plate pulse length sensed by the leveling signal is abnormally greater than 65535.	• Check whether the leveling switch NO/NC is set correctly in F5-25. • If the leveling switch signal flashes, check whether the leveling plates are installed properly and whether there is high-voltage interference.	-
	Subcode 118	Up leveling and re-leveling connected inversely in communication mode.	• Check whether the up leveling and up re-leveling are connected correctly. • Check for proper distance for the up leveling and up re-leveling. • Check leveling switch NO/NC settings in F5-25 bit9 and bit10 in communication mode.	-
E35	Subcode 119	Down leveling and re-leveling connected inversely in communication mode	• Check whether the down leveling and down re-leveling are connected correctly. • Check for proper distance for the down leveling and down re-leveling. • Check leveling switch NO/NC settings in F5-25 bit10 in communication mode.	-
	Subcode 120	The leveling plate length difference of over 5 cm is sensed by up and down leveling signals during auto-tuning.	Check whether the leveling switch is installed vertically and whether it is parallel with the leveling plate.	-

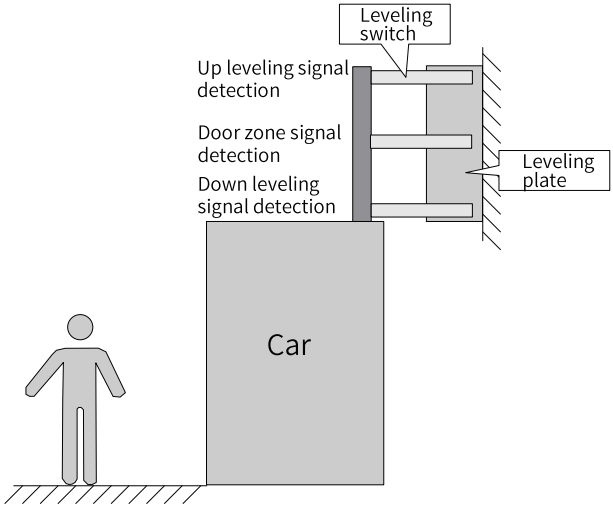
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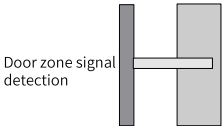
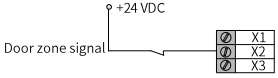
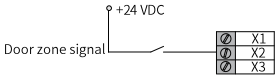
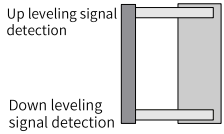
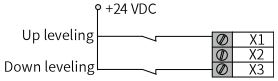
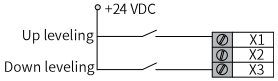
See contents below for details about ①.

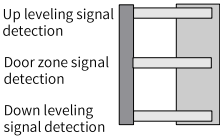
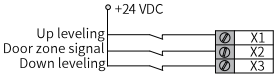
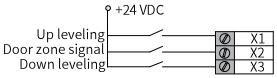
Detailed Handling

① Leveling switch parameter settings

Leveling signal devices, including the leveling switches and leveling plates, are connected to the input terminals of the controller. They enable the car to land on each floor accurately. The leveling plates are installed on the guide rails, with one leveling plate on each floor. Make sure that the length and verticality of all the leveling plates are the same. The number of leveling plates is dictated by the number of floors [(F6-00)-(F6-01)+1].



Number of leveling switches	Installation method	Connecting to controller input terminals	Parameter Settings
1			F5-01 =0 F5-02 = 35 (NC) F5-03 =0
			F5-01 =0 F5-02 = 03 (NO) F5-03 =0
2			F5-01 = 33 (NC) F5-02 =0 F5-03 = 34 (NC)
			F5-01 = 01 (NO) F5-02 =0 F5-03 = 02 (NO)

Number of leveling switches	Installation method	Connecting to controller input terminals	Parameter Settings
3			F5-01 = 33 (NC) F5-02 = 35 (NC) F5-03 = 34 (NC)
			F5-01 = 01 (NO) F5-02 = 03 (NO) F5-03 = 02 (NO)

22.3.12RUN Contactor Feedback Abnormal E36

Fault Report



The MCB shows fault E36 with abnormal RUN contactor feedback.

Fault Handling

Code	Possible cause		Solution	Note
E36	Subcode 101: The RUN contactor has no output, but the contactor feedback is active.	Parameter setting error or wrong feedback wiring. The feedback of the RUN contactor is active but the contactor has no output.	• Set parameter NO/NC based on field conditions: 06/38: RUN contactor feedback signal NO/NC • Check whether the feedback contact of the RUN contactor acts properly. • Check whether the NO/NC settings of the feedback contact are correct.	①
	Subcode 102: The output of the RUN contactor is active but the contactor has no feedback.	Parameter setting error or wrong feedback wiring. Poor connection of door lock contacts	• Set parameter NO/NC based on field conditions. Check whether the door vane rubs against the door roller during operation as this may lead to the disconnection of the door lock circuit. • Check whether the feedback contact of the RUN contactor acts properly. • Check whether the NO/NC settings of the feedback contact are correct.	-
	Subcode 103: The current of the asynchronous motor from the acceleration segment to the constant speed segment is too small (≤ 0.1 A).	Disconnected circuit. Wrong no-load current.	• Check whether the RUN contactor closes normally. • Check whether the output (UVW) cables of the controller are connected normally. • Check whether the control circuit of the RUN contactor coil is normal. • Check for correct no-load current of FA-18 (generally 30% to 50% of the rated motor current).	-
	Subcode 104: Multiplexed feedback points of the RUN contactor have inconsistent operational states.	Parameter setting error or wrong feedback wiring.	• Set parameter NO/NC based on field conditions: 06/38: RUN contactor feedback signal NO/NC • Check whether the feedback contact of the RUN contactor acts properly. • Check whether the NO/NC settings of the feedback contact are correct.	-
	Subcode 105: The RUN contactor feedback is active before re-leveling is started.	Parameter setting error or wrong feedback wiring.	• Set parameter NO/NC based on field conditions: 06/38: RUN contactor feedback signal NO/NC • Check whether the feedback contact of the RUN contactor acts properly. • Check whether the NO/NC settings of the feedback contact are correct.	-

Note

See contents below for details about ①.

Detailed Handling

The RUN contactor parameters in group F5 are set incorrectly. Set the signal feature 06 (NO) and 38 (NC) as needed.

22.3.13Brake Contactor Feedback Abnormal E37

Fault Report



The MCB shows fault E37 with abnormal brake contactor feedback or brake travel switch feedback.

Fault Handling

Fault code	Possible cause		Solution	Notes
E37	Parameter setting error	Check group F5 parameters setting.	Set parameter NO/NC based on field conditions: 07/39: Brake feedback NO/NC 26/58: Brake travel switch 1 NO/NC 78/110: Brake travel switch 2 NO/NC	①
	Circuit	Check the brake feedback wiring according to the schematic diagram.	Ensure the correct wiring of the brake feedback circuit.	-
	Brake not released	Check the brake power supply and circuit.	Ensure normal brake power supply. Ensure normal circuit for brake release.	-
	Brake micro switch	Observe whether the micro switch acts for brake release.	Adjust the position of the micro switch.	-

Subcode details:

Sub code	Possible causes
101	The brake contactor output is inconsistent with the feedback
102	Multiplexed brake contactor feedback points have inconsistent states
103	The brake contactor output is inconsistent with the brake travel switch 1 feedback.

Sub code	Possible causes
104	Multiplexed brake travel switch 1 feedback points have inconsistent states
105	The brake contactor feedback active before the brake contactor releases
106	The brake contactor output is inconsistent with the brake travel switch 2 feedback.
107	Multiplexed brake travel switch 2 feedback points have inconsistent states
108	The brake contactor output inconsistent with the feedback of the brake travel switch 1 on the I/O expansion board
109	The brake contactor output inconsistent with the feedback of the brake travel switch 2 on the I/O expansion board
300	Multiplexed main brake contactor feedback points have inconsistent states
301	The output of main brake contactor inconsistent with the feedback
310	Multiplexed auxiliary brake contactor 1 feedback points have inconsistent states
311	The output of auxiliary brake contactor 1 inconsistent with the feedback
320	Multiplexed auxiliary brake contactor 2 feedback points have inconsistent states
321	The output of auxiliary brake contactor 2 inconsistent with the feedback
330	Multiplexed brake travel switch 1 feedback points have inconsistent states
331	The output of the auxiliary brake contactor 1 inconsistent with the travel switch 1 feedback
340	Multiplexed brake travel switch 2 feedback points have inconsistent states
341	The output of the auxiliary brake contactor 2 inconsistent with the travel switch 2 feedback
351	The output of the auxiliary brake contactor 1 inconsistent with the expanded travel switch 1 feedback
361	The output of the auxiliary brake contactor 2 inconsistent with the expanded travel switch 2 feedback
402	The output of auxiliary brake contactors 1 and 2 abnormal
403	Contactor output inconsistent with the feedback in single braking arm force detection
404	Braking force insufficient and rollback speed at stop over 0.050 m/s

Note

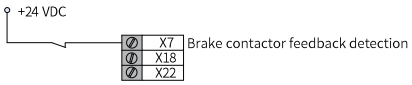
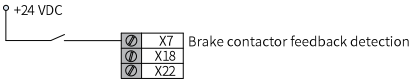
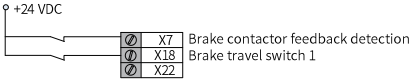
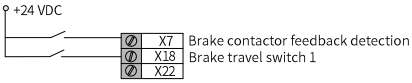
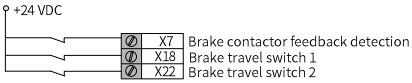
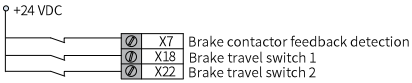
See contents below for details about ①.

Detailed Handling

① Brake parameter setting

The national standard states that braking circuit test requires feedback from at least two circuit channels. So the brake feedback parameters can be set repeatedly (not applicable

to other parameters). If the X input terminals of group F5 are for brake test function, the test treats the terminals on the same priority level and reports E37 if any circuit channel feedback is abnormal.

Brake feedback test	Connecting to controller input terminals	Setting
1 circuit channel of brake contactor auxiliary contact test		F5-07 = 39 (NC) F5-18 = 0 F5-22 = 0
		F5-07 = 7 (NO) F5-18 = 0 F5-22 = 0
1 circuit channel of brake contactor auxiliary contact test 1 circuit channels of brake travel switch test		F5-07 = 39 (NC) F5-18 = 58 (NC) F5-22 = 0
		F5-07 = 7 (NO) F5-18 = 26 (NO) F5-22 = 0
1 circuit channel of brake contactor auxiliary contact test 2 circuit channels of brake travel switch test		F5-07 = 39 (NC) F5-18 = 58 (NC) F5-22 = 110 (NC)
		F5-07 = 7 (NO) F5-18 = 26 (NO) F5-22 = 78 (NO)

22.3.14Rotary Encoder Feedback Signal Abnormal E38

Fault Report



The MCB reports fault E38 for no encoder pulse change or reverse pulse direction.

Fault Handling

Fault code	Possible cause		Solution	Notes
E38	Subcode 101	No change in the pulses in F4-03 beyond the time set in F1-13	• Check whether the rotary encoder wiring is correct (Perform manual rotation to check F4-03 change). • Check whether the brake works properly.	-
	Subcode 102	F4-03 increase in motor running down	• Check whether the elevator has rollback at startup and whether the parameters and wiring of the rotary encoder are correct. • Check whether the system grounding and signal grounding are reliable. • Check whether the UVW phase sequence of the motor is correct.	-
	Subcode 103	F4-03 decrease in motor running up		-
	Subcode 104	SVC used in distance control mode.	Set F0-00 (Control mode) to 1 (FVC) in the distance control mode.	-
	Damaged or disconnected encoder	Release the brake manually and perform manual rotation to check F4-03 change.	Replace the encoder and cable.	①
	Brake clearance	• Check the brake release and clearance. • The brake is not fully released within the time set in F1-13.	To adjust the brake clearance, see *"22.2.10 Car Startup Rollback" on page 531*. F1-13 = 2.1	-

Fault code	Possible cause		Solution	Notes
E38	Pulse direction and running direction reversed	Run at inspection speed and monitor F4-03 change (increase for up running and decrease for down running).	Set through F2-10.	-
	Asynchronous motor output circuit abnormal	• Check whether the RUN contactor closes. • Check for tightened wiring terminals.	Check the circuit on the output side.	-
	Limit switch abnormal	Subcode 105: During up running, the down limit switch operates when the down slow-down switch 1 becomes active.	• Check whether the elevator rolls back at startup on the terminal floor. • Check whether the leveling switch waggles around. • Check whether the wiring of the down limit switch is normal.	-
		Subcode 106: During down running, the up limit switch operates when the up down-slow switch 1 becomes active.	• Check whether the elevator rolls back at startup on the terminal floor. • Check whether the leveling switch waggles around. • Check whether the wiring of the up limit switch is normal.	-

Note

See contents below for details about ①.

Detailed Handling

① Damaged or disconnected encoder

1. Disconnect the power, remove the encoder wire, and check for tight pin connection at both ends. If there is any disconnection, replace the encoder wire.
2. Check the multimeter setting. Measure with the multimeter to check for any terminal or circuit disconnection. Replace the encoder wire if necessary.
3. Connect the encoder and PG card well.
4. Power up the system and remove the power supply of the brake.

5. Manually release the brake, perform manual rotation or run in shorting stator braking mode (shorting motor stator contactor active).
6. Check F4-03 change. If there is no pulse change, replace the encoder.

22.3.15Shorting Door Lock Circuit Relay Feedback Fault E47

Fault Report



The MCB shows fault E47 with abnormal shorting door lock circuit relay feedback and output and abnormal interaction with the SCB in communication mode.

Fault Handling

Fault code	Possible cause		Solution	Notes
E47	Inconsistent shorting door lock circuit relay feedback and output	• Parameter setting error in group F5 • Shorting door lock circuit relay fault	• Check the shorting door lock circuit relay and wiring. • 22/54: Shorting door lock circuit relay feedback NO/NC	-
	Shorting door lock circuit relay feedback over 2s for the SCB in communication mode			-
	SCB wiring disconnected	• Check the balancing factor. • Check the car load.	• Reset the balancing factor. • Reduce the car load.	-
	Inconsistent system and SCB manufacturer No.	Inconsistent manufacturer No.	Check the manufacturer No.	-
	SCB authentication failed	SCB not authenticated	Use the authentic SCB from the original manufacturer.	-
	SCB fault	MCTC-SCB-related fault	Check whether the SCB is damaged.	-
	Subcode 101	The shorting door lock circuit relay output for 2s, but the relay feedback is inactive or the door lock feedback disconnected	• Check the signal feature (NO/NC) of the feedback contact of the shorting door lock circuit relay. • Check whether the shorting door lock circuit relay acts properly.	-
	Subcode 102	The shorting door lock circuit relay no output, but the relay feedback is active for 2s		-
E47	Subcode 106	The shorting door lock circuit relay feedback active before re-leveling	• Check the signal feature (NO/NC) of the feedback contact of the shorting door lock circuit relay. • Check whether the shorting door lock circuit relay acts properly.	-
	Subcode 103	The shorting door lock circuit relay output over 15s during re-leveling or advance door opening	• Check whether the leveling and re-leveling signals are normal. • Check whether the set re-leveling speed is too low.	-
	Subcode 201	SCB wiring disconnected in communication mode	• Check the CAN communication connection of the SCB. • Check the 24 V power supply of the MCB and SCB.	-
	Subcode 202	Mismatch of the MCB with SCB	Contact the agent or manufacturer.	-

Fault code	Possible cause		Solution	Notes
E47	Subcode 203	SCB relay output inconsistent with the feedback in communication mode	• Check the match of the SCB model with the door type (SCB-D4 for through-type door). • Check whether the relay on the SCB board acts normally.	-
	Subcode 209	System and SCB encryption authentication failed	• Check whether it is the authentic SCB from the original manufacturer. • Contact the manufacturer.	-
	Subcode 210	SCB board self-authentication failed	• Check whether the SCB board has encrypted chips. • Perform programming again at the factory.	-

Fault code	Possible cause		Solution	Notes
E47	Subcode 300	SCB board fault (3xx)	301: SCB software fault 302: SCB identification fault 303: Up door zone signal abnormal 304: Down door zone signal abnormal 305: Safety relay KM1 abnormal 306: Safety relay KM2 abnormal 308: Safety relay KM4 abnormal 309: Safety relay KM5 abnormal 310: Safety relay KM6 abnormal	-

22.3.16Consecutive Loss of Leveling Signal E50

Fault Report



The MCB shows fault E50 with door zone and leveling switch signals lost or stuck for three consecutive times.

Fault Handling

Fault code	Possible cause		Solution	Notes
E50	Door zone and leveling switch fault	• Improper position of switches • Switch fault	Check whether the switches are working normally.	-
	Improper position of leveling plates	Check the balancing factor.	Reset the balancing factor.	-
	Leveling and door zone signals wiring incorrectly	Abnormal connection of the input signal terminals	Check the wiring.	-
	Steel rope slip	• Pulley badly tensioned • Improper configuration of car weight and counterweight	• Check the pulley. • Adjust the counterweight.	-
	Subcode 101	Leveling signal stuck detected for three consecutive times	• Check whether the leveling switches and door zone switches work properly. • Check the installation verticality and depth of leveling plates. • Check the leveling signal input terminals on the MCB. • Check whether the steel ropes slip.	-
	Subcode 102	Leveling signal loss detected for three consecutive times		-

22.3.17Door Lock Fault E53

Fault Report



The MCB shows E53 for door lock fault.

Fault Handling

Fault code	Possible cause		Solution	Notes
Err53	101	The door lock feedback remains active 3s after door open output, with shorting door lock circuit disabled	• Check whether the door lock circuit is shorted. • Check whether the door lock feedback is correct.	-
	102	Inconsistent states of the door lock feedback contacts for multiplexed functions, or inconsistent feedback of door lock 1 and door lock 2	• Check whether the door opens smoothly without any lock hook obstruction. • Check whether the door open start speed is too slow. • Check whether the door lock circuit is shorted.	-
	105	The door lock 1 shorting signal remains active 3s after door open output, with shorting door lock circuit enabled		-
	106	The door lock 2 shorting signal remains active 3s after door open output, with shorting door lock circuit enabled		-
	104	The high-voltage and low-voltage door lock signals inconsistent	Check whether the higher-voltage and low-voltage door lock signals are inconsistent. If the time of inconsistency is above 1.5s, a fault is reported.	-
Err53	107	The door lock shorting signal selected, but the feedback signal is continuously disconnected	Check whether the door lock shorting feedback signal cable is not connected or is disconnected.	-
	201	AB/BC shorting, indicating that the front car door or landing door is shorted	• Check the shorting of the front car door or landing door lock. • Check whether the relay on the SCB board engages or opens normally.	-
	202	BE shorting, indicating that 131 and 134 are shorted	• Check the shorting of the front landing door lock and lock end. • Check whether the relay on the SCB board engages or opens normally.	-
	203	AD shorting, indicating that 130 and 133 are shorted	• Check the shorting of the front car door lock and rear landing door lock end. • Check whether the relay on the SCB board engages or opens normally.	-
	204	DE shorting, indicating that 133 and 134 are shorted	• Check the shorting of rear landing door lock end. • Check whether the relay on the SCB board engages or opens normally.	-

Fault code	Possible cause		Solution	Notes
Err53	205	BC shorting, indicating that 131 and 132 are shorted	• Check the shorting of the front car door lock. • Check whether the relay on the SCB board engages or opens normally.	-
	206	CD/DE shorting, indicating that the rear landing door or rear car door is shorted	• Check the shorting of the rear landing door or rear car door lock. • Check whether the relay on the SCB board engages or opens normally.	-
	207	CE/AE shorting, indicating that 132 and 134 or 130 and 134 are shorted	• Check the shorting of the front car door and lock end. • Check the shorting of the rear car door and lock end. • Check whether the relay on the SCB board engages or opens normally.	-
	208	BD shorting, indicating that 132 and 133 are shorted	• Check the shorting of the front landing door and rear car door. • Check whether the relay on the SCB board engages or opens normally.	-
	209	KM3 relay on the SCB board stuck	Check whether the relay K3 on the SCB board engages or opens normally.	-
	210	AC/AE shorting, indicating that 130 and 132 or 130 and 134 are shorted	• Check the shorting of the front car door and lock end. • Check the shorting of the front car door and rear landing door. • Check whether the relay on the SCB board engages or opens normally.	-
	211	AE shorting, indicating that 130 and 134 are shorted	• Check the shorting of the front car door and lock end. • Check whether the relay on the SCB board engages or opens normally.	-
	212	KM3 relay on the SCB board stuck	Check whether the relay K3 on the SCB board engages or opens normally.	-

22.3.18Overcurrent at Inspection Startup E54

Fault Report



The MCB shows fault E54 when the starting current exceeds 110% of rated current due to excessive deviation between the car and counterweight or too large friction force.

Fault Handling

Fault code	Possible cause		Solution	Notes
E54	Too large friction force	• Check the brake release. • Check for unblocked safety gear. • Check whether the guide shoes are too tight.	• Ensure that the brake is fully released. • Ensure that the safety gear is not blocked. • Ensure that the guide shoes have proper gaps.	①
	Too heavy load	• Check the balancing factor. • Check the car load.	• Reset the balancing factor. • Reduce the car load.	-
	Subcode 102	The current at inspection startup exceeds 120% of rated current	• Do not have unbalanced load or reduce the load during installation in inspection mode. • Check whether the motor parameters obtained through auto-tuning are correct and perform auto-tuning again if possible. • Check whether the mechanical resistance is too large. • Set the bit1 of FC-00 to ON to disable the startup overcurrent detection.	-

Note

See contents below for details about ①.

Detailed Handling

① With normal brake release, unblocked safety gear, and proper guide shoe gap, you still see E54 in resetting the safety gear during inspection up after the safety gear linkage test. If this happens, disable the startup overcurrent detection and set bit1 of FC-00 to 1 and restore the parameter to its original value after the safety gear is reset successfully.

22.3.19Stop at Another Floor E55

Fault Report



E55 fault displayed on the MCB: In automatic running, the door open limit is not received after FB-06 output, and the next floor is automatically registered for the door open limit signal.

Fault Handling

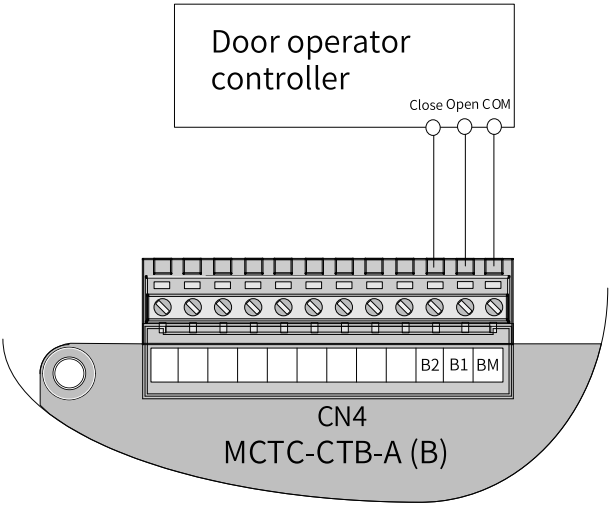
Fault code	Possible cause		Solution	Notes
E55	Wiring error	Short CTB B1-BM and B2-BM to check for normal door open and close.	Wire correctly.	①
	Parameter setting	Check whether the door open/close limit signal is consistent with the actual door state through monitoring F5-35.	Set the F5-25 NO/NC feature according to field wiring or drawings. See *" Appendix 2: Fault Subcodes" on page 613* for more details on monitoring F5-35.	-
	Door open limit not reached	Check whether the door operator executes door open/close normally. Check for mechanical blocking.	Ensure normal door operator action.	-
	Subcode 101	During the 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 current floor. • Check whether the CAN communication is abnormal during door open.	-

Note

See contents below for details about ①.

Detailed Handling

① Check for connect door operator and CTB wiring



22.3.20Door Open/Close Signal Fault E56

Fault Report



The MCB shows fault E56 with open and close signals active for over 500 ms, open and close limit signals simultaneously active for over 500 ms, and the close limit signal active for 4s after the door opens for 3s.

Fault Handling

Fault code	Possible cause		Solution	Notes
E56	Parameter setting error in group F5	Check group F parameters.	Check the NO/NC parameter setting of F5-25.	-
	Door open/close signal incorrect	Check the door open/close signal cable.	Check the door open/close signal input cable.	-
	Door close limit signal incorrect	Check the door open/close signal cable.	Check the door open/close signal input cable.	-

Sub code	Fault cause	Solution
101	The door open limit signal active during running	• Check the signal feature (NO/NC) of the door open/close signal set in F5-25. • Check the connection of the door open/close signal.
102	The door close limit signal inactive during running	
103	The door open limit signal and door close limit signal active simultaneously	
104	The door close limit signal is continuously connected 2s after door open. This fault subcode is detected after the door lock bypass is set.	• Adjust the speed if the door opens slowly. • Check whether the door close limit signal is always active.

22.3.21 Shaft Position Switches Abnormal E58

Fault Report



MCB shows fault E58 for the up and down slow-down switches and limit switches being active at the same time.

Fault Handling

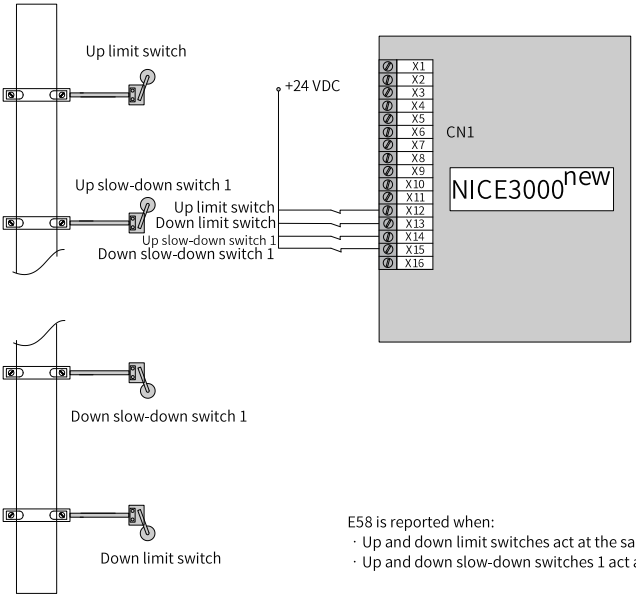
Fault code	Possible cause		Solution	Notes
E58	Wiring error	Check the circuit.	Check for normal circuit connection.	①
	Parameter setting	Check input terminal definition in group F5.	Check that parameters are correctly set.	-
	Shaft travel switch or position switch error	Check whether the position switches can operate and be reset.	Replace them if they cannot be reset.	-
	Subcode 101	Up and down slow-down switches 1 active simultaneously	• Check the 24 V power supply. • Check whether the signal feature (NO/NC) of the slow-down switches is consistent with the MCB parameters. • Check whether the slow-down switches malfunction.	-
	Subcode 102	The feedback of both up and down limit switches active	• Check whether the signal feature (NO/NC) of the limit switches is consistent with the MCB parameters. • Check whether the limit switches malfunction.	-

Note

See contents below for details about ①.

Detailed Handling

① Wiring of limit switches and slow-down switches



E58 is reported when:
- Up and down limit switches act at the same time (subcode 102).
- Up and down slow-down switches 1 act at the same time (subcode 101).

22.3.22UCMP Test Abnormal E65

Fault Report



The MCB shows fault E65 when the car runs and stops out of the door zone in shorting door lock circuit state.

Fault Handling

Fault code	Possible cause		Solution	Notes
E65	This fault reported when the car moves unexpectedly	The brake is not fully closed.	• Check whether the brake is fully closed and ensure that the car does not move unexpectedly. • Check the gap between the door vane and door roller and ensure no contact between them during operation.	-

22.3.23Braking Force Abnormal E66

Fault Report



MCB shows fault E66 when the braking force is detected to be insufficient during the braking force test.

Fault Handling

Code	Possible cause	Solution	Note
E66	• Braking force insufficient • Brake pads are worn.	Check the brake clearance, and then perform torque test again.	-

Sub code	Possible causes
101	The braking force detected to be insufficient
110	The right brake arm force insufficient in braking force test
111	The left brake arm force insufficient in braking force test

Torque test steps are as follows:

1. The system is in inspection state and the inspection switch is active;
2. The elevator stops in the door zone with the door lock closed.
3. Set F-8 to 8 using the keypad and the MCB shows E88.
4. The system outputs torque according to the setting of braking force.

If the test result is unacceptable, the system reports E66 and the elevator stops running.

Set balancing factor properly and perform torque auto-tuning.

Conditions: The system is in the normal or parking mode and there is no fault above level 3.

Parameter settings: Set F-8 to 11 using the keypad or F3-24 to 6 using the operator. Ensure that the rated load (F0-05) is set correctly.

Running process: Hall calls are not allowed to register. The elevator executes all car calls and judges whether the door close limit is reached. After the door lock is applied and remain active for 3s, the elevator enters the test mode and the HCB displays "RI".

Result display: F7-13 (Balancing factor) and F7-14 (Recommended torque) are saved and the keypad displays "Pxx.xx Txxx" in scrolling mode for 8s. T is followed by the recommended torque value.

23 Solutions to EMC Interference

If a circuit breaker with leakage current protection is to be used, follow these guidelines for selection:

- During operation, the control cabinet and integrated controller generate some high-frequency leakage current. To avoid false trips of the residual current device (RCD), select an RCD with a tripping current of no less than 100 mA for each cabinet or controller.
- Use recommended RCD brands like CHINT and SCHNEIDER.

If the RCD malfunction occurs, use the following methods to solve the fault.



For all rectification measures involving grounding, measure the grounding impedance with a multimeter after connecting the grounding cable to ensure that the measurement value is below 1 Ω.

<table>
<tr><th>Symptom</th><th>Causes</th><th>Solutions</th></tr>
<tr><td rowspan="5">Instantaneous trip at power-on</td><td>Poor RCD interference resistance</td><td rowspan="5">1. Ensure that the equipment is reliably grounded, and use a multimeter to measure the grounding resistance to be less than 1 Ω.
2. Power off and on 2 to 3 times and check whether it still trips.
3. Use RCDs from recommended brands.
4. Consider replacing with an RCD with a higher rated tripping current.
5. Move unbalanced loads upstream of the RCD.
6. Disconnect the EMC screw or external EMC filter grounding terminal to reduce input capacitance to ground. For the location of the EMC screw, see "2.3 Component Description" on page 24.</td></tr>
<tr><td>RCD not powered simultaneously</td></tr>
<tr><td>Small tripping current of the RCD</td></tr>
<tr><td>Unbalanced loads connected downstream of the RCD</td></tr>
<tr><td>Large capacitance to ground upstream of the drive</td></tr>
<tr><td rowspan="4">RCD Trip during operation</td><td>Poor RCD interference resistance</td><td rowspan="4">1. Ensure that the equipment is reliably grounded, and use a multimeter to measure the grounding resistance to be less than 1 Ω.
2. Power off and on 2 to 3 times and check whether it still trips.
3. Reduce the length of motor cables.
4. Lower the carrier frequency appropriately while ensuring performance requirements are met.
5. Use RCDs from recommended brands.
6. Consider replacing with an RCD with a higher rated tripping current.
7. Install the magnetic ring near the RCD on the LN/RST and UVW lines. For details, see "4.7 Selection of the Magnetic Ring and Magnetic Clamp" on page 70.
8. Install the simple EMC filter at the input side. For details, see "4.3 EMC Filter Selection" on page 53.</td></tr>
<tr><td>Small tripping current of the RCD</td></tr>
<tr><td>Unbalanced loads connected downstream of the RCD</td></tr>
<tr><td>Excessive distributed capacitance to ground in motor cables, motors, and so on</td></tr>
</table>

23.1 Shielded Cable Requirements

- Use the shielded cable for motor connection to meet the EMC requirements. The 4-conductor shielded cable is recommended with one conductor as the PE. If the 3-conductor shielded cable is used and the shield cannot meet the conduction requirements, an additional PE wire must be added.
  - Recommended power cables:
    Recommended

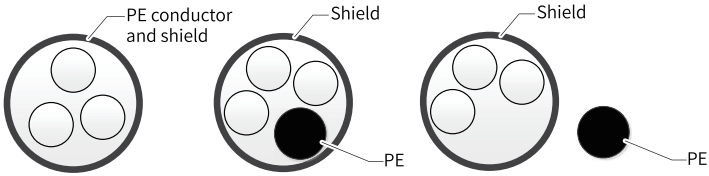


Figure 23-1 Cross section of recommended shielded cables

  - Unrecommended power cables:
    Unrecommended

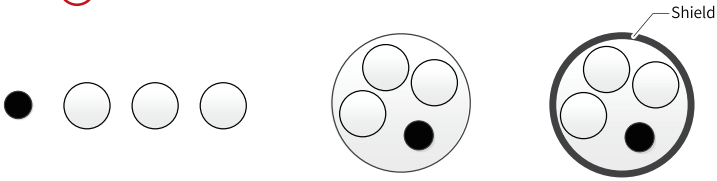


Figure 23-2 Cross section of unrecommended shielded cables

- To suppress the radio frequency interference effectively, the cable shield uses copper braid as the material. The braiding density should be greater than 85% to enhance the shielding efficiency and conductivity. The following figure shows the details.

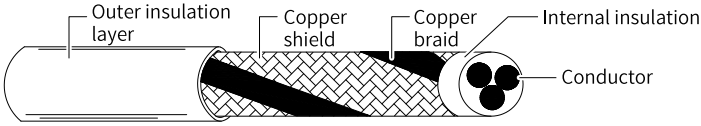


Figure 23-3 Braiding density of the shield

- The grounding area of the shielded cable must be as large as possible. Attach the shield to the metal plate with the metal clamp fastener.

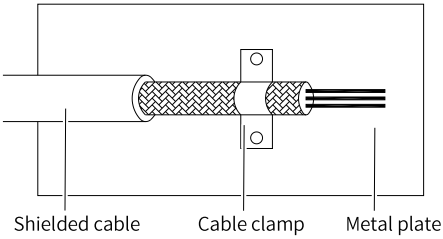


Figure 23-4 Attaching the shield with the metal clamp fastener

23.2 Cabling Requirements

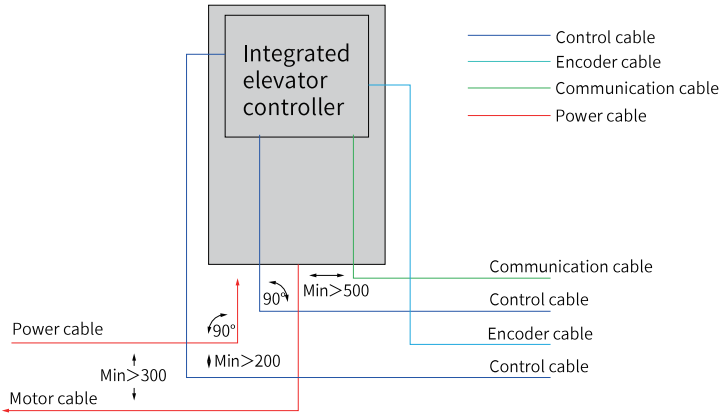
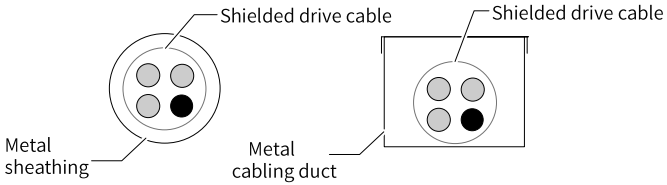


Figure 23-5 Cabling requirements

- The motor cables must be far away from other cables. Recommended distance is greater than 0.5 m. Motor cables for several controllers can be laid in parallel.
- It is recommended that the motor cables be protected in the metal sheathing or cabling duct with metal cover. They must be grounded reliably at both ends.



- To avoid electromagnetic interference caused by rapid change of the output voltage of the controller, the motor cables and other cables must not be laid side by side for a long distance. It is recommended that the motor cables, power input cables and control cables be laid in different ducts. Metal separators can be used for different types of cables. The cable duct must be in good connection and grounded.

- If the control cable must run across the power cable, make sure they are arranged at an angle of close to 90°. Do not run other cables above the controller.
- The power input and output cables of the controller and weak-current signal cables (such as control wires) should be laid vertically (if possible) rather than horizontally.
- The cable duct must be in good connection and well grounded. Aluminum ducts can be used to improve equipotentiality.
- The controller must be connected with the control cabinet as specified. Apply coatings properly and ensure that the contact area has good conductivity.
- The motor must be connected with the system parts as specified. Apply coatings properly and ensure good conductivity.

24 CE Certification and Standard Compliance

24.1 Important Notes on EU Standards Compliance



Figure 24-1 CE marking

- 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 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 must also be CE certified and labeled.
- It is the responsibility of the end user to ensure the machines the controller is to be used for comply with the CE standards and to affix the CE marking.

24.2 Low Voltage Directive Compliance

This product 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 with pollution not higher than severity 2 and overvoltage category 3 in accordance with IEC 60664.
- 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. The fuse on the input side must comply with UL standards. For model selection details, see *"4.1 Cable, Circuit Breaker, and Contactor Selection" on page 46*.

For input current and output current of the controller, refer to *"2.4 Rated Data" on page 32*.

- 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.

24.3 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 EN 12015:2020, EN 12016:2013, GB-T 24807:2021, and GB-T 24808:2022 only when meeting the following requirements:

- The external 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 360° grounded. For selection of EMC filters, see *"4.3 EMC Filter Selection" on page 53*.
- The controller and the motor must be connected with shielded cables. For cable selection and installation, see the chapter Main Circuit Wiring Requirements.
- Install the controller and arrange the cables according to the recommended cabling method. See *"23.2 Cabling Requirements" on page 603*.
- 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 EN 12015:2020, EN 12016:2013, GB-T 24807:2021, and GB-T 24808:2022.

When the system equipped with the controller is used in other applications, it is the system manufacturer's responsibility to ensure that the whole system complies with the EMC Directive (2014/30/EU), and IEC 61800-3:2018, IEC 61800-3:2017, and GB-T 12668.3-2012 as required by the actual application.

Note

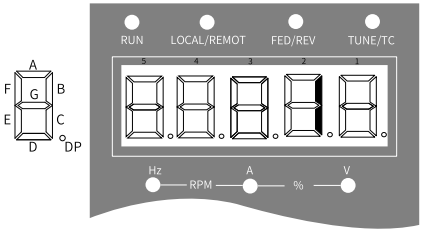
The controller may cause radio interference for use in the First Environment that includes domestic premises and establishments directly connected without intermediate transformers to a low-voltage supply (of electricity) network which supplies buildings used for domestic purposes. Besides the CE compliance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

25 Appendix 1: Status Monitoring Parameters

F5-34 and F5-35 Monitoring

F5-34 monitors the I/O terminals on the MCB. F5-35 monitors the I/O terminals on the CTB, CCB and HCB.

The LED segments are numbered 5, 4, 3, 2 and 1 from left to right. A segment lights up to indicate that the signal is valid. The correlation of signals and each segment is shown in the following table.



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

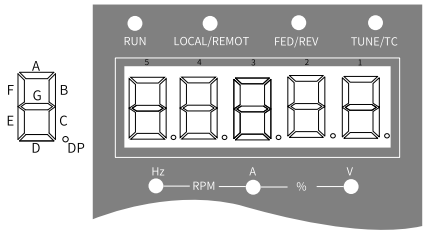
F5-34			F5-35		
No.	Segment	Definition	No.	Segment	Definition
3	A	Up slow-down 1 signal	3	A	Door open output 1
	B	Down slow-down 1 signal		B	Door close output 1
	C	Up slow-down 2 signal		C	Door lock signal
	D	Down slow-down 2 signal		D	Door open output 2
	E	Up slow-down 3 signal		E	Door close output 2
	F	Down slow-down 3 signal		F	Door lock signal
	G	Shorting door lock circuit relay output feedback		G	Up arrival gong
	DP	Firefighter operation signal		DP	Down arrival gong
4	A	Door operator 1 light curtain	4	A	Door open button display
	B	Door operator 2 light curtain		B	Door close button display
	C	Brake output feedback 2		C	Door open delay button display
	D	UPS input		D	Non-door zone stop output
	E	Elevator lock input		E	Reserved
	F	Safety circuit feedback 2		F	Buzzer output
	G	Synchronous motor self-locking feedback		G	Reserved
	DP	Door lock circuit feedback 2		DP	Energy-saving sign

F5-34			F5-35		
No.	Segment	Definition	No.	Segment	Definition
5	A	Reserved	5	A	System light curtain state 1
	B	RUN contactor output		B	System light curtain state 2
	C	Brake contactor output		C	Hall call elevator lock input
	D	Shorting door lock circuit relay output		D	Hall call fire emergency input
	E	Fire emergency floor arrival signal		E	Full-load signal
	F	-		F	Overload signal
	DP	-		DP	-

FA-12 Monitoring

FA-12 displays the current status of the elevator.

The LED segments are numbered 5, 4, 3, 2 and 1 from left to right. No. 5 and 4 combined display elevator status. No. 2 and 3 display none. No.1 displays door 1 status. The correlation of status and each segment is shown in the following table.



5		4		3	2	1	
Elevator state				No display	No display	Door 1 state	
00	Inspection state	08	Elevator lock	-	-	0	Waiting state
01	Shaft auto-tuning	09	Idle elevator parking			1	Door open state
02	Micro-leveling	10	Low-speed re-leveling			2	Door open limit
03	Returning to fire emergency floor	11	Emergency evacuation operation			3	Door close state
04	Firefighter operation	12	Motor auto-tuning			4	Door close limit
05	Fault state	13	Keypad control			-	-
06	Attendant	14	Main floor verification			-	-
07	Automatic	15	VIP state			-	-

26 Appendix 2: Fault Subcodes

Group E0 parameters are for fault records viewing and each fault has a subcode. For example, E0-00 shows the latest fault with E0-01 being subcode.

Param.	Name	Range	Default	Unit	Property
Group E0 to E9: Fault Record Parameters					
E0-00	Latest fault	0 to 9999	0	-	●
E0-01	Latest fault subcode	0 to 65535	0	-	●
E0-02	Month and day upon latest fault	0 to 1231	0	MM.DD	●
E0-03	Hour and minute upon latest fault	0 to 23.59	0	HH.MM	●
E0-04	Logic information upon latest fault	0 to 65535	0	-	●
E0-05	Curve information upon latest fault	0 to 65535	0	-	●
E0-06	Speed reference upon latest fault	0.000 to 4.000	0	m/s	●
E0-07	Feedback speed upon latest fault	0.000 to 4.000	0	m/s	●
E0-08	Bus voltage upon latest fault	0 to 999.9	0	V	●
E0-09	Current position upon latest fault	0.0 to 300.0	0	m	●
E0-10	Output current upon latest fault	0.0 to 999.9	0	A	●
E0-11	Output frequency upon latest fault	0.00 to 99.99	0	Hz	●
E0-12	Torque current upon latest fault	0.0 to 999.9	0	A	●
E0-13	Output voltage upon latest fault	0 to 999.9	0	V	●
E0-14	Output torque upon latest fault	0 to 200.0	0	%	●
E0-15	Output power upon latest fault	0.00 to 99.99	0	kW	●
E0-16	Communication interference upon latest fault See FA-24 description.	0 to 65535	0	-	●
E0-17	Encoder interference upon latest fault	0 to 65535	0	-	●
E0-18	Input state 1 upon latest fault See FA-26 description	0 to 65535	0	-	●

Param.	Name	Range	Default	Unit	Property
Group E0 to E9: Fault Record Parameters					
E0-19	Input state 2 upon latest fault See FA-27 description	0 to 65535	0	-	●
E0-20	Input state 3 upon latest fault See FA-28 description	0 to 65535	0	-	●
E0-21	Input state 4 upon latest fault See FA-29 description	0 to 65535	0	-	●
E0-22	Input state 5 upon latest fault See FA-30 description	0 to 65535	0	-	●
E0-23	Output state 1 upon latest fault See FA-31 description	0 to 65535	0	-	●
E0-24	Output state 2 upon latest fault See FA-32 description	0 to 65535	0	-	●
E0-25	Car input state upon latest fault See FA-33 description	0 to 65535	0	-	●
E0-26	Car output state upon latest fault See FA-34 description	0 to 65535	0	-	
E0-27	Hall state upon latest fault See FA-35 description	0 to 65535	0	-	
E0-28	System state 1 upon latest fault See FA-36 description	0 to 65535	0	-	
E0-29	System state 2 upon latest fault See FA-37 description	0 to 65535	0	-	

27 Appendix 3: Fault List

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err02 Overcurrent during acceleration	1	Hardware overcurrent 1 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short and the acceleration rate is set too high. • The braking resistor is short-circuited. • Power hardware fault	• Check whether the motor and grounding cables are connected correctly. • Check whether the shorting motor stator contactor causes a short circuit at the controller output side. • Check whether motor cables have a damaged jacket. • Check the driver board.	5A
	2	Hardware overcurrent 2 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short • The braking resistor is short-circuited. • Power hardware fault		
	11	Hardware overcurrent 3 fault			
	12	Hardware overcurrent 4 fault			
	15	Inter-phase short circuit fault	• Output interphase short circuit • The AC drive is damaged	Check whether there is three-phase short circuit.	

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err03 Overcurrent during deceleration	1	Hardware overcurrent 1 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short and the acceleration rate is set too high. • The braking resistor is short-circuited. • Power hardware fault	• Check whether the motor and grounding cables are connected correctly. • Check whether the shorting motor stator contactor causes a short circuit at the controller output side. • Check whether motor cables have a damaged jacket. • Check the driver board.	5A
	2	Hardware overcurrent 2 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short • The braking resistor is short-circuited. • Power hardware fault		
	11	Hardware overcurrent 3 fault			
	12	Hardware overcurrent 4 fault			

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err04 Overcurrent at a constant speed	1	Hardware overcurrent 1 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short and the acceleration rate is set too high. • The braking resistor is short-circuited. • Power hardware fault	• Check whether the motor and grounding cables are connected correctly. • Check whether the shorting motor stator contactor causes a short circuit at the controller output side. • Check whether motor cables have a damaged jacket. • Check the driver board.	5A
	2	Hardware overcurrent 2 fault	• The main circuit output is grounded or short-circuited or the motor insulation performance degrades. • Motor auto-tuning is not performed or motor parameter setting errors occur. • The encoder signal is incorrect. • The phase sequence of the motor is incorrect. • The acceleration time is too short • The braking resistor is short-circuited. • Power hardware fault		
	11	Hardware overcurrent 3 fault			
	12	Hardware overcurrent 4 fault			
Err05 Overvoltage during acceleration	1	Bus overvoltage	• The bus voltage correction factor FF-08 is too large, resulting in too high bus voltage displayed. • The bus voltage hardware mismatches with software, especially for the 380 V and 220 V. • The input power supply mismatches. • During operation under generator power, the braking resistance is too large. • The acceleration time is too short	• Reduce the value of FF-08. • Check whether the bus voltage hardware mismatches with software. • Check the input power supply. • Check whether the braking resistance is too large during operation under generator power. • Increase the acceleration end jerk time.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err06 Overvoltage during deceleration	1	Bus overvoltage	• The bus voltage correction factor FF-08 is too large, resulting in too high bus voltage displayed. • The bus voltage hardware mismatches with software, especially for the 380 V and 220 V. • The input power supply mismatches. • During operation under generator power, the braking resistance is too large. • Deceleration time is too short	• Reduce the value of FF-08. • Check whether the bus voltage hardware mismatches with software. • Check the input power supply. • Check whether the braking resistance is too large during operation under generator power. • Deceleration time is too short	5A
Err07 Overvoltage at constant speed	1	Bus overvoltage	• The bus voltage correction factor FF-08 is too large, resulting in too high bus voltage displayed. • The bus voltage hardware mismatches with software, especially for the 380 V and 220 V. • The input power supply mismatches. • During operation under generator power, the braking resistance is too large. • Deceleration time is too short	• Reduce the value of FF-08. • Check whether the bus voltage hardware mismatches with software. • Check the input power supply. • Check whether the braking resistance is too large during operation under generator power. • Deceleration time is too short	5A
	101	Elevator lock with car button	The elevator lock function is triggered.	Enter the password to unlock the elevator.	-
Err08 Maintenance notification period reached	101	The set maintenance days have expired.	The maintenance period in F9-13 has expired.	Set F9-13 to 0 and reset it manually.	-
Err09 Undervoltage	1	Bus undervoltage	During operation, the bus voltage is below the undervoltage threshold. • For 380 V model: Undervoltage threshold 350 V • For 220 V model: Undervoltage threshold 150 V The bus voltage correction factor FF-08 is too low, resulting in too low bus voltage displayed. The bus voltage hardware mismatches with software, especially for the 380 V and 220 V.	• Restore the bus voltage correction factor FF-08 to 100.0%. • Check the input power line. • Replace with an AC drive of higher power. • Replace the drive hardware.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err10 Controller overload	1	The overload protection time of the AC drive is reached.	The overload protection time of the AC drive is reached.	• Check whether the brake is released and whether the brake power supply is normal. You can perform electric brake release to check. • Check whether the guide shoes are too tight. • Check the balancing factor. • Check whether the encoder parameters F1-00 and F1-12 are set correctly. • Check whether the initial angle of thesynchronous motor encoder is correct. • Check whether motor parameters are set properly, and perform motor auto-tuning again. • If this fault is reported during the slip experiment, perform the slip experiment by enabling the slip function set in F3-24. • Adjust the motor UVW phase sequence. • If the fault is reported because the current has exceeded the rated current of the AC drive when the elevator runs at stable speed or when the car has no load, replace with an AC drive of higher power.	5A
Err12 Input phase loss	1	Input phase loss	• The power input phases are not symmetric. • The drive control board malfunctions.	• Set FJ-40 bit1 to 1 to increase the judgment threshold. • Check whether the R, S and T power lines have phase loss. • Check whether there is severe three-phase unbalance. • Check the driver board.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err13 Output phase loss	2	Output phase loss during auto-tuning or before operation	• There is phase loss between the output UVW and the RUN contactor • There is phase loss between the RUN contactor and the motor. • The RUN contactor contact is abnormal. • The drive cable inside the driver board is disconnected or damaged. • The motor winding has phase loss.	Use a multimeter to test the resistance between the motor UV, UW, and VW lines.	5A
	3	Output phase loss during operation	• There is phase loss between the output UVW and the RUN contactor • There is phase loss between the RUN contactor and the motor. • The RUN contactor contact is abnormal. • The drive cable inside the driver board is disconnected or damaged. • The motor winding has phase loss. Note: The fault detection is enabled by default. It can be disabled by setting FC-01 bit1 to 1.	Use a multimeter to test the resistance between the motor UV, UW, and VW lines.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err14 Module overtemperature	1	AC drive overtemperature fault	• The fan is blocked or faulty. • The ambient temperature is too high • The NTC circuit of the driver board temperature sensor is abnormal. • The model FF-01 or temperature curve FF-02 is set incorrectly. Note: Controller overtemperature threshold: • Power of 30 kW and below: NTC temperature FA-07 greater than 95°C. • Power of 37 kW and above: NTC temperature FA-07 greater than 80°C.	• The temperature curve FF-02 is set incorrectly. Set FF-02 to 1. • Replace the damaged fan. • Clear the air filter. • Check whether the installation clearances of the controller satisfy the requirements. • Lower the ambient temperature • Replace a compatible MCB or driver board.	5A
	60	-	• The fan is blocked or faulty. • The ambient temperature is too high • Air filter blocked	• Replace the damaged fan. • Clear the air filter. • Check whether the installation clearances of the controller satisfy the requirements. • Lower the ambient temperature	5A
Err15 Output abnormal	1	Braking transistor overcurrent signal	• The resistance of the braking resistor is too small (40% of the rated motor power recommended). • The braking resistor is short-circuited. • The driver board is abnormal.	1. Check for proper power rating and resistance of the braking resistor. 2. Use a multimeter to check whether the braking resistor is short-circuited and verify the correct wiring; the braking resistor should be connected between PB and +. 3. Replace the driver board and power on the drive again to check whether it is abnormal.	5A
	2	Braking transistor short circuit	• The braking resistor is connected to the positive and negative bus lines (PN). • The braking transistor has short circuit. • The driver board is abnormal. • The external braking unit of power of 90 kW or above is abnormal.	• Replace with the input power supply of higher quality. • The voltage ripple sampled is large. • Replace the integrated controller.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err16 Current control fault	1	The excitation current control is abnormal.	• Output phase loss occurs. • The RUN contactor is not closed. • The 220 V drive runs with 380 V motor. • The input voltage is low. • Motor parameters are set incorrectly.	• Check whether the motor parameters are set correctly. • Check whether the output phase loss occurs. • Check whether the RUN contactor closes. • Check whether the brake circuit is normal. • Check whether the input voltage is too low.	5A
	2	Torque current control abnormal			5A
	3	Current control abnormal	• The torque upper limit F2-08 is set too low. • The output voltage reaches saturation levels. • Motor parameters are set incorrectly. • The RUN contactor is not closed. • Output phase loss occurs. • Brake not released • The input voltage is low.		5A
Err17 Encoder interference during motor auto-tuning	2	Abnormal Z signal during auto-tuning	• The CD phases sequence set through F1-08 bit3 is reversed. • Eliminate encoder interference • The encoder CD signals are abnormal. Note: Disable detection through setting F1-10 bit14 to 1 (0: enable).	• The encoder suffers interference. You can improve its anti-interference capability by adding a magnetic ring to the encoder circuit. • The encoder CD signal has a significant zero drift or is abnormal; replace the encoder and try again.	5A
	3	The UVW encoder auto-tuning reference signal is abnormal.	• The wiring is incorrect. • The encoder is disconnected. • The encoder circuit interference occurs.	• The encoder suffers interference. You can improve its anti-interference capability by adding a magnetic ring to the encoder circuit. • Check for any broken wires, loose connections, or wiring errors in the encoder.	5A
Err18 Current detection fault	1	Excessive output current sampling zero drift	• The driver board hardware is abnormal. • The current sampling terminal of the driver board is connected improperly.	Replace the drive hardware.	-
	2	Reserved	Reserved		5A
	3	Product identification signal error	The driver board hardware is abnormal or interference occurs.		-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err19 Motor auto-tuning fault	1	Stator resistance auto-tuning failure	• The RUN contactor is not closed. • Output phase loss occurs. • A small AC drive runs with a large motor for auto-tuning.	• Check whether the RUN contactor closes normally. • Check whether the output phase loss occurs. • Check whether the rated motor current is set correctly in F1-03. • The driver board is abnormal.	5A
	5	Magnetic pole position auto-tuning failure	• The output is open circuit. • The RUN contactor contact is abnormal, resulting in an open circuit. • The output cable is too long, greater than 50 m. The motor inductance is too large or the motor is abnormal. • A large AC drive runs a small motor (drive power is over twice motor power).	1. Check whether F1-03 is the rated motor current. Set F1-03 to a small value. 2. Check whether the output is open circuit, including whether the wiring from the UVW output of the AC drive to the motor side is loose or short-circuited. Check whether the contact of the RUN contactor is abnormal. 3. Try to replace with the AC drive that matches the motor power. 4. Replace the motor if the motor inductance value is too large or the motor is abnormal.	5A
	6	Magnetic pole position auto-tuning failure	• The output is open circuit. • The RUN contactor contact is abnormal, resulting in an open circuit. • The output cable is too long, greater than 50 m. The motor inductance is too large or the motor is abnormal. • A large AC drive runs a small motor (drive power is over twice motor power).	1. Check whether F1-03 is the rated motor current. Set F1-03 to a small value. 2. Check whether the output is open circuit, including whether the wiring from the UVW output of the AC drive to the motor side is loose or short-circuited. Check whether the contact of the RUN contactor is abnormal. 3. Try to replace with the AC drive that matches the motor power. 4. Replace the motor if the motor inductance value is too large or the motor is abnormal.	5A
	8	The encoder type is set incorrectly.	Synchronous motor static auto-tuning (F1-11 = 5) is selected, but the encoder is not a sin/cos type (F1-00≠0).	Check for correct motor and encoder types.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err19 Motor auto-tuning fault	9	CD signals are unstable during auto-tuning.	Encoder CD signals are unstable.	• The motor is rotating during static auto-tuning; check whether the brake is properly closed or there are other abnormalities. • Check for any loose connections in the encoder. Perform wiring again. • The encoder suffers interference. You can improve its anti-interference capability by adding a magnetic ring to the encoder circuit.	5A
	10	The encoder phase sequence is incorrect.	Motor type F1-25 mismatches with encoder type F1-00.	The fault is reported if the encoder phase sequence is not 0 during static auto-tuning of the sin/cos encoder or communication-type encoder. Set F1-08 to 0 manually.	5A
	12	Angle information is not obtained during angle-free auto-tuning.	F1-22 bit0 and bit1 are enabled, and the encoder zero position angle is not obtained during inspection operation.	Perform angle-free auto-tuning again and ensure that the motor makes three rotations before power-off and power-on again.	5A
Err19 Motor auto-tuning fault	11	Reserved	Reserved	Reserved	-
	13	Initial magnetic pole auto-tuning is not completed.	Initial magnetic pole position auto-tuning of the synchronous motor is not completed.	Check whether the motor parameters in group F1 are set correctly.	-
	14	The encoder type is set incorrectly.	When F1-11 is set to 5 for static auto-tuning of the encoder direction, the encoder is not a sin/cos type.	In static auto-tuning, F1-00 needs to be set to 0 or 3.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err19 Motor auto-tuning fault	15	Abnormal angle auto-tuning	• The encoder CD signals wiring is abnormal. • The encoder cable connector becomes loose. • Encoder abnormal	• Check whether the encoder type is set correctly in F1-00. • The encoder CD signals wiring is abnormal. Check whether the encoder cable connector becomes loose. • The encoder is abnormal and replace the encoder.	-
	19	CD signals are unstable.	• Encoder fault • PG card error	• The encoder CD signals wiring is abnormal. Check whether the encoder cable connector becomes loose. • The encoder is abnormal and replace the encoder. • Replace the PG card.	-
	103	Auto-tuning angle of 0	-	Perform auto-tuning again.	-
Err20 Speed feedback incorrect	1	The encoder AB signals are abnormal during auto-tuning.	• The brake is not released. • The AB signals wiring is incorrect. • The AB signals interference exists. • The wiring between the driver board and the MCB is abnormal. • The motor is damaged.	• Perform auto-tuning and commissioning at inspection speed again. • Encoder Replacement	5A
	3	Encoder AB signals is reversed during auto-tuning	• FF-10 is set incorrectly. • The UVW phase sequences are misconnected. • AB phase interference exists.	• Adjust the phase sequences of UVW power cables. • Modify FF-10 to reverse the setting. • Decrease F2-00 or F2-03.	5A
	4	The encoder Z signal is lost during auto-tuning.	• The wiring of the Z signal is abnormal. • Encoder signal interference exists. • The motor is stalled. • The PG card or encoder is damaged.	Try replacing the encoder cable.	5A
	5	The encoder CD signals are disconnected.	• The encoder type is set incorrectly. • The wiring is incorrect. • For the magnetic ring encoder, it is the sin/cos encoder and has no CD signals available. F1-00 needs to be set to 5. • The encoder or PG card hardware is damaged. • The MCB is abnormal.	• Replace the MCB. • Re-connect the encoder cable. • Replace the encoder and encoder cable.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	7	UVW encoder wiring disconnection	• The encoder type parameter is set incorrectly or the PG card is incorrect. • The wiring is abnormal. • The encoder or PG card is damaged.	1. Check whether it is the UVW type encoder and whether the PG card and encoder parameters are correct. 2. Check whether the encoder wiring is correct and whether there is cable disconnection. 3. Replace the encoder PG card and encoder.	5A
	9	Overspeed fault during operation	Overspeed occurs during operation or the pulse changes greatly during position lock control.	• Check that the motor UVW phase sequence is correct. • Check whether F1-04 and F1-05 are set correctly. • The angle of synchronous motor is abnormal. Perform motor auto-tuning again. • Reduce the position lock speed loop Kp. • Decrease the speed loop gain or increase the integral time. • Check whether the encoder PPR is set correctly in F1-12. • Check whether the brake circuit power supply is normal.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	12	locked-rotor during operation	• Power cable phase sequence is incorrect. • The brake is not fully released. • Check FA-03 consistency through magnetic pole auto-tuning. • The encoder wiring is abnormal.	• Check whether the power line phase sequence is reversed. • Check whether the brake is fully released. • Check FA-03 consistency through magnetic pole auto-tuning. • Check the encoder wiring.	5A
	13	Encoder AB signal disconnection during running	• Power cable phase sequence is incorrect. • Check whether the brake acts unexpectedly. • Check whether the encoder feedback signal is updated.	• Power cable phase sequence is incorrect. • Check whether the brake acts unexpectedly. • Check whether the encoder feedback signal is updated.	5A
	14	The encoder Z signal is lost during operation.	The encoder Z signal is lost.	• Check the encoder grounding interference. • For the 1313 series encoder, confirm whether the Z signal exists.	5A
	15	The phase sequence of the motor is incorrect	The phase sequence of the motor is incorrect	• Change the output UV sequence and perform auto-tuning again. • Check whether the brake is released and check the brake circuit. • Loose brake power cable connection results in excessive current during phase sequence change. • Motor parameter F1-05 is set incorrectly. • Try replacing the encoder and wiring and check whether the hardware is faulty.	5A
	19	The encoder AB signals are disconnected.	The encoder AB signals are disconnected.	Check the encoder wiring.	5A
	55	Encoder CD signals or Z signal mismatch	The signals of the sin/cos encoder are seriously interfered with or CD signals are incorrect during motor auto-tuning	• Check the CD wiring. • The encoder line sequence is set incorrectly. • For the 1313 series encoder, check for correct CD signals from simulation.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	80	Communication-type encoder communication error	Communication-type encoder communication error	• Check the encoder wiring. • Check whether the encoder is damaged. • Encoder Replacement	-
	81	Overspeed at power-on of the communication-type encoder	Overspeed at power-on of the communication-type encoder	Contact the manufacturer.	-
	82	Running overspeed	Running overspeed	• Check the encoder wiring. • Encoder Replacement	-
	83	QEP count error	QEP count error	• Check the encoder wiring. • Encoder Replacement	-
	84	Initial position computing error	Initial position computing error	Perform motor auto-tuning again.	-
	85	M-channel analog abnormal	M-channel analog abnormal	• Check the encoder wiring. • Check whether the encoder cable runs parallel with the power cable for long distance. • Encoder Replacement	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	86	The encoder is not aligned in the production line.	The encoder is not aligned in the production line.	Contact the agent or manufacturer.	-
	87	Reserved	Reserved	Contact the agent or manufacturer.	-
	88	Reserved	Reserved	Contact the agent or manufacturer.	-
	90	Initialization of the communication-type encoder fails.	Initialization of the communication-type encoder fails.	Check the encoder wiring. Replace the encoder.	-
	91	Electronic shorting motor stator contactor fails in synchronous braking evacuation mode.	Electronic shorting motor stator contactor fails in synchronous braking evacuation mode.	Check whether power cable connection is normal.	-
	92	Overspeed fault in shorting motor stator contactor in synchronous braking evacuation mode.	Overspeed fault in shorting motor stator contactor in synchronous braking evacuation mode.	Check the motor power cable wiring.	-
	93	Timeout before reaching steady speed in synchronous braking evacuation mode.	Timeout before reaching steady speed in synchronous braking evacuation mode.	Check the motor power cable wiring.	-
	94	Synchronous braking rescue failure.	Synchronous braking rescue failure.	Check the motor power cable wiring.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	10	The torque current reaches the upper limit and the speed deviation is too large (speed measure ment not zero)	The torque current reaches the upper limit and the speed deviation is too large (speed measurement not zero)	• The torque upper limit F2-08 is too small. It is recommended to increase the value of this parameter to 200. • Check whether the load is too large. Use an AC drive of higher power. • Check whether the brake is fully released. • Check for right AC drive model selection. Use an AC drive of proper power. • Check whether the bus voltage is abnormal. • Check whether the motor parameters in group F1 are correctly set, with particular attention to F1-04, F1-05, and F1-12 (encoder PPR). • Check whether there is a significant change in FA-03 before and after power cycle. If there is a significant difference, it indicates that the CD signals of the encoder experience considerable interference, leading to an incorrect angle calibration before and after the power cycle. In this case, perform auto-tuning again to identify the magnetic pole angle.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err20 Speed feedback incorrect	20	The MT speed measure ment is abnormal during with-load auto-tuning of encoder zero point and phase sequence.	The MT speed measurement is abnormal during with-load auto-tuning of encoder zero point and phase sequence.	• Check whether during auto-tuning, the motor rotates and whether the brake is not released. • Check whether the encoder has loose or abnormal connection. • The encoder is damaged and replace the encoder.	-
	21	The CD signals are abnormal during with-load auto-tuning of encoder zero point and phase sequence.	The CD signals are abnormal during with-load auto-tuning of encoder zero point and phase sequence.	• Check the CD wiring. • Set encoder PPR correctly. • For the 1313 series encoder, check for correct CD signals from simulation.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err21 Parameter setting error	2	Incorrect maximum frequency setting	F0-06 is smaller than F1-04.	Ensure that F0-06 is greater than or equal to F1-04.	5A
	3	Encoder misconfig ured as UVW type	The encoder type F1-00 is set incorrectly.	Check whether F1-00 is set correctly.	5A
	4	The number of pole pairs of resolver encoder and synchronous motor not divisible	• The encoder type F1-00 is set incorrectly. • Motor parameters F1-04 and F1-05 are set incorrectly.	Check whether F1-00 is set correctly.	5A
	5	Contract No. error	The contract No. is incorrect.	Contact the elevator manufacturer.	5A
	6	Elevator lock fault	MCB elevator lock terminal active	Contact the manufacturer.	5A
	7	The 380 V unit is incorrectly set to 480 V.	The 380 V unit is incorrectly set to 480 V.	Check whether FF-01 and FF-07 are set incorrectly.	5A
	8	The MCB and the driver board software are incompati ble.	The MCB and the driver board software are incompatible.	Contact the manufacturer.	5A
	9	Macro configura tion error	Macro configuration error	Contact the manufacturer.	5A
	10	EEPROM is damaged.	EEPROM is damaged.	Contact the manufacturer.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err21 Parameter setting error	101	Main parameter block data storage version error	Programing error: The storage mechanism of the software that is incompatible with the previous is programmed.	Contact the elevator manufacturer and restore the previous version of the software.	5A
	102	The unique serial number version is abnormal.			
	103	The parameter version is abnormal.			
	104	The internal parameter version is abnormal.			
	105	The EEPROM version is abnormal.			
	106	The braking force detection and brake travel switch feedback points are set improperly.	After the braking force detection function is disabled, the brake travel feedback 1 and brake travel feedback 2 points are not set.	• **With brake travel feedback**: Set brake travel feedback 1 (26/58) and brake travel feedback 2 (78/110) in group F5. • **Without brake travel feedback**: Set F6-52 bit10 to 0 to enable the braking force detection function.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err21 Parameter setting error	107	The shorting motor stator contactor feedback setting is abnormal.	Tomorrow series control cabinet: The electronic shorting motor stator is disabled (bit1 of F8-30 = 0) and the shorting motor stator contactor feedback (30/62) and auxiliary shorting motor stator contactor feedback (274/306) are not set. 3rd Gen cabinet: The shorting motor stator contactor feedback (30/62) is not set.	**Tomorrow series control cabinet:** • Integrated shorting motor stator scheme: Enable the integrated shorting motor stator function (bit1 of F6-68 is set to 1). • Electronic shorting motor stator scheme: Enable the electronic shorting motor stator function (bit1 of F8-30 = 1). Set the feedback point (274/306) based on whether the auxiliary shorting motor stator contactor is selected. • Shorting motor stator using contactor scheme: Set the shorting motor stator contactor feedback point (30/62). **3rd Gen cabinet:** • Integrated shorting motor stator scheme: Enable the integrated shorting motor stator function (bit1 of F6-68 is set to 1). • Shorting motor stator using contactor scheme: Set the shorting motor stator contactor feedback point (30/62).	5A
	110	The input point of the up slow-down switch 1 signal is not set.	During shaft auto-tuning, it is detected that the input point (16/48) of the up slow-down switch 1 is not set.	Set the input point (16 for NO, 48 for NC) of the up slow-down switch 1 from F5-01 to F5-24.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err21 Parameter setting error	201	For the non-communication-type brake power supply board, the output or feedback of the brake contactor is set incorrectly.	When the communication-type brake power supply board is not enabled (bit11 of F6-54 = 0) and separate braking force detection is set (bit9 of F6-54 = 1), and the Y point is set with the brake contactor output (2), the following are the possible causes of the fault: • the left brake contactor output (33) is not set • the right brake contactor output (34) is not set • the auxiliary brake contactor 1 feedback (74/106) is not set • the auxiliary brake contactor 2 feedback (75/107) is not set	Configure the brake contactor output correctly: Cancel the setting of the brake contactor output (2) at Y point and set the left brake contactor output (33), the right brake contactor output (34), the auxiliary brake contactor 1 feedback (74/106), and auxiliary brake contactor 2 feedback (75/107).	5A
	202	For the communication-type brake power supply board, the output of the brake contactor is set incorrectly.	When the communication-type brake power supply board is enabled (bit11 of F6-54 = 1) and separate braking force detection is set (bit9 of F6-54 = 1), the Y point is set with the brake contactor output (2) and the left (33) or right (34) brake contactor output is also set.	Configure the brake contactor output correctly. Cancel the setting of the left brake contactor output (33) and the right brake contactor output (34) at Y point.	5A
	13	Incorrect synchronous motor parameter setting	Incorrect synchronous motor parameter setting	Check whether parameters of the synchronous motor are set incorrectly. Set FJ-36 bit2 to 1 to mask the fault.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err22 The leveling signal abnormal	101	The leveling signal is stuck.	• The leveling signal is stuck. • The DI input circuit malfunctions. • The input set through the parameter does not match the actual wiring. • The signal feature (NO/NC) is incorrect.	• Replace or repair the leveling switch. • Replace the control board. • Change the electrical circuit according to the electrical diagram. • Change the signal feature (NO/NC) of the leveling signal.	1A
	102	Loss of leveling signals	• Loss of leveling signals • The DI input circuit malfunctions. • The input set through the parameter does not match the actual wiring. • The signal feature (NO/NC) is incorrect.	• Replace or repair the leveling switch. • Replace the control board. • Change the electrical circuit according to the electrical diagram. • Change the signal feature (NO/NC) of the leveling signal.	1A
	103	The pulse deviation during car leveling process is too large.	• The steel rope slips during car running. • When the elevator comes to emergency stop due to a fault, it experiences excessive slip distance. • The elevator lands at a wrong floor.	• Check the mechanical structure, such as the steel rope. • Normal phenomenon that requires no attention.	1A
	104	Reserved	Reserved	Contact the agent or manufacturer.	1A
	105	Leveling signal not detected in communication mode	• Loss of leveling signals • The DI input circuit of the CTB malfunctions. • The communication between the MCB and the CTB is in poor quality or even disconnected.	• Replace or repair the leveling switch. • Check whether the wiring of the CTB is correct. • Check whether the CAN communication termination resistor exists.	1A
	106	Reserved	After the elevator stops in normal-speed running, there is floor switchover, and up or down leveling signal is not detected to be inactive.	• Check whether the leveling switch NO or NC is set correctly. • Check whether the leveling switch is damaged.	1A
	201	The leveling signal changes after elevator comes to stop.	The leveling signal changes after elevator comes to stop.	-	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err22 The leveling signal abnormal	202	The floor changes during the leveling process.	-	-	-
Err23 Short circuit fault	1	Short circuit to ground fault 1	UVW output short circuit to ground	The multimeter detects whether the UVW is short-circuited to ground. After the issue is resolved, power on the system again.	5A
	2	Short circuit to ground fault 2		By default, a self-test for output to ground short circuits is performed before each run. When there is an output to ground short circuit, current will be detected. If the current exceeds a threshold value, it is determined that there is a ground short circuit in the output, and the fault is reported.	5A
	3	Short circuit to ground fault 3		Use a multimeter to detect whether the UVW is short-circuited to ground. After the issue is resolved, power on the system again.	5A
	4	-	AC drive output interphase short circuit	Check whether short circuit to ground exists in the three-phase output of the AC drive, or whether the three phases have the same output.	5A
	6	-	Hardware overcurrent in electronic motor stator shorting and invalid short circuit to ground detection	Check whether short circuit to ground exists in the UVW output.	5A
	7	-	Hardware overcurrent in electronic shorting motor stator.	Check whether short circuit to ground exists in the UVW output.	-
Err24 RTC fault	101	Failure of the external crystal oscillator for the RTC on the MCB	Failure of the external crystal oscillator for the RTC on the MCB	Replace the MCB	3B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err25 Data storage error	101	EEPROM read timeout	EEPROM is damaged. The EEPROM communication circuit is abnormal.	Replace the MCB	4A
	102	EEPROM write timeout	EEPROM is damaged. The EEPROM communication circuit is abnormal.		4A
	103	FLASH read/ write timeout	FLASH error		4A
	104	Internal error in fault storage	Internal logic error		4A
Err26 Earthquake signal	101	Earthquake fault	The earthquake signal is active for 2s.	• Check whether the NC/NO feature of the earthquake signal is consistent with the MCB parameter setting. • Restore the earthquake detection device to the inactive state.	3B
Err28 Maintenance fault	101		Reserved	Contact the agent or manufacturer.	5A
	102	Elevator lock in the car	-	-	5A
	103	Elevator lock fault for maintenance	-	-	5A
	107	Limit days active	-	-	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err29 Shorting motor stator contactor feedback abnormal	101	The output and feedback of the shorting motor stator contactor of the MCB are inconsistent.	The output and feedback of the shorting motor stator contactor are inconsistent.	Check the wiring and feedback settings.	5A
	102	The output and feedback of the shorting motor stator contactor of the expansion board are inconsistent.	The output and feedback of the shorting motor stator contactor of the expansion board are inconsistent.	Check the wiring and feedback settings.	5A
	105	The shorting motor stator braking test fails.	The shorting motor stator contactor is abnormal.	Check the wiring or replace the shorting motor stator contactor.	5A
	106	The shorting motor stator pulse test fails.	The shorting motor stator is abnormal.	• Check whether the three-phase shorting of the contactor is normal. • If electronic motor stator shorting is used, the drive module must be replaced.	5A
	201	In synchronous braking evacuation mode, the shorting motor stator contactor output and feedback are abnormal.	The shorting motor stator contactor has output but the feedback is inactive.	Check the wiring.	5A
	301	The output and feedback of the auxiliary shorting motor stator contactor are inconsistent.	The output and feedback of the auxiliary shorting motor stator contactor are inconsistent.	-	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err30 Elevator position abnormal	101	Up leveling signal has no change within a certain period of elevator running.	• The up leveling signal is disconnected or stuck, or the leveling signal cables may touch the ground, or be shorted with other signal cables. • The floor-to-floor height is too large or the re-leveling speed (F3-21) is too low, causing overlong re-leveling time. Or the evacuation running speed (F8-09) is set too low, causing overlong evacuation running time.	• Check whether the up leveling signal is wired reliably and whether the switch operates normally. • Set the re-leveling speed (F3-21) to a larger value. • Set the evacuation running speed (F8-09) to a larger value.	4A
	102	Down leveling signal has no change within a certain period of elevator running.			4A
	103	Door zone signal has no change within a certain period of elevator running.			4A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err33 Elevator speed abnormal	101	The speed exceeds the limit during normal-speed running.	• The encoder parameter setting is incorrect. • The encoder wiring is incorrect. • Motor parameters are set incorrectly.	• Set F1-11 correctly. • Ensure that the wiring is correct. • Ensure that the motor parameters are correct and perform auto-tuning again.	5A
	102	The speed exceeds the limit during inspection or shaft auto-tuning.	• The inspection speed is set too high. • Motor parameters are set incorrectly.	• Set the inspection speed (F3-11) to a smaller value. • Ensure that the motor parameters are correct and perform auto-tuning again.	5A
	103	The speed exceeds the limit in shorting stator braking mode (for PMSM).	• UVW phase sequence error. • Shorting motor stator failure.	• Adjust the UVW phase sequence. • Ensure that the shorting motor stator function is normal.	5A
	104	Overspeed during emergency rescue by controller drive	The speed during emergency evacuation by controller drive (F8-09) is set too high.	• Check whether the emergency power capacity meets the requirements. • Set the evacuation speed to a smaller value.	5A
	105	Operation timeout during emergency evacuation by controller drive	• The speed during emergency evacuation by controller drive (F8-09) is set too low. • The emergency power supply capacity is abnormal.	• Set the evacuation speed to a larger value. • Replace the emergency power supply.	5A
	106	The MCB and DSP speed measure ment deviation is too large.	• The encoder wiring is abnormal. • The SPI communication between the MCB and the DSP is abnormal.	• Ensure that the wiring is correct. • Reduce interference.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err34 Logic fault	101 to 105	-	The software logic is abnormal.	Contact the agent or manufacturer to replace the control board.	5A
	107	Battery missing under elevator lock	The value set in F9-10 is less than 800, the MCB battery is removed, and the system time cannot be increased for 4.8 hours. The value set in F9-35 is less than 800, F9-34 is set to 1, the MCB battery is removed, and the system time cannot be increased for 4.8 hours.	Contact the agent or manufacturer to replace the control board.	5A
	108	The elevator lock limit is active.	The fault reporting function of elevator lock limit is enabled.	Contact the agent or manufacturer to replace the control board.	5A
Err35 Shaft auto-tuning data abnormal	101	The shaft auto-tuning trigger conditions are not met.	Old auto-tuning mode: • The down slow-down 1 signal NO/NC is set incorrectly. • The down slow-down 1 signal is wired improperly. • The current floor is not the bottom floor. • Set F0-01 to 0. New auto-tuning mode: The down slow-down signal (two landing floors) is inactive.	• Set the down slow-down 1 signal NO/NC correctly. • Ensure the down slow-down 1 signal is wired correctly. • Ensure the current floor (F4-01) is the bottom floor (F6-01). • Set F0-01 to 1.	4C
	102	The shaft auto-tuning operation conditions are not met.	Inspection switch disconnected during shaft auto-tuning.	Enable EEO.	4C
	103	Shaft auto-tuning not performed	Group F4 pulse check error	Perform shaft auto-tuning again.	4C
	104	The conditions for running at normal speed are not met.	Shaft auto-tuning not performed	Perform shaft auto-tuning again.	4C
	105	The current position is abnormal.	• The UVW phase sequence is incorrect and the elevator running direction is reversed. • F2-10 is set incorrectly and the elevator running direction is reversed.	• Adjust the UVW phase sequence. • Set F2-10 to the correct running direction.	4C

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err35 Shaft auto-tuning data abnormal	106	Abnormal leveling plate length	• The up leveling signal NO/NC is set incorrectly. • The up leveling switch signal flashes, the wiring is abnormal or leveling plates are not installed properly.	• Set the up leveling signal NO/NC correctly. • Ensure that the wiring of the up leveling signal is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	107	Abnormal leveling plate length	• The down leveling signal NO/NC is set incorrectly. • The down leveling switch signal flashes, the wiring is abnormal or leveling plates are not installed properly.	• Set the down leveling signal NO/NC correctly. • Ensure that the wiring of the down leveling signal is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	108	Abnormal leveling switch	• The leveling signal wiring is abnormal. • The floor-to-floor height is too large. • The auto-tuning speed is set too low.	• Ensure that the leveling signal wiring is correct and reliable. • Set the shaft auto-tuning speed (F3-26) to a larger value.	4C
	109	Abnormal leveling plate length	• The leveling signal NO/NC is set incorrectly • The leveling signal flashes, the wiring is abnormal or leveling plates are not installed properly.	• Set the leveling signal NO/NC correctly. • Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	110	Abnormal leveling switch	The leveling signal NO/NC is set incorrectly	Set the leveling signal NO/NC correctly.	4C
	111	The floor height is abnormal.	• The leveling signal wiring is abnormal. • The leveling plate is not installed properly.	• Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err35 Shaft auto-tuning data abnormal	112	The maximum number of floors is abnormal.	• F6-00 (Top floor of the elevator) is incorrectly set. • The leveling plate is missing.	• Set F6-00 correctly. • Ensure proper leveling plate installation on all floors.	4C
	113	Pulse check error	Shaft auto-tuning not performed	Perform shaft auto-tuning again.	4C
	114	Pulse check error	In distance control mode, it is judged at running startup that shaft auto-tuning is not performed.	Perform shaft auto-tuning again.	4C
	115	The floor height is abnormal.	• The leveling signal wiring is abnormal. • The leveling plate is not installed properly.	• Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	116	The leveling signal abnormal	• The up and down leveling signal wiring is incorrect. • The gap between leveling switches is improper. • The leveling plate length is incorrect.	• Ensure that the leveling signal wiring is correct and reliable. • Adjust the gap between leveling switches. • Replace the leveling plates that do not meet the requirements.	4C
Err35 Shaft auto-tuning data abnormal	117	Abnormal leveling plate length	• The communication leveling signal NO/NC is set incorrectly. • The communication leveling signal flashes, the wiring is abnormal or leveling plates are not installed properly.	• Set the leveling signal NO/NC correctly. • Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	118	The up leveling and up re-leveling signals are connected inversely.	• The leveling signal wiring is incorrect. • The leveling signal NO/NC is set incorrectly	• Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	119	The down leveling and down re-leveling signals are connected inversely.	• The leveling signal wiring is incorrect. • The leveling signal NO/NC is set incorrectly	• Ensure that the leveling signal wiring is correct and reliable. • Ensure that the leveling plate is installed according to the requirements.	4C
	120	Abnormal leveling plate length	The leveling signal wiring is abnormal.	Ensure that the leveling signal wiring is correct and reliable.	4C

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err36 RUN contactor feedback abnormal	101	The RUN contactor has feedback but no output.	• The RUN contactor is damaged and cannot open normally. • The RUN contactor feedback signal NO/NC is incorrect. • The feedback signal line of the RUN contactor is abnormal. • The contact of the RUN contactor is stuck. • The MCB relay is damaged and cannot open normally.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB.	5A
	102	The RUN contactor has output but no feedback.	• The RUN contactor is damaged and cannot close normally. • The RUN contactor feedback signal NO/NC is incorrect. • The feedback signal line of the RUN contactor is abnormal. • The contact of the RUN contactor is stuck. • The MCB relay is damaged and cannot close normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	103	The output current of the asynchro nous motor is abnormal.	• The UVW wiring connection is abnormal. • The RUN contactor is damaged and cannot close normally. • The MCB relay is damaged and cannot close normally. • The safety circuit voltage is low and the contactor cannot close.	• Ensure that the UVW wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit voltage.	5A
	104	Multiplexed RUN contactor feedback points have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err36 RUN contactor feedback abnormal	105	The RUN contactor has feedback but no output.	• The RUN contactor is damaged and cannot open normally. • The RUN contactor feedback signal NO/NC is incorrect. • The feedback signal line of the RUN contactor is abnormal. • The contact of the RUN contactor is stuck. • The MCB relay is damaged and cannot open normally.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB.	5A
	201	The RUN contactor has output but no feedback.	• The RUN contactor is damaged and cannot close normally. • The RUN contactor feedback signal NO/NC is incorrect. • The feedback signal line of the RUN contactor is abnormal. • The contact of the RUN contactor is stuck. • The MCB relay is damaged and cannot close normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	106	The RUN contactor has output but no feedback.			-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	101	The output of the brake contactor is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	102	Multiplexed brake contactor feedback points have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	103	The brake contactor output is inconsistent with the brake travel switch 1 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	104	When a feedback contact of the brake travel switch 1 is enabled for multiple functions, their states are inconsistent	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	106	The brake contactor output is inconsistent with the brake travel switch 2 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	107	Multiple brake travel switch 2 feedback terminals have inconsistent states	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	108	The output of the brake contactor is inconsistent with the feedback state of the expansion board brake travel switch 1.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	109	The output of the brake contactor is inconsistent with the feedback state of the expansion board brake travel switch 2.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	118	Multiple auxiliary brake contactor 1 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	119	The output of the auxiliary brake contactor 1 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	120	Multiple auxiliary brake contactor 2 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	121	The output of the auxiliary brake contactor 2 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	122	Multiple auxiliary brake contactor 3 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	123	The output of the auxiliary brake contactor 3 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	300	Multiplexed brake contactor feedback points have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	301	The output of the brake contactor is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	310	Multiple auxiliary brake contactor 1 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	311	The output of the auxiliary brake contactor 1 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	320	Multiple auxiliary brake contactor 2 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	321	The output of the auxiliary brake contactor 2 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	330	When a feedback contact of the brake travel switch 1 is enabled for multiple functions, their states are inconsistent	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	331	The output of the auxiliary brake contactor 1 is inconsistent with the brake travel switch 1 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	340	Multiple brake travel switch 2 feedback terminals have inconsistent states	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	341	The output of the auxiliary brake contactor 2 is inconsistent with the brake travel switch 2 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	351	The output of the auxiliary brake contactor 1 is inconsistent with the expansion board brake travel switch 1 feedback.			5A
	361	The output of the auxiliary brake contactor 2 is inconsistent with the expansion board brake travel switch 2 feedback.			5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	402	The output and the feedback are inconsistent during the single-arm braking force test.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	403	Braking abnormal	Braking force insufficient	Repair the brake.	5A
	404	Braking abnormal			5A
	405	Brake feedback abnormal during the single-arm braking force test.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	5A
	406	Braking abnormal	Braking force insufficient	Repair the brake.	5A
	407	Braking abnormal			5A
	408	Abnormal brake feedback	• The brake contactor is damaged and cannot open normally. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot open normally.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	115	The brake contactor output is inconsistent with the brake travel switch 3 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A
	116	Multiple brake travel switch 3 feedback terminals have inconsistent states	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	5A
	117	The output of the brake contactor is inconsistent with the feedback state of the expansion board brake travel switch 3.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	370	Multiple auxiliary brake contactor 3 feedback terminals have inconsistent states.	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	-
	371	The output of the auxiliary brake contactor 3 is inconsistent with the feedback.	• The brake contactor is damaged and cannot close or open normally. • The brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the brake contactor is abnormal. • The contact of the brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally. • The safety circuit voltage is low and the contactor cannot close.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB. • Adjust the safety circuit power supply.	-
	380	Multiple brake travel switch 3 feedback terminals have inconsistent states	• Multiplexed point NO/NC is incorrect. • Multiplexed point signal line is abnormal.	• Set the MCB parameters correctly. • Ensure that the wiring is correct.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err37 Brake contactor feedback abnormal	381	The output of the auxiliary brake contactor 3 is inconsistent with the brake travel switch 3 feedback.	• The brake travel feedback NO/NC is incorrect. • The brake travel feedback signal line is abnormal. • The brake cannot be closed or released.	• Set the MCB parameters correctly. • Ensure that the wiring is correct. • Repair the brake.	-
	391	The output of the auxiliary brake contactor 3 is inconsistent with the expansion board brake travel switch 3 feedback.			-
	501	The output of the high-voltage brake contactor is inconsistent with the feedback state.	• The high-voltage brake contactor is damaged and cannot close or open normally. • The high-voltage brake contactor feedback signal NO/NC is incorrect. • The feedback signal line of the high-voltage brake contactor is abnormal. • The contact of the high-voltage brake contactor is stuck. • The MCB relay is damaged and cannot close or open normally.	• Replace the contactor • Set the MCB parameters correctly. • Ensure that the wiring is correct. • Replace the contactor • Replace the MCB or expansion board.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err38 Rotary encoder feedback signal abnormal	101	The pulse signal does not change during operation.	• The rotary encoder is abnormal. • The brake is abnormal.	• Encoder Replacement • Repair the brake.	5A
	102	The pulse signal change and running direction are opposite as the elevator runs down.	• The rotary encoder is wired incorrectly. • The UVW phase sequence of the motor is incorrect.	• Ensure that the encoder is wired correctly. • Adjust the motor phase sequence.	5A
	103	The pulse signal change and running direction are opposite as the elevator runs up.			5A
	104	The control mode is incorrect.	The control mode is set incorrectly.	Set F0-00 to 1.	5A
	105	The running direction is opposite to the way the limit switches act as the elevator runs up.	• The up limit switch wiring is incorrect. • The up limit switch NO/NC is incorrect. • The running direction is incorrect.	• Ensure that the up limit switch is wired correctly. • Set the up limit switch NO/NC correctly. • Adjust the running direction of F2-10.	5A
	106	The running direction is opposite to the way the limit switches act as the elevator runs down.	• The down limit switch wiring is incorrect. • The down limit switch NO/NC is incorrect. • The running direction is incorrect.	• Ensure that the down limit switch is wired correctly. • Set the down limit switch NO/NC correctly. • Adjust the running direction of F2-10.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err39 Motor overtemperature	101	Motor overtemperature	• The signal NO/NC is set incorrectly • The thermal protection relay is abnormal. • The motor is abnormal, or the motor is damaged. • The cooling conditions of the motor are poor.	• Set the signal NO/NC correctly. • Replace the thermal protection relay. • Repair or replace the motor. • Improve the cooling conditions of the motor.	3A
	102	Front door operator overtemperature			3A
	103	Rear door operator overtemperature			3A
Err40	101	Running time limit	The running time limit is enabled.	Contact the agent or manufacturer.	4B
Err41 Safety circuit fault	101	The safety circuit signal is disconnected	Only the high-voltage safety circuit is considered here as it is most often used: • The safety switch acts and the safety circuit is disconnected. • The emergency stop or inspection/EEO (emergency electrical operation) is active. • The safety circuit power supply is abnormal. • The safety circuit and MCB wiring is abnormal. • The MCB hardware is damaged.	• Reset the safety switch. • Reset the emergency stop, inspection, and EEO switch. • Repair the safety circuit power supply. • Repair the wiring between the safety circuit and the MCB. • Replace the MCB.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err42 The door lock disconnected during running	101	The door lock feedback signal is inactive during elevator running.	The door lock feedback signal is inactive during elevator running.	• Check whether the landing door lock and car door lock are connected correctly. • Check whether the door lock has intermittent break. • Check the door lock voltage.	5A
	102	The fault 2 is reported and door lock feedback signal is inactive during elevator running.	The fault 2 is reported and door lock feedback signal is inactive during elevator running.		5A
	103	The “safe” signal is disconnected during elevator running.	The “safe” signal is disconnected during elevator running.		5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err42 The door lock disconnected during running	104	The fault 2 is reported and the system judges whether the door lock is disconnected within 1 s during elevator running.	The fault 2 is reported and the system judges whether the door lock is disconnected within 1 s during elevator running.	• Check whether the landing door lock and car door lock are connected correctly. • Check whether the door lock has intermittent break. • Check the door lock voltage.	5A
	105	The voltage of the energized door lock circuit is lower than 75 V and higher than 28 V.	• The door lock circuit input voltage is abnormal. • The board is abnormal.	• Adjust the input voltage of the door lock circuit. • If the board is damaged, replace it.	5A
	106	The voltage of the energized door lock circuit is higher than 150 V.			5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err43 Up limit signal abnormal	101	The up limit signal is active when the elevator moves up.	Check the limit signal operation. • The limit signal feature (NO/NC) is abnormal. • The limit switch is abnormal. • The position of the limit switch is not suitable.	• Adjust the signal feature (NO/NC) of the up limit signal through the parameter. • Replace the up limit switch. • Adjust the position of the up limit switch to ensure that the switch does not operate as the elevator runs normally to the terminal floor.	4A
	102	In the inspection state, the up button and up limit switch are active at the same time.	Check the limit signal operation. • The elevator cannot move up. • The limit signal feature (NO/NC) is abnormal. • The limit switch is abnormal.	• Release the up button and the elevator cannot continue running up. • Adjust the signal feature (NO/NC) of the up limit signal through the parameter. • Replace the up limit switch.	4A
	103	The down limit switch is active when the elevator moves down.	The down limit switch is active when the elevator moves down.	Adjust the position of the down limit switch.	-
	104	In the inspection state, the down button and down limit switch are active at the same time.	In the inspection state, the down button and down limit switch are active at the same time.	-	-
	105	Up and down limit switches are active at the same time.	Up and down limit switches are active at the same time.	• Check the signal feature (NO/NC) of the up/down limit switch. • Adjust the position of the up/down limit switch.	-
	201	In synchronous braking mode, the up limit signal is active.	Check the limit signal operation.	-	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err44 Down limit signal abnormal	101	The down limit signal is active when the elevator moves down.	Check the limit signal operation. • The limit signal feature (NO/NC) is abnormal. • The limit switch is abnormal. • The position of the limit switch is not suitable.	• Adjust the signal feature (NO/NC) of the down limit signal through the parameter. • Replace the down limit switch. • Adjust the position of the down limit switch to ensure that the switch does not operate as the elevator runs normally to the terminal floor.	4A
	102	In the inspection state, the down button and down limit switch are active at the same time.	Check the limit signal operation. • The elevator cannot move down. • The limit signal feature (NO/NC) is abnormal. • The limit switch is abnormal.	• Release the down button and the elevator cannot continue running down. • Adjust the signal feature (NO/NC) of the down limit signal through the parameter. • Replace the down limit switch.	4A
	201	In synchronous braking mode, the down limit signal is active.	Check the limit signal operation.	-	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err45 Slow-down switch abnormal	101	The down slow-down distance insufficient during shaft auto-tuning	Check the slow-down switch action position. • The elevator cannot move down. • The signal feature (NO/NC) of the slow-down signal is abnormal. • The slow-down switch is abnormal. • The position of the slow-down switch is not suitable.	• Adjust the signal feature (NO/NC) of the down slow-down signal through the parameter. • Replace the down slow-down switch. • Adjust the down slow-down switch position or change the elevator speed.	4B
	102	The up slow-down distance insufficient during shaft auto-tuning	Check the slow-down switch action position. • The signal feature (NO/NC) of the slow-down signal is abnormal. • The slow-down switch is abnormal. • The position of the slow-down switch is not suitable.	• Adjust the signal feature (NO/NC) of the up slow-down signal through the parameter. • Replace the up slow-down switch. • Adjust the up slow-down switch position or change the elevator speed.	4B
	103	The slow-down switches 1, 2, and 3 operates outside ±40 cm of the correct position.	Check the slow-down switch action position. • The signal feature (NO/NC) of the slow-down signal is abnormal. • The slow-down switch is abnormal.	• Adjust the signal feature (NO/NC) of the up slow-down signal through the parameter. • Replace the up and down slow-down switches.	4B
	104	For the super high-speed elevator, the running speed is greater than the maximum when reaching the up slow-down switch 1 position.	Check the slow-down switch action position.	-	4B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err45 Slow-down switch abnormal	105	For the super high-speed elevator, the running speed is greater than the maximum when reaching the down slow-down switch 1 position.	Check the slow-down switch action position.	-	4B
	106	The up and down slow-down switches 2 are connected inversely during shaft auto-tuning.	Check the slow-down switch action position. • The signal feature (NO/NC) of the slow-down signal is abnormal. • The slow-down switch is abnormal.	• Adjust the signal feature (NO/NC) of the up and down slow-down signal 2 through the parameter. • Replace the up and down slow-down switch 2.	4B
	107	The up and down slow-down switches 3 are connected inversely during shaft auto-tuning.	Check the slow-down switch action position. • The signal feature (NO/NC) of the slow-down signal is abnormal. • The slow-down switch connection is abnormal.	• Adjust the signal feature (NO/NC) of the up and down slow-down signal 3 through the parameter. • Replace the up and down slow-down switch 3.	4B
	108	The up slow-down switch 1 position not obtained during shaft auto-tuning.	The up slow-down switch 1 position not obtained when shaft auto-tuning is completed.	• Adjust the signal feature (NO/NC) of the up slow-down signal 1 through the parameter. • Replace the up slow-down switch 1. • Adjust the up slow-down switch 1 position.	4B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err45 Slow-down switch abnormal	201 to 204	Up slow-down signal is abnormal in elevator down running.	Check the slow-down switch action position.	-	4B
		Down slow-down signal is abnormal in elevator up running.			
		Up slow-down signal is abnormal at elevator stop.			
		Down slow-down signal is abnormal at elevator stop.			
	301	The slow-down signal is abnormal more than five times.			

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err46 Re-leveling abnormal	101	The up and down leveling signals are inactive during re-leveling.	-	Check the operation of the leveling signal.	2B
	102	The elevator speed is over 0.1 m/s during re-leveling.	-	The software logic is abnormal. Theoretically, it does not occur.	2B
	103	When the leveling signal is transmitted through communication, if frame 201 is not received for more than 250 ms, the pulse exceeds 2 cm.	-	Check the CTB signal.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err47 Advance door opening board fault	101	The shorting door lock circuit relay output has no feedback.	The shorting door lock circuit relay output has no feedback.	• Check whether group F5 settings correspond to the actual wiring. • Check the connection of the SCB board to ensure that the safety circuit and door lock circuit ends are energized during shorting door lock circuit relay output.	2B
	102	There is no shorting door lock circuit relay output, but feedback is received.	There is no shorting door lock circuit relay output, but feedback is received.	Check whether group F5 settings correspond to the actual wiring.	2B
	106	The shorting door lock circuit relay feedback is active before re-leveling.	The shorting door lock circuit relay feedback is active before re-leveling.	Check whether group F5 settings correspond to the actual wiring.	2B
	103	The output of the shorting door lock circuit relay lasts for 15s.	The output of the shorting door lock circuit relay lasts for 15s.	-	2B
	201	Abnormal SCB communication	The communication between the MCB and SCB is abnormal.	Re-connect the communication cable or use a multimeter to check whether the circuit is energized.	2B
	202	The manufacturer codes of the MCB and SCB board are inconsistent.	The manufacturer codes of the MCB and SCB board are inconsistent.	Update the protocol to make the protocols of the MCB and the SCB board consistent.	2B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err47 Advance door opening board fault	203	The SCB relay feedback is abnormal.	The SCB relay feedback is abnormal.	• Check whether the input voltage of 24 V, FL1, and FL2 is 24 V, and the minimum voltage must be no less than 20 V. • Check the electrical diagram for correct SCB wiring and door lock circuit wiring.	2B
	209	The MCB and SCB authentication fails.	The MCB and SCB authentication fails.	Power off and on to check whether it can be reset. Otherwise, replace the board.	2B
	210	SCB self-authentication fails.	SCB self-authentication fails.		2B
	301	The SCB self-test is abnormal.	The program self-test is abnormal.		2B
	302	The board A4/D4 identification is abnormal.	The board type identification is abnormal.		2B
	303	The up door zone signal is stuck.	FL1 up door zone signal is stuck.	Check whether the FL1 connection signal is stuck.	2B
	304	The down door zone signal is stuck.	FL2 down door zone signal is stuck.	Check whether the FL2 connection signal is stuck.	2B
	305	The output and feedback of the relay are inconsistent.	The output and feedback of KM1 relay are inconsistent.	• Check whether the input voltage of 24 V, FL1, and FL2 is 24 V, and the minimum voltage must be no less than 20 V. • If the fault is reported even when the voltage is normal, replace the board.	2B
	306		The output and feedback of KM2 relay are inconsistent.		
	307		The output and feedback of KM3 relay are inconsistent.		
	308		The output and feedback of KM4 relay are inconsistent.		
	309		The output and feedback of KM5 relay are inconsistent.		
	310		The output and feedback of KM6 relay are inconsistent.		

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err48 Door open fault	101	During the automatic running of the elevator, the door open limit signal is not received within the time threshold in Fb-06.	During the automatic running of the elevator, the door open limit signal is not received within the time threshold in Fb-06.	Check the door open limit signal operation.	5A
Err49 Door close fault	101	During the automatic running of the elevator, the door close limit signal is not received within the time threshold in Fb-08.	During the automatic running of the elevator, the door close limit signal is not received within the time threshold in Fb-08.	Check the door open limit signal operation.	5A
Err50 Consecutive loss of leveling signal	101	The up, down, and door zone leveling switches are still stuck for three consecutive floor switchovers.	The leveling switch is stuck. • The leveling signal is stuck. • The DI input circuit malfunctions. • The input set through the parameter does not match the actual wiring. • The signal feature (NO/NC) is incorrect.	Check the leveling switch input. • Replace or repair the leveling switch. • Replace the control board. • Change the electrical circuit according to the electrical diagram. • Change the signal feature (NO/NC) of the leveling signal.	3B
	102	The up, down, and door zone leveling switches do not still act for three consecutive floor switchovers.	• The leveling switch is damaged or inactive. • The DI input circuit malfunctions. • The input set through the parameter does not match the actual wiring. • The signal feature (NO/NC) is incorrect.	Check the leveling switch input. • Replace or repair the leveling switch. • Replace the control board. • Change the electrical circuit according to the electrical diagram. • Change the signal feature (NO/NC) of the leveling signal.	3B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err51 CAN communication fault	101	Communication between the integrated controller and the CTB is disconnected for more than 4s.	• The CTB is not powered on. • The CTB and MCB communication cables are disconnected. • The CTB software and MCB software protocols do not match.	• Provide stable power supply to the CTB. • Connect the communication cable between the CTB and the MCB. • Replace the CTB with one that is compatible with the protocol of the MCB.	1A
	102	The CTB and the integrated controller manufacturer codes are inconsistent.	The CTB and the integrated controller manufacturer codes are inconsistent.	Replace the CTB with one that has the same manufacturer code with the integrated controller.	1A
	103	The car display board and the integrated controller manufacturer codes are inconsistent.	The car display board and the integrated controller manufacturer codes are inconsistent.	Replace the car display board with one that has the same manufacturer code with the integrated controller.	1A
	210	The front door first COB and the integrated controller manufacturer codes are inconsistent.	The front door first COB and the integrated controller manufacturer codes are inconsistent.	Replace the front door first COB with one that has the same manufacturer code with the integrated controller.	1A
	211	The front door second COB and the integrated controller manufacturer codes are inconsistent.	The front door second COB and the integrated controller manufacturer codes are inconsistent.	Replace the front door second COB with one that has the same manufacturer code with the integrated controller.	1A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err51 CAN communication fault	212 ... 215	The front door first to fourth CCBs and the integrated controller manufacturer codes are inconsistent.	The front door first to fourth CCBs and the integrated controller manufacturer codes are inconsistent.	Replace the front door first to fourth CCBs with ones that have the same manufacturer code with the integrated controller.	-
	220	The rear door first COB and the integrated controller manufacturer codes are inconsistent.	The rear door first COB and the integrated controller manufacturer codes are inconsistent.	Replace the rear door first COB with one that has the same manufacturer code with the integrated controller.	-
	221	The rear door second COB and the integrated controller manufacturer codes are inconsistent.	The rear door second COB and the integrated controller manufacturer codes are inconsistent.	Replace the rear door second COB with one that has the same manufacturer code with the integrated controller.	-
	222 ... 225	The rear door first to fourth CCBs and the integrated controller manufacturer codes are inconsistent.	The rear door first to fourth CCBs and the integrated controller manufacturer codes are inconsistent.	Replace the rear door first to fourth CCBs with ones that have the same manufacturer code with the integrated controller.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err52 Hall call communication fault	101	All hall call display boards are disconnected.	• The 24 V power supply of the hall call display board is in poor state. • The RS485 communication cable of the display board is disconnected or has loose connections. • The addresses of the display board are all 0. • Strong communication interference exists. • For non-encrypted product, the manufacturer protocols between the display board and the integrated controller are inconsistent.	• Ensure the power supply to the hall call display board is normal. • Secure the communication cable of the hall call display board, ensuring there is no loose connection or disconnection. • Set the correct address for the hall call display board based on the floor. • Route power cables (high voltage) and signal cables (low voltage) separately to avoid interference. • Replace the hall call display board with a product that matches the manufacturer protocol of the integrated controller.	1A
	201 ... 248	The front door display boards (floors 1 to 48) and the integrated controller manufacturer codes are inconsistent.	The front door display boards (floors 1 to 48) and the integrated controller manufacturer codes are inconsistent.	Replace the front door display boards (floors 1 to 48) with ones that have compatible manufacturer code with the integrated controller.	1A
	301 ... 348	The rear door display boards (floors 1 to 48) and the integrated controller manufacturer codes are inconsistent.	The rear door display boards (floors 1 to 48) and the integrated controller manufacturer codes are inconsistent.	Replace the rear door display boards (floors 1 to 48) with ones that have compatible manufacturer code with the integrated controller.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err53 Door lock fault	101	The door lock circuit end remains active.	The door lock circuit is shorted.	Ensure that the door lock circuit end is inactive.	5A
	102	The high-voltage and low-voltage door lock multiplexed signals are inconsistent.	The door lock feedback parameter is set incorrectly.	-	5A
	104	The high and low-voltage door lock input is inconsistent.	• The high and low-voltage terminal parameters are set incorrectly. • The terminal cable is not connected properly.	-	5A
	105	The front door lock is shorted.	The front door lock is shorted.	-	5A
	106	The rear door lock is shorted.	The rear door lock is shorted.	-	5A
	107	The door lock shorting detection is abnormal.	When the door lock circuit end is active, the door lock shorting 1 or door lock shorting 2 detection point is inactive for 1s.	-	5A
	201	AB/BC shorting	AB/BC shorting, indicating that the front car door or landing door is shorted	-	5A
	202	BE shorting	BE shorting, indicating that 131 and 134 are shorted	-	5A
	203	AD shorting	AD shorting, indicating that 130 and 133 are shorted	-	5A
	204	DE shorting	DE shorting, indicating that 133 and 134 are shorted	-	5A
	205	BC shorting	BC shorting, indicating that 131 and 132 are shorted	-	5A
	206	CD/DE shorting	CD/DE shorting, indicating that the rear landing door or rear car door is shorted	-	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err53 Door lock fault	207	CE/AE shorting	CE/AE shorting, indicating that 132 and 134 or 130 and 134 are shorted	-	5A
	208	BD shorting	BD shorting, indicating that 132 and 133 are shorted	-	5A
	209	KM3 cannot be disconnected due to a stuck fault.	KM3 cannot be disconnected due to a stuck fault.	-	5A
	210	AC/AE shorting	AC/AE shorting, indicating that 130 and 132 or 130 and 134 are shorted	-	5A
	211	AE shorting	AE shorting, indicating that 130 and 134 are shorted	-	5A
	212	KM3 is stuck.	KM3 cannot be closed due to a stuck fault.	-	5A
Err54 Overcurrent at inspection startup	102	Overcurrent at inspection startup	• The brake does not release normally. • Mechanical blocking occurs. • The car counterweight is heavy.	No	5A
Err55 Landing fault	101	Landing fault	• The door open limit signal at the current floor is abnormal. • CAN communication is abnormal.	• Check the door open limit signal at the present floor. • Check whether the CAN communication is abnormal during door open.	1A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err56 Door open/ close limit signal fault	101	The door open limit is abnormal during running.	• The signal feature (NO/NC) of door open limit F5-25 is abnormal. • The door open limit signal wiring is abnormal. • CAN communication is abnormal.	• Check the setting of F5-25. • Check the door open/close limit wiring.	5A
	102	The door close limit is abnormal during operation.	• The signal feature (NO/NC) of door close limit F5-25 is abnormal. • The door close limit signal wiring is abnormal. • CAN communication is abnormal.		5A
	103	The door open limit signal and door close limit signal are active simultane ously	• The signal feature (NO/NC) of door open/close limit F5-25 is abnormal. • The door open/close limit signal wiring is abnormal. • CAN communication is abnormal.		5A
	104	The door close limit signal is abnormal after door open.	• The signal feature (NO/NC) of door open/close limit F5-25 is abnormal. • The door open/close limit signal wiring is abnormal. • CAN communication is abnormal.		5A
	105	The door open/close limit signal auto-tuning is abnormal.	• The signal feature (NO/NC) of door open/close limit F5-25 is abnormal. • The door open/close limit signal wiring is abnormal.	• Set the door open/close limit wiring correctly. • Set the signal feature (NO/NC) of door open/close limit correctly.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err57 SPI communication fault	101	The communication is abnormal between the control board and the DSP board of the drive unit.	The wiring is abnormal between the control board and the DSP board of the drive unit.	Re-connect the wiring between the control board and the DSP.	5A
	102	The communication is abnormal between the control board and the DSP board of the drive unit.	The wiring is abnormal between the control board and the DSP board of the drive unit.	Re-connect the wiring between the control board and the DSP.	5A
	103	The manufacturer codes of the control board and the DSP are inconsistent.	The manufacturer codes of the control board and the DSP are inconsistent.	Replace the DSP device with one that has compatible manufacturer code with the control board.	5A
	104	Weton communication-type encoder communication error	• The wiring of the communication-type encoder is abnormal. • The system grounding is abnormal.	• Check the encoder wiring. • Check the grounding of the whole system.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err57 SPI communication fault	105	Weton communication-type encoder communication error	• The wiring of the communication-type encoder is abnormal. • The system grounding is abnormal. • Encoder abnormal	• Check the encoder wiring. • Check the grounding of the whole system. • Encoder Replacement	5A
	204	The DSP does not support electronic shorting of motor stator.	The DSP does not support the electronic shorting motor stator function.	Upgrade the drive software or choose the shorting stator braking mode.	5A
	205	Driver board does not support the shorting motor stator pulse test	Driver board software does not support the shorting motor stator pulse test	• Disable the electronic shorting motor stator function and turn the power off and on again. • Modify the DSP program to a version that supports the electronic shorting motor stator function.	5A
Err58 Shaft position switches abnormal	101	Up and down slow-down switches 1 active simultaneously	• The signal feature (NO/NC) of the slow-down switch is inconsistent with the actual electrical setting. • The slow-down switch malfunctions.	• Check whether the signal feature (NO/NC) of the slow-down switches is consistent with the MCB parameters. • Check whether the slow-down switches malfunction.	4B
	102	The feedback of both up and down limit switches active			4B
Err59 Quiescent current fault	101	The output current is abnormal during stop.	• F6-51 is set improperly. • AC drive fault	• Modify the F6-51 limit. • Replace the AC drive.	3A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err60 Door operator fault	200	-	Door operator fault	Check the door operator.	-
	250	-	Front door operator and encrypted MCB manufacturer codes are inconsistent.	Contact the agent or manufacturer.	3B
	251	-	Front door operator and encrypted MCB authentication fails.	Contact the agent or manufacturer.	3B
	252	-	Front door operator self-authentication fails.	Contact the agent or manufacturer.	3B
	300	-	Door operator 2 fault	Check the door operator.	-
	350	-	Rear door operator and encrypted MCB manufacturer codes are inconsistent.	Contact the agent or manufacturer.	3B
	351	-	Rear door operator and encrypted MCB authentication fails.	Contact the agent or manufacturer.	3B
	352	-	Rear door operator self-authentication fails.	Contact the agent or manufacturer.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err61 Communication-type brake power supply fault	101	Brake power supply and MCB communication error	-	-	3A
	102	MCB and brake power supply board manufacturer codes inconsistent	-	-	3A
	110	Brake power supply board BUCK1 output inconsistent with the feedback	-	-	3A
	111	Brake power supply board BUCK2 output inconsistent with the feedback	-	-	3A
	121	communication-type brake power supply 2 and MCB communication error	-	-	3A
	141	The brake startup high voltage and sustaining voltage of the two brake power supply boards are inconsistent.	-	-	3A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err61 Communication-type brake power supply fault	201	Brake power supply board and encrypted MCB manufacturer codes inconsistent	-	-	3A
	202	System and brake power supply encryption authentication fails.	-	-	3A
	203	Brake power supply board self-authentication fails.	-	-	3A
	301 ... 318	Brake power supply board 1 fault	-	-	3A
	319	The CAN cable connected to the integrated controller is disconnected	-	Check the CAN communication between the brake power supply board and the integrated controller	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err61 Communication-type brake power supply fault	320	-	-	Check whether the system 24 V is short-circuited	3A
	321	Brake power supply board 1 IGBT is damaged	-	Check whether there is resistance between J3 terminals BK1+ and BK1-. The resistance indicates that the IGBT is damaged and you need to replace the power supply board	3A
	322	Brake power supply board 1 self-authentication fails.	-	Contact the manufacturer.	3A
	323	The output terminals of the brake power supply board 1 are short-circuited to PE	-	Check whether the J3 terminals BK1+, BK1-, BK2+, and BK2- of the power supply board 1 are short-circuited to PE. When short circuit occurs, B1-08 bit14 is 1.	3A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err61 Communication-type brake power supply fault	401	Brake power supply board 2 fault	Brake 1 is short-circuited or the current is too high or the brake power is too high.	-	3A
	402	Brake power supply board 2 fault	Brake 2 is short-circuited or the current is too high or the brake power is too high.	-	3A
	403	Brake power supply board 2 fault	The bus voltage input is too high.	Check the bus input circuit.	3A
	404	Brake power supply board 2 fault	The bus voltage input is too low.	Check the bus input circuit.	3A
	405	Brake power supply board 2 fault	Inrush of external voltage into the brake 1 output port.	No	3A
	406	Brake power supply board 2 fault	Inrush of external voltage into the brake 2 output port.	No	3A
	407	Brake power supply board 2 fault	The power of brake 1 is too high.	Use the dual power supply boards solution.	3A
	408	Brake power supply board 2 fault	The power of brake 2 is too high.	Use the dual power supply boards solution.	3A
	410	Brake power supply board 2 fault	The brake power supply board temperature is too high.	Reduce the power supply board temperature.	-
	413	Brake power supply board 2 fault	The brake power supply board temperature is too high.	Reduce the power supply board temperature.	-
	414	Brake power supply board 2 fault	The bus voltage input is too low.	Check the bus input circuit.	3A
	418	Brake power supply board 2 fault	No	Reduce the system load.	3A
	417 to 423	Brake power supply board 2 fault	-	-	3A
Err62 Analog disconnection	101	Analog disconnection	Analog load cell disconnected	• Check the setting of F5-36 (Load cell input selection). • Check whether the analog input cable of the CTB or MCB is connected incorrectly or broken. • Adjust the load cell switch function.	3B

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err64 External Faults	101	The external fault signal remaining active for 2s	• Check the signal feature (NO/NC) setting of the external fault terminal. • Check the input signal state of the external fault terminal.	Auto reset after inactive external fault signal	5A
Err65 UCMP test fault	101	This fault reported when the car moves unexpectedly	During UCMP test, the car moves unexpectedly.	• Check whether the brake is fully closed and ensure that the car does not move unexpectedly. • Check the gap between the door vane and door roller and ensure no contact between them during operation.	5A
Err66 Braking force abnormal	101	Braking force insufficient	Braking force insufficient	Adjust the brake.	5A
	110	The right brake arm force insufficient in braking force test			5A
	111	The left brake arm force insufficient in braking force test			5A
	201	After the braking force fails, the system activates the parking function, and E66 is reported at stop.	After the braking force fails, the system activates the parking function, and E66 is reported at stop.		5A
	102	The braking force test is continuously abnormal.	Multiple braking force test failures occur.		-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err67 Communication-type AFE fault	201	AFE1 communication disconnection.	• The AFE1 communication cable is disconnected. • The AFE1 device is abnormal.	• Connect the AFE1 communication cable properly. • Troubleshoot the AFE1 fault.	5A
	202	AFE2 communication disconnection.			5A
	1 to 23	AFE device fault	Refer to the corresponding AFE fault manual.	Refer to the corresponding AFE fault manual.	5A
Err68 Rope gripper fault	101	The rope gripper feedback (DI: 88/120) is active for 1s.	• The rope gripper feedback signal is active. • The NO (88)/NC (120) setting of the rope gripper feedback signal is incorrect.	• Check the cause of the abnormal rope gripper feedback and handle it accordingly • Set the signal feature (NO/NC) according to the actual state.	5A
Err69 Communication-type ARD fault	1 to 28	ARD device fault	Refer to the corresponding ARD fault manual.	Refer to the corresponding ARD fault manual.	1A
	101	The manufacturer codes of the communication-type ARD and MCB are inconsistent.	The manufacturer codes of the ARD and MCB are inconsistent.	If it is inconsistent, replace the device to ensure consistency.	1A
	102	ARD and MCB contract No. inconsistency.	ARD and MCB contract No. inconsistency.	If it is inconsistent, replace the device to ensure consistency.	1A
Err74 STO fault	1	STO feedback abnormal	Hardware STO error	Check the STO card and replace if necessary.	5A
	2	The “safe” signal is abnormal during running.	During operation, the safety circuit is disconnected.	• Set F1-24 to 32768 for shielding “safe” signal detection. • Check the door lock and safety circuit.	5A

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err79 Permission authentication failure	1	Encrypted driver board and the MCB authentication fails.	The driver board is incompatible with the MCB.	Replace with a new encrypted driver board and MCB.	5A
	2	Self-authentication failure	Driver board self-authentication fails.	Hardware does not match the programmed software. The encrypted hardware goes with the encrypted software.	5A
	3	Driver board authentication with MCB fails.	Driver board authentication 2 with MCB failed	• Check whether the hardware is encrypted. • Check whether the driver board and MCB software is encrypted. • Check whether the driver board and MCB have keys processed through programming.	5A
	101	The control board self-authentication fails.	The MCB Flash is maliciously erased.	Return to the factory for maintenance.	5A
	102	The control board and driver board authentication fails.	The driver board is a non-encrypted device without a key.	Replace with an encrypted driver board.	5A
	105	Software object layer module self-authentication fails.	The software programming file is abnormal.	Program the genuine software.	5A
	106	Software physical layer module self-authentication fails.	The software programming file is abnormal.	Program the genuine software.	5A
	107	Software downgrade incompatibility	The software programming version is low and incompatible with the device.	Upgrade the program to the factory version or a higher version than the factory version.	5A
Err90 Alarms	652	24 V power supply input inactive	The low-voltage DI input X terminal on the MCB does not receive the 24 V input.	Check the MCB low-voltage input circuit.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err91 Landing at nearest floor fault	611	Pulse detection failure for integrated shorting motor stator contactor.	• The electrical wiring of the integrated shorting motor stator contactor input is incorrect. • The configuration of the integrated shorting motor stator contactor in Group F5 is incorrect.	• Check whether the pulse input of the integrated shorting motor stator contactor is abnormal. • Check whether the integrated shorting motor stator contactor parameters (output and feedback) in group F5 are normal.	3B
	612	Failure in matching the integrated shorting motor stator contactor and unit model power.	The model FF-01 matching fails.	• Modify FF-01. • Replace with the integrated shorting motor stator contactor of higher power (rated parameter greater than FF-01).	3B
	615	AC drive overtemperature early warning	• The AC drive fan is damaged. • The AC drive is damaged • The continuous running time is too long.	• Replace the AC drive. • Contact the manufacturer for maintenance. • Stop running and allow it to cool down.	-
Err92 Deceleration to stop fault	664	-	The reset is not performed after the inspection switch is activated.	After the pit inspection is completed, set the pit inspection switch to normal. Then press and hold the pit reset button.	4B
	665	-	• The door close limit wiring is incorrect. • The signal feature (NO/NC) in group F5 is incorrect.	• Connect according to the electrical diagram. • Modify the signal feature (NO/NC) in group F5.	4B
	608	-	When L0-05 is set for the test and the elevator running speed exceeds the rated speed, the fault is reported.	Manual reset	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err89 Communication-type encoder fault	101	The PG card and the encoder communication is abnormal.	• The encoder connected is not a communication-type encoder. • The communication-type encoder and PG card cable is abnormal. • The communication-type encoder and PG card wiring is abnormal. • The PG card hardware is damaged. • The communication-type encoder is damaged. • Communication interference between the communication-type encoder and the PG card occurs.	• Replace with a communication-type encoder. • Replace the cable between the encoder and PG card. • Ensure the encoder and PG card wiring terminals are connected tightly. • PG card Replacement • Replace the communication-type encoder. • Add the magnetic ring for the cable between the communication-type encoder and PG card.	-
	102	The communication between the MCB and PG card is abnormal.	• The PG card connected is not model PG-F2. • The PG card becomes loose. • The PG card hardware is damaged. • The PG card terminal of the MCB is damaged.	• PG card Replacement • Re-connect the PG card. • PG card Replacement • Replace the MCB.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err89 Communication-type encoder fault	103	Manufacturer code fault.	• The system uses a standard protocol, the MCB uses the standard protocol, but the encoder uses a non-standard protocol. • The system requires a manufacturer protocol, the encoder has a manufacturer protocol, but the MCB protocol has not been modified. • The system requires a manufacturer protocol, the MCB has a manufacturer protocol, but the manufacturer code verification function is not enabled. The encoder has a manufacturer protocol inconsistent with the MCB. • The system requires a manufacturer protocol, the MCB has a manufacturer protocol, and the manufacturer code verification function is enabled. The encoder has no manufacturer code or has one inconsistent with the MCB manufacturer code.	• Replace the encoder with one that uses a standard protocol. • Modify the MCB to the correct manufacturer protocol. • Replace the encoder with one that uses a standard protocol, or replace it with an encoder that uses the same protocol as the MCB. • Replace the encoder with one that uses the same protocol as the MCB.	-
Err89 Communication-type encoder fault	104	Contract No. fault	• The MCB is replaced on-site and the contract numbers of the new and old MCB do not match. • The encoder is replaced on-site and the contract numbers of the new and old encoders do not match. • For the new system on-site, the contract numbers of the MCB and encoder do not match.	• If the contract number verification function is required on-site, modify the MCB contract number to the required value, and set F8-18 to 5 to redistribute the contract number. • If the contract number verification function is not required on-site, set F6-55 bit13 to 0.	-
	105	Parameter read/write timeout.	The communication-type encoder is abnormal.	Replace the communication-type encoder.	-
	201 . . . 206	The encoder itself is defective or abnormal.	The encoder itself is defective or abnormal.	Replace the communication-type encoder.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err94 Permission authentication failure	103	CTB encryption authentication fails.	CTB encryption authentication fails.	Replace with the encrypted CTB.	1A
	104	Car display board authentication fails.	• Car display board authentication fails. • Address 0 is not among the car display board addresses.	• Replace with the encrypted car display board. • Set 0 as the address for one car display board.	1A
	107	CTB self-authentication fails.	CTB self-authentication fails.	Replace with the encrypted CTB.	1A
	201 ... 248	Front door hall call display board (floors 1 to 48) authentication fails.	Front door hall call display board (floors 1 to 48) authentication fails.	• Set the address of the hall call display board (floors 1 to 48) correctly. • Replace with the encrypted display board.	1A
	301 ... 348	Rear door hall call display board (floors 1 to 48) authentication fails.	Rear door hall call display board (floors 1 to 48) authentication fails.	• Set the address of the hall call display board (floors 1 to 48) correctly. • Replace with the encrypted display board.	-
	401	MCB and CCB authentication fails.	MCB and CCB authentication fails. Note: 410 is the first front door COB, 412 the first front door CCB, 420 the first rear door COB and 422 the first rear door CCB.	• Check whether the COB is encrypted. • Check whether the COB has a key processed correctly through programming. • Check whether the COB address is set correctly.	-
	410	Front door first COB authentication fails.	Front door first COB authentication fails.	• Correct the DIP switch settings of the front door first COB. • Replace with the encrypted COB.	-
	411	Front door second COB authentication fails.	Front door second COB authentication fails.	• Correct the DIP switch settings of the front door second COB. • Replace with the encrypted COB.	-

Fault code	Fault Sub code	Subcode name	Cause	Solution	Fault Level
Err94 Permission authentication failure	412 ... 415	Front door first to fourth CCB authentication fails.	Front door first to fourth CCB authentication fails.	• Correct the DIP switch settings of the front door first to fourth CCBs. • Replace with the encrypted CCBs.	-
	420	Rear door first COB authentication fails.	Rear door first COB authentication fails.	• Correct the DIP switch settings of the rear door first COB. • Replace with the encrypted COB.	-
	421	Rear door second COB authentication fails.	Rear door second COB authentication fails.	• Correct the DIP switch settings of the rear door second COB. • Replace with the encrypted COB.	-
	422 ... 425	Rear door first to fourth CCB authentication fails.	Rear door first to fourth CCB authentication fails.	• Correct the DIP switch settings of the rear door first to fourth CCBs. • Replace with the encrypted CCBs.	-

28 Service and Support

Should you encounter a safety accident during the use or operation of the product, or face challenges in operating and maintaining the equipment, which remain unresolved after the relevant documentation is consulted, we provide multiple channels to ensure prompt resolution:

- Channel #1: Contact service@inovance.com.
- Channel #2: Visit https://www.inovance.com/global to access document downloads, after-sales support, spare parts ordering, repair applications, and authenticity verification services.
- Channel #3: Download My Inovance app (https://zshc-eu.inovance.com/download-pc/) where you can access products info and documentation, and query product parameters.

We are committed to providing you with quick and professional technical support, and we look forward to your satisfaction and trust.

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