V&T
蓝海华腾

# USER'S MANUAL

## AIEC3300 Series Elevator Integrated Controller

# Foreword

Thank you for purchasing the AIEC series elevator integrated controller produced by SHENZHEN V&T TECHNOLOGIES CO.,LTD.

AIEC series elevator controller support multiple motor control modes and encoder types, integrate advanced communication protocol, greatly improve the efficiency of elevator operation.

AIEC series elevator controller support supports parallel/group control and provides multiple scheduling algorithms to meet the different requirements for customers.

AIEC series elevator controller is divided into the following models:

AIEC1000/1300: Special integrated controller for freight elevator.

AIEC2000/2300: Special integrated controller for escalator.

AIEC3000/3300: Special integrated controller for passenger elevator.

This manual describes the correct use of the AIEC series elevator controller, including model selection, installation, parameters setting , commissioning , and troubleshooting guide. In order to use this product correctly, please read and understand this manual carefully before using the product. If you have any questions, please contact our technician for help. Please keep this manual carefully for reference to future maintenance.

Due to continuous improvement of products, the information provided by the companyis subject to change without notice.

# Introduction

## 1、List of basic functions

| Function | Description | Remarks |
|---|---|---|
| Common Running Functions | | |
| Full collective selective | In automatic running or attendant state, this function enables the elevator to respond both car calls and hall calls. Passengers at any service floor can call the elevator by pressing the up call button and down call button. | FE−00 "Collective selective mode" |
| Up collective selective control function | In automatic running or attendant state, the elevator responds only to hall up calls besides car calls. | – |
| Down collective selective control function | In automatic running or attendant state, the elevator responds only to hall down calls besides car calls. | – |
| Service floor function | The standard program supports 40 floors. The service of more than 40 floors is supported by the customized program. | – |
| Service floor setting function | User can enable or disable the system service for certain floors flexibly based on actual requirements. | F6−05/06/35 |
| Door machine service floor setting function | User can set the required service floors of the door machines. | FB−02/03/04/05 FB−18/19 |
| Door open time setting function | The system automatically determines different door open time for door open for call, command, protection, or delay according to the set door open holding time. | Set in group FB |
| Door open holding function | The elevator runs automatically ,passengers can press the door open holding button in the car to keep door open to facilitate goods to be moved in or out. | FB−14 "Door open holding time" |
| Door pre−close by the door close button function | During door open holding in automatic running state, passengers can press the door close button to close the door in advance, which shorten the waiting time for closing the door and improves the efficiency. | – |
| Repeat door Close function | If the door lock is not applied after the elevator performs door close for a certain time, the elevator automatically opens the door and then closes the door again. | FB−08 "Door close protection time" |
| Forced door Close function | When the door fails to close within the set time due to the action of the lightcurtain or safety edge, the elevator enters the forced door close state, closes the door slowly, and gives a prompt tone. | – |
| Automatic door open upon door lock abnormality | If the system detects that the door lock circuit is abnormal during door open/close, the elevator automatically opens and closes the door again, and reports a fault after the set door open/close times is reached. | FB−09 "Door open/close times" |
| Light curtain signal judgment function | If the door is blocked by stuff during thedoor of the elevatorclose, the light curtain acts and the elevator opens the door. This function is invalid in fire emergency state. | – |
| Floor number displaysetting | The system supports display of floor numbers in combinations of numbers and letters, which meets the requirements of special conditions. | Set in group FE |

| Function | Description | Remarks |
|---|---|---|
| Auxiliary operation box function | An optional auxiliary operation box that has the same functions as the main operation box is available. | – |
| Independent Command function | When the main and auxiliary operation boxes are configured, the auxiliary operation box can be set to the back door command or disability command input. The system can distinguishing response the command of main and auxiliary operation boxes, so the door switches can be control independently. | – |
| Independent Running function | The elevator does not respond to any call, and the door needs to be closed manually. The elevator runs independently out of the group control system. | Signal input: CCB JP23 |
| Attendant operation function | In attendant state, the running of the elevator is controlled by the attendant. | Signal input: CCB JP21 |
| Voice announcement function | The elevator automatically announces information such as the running direction and next arriving floor during running. | |
| Response at acceleration function | The system allows to automatically respond to calls from the service floors during the elevator acceleration. | – |
| Idle elevator returning to base floor function | During the automatic operation of the elevator ,the elevator automatically returns to the setparking floor and waits for passengers if there is no car call or hall call within the set time. | F9−00“Idle time before returning to base floor"" |
| Landing at another floor function | If the door open time exceeds the door open protection time but the door open limit signal is still inactive, the elevator closes the door and thenautomatically runs to the next landing floor; the system reports fault Err55. | – |
| Cancellation of wrong calls function | For car calls, passengers can press the button three seconds to cancel wrong calls. | – |
| Low−speed self−rescue function | When the elevator is in non−inspection state and stops at non−leveling area, the elevator automatically runs to the leveling area at low speed if the safety requirements are met, and then opens the door. | – |
| Car arrival gong function | After the elevator arrives at the destination floor, the CTB gives a prompt tone. | – |
| Hall arrival forecast indicator function | When the elevator will arrive at the destination floor soon, the hall arrival forecast indicator becomes ON. | DCB product output |
| Hall arrival gong function | When the elevator will arrive at the destination floor soon, the hall arrival gong becomes ON. | DCB product output |
| Hall I/O extension function | If the hall I/O terminals are not sufficient, more terminals can be provided by using AIEC−KZ−G1. | – |
| Car I/O extension function | If the car I/O terminals are not sufficient, more terminals can be provided by using AIEC−KZ−G1. | – |
| Button stuck check function | The system can automatically identify whether a hall call button is stuck and cancel the stuck call, preventing the condition that the elevator cannot close and run due to stuck hall calls. | Bit4 of FE−32 |
| Automatic startup torque compensation function | The system automatically implements startup torque compensation based on the current car load, achieving smooth startup and improving the riding comfort. | F8−01 "Pre−torque selection" |

| Function | Description | Remarks |
|---|---|---|
| Direct travel ride function | The system automatically calculates and generates the running curves based on the distance, enabling the elevator to directly stop at the leveling position without creeping. | – |
| Automatic generation of optimum curve function | The system automatically calculates the optimum speed curve compliant with the human−machine function principle based on the distance, without being limited by the number of curves or short floor. | – |
| Running times recording function | In automatic running state, the system automatically records the running times of the elevator. | Recorded in F9−11/12 |
| Running time recording function | The system automatically records the accumulative working hours and working days of the elevator. | Recorded in F9−09 |
| VIP service function | The elevator first directly runs to the VIP floor and provides services for special persons. | – |
| Disability service function | When the elevator is waiting at the leveling position, if there is a call at this floor from the disability operation box, the door open holding time is prolonged. It is the same for the back door. | FB−15 "Special door open holding time" |
| Full−load direct running function | When the car is full−loaded in automatic running state, the elevator does not respond to hall calls from the passing floors. These halls calls, however, can still be registered, and will be executed at next time of running (in the case ofsingle elevator) or by another elevator (in the case of parallel/group control). | – |
| Overload protection function | When the car load exceeds the rated elevator load (Overload condition: When the car load exceeds 110% of the rated load, the elevator enters the overloadstate), the elevator gives an alarm and stops running without door close. | – |
| Fault data recording function | The system automatically records detailed information of faults, which helpsimprove the efficiency of maintenance and repair. | Groups FC and E0 to E9 |
| Inspection−related Functions | | |
| Simple maintenance keypad function | The 3−button on−board keypad on the MCB provides the functions such as commissioning the running floors and door open/close. | – |
| Shaft auto−tuning function | Shaft auto−tuning is required before first−time automatic running. The elevator runs from the bottom floor to the top floor at the inspection speed andautomatically records all position signals in the shaft in the running process. | F1−11 "Auto−tuning mode" |
| Floor position intelligent correction | Every time the elevator runs to the terminal floor, the system automatically checks and corrects the car position information based on slow−down switch1, and eliminates over travel top terminal or bottom terminal with use of the slow−down switches. | – |
| Motor auto−tuning function | With simple parameter setting, the system can obtain the motor parametersno matter whether the motor is with−load or without load. | – |
| Inspection running function | After entering the inspection state, the system cancels automatic running and related operations. You can press the up or down call button to make the elevator jog at the inspection speed. | – |

| Function | Description | Remarks |
|---|---|---|
| Test running function | The test running includes the fatigue test of a new elevator, car call floor test,hall call test, and tests such as hall call response forbidden, door open/closeforbidden, terminal floor limit switch shielded, and overload signal shielded. | – |
| Fire Emergency and Security Functions | | |
| Returning to base floor at fire emergency function | After receiving a fire emergency signal, the elevator does not respond to any call but directly runs to the fire emergency floor and waits. | F6−03 and F8−12 "Fire emergency floor" |
| Security floor function | After the security floor function is enabled, the security floor is used at 10:00 p.m. to 6:00 a.m, and the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor. | F6−13 |
| Elevator lock function | In automatic running state, when the elevator lock switch acts or the set elevator time is reached, the elevator returns to the elevator lock floor after responding to all car calls, stops running, and turns off the lamp and fan in the car. | F6−04 "Elevator lock floor" |
| Troubleshooting based on fault level function | Faults are classified into different levels based on the severity. Different levels of faults are rectified using different methods, improving the system operation efficiency. | – |
| Passenger unloading first upon fault function | The system automatically determines the fault level. If the safety running conditions are met, the elevator first runs to the leveling position to unload passengers. | – |
| Interference degree judgment | The system judges the degree of communication interference. | Viewed in FA−24 |
| Runaway prevention function | The system detects the running state of the elevator in real time. If the elevator speed exceeds the limit, the system immediately stops running of the elevator. | – |
| Automatic identification of power failure function | The system automatically identifies power failure and outputs the relay signal for emergency evacuation automatic switchover to implement emergency evacuation at power failure. | Y6 especially used for emergency evacuation switchover |
| Base floor Verification function | After detecting a position abnormality, the system runs the elevator to each floor until reaching the terminal floor for verification, guaranteeing system security. | – |
| Independent working power supply function | The system supports not only three−phase 380 VAC but also single−phase 220 VAC to meet different applications of the power supply system . | – |
| Automatic voltage identification function | The system detects the bus voltage and automatically adjusts the running speed of the elevator to adapt to the situation of insufficient power from power supply (such as emergency UPS). | – |
| Parallel/Group Control and Other Functions | | |
| Parallel/Group control | The system supports parallel/group control of two elevators and provides multiple scheduling algorithms to meet requirements of different customers. | – |
| Dispersed waiting | In parallel/group control, the elevators can wait at different floors. | F6−09 |

| Function | Description | Remarks |
|---|---|---|
| Parallel/Group control exit | If the parallel/group control exit switch of a certain elevator in a parallel/ group control system is valid or the time for exiting the parallel/group controlis reached, the elevator exits parallel/group control and runs independently.This does not affect normal running of the parallel/group control system. | – |
| Parallel/ Group control automatic exit | If an elevator in the parallel/group control system cannot respond to calls intime due to faults, the elevator automatically exits the parallel/group control system and runs independently. This does not affect normal running of the parallel/group control system. | – |
| Anti−nuisance function | The system automatically judges the number of passengers inside the car and car call registers. If there are excessive car calls, the system determines that it is in nuisance state, and cancels all car calls. Then, car calls need to be registered again correctly. | F8−08 "Anti−nuisance function" |
| Full−load indication | When the elevator is full−loaded, a full−load indication is displayed on the HCBs and the elevator directly runs to the desired floors. | – |
| Prompt of non−door zone stop | The system gives a prompt when the elevator stops at a non−door zone area due to faults. | – |
| Energy−saving Functions | | |
| Car energy−saving | In car door open holding and door close limit state, after the set time (F9−01)passes by, the system automatically cuts off the power supply to the lamp and fan in the car. | F9−01 "Time for fan and lamp to be turned off" |
| Energy−saving running with standby power supply | When the normal power supply is interrupted and the emergency power supply is used, the system reduces the running speed of the elevator in the prerequisite of guaranteeing the smooth running curve. | – |
| Arrival gong disabled at night | Within the set time period, the arrival gong is disabled. | Bit4 of F5−33 |

## 2、Optional functions

| Function | Description | Remarks |
|---|---|---|
| Door pre−open function | In automatic running state, when the elevator speed is smaller than 0.25 m/sand the door zone signal is active, the system shorts the door lock by meansof the shorting door lock circuit relay and outputs the door open signal, implementing door pre−open. This improves the elevator use efficiency. | AIEC−SCBrequired |
| Micro−leveling | After landing at a floor, the elevator may move upward or downward due tothe load change and the car door is not aligned with the ground, which is inconvenient for passengers and goods in and out. In this case, the systemallows the elevator to run to the leveling position in the door open state at the re−leveling speed. | AIEC−SCBrequired |
| Power failure emergency evacuation | For the elevator configured with emergency power supply, the system usesthe emergency power supply to implement low−speed self−rescue in the case of power failure. | AIEC−ARD−C required |
| IC card | Passengers need to use the IC card to go to floors that require authorization. | IC card required |

## Safety Precautions

Description of safety labels

DANGER: Indicates that misuse will result in fire, server personal injuries or even death.

CAUTION: Indicates that misuse will result in moderate personal injuries or damage the equipment.

### ■ Use

| **DANGER** |
| --- |
| ● This product is not designed for equipment used in life−threatening situations.<br>● This productcannot be simply used in the applications directly related to the human safety, such as medical equipment.<br>● This product is produced under strict quality management system. If the product failure may cause severe accident or loss, safety measures, such as redundancy or bypass, shall be taken. |

### ■ Goods Arrival Inspection

| **CAUTION** |
| --- |
| ● If the integrated controller is found damaged or have missing parts, the integrated controller cannot be installed. Otherwise, accident may be caused. |

### ■ Installation

| **CAUTION** |
| --- |
| ● When handling and installing the product, please hold the product bottom. Do not hold the enclosure only. Otherwise, your feet may be injured and the integrated controller may be damaged because of dropping.<br>● The integrated controller shall be mounted on the fire retardant surface, such as metal, and kept far away from the inflammables and heat source.<br>● Keep the drilling scraps from falling into the inside of the integrated controller during the installation; otherwise, integrated controller failure may be caused.<br>● When the integrated controller is installed inside the cabinet, the electricity control cabinet shall be equipped with fan and ventilation port. And ducts for heat dissipation shall be constructed in the cabinet. |

### ■ Wiring

**DANGER**

- The wiring must be conducted by qualified electricians. Otherwise, electric shock may happen or integrated controller damage.
- Before wiring, confirm that the power supply is disconnected. Otherwise, electric shock may happen or fire.
- The PE terminal must be reliably grounded; otherwise, the integrated controller enclosure may become live.
- Please do not touch the main circuit terminals. The wires of the main circuit terminals must not contact the integrated controller enclosure. Otherwise, electric shock may happen.
- The connecting terminals for the braking resistor are PR and ⊕. Please do not connect terminals other than these two. Otherwise, fire may be caused.
- The leakage current of the integrated controller system is more than 3.5mA, and the specific value of the leakage current is determined by the operation application conditions.Integrated controller and the motor must be grounded to ensure the safety.

## ■ Wiring

**CAUTION**

- The three−phase power supply cannot connect to output terminals U/T1, V/T2 and W/T3; otherwise, the integrated controller will be damaged.
- It is forbidden to connect the integrated controller output terminals to the capacitor or LC/RC noise filter with phase lead, otherwise, the internal components of the integrated controller may be damaged.
- Please confirm that the power supply phases and rated voltage are consistent with those indicated by the nameplate, otherwise, the integrated controller may be damaged.
- Do not perform dielectric strength test on the integrated controller, otherwise, the integrated controller may be damaged.
- The wires of the main circuit terminals and the wires of the control circuit terminals shall be laid separately or in a square−crossing mode, otherwise, the control signal may be interfered.
- The wires of the main circuit terminals shall adopt lugs with insulating sleeves.
- The integrated controller input and output cables with proper sectional area shall be selected according to the integrated controller power. When the cables between the integrated controller and the motor are longer than 100m, it is suggested to use output reactor to avoid the integrated controller failure caused by the over current of the distribution capacitor.

## ■ Operation

| DANGER |
| --- |
| ● Under some application conditions, the motor may suddenly move when it is powered on, which may cause death or serious injury.<br>● Before turning on the power supply, please confirm that the application environment allows the motor to run, or confirm that there are settings to prohibit the motor from running automatically.<br>● Power supply can only be connected after the wiring is completed and the cover is installed. It is forbidden to remove the cover in live condition; otherwise, electric shock may happen.<br>● When auto failure reset function or restart function is enabling, isolation measures shall be taken for the mechanical equipment, otherwise, personal injury may be caused.<br>● When the integrated controller is powered on, its terminals are still live even when it is in the stop state. Do not touch the integrated controller terminals; otherwise electric shock may happen.<br>● The failure and alarm signal can only be reset after the running command has been cut off. Otherwise, personal injury may be caused. |

| CAUTION |
| --- |
| ● Do not start or stop the integrated controller by switching on or off the power supply, otherwise, the integrated controller may be damaged.<br>● Before operation, please confirm if the motor and equipment are in the allowable use range, otherwise, the equipment may be damaged.<br>● The heatsink and the braking resistor have high temperature. Please do not touch such device; otherwise, you may be burnt.<br>● Please do not change the integrated controller parameter randomly. Most of the factory set parameters of the integrated controller can meet the operating requirement, and the user only needs to set some necessary parameters. Any random change of the parameter may cause the damage of the mechanical equipment. |

## ■ Maintenance and Inspection

| DANGER |
| --- |
| ● In the power−on state, please do not touch the integrated controller terminals; otherwise, electric shock may happen.<br>● If cover is to be removed, the power supply must be disconnected first.<br>● Wait for at least 10 minutes after power off or confirm that the CHARGE LED is off before maintenance and inspection to prevent the human injury caused by the residual voltage of the electrolytic capacitor in main circuit.<br>● The components shall be maintained, inspected or replaced by qualified electricians. |

| CAUTION |
| --- |
| ● The circuit boards have large scale CMOS IC. Please do not touch the board to avoid the circuit board damage caused by electrostatic. |

## ■ Others

| DANGER |
| --- |
| ● It is forbidden to modify the integrated controller unauthorizedly; otherwise, human injury may be caused.<br>● The intercom power should not exceed 8W if it is used when commissioning the elevator integrated controller. |

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# Chapter 1 AIEC Series Product Introduction

## 1.1 Product Model Description

The digits and letters on the nameplate indicate such information as the product series, power supply class, power class, software versions and hardware versions.

**AICE - 3300 - C - 40 15 - XX**

| Mark | Series |
|---|---|
| AIEC | AIEC series elevator integrated controller |

| Mark | Controller type |
|---|---|
| 1000 | Special integrated controller for freight elevator |
| 1300 | |
| 2000 | Special integrated controller for escalator |
| 3300 | |
| 3000 | Special integrated controller for passenger elevator |
| 3300 | |

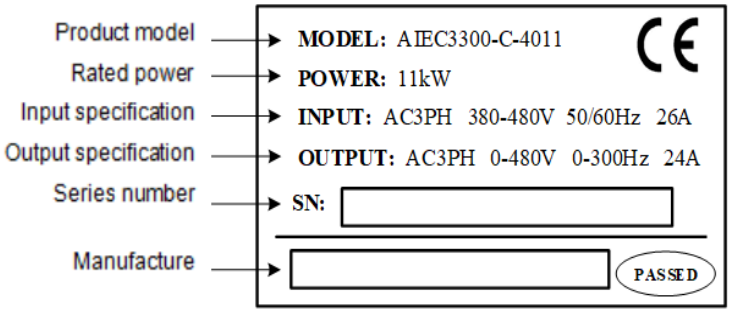
| Mark | Motor type |
|---|---|
| A | Asynchronous motor |
| B | Synchronous motor |
| C | Synchronous/Asynchronous motor integrator |

Structure version, default to original version

| Mark | Power class |
|---|---|
| 02 | 2.2kW |
| 03 | 3.7kW |
| ... | ... |
| 55 | 55kW |
| 75 | 75kW |

| Mark | Power class |
|---|---|
| 20 | Single-phase/Three-phase 220 V |
| 40 | Three-phase 380 V |

## 1.2 Product Nameplate Description



## 1.3 Product Series

### ■ AIEC3300−C−40□□□ Three−phase 380V application

| Power kW) | | 2.2 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motor power (kW) | | 2.2 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
| Output | Voltage (V) | Three−phase 0 to rated input voltage | | | | | | | | | | | | |
| | Rated current (A) | 5.5 | 9 | 13 | 17 | 24 | 30 | 39 | 45 | 60 | 75 | 91 | 112 | 150 |
| | Overload capacity | 150% 1 minute, 180% 10 seconds, 200% 0.5 second, interval: 10 minutes (inverse time lag feature) | | | | | | | | | | | | |
| Input | Rated voltage/ frequency | Three−phase 380V/480V; 50Hz/60Hz | | | | | | | | | | | | |
| | Allowable voltage range | 323V ~ 528V; Voltage imbalance ≤3%; allowable frequency fluctuation: ±5% | | | | | | | | | | | | |
| | Rated current (A) | 6.1 | 10 | 15 | 19 | 26 | 33 | 43 | 50 | 66 | 83 | 100 | 123 | 165 |
| Braking unit | | Built−in as standard | | | | | | | | | | Built−in as option | | |
| Protection class | | IP20 | | | | | | | | | | | | |
| Cooling mode | | Self −cooling | Forced air convection cooling | | | | | | | | | | | |

### ■ AIEC3300−C−20□□□ Single−phase / Three−phase 220V application

| Power (kW) | | 2.2 | 3.7 | 5.5 |
|---|---|---|---|---|
| Motor power (kW) | | 2.2 | 3.7 | 5.5 |
| Output | Voltage (V) | Three−phase 0 to rated input voltage | | |
| | Rated current (A) | 10.0 | 14.0 | 27.0 |
| | Overload capacity | 150% rated current for 60 seconds; 200% rated current for 10 seconds | | |
| Input | Rated voltage/ frequency | Three−phase or single−phase 200V~240V; 50Hz/60Hz | | |
| | Allowable voltage range | 180V ~ 260V; Voltage unbalancedness ⩽3%; allowable frequency fluctuation: ±5% | | |
| | Rated current (A) | 12.0 | 17.0 | 29.0 |

## 1.4 Technical Specifications of Product

| | | |
|---|---|---|
| Basic features | Standard floor | 40 floors |
| | Elevator running speed | ≤ 4.00m/s |
| | Number of elevators in parallel/group mode | ≤ 4 sets |
| | Communication mode | CAN /RS485/RS232 |
| Control features | Motor control mode | Closed loop vector control with PG card |
| | Startup torque | Up to 200% (depending on load) |
| | Speed range | 1:1000(Closed loop vector control with PG card) |
| | Speed control precision | ±0.05% (Closed loop vector control with PG card, 25±10℃) |
| | Torque limit | 200% of the rated torque |
| | Torque precision | ±5% |
| | No-load startup compensation | When the elevator load is unknown, the system compensates the appropriate torque for the motor according to the running direction of the elevator, so as to make it start smoothly, minimize the car sliding at the moment of starting, and increase the comfort of elevator starting. |
| | Carrier frequency | 2～16kHz |
| Product functions | Key functions | See product introduction for details |
| | Frequency range | 0～99Hz |
| | Acceleration/ deceleration time | 0.1～8s |
| | Braking torque | 150% |
| Special functions | Protecting anti-plug | Perfect protection circuit design, any wrong insertion will not damage, and will not affect other controller. |
| | Unique communication anti-interference | In order to improve the anti-interference performance, the car top board and the main control board use the enhanced CAN communication technology, without shielding wire. |
| | Energy saving operation of standby power supply | When the normal power supply is interrupted and the emergency power supply is used, the system reduces the running speed of the elevator in the prerequisite of guaranteeing the smooth running curve and stop at the nearest floor.Open the door first, close door after delay for a period of time, press any key in the car to open the door. |
| | Troubleshooting based on fault level | Faults are classified into different levels based on the severity. Different levels of faults are rectified using different methods, improving the system operation efficiency. |
| | Auto-leveling | The system implements automatic accurate leveling based on the floor pulse counting and up/down leveling feedback signals. |
| | Door pre-open function | In automatic running state, when the elevator speed is smaller than 0.25 m/s and the door zone signal is active, the system shorts the door lock by means of the shorting door lock circuit relay and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency. |
| | Micro-leveling | After landing at a floor, the elevator may move upward or downward due to the load change and the car door is not aligned with the ground, which is inconvenient for passengers and goods in and out. In this case, the system allows the elevator to run to |

| | | |
|---|---|---|
| | | the leveling position in the door open state at the re−leveling speed. |
| Protection function | Motor over−load protection, controller over−load protection, short circuit protection, input lost phase protection, output lost phase protection, over−voltage protection, under voltage protection, instantaneous power failure compensation, heatsink overheating, stall prevention, pulse encoder failure, brake unit protection, module protection, current sensor protection, speed abnormality protection, output short to ground protection, output imbalance protection, braking resistor short circuit protection, speed abnormality protection, running time limiter protection, level switch fault protection, EEPROM abnormal. | |
| PG card | PG card type | Support push−pull, open collector and SIN/COS encoder. |
| I/O signal | Optocoupler input control power supply | Isolation 24 VDC |
| | Low voltage optocoupler isolation input | 24 x digital inputs.<br>Optocoupler control signals are isolation 24 VDC power input signals. |
| | Low voltage optocoupler isolation input | 4 x digital outputs |
| | Relay output | 6 normally open contacts, single−pole single−throw, 5 A contact switchover capability.<br>Contact load (Resistive): 5A250VAC or 5A28VDC |
| | USB interface | Commissioning by cell phone, IoT monitoring |
| | CAN communication interface | 2 communication ports (Car top communication, parallel or group control) |
| | MODBUS communication | 2 communication ports (Outbound communication, Internet of Things) |
| | Analog input port | 1 single−ended or differential input, input voltage range −10 V to +10 V, precision 0.1% |
| Operation and display | Operation panel、Keypad、Mobile phone commissioning | |
| Environment | Operating site | The product shall be mounted vertically in the electric control cabinet with good ventilation. Horizontal or other installation modes are not allowed. The cooling media is the air. The product shall be installed in the environment free from direct sunlight, dust, corrosive gas, combustible gas, oil mist, steam and drip. |
| | Ambient temperature | −10 ~ +40°C, derated at 40 ~ 50°C, the rated output current shall be decreased by 1% for every temperature rise of 1°C |
| | Humidity | 5 ~ 95%, no condensing |
| | Altitude | 0 ~ 2000m, derated above 1000m, the rated output current shall be decreased by 1% for every rise of 100m |
| | Vibration | Less than 5.9 m/s 2 (0.6 g) |
| | IP level | IP20 |
| | Power distribution system | TN/TT |
| | Pollution degree | PD2 |
| | Storage temperature | −20～+60℃ |

## 1.5 Product Component Name

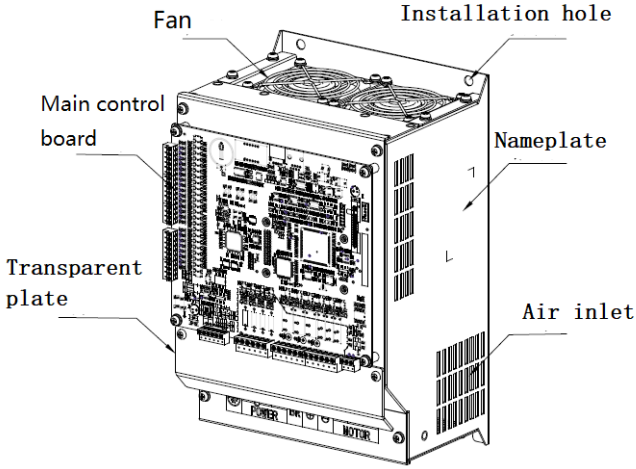



Figure 1-1 AIEC3300-C-4011 product component name

## 1.6 Mounting Dimensions

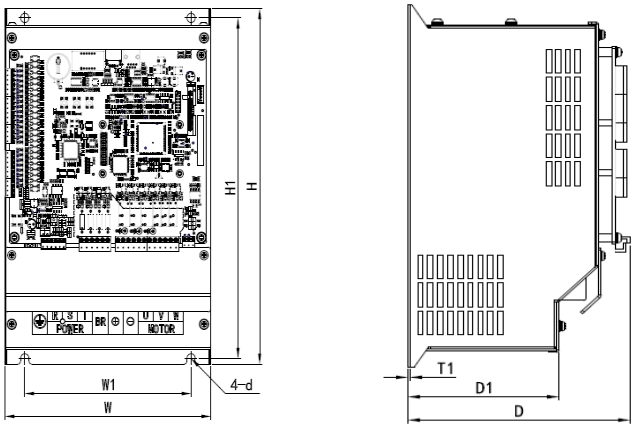


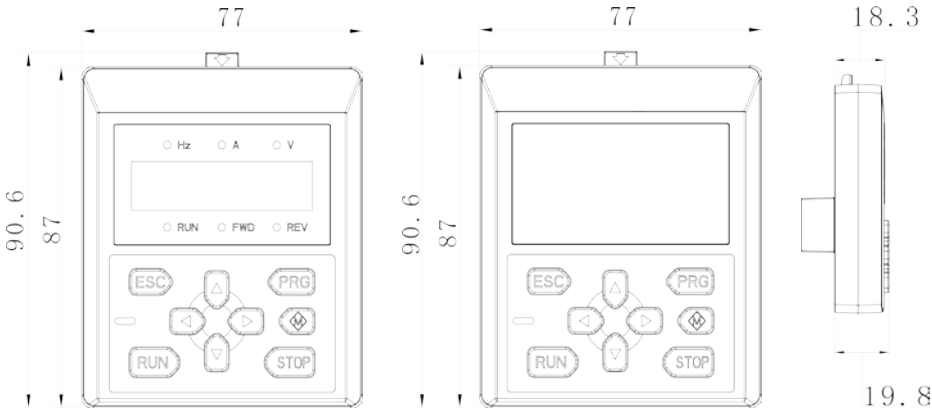

Figure 1-2 AIEC3300-C-4007 and above power class

Product installation dimensions

| Voltage( V) | Elevator integrated controller model | Dimension (mm) | | | | | | | Gross weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| | | W | H | D | W1 | H1 | T1 | Mounting hole diameter | |
| Single-phase /Three-phase 220 | AIEC3300-C-2002 | 198 | 302 | 143 | 160 | 289 | 1.5 | 8 | 6 |
| | AIEC3300-C-2003 | | | | | | | | |
| Three-phase 380 | AIEC3300-C-4007 | 198 | 302 | 164 | 160 | 289 | 1.5 | 8 | 8 |
| | AIEC3300-C-4011 | | | | | | | | |
| | AIEC3300-C-4015 | | | | | | | | |
| | AIEC3300-C-4018 | 223 | 351 | 195 | 195 | 335 | 1.5 | 8 | 10 |
| | AIEC3300-C-4022 | | | | | | | | |
| | AIEC3300-C-4030 | 264 | 430 | 217 | 230 | 418 | 1.5 | 8 | 18 |
| | AIEC3300-C-4037 | | | | | | | | |
| | AIEC3300-C-4045 | 305 | 548 | 255 | 245 | 523 | 1.5 | 10 | 35 |
| | AIEC3300-C-4055 | | | | | | | | |
| | AIEC3300-C-4075 | 338 | 580 | 310 | 270 | 560 | 1.5 | 10 | 52 |

## 1.7 KeypadDimensions

### ■ Keypad Dimensions




LED keypad (AIEC −DP01) LCD keypad (AIEC−DP02) Keypad side view

Figure1−3 KeypadMounting Dimension

### ■ Install the keypad to external electric control cabinet

The keypad can be installed to external electric control cabinet.The keypad mounting dimension to external electric control cabinet as follows:

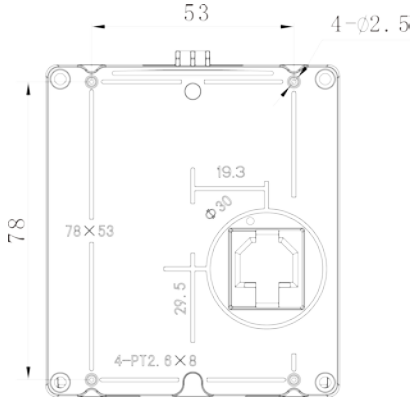



Figure 1−4 Keypad Back View and Mounting Dimension

## 1.8 Braking Resistor Selection Guidance

| Elevator integrated controller model | Braking unit | Braking resistor | | | |
|---|---|---|---|---|---|
| | | Power | Resistance | Minimum resistance | Qty. |
| Single−phase 220 V, range: 220–240 VAC | | | | | |
| AIEC3300−C−2002 | Built−in | 300W | 145.0Ω | 125.0Ω | 1 |
| AIEC3300−C−2003 | | 450W | 105.0Ω | 90.0Ω | 1 |
| Three−phase 220 V, range: 220–240 VAC | | | | | |
| AIEC3300−C−2002 | Built−in | 600W | 72.0Ω | 65.0Ω | 1 |
| AIEC3300−C−2003 | | 1100W | 54.0Ω | 50.0Ω | 1 |
| Three−phase 380 V, range:380–440 VAC | | | | | |
| AIEC3300−C−4002 | Built−in | 600W | 290Ω | 230Ω | 1 |
| AIEC3300−C−4003 | | 1100W | 170Ω | 135Ω | 1 |
| AIEC3300−C−4005 | | 1600W | 115Ω | 90Ω | 1 |
| AIEC3300−C−4007 | | 2500W | 85Ω | 65Ω | 1 |
| AIEC3300−C−4011 | | 3500W | 55Ω | 43Ω | 1 |
| AIEC3300−C−4015 | | 4500W | 43Ω | 35Ω | 1 |
| AIEC3300−C−4018 | | 5500W | 34Ω | 25Ω | 1 |
| AIEC3300−C−4022 | | 6500W | 24Ω | 22Ω | 1 |
| AIEC3300−C−4030 | | 9000W | 20Ω | 16Ω | 1 |
| AIEC3300−C−4037 | | 11000W | 16Ω | 13Ω | 1 |
| AIEC3300−C−4045 | Built−in as option | 13500W | 14Ω | 11Ω | 1 |
| AIEC3300−C−4055 | | 16500W | 12Ω | 10Ω | 1 |
| AIEC3300−C−4075 | | 12000W | 16Ω | 13Ω | 2 |

# Chapter 2 Wiring of Integrated Controller

## 2.1 Peripheral DevicesConnection

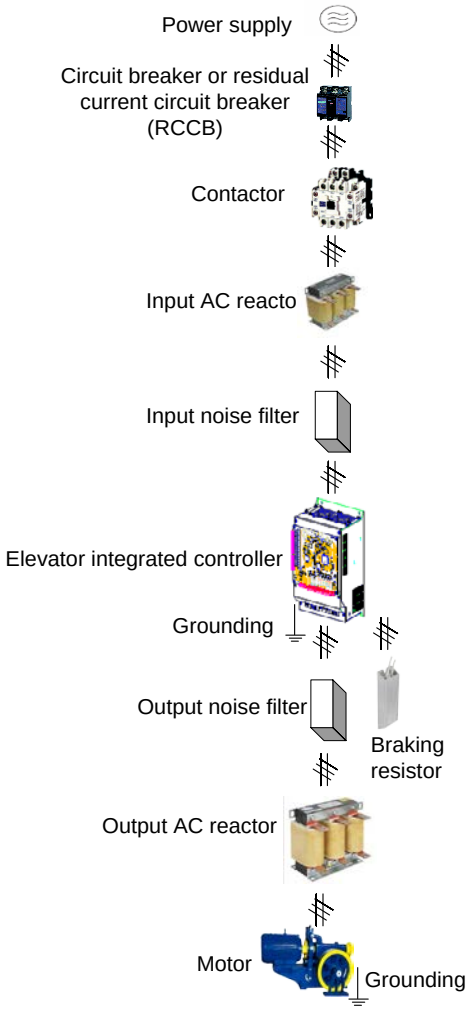



Figure2−1 Connection diagram of the product and peripheral devices

## 2.2 Peripheral Devices Description

| | |
|---|---|
| Circuit breaker | The circuit breaker capacity should be 1.5 ~ 2 times of the controller rated current.<br>The time features of the circuit breaker should fully consider the time features of the controller overload protection. |
| RCCB<br>(Residual current circuit breaker) | The controller output is the high−frequency pulse and also generates leakage currents to ground. Special RCCB shall be used when installing RCCB at the input end of the controller. It is suggested that B type RCCB be used, and the leakage current value shall be set to 300mA. |
| Contactor | Frequent contactor action will cause controller failure, so the highest frequency for the open and close of contactor shall not exceed 10 times/min.<br>When braking resistor is used, to avoid the over−temperature damage of the braking resistor, a thermal protection relay with braking resistor over−temperature detection should be installed to disconnect the contactor of power supply. |
| Input noise filter | Reduce external conduction and radiation interference of the controller.<br>Decrease conduction interference flowing from power supply and improve the anti−interference capacity. |
| Output noise filter | When the output end of the controller is connected with noise filter, the conduction and radiation interference can be reduced. |
| Output AC reactor | When the cable connecting the controller and the motor is longer than 100m, it is suggested to install AC output reactor to suppress the high−frequency oscillation to avoid damaging motor insulation, large leakage current and frequent controller protective action. |

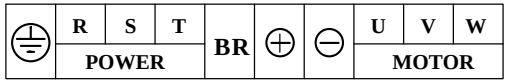
## 2.3 Peripheral Devices Selection Guide

| Elevator integrated controller model* | Circuit Breaker (A) | Contactor (A) | R/L1、S/L2、T/L3、⊕、BR、Θ、U/T1、V/T2、W/T3 | | | PE terminal ⏚ | | |
|---|---|---|---|---|---|---|---|---|
| | | | Terminal screw | Tightening torque (N·m) | Wire specification ($mm^2$) | Terminal screw | Tightening torque (N·m) | Wire specification ($mm^2$) |
| Single −phase 220 V, range: 220 − 240 V ,50/60Hz | | | | | | | | |
| AIEC3300−C−2002 | 16 | 12 | M4 | 1.2～1.5 | 1 | M4 | 1.2～1.5 | 1 |
| AIEC3300−C−2003 | 20 | 18 | M4 | 1.2～1.5 | 2.5 | M4 | 1.2～1.5 | 2.5 |
| Three −phase 220 V, range: 220 − 240 V ,50/60Hz | | | | | | | | |
| AIEC3300−C−2002 | 16 | 12 | M4 | 1.2～1.5 | 1 | M4 | 1.2～1.5 | 1 |
| AIEC3300−C−2003 | 25 | 18 | M4 | 1.2～1.5 | 2.5 | M4 | 1.2～1.5 | 2.5 |
| Three −phase 380 V, range: 380 − 440 V ,50/60Hz | | | | | | | | |
| AIEC3300−C−4003 | 16 | 12 | M4 | 1.2～1.5 | 1.5 | M4 | 1.2～1.5 | 1.5 |
| AIEC3300−C−4005 | 25 | 18 | M4 | 1.2～1.5 | 2.5 | M4 | 1.2～1.5 | 2.5 |
| AIEC3300−C−4007 | 32 | 25 | M4 | 1.2～1.5 | 4 | M4 | 1.2～1.5 | 4 |
| AIEC3300−C−4011 | 40 | 32 | M5 | 2.5～3.0 | 6 | M5 | 2.5～3.0 | 6 |
| AIEC3300−C−4015 | 50 | 38 | M5 | 2.5～3.0 | 6 | M5 | 2.5～3.0 | 6 |
| AIEC3300−C−4018 | 60 | 40 | M6 | 4.0～5.0 | 10 | M6 | 4.0～5.0 | 10 |
| AIEC3300−C−4022 | 80 | 50 | M6 | 4.0～5.0 | 10 | M6 | 4.0～5.0 | 10 |
| AIEC3300−C−4030 | 100 | 65 | M6 | 4.0～5.0 | 16 | M6 | 4.0～5.0 | 16 |

| Elevator integrated controller model* | Circuit Breaker (A) | Contactor (A) | R/L1、S/L2、T/L3、⊕、BR、Θ、U/T1、V/T2、W/T3 | | | PE terminal ⏚ | | |
|---|---|---|---|---|---|---|---|---|
| | | | Terminal screw | Tightening torque (N·m) | Wire specification ($mm^2$) | Terminal screw | Tightening torque (N·m) | Wire specification ($mm^2$) |
| AIEC3300−C−4037 | 100 | 80 | M8 | 9.0～10.0 | 25 | M8 | 9.0～10.0 | 25 |
| AIEC3300−C−4045 | 160 | 95 | M8 | 9.0～10.0 | 35 | M8 | 9.0～10.0 | 35 |
| AIEC3300−C−4055 | 160 | 110 | M10 | 17.6～22.5 | 50 | M10 | 17.6～22.5 | 50 |
| AIEC3300−C−4075 | 225 | 170 | M10 | 17.6～22.5 | 75 | M10 | 17.6～22.5 | 75 |

* The description above is not the ordering model. Please refer to 1.1 product model description for ordering model, or contact our company to determine the ordering model.

## 2.4 Description of Main Circuit Terminal




| Terminal symbol | Terminal name and function description |
|---|---|
| ⏚ | Grounding terminal PE |
| R、S、T | Three−phase AC input terminal |
| BR、⊕ | Connecting terminal of braking resistor |
| ⊕、Θ | DC power input terminal; DC input terminal of external braking unit |
| U、V、W | Three−phase AC output terminal |

## 2.5 Attention for Main Circuit Wiring

### 2.5.1 Power Supply Wiring

- It is forbidden to connect the power supply cable to the integrated controller output terminals; otherwise, the internal components of the integrated controller will be damaged.
- The integrated controller shall connect to the power supply through a circuit breaker or RCCB and contactor to protect the integrated controller input against over current or disconnects the input power for maintenance.
- Please confirm that the power supply phases, rated voltage are consistent with that of the nameplate, otherwise, the integrated controller may be damaged.

### 2.5.2 Motor Wiring

- It is forbidden to short circuit or ground the integrated controller output terminal, otherwise the internal components of the integrated controller will be damaged.
- Do not short circuit the output cable and the integrated controller enclosure, otherwise electric shock may happen.

- It is forbidden to connect the output terminal of the integrated controller to the capacitor or LC/RC noise filter with phase lead, otherwise, the internal components of the integrated controller may be damaged.
- When contactor is installed between the integrated controller and motor, it is forbidden to switch on/off the contactor when the integrated controller is running; otherwise, large current will flow into the integrated controller, triggering the integrated controller protection action.
- Length of cable between the integrated controller and motor:

  If the cable between the integrated controller and the motor is too long, the high-order harmonic leakage current of the output end will cause adverse impact on the integrated controller and the peripheral devices. Output AC reactor should be installed the motor cable is longer than 100m, Refer to the following table for the carrier frequency setting.

| Length of cable between the integrated controller and motor | Less than 50m | Less than 100 m | More than 100m |
|---|---|---|---|
| Carrier frequency ( F0-07) | Less than 15kHz | Less than 10kHz | Less than 5kHz |

## 2.5.3 Grounding wiring

- The integrated controller will produce leakage current. The higher the carrier frequency is, the larger the leakage current will be. The leakage current of the integrated controller system is more than 3.5mA, and the specific value of the leakage current is determined by the application conditions. To ensure the safety, the integrated controller and the motor must be grounded.
- The grounding resistance shall be less than 10ohm. For the grounding wire diameter requirement, refer to models of main circuit peripheral devices.
- Do not share grounding wire with the welding machine and other power equipment.
- In the applications with more than 2 integrated controllers, keep the grounding wire from forming a loop.

Correct Wrong

Figure 2-2 Grounding wiring

## 2.5.4 Countermeasures for Conduction and Radiation Interference

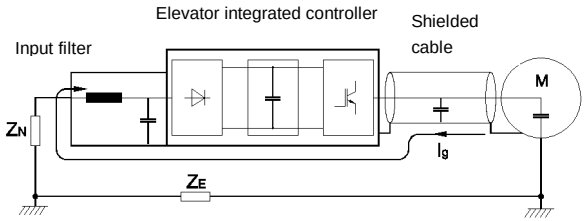



Figure2-3 Noise current illustration

- When the input noise filter is installed, the wire connecting the filter to the integrated controller input power terminals shall be as short as possible.
- The filter enclosure and mounting cabinet shall be reliably connected in large area to reduce the back flow impedance of the noise current Ig.
- The wire connecting the integrated controller and the motor shall be as short as possible. The motor cable adopts 4−core cable, with the grounding end grounded at the integrated controller side, the other end connected to the motor enclosure. The motor cable shall be sleeved into the metal tube.
- The input power wire and output motor wire shall be kept away from each other as long as possible.
- The equipment and signal cables vulnerable to influence shall be kept far away from the integrated controller.
- Main signal cables shall adopt shielded cable. It is suggested that the shielded layer shall be grounded with 360−degree grounding method and sleeved into the metal tube. The signal cable shall be kept far away from the integrated controller input wire and output motor wire. If the signal cable must cross the input wire and output motor wire, they shall be kept orthogonal.
- When frequency reference is analog voltage or current signals, shielded twisted pair cable shall be used. The shielded layer shall be connected to the PE terminal of the integrated controller, and the signal cable length should be less than 50m.
- The wires of the control circuit terminals RA/RB/RC and other control circuit terminals shall be separately routed.
- It is forbidden to short circuit the shielded layer and other signal cables or equipment.
- When the integrated controller is connected to the inductive load equipment (e.g. electromagnetic contactor, relay and solenoid valve), surge suppressor must be installed on the load equipment coil, as shown in the following figure.

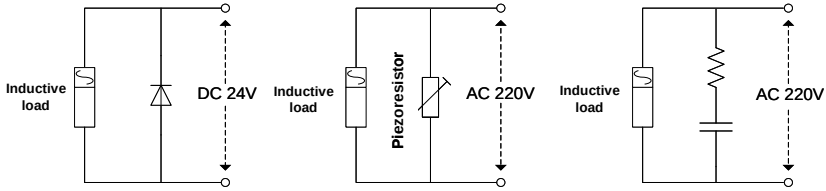



Figure2−4 Application of inductive load surge suppressor

## 2.6 Description of Control Circuit Terminals

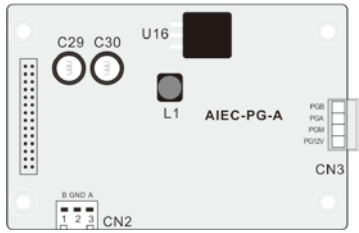
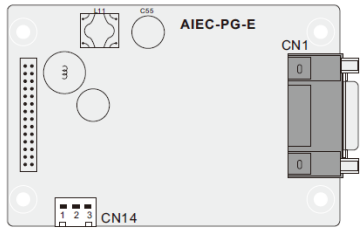
| Type | Terminal | Description |
|---|---|---|
| Keypad 485 | CN12 | RS485 port of keypad |
| Terminal communication | 24V | 24V power supply for the board |
| | COM | |
| | MOD+ | Standard isolation RS−485,modbus communication for hall call and display |
| | MOD− | |
| | CAN+ | CAN communication, connect with car top board, machine−room−less monitoring board and DI/DO expansion board |
| | CAN− | |

| | | |
|---|---|---|
| Digital input | X1～X24 | Input voltage range: 10Vdc～30Vdc<br>Input resistance：4.7kΩ, current limit 5mA<br>The function of digital input is setting by parameters of F5−01 to F5−24 |
| | COM | Digital input common end |
| | X25～X28 | High voltage input, input voltage: 110VAC ±15%，110VDC ±20%<br>Safety circuit feedback and door lock feedback. The function is setting by parameters of F5−37 toF5−39 |
| Analog input | AI | Differential input, input voltage range −10 V to +10 V, it is used for load−cell |
| Relay output | Y1/M1～Y6/M6 | Relay output terminal NO: 5A/250Vac<br>The relay output function is setting by parameters of F5−26 to F5−31 |
| Group control | CAN2+ | CAN2 communication interface, for group or parallel/group control |
| | CAN2− | |
| | COM | |
| IoT communication | CN8 | IoT communication interface |

## 2.7 PG card Description (AIEC−PG)

The PG cards ofAIEC−PG−A and AIEC−PG−E for different encoder types, as described in the following table.

PG card models

| Encoder Type | Applicable PG Card | Appearance |
|---|---|---|
| Open collector output typeencoder, push pull output type encoder | AIEC−PG−A |  |
| SIN/COS encoder | AIEC−PG−E |  |

Definitions of the CN1 terminals of AIEC−PG−A card

| Terminal | PGB | PGA | PGM | PG12 |
|---|---|---|---|---|
| Definition | B− | A− | GND | 12V |

**Wiring diagram of PG−E and encoder ERN1387:**

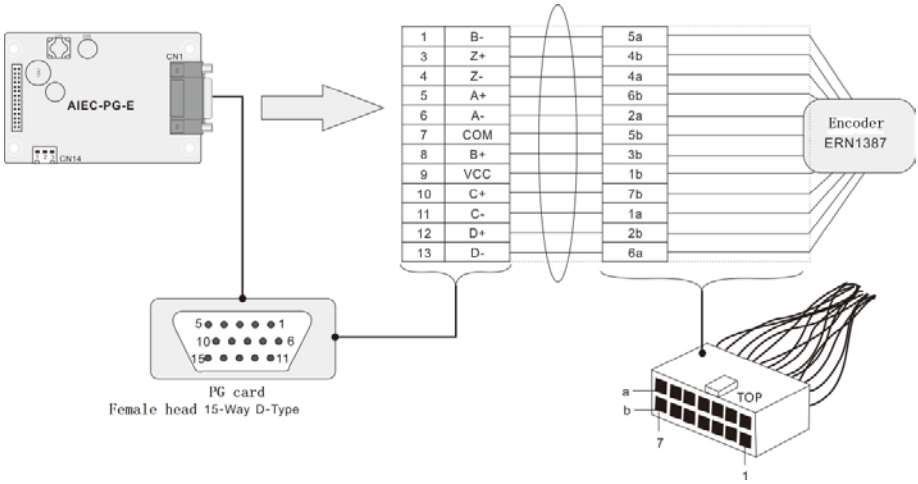



Figure 2−5 Wiring diagram of PG−E and encoder ERN1387

Definitions of the CN1 terminals of AIEC−PG−E card

| Terminal | B− | Z+ | Z− | A+ | A− | COM | B+ | VCC | C+ | C− | D+ | D− |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Definition | 5a | 4b | 4a | 6b | 2a | 5b | 3b | 1b | 7b | 1a | 2b | 6a |

## 2.8 Options Introduction

### 2.8.1 Car Top Board AIEC−CTB

AIEC−CTB is the car control board (car top board), it has 8 digital inputs, 8 relay outputs as standard (10 relay outputs for non−standard CTB) and 1 AI input.

- **Appearance and dimensions and mounting method**

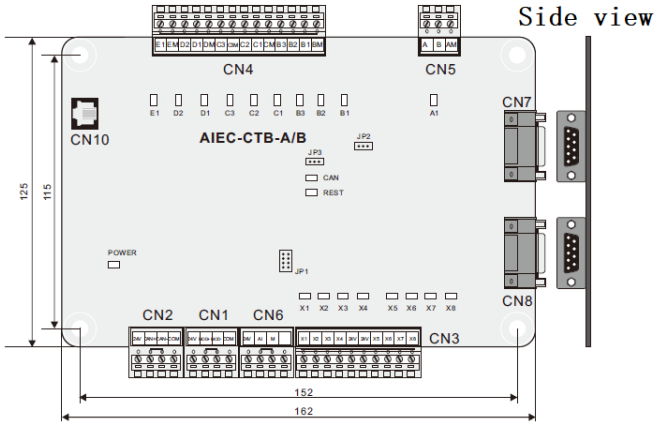



Figure 2-6 Appearance and dimensions of the CTB (unit: mm)

## 2.8.2 Car call/ hall call display board AIEC-DCB

Display board selection and description

| No. | Name | Description | Dimensions(mm) |
|---|---|---|---|
| **No hall call display** | | | |
| 1 | AIEC-DCB-B | No hall call display | 70*84*20 |
| **Dot-matrix display board** | | | |
| 2 | AIEC-DCB-F | Red character, horizontal display | 70*144*21 |
| 3 | AIEC-DCB-G1<br>AIEC-DCB-G2<br>AIEC-DCB-G4 | Large-area display, both horizontal and vertical display supported<br>G1: red character<br>G2: orange character<br>G4: blue character | 65*157*22 |
| 4 | AIEC-DCB-G3 | Large-area display, vertical, red character | 136*160*14 |
| 5 | AIEC-DCB-H<br>AIEC-DCB-H1<br>AIEC-DCB-H2<br>AIEC-DCB-H3<br>AIEC-DCB-S3 | H: red character, vertical display<br>H1: blue character, vertical display<br>H2: orange character, vertical display<br>H3: Red character, vertical display, with waterproof case<br>S3: White character (belonging to DCB-H series) | 144*70*21 |
| 6 | AIEC-DCB-J<br>AIEC-DCB-J2 | J: red character, vertical display<br>J2: orange character, vertical display | 144*70*18 |
| 7 | AIEC-DCB-O1 | Orange character, vertical display | 137*79*11 |
| 8 | AIEC-DCB-Q1 | Mini dot-matrixQ1: red character Q2: orange character | 74*67*10 |
| 9 | AIEC-DCB-R1<br>AIEC-DCB-R2<br>AIEC-DCB-R3 | Ultrathin display board<br>R1: red character R2: orange character R3: blue character | 144*70*10 |
| 10 | AIEC-DCB-R4 | Ultrathin display board, red character | 150*70*8.5 |
| 11 | AIEC-DCB-R5 | Ultrathin display board, red character | 144*70*10 |

| No. | Name | Description | Dimensions(mm) |
|---|---|---|---|
| 12 | AIEC−DCB−XG | High−density dot−matrix display, orange character | 100*70*10 |
| 13 | AIEC−DCB−XG−VX | High−density dot− matrix display, orange character, vertical (with arrival indicator)<br>VX: vertical display<br>HX: Horizontal display | 105*70*10<br>70*105*10 |
| 14 | AIEC−DCB−SL | Ultra−long display board, red character | 245*55*15 |
| 15 | AIEC−DCB−Y1 | Dot matrix parallel dedicated display board, orange character | 133*130*10 |
| 16 | AIEC−DCB−LW01 | High−density display, white character | 144*70*10 |
| 17 | AIEC−DCB−HS3<br>( F)AIEC−DCB−HS5<br>( F) AIEC−DCB−HS6<br>( F) | Square dot−matrix display, both horizontal / verticalsupported<br>HS3 (F): blue character in black background<br>HS5 (F): white character in black background<br>HS6 (F): yellow character in black background | 173*118*8.8 |
| 18 | AIEC−DCB−HS3<br>( Y)AIEC−DCB−HS5<br>( Y)AIEC−DCB−HS6<br>( Y) | Round dot−matrix display, both horizontal / vertical supported<br>HS3 (Y): blue character in black background<br>HS5 (Y): white character in black background<br>HS6 (Y): yellow character in black background | 173*118*8.8 |
| **Segment display board** | | | |
| 19 | AIEC−DCB−D2 | Ultrathin segment LCD, white character in blue background | 144*70*10 |
| 20 | AIEC−DCB−U1<br>AIEC−DCB−U2<br>AIEC−DCB−U3 | Segment LCD display<br>U1: white character in blue background<br>U2: white character in black background<br>U3: yellow character in black background | 144*80*17 |
| 21 | AIEC−DCB−U1B | Segment LCD display, white character in blue background | 160*75*9 |
| 22 | AIEC−DCB−V1<br>AIEC−DCB−V4 | 6.4−inch segment LCD display<br>V1: white character in blue background (vertical)<br>V4: white character in black background (vertical) | 185*131*18 |
| | AIEC−DCB−V2<br>AIEC−DCB−V3 | 6.4−inch segment LCD display<br>V2: white character in blue background (horizontal)<br>V3: white character in black background (horizontal) | 131*185*18 |
| 23 | AIEC−DCB−Z1 | Segment LCD special parallel display board, white character in blue background | 135*129*16 |
| 24 | AIEC−DCB−P1 | Seven−segment display board, redcharacter | 144*70*18 |
| 25 | AIEC−DCB−D3A<br>AIEC−DCB−D5A<br>AIEC−DCB−D6A | Ultrathin segment LED display<br>D3A: blue character in black background<br>D5A: white character in black background<br>D6A: yellow character in black background | 130*72*7 |
| 26 | AIEC−DCB−D3B<br>AIEC−DCB−D5B<br>AIEC−DCB−D6B | Ultrathin segment LED display<br>D3B: blue character in black background<br>D5B: white character in black background<br>D6B: yellow character in black background | 130*72*7 |
| 27 | AIEC−DCB−V3A<br>AIEC−DCB−V5A<br>AIEC−DCB−AIEC3300A | Ultrathin segment LED display, vertical<br>V3A: blue character in black background<br>V5A: white character in black background<br>AIEC3300A: yellow character in black background | 173*118*8.8 |
| 28 | AIEC−DCB−V3B<br>AIEC−DCB−V5B<br>AIEC−DCB−AIEC3300B | Ultrathin segment LED display, horizontal<br>V3B: blue character in black background<br>V5B: white character in black background<br>AIEC3300B: yellow character in black background | 118*173*8.8 |

| No. | Name | Description | Dimensions(mm) |
|---|---|---|---|
| True−color display board | | | |
| 29 | AIEC−DCB−T1 | 4.3−inch true−color LCD display | 145*85*18 |
| 30 | AIEC−DCB−T2 | 7−inch true−color LCD display | 188*113*28<br>113*188*28 |
| | AIEC−DCB−T5 | 7−inch true−color LCD display inside car | |
| 31 | AIEC−DCB−T3 | 9.7−inch true−color LCD display | 250*194*32<br>194*250*32 |
| | AIEC−DCB−T6 | 9.7−inch true−color voice LCDdisplay inside car | |

## 2.8.3 Car Call Board AIEC−CCB

Car call board (AIEC−CCB) is used for the communication between the user and the control system. The main function is to collect button calls and output signals of the button call indicators. The car call board with 24 digital inputs, 22 outputs, include 16 floor buttons and 8 functional signals.

The requirement of the 40−floor can be realized through cascaded connection.( CN1 is an output connector and CN2 is an input connector.)

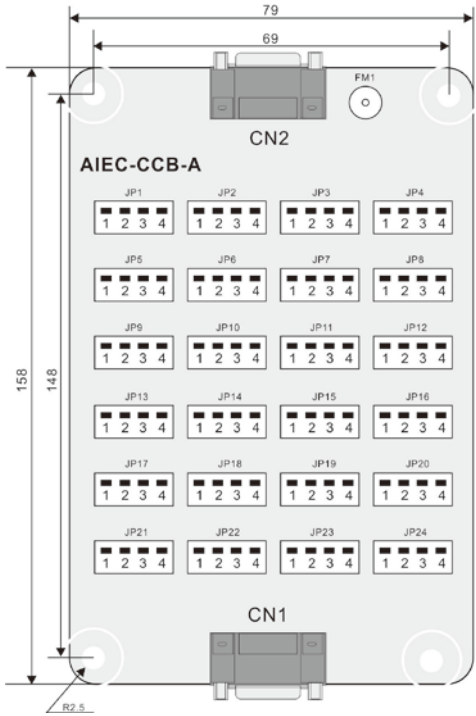
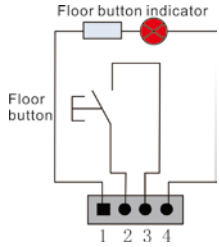



Figure 2−7 Appearance and dimensions of the CCB (unit: mm)

## ■ Description of terminals

Description and wiring of CCB terminals

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

Note:

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

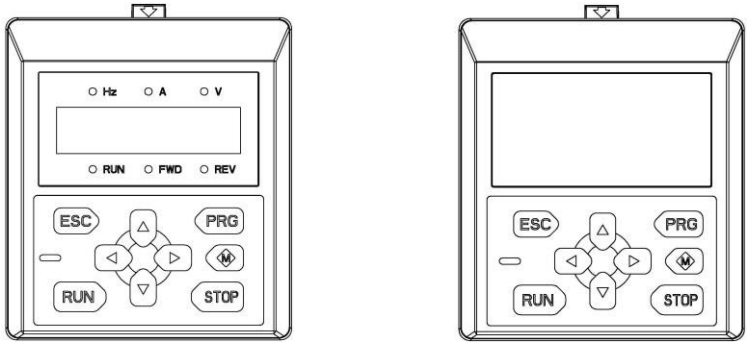
# Chapter 3 System Commissioning

## 3.1 Commissioning tools

AIEC3300 series elevator integrated controller supports three commissioning tools for user: LED keypad, 3−button on−board keypad, and mobile phone.

### 3.1.1 Use of keypad

AIEC3300 series elevator integrated controller is equipped with a LED keypad as standard. It is connected to CN12 interface of the elevator integrated controller through 8−core extension wire. You can change the parameters, monitor the working state, and start/stop by the keypad. It is one of the main tools for commissioning and maintenance.




LED Operation Panel(AIEC−DP01) LCD Operation Panel(AIEC−DP02)

Figure 3−1 Operation Panel

■ **Description of the Keypad Keys**

| Button | Name | Function |
|---|---|---|
| PRG | Programming KEY | 1. Enter the submenu.<br>2. Enter the parameter setting value.<br>3. Data storage confirmation. |
| ESC | ESCAPE KEY | 1. Return to the previous menu.<br>2. Abandon the modification of the data. |
| ▲ ▼ | INCREASING/DECREASING | 1. Under the first level menu, the parameter number is incremented / decremented according to the current edit bit.<br>2. Under the secondary menu, the parameter data is increased / decreased according to the current edit bit.<br>3. In the default display state, when the speed command selection is given by the keyboard, the given speed is increase/decrease by the current bit. |

| | | |
|---|---|---|
|  | MOVE<br>RIGHT/LEFT | 1. Under the first level menu, use the key▸/◂ to move the current edit position of the menu.<br>2. Under the secondary menu, use the key▸/◂ to move the current edit position of the menu.<br>3. In the running or stop state, the monitored values are switched in turn. |
|  | RUUNING KEY | The running command setting mode is selected in the keypad given mode for enabling control. |
|  | STOP/RESET KEY | 1. Enable selection in the keyboard given mode, used for stop.<br>2. When the Integrated controller has a fault alarm, it is used to reset the alarm. |

## ■ Description of Indicator

AIEC−DP01 unit indicator and other status indicators.

| Indicator status | | | Color | Meaning |
|---|---|---|---|---|
| Unit light | Hz | Frequency indicator | Green | On: The unit of current display parameter is the running frequency. |
| | A | Current indicator | Green | On: The unit of current display parameter is current. |
| | V | Voltage indicator | Green | On: The unit of current display parameter is voltage. |
| | Hz+A | Speed indicator | Green | On: The unit of current display parameter is running speed. |
| | Hz+V | Percentage indicator | Green | On: The unit of current display parameter is percentage |
| | A+V | Time s indicator | Green | On: The unit of current display parameter is time s |
| | Hz+A+V | Speed m / s indicator | Green | On: The unit of current display parameter is speed m / s |
| | | No unit indicator | − | On: The unit of current display parameter is no unit. |
| indicator | RUN | Running indicator | Red | On: Integrated Controller is running<br>Off: Integrated Controller has stopped output |
| | FWD | Forward indicator | Red | On: Integrated Controller is forward<br>Off: Integrated Controller is reversed |

## Format of the menu

Two level menu style is adopted in menu display. The first level menu is parameter index, and the second level menu is parameter value.

◆First Level Menu

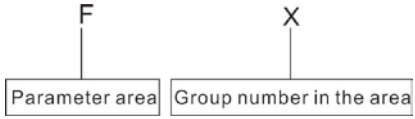



Figure 3-2 The Format of the First Level Menu

◆ The Second Level Menu


Figure 3-3 The Format of the Second Level Menu

◆ The structure of the second level menu

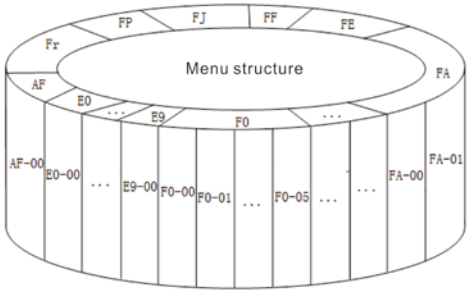



Figure 3-4 The structure of the second level menu

◆The third Level Menu

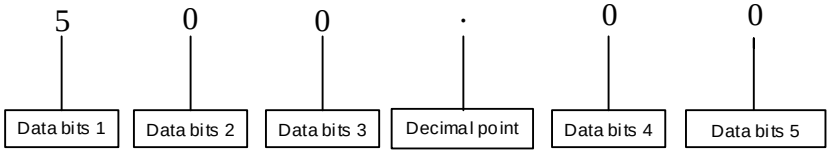



Figure 3-5 The Format of the Third Level Menu

■ **Format of third level menu data display / setting**

Decimalism display/setting:

The data bits 1 − 5 can be displayed/set with symbols of 0, 1, ...9

Hexadecimal display/setting:

The data bits 1 − 5 can be displayed/set with symbols of 0, 1, ...9,A, B, C, D, E, F.

### 3.1.3 Recognition of LED display symbols

The corresponding relationship between LED display symbols and characters/numbers

| LED display | Meaning of symbol | LED display | Meaning of symbol | LED display | Meaning of symbol | LED display | Meaning of symbol |
|---|---|---|---|---|---|---|---|
|  | 0 |  | 9 |  | H |  | T |
|  | 1 |  | A |  | J |  | t |
|  | 2 |  | B |  | j |  | U |
|  | 3 |  | C |  | L |  | u |
|  | 4 |  | c |  | N |  | y |
|  | 5 |  | d |  | n |  | − |
|  | 6 |  | E |  | o |  | . |
|  | 7 |  | F |  | p | | |
|  | 8 |  | G |  | r | | |

### 3.1.2 3−button on−board keypad

The upper left corner of the main board AIEC−MCB−A is equipped with a keypad with three digital tubes and three micro keys. The keypad has the functions of displaying the status of the integrated controller, such as floor, fault code, and simple commissioning function.

Note: the parameters displayed on the 3−button on−board keypad are different from the parameters displayed on the keypad.

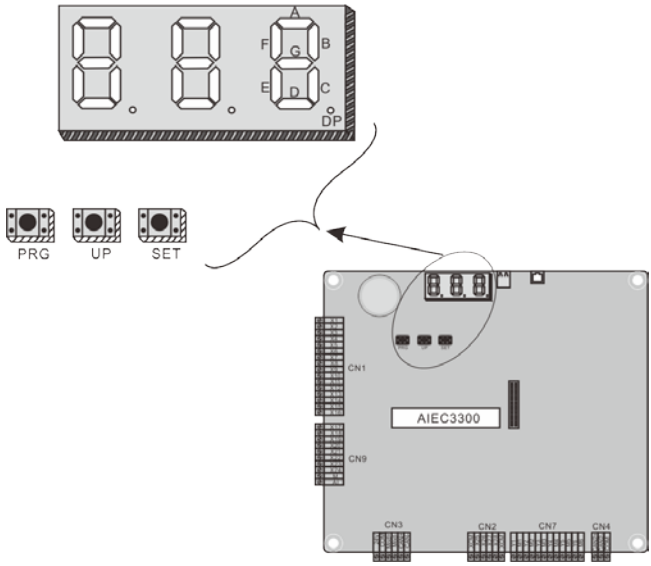



Figure 3−6 Schematic diagram of the 3−button on−board keypad.

| Button | Function description |
|---|---|
| PRG | In any state, press the PRG key to display the current parameter menu; press the PRG key again to exit the current operation. |
| UP | 1、UP key is used for increasing parameter menu number or value.<br>2、In group F−6, In basic parameter display mode, press up key to indicate door open command. |
| SET | 1、Enter parameter edit mode; press SET key to confirm and save operation.<br>2、In group F−6, In basic parameter display mode, press up key to indicate door close command. |

The diagram below is the operation steps of using the 3−button on−board keypad to call the elevator to the 4th floor.

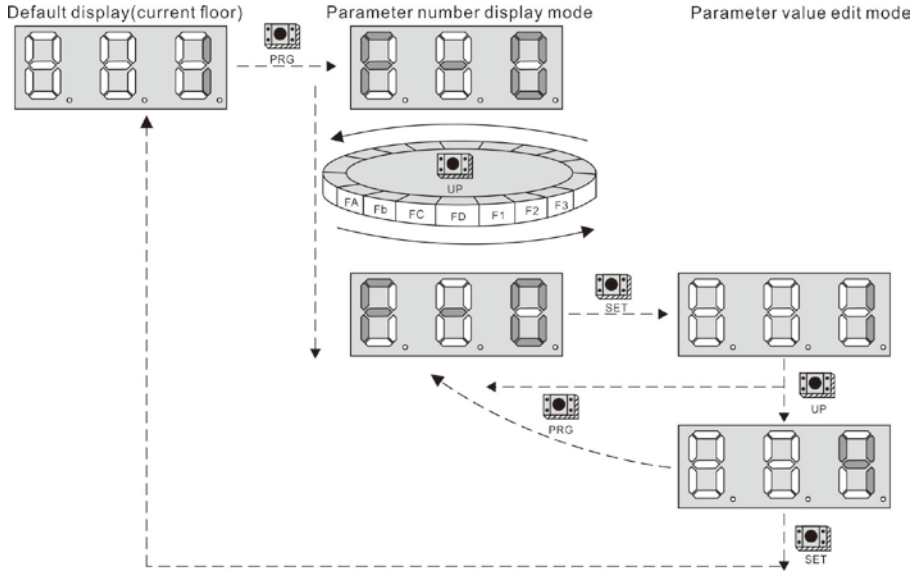
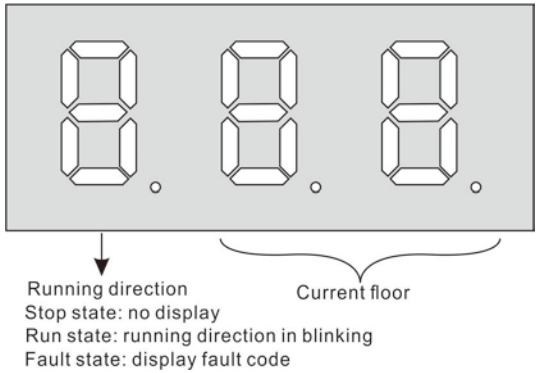



Figure 3−7 setting the called floor

## ■ 3−button on−board keypad description

◆F−0: Display of floor and running direction

The F−0 floor and running direction information is displayed on the keypad by default upon power−on. As shown in the figure: from left to right,The first LED indicates the running direction, When the elevator stops, the first LED has no display. When the elevator runs, the first LED blinks to indicate the running direction. The last two LEDs indicate the current floor number of the elevator. When the system has an alarm or fault, the LEDs automatically display the fault code and blink. If the fault is reset automatically, the F−0 menu is displayed.



◆F−1：Command input of the running floor

Enter the F−1 command input of the running floor menu through the three miniature keys (PRG, UP, SET), the LEDs display F6−01 the bottom floor parameters. Press the UP button to set the destination floor (the range of lowest floor to top floor), press the SET button to save, The elevator runs to the destinationfloor, and the display switches over to the F−0 menu at the same time.

◆F−2：Fault reset and fault time code display

Enter the F−2 menu through the three miniature keys (PRG, UP, SET), the LEDs display "0". Press the UP button tochange the Fault reset or display the fault time code ,range0～2：

Display "1": If you select this value and press the SET button, the system fault is reset.Then, the display automatically switches over to the F−0 menu.

Display "2": If you select this value and press the SET button, the 7−segment LEDsdisplay the 10 fault codes and occurrence time circularly. You can press the PRGbutton to exit.

◆F−3：Time display

Enter the F−3 time display menu through the three miniature keys (PRG, UP, SET),the LEDs display the current system time circularly.

◆F−4：Contract number display

Enter the F−4 menu through the three miniature keys (PRG, UP, SET),the LEDs display the user's contract number.

◆F−5：Running times display

Enter the F−5 menu through the three miniature keys (PRG, UP, SET),the LEDs display the elevator running times.

◆F−6：Door open/close control

Enter the F−6 menu through the three miniature keys (PRG, UP, SET), the LEDs display "1−0", and the UP and SET keys Indicates the door open command and door close command respectively. Press thePRG key to exit.

◆F−7：Shaft auto−tuning command input

Enter the F−7 menu through the three miniature keys (PRG, UP, SET), the LEDs display "0", Press the UP key tochange the shaft auto−tuning method, the range is 0 ~ 2.

"1" and "2" indicate the shaft auto−tuning command (1. Notclear leveling adjustmentparameters in group FR; 2. Clear leveling adjustment parameters in group FR).After press the SET button,and the conditions are met. Elevator starts shaft auto−tuning, Meanwhile, the display switches over to the F−0 menu. After shaft auto−tuning is complete, F−7 is back to "0" automatically. If shaft auto−tuningconditions are not met, fault code "E35" is displayed

◆F−8：Test function

Enter the F−8 test function menu through the three miniature keys (PRG, UP, SET), the LEDs display "0", The setting range of F−8 is 0 ~ 8, which means:

| | | | |
|---|---|---|---|
| 1 | Hall call forbidden | 2 | Door open forbidden |
| 3 | Overload forbidden | 4 | Limit switches disabled |
| 6 | Entering slip experiment state | 7 | Manual test on UCMP |
| 8 | Manual test on braking force | | |

After the setting is complete, press the SET key. Then the LEDs display"E88" and blink, prompting that the elevator is being tested.

When you press PRG toexit, the value of F8 will become to 0 automatically.

◆F-9：Factory parameters reserved

◆F-A：Auto-tuning

It is necessary to perform the F-A auto-tuning function to get the motor key parameters for better motor control performance and more comfortable. These motor parameters will be automatically stored in the elevator integrated controller after change the parameters manually or perform auto-tuning again.

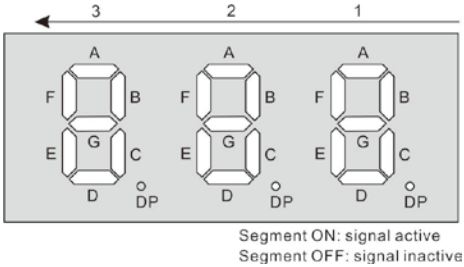
Enter the F-A auto tuningmenu through the three miniature keys (PRG, UP, SET), the LEDs display "0", The setting range of F-A is 0 ~ 2,

| | |
|---|---|
| F-A=1 | With-load auto-tuning |
| F-A=2 | No-load auto-tuning |

After the setting is complete, press the SET key. The LEDs display "TUNE", and the elevator enters the auto-tuning state. After confirming that the elevator meets the safe running conditions(It is extremely important to confirm safe operating conditions), press the SET key again to start auto-tuning. After auto-tuning is complete, the LEDs display the present angle for 2s, and then switch-over to the F-0 menu. Press the PRG key to exit the auto-tuning state.

◆F-b：CTB state display

Enter the F-b CTB state display menu through the three miniature keys (PRG, UP, SET), then the LEDs display the input/output state of the CTB. Thefollowing figure shows the meanings of the segment codes:




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

Figure 3-8 CTB state display

◆F−C：elevator direction change，do not change the value of the F−C parameter at will. (same as the function of F2−10)

F−C =0：Direction unchanged

F−C =1：Direction reversed

Note: if the parameter value of FC is modified, the motor direction will be reversed when reset the parameters to default value.

## 3.2 System Commissioning

### 3.2.1 Safety Check Before Commissioning

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

**■ Check mechanical safety**

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

**■ Check electrical wiring**

| □√ | No. | Check details |
|---|---|---|
| □ | 1 | Make sure that the three−phase power cannot be connected to the output terminals (U / V / W), otherwise the integrated controller will be damaged. |
| □ | 2 | The integrated controller, cabinet and motor are grounded correctly. |
| □ | 3 | The power supply R, S, T cables are wired correctly and securely. |
| □ | 4 | The UVW cables between the controller and the motor are wired correctly and securely. |
| □ | 5 | The safety circuit is conducted, and the emergency stop buttons and switches in the cabinet and in the equipment room can be enabled. |
| □ | 6 | The door lock circuit is conducted. The door lock circuit is disconnected when the car door or any hall door opens. |

**■ Check electrical safety**

| □√ | No. | Check details |
|---|---|---|
| □ | 1 | The line voltage of the user power supply is within 380–440 V, and the phase unbalance degree does not exceed 3%. |
| □ | 2 | The total lead−in wire gauge and total switch capacity meet the requirements. |
| □ | 3 | There is no inter−phase or to−ground short circuit in the 220 V power supply. |
| □ | 4 | The 24 V power supply has no short circuit between positive and negative or to−ground short circuit. |
| □ | 5 | There is no inter−phase or to−ground short circuit in the R, S, T power supply. |
| □ | 6 | There is no inter−phase or to−ground short circuit in the U, V, W phases of the controller. There is no to−ground short circuit in the U, V, W phases of the motor. |

| | | |
|---|---|---|
| □ | 7 | There is no to-ground short circuit on the output side of the transformer. |
| □ | 8 | The communication cable has no short circuit with the 24 V power supply or short circuit to ground. |

### ■ Check the rotary encoder

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

## 3.2.2 Commissioning at Inspection Speed

Sensorless vector control (SVC): applicable to inspection speed running for commissioning or fault judgment running during maintenance.

Feedback vector control (FVC): applicable to normal elevator running, achieving good driving performance and running efficiency in the prerequisite of correct motor parameters

### ■ Parameters related to motor auto-tuning

Motor auto-tuning related parameters

| Parameter No. | Parameter Name | Description |
|---|---|---|
| F1-25 | Motor type | 0: Asynchronous motor<br>1: Synchronous motor |
| F1-00 | Encoder type | 0: SIN/COS encoder<br>1: UVW encoder<br>2: ABZ incremental encoder<br>3：reserved |
| F1-12 | Encoder pulses per-revolution | 0～10000 |
| F1-01～F1-05 | Rated motor power<br>Rated motor voltage<br>Rated motor current<br>Rated motor frequency<br>Rated motor speed | These parameters are model dependent, and you need to manually input them according to the nameplate. |
| F0-01 | Command source selection | 0: Keypad control<br>1: Distance control |
| F1-11 | Auto-tuning mode | 0: No operation<br>1: With-load auto-tuning<br>2: No-load auto-tuning<br>3: Shaft auto-tuning 1<br>4: Shaft auto-tuning 2<br>5: Synchronous motor static auto-tuning |

## ■ Motor auto-tuning steps

**◆ Synchronous motor with-load auto-tuning (motor can connected with car)**

1. The elevator enter inspection state.
2. Set F0-01=1, F0-01 must be set to 1 forwith-load tuning;
3. Set F1-25=1, motor type is synchronous motor;
4. Set motor parameters F1-01～F1-05:

① Please obtain the rated power, rated voltage, rated current, rated frequency and rated speed from the nameplate of the main motor;

② Please be sure to set the motor parameters correctly, otherwise fault will be reported during the tuning.

5. Set encoder parameters F1-00 and F1-12

① Set F1-00 according to encoder type:

0: SIN/COS encoder;

1: UVW encoder;

② Set according to the identification of encoder nameplate: F1-12 (encoder pulse);

6. Set F111 = 1, press the "PRG" key, and the operator will display "TUNE" to prompt enter motor tuning state. If F1-12 is displayed, it means entering the tuning state fails:

① Check whether the elevator is in the inspection state;

② Check whether the main control board shows a fault, which needs to be cleared;

③ Check whether F0-01 is 1;

7. Continue to press the up or down inspection button for tuning: During tuning, the up or down inspection buttons need to be pressed all the time.After tuning, the integrated controller will automatically stop . Please release the up or down inspection button at this time.

8. Auto-tuning complete

① After tuning, the main control board will display the learned encoder angle for 3 seconds;

② Tune for many times to confirm that the error value learned before and after F1-06 is within ±5°;

③ F1-08 is mostly 0 or 8， which shall remain unchanged after tuning for several times.

**◆ Synchronous machine no-load auto-tuning (the motor must disconnect the car before tuning)**

1.The elevator enters the inspection state;

2. Confirm that F0-01 = 1: F0-01 must be 0 when no-load tuning;
3. Set the motor type to F1-25 = 1: when F1-25 is set to 1, it indicates a synchronous motor;
4. Set motor parameters F1-01～F1-05 :

① Please obtain the rated power, rated voltage, rated current, rated frequency and rated speed from the nameplate of the main motor;

② Please be sure to set the motor parameters correctly, otherwise fault will be reported during the tuning;

5. Set parameters F1-00 and F1-12 of the encoder:

① Set F1−00 according to encoder type:

0: SIN/COS encoder;

1: UVW encoder;

② Set according to the identification of encoder nameplate: F1−12 (encoder pulse);

6. Set F1−11 = 2, press the "PRG" key, and the operator will display "TUNE" to prompt entering the motor auto−tuning state. If F1−12 is displayed, it means entering the tuning state fails:

① Check whether the elevator is in the inspection state;

② Check whether the main control board shows a fault, which needs to be cleared;

③ Check whether F0−01 is 0;

7. Tuning:

① Open the brake manually;

② Press the "RUN" key on the operator to start tuning: after tuning, the integrated controller will automatically stop output;

8. After tuning:

① After tuning, the main board will display the learned encoder angle for 3 seconds;

② Tune for many times to confirm that the error value learned before and after F1−06 is within ±5°;

③ F108 is mostly 0 or 8， which shall remain unchanged after tuning for several times;

9. set F0−01 = 1: After tuning, F0−01 must be set to 1, otherwise the elevator cannot run.

**◆ Asynchronous machine with−load auto−tuning (motor can connected with car)**

1. The elevator enters the inspection state;

2. Confirm that F0−01 = 1: F0−01 must be 0 during with−load tuning;

3.Set the motor type to F1−25 = 0: when F1−25 is set to 0, it indicates a asynchronous motor;

4. Set parameters F1−01～F1−05 of the main motor:

① Please obtain the rated power, rated voltage, rated current, rated frequency and rated speed from the nameplate of the main motor;

② Please be sure to set the motor parameters correctly, otherwise fault will be reported during the tuning;

5. Set parameters F1−00 and F1−12 of the encoder:

① Set F1−00 to 2: ABZ typeencoder;

② Set according to the identification of encoder nameplate: F1−12 (encoder pulse);

6. Set F1−11 = 1, press the "PRG" key, and the operator will display "TUNE" to prompt entering the motor auto−tuning state. If F1−12 is displayed, it means entering the tuning state fails:

① Check whether the elevator is in the inspection state;

② Check whether the mainboard shows a fault, which needs to be cleared;

③ Check whether F0−01 is 0;

7. Press the "RUN" key on the operator to start tuning:

① After tuning is started, the motor will not rotate, but there will be the howling of current, and the whole tuning process will last for tens of seconds;

② After tuning, the controller automatically stops output;

③The tuning values are save to parameters of F1—14～F1-18

8. Tuning complete;

9. set F001 = 1: After tuning, set F0-01 = 1 , otherwise the elevator cannot run in low speed.

**◆ Asynchronous machine no-load auto-tuning (the motor must disconnect the car before auto-tuning)**

1. The elevator enters the inspection state;

2. Confirm that F0-01 = 1: F0-01 must be 0 during no-load tuning;

3. Set the motor type to F1-25 = 0: when F1-25 is set to 0, it indicates a asynchronous motor;

4. Set parameters F1-01～F1-05 of the main motor:

① Please obtain the rated power, rated voltage, rated current, rated frequency and rated speed from the nameplate of the main motor;

② Please be sure to set the motor parameters correctly, otherwise fault will be reported during the tuning;

5. Set encoderparameters F1-00 and F1-12 :

① Set F1-00：2 ： ABZ type encoder ;

② Set according to the identification of encoder nameplate: F1-12 (encoder pulse);

6. Set F1-11 = 2, press the "PRG" key, and the operator will display "TUNE" to prompt entering the motor tuning state. If F1-12 is displayed, it means entering the tuning state fails:

① Check whether the elevator is in the inspection state;

② Check whether the main control board shows a fault, which needs to be cleared;

③ Check whether F0-01 is 0;

7. Tuning: ① Manually open the brake; ② Press the "RUN" key on the operator to start tuning:

① In the no-load tuning state, the motor will rotate, the brake is required to be opened manually, and the whole tuning process will last for tens of seconds;

② After tuning, the controller automatically stops;

③ The motor parameter get by auto-tuning are save to F1-14 to F1-18;

8. Tuning complete;

9. setF001 = 1: After tuning, set F0-01 = 1 otherwise the elevator cannot run.

Notes:

◆ During synchronous motor no-load tuning, the main motor must disconnect the car first;

◆ During the tuning process of the synchronous motor, the initial magnetic pole angle of the motor, the connection mode of the motor, the D/Q axis inductance and the encoder origin angle will be learned;

◆ It needs to be tuned more than three times, and the angle of initial angle (zero position angle of encoder) of F1-06 synchronous machine obtained by each tuning shall be controlled within ±5°;

◆ If the F1-03 rated current, F1-04 rated frequency and F1-05 rated speed parameters are changed, the motor must be tuned again;

◆ If the encoder, encoder wire is replaced or motor wiring sequence is changed, the motor must

be tuned again;

- ◆ The initial angle value of F1−06 synchronous machine is prohibited from manual modification;
- ◆ Precautions for asynchronous motor tuning:

If E38 fails when the asynchronous motor is tuned, please try to change the phase sequence of encoders A and B.

### ■ Angle−free auto−tuning

Angle−free auto−tuning related parameters

| Parameters | Parameter Description | Description |
|---|---|---|
| F1−25 | Motor type | 1: Synchronous motor |
| F1−00 | Encoder type | 0: SIN/COS encoder<br>1: UVW encoder |
| F1−12 | Encoder pulses per−revolution | According to the encoder nameplate |
| F1−01～F1−05 | Rated motor power<br>Rated motor voltage<br>Rated motor current<br>Rated motor frequency<br>Rated motor speed | These parameters are model dependent, and you need to manually input them according to the motor nameplate. |
| F0−01 | Command source selection | 1: Distance control |
| F1−22 | Auto−tuning function selection | F1−22 = 2: Semi−automatic angle−free auto−tuning<br>Angle auto−tuning is performed in the first inspection or emergency electric RUN after power−off and power−on again.<br>F1−22 = 6: Full−automatic angle−free auto−tuning<br>Angle auto−tuning is performed in the first running after power−off and power−on again (without differentiating elevator states). |

**Semi−automatic angle−free auto−tuning:** After power−off and power−on again, the system automatically performs encoder angle auto−tuning only during running at inspection speed. After auto−tuning is successful, the system does not perform auto−tuning again before the next power−off.

**Full−automatic angle−free auto−tuning:** After power−off and power−on again, the system automatically performs encoder angle auto−tuning during elevator running at inspection/normal speed. After auto−tuning is successful, the system does not perform auto−tuning again before the next power−off.

## 3.2.3 Shaft Auto−tuning

1 Shaft Auto−tuningrelated parameters

| Parameters | Parameter Description | Description | Default | Remarks |
|---|---|---|---|---|
| F0−04 | Rated elevator speed | 0.250～8.000m/s | 1.600 m/s | − |
| F6−00 | Top floor of the elevator | F6−01～56 | 9 | (Actual number of floors + 1) −Bottom floor |

| | | | | |
|---|---|---|---|---|
| F6-01 | Bottom floor of the elevator | 1～F6-00 | 1 | - |

Note：After F0-04 is changed, shaft auto-tuning must be performed again. Otherwise, an abnormality will occur during elevator running.

2 Conditions must be Satisfied for Shaft Auto-tuning

- ◆ The elevator is at the leveling position of the bottomfloor;
- ◆ The elevator is in normal operation state;
- ◆ The input signal down slow-down switch 1 to the main control board is valid;
- ◆ The integrated controller is not in a fault alarm state.

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

3 Preparation for Shaft Self-learning

- ◆ Check that the shaft switches act properly, including final limit switches, limit switches, slow-down switches, and leveling sensors.
- ◆ Confirm the action sequence of the leveling sensor is correct.

Under normal circumstances, it is only necessary to install a leveling sensor.If multiple leveling sensors are installed, it must be confirmed whether the action sequence of the leveling sensors when passing through the floor plug board is correct. Take an example of installing three sensors:

① When inspection up, the sequence of sensor actions is: up leveling sensor → door zone sensor → down leveling sensor

② When inspection down, the sequence of sensor actions is: down leveling sensor → door zone sensor → up leveling sensor

- ◆ Confirm that the CAN communication between the main control board and the car top board is normal (the CAN1 signal indicatorof the main board flashes, indicating that the CAN communication is normal. )

4 Starting and Completing the ShaftAuto-tuning

When the above conditions are met, one of the following methods can be selected to start ShaftAuto-tuning:

- ●Set the shaft auto-tuning functionselection F1-11 to 3 on the keypad to start ShaftAuto-tuning 1 function.
- ●Set the F-7 to 1 on the 3-button on-board keypad to start shaft auto-tuning, and do not clear the parameters of group FR .

When the shaft auto-tuning is started, the elevator runs towards the top floor at F3-11 inspectionspeed, stops after reaching the leveling plate of the top floor, if the main control board displays the present floor number(top floor), then indicatingthe shaft auto-tuning is successful.

If the fault code E35 is reported during shaft auto-tuning, deal with the fault , and perform shaft

auto-tuningagain.

### 3.2.4 Door Machine Controller Commissioning

After door machine commissioning and installation is complete, it is necessary tocheck whether wiring is correct and whether limit signals are consistent with the system defaults.

The procedure of door machine controller commissioning is as follows:

- ◆ Check that F7-05 (Door open forbidden) is 0 (No).
- ◆ Check whether the door machine controller wiring is correct and secure and that the power voltage is proper.
- ◆ Check that the input and output of the door machine controller are normal in terminal control mode.
- ◆ Commission the door machine controller.

Check that the door open / close output is normal:

- ● Short BM / B1 on the CTB, and door 1 opens;
- ●Short BM / B2, and door 1 closes.If the door acts abnormally after you short BM / B1 or BM / B2 on the CTB, check:
- ● Whether cable connection between the CTB and the door machine controller iscorrect
- ● Whether the function setting of door open / close input terminals is correct
- ● Whether door machine controller commissioning fails. If yes, perform commissioningagain.

- ◆ Method for verifying that the door open / close limit signal feedback from the door machine controller is normal:

Observe the X terminal signal indicators on the CTB and judge whether door openand close limit feedback from the door machine controller is normal according to thefollowing table.

Judging door open / close limit

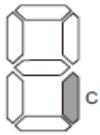
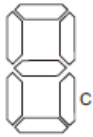
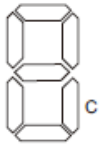
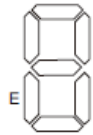
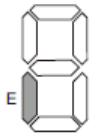
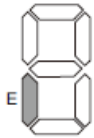
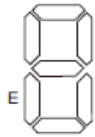
| Signal \ State | Door State | State of X3 Signal Indicator | State of X5 Signal Indicator |
|---|---|---|---|
| Door open / close limit signal set to NO | At Door Ope Limit | Steady ON | Steady OFF |
| | During door open /close | Steady OFF | Steady OFF |
| | At Door Close Limit | Steady OFF | Steady ON |
| Door open / close limit signal set to NC | At Door Ope Limit | Steady OFF | Steady ON |
| | During door open /close | Steady ON | Steady ON |
| | At Door Close Limit | Steady ON | Steady OFF |

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

- ◆ Whether cable connection between the CTB and the door machine controller iscorrect
- ◆ Whether the function setting of door open / close output terminals is correct
- ◆ Whether door machine controller commissioning fails. If yes, perform commissioningagain.

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

Checking consistency between F5−25 and actual door open/close limit signals

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

### 3.2.5 HCB Installation and Setting

This section describes HCB installation and setting of the single−door independent elevator system. For details on HCB installation and setting of parallel elevator system and opposite door elevator system, refer to related sections.

#### ■ HCB installation

- ◆ Install an HCB for each service floor (non−service floors do not require the HCB), asshown in Figure 3−9
- ◆ The HCB communicates with the MCB via Modbus. All HCBs are connected in paralleland then connected to the MCB.

## ■ HCB address setting

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

From the bottom floor, set the address of the HCB for the floor where the Nth leveling plate is located to N, as shown in the following figure, as shown in Figure 3−9.

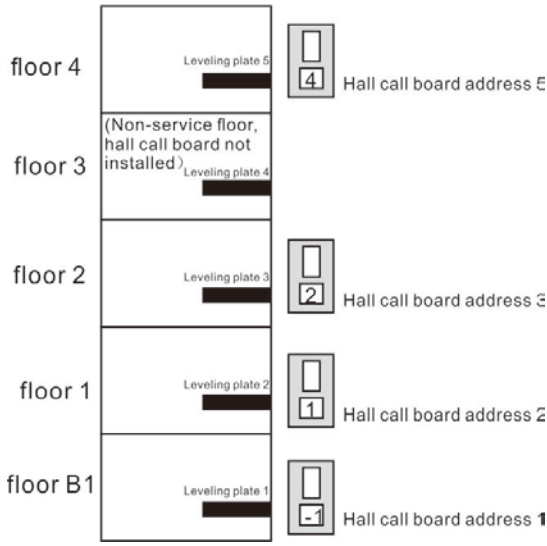



Figure 3−9 HCB installation and address setting

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

Note：

When the display board is used inside the car, the address must be set to 0.

### 3.2.6 Riding Comfort Adjustment

The riding comfort is an important factor of the elevator's overall performance. Enhancing the riding comfort mainly involves adjustment of the controller output and the elevator's mechanical construction.

## ■ Performance adjustment of system control

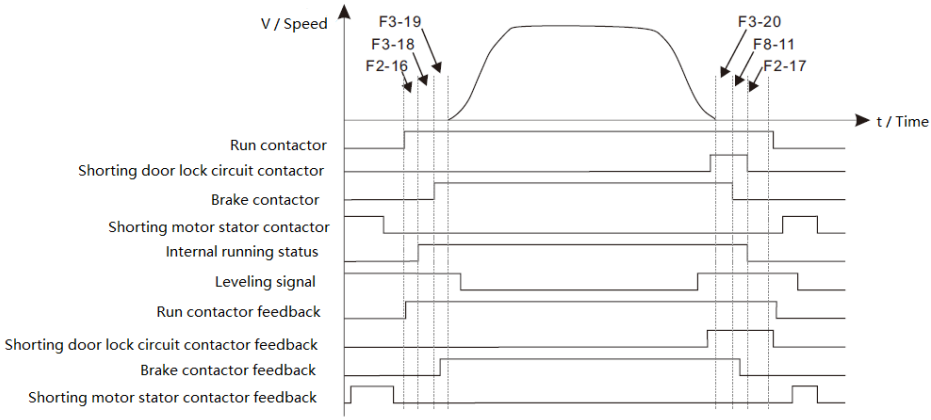



Figure 3−10 Running time sequence of integrated controller

## ■ Riding comfort adjustment at elevator startup and stop

**Related parameters:**

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F2−00 | Speed loop proportional gain 1 | 0～8000 | 1000 |
| F2−01 | Speed loop integral time 1 | 0～2000 | 500 |
| F2−03 | Speed loop proportional gain 2 | 0～8000 | 1500 |
| F2−04 | Speed loop integral time 2 | 0～2000 | 500 |

◆Adjustment to abnormal motor startup

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

- To achieve a faster system response, increase the proportional gain and reduce the integral time. However, too large proportional gain or too small integral time may lead to system oscillation.
- Decreasing the proportional gain and increasing the integral time will slow the dynamic response of the motor. However, too small proportional gain or too large integral time may cause motor speed tracking abnormality, resulting in fault E33 or unstable leveling at stop.

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

- Decrease the proportional gain first (between 500 and 1000) to ensure that the system does not oscillate,;
- Reduce the integral time (between 500 and 1000) to ensure that the system has quick response but small overshoot.

◆ Adjustment to elevator startup

● Related parameters of adjustment for no-load-cell startup

| Function Code | Name | Setting Range | Default | Description |
|---|---|---|---|---|
| F8-01 | Pre-torque selection | 0: Pre-torque invalid<br>1:Load cell pre-torque compensation<br>2:Automatic pre-torque compensation<br>3: Load cell pre-torque and automatic compensation both in effect | 2 | The no-load-cell startup function is enabled when F8-01 is set to 2.<br>2: Pre-torque automatic compensation |
| F2-11 | No-load-cell zero servo current Kp | 0～5000 | 1000 | These are zero servo adjustment parameters, and are valid only when F8-01 is set to 2 or 3. |
| F2-12 | No-load-cell zero servo current KI | 0～5000 | 500 | |
| F2-13 | No-load-cell zero servo speed KI | 0～5000 | 500 | |

**Adjustment instructions:**

When no-load-cell pre-torque compensation is used (F8-01 = 2), no analog load cell is required, and the controller quickly compensates the torque based on slight rotation change of the encoder at startup. The default setting of F2-11 to F2-13 is proper for most large-power motors, and you need not modify these parameters. For the small-power motor (P ≤ 5.5 kW), the motor may have oscillation or noise at with-load startup, and passengers in the car may have a strong feeling of car lurch. To eliminate oscillation, do as follows:

1、Decrease the value of F2-11 to eliminate motor oscillation.

2、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.

◆ Related parameters of adjustment for load cell startup

| Function Code | Name | Setting Range | Default | Description |
|---|---|---|---|---|
| F8-01 | Pre-torque selection | 0: Pre-torque invalid<br>1:Load cell pre-torque compensation<br>2:Automatic pre-torque compensation<br>3: Load cell pre-torque and automatic compensation both in effect | 2 | When a load cell is used, set F8-01 to 1.<br>1: Weighing pre-torque compensation |
| F8-02 | Pre-torqueoffset | 0.0%～100.0% | 50.0% | These are pre-torque regulating parameters. |
| F8-03 | Drive gain | 0.000～7.000 | 1.000 | |
| F8-04 | Brake gain | 0.000～7.000 | 1.000 | |

**Adjustment instructions:**

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

1、In the driving state, increase F8-03 properly if there is rollback at elevator startup, and decrease F8-03 if there is car lurch at elevator startup.

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

**important hint:**

1、F8-02 (Pre-torque offset) is actually the elevator balance coefficient, namely, the percentage of the car load to the rated load when the car and counterweight are balanced. This parameter must be set correctly. F8-03 (Drive gain) or F8-04 (Brake gain) scales the elevator's present pre-torque coefficient when the motor runs at the drive or brake side. If the gain set is higher, then the calculated value of startup protorque compensation is higher.

2、Motor operation is generally divided into "driving state ( full-load up, no-load down)" and "braking state ( full-load down, no-load up)"。

◆ Comfort adjustment is enabled when the weighing compensation and automatic compensation are both in effect.

| Function Code | Name | Setting Range | Default | Description |
|---|---|---|---|---|
| F8-01 | Pre-torque selection | 0: Pre-torque invalid<br>1:Load cell pre-torque compensation<br>2:Automatic pre-torque compensation<br>3: Load cell pre-torque and automatic compensation both in effect | 2 | When a load cell is used and the inconsistency of startup effects at different loads is caused by improper load cell linearity, set F8-01 to 3.<br>3: Weighing pre-torque and automatic compensation both in effect |
| F8-02 | Pre-torqueoffset | 0.0%～100.0% | 50.0% | These are pre-torque regulating parameters. |
| F8-03 | Drive gain | 0.000～7.000 | 1.000 | |
| F8-04 | Brake gain | 0.000～7.000 | 1.000 | |
| F2-11 | No-load-cell zero servo current Kp | 0～5000 | 1000 | Automatic pre-torque compensation Adjustment parameters |
| F2-12 | No-load-cell zero servo current KI | 0～5000 | 500 | |
| F2-13 | No-load-cell zero servo speed KI | 0～5000 | 500 | |

**Adjustment instructions:**

When F8-01 is set to 3, the controller identifies the braking or driving state according to the load cell signal, automatically calculates the required torque compensation value, and quickly corrects the torque compensation value according to the slight rotationchange of the encoder at the moment of startup.

The adjustment is based on the combination of “startup comfort adjustment withouta load cell” and “startup comfort adjustment with a load cell”.

◆Related para meters of Handling of rollback at elevator startup and stop：

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F3−19 | Brake release delay | 0.000～2.000s | 0.600s |
| F8−11 | Brake close delay | 0.200～1.500s | 0.600s |

F3−19 (Brake release delay) specifies the time from the moment when the system sends the brake release command to the moment when the brake is completely released, during which the system retains the zero−speed torque current output. If there is obvious rollback at elevator startup, increase F3−19 properly. The system retains the zero−speed torque current output within the time set in F8−11 from the moment when the system sends the brake close command; this is to preventrollback. If there is obvious rollback at elevator stop, increase F8−11 properly.

◆Handling of current noise at motor startup and stop

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

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F2−16 | Torqueacceleration time | 1～500m/s | 1 m/s |
| F2−17 | Torque deceleration time | 1～3300m/s | 350 m/s |

◆Adjustment at large mechanical static friction

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F3−00 | Startup speed | 0.000～0.050m/s | 0.000m/s |
| F3−01 | Startup holding time | 0.000～5.000s | 0.000s |

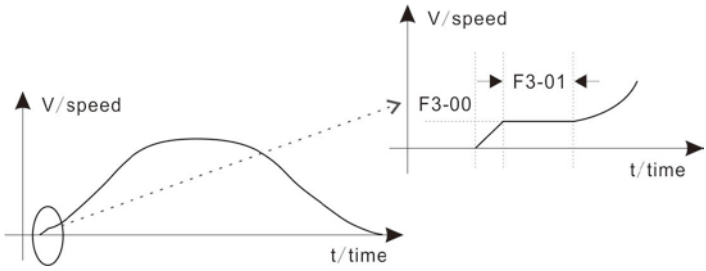



Figure 3−11 Startup timing sequence for eliminating static friction

Bad riding comfort due to static friction may often exist in villa elevators. When there is large friction between the guide shoes and the guide rails, large static friction gen−erates at the moment of startup,

leading to bad riding comfort. Make the system starts up at the specified speed by setting these parameters to eliminate friction and im−prove riding comfort.

◆ Riding comfort adjustment to the running curve

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F3−02 | Acceleration rate | 0.200～1.500m/s$^2$ | 0.700 m/s$^2$ |
| F3−03 | Acceleration start jerk time | 0.300～4.000s | 1.500s |
| F3−04 | Acceleration end jerk time | 0.300～4.000s | 1.500s |
| F3−05 | Deceleration rate | 0.200～1.500 m/s$^2$ | 0.700 m/s$^2$ |
| F3−06 | Deceleration end jerk time | 0.300～4.000s | 1.500s |
| F3−07 | Deceleration start jerk time | 0.300～4.000s | 1.500s |

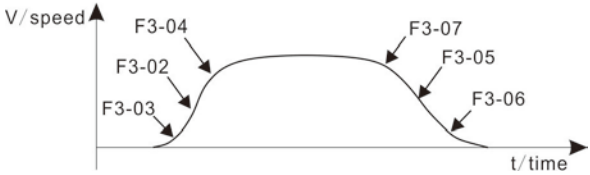



Figure 3−12 Running curve

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

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

◆ Adjustment of mechanical construction

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

| No. | Mechanical Factor | Description |
|---|---|---|
| 1 | Guide rail | Installation of the guide rail mainly involves verticality and surfaceflatness of the guide rail, smoothness of the guide rail connectionand parallelism between two guide rails (including guide rails on thecounterweight side). |
| 2 | Guide shoe | Tightness of the guide shoes (including the one on the counterweightside) also influences the riding comfort. The guide shoes must not be tooloose or tight. |
| 3 | Steel rope | The drive from the motor to the car totally depends on the steel rope.Large flexibility of the steel rope with irregular resistance during the carrunning may cause curly oscillation of the car. In addition, unbalancedstress of multiple steel ropes may cause the car to jitter during running. |
| 4 | Brake | The riding comfort during running may be influenced if the brake arm isinstalled too |

| | | |
|---|---|---|
| | | tightly or released incompletely. |
| 5 | Balance of the car | If the car weight is unbalanced, it will cause uneven stress of the guideshoes that connect the car and the guide rail. As a result, the guide shoeswill rub with the guide rail during running, affecting the riding comfort. |
| 6 | Gearbox | For asynchronous motor, abrasion or improper installation of thegearbox may also affect the riding mfort. |
| 7 | Resonance caused by the car, guild rail and motor | Resonance is an inherent character of a physical system, related to thematerial and quality of system components. If you are sure that theoscillation is caused by resonance, reduce the resonance by increasingor decreasing the car weight or counterweight and adding resonanceabsorbers at connections of the components (for example, place rubberblanket under the motor). |

### 3.2.7 Adjustment Leveling Accuracy

◆Leveling adjustment is divided into all−floor adjustment and single−floor adjustment:

- All−floor adjustment

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F4−00 | Leveling adjustment | 0～500 | 0 |

F4−00 is used to adjust the car stop position at all floors and the default is 30. The setting of F4−00 is effective to all floors.

F4−00Setting method of F4−00 leveling adjustment parameters:

Increase F4−00 if under−leveling occurs at every floor

Decrease F4−00 if over−leveling occurs at every floor.

- Single−floor adjustment

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

| Function Code | Name | Setting Range | Default | Unit |
|---|---|---|---|---|
| Fr−00 | Leveling adjustment function | 0～1 | 0 | − |
| Fr−01 | Leveling adjustment record 1 | 00000～60060 | 30030 | mm |
| Fr−02 | Leveling adjustment record 2 | | 30030 | mm |
| ～ | ～ | | ～ | ～ |
| Fr−27 | Leveling adjustment record 27 | | 30030 | mm |
| Fr−28 | Leveling adjustment record 28 | | 30030 | mm |

**The leveling adjustment steps are as follows:**

1、Set Fr−00 to 1;

2、Go into the car after the elevator automaticallyruns to the top floor;

3、Adjust the leveling data based on actual error:Press the top floor button once, and the stop positionis changed 1 mm upward.Press the bottom floor button once, and the stopposition is changed 1 mm downward;

4、Press the top floor button and bottom floor Button inthe car at the same time to save the adjustment result

5、Run the car to the next floor, and makeadjustment;

6、After adjusting all the floors that need to be leveled, restore Fr−00 to 1.

Note：

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

◆ 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.

◆ During adjustment, the CCB 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 that if a certain floor need not adjustment, you also need to save the data once. Otherwise, you cannot register the car call.

# Chapter 4 Description of Applications

## 4.1 Parallel/Group Control

### ■ Background

The controller provides parallel control of two elevators and group control of 2 to 8 elevators, implementing proper allocation of elevators and improving running efficiency.

### ■ Brief description of parallel control and group control control functions

◆ Parallel control of 2 elevators implemented by directly using the CAN2communication port

◆ Group control of multiple elevators with together use of the group control board AIEC−GCB−A

### 4.1.1 Parallel Control

When two elevators need to be controlled in parallel, just connect the CAN2 port of CN4 of each integrated controller (as shown in the figure below).

### ■ Wiring

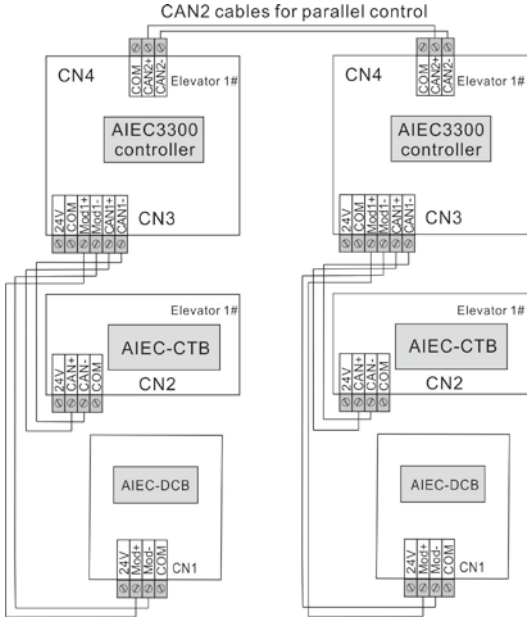



Figure 4−1 Wiring diagram of parallel control (via CN4)

Use description of parallel control (set the floor offset, F6−50 ≠ 0).

- ◆ User floor: actual floor of the building.
- ◆ Physical floor: floor which either elevator stops at and provides service for or floorinstalled with the leveling plate.
- ◆ For the same physical floor, the leveling plate must be installed for both the elevators.Even if one elevator need not stop at a certain floor, the leveling plate must beinstalled at this floor for this elevator. You can set the service floors of this elevator so that it does not stop at this floor.
- ◆ The HCB addresses should be set according to physical floors of this elevator. Physical floors of different elevators may be inconsistent.
- ◆ The top floor (F6−00) and bottom floor (F6−01) of each elevator should be set based on the corresponding physical floors of this elevator.

## ■ Related parameters

| Function Code | Name | Setting Range | Setting in Parallel Control | Remarks |
|---|---|---|---|---|
| F6−07 | Number of elevators in parallel/group mode | 1～8 | 2 | −− |
| F6−08 | Elevator No. | 1～8 | Main elevator:1; auxiliary elevator: 2 | −− |
| F6−09 | Program control selection | −−− | Bit3 = 1: Parallel/group control implemented at CAN2 | Set Bit3 to 1 when the CAN2 communication port CN4 is used for parallel/group control. |

**Example:Application of two elevators in parallel control**

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

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

The following figure shows related attributes both elevators:

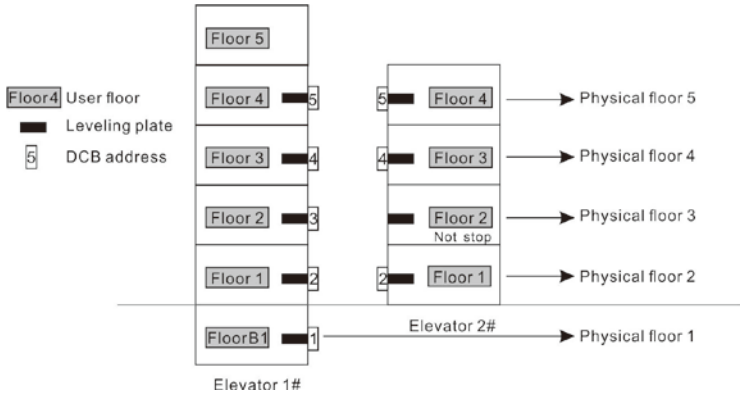



Figure 4−2 Floor diagram of two elevators in parallel control

**Parameter setting and HCB addresses of two elevators**

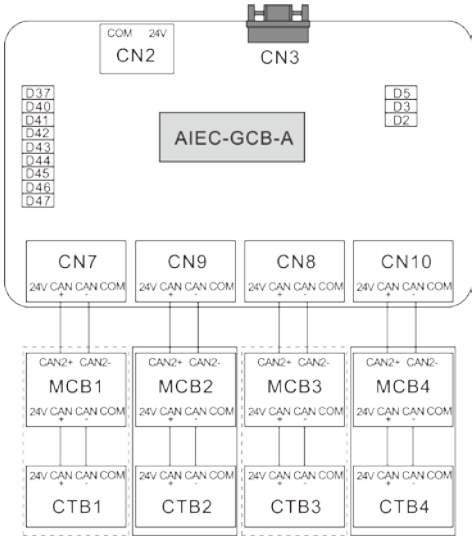
**Floor address setting for elevators in parallel control**

| | | Elevator 1 | | Elevator 2 | |
|---|---|---|---|---|---|
| Number of elevators in parallel/group mode (F6−07) | | 2 | | 2 | |
| Elevator No. (F6−08) | | 1 | | 2 | |
| User floor | Physical floor | HCB address | HCB display | HCB address | HCB display |
| B1 | 1 | 1 | FE−01 = 1101 | | |
| 1 | 2 | 2 | FE−02 = 1901 | 2 | FE−03=1902 |
| 2 | 3 | 3 | FE−03=1902 | Non−stop floor, no hall call, but leveling plate required | −− |
| 3 | 4 | 4 | FE−04=1903 | 4 | FE−04=1904 |
| 4 | 5 | No hall call | No hall call | 5 | FE−05=1905 |
| Bottom floor of the elevator (F6−01) | | 1 | | 1 | |
| Top floor of the elevator (F6−00) | | 4 | | 4 | |
| Service floor 1 (F6−05) | | 65535 | | 65533 (not stop at physical floor 2) | |
| Offset floor (F6−50) | | 0 | | 1 | |

## 4.1.2 Group Control Scheme

- ◆ A GCB (AIEC−GCB−A) is additionally required to implement group control of more than two elevators.A single GCB supports group control of a maximum of 4 elevators.
- ◆ If group control of more than 4 elevators is required, two GCBs need to be installed.This scheme is customized. For details, consult manufacturer.

## ■ Wiring




Elevator 1 # Elevator 2 # Elevator 3 # Elevator 4 #

Figure 4−3 Wiring diagram of group control

## ■ Related parameters

| Function Code | Name | Setting Range | Setting in Group Control | Remarks |
|---|---|---|---|---|
| F6−07 | Number of elevators in parallel/ Groupmode | 1～4 | 1～4 | Number of elevators in parallel/ Groupmode |
| F6−08 | Elevator No. | 1～4 | 1～4 | F6−08=1：elevator 1 #;<br>F6−08=2：elevator 2 #;<br>F6−08=3：elevator 3 #;<br>F6−08=4：elevator 4 #; |
| F6−60 | Program control selection | --- | Bit1 = 0:<br>Group control board is AIEC−GCB−A | Select strictly according to the group control board model |
| | | --- | Bit4 = 1:<br>Group control in parallel with AIEC3300 | Set Bit4 to 1 when the AIEC3300 is involved in group control. |

You need not set the CTB address in group control mode.

## 4.2 Introduction to Opposite Door Control Scheme

### ■ Background

This function implements separate control on two doors of an elevator.

### ■ Brief description of scheme

The AIEC3300 supports two opposite door control modes: mode A, mode B.

**Opposite door control modes**

| Type | Door Control Mode | Description |
|---|---|---|
| Mode A | Simultaneous control | The front door and back door acts simultaneously upon arrival for hall calls and car calls. |
| Mode B | Car call simultaneous, hall call independent | Car call: The front door and back door act simultaneously upon arrival for car calls.<br>Hall call: The corresponding door opens upon arrival for hall calls from this door. |

### ■ Wiring

◆ CCB wiring

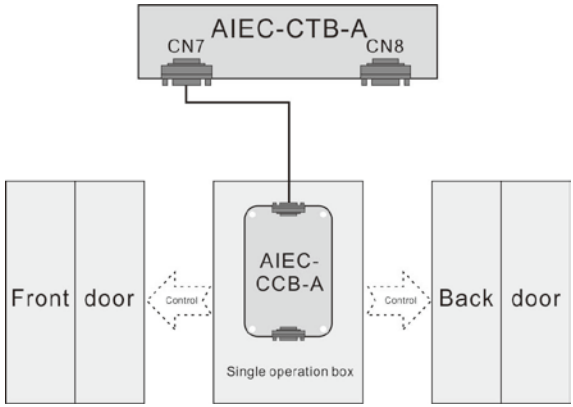



Figure 4−4 CCB wiring

◆ DCB setting

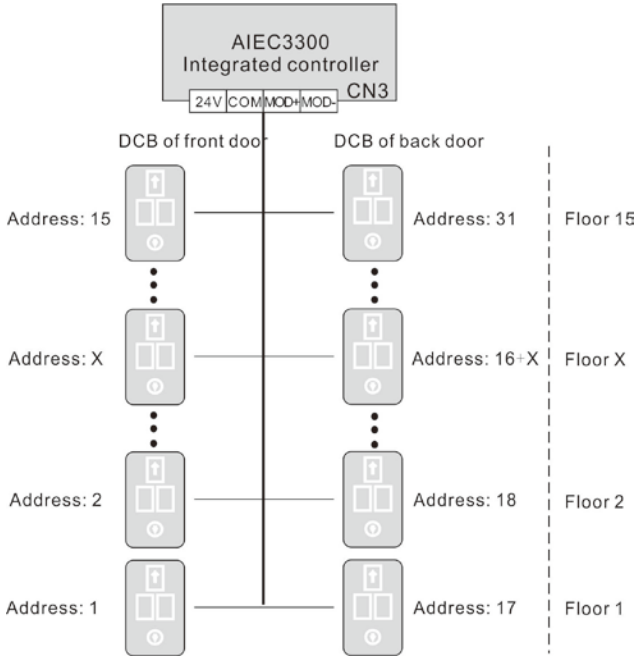



Figure 4−5 HCB setting diagram

HCB addresses of front door: 1 to 15, HCB address of back door: N to N+15, F8−16 = N (N > F6−00)

## ■ Related parameters

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

# 4.3 UCMP Application Brief

## ■ Background

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

Regularly detecting the braking force of the holding brake can prevent the holding brake of the driving host from failing. Brief description of car accident displacement detection scheme and brake braking force test scheme Pre-open modules ( AIEC-SCB-A / A1 / C / D) are required for the UCMP function.

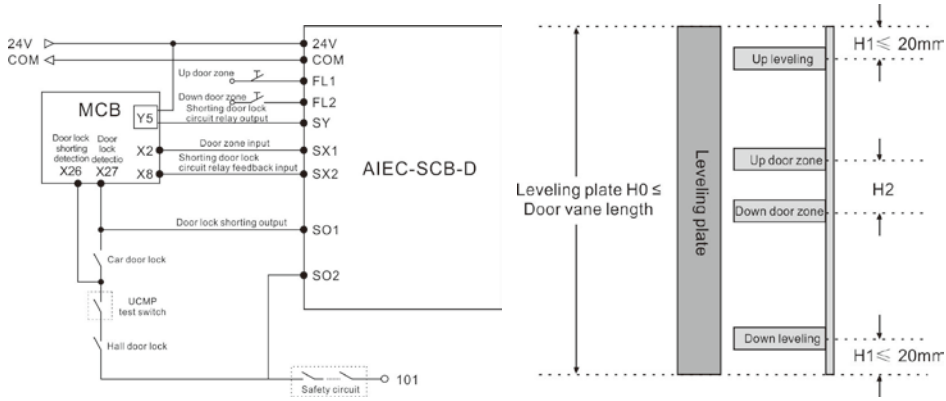
| Item | Asynchronous Motor | Synchronous Motor |
|---|---|---|
| | With an Auxiliary Brake | Without Any Auxiliary Brake |
| Model | AIEC-SCB-C or AIEC-SCB-D ② | AIEC-SCB-A ① or AIEC-SCB-A1 ① |

① With CE certification, suitable for domestic and foreign markets, others are only applicable to the domestic market;

② Only AIEC-SCB-D can be used for the opposite door on site.

### 4.3.1 Accidental car displacement solution

**■ Wiring**

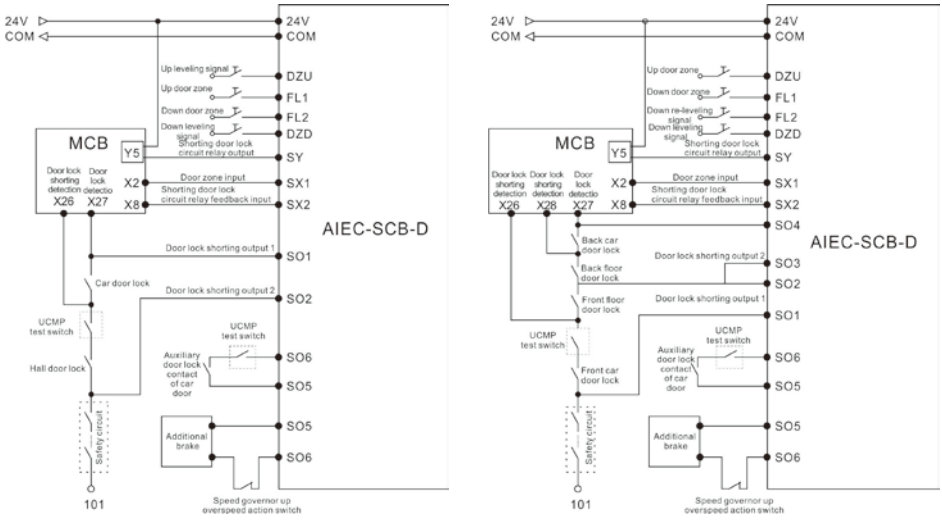



Without any additional brake (single door) Recommended installation scheme for UCMP switch

Figure 4-6 UCMP wiring without any additional brake

**Requirements for switch installation:**

- Leveling plate length ≤ 300 mm. A 300 mm leveling plate is recommended;
- H1 ≤ 20mm; H2=60mm.
- NO door zone switches must be used.
- Two door zone switches must be used. The leveling plate length is determined by the actual door open zone (door vane length) of the elevator.




With an auxiliary brake (single door) With an auxiliary brake (double door)

Figure 4−7 UCMP wiring with an additional brake

Note: When using AIEC−SCB−C / D, the leveling sensors in the upper and lower door areas must be normally open.

## ■ Related parameters

| Function Code | Name | Setting Range |
|---|---|---|
| F−8 | Test function | F−8=7：Entering the UCMP test with the keypad |
| F3−24 | Program function selection | F3−24=1：Slip experiment function enabled<br>F3−24=2：UCMP manual test |

| Function Code | Name | Setting Range |
|---|---|---|
| F5−01 | X1 function selection | 01/33：Up leveling signal NO/NC ( AIEC−SCB−A/A1) |
| | | 01: Up leveling signal NO ( AIEC−SCB−C/D) |
| F5−03 | X3 function selection | 02/34：Down leveling signal NO/NC ( AIEC−SCB−A/A1) |
| | | 02: Down leveling signal NO ( AIEC−SCB−C/D) |
| F5−02 | X2 function selection | 03: Door zone signal NO |
| F5−08 | X8 function selection | 22：Shorting door lock circuit contactor feedback NO |
| F5−30 | Y5 function selection | 03：Shorting door lock circuit contactor control |

**experiment procedure:**

● In inspection state, in the case of door lock closed, and in the door zone.

● Set F−8 to 7 using the keypad, and the system displays E88 and enters the UCMP test function. At this moment, the door lock circuit is open.

● Manually press and hold down the inspection button and the up or down button, and the shorting motor stator contactor performs outputting and the door lock is shorted. At this moment, the elevator performs inspection running.

● After the elevator is divorced from the door zone (the door zone signal is invalid), the hardware UCMP module will cancel door lock shorting. At this moment, the elevator reports E65 (UCMP fault) and stops running.

Note:

◆ It is invalid to set F−8 to 7 in non−inspection state or door zone or in the case of door lock inoperative.

◆ After F−8 is set to 7 , clearing is automatically performed after one running and after power failure.

◆ In UCMP test mode, the startup acceleration curve is linearly accelerated to the inspection speed according to F3−08.

◆ Automatic resetting cannot be performed in case of E65 or after power−off and on.

◆ E65 can be manually reset only in inspection state.

### 4.3.2 **Braking Force Test Scheme**

#### ■ Wiring

Wiring is not required.

#### ■ Related parameters

| Function Code | Name | Setting Range | Default |
|---|---|---|---|
| F2−32 | Torque output duration | 1～10s | 2 |
| F2−33 | Torque limit | 80～150% of the rated motor torque | 110 |
| F2−34 | Threshold of pulses for judging braking force abnormal | 1～100 encoder feedback pulses | 30 |
| F2−35 | Threshold of slip distance excessive | 1° to 20° motor rotating mechanical angle | 10 |
| F−8 | Test function | 8：Manual test on braking force | 0 |

| Function Code | Name | Setting Range | Default | Remarks |
|---|---|---|---|---|
| F7−09 | Braking force test result | 0～2 | 0 | 1: pass 2: fail |
| F7−10 | Braking force test countdown | 0～1440 | 1440 | Countdown time is automatically restored to 1440 at the end of the test. |

**Manual test:**

1. Make sure that the door lock, safety circuit is on, and the elevator is under maintenance.

2. Manually set the braking force detection parameters of F2−32 ～ F2−35.

3. The 3−button on−board keypad F−8 is set to 8 when the elevator enters the brake braking force detection operation, or F3−24 = 2.

4.The shorting motor stator contactor and RUN contactor have output, and the brake contactor has no output.

5. After the test is completed, check the F7−09 test results, = 1, = 2, or detect abnormal brake digital brake brake force detection fault E66, and the elevator stops running.

6.E66 fault cannot be reset, nor can it be reset after power off and power on. The fault can only be reset after the brake braking force test is re−tested and passed.

**Automatic test:**

After braking force test conditions ① are satisfied, the system automatically enters the test state. The steps are the same as steps 3, 4, 5, and 6 of the manual test. Fault E66 cannot be reset upon power failure and can be automatically reset onlywhen a braking force test is redone and passes.

Note:

◆ Countdown function: After 12 h is exceeded, the system starts to judge whether condition 1 is satisfied. If testing has been performed, the countdown function code is reset to 24 h. If no test has been performed, the system proceeds to condition 2 (forced test).

◆ During the automatic test, no fault is prompted for hall calls and the keypad prompts the E88 test state. Hall calls can be registered, but cannot obtain a response. The system restores to normal and responds to registered hall calls at the end of the test. Car calls are canceled. The door cannot be opened or closed.

Note: Test conditions

Condition 1: Normal test on braking force: Under the condition of no car and hall calls, testing is performed after the elevator energy saving time or 3 minutes.

Condition 2: Forced test on braking force: The system makes a judgment ahead of 2 minutes. When time set in F7−10 is smaller than or equal to 2 minutes, the elevator buzzes for 30s. Buzzing can be closed by setting F8−19 Bit13. At the moment, registered hall calls are reserved, car calls are canceled, and the door can be opened or closed. The system starts testingafter the door is closed.

## 4.4 Introduction to Automatic Emergency Evacuation Scheme at Power Failure

### ■ Background

Passengers may be trapped in the car if power failure happens during use of theelevator. The

emergency evacuation device needs to be configured in the system to solve the problem.

**Scheme Brief**

● Automatic rescue device (ARD) for elevator emergency evacuation

In this scheme, the ARD provides power supply to the motor and the drive controlcircuit. The ARDs of different brands may have different control and output wiring; during use, refer to the corresponding usermanual for the ARD. This part describes only our company elevator ARD.

| Automatic Emergency Evacuation Scheme | Principle |
|---|---|
| Emergency evacuation by controller drive | After the mains power supply shuts down, the standby power supply is used to provide power to the system. The controller drives the motor, which runs the car to the leveling area to let passengers out. |

Common standby power supply modes:

| Standby Power Supply | Function description |
|---|---|
| Automatic rescue device (ARD) for elevator emergency evacuation | The battery is used as the standby power supply. Only the input terminal for emergency evacuation signal feedback must be reserved in the control cabinet. There is no other cost.<br>The ARD itself has the control system which can diagnose the mains power supply status and performs emergency evacuation running. |

### 4.4.1 ARD for elevator emergency evacuation

#### ■ Wiring

The following figure shows wiring of the ARD for elevator emergency evacuation.

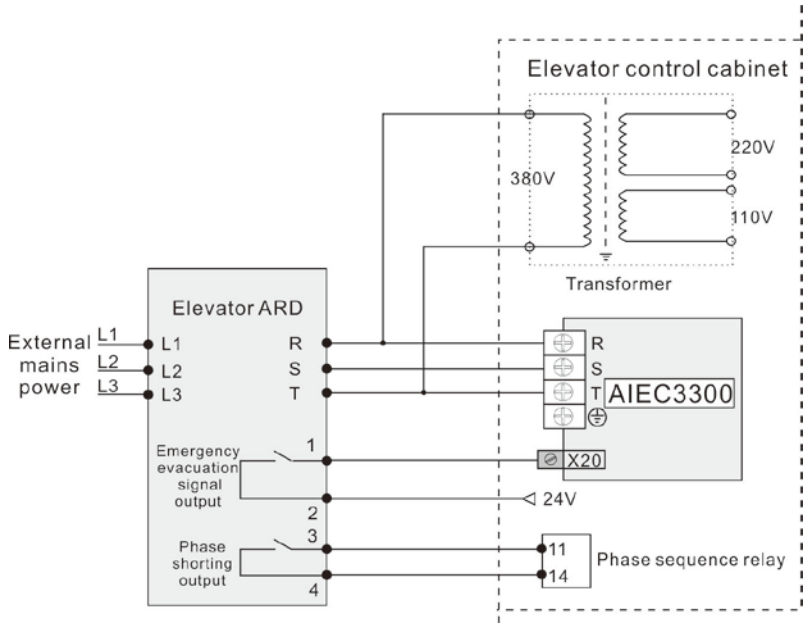



Figure 4−10 Wiring of three−phase (380 V) elevator ARD

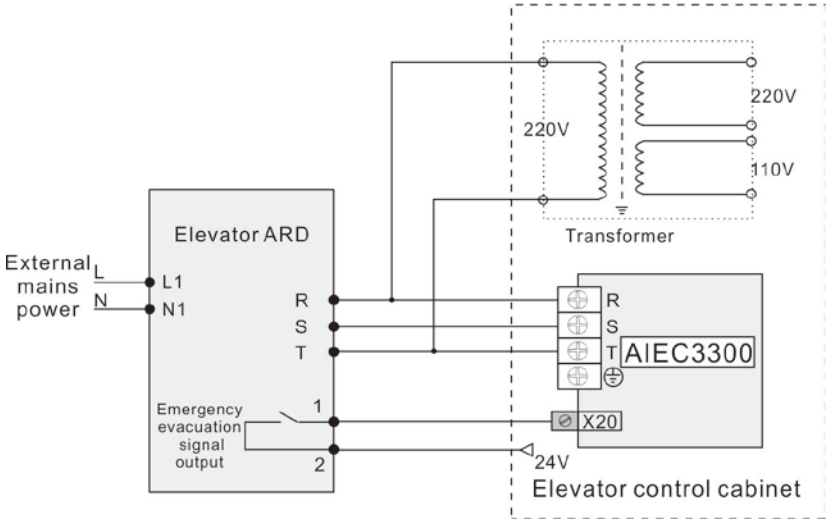



Figure 4−11 Wiring of single−phase (220 V) elevator ARD

## ■ Related parameters

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

| Function Code | Value | Description | Remarks |
|---|---|---|---|
| F8−10 | 1：UPS | Emergency evacuation operation mode at power failure | − |
| F5−20(X20) | 27 | Emergency evacuation signal NO | Assume that X20 is used as the NO input of emergency evacuation signal. |

Note：

**Pay attentions to the following precautions:**

◆ Select the ARD with the nominal output power equal to or larger than the motor rated power.

◆ For the 380 V elevator ARD, only two phases are used for emergency evacuationoutput, and you need to ensure that wiring to the controller is correct; You need to ensure that the transformer meets the requirements on the input side.

**Other parameters related to emergency evacuation**

| Function Code | Value | Description |
|---|---|---|
| F3−22 | 0.100～1.300m/s$^2$ | Acceleration rate at emergency evacuation |
| F6−48 | 0.010～0.630m/s | Emergency evacuation switching speed |
| F6−49 | 0～F6−00 | Evacuation parking floor |
| F8−09 | 0.05m/s | Emergency evacuation operation speed at power failure |

# Chapter 5 Parameters List

## Meanings of Each Item in the Parameters List

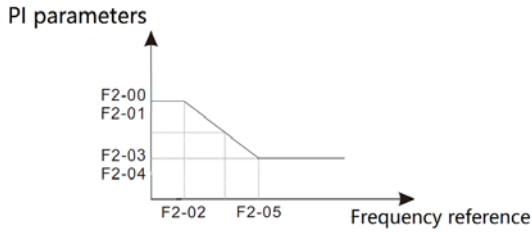
| Item | Description |
|---|---|
| No. | The number of parameter, such as F0−00 |
| Name | The name of parameter, which explains the parameter's meanings |
| Default | The value of factory setting ( see FP−01) |
| Setting range | The value from minimum value to maximum value that can be set to this parameter |
| Unit | V:voltage; A: current; ℃: temperature; Ω: Ohm;<br>mH: millie−henry; rpm: revolutions per minute;%: percentage; bps: baud rate;<br>Hz、kHz: frequency unit; ms、s、min、h、kh: time unit; kW: power; −: no unit |
| Attribute | ○: This parameter can be changed even in running status;<br>×: This parameter can be changed only in stop status;<br>*: This parameter is read only cannot be change. |
| Description | Parameter setting list and descriptions |
| User setting | Used for recording parameters by user |

## 5.1 Parameters List

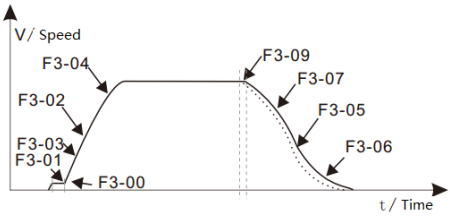
| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| Group F0 Basic parameters | | | | | | | |
| F0−00 | Control mode | 1 | 0～2 | − | × | 0: Open loop vector control (SVC)<br>1: Close loop vector control (CLVC)<br>2: V/F control | |
| F0−01 | Run command source selection | 1 | 0～1 | − | × | 0: Keypad control<br>1: Distance control | |
| F0−02 | Running speed under keypad control | 0.050 | 0.050～F0−04 | m/s | ○ | 0.050～F0−04 | |
| F0−03 | Elevator maximum speed | 1.600 | 0.250～F0−04 | m/s | × | 0.250～F0−04 | |
| F0−04 | Elevator rated speed | 1.600 | 0.250～4.000 | m/s | × | 0.250～4.000 | |
| F0−00, control mode. The parameter is used to set the motor control mode of elevator controller.<br>F0−01, run command source selection. When F0−01=0, the run command source is keypad control; when F0−01=1, the run command source is distance control.<br>F0−02,running speed under keypad control. The parameter is used to set the running speed in keypad control mode, the default value is 0.050m/s.<br>F0−03, elevator maximum speed, the parameter is used to set the actual maximum speed of the elevator, The value must be smaller than the elevator rated speed (F0−04).<br>F0−04, elevator rated speed. The parameter is used to set the nominal rated speed of the elevator. The value of this parameter is dependent on the elevator mechanism and traction motor; the parameter shall not be changed without authorization. | | | | | | | |
| F0−05 | Elevator rated load | 1000 | 300～9999 | kg | × | 300～9999 | |
| F0−06 | Maximum frequency | 50.00 | F1−04～99.00 | Hz | × | F1−04～99.00 | |
| F0−07 | Carrier frequency | 8.0 | 0.5～16.0 | kHz | × | | |
| GroupF1 Motor parameters | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F1−00 | Encoder type selection | 0 | 0～3 | − | × | 0: SIN−COS encoder<br>1: UVW encoder<br>2: ABZ encoder<br>3: Reserved | |
| F1−01 | Motor rated power | Model dependent | 0.7～75.0 | kW | × | 0.7～75.0 | |
| F1−02 | Motor rated voltage | Model dependent | 0～600 | V | × | 0～600 | |
| F1−03 | Motor rated current | Model dependent | 0.00～655.00 | A | × | 0.00～655.00 | |
| F1−04 | Motor rated frequency' | Model dependent | 0.00～F0−06 | Hz | × | 0.00～F0−06 | |
| F1−05 | Motor rated speed | Model dependent | 0～3300 | rpm | × | 0～3300 | |
| F1−06 | Encoder initial angle (synchronous motor) | 0 | 0.0～359.9 | ° | × | 0.0～359.9 | |
| F1−07 | Encoder angle at power−off (synchronous motor) | 0 | 0.0～359.9 | ° | × | 0.0～359.9 | |
| F1−08 | Synchronous motor wiring mode | 0 | 0～15 | − | × | 0～15 | |
| F1−09 | Current filter coefficient (synchronous motor) | 0 | 0.0～359.9 | − | × | 0.0～359.9 | |
| F1−10 | Encoder verification selection | 0 | 0～65535 | − | × | 0～65535 | |
| F1−11 | Auto−tuning mode selection | 0 | 0～5 | − | × | 0: No operation<br>1: With−load auto−tuning<br>2: No−load auto−tuning<br>3: Shaft auto−tuning 1<br>4: Shaft auto−tuning 2<br>5: Synchronous motor static auto−tuning | |
| F1−11 Auto−tuning mode selection. The parameter is used to set the auto−tuning mode.<br>F1−11=0: No operation;<br>F1−11=1: With−load auto−tuning. Static auto−tuning for asynchronous motor, rotation auto−tuning for synchronous motor;<br>F1−11=2: No−load auto−tuning;<br>F1−11=3: Shaft auto−tuning 1, the parameters value of group Fr will not be cleared;<br>F1−11=4: Shaft auto−tuning 2, the parameters value of group Fr will be cleared;<br>F1−11=5: Synchronous motor static auto−tuning. | | | | | | | |
| F1−12 | Encoder pulses per revolution | 2048 | 0～10000 | PPR | × | 0～10000 | |
| F1−13 | Encoder wire−breaking detection time | 2.1 | 0～10.0 | s | × | 0～10.0 | |
| F1−12 is used to set the pulses per revolution of the encoder (according to the encoder nameplate).<br>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, if there is no encoder signal input within the time set in this parameter, the system report the encoder fault and stops running. When the setting of F1−13 is smaller than 0.5s, the encoder wire−breaking detection is disabled. | | | | | | | |
| F1−14 | Stator resistance (asynchronous motor) | Model dependent | 0.000～30.000 | Ω | × | 0.000～30.000 | |
| F1−15 | Rotor resistance (asynchronous motor) | Model dependent | 0.000～30.000 | Ω | × | 0.000～30.000 | |

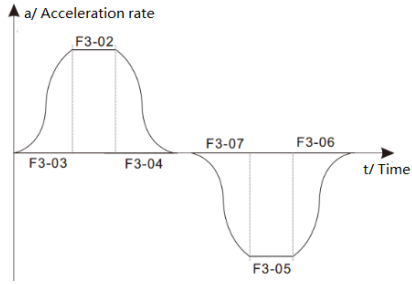
| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F1−16 | Leakage inductance (asynchronous motor) | Model dependent | 0.00～300.00 | mH | × | 0.00～300.00 | |
| F1−17 | Mutual inductance (asynchronous motor) | Model dependent | 0.1～3300.0 | mH | × | 0.1～3300.0 | |
| F1−18 | No−load current (asynchronous motor) | Model dependent | 0.01～300.00 | A | × | 0.01～300.00 | |
| F1−19 | Q axis inductance (torque) | 3.00 | 0.00～650.00 | mH | × | 0.00～650.00 | |
| F1−20 | D axis inductance (excitation) | 3.00 | 0.00～650.00 | mH | × | 0.00～650.00 | |
| F1−21 | Back EMF coefficient | 0 | 0～65535 | − | × | 0～65535 | |
| F1−22 | Auto−tuning function selection | 0 | 0～65535 | − | × | Bit1 = 1, Bit2 = 0: Semi−automatic angle−free auto−tuning mode<br>Bit1 = 1, Bit2 = 1: Full−automatic angle−free auto−tuning mode | |
| F1−22, auto−tuning function selection. The parameter is used to select the angle−free auto−tuning mode for synchronous motor.<br>When F1−22=2 (Bit1=1, Bit2=0), semi−automatic angle−free auto−tuning. After power−off and power−on again, the system automatically performs encoder angle auto−tuning only during running at inspection speed. After auto−tuning is successful, the system does not perform auto−tuning again before the next power−off.<br>Note: If the system auto−tuning is not completed in system inspection and power off, the fault Err19 will be reported after power on again after the elevator enter normal state.<br>When F1−22=6 (Bit1=1, Bit2=1), full−automatic angle−free auto−tuning. After power−off and power−on again, the system automatically performs encoder angle auto−tuning during the elevator first running at inspection or normal running status. After auto−tuning is success, the system will not perform auto−tuning again before the next power−off. | | | | | | | |
| F1−25 | Motor type | 1 | 0～1 | − | × | 0: Asynchronous motor<br>1: Synchronous motor | |
| F1−25, motor type. This parameter is used to set the motor is asynchronous motor or synchronous motor. | | | | | | | |
| Group F2 Vector control parameters | | | | | | | |
| F2−00 | Speed loop proportional gain Kp1 | 1000 | 0～8000 | − | × | 0～8000 | |
| F2−01 | Speed loop integral time Ti1 | 500 | 0～2000 | − | × | 0～2000 | |
| F2−02 | Switchover frequency 1 | 0 | 0.00～60.00 | Hz | × | 0.00～F2−05 | |
| F2−03 | Speed loop proportional gain Kp2 | 1500 | 0～8000 | − | × | 0～8000 | |
| F2−04 | Speed loop integral time Ti2 | 500 | 0～2000 | − | × | 0～2000 | |
| F2−05 | Switchover frequency 2 | 5.00 | 0.00～60.00 | Hz | × | F2−02～F0−06 | |
| When the running frequency is smaller than the value of switchover frequency 1 (F2−02), PI regulation parameters are speed loop proportional gain Kp1(F2−00) and speed loop integral time Ti1(F2−01).<br>When the running frequency is larger than the value of switchover frequency 2 (F2−05), PI regulation parameters are speed loop proportional gain Kp2(F2−03) and speed loop integral time Ti2(F2−04).<br>When the running frequency is between F2−02 and F2−05, PI regulation parameters are obtained from the weighted average value of the two groups of PI parameters (F2−00, F2−01 and F2−03, F2−04). As shown in the figure below: | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
|  **Relationship between the running frequency and PI parameters**<br>The speed dynamic response characteristics in vector control can be adjusted by setting the proportional gain and integral time of the speed regulator. To achieve a faster system response, increase the proportional gain and reduce the integral time. Be aware that this may lead to system oscillation.<br>The recommended adjustment method is as follows:<br>If the default setting cannot meet the requirements, make proper adjustment. Decrease the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response but small overshoot.<br>If both F2−02 (Switchover frequency 1) and F2−05 (Switchover frequency 2) are 0, only F2−03 and F2−04 are valid. | | | | | | | |
| F2−06 | Current loop proportional gain Kp | 2000 | 0～9999 | − | × | 0～9999 | |
| F2−07 | Current loop integral gain Ki | 500 | 0～9999 | − | × | 0～9999 | |
| Under vector control, themotor output current must be controlled in order to track the current reference.<br>Under normal circumstances, the two parameter does not required to be changed. | | | | | | | |
| F2−08 | Torque upper limit | 200.0 | 0.0～200.0 | % | × | 0.0～200.0 | |
| The parameter is used to set the torque upper limit of the motor. The value 100% corresponds to the rated output torque of the applicable motor. | | | | | | | |
| F2−10 | Elevator running direction | 0 | 0～1 | − | × | 0: Direction unchanged<br>1: Direction reversed | |
| This parameter is used to reverse the elevator running direction (without changing the wiring of the motor) .<br>When you perform inspection running for the first time after motor auto−tuning is successful, check whether the actual motor running direction is consistent with the inspection command direction. If not, change the motor running direction by setting F2−10 to be consistent with the inspection command direction.<br>Pay attention to the setting of this parameter when reset to default setting, if this parameter is changed, after reset to default setting, this parameter will be reset to default too. | | | | | | | |
| F2−11 | No−load−cell zero servo current Kp | 1000 | 0～5000 | − | × | 0～5000 | |
| F2−12 | No−load−cell zero servo current KI | 500 | 0～5000 | − | × | 0～5000 | |
| F2−13 | No−load−cell zero servo speed KI | 500 | 0～5000 | − | × | 0～5000 | |
| These parameters are used to adjust automatic pre−torque compensation in the case of no−load−cell. The no−load−cell startup function is enabled through the parameter of F8−01, .<br>Decrease the values of these parameters in the case of car lurch at startup, and increase the values in the case of rollback at startup. | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F2-16 | Torque acceleration time | 1 | 1～500 | ms | × | 1～500 | |
| F2-17 | Torque deceleration time | 350 | 1～3000 | ms | × | 1～3000 | |
| The two parameters are used to set the acceleration time and deceleration time of the torque current. | | | | | | | |
| Group F3 Running control parameters | | | | | | | |
| F3-00 | Startup speed | 0.000 | 0.000～0.050 | m/s | × | 0.000～0.050 | |
| F3-01 | Startup speed holding time | 0.000 | 0.000～5.000 | s | × | 0.000～5.000 | |
| The two parameters are used to set the startup speed and startup speed holding time of the system.<br>Note: Setting proper value for the two parameters can effectively improve the terrace feeling due to static friction between the guide shoes and the guide rail. | | | | | | | |
| F3-02 | Acceleration rate | 0.700 | 0.200～1.500 | $m/s^2$ | × | 0.200～1.500 | |
| F3-03 | Acceleration start jerk time 1 | 1.500 | 0.300～4.000 | s | × | 0.300～4.000 | |
| F3-04 | Acceleration end jerk time 2 | 1.500 | 0.300～4.000 | s | × | 0.300～4.000 | |
| F3-02, F3-03, and F3-04 are used to set the running curve during acceleration of the elevator.<br>F3-02 is the acceleration rate of the elevator speed curve (uniform accelerationsegment).<br>F3-03 is the time for the rate to increase from 0 to the value set in F3-02 in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is.<br>F3-04 is the time for the rate to decrease from the value set in F3-02 to 0 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is. | | | | | | | |
| F3-05 | Deceleration rate | 0.700 | 0.200～1.500 | $m/s^2$ | × | 0.200～1.500 | |
| F3-06 | Deceleration end jerk time 1 | 1.500 | 0.300～4.000 | s | × | 0.300～4.000 | |
| F3-07 | Deceleration start jerk time 2 | 1.500 | 0.300～4.000 | s | × | 0.300～4.000 | |
| F3-05, F3-06, and F3-07 are used to set the running curve during deceleration of the elevator.<br>F3-05 is the deceleration rate of the elevator speed curve (uniform deceleration segment).<br>F3-06 is the time for the rate to decrease from the value set in F3-05 to 0 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is.<br>F3-07 is the time for the rate to increase from 0 to the value set in F3-05 in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is.<br>F3-02 (F3-05) is the acceleration (deceleration) rate of the speed curve in the linear acceleration process.<br>F3-03 (F3-07) is the time for the rate to change from 0 to the value set in F3-02 (F3-05) in the speed curve (start jerk segment). The larger the value is, the smoother the jerk is.<br>F3-04 (F3-06) is the time for the rate to decrease from the value set in F3-02 (F3-05) to 0 in the speed curve (end jerk segment). The larger the value is, the smoother the jerk is.<br>as shown in Figures below: | | | | | | | |

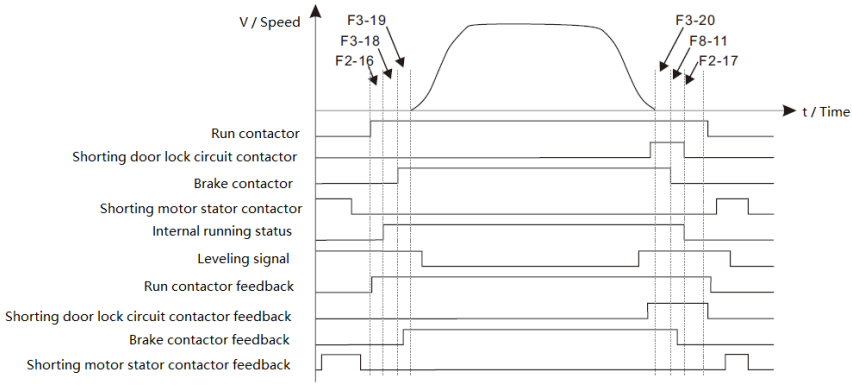



**Running speed curve**




**Acceleration rate curve**

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| F3-08 | Special deceleration rate | 0.900 | 0.200～1.500 | $m/s^2$ | × | 0.200～1.500 | |
| F3-09 | Pre-deceleration distance | 0.0 | 0～90.0 | mm | × | 0～90.0 | |
| F3-09 is used to set the pre-deceleration distance of the elevator in distance control. This function is to eliminate the effect of encoder signal loss or leveling signal delay. | | | | | | | |
| F3-10 | Re-leveling speed | 0.040 | 0.020～0.080 | m/s | × | 0.020～0.080 | |
| F3-10 is used to set the elevator speed during re-leveling.<br>Note: This parameter is valid only when the pre-open module (AIEC-SCB-D) is added to implement the re-leveling function (set in FE-32). | | | | | | | |
| F3-11 | Inspection speed | 0.250 | 0.100～0.630 | m/s | × | 0.100～0.630 | |
| F3-11 is used to set the elevator speed during inspection or shaft auto-tuning. The default value is 0.250m/s. | | | | | | | |
| F3-12 | Position of up slow-down 1 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| F3-13 | Position of down slow-down 1 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| F3-14 | Position of up slow-down 2 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| F3-15 | Position of down slow-down 2 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| F3-16 | Position of up slow-down 3 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| F3-17 | Position of down slow-down 3 | 0.00 | 0.00～300.00 | m | × | 0.00～300.00 | |
| 3-12 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.<br>The AICE controller 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.<br>The system automatically detects the speed when the elevator reaches a slow-down switch. If the detected speed or position is abnormal, the system enables the elevator to slow down at the special deceleration rate set in F3-08, preventing over travel top terminal or over travel bottom terminal. | | | | | | | |
| F3-18 | Zero-speed control time at startup | 0.200 | 0.200～1.000 | s | × | 0.200～1.000 | |
| F3-19 | Brake release delay | 0.600 | 0.000～2.000 | s | × | 0.000～2.000 | |
| F3-20 | Zero-speed control time at end | 0.300 | 0.000～1.000 | s | × | 0.000～1.000 | |
| F3-18 to F3-20 are used to set the time related to the zero-speed holding current output and braking action delay.<br>F3-18 (Zero-speed control time at startup) specifies the time from output of the RUN contactor to output of the brake contactor, during which the controller performs excitation on the motor and outputs zero-speed current with large startup torque.<br>F3-19 (Brake release delay) specifies the time from the moment when the system sends the brake release command to the moment when the brake is completely released, during which the system retains the zero-speed torque current output.<br>F3-20 (Zero-speed control time at end) specifies the zero-speed output time when the running curve ends.<br>The following figure shows the running time sequence. | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
|  **Running time sequence**<br>Note: The system retains the zero-speed torque current output within the time set in F8-11 from the moment when the system sends the brake apply command; this is to prevent rollback. | | | | | | | |
| F3-21 | Low-speed re-leveling speed | 0.100 | 0.080～F3-11 | m/s | × | 0.080～F3-11 | |
| F3-21 is used to set the elevator speed of returning to the leveling position at normal non-leveling stop. | | | | | | | |
| F3-22 | Acceleration rate at emergency evacuation | 0.300 | 0.100～1.300 | $m/s^2$ | × | 0.100～1.300 | |
| 3-22 is used to set the acceleration rate at emergency evacuation. | | | | | | | |
| F3-23 | Slow-down delay deceleration time | 0 | 0.00～10.00 | s | × | 0.00～10.00 | |
| 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. | | | | | | | |
| F3-24 | Program function selection | 0 | 0～2 | - | × | 0: Reserved<br>1: Slip experiment function enabled<br>2: UCMP test function enabled | |
| Group F4 Floor parameters | | | | | | | |
| F4-00 | Leveling adjustment | 0 | 0～500 | mm | × | 0～500 | |
| F4-00 is used to adjust the leveling accuracy at elevator stop.<br>If over-leveling occurs at all floors during elevator stop, decrease the value of this parameter properly. If under-leveling occurs at all floors during elevator stop, increase the value of this parameter properly. This parameter takes effect to leveling of all floors. Therefore, if leveling at a single floor is inaccurate, adjust the position of the leveling plate or refer to the description of leveling adjustment in group Fr. The controller has the advanced distance control algorithm and adopts many methods to ensure reliability of direct travel ride. Generally you don't need modify this parameter. | | | | | | | |
| F4-01 | Current floor | 1 | F6-01～F6-00 | - | × | F6-01～F6-00 | |
| F4-01 indicates the current floor of the elevator car.<br>The system automatically changes the value of this parameter during running, and corrects it at leveling position (door open limit) after the up slow-down and down slow-down switches act. At non-bottom floor and top-floor leveling, you can also manually modify this parameter, but the value must be consistent with the actual current floor. | | | | | | | |
| F4-02 | High byte of current floor | 1 | 0～65535 | Pulses | * | 0～65535 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | position | | | | | | |
| F4-03 | Low byte of current floor position | 34464 | 0～65535 | Pulses | * | 0～65535 | |
| F4-02 and F4-03 indicate the absolute pulses of the current position of the elevator car relative to the bottom leveling position. The position data in the shaft is recorded in pulses. Each position is expressed by a 32-bit binary number, where the high 16 bits indicate the high byte of the floor position, and the low 16 bits indicate the low byte of the floor position. | | | | | | | |
| F4-04 | Length 1 of leveling plate | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-05 | Length 2 of leveling plate | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-06 | High byte of floor height 1 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-07 | Low byte of floor height 1 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-08 | High byte of floor height 2 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-09 | Low byte of floor height 2 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-10 | High byte of floor height 3 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-11 | Low byte of floor height 3 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-12 | High byte of floor height 4 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-13 | Low byte of floor height 4 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-14 | High byte of floor height 5 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-15 | Low byte of floor height 5 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-16 | High byte of floor height 6 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-17 | Low byte of floor height 6 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-18 | High byte of floor height 7 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-19 | Low byte of floor height 7 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| High bytes and low bytes of floor height 8 to floor height 35 | | | | | | | |
| F4-76 | High byte of floor height 36 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-77 | Low byte of floor height 36 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-78 | High byte of floor height 37 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-79 | Low byte of floor height 37 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-80 | High byte of floor height 38 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-81 | Low byte of floor height 38 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-82 | High byte of floor height 39 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| F4-83 | Low byte of floor height 39 | 0 | 0～65535 | Pulses | × | 0～65535 | |
| Group F5 Terminal function parameters | | | | | | | |
| F5-00 | Attendant/Automatic switchover time | 3 | 3～200 | s | × | 3～200 | |

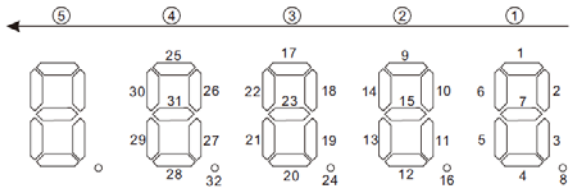
| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F5-01 | X1 function selection | 33 | 0～127 | - | × | 00: No function<br>01/33: Up leveling signalNO/NC<br>02/34: Down leveling signalNO/NC<br>03/35: Door zone signalNO/NC<br>04/36: Safety circuit feedbackNO/NC<br>05/37: Door lock circuit 1 feedbackNO/NC<br>06/38: RUN contactor feedbackNO/NC<br>07/39: Brake contactor feedbackNO/NC<br>08/40: Inspection signalNO/NC<br>09/41: Inspection drive up signalNO/NC<br>10/42: Inspection drive down signalNO/NC<br>12/44: Up limit signalNO/NC<br>13/45: Down limit signalNO/NC<br>14/46: Overload signalNO/NC<br>15/47: Full-load signalNO/NC<br>16/48: Up slow-down 1 signalNO/NC<br>17/49: Down slow-down 1 signalNO/NC<br>18/50: Up slow-down 2 signalNO/NC<br>19/51: Down slow-down 2 signalNO/NC<br>20/52: Up slow-down 3 signalNO/NC<br>21/53: Down slow-down 3 signalNO/NC<br>22/54: Shorting door lock circuit contactor feedbackNO/NC<br>23/55: Firefighter running signalNO/NC<br>24/56: Door machine 1 light curtain signalNO/NC<br>25/57: Door machine 2 light curtain signalNO/NC<br>26/58: Brake travel switch 1 feedbackNO/NC<br>27/59: Power-off emergency evacuation signalNO/NC<br>28/60: Elevator lock signalNO/NC<br>29/61: Safety circuit 2 feedbackNO/NC<br>30/62: Shorting PMSM stator feedbackNO/NC<br>31/63: Door lock circuit 2 | |
| F5-02 | X2function selection | 35 | 0～127 | - | × | | |
| F5-03 | X3function selection | 34 | 0～127 | - | × | | |
| F5-04 | X4function selection | 4 | 0～127 | - | × | | |
| F5-05 | X5function selection | 5 | 0～127 | - | × | | |
| F5-06 | X6function selection | 38 | 0～127 | - | × | | |
| F5-07 | X7function selection | 39 | 0～127 | - | × | | |
| F5-08 | X8function selection | 22 | 0～127 | - | × | | |
| F5-09 | X9function selection | 40 | 0～127 | - | × | | |
| F5-10 | X10function selection | 09 | 0～127 | - | × | | |
| F5-11 | X11function selection | 10 | 0～127 | - | × | | |
| F5-12 | X12function selection | 44 | 0～127 | - | × | | |
| F5-13 | X13function selection | 45 | 0～127 | - | × | | |
| F5-14 | X14function selection | 48 | 0～127 | - | × | | |
| F5-15 | X15function selection | 49 | 0～127 | - | × | | |
| F5-16 | X16function selection | 50 | 0～127 | - | × | | |
| F5-17 | X17function selection | 51 | 0～127 | - | × | | |
| F5-18 | X18function selection | 00 | 0～127 | - | × | | |
| F5-19 | X19function selection | 00 | 0～127 | - | × | | |
| F5-20 | X20function selection | 00 | 0～127 | - | × | | |
| F5-21 | X21function selection | 00 | 0～127 | - | × | | |
| F5-22 | X22function selection | 00 | 0～127 | - | × | | |
| F5-23 | X23 function selection | 00 | 0～127 | - | × | | |
| F5-24 | X24function selection | 00 | 0～127 | - | × | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | feedbackNO/NC<br>65/97: Door machine 1 safety edge signalNO/NC<br>66/98: Door machine 2 safety edge signalNO/NC<br>67/99: Motor overheat signalNO/NC<br>68/100: Earthquake signalNO/NC<br>69/101: Back door forbidden signalNO/NC<br>70/102: Light−load signalNO/NC<br>71/103: Half−load signalNO/NC<br>72/104: Fire emergency floor switchover signalNO/NC<br>76/108: Door 1 open inputNO/NC<br>77/109: Door 2 open inputNO/NC<br>78/110: Brake travel switch 2 inputNO/NC<br>79/111: External fault inputNO/NC<br>80/112: Terminal floor verification signalNO/NC<br>81/113: Door lock 1 shortingNO/NC<br>82/114: Door lock 2 shortingNO/NC<br>86/118: Door lock bypassNO/NC | |
| Note: NC setting value = NO setting value +32. for example:<br>When F5−01=1, up leveling signal, when X1−COM is connected, the signal is valid.<br>When F5−01=33, up leveling signal, when X1−COM is disconnected, the signal is valid. | | | | | | | |
| F5−25 | CTB input type | 320 | 0～511 | − | × | 0～511 | |
| F5−26 | Y1 function selection | 1 | 0～23 | − | × | 0: No function<br>1: Running contactor control<br>2: Brake contactor control<br>3: Shorting door lock circuit contactor control<br>4: Fire emergency floor arrival signal feedback<br>5: Door machine 1 open<br>6: Door machine 1 close<br>7: Door machine 2 open<br>8: Door machine 2 close<br>9: Brake and RUN contactors healthy<br>10: Fault state<br>11: Running state<br>12: Shorting PMSM stator contactor<br>13: Emergency evacuation automatic switchover<br>14: System healthy | |
| F5−27 | Y2 function selection | 2 | 0～23 | − | × | | |
| F5−28 | Y3 function selection | 3 | 0～23 | − | × | | |
| F5−29 | Y4 function selection | 4 | 0～23 | − | × | | |
| F5−30 | Y5 function selection | 0 | 0～23 | − | × | | |
| F5−31 | Y6 function selection | 0 | 0～23 | − | × | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | 15: Emergency buzzer control<br>16: Higher−voltage startup of brake<br>17: Elevator running in up direction<br>18: Lamp/Fan running<br>19: Medical sterilization<br>20: Non−door zone stop<br>21: Electric lock<br>22: Non−service state<br>23: Emergency evacuation completed | |
| F5−32 | Communication status | − | − | − | * | CANbus and Modbus communication state monitoring | |

The parameter of F5−32 is used to monitor the state of CANbus communication with the CTB and Modbus communication with the HCB.

When you enter the menu of F5−32, the LEDs on the operation panel indicate the current HCB communication state. The LEDs are numbered 1 to 5 from right to left to facilitate the description. The segments are defined as follows:




**F5−32 communication state monitoring**

Segment No. indicates the address of the HCB at each floor for Modbus communication with the MCB.

LED segment No.1 to number 4 indicates the address of the HCB at each floor for Modbus communication with the MCB.

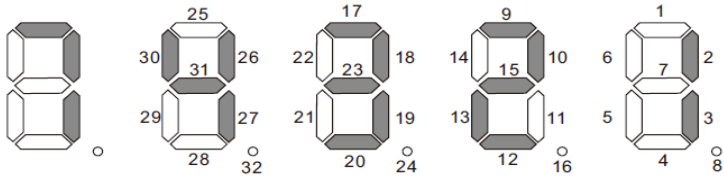
LED segment ON: Communication normal

LED segment OFF: Communication abnormal.

LED segment No.5 is used to monitor the CANbus communication state between the CTB and the MCB.

The value of 0 to 9 indicates the CANbus communication state from strong to weak.

For example, if the LEDs are shown as the following figure, it indicates that Modbus communication of addresses 1、4、5、6、7、8、11、14、16、21、22、24、25、28、29 and 32 are abnormal, and Modbus communication of other addresses is normal. CANbus communication state displayed by the LED is 7, indicating serious communication interference.



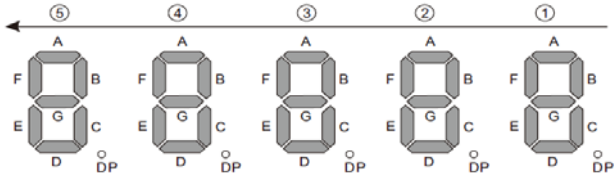

**Example of LED display indicating the communication state**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F5−33 | Program control selection | 0 | 0～65535 | − | × | Bit3: Elevator fire emergency requirement for Hong Kong<br>Bit4: Arrival gong disabled at night<br>Bit6: Door lock disconnected at | |

<table>
<tr><th>No.</th><th>Name</th><th>Default</th><th>Setting range</th><th>Unit</th><th>Attribute</th><th>Description</th><th>User setting</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>inspection switched over to normal running<br>Bit7: Fault code not displayed on the keypad<br>Bit8: Door open command canceled immediately at door open limit<br>Bit9: Car stop and zero−speed torque holding at abnormal brake feedback</td><td></td></tr>
<tr><td colspan="7">The parameter of F5−33 is used to select some special functions for elevator .<br>Each bit of the parameter 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.<br>The functions defined by the binary bits of F5−33 are described in the following table.
<table>
<tr><th colspan="4">F5−33 Program control selection</th></tr>
<tr><th>Bit</th><th>Function</th><th>Description</th><th>Default</th></tr>
<tr><td>Bit3</td><td>Elevator fire emergency requirement for Hong Kong</td><td>If it is enabled, the fire emergency functions in F6−44 applying to Hong Kong become enabled automatically.</td><td>0</td></tr>
<tr><td>Bit4</td><td>Arrival gong disabled at night</td><td>The arrival gong is disabled from 22:00 p.m. to 7:00 a.m.</td><td>0</td></tr>
<tr><td>Bit6</td><td>Door lock disconnected at inspection switched over to normal running</td><td>The door lock is additionally disconnected once when the inspection state is switched over to the normal running state.</td><td>0</td></tr>
<tr><td>Bit7</td><td>Fault code not displayed on the keypad</td><td>The keypad does not blink to display the fault code.</td><td>0</td></tr>
<tr><td>Bit8</td><td>Door open command canceled immediately at door open limit</td><td>The system immediately cancels the door open command after receiving the door open limit.</td><td>0</td></tr>
<tr><td>Bit9</td><td>Car stop and zero−speed torque holding at abnormal brake feedback</td><td>When the brake feedback is abnormal, the elevator arrives at the door−zone position and stops. The door keeps closed, and the system holds torque output as long as possible. After the system is overloaded, there is no torque output, and the elevator may fall in this case. Be cautious of using this function.</td><td>0</td></tr>
</table></td></tr>
<tr><td>F5−34</td><td>Terminal state display ( MCB board)</td><td>−</td><td>−</td><td>−</td><td>*</td><td>Monitoring of I/O terminals on MCB</td><td></td></tr>
<tr><td>F5−35</td><td>Terminal state display ( CTB board)</td><td>−</td><td>−</td><td>−</td><td>*</td><td>Monitoring of I/O terminals on CTB, CCB and HCB</td><td></td></tr>
</table>

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

The two parameters of F5−34(MCB board) and F5−35(CTB board) are used to monitor the state of all I/O terminals of the system. The segments of the five LEDs displayed are defined as follows.




**Monitoring of all I/O terminals**

F5−34 Terminal state display

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| A | − | Inspection signal | Up slow−down 1 signal | Door machine 1 light curtain | Reserved |
| B | Up leveling signal | Inspection up signal | Down slow−down 1 signal | Door machine 2 light curtain | RUN contactor output |
| C | Down leveling signal | Inspection down signal | Up slow−down 2 signal | Brake contactor feedback 2 | Brake contactor output |
| D | Door zone signal | Fire emergency signal | Down slow−down 2 signal | UPS input | Shorting door lock circuit contactor control |
| E | Safety circuit feedback 1 | Up limit signal | Up slow−down 3 signal | Elevator lock input | Fire emergency floor arrival signal |
| F | Door lock circuit feedback1 | Down limit signal | Down slow−down 3 signal | Safety circuit feedback 2 | − |
| G | RUN contactor feedback | Over−load signal | Shorting door lock circuit contactor feedback | Shorting PMSM stator contactor feedback | − |
| DP | Brake contactor feedback 1 | Full−load signal | Firefighter running signal | Door lock circuit feedback 2 | − |

F5−35 Terminal state display

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| A | Light curtain 1 | Door open button | Door open output1 | Door open button display | System light curtain state 1 |
| B | Light curtain 2 | Door close button | Door close output2 | 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 output2 | 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 | Over−load signal |
| G | Full−load signal | Independent running signal | Up arrival gong | Reserved | − |
| DP | Over−load signal | Firefighter operation signal | Down arrivalgong | Energy saving signal | − |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F5−36 | Load cell input selection | 1 | 0～3 | − | × | 0: MCB digital input<br>1: CTB digital input<br>2: CTB analog input<br>3: MCB analog input | |
| F5−37 | X25 function selection | 0 | 0～8 | − | × | 0: No function<br>4:Safety circuit signal<br>5: Door lock circuit signal 1<br>(Detection terminal is high voltage, This is an optional function )<br>6: Door lock circuit signal 2( Detection terminal is high voltage, This is an optional function )<br>7: Door lock 1 shorting (front door)<br>8: Door lock 2 shorting (back door) | |
| F5−38 | X26 function selection | 0 | 0～8 | − | × | | |
| F5−39 | X27 function selection | 0 | 0～8 | − | × | | |
| F5−40 | X28 function selection | 0 | 0～8 | − | × | | |
| | | | GroupF6 Basic elevator parameters | | | | |
| F6−00 | Top floor of the elevator | 9 | F6−01～40 | − | × | F6−01～40 | |
| F6−01 | Bottom floor of the elevator | 1 | 1～F6−00 | − | × | 1～F6−00 | |
| FThese two parameters are used to set the top floor and bottom floor of the elevator, determined by the number of actually installed leveling plates. | | | | | | | |
| F6−02 | Parking floor | 1 | F6−01～F6−00 | − | × | F6−01～F6−00 | |
| F6−03 | Fire emergency floor | 1 | F6−01～F6−00 | − | × | F6−01～F6−00 | |
| F6−04 | Elevator lock floor | 1 | F6−01～F6−00 | − | × | F6−01～F6−00 | |
| F6−02, Parking floor. When the idle time of the elevator exceeds the value set in F9−00(default value is 10min), the elevator returns to the parking floor set in F6−02 automatically.<br>F6−03, Fire emergency floor. When the elevator enters the state of returning to base floor at fire emergency, the elevator will return to fire emergency floor.<br>F6−04, Elevator lock floor. The parameter is used to set the elevator lock floor. In the automatic running state, if the elevator lock switch is turned on or the set elevator lock time is reached, the elevator cancels all registered hall calls and responds to all registered | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| car calls, returns to the elevator lock floor, stops automatic running, and closes the lamp and fan in the car; after the door closes, the elevator cancels hall call display. | | | | | | | |
| F6-05 | Service floors 1 | 65535 | 0～65535 | - | × | 0～65535 | |
| F6-06 | Service floors 2 | 65535 | 0～65535 | - | × | 0～65535 | |
| F6-35 | Service floors 3 | 65535 | 0～65535 | - | × | 0～65535 | |

These parameters are used to set the service floors among floors 1–40.
F6-05 (Service floors 1) corresponds to floors 1–16.
F6-06 (Service floors 2) corresponds to floors 17–32.
F6-35 (Service floors 3) corresponds to floors 33–40.
The following part takes F6-05 as an example to describe how to set the service floors.
The 16 binary bits of the parameter respectively correspond to 16 floors. If a bit is set to 1, the elevator will respond to calls of this floor; if this bit is set to 0, the elevator will not respond to calls of this floor.
Set every bit respectively. Convert the binary value to decimal and set it on the operation panel, as shown in the following figure.

| Floor | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit | Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit9 | Bit8 | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| Decimal | 32768 | 16384 | 8192 | 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |

**Converting binary value of F6-05 to decimal**

For example:
If floors 2, 8, 9, and 12 of a 16-floor elevator need to be forbidden, and all other floors are in service, we need to set Bit1, Bit7, Bit8, and Bit11 corresponding to floors 2, 8, 9, and 12 to 0, and set the other bits to 1, and converting binary value to decimal value, as shown in the following figure.
1 + 4 + 8 + 16 + 32 + 64 + 512 + 1024 + 4096 + 8192 + 16384 + 32768 = 63101
Then, setting parameter F6-05 to "63101" bykeypad.
The setting method for F6-06 and F6-35 is the same as F6-05.

| | | | | | | |
|---|---|---|---|---|---|---|
| F6-07 | Number of elevators in parallel/group mode | 1 | 1～8 | - | × | 1～8 | |
| F6-08 | Elevator No. | 1 | 1～8 | - | × | 1～8 | |
| F6-09 | Program control selection | 0 | 0～ 65535 | - | × | Bit0: Dispersed waiting<br>Bit2: Reserved<br>Bit3: Parallel/Group control implemented at CAN2<br>Bit4: Group control in compatibility (Group control )<br>Bit6: Clear floor number and display direction in advance<br>Bit8: Unidirectional hall call (single hall call button)<br>Bit9: Analog wire breaking detect function is disabled<br>Bit10: Err30 judgment at re-leveling cancellation<br>Bit14: Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s) | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

The parameter is use to set the program control selection for elevator. Each function is controlled by one binary bit of the parameter. "1" indicates that the function is enabled, and "0" indicates that the function is disabled.

The description of every bit as follows:

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Dispersed waiting | Single/Parallel control. Enabling this function in group control will cancel the idle time return to base floor function. During group control, set the base floor cooperation with the group control board to realize dispersed waiting. | 0 |
| Bit3 | Parallel/Group control implemented at CAN2 | Parallel connection with CAN2 (MCB) − For group control | 0 |
| Bit4 | Group control in compatibility (Group control ) | The function is selected for AIEC3300 and group control system. It is necessary to ensure that all elevators in the group control system have the same settings of this function.. | 0 |
| Bit6 | Clear floor number and display direction in advance | Before the elevator reaches the destination floor, the number of the displayed floor will be cleared; if the elevator direction is changed, the direction will be displayed in advance | 0 |
| Bit8 | Unidirectional hall call (single hall call button) | It is applicable to the application where there is single call button outside the hall. | 0 |
| Bit9 | Analog wire breaking detect function is disabled | During normal running, analog wire breaking is not detected | 0 |
| Bit10 | Err30 judgment at re−leveling cancellation | Canceling the E30 fault report during re−leveling. | 0 |
| Bit14 | Time interval detection of safety circuit 2 and door lock circuit 2 (1.5s) | When the state of safety circuit and safety circuit 2, door lock circuit 1 and door lock circuit 2 are inconsistent, The system operation will be forbidden. It can be operated after it is restored to normal and powered on again. | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6−10 | Leveling switch filter time | 14 | 10～50 | ms | × | 10～50 | |
| F6−11 | Elevator function selection | 8448 | 0～65535 | − | × | Bit1: Disabling returning to base floor for verification<br>Bit2: Canceling auto sequential arrange of hall call floor addresses to be displayed<br>Bit5: Motor current detection valid at startup for synchronous motor<br>Bit6: Reversing MCB and lamp output<br>Bit7: Door open valid at non−door zone in the inspection state<br>Bit8: Door open and close once after inspection turned to normal<br>Bit10: Buzzer not tweet upon re−leveling<br>Bit11: Super short floor function<br>Bit13: E53 fault auto reset<br>Bit14: Up slow−down not reset for super short floor<br>Bit15: Down slow−down not reset for super short floor | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6−12 | VIP floor | 0 | 0～F6−00 | − | × | 0～F6−00 | |

This parameter is used to set the VIP floor.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6−13 | Security floor | 0 | 0～F6−00 | − | × | 0～F6−00 | |

This parameter is used to set the securityfloor.

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

There are two ways for the elevator stop at the security floor:

The parameter of Fd−07 or Fd−08(DCB−JP1) is set to 5 (security signal). If the security signal is active, the elevator enters the security state.

Enabling the night security floor function (setting FE−32 Bit5 = 2), the elevator enters the security state from 22:00 p.m. to 6:00 a.m.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6−14 | Start time of down collective selective 1 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6−15 | End time of down collective selective 1 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6−16 | Start time of down collective | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | selective 2 | | | | | | |
| F6-17 | End time of down collective selective 2 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-18 | Start time of time-based floor service 1 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-19 | End time of time-based floor service 1 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-20 | Service floor 1 of time-based floor service 1 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-21 | Service floor 2 of time-based floor service 1 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-36 | Service floor 3 of time-based floor service 1 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-22 | Start time of time-based floor service 2 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-23 | End time of time-based floor service 2 | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-24 | Service floor 1 of time-based floor service 2 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-25 | Service floor 2 of time-based floor service 2 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-37 | Service floor 3 of time-based floor service 2 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-26 | Peak 1 start time for parallel/group control | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-27 | Peak 1 end time for parallel/group control | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-28 | Parallel/group control peak 1 floor | 1 | F6-01～F6-00 | - | × | F6-01～F6-00 | |
| F6-29 | Peak 2 start time for parallel/group control | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-30 | Peak 2 end time for parallel/group control | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-31 | Parallel/group control peak 2 floor | 1 | F6-01～F6-00 | - | × | F6-01～F6-00 | |
| F6-35 | Service floor 3 | 65535 | 0～65535 | - | ○ | 0～65535 | |
| F6-38 | Elevator lock start time | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| F6-39 | Elevator lock end time | 00.00 | 00.00～23.59 | HH.MM | ○ | 00.00～23.59 | |
| 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.<br>There are 2 ways to lock the elevator:<br>Setting F6-40 Bit5 = 1, to enable the timed elevator lock function.F6-38 and F6-39 are used to set the elevator lock time period, during which the elevator is in locked state.<br>Setting Fd-07 = 1, to enable the hall elevator lock switch. | | | | | | | |
| F6-40 | Program control selection 1 | 0 | 0～65535 | - | × | Bit0: Disability function<br>Bit1: Soft limit function<br>Bit2: JP16 input used as back door selection (button)<br>Bit3: JP16 input used as the back | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | door open signal<br>Bit4: Reserved<br>Bit5: Timed elevator lock<br>Bit6: Manual door<br>Bit7: Reserved<br>Bit9: Disabling reverse floor number clear<br>Bit10: Displaying next arriving floor number<br>Bit11: Responding to car calls first<br>Bit12: Car call assisted command in single door used as disability function<br>Bit13: Folding command used as disability function or back door function<br>1: Disability function<br>0: Back doorfunction<br>Bit14: Car call command folding<br>Bit15: JP20 used for switchover to back door(switch) | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

F6-40 Program control selection 1

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Disability function | It is used to enable or disable the disability function. | 0 |
| Bit1 | Soft limit function | When the up slow-down and down leveling signals are active and the up leveling signal is inactive, the system considers that the up limit is performed.<br>When the down slow-down and up leveling signals are active and the down leveling signal is inactive, the system considers that the down limit is performed. | 0 |
| Bit2 | JP16 input used as back door selection (button) | JP16 is used for the input of the back door open signal. This function is enabled if FC-04 is set to 2. When JP16 has input, the elevator opens only the back door. When IP16 has no input, the elevator opens only the front door. | 0 |
| Bit3 | P16 input used as the back door open signal | JP16 is used for the input of the back door open signal. | 0 |
| Bit4 | Reserved | - | - |
| Bit5 | Timed elevator lock | When Bit5=1, timed elevator lock function is enabled, and the parameters of F6-38 and F6-38 is valid. | 0 |
| Bit6 | Manual door | This function is used for elevator with manual door. | 0 |
| Bit7 | Reserved | - | - |
| Bit8 | Reserved | - | - |
| Bit9 | Disabling reverse floor number clear | The system clears all the current car calls every time the elevator changes the direction by default. When this function is enabled, the function of clearing reverse floor numbers is disabled. | 0 |
| Bit10 | Displaying next arriving floor number | The next floor to be arrived at is displayed during elevator running. | 0 |
| Bit11 | Responding to car calls first | The system responds to hall calls only after executing all car calls. | 0 |
| Bit12 | Car call assisted command in single door used as disability function | You can set the auxiliary command terminal (CN8) on the CTB for input of the disability calls.<br>Bit12=0: Consistent with CN7 for the single door, and back door for the double door<br>Bit12=1: CN8 calls are the disability calls | 0 |
| Bit13 | Folding command used as disability function and back door function | This bit is used to setting the function for folding command (only valid when the function of bit 14 is enabled, that is bit14=1):<br>Bit13=1: Disability<br>Bit13=0: Back door | 0 |
| Bit14 | Car call command folding | Car call command folding:<br>A.Function disabled: CN7 is used for front door calls or ordinary calls, and CN8 is used for back door calls or disability calls.<br>B.Function enabled: For CN7 and CN8, inputs 1 to 16 are used for front door calls or ordinary calls, and inputs 17 to 32 are used for back door calls or disability calls. | 0 |
| Bit15 | JP20 used for switchover to back door(switch) | JP20 is used for input of switchover between the front door and the back door. | 0 |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F6-41 | Program control selection 2 | 0 | 0～65535 | - | × | Bit2: Stop due to inspectionslow-down<br>Bit4: Buzzer tweet during door open delay<br>Bit6: Canceling door open delay<br>Bit8: Elevator lock at door open<br>Bit9: Display at elevator lock<br>Bit10: Elevator lock in the attendant state<br>Bit11: Blinking at arrival (within the time setting by F6-47 )<br>Bit12: Door re-open during door open delay<br>Bit13: Door re-open after car call of the present floor | |

F6-41 Program control selection 2

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

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F6-42 | Program control selection 3 | 0 | 0～65535 | - | × | Bit1: Canceling door open/close command at delay after door open/close limit<br>Bit2: Not judging door lock state at door close output<br>Bit3: Door close command output during running<br>Bit4: Returning to base floor for verification at first-time power-on<br>Bit5: Clearing calls immediately at elevator lock<br>Bit6: Electric lock NC output<br>Bit7: Canceling fault E50 detection<br>Bit8: Door open/close limit detection cancellation<br>Bit9: Fault sub-code scrolling display cancellation<br>Bit10: Door open energy saving<br>Bit11: Independent switch separated from parallel connection | |

F6-42 Program control selection 3

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Reserved | - | - |
| Bit1 | Canceling door open/close command at delay after door open/close limit | Bit1 = 1: 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 | On normal conditions, the system determines that the door is completely closed only when the door close limit signal is active and the door lock is applied. If this function is enabled, the system need not judge the door lock state. | 0 |
| Bit3 | Door close command output during running | The door close command is output continuously during the elevator running. | 0 |
| Bit4 | Returning to base floor for verification at first-time power-on | The elevator runs to the bottom floor for verification at power-on for the first time. | 0 |
| Bit5 | Clearing calls immediately at elevator lock | 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.<br>1: After the elevator lock signal becomes active, the elevator clears all calls and enters elevator lock state. | 0 |
| Bit6 | Electric lock NC output | After the NC output is selected, the electric 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 | Fault subcode scrolling display cancellation | When this function is enabled, the keypad will not display the fault in a scrollable manner. | 0 |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| Bit10 | Door open energy saving | In the case of waiting with the door open, the system closes the lighting and fan after the time set in F9-01 passes by in door open limit state. | | | | | 0 |
| Bit11 | ndependent switch separated from parallel connection | 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 |
| F6-43 | Attendant function selection | 128 | 0~65535 | - | × | Bit0: Calls canceled after entering attendant state<br>Bit1: Not responding to hall calls<br>Bit2: Attendant automatic switchover<br>Bit3: Door close at jogging<br>Bit4: Automatic door close<br>Bit5: Buzzer tweeting at intervals in attendant state<br>Bit6: Continuous buzzer tweeting in attendant state<br>Bit7: Car call button blinking to prompt | |

F6-43 is used to select the attendant-related elevator functions. Each bit of the function code 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 | Description | Default |
|---|---|---|---|
| Bit0 | Calls canceled 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, prompting there is a hall call, but the system does not respond. | 0 |
| Bit2 | Attendant automatic switchover | If this function is enabled, the setting of F5-00 is valid | 0 |
| Bit3 | Door close at jogging | The elevator door closes after the attendant presses the door close button manually. | 0 |
| Bit4 | Automatic door close | It is the same as the normal state. After the door open holding time is reached, the door closes automatically. | 0 |
| Bit5 | Buzzer tweeting at intervals in attendant state | When there is a registered hall call, the buzzer tweets 2.5s at intervals. | 0 |
| Bit6 | Continuous buzzer tweeting in attendant state | When there is a registered hall call, the buzzer tweets continuously until there is a registered car call at a hall call floor. | 0 |
| Bit7 | Car call button blinking to prompt prompt | When the hall call input is active, the car call button for the corresponding floor blinks to give a prompt. | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6-44 | Fire emergency function selection | 16456 | 0~65535 | - | × | Bit3: Arrival gong output in inspection state<br>Bit4: Multiple car calls registered in | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | fire emergency state<br>Bit5: Retentive at power failure in fire emergency state<br>Bit6: Closing door by holding down the door close button<br>Bit7: Reserved<br>Bit8: Door close at car call registering<br>Bit9: Displaying hall calls in fire emergency state<br>Bit10: JP22 use as firefighter forced running<br>Bit11: Exiting firefighter state upon arrival at fire emergency floor<br>Bit12: Not clearing car calls at reverse door open in firefighter running state<br>Bit14: Opening door by holding down the door open button<br>Bit15: Automatic door open at fire emergency floor | |
| F6-44 is used to select the fire emergency-related functions. Each bit of the function code 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.<br>The functions defined by the binary bits are described in the following table. | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|

F6-44 Fire emergency function selection

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0～2 | Reserved | - | - |
| Bit3 | Arrival gong output in inspection state | The arrival gong is output in the inspection or fire emergency state. | 1 |
| Bit4 | Multiple car calls registered in fire emergency state | Multiple car calls can be registered in the fire emergency state. If this function is disabled, only one car call can be registered. | 0 |
| Bit5 | Retentive at power failure in fire emergency state | In the fire emergency state, the current state of system and car will be memorized at power failure and be resumed after the system is powered on again. | 0 |
| Bit6 | Closing door by holding down the door close button | In the fire emergency state, the door close process can be completed only by holding down the door close button until the door close limit is reached. Otherwise, it will be switched over to door open automatically. | 1 |
| Bit7 | Reserved | - | - |
| Bit8 | Door close at car call registering | The elevator enters the door close process automatically if a car call is registered. | 0 |
| Bit9 | Displaying hall calls in fire emergency state | Hall calls are displayed in the fire emergency state. | 0 |
| Bit10 | JP22 use as firefighter forced running | JP22 is used for firefighter forced running input.<br>In the firefighter running state, when the JP22 input switch and the door close button are enabled simultaneously, the buzzer tweets and the system outputs the door close signal. If the door lock is not enabled within 10s, the system outputs the shorting door lock circuit contactor signal, and the elevator starts running (used together with SCB-D). | 0 |
| Bit11 | Exiting firefighter state upon arrival at fire emergency floor | The system can exit the firefighter state only after the elevator arrives at the fire emergency floor. | 0 |
| Bit12 | Not clearing car calls at reverse door open in firefighter running state | In the firefighter running state, the car calls that have been registered are not cleared at reverse door open. | 0 |
| Bit13 | Reserved | - | - |
| Bit14 | Opening door by holding down the door open button | In the fire emergency state, the door open process can be completed only by holding down the door open button until the door open limit is reached. Otherwise, it will be switched over to door close automatically. | 1 |
| Bit15 | Automatic door open at fire emergency floor | The door opens automatically after the elevator arrives at the fire emergency floor. | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6-45 | Emergency evacuation function selection | 0 | 0～65535 | - | × | Bit0-Bit1: Direction determine mode<br>Bit2: Stop at the base floor<br>Bit3: Single leveling door open<br>Bit4: Startup compensation<br>Bit8: Emergency evacuation running time protection<br>Bit10: Emergency buzzer output<br>Bit12: Reserved<br>Bit14: Emergency evacuation exit | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | mode<br>Bit15: reserved | |

F6-45 is used to select the emergency evacuation-related elevator functions. Each bit of the function code defines a function. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.
When F6-45 bit2 = 1, the elevator stops at the emergency evacuation parking floor set in F6-49.
When F6-45 bit2 = 0, the elevator stops at the nearest landing floor.
The functions defined by the binary bits of F6-45 are described in the following table.

F6-45 Emergency evacuation function selection

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Direction determine mode | 0: Automatically calculating the direction (The elevator runs in heavy-load direction. The no-load-cell function must be enabled.)<br>1: Load direction determining (The elevator runs in heavy-load direction. The load-cell function must be enabled.) | 0 |
| Bit1 | | 0: Direction of nearest landing floor<br>1: | 0 |
| Bit2 | Stop at the base floor | During evacuation running, the elevator arrives at the evacuation parking floor set in F6-49 (it must be a non-zero value and is a service floor). Otherwise, the elevator stops at the nearest floor. | 0 |
| Bit3 | Single leveling door open | During evacuation running, the elevator arrives at the destination floor. When a leveling signal is active, the elevator decelerates to stop. | 0 |
| Bit4 | Startup compensation | Startup torque compensation valid in emergency evacuation running | 0 |
| Bit5～7 | Reserved | - | 0 |
| Bit8 | Emergency evacuation running time protection | If the elevator does not arrive at the required floor after 50s emergency evacuation running time, E33 is reported. This function is invalid when the function of switching over shorting stator braking mode to controller drive is used. | 0 |
| Bit9 | Reserved | - | 0 |
| Bit10 | Emergency buzzer output | The buzzer output is active during UPS emergency evacuation running. | 0 |
| Bit11 | Reserved | - | 0 |
| Bit12 | Reserved | - | 0 |
| Bit14 | Emergency evacuation exit mode | 0: The system exits emergency evacuation when receiving the door open limit signal from the elevator that arrives at the destination floor.<br>1: The system exits emergency evacuation when receiving the door close limit signal from the elevator that arrives at the destination floor. | 0 |
| Bit15 | Reserved | - | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| F6-46 | VIP function selection | 0 | 0～65535 | - | × | Bit0: VIP enabled by hall call at VIP floor (VIP floor)<br>Bit1: VIP enabled by terminal<br>Bit8: Number of VIP car calls limited | |
| F6-47 | Blinking advance time | 1.0 | 0.0～15.0 | s | ○ | 0.0～15.0 | |
| F6-48 | Emergency evacuation switching speed | 0.010 | 0.010～0.630 | m/s | × | 0.010～0.630 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F6-49 | Evacuation parking floor | 0 | 0～F6-00 | - | × | 0～F6-00 | |
| F6-50 | Parallel floor offset | 0 | 0～40 | - | × | 0～40 | |
| 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. | | | | | | | |
| F6-51 | Static current | 0 | 0.00～655.00 | A | × | 0.00～655.00 | |
| Group F7 Test function parameters | | | | | | | |
| F7-00 | Car call floor registered | 0 | 0～F6-00 | - | ○ | 0～F6-00 | |
| F7-01 | Up hall call floor registered | 0 | 0～F6-00 | - | ○ | 0～F6-00 | |
| F7-02 | Down hall call floor registered | 0 | 0～F6-00 | - | ○ | 0～F6-00 | |
| These parameters are used to set the destination floors at elevator commissioning or repairing. They can be respectively used as the car call button, hall call up button and hall call down button. After the test parameters are set, the calls remain valid, and will become invalid after they are changed to 0 or the system is powered off completed. | | | | | | | |
| F7-03 | Random running times | 0 | 0～60000 | - | ○ | 0～60000 | |
| F7-04 | Hall call enabled | 0 | 0～1 | - | ○ | 0: Hall call allowed<br>1: Hall call forbidden | |
| F7-05 | Door open enabled | 0 | 0～1 | - | ○ | 0: Door open allowed<br>1: Door open forbidden | |
| F7-06 | Overload function | 0 | 0～1 | - | ○ | 0: Overload forbidden<br>1: Overload allowed | |
| F7-07 | Limit function | 0 | 0～1 | - | ○ | 0: Limit switch enabled<br>1: Limit switch disabled | |
| F7-08 | Time interval of random running | 0 | 0～1000 | s | ○ | 0～1000 | |
| F7-09 | Braking force test result | 0 | 0～2 | - | * | 0: Insignificant<br>1: Pass<br>2: Fail | |
| F7-10 | Countdown for braking force detection period | 1440 | 0～1440 | min | × | 0～1440 | |
| F7-09 indicates braking force test results performed by the system.<br>0: It indicates that the system has not performed any braking force test.<br>1: It indicates that braking force test passes.<br>2: It indicates that braking force test fails and the system reports the fault E66. The brake must be inspected after any fault and can be reset only after the braking force test passes.<br><br>F7-10 is countdown for braking force detection period.<br>The initial value is 1440 minutes, i.e. 24 h. The test is automatically triggered if the system has no call after 12 h so that the stop time exceeds the energy saving time. When it is smaller than 10 minutes ahead of 24 h, the system clears car calls without any response to hall calls. After the door is automatically closed and the elevator buzzes for 30s, the system forcedly starts a braking force test. | | | | | | | |
| Group F8 Enhanced function parameters | | | | | | | |
| F8-00 | Load for load cell auto-tuning | 0 | 0～100 | % | × | 0～100 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F8-01 | Pre-torque selection | 2 | 0～3 | - | × | 0: Pre-torque invalid<br>1: Load cell pre-torque compensation<br>2: Automatic pre-torque compensation<br>3: Both load cell pre-torque compensation and automatic pre-torque compensation valid | |
| F8-01 is used to set the pre-torque compensation mode at startup of the elevator. The values are as follows:<br>F8-01=0, Pre-torque invalid. Load cell auto-tuning is allowed.<br>F8-01=1, Load cell pre-torque compensation.<br>With a load cell, the system implements the pre-torque compensation function.<br>F8-01=2, Automatic pre-torque compensation.<br>The system automatically adjusts the compensated torque at startup without a load cell.<br>F8-01=3, Both load cell pre-torque compensation and automatic pre-torque compensation valid.<br>When automatically adjusting the startup compensation torque, the system make a correction together with the load cell to achieve better startup effects on some occasions.<br>When using pre-torquecompensation function with load cell, the system outputs the torque matching the load in advance to ensure the riding comfort at startup. But the output torque is limited by F2-08 (Torque upper limit). When the load torque is greater than torque upper limit, the output torque of the system is the torque upper limit. | | | | | | | |
| F8-02 | Pre-torque offset | 50.0 | 0.0～100.0 | % | × | 0.0～100.0 | |
| F8-03 | Drive gain | 0.60 | 0.00～2.00 | - | × | 0.00～2.00 | |
| F8-04 | Brake gain | 0.60 | 0.00～2.00 | - | × | 0.00～2.00 | |
| F8-05 | Current car load | 0 | 0～255 | - | * | 0～255 | |
| F8-06 | Car no-load load | 0 | 0～255 | - | × | 0～255 | |
| F8-07 | Car full-load load | 100 | 0～255 | - | × | 0～255 | |
| F8-08 | Anti-nuisance function | 0 | 0～4 | - | ○ | 0: Anti-nuisance function is disabled<br>1: Nuisance judged by load cell<br>2: Nuisance judged by light curtain<br>4: Nuisance judged by light-load signal | |
| F8-09 | Emergency evacuation operation speed at power failure | 0.050 | 0.020～F3-11 | m/s | × | 0.020～F3-11 | |
| F8-10 | Emergency evacuation operation mode selection at power failure | 0 | 0～2 | - | × | 0: Motor not running<br>1: UPS<br>2: 48 V battery power supply | |
| F8-11 | Brake close delay | 0 | 0.200～1.500 | s | × | 0.200～1.500 | |
| F8-12 | Fire emergency floor 2 | 0 | 0～F6-00 | - | × | 0～F6-00 | |
| F8-14 | HCB communication setting | 0 | 0～65535 | - | ○ | Bit4: Energy saving of HCB communication | |
| F8-16 | HCB CAN communication start address | 0 | 0～40 | - | ○ | 0～40 | |
| F8-16 is used to set the HCB start address of the back door in opposite door mode.<br>HCB address of back door = HCB address of front door at the same floor + (F8-16) | | | | | | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| F8-17 | Hall call address check | 0 | 0～1 | - | ○ | 0～1 | |
| Group F9 Time parameters | | | | | | | |
| F9-00 | Idle time before returning to base floor | 10 | 0～240 | min | ○ | 0～240 | |
| F9-01 | Car energy-saving time | 2 | 0～240 | min | ○ | 0～240 | |
| F9-02 | Motor running time limit | 45 | 0～45 | s | × | 0～45 | |
| It is used to set the running time limit of the motor.<br>In normal running state, if the continuous motor running time in the same direction between two adjacent floors exceeds the setting of this parameter but no leveling signal is received, the system will perform protection. This parameter is mainly used for over-time protection in the case of steel rope slipping on the traction sheave.<br>If this parameter is set to a value smaller than 3s, it becomes invalid. | | | | | | | |
| F9-03 | Clock: year | Current time | 2000～2100 | YYYY | ○ | 2000～2100 | |
| F9-04 | Clock: month | Current time | 1～12 | MM | ○ | 1～12 | |
| F9-05 | Clock: day | Current time | 1～31 | DD | ○ | 1～31 | |
| F9-06 | Clock: hour | Current time | 0～23 | HH | ○ | 0～23 | |
| F9-07 | Clock: minute | Current time | 0～59 | MM | ○ | 0～59 | |
| F9-09 | Accumulative running time | 0 | 0～65535 | h | * | 0～65535 | |
| F9-11 | High byte of running times | 0 | 0～9999 | - | * | 0～9999 | |
| F9-12 | Low byte or running times | 0 | 0～9999 | - | * | 0～9999 | |
| These parameters are used to view the actual accumulative running time and running times of the elevator.<br>Running times of the elevator = F9-11 x 10000 + F9-12. | | | | | | | |
| F9-13 | Maintenance notification period | 0 | 0～99 | day | × | 0～99 | |
| It is the forced maintenance notification function.<br>When F9-13≠0, this function is enabled, and the system starts to count the days. If there is no power-off operation during the counting and the counted days reaches the value of this parameter, the elevator enters the parking state and the system reports Err08, notifying that the elevator must be maintained and cannot run. Maintenance personnel need to power off and maintain the elevator, and then the system clears the value to 0 and starts counting again.<br>When P9-13=0, this function is disabled. | | | | | | | |
| Group FA Keypad setting parameters | | | | | | | |
| FA-00 | Keypad display selection | 3 | 0～3 | - | ○ | 0: Reversed display of physical floor<br>1: Positive display of physical floor<br>2: Reversed display of hall call floor<br>3: Positive display of hall call floor | |
| FA-01 | Display in running state | 65535 | 1～65535 | - | ○ | 1～65535 | |
| FA-02 | Display in stop state | 65535 | 1～65535 | - | ○ | 1～65535 | |
| FA-03 | Current encoder angle | 0.0 | 0.0～359.9 | ° | * | 0.0～359.9 | |
| FA-05 | MCB board software ( ZK) | 0 | 0～65535 | - | * | 0～65535 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| FA−06 | Drive board software ( DSP) | 0 | 0～65535 | − | * | 0～65535 | |
| FA−07 | Heat−sink temperature | 0 | 0～100 | ℃ | * | 0～100 | |
| FA−11 | Pre−torque current | 0 | 0.0～200.0 | % | * | 0.0～200.0 | |
| FA−12 | Logic information | 0 | 0～65535 | − | * | 0～65535 | |
| FA−13 | Curve information | 0 | 0～65535 | − | * | 0～65535 | |
| FA−14 | Set speed | 0 | 0.000～4.000 | m/s | * | 0.000～4.000 | |
| FA−15 | Feedback speed | 0 | 0.000～4.000 | m/s | * | 0.000～4.000 | |
| FA−16 | Bus voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| FA−17 | Current position | 0 | 0.0～300.0 | m | * | 0.0～300.0 | |
| FA−18 | Output current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| FA−19 | Output frequency | 0 | 0.00～99.99 | Hz | * | 0.00～99.99 | |
| FA−20 | Torque current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| FA−21 | Output voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| FA−22 | Output torque | 0 | 0～100 | % | * | 0～100 | |
| FA−23 | Output power | 0 | 0.00～99.99 | kW | * | 0.00～99.99 | |
| FA−24 | Communication interference | 0 | 0～65535 | − | * | 0～65535 | |
| FA−26 | Input state 1 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−27 | Input state 2 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−28 | Input state 3 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−30 | Input state 5 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−31 | Output state 1 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−32 | Output state 2 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−33 | Car input state | 0 | 0～65535 | − | * | 0～65535 | |
| FA−34 | Car output state | 0 | 0～65535 | − | * | 0～65535 | |
| FA−35 | Hall sate | 0 | 0～65535 | − | * | 0～65535 | |
| FA−36 | System state 1 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−37 | System state 2 | 0 | 0～65535 | − | * | 0～65535 | |
| FA−38 | Maximum floor running time interval | 0 | 0～200 | s | * | 0～200 | |
| 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 time. If the leveling signal does not change within the reference time in running, the system report the fault E30 and the elevator stop running. | | | | | | | |
| FA−46 | Hall call communication state 1 | 0 | 0～65535 (floor 1～16) | − | * | 0～65535 (floor 1～16) | |
| FA−47 | Hall call communication state 2 | 0 | 0～65535 (floor 17～32) | − | * | 0～65535 (floor 17～32) | |
| FA−48 | Hall call communication state 3 | 0 | 0～65535 (floor 33～40) | − | * | 0～65535 (floor 33～40) | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| FA−50 | Expansion board hall call communication state 1 | 0 | 0～65535 (floor 1～16) | − | * | 0～65535 (floor 1～16) | |
| FA−51 | Expansion board hall call communication state 2 | 0 | 0～65535 (floor 17～32) | − | * | 0～65535 (floor 17～32) | |
| FA−52 | Expansion board hall call communication state 3 | 0 | 0～65535 (floor 33～40) | − | * | 0～65535 (floor 33～40) | |
| FA−58 | Version display selection | 0 | 0～2 | − | ○ | 0: Machine−room−less monitoring board version<br>1: Equipment room expansion boardversion<br>2: Car expansion board version | |
| FA−59 | Expansion board software version | 0 | 0～65535 | − | * | 0～65535 | |
| Group Fb Door function parameters | | | | | | | |
| Fb−00 | No. of door machine(s) | 1 | 1～2 | − | × | 1～2 | |
| Fb−00 is used to set the number of door machine(s).<br>Set it to 1 if there is only one door, and 2 if there are double doors.<br>Note:This parameter must be set according to the actual number of door machine(s). | | | | | | | |
| Fb−01 | CTB software | 0 | 00～999 | − | * | 00～999 | |
| When the controller is connected to the CTB, this parameter display the CTB software version. | | | | | | | |
| Fb−02 | Door machine 1 service floors 1 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| Fb−03 | Door machine 1 service floors 2 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| Fb−18 | Door machine 1 service floors 3 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| Fb−04 | Door machine 2 service floors 1 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| Fb−05 | Door machine 2 service floors 2 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| Fb−19 | Door machine 2 service floors 3 | 65535 | 0～65535 | − | ○ | 0～65535 | |
| These parameters are used to set the service floors of door machine 1 and door machine 2.<br>For door machine 1:<br>Service floor 1 corresponds to floors 1–16.<br>Service floor 2 corresponds to floors 17–32.<br>Service floor 3 corresponds to floors 33–48.<br>For door machine 2:<br>Service floor 1 corresponds to floors 1–16.<br>Service floor 2 corresponds to floors 17–32.<br>Service floor 3 corresponds to floors 33–48.<br>The setting of door machine service floors is the same as that of service floors in F6−05. | | | | | | | |
| Fb−06 | Door open protection time | 10 | 5～99 | s | ○ | 5～99 | |
| Fb−07 | Arrival gong output delay | 0 | 0～1000 | ms | ○ | 0～1000 | |
| Fb−08 | Door close protection time | 15 | 5～99 | s | ○ | 5～99 | |
| Fb−09 | Door open and close protection times | 0 | 0～20 | − | ○ | 0～20 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| Fb-10 | Door state of standby elevator | 0 | 0～2 | - | ○ | 0: Closing the door as normal at base floor<br>1: Waiting with door open at base floor<br>2: Waiting with door open at each floor | |
| Fb-11 | Door open holding time for hall call | 5 | 1～1000 | s | ○ | 1～1000 | |
| Fb-12 | Door open holding time for car call | 3 | 1～1000 | s | ○ | 1～1000 | |
| Fb-13 | Door open holding time at base floor | 10 | 1～1000 | s | ○ | 1～1000 | |
| Fb-14 | Door open delay | 30 | 10～1000 | s | ○ | 10～1000 | |
| Fb-15 | Special door open holding time | 30 | 10～1000 | s | ○ | 10～1000 | |
| Fb-16 | Manual door open holding time | 5 | 1～60 | s | ○ | 1～60 | |
| Fb-17 | Holding time for forced door close | 120 | 5～180 | s | ○ | 5～180 | |
| Fb-20 | Manual door lock waiting time | 0 | 0～60 | - | ○ | 0～60 | |
| Fb-24 | UCMP test program version | 1 | 0～65535 | - | * | 0～65535 | |
| Group FC Protection function parameters | | | | | | | |
| FC-00 | Program control selection | 0 | 0～65535 | - | * | bit0: Detection of short circuit to ground at power-on<br>Bit2: Decelerating to stop at valid light curtain<br>Bit9: Mode without door open/close limit | |

The parameters is used to select program control functions. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.

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

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Detection of short circuit to ground at power-on | Check whether the motor is short circuited to groundat power-on. If the motor is short circuited to ground, the controller blocks the output immediately, and reports the fault. | 1 |
| Bit1 | Reserved | - | 0 |
| Bit2 | Decelerating to stop at valid light curtain | During normalspeed running, the elevator decelerates to stop immediately after the light curtain acts, and then runs to the registered destination floor after the light curtain restores. This function is mainly used in the case of manual door. | 0 |
| Bit9 | Mode without door open/close limit | In this mode, the door open/close limit signal is not required, and the system automatically judges door open/close limit. The system determines that door open limit is implemented 3s after the door open command is output and door close limit is implemented 3s after the door close command is output. | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FC-01 | Function selection | 65 | 0～65535 | - | × | Bit0: Overload protection<br>bit1: Canceling protection at output phase loss | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | Bit4: Light curtain judgment at door close limit<br>Bit5: Canceling DSP communication judgment<br>Bit14: Canceling protection at input phase loss | |

The parameter is used to select program control functions. If a bit is set to 1, the function indicated by this bit is enabled; if this bit is set to 0, the function is disabled.
The functions defined by the bits are described in the following table.

FC−01 Function selection

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Overload protection | 0: Motor overload detection enabled<br>1: Motor overload detection disabled | 1 |
| Bit1 | Canceling protection at output phase loss | It sets whether to implement protection at output phase loss. | 0 |
| Bit4 | Light curtain judgment at door close limit | At door close limit, the door re−opens if the light curtain is valid. | 0 |
| Bit5 | Canceling DSP communication judgment | It sets whether to implement wire−breaking detection on DSP communication between the MCB and the drive board. | 0 |
| Bit14 | Canceling protection at input phase loss | Canceling protection at input phase loss | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FC−02 | Overload protection coefficient | 1.00 | 0.50～10.00 | − | × | 0.50～10.00 | |
| FC−03 | Overload pre−warning coefficient | 80 | 50～100 | % | × | 50～100 | |
| FC−04 | Opposite door selection | 0 | 0～1 | − | × | 0～1 | |

Fb−00 is used to set the number of door machine(s).Set it to 1 if there is only one door, and 2 if there are double doors.
FC−04 is used to set opposite door−related control function. The values are as follows:
FC−04=0: Simultaneous control
FC−04=1: Hall call independent, car call simultaneous

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FC−11 | 11st fault code | 0 | 0～9999 | − | * | 0～9999 | |
| FC−12 | 11st fault sub−code | 0 | 0～65535 | − | * | 0～65535 | |
| FC−13 | 11st fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC−14 | 11st fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| FC−15 | 12nd fault code | 0 | 0～9999 | − | * | 0～9999 | |
| FC−16 | 12nd fault sub−code | 0 | 0～65535 | − | * | 0～65535 | |
| FC−17 | 12nd fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC−18 | 12nd fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| FC−19 | 13rd fault code | 0 | 0～9999 | − | * | 0～9999 | |
| FC−20 | 13rd fault sub−code | 0 | 0～65535 | − | * | 0～65535 | |
| FC−21 | 13rd fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC−22 | 13rd fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| FC−23 | 14th fault code | 0 | 0～9999 | − | * | 0～9999 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| FC-24 | 14th fault sub-code | 0 | 0～65535 | - | * | 0～65535 | |
| FC-25 | 14th fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC-26 | 14th fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| FC-27 | 15th fault code | 0 | 0～9999 | - | * | 0～9999 | |
| FC-28 | 15th fault sub-code | 0 | 0～65535 | - | * | 0～65535 | |
| FC-29 | 15th fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC-30 | 15th fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| FC-31 | 16th fault code | 0 | 0～9999 | - | * | 0～9999 | |
| FC-32 | 16th fault sub-code | 0 | 0～65535 | - | * | 0～65535 | |
| FC-33 | 16th fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC-34 | 16th fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| ... ... | | | | | | | |
| FC-207 | 60th fault code | 0 | 0～9999 | - | * | 0～9999 | |
| FC-208 | 60th fault sub-code | 0 | 0～65535 | - | * | 0～65535 | |
| FC-209 | 60th fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| FC-210 | 60th fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| Group Fd Communication parameters | | | | | | | |
| Fd-00 | Baud rate | 1 | 0～1 | - | × | 0: 9600<br>1: 38400 | |
| Fd-02 | Local address | 1 | 0～127 | - | × | 0～127 | |
| Fd-03 | Communication response delay | 0 | 0～20 | ms | × | 0～20 | |
| Fd-04 | Communication timeout | 0.0 | 0～60.0 | s | × | 0～60.0 | |
| Fd-05 | Re-leveling stop delay | 0.00 | 0.00～2.00 | s | × | 0.00～2.00 | |
| Fd-05 is used to set the re-leveling stop delay. The elevator decelerates to stop after this delay after receiving a single leveling signal during re-leveling. | | | | | | | |
| Fd-07 | DCB: JP1 input | 1 | 0～7 | - | × | 0: Invalid<br>1: Elevator lock signal<br>2: Fire emergency signal<br>3: Present floor forbidden<br>4: VIP floor signal<br>5: Security floor signal<br>6: Door close button signal<br>7: Second fire emergency floor signal | |
| Fd-08 | DCB: JP2 input | 2 | | - | × | | |
| Fd-09 | DCB-JP1 output | 1 | 0～6 | - | × | 0: Invalid<br>1: Up arrival indicator<br>2: Down arrival indicator<br>3: Fault output<br>4: Non-door zone stop output<br>5: Non-service state<br>6: Door close button indicator | |
| Fd-10 | DCB-JP2 output | 2 | | - | × | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | output | |
| Fd−11 | Expansion board 1: X1 input | 0 | 0～28 | − | × | 0: Reserved<br>NO input:<br>1: Fire emergency signal<br>2: Overload signal<br>3: Full−load signal<br>4: Firefighter operation<br>5: Door machine 1 light curtain signal<br>6: Door machine 2 light curtain signal<br>7: Brake travel switch 1 feedback<br>8: UPS valid signal<br>9: Elevator lock signal<br>10: Safety circuit signal 2<br>11: Synchronous motor self−lock feedback<br>12: Door lock circuit 2 feedback<br>13: Door machine 1 safety edge signal<br>14: Door machine 2 safety edge signal<br>15: Motor overheat signal<br>16: Earthquake signal<br>17: Back door forbidden<br>18: Light−load signal<br>19: Half−load signal<br>20: Fire emergency floor switchover<br>21: False floor signal<br>22: Door 1 open<br>23: Door 2 open<br>24: Brake travel switch 2 feedback<br>25: External fault input<br>26: End floor signal<br>27: Door 2 selection<br>28: Single/Double door selection NC function= selection NO function + 32 | |
| 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 | | − | × | | |
| The parameters of Fd−11 to Fd−30 are used to set the functions of input terminal on the expansion card.<br>The elevator controller supports up to two expansion cards that are used to expand the input terminal functions in the control cabinet or on the car. | | | | | | | |
| Fd−31 | Expansion board 1: Y1 output | 0 | 0～22 | − | × | 0: Reserved<br>1: Door machine 1 open<br>2: Door machine 1 close<br>3: Door machine 2 open<br>4: Door machine 2 close<br>5: Brake and RUN contactors healthy (no faults E37 and E36)<br>6: Fault state (output at level 3, 4, and 5 faults) | |
| Fd−32 | Expansion board 1: Y2output | 0 | | − | × | | |
| Fd−33 | Expansion board 1: Y3 output | 0 | | − | × | | |
| Fd−34 | Expansion board 1: Y4 output | 0 | | − | × | | |
| Fd−35 | Expansion board 1: Y5 | 0 | | − | × | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | output | | | | | 7: Running monitoring (AICE3300 in running state)<br>8: Synchronous motor self-lock output<br>9: Controller healthy<br>10: Buzzer tweet<br>11: Higher-voltage startup of brake (continuous 4s)<br>12: Elevator running in up direction<br>13: Lamp and Fan running<br>14: Medical sterilization<br>15: Non-door zone stop<br>16: Electric lock output<br>17: Non-service state<br>18: Emergency evacuation completed<br>19: Fire emergency operation<br>20: Power failure emergency output<br>21: Door lock signal<br>22: Night output signal | |
| 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 | | - | × | | |
| The parameters Fd-31to Fd-50are used to set the functions of 10 relay outputs. The system supports up to two I/O expansion cards with up to 20 output terminals. | | | | | | | |
| Group FE Display setting parameters | | | | | | | |
| FE-00 | Collective selective mode | 0 | 0～2 | - | × | 0: Full collective selective<br>1: Down collective selective<br>2: Up collective selective | |
| It is used to set the collective selective mode of the system. The values are as follows:<br>FE-00=0, full collective selective. The elevator responds to both up and down hall calls.<br>FE-00=1, down collective selective. The elevator responds to down hall calls but does not respond to up hall calls.<br>FE-00=2, up collective selective.The elevator responds to hall up calls but does not respond to hall down calls. | | | | | | | |
| FE-01 | Floor 1 display | 1901 | 00～43 | - | ○ | The two high digits indicate the display code of ten's digit of the floor, and the two low digits indicate the display code of the unit's digit of the floor.<br>The corresponding relationship between code and display is as follows: | |
| 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 | | - | ○ | | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| FE−07 | Floor 7 display | 1907 | | − | ○ | 00: Display “0” | |
| FE−08 | Floor 8 display | 1908 | | − | ○ | 01: Display “1” | |
| FE−09 | Floor 9 display | 1909 | | − | ○ | 02: Display “2” | |
| FE−10 | Floor 10 display | 0100 | | − | ○ | 03: Display “3” | |
| FE−11 | Floor 11 display | 0101 | | − | ○ | 04: Display “4” | |
| FE−12 | Floor 12 display | 0102 | | − | ○ | 05: Display “5” | |
| FE−13 | Floor 13 display | 0103 | | − | ○ | 06: Display “6” | |
| FE−14 | Floor 14 display | 0104 | | − | ○ | 07: Display “7” | |
| FE−15 | Floor 15 display | 0105 | | − | ○ | 08: Display “8” | |
| Floor 16～30 display | | ... | | | | 09: Display “9” | |
| FE−31 | Floor 31 display | 0301 | | − | ○ | 10: Display “A” | |
| FE−35 | Floor 32 display | 0302 | | − | ○ | 11: Display “B” | |
| FE−36 | Floor 33 display | 0303 | | − | ○ | 12: Display “G” | |
| FE−37 | Floor 34 display | 0304 | | − | ○ | 13: Display “H” | |
| FE−38 | Floor 35 display | 0305 | | − | ○ | 14: Display “L” | |
| FE−39 | Floor 36 display | 0306 | | − | ○ | 15: Display “M” | |
| FE−40 | Floor 37 display | 0307 | | − | ○ | 16: Display “P” | |
| FE−41 | Floor 38 display | 0308 | | − | ○ | 17: Display “R” | |
| FE−42 | Floor 39 display | 0309 | | − | ○ | 18: Display “−” | |
| FE−43 | Floor 40 display | 0400 | | − | ○ | 19: No display | |
| FE−52 | Highest digit selection 1 | 0 | | − | ○ | 20: Display “12” | |
| FE−53 | Highest digit selection 2 | 0 | | − | ○ | 21: Display “13” | |
| FE−54 | Highest digit selection 3 | 0 | | − | ○ | 22: Display “23” | |
| FE−55 | Highest digit selection 4 | 0 | | − | ○ | 23: Display “C” | |
| FE−56 | Highest digit selection 5 | 0 | | − | ○ | 24: Display “D” | |
| | | | | | | 25: Display “E” | |
| | | | | | | 26: Display “F” | |
| | | | | | | 27: Display “I” | |
| | | | | | | 28: Display “J” | |
| | | | | | | 29: Display “K” | |
| | | | | | | 30: Display “N” | |
| | | | | | | 31: Display “O” | |
| | | | | | | 32: Display “Q” | |
| | | | | | | 33: Display “S” | |
| | | | | | | 34: Display “T” | |
| | | | | | | 35: Display “U” | |
| | | | | | | 36: Display “V” | |
| | | | | | | 37: Display “W” | |
| | | | | | | 38: Display “X” | |
| | | | | | | 39: Display “Y” | |
| | | | | | | 40: Display “Z” | |
| | | | | | | 41: Display “15” | |
| | | | | | | 42: Display “17” | |
| | | | | | | 43: Display “19” | |
| FE−52 to FE−56 are used to set special display of floors.<br>When the 2−digit display cannot meet the requirement, you can add the third−digit display by setting these parameters as follows: Set the two high digits for indicating the floor address that requires special display, and set the two low digits for indicating the display content. For example, if floor 18 needs to be displayed as “17A”, set FE−18 to 0710 (displaying “7A”) and then set the FE−65 to 1801 ( indicates the floor with address 18 that the highest digital display is "1" ). | | | | | | | |
| FE−32 | Elevator function selection 1 | 34816 | 0～65535 | − | ○ | Bit0: New national standard<br>Bit2: Re−leveling function<br>Bit3: Door pre−open function<br>Bit4: Stuck hall call cancellation<br>Bit5: Night security floor function | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | bit6: Down collective selective peak service<br>bit7: Parallel/Group control peak service<br>bit8: Time-based service floor function<br>Bit9: VIP function<br>Bit11: Car call deletion<br>Bit12: Hall call deletion | |

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

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

E-32 Elevator function selection 1

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | New national standard | Including door lock short circuit detection and braking force monitoring functions | 0 |
| Bit1 | Reserved | - | 0 |
| Bit2 | Re-leveling function | If the function is enabled, the elevator performs re-leveling at a low speed with door open.<br>An external shorting door lock circuit contactor needs to be used together. | 0 |
| Bit3 | Door pre-open function | During normal stop, when the elevator speed is smaller than a certain value and the door zone signal is active, the system shorts the door lock by means of the shorting door lock circuit contactor and outputs the door open signal, implementing door pre-open. This improves the elevator use efficiency | 0 |
| Bit4 | Stuck hall call cancellation | The system automatically identifies the state of the hall call buttons. If the state is abnormal, the system cancels the stuck hall call. | 0 |
| Bit5 | Night security floor function | From 10:00 p.m to 6:00 a.m., the elevator runs to the security floor first every time, stops and opens the door, and then runs to the destination floor. | 0 |
| Bit6 | Down collective selective peak service | The peak service at down collective selective is used. | 0 |
| Bit7 | Parallel/Group control peak service | The peak service is used. | 0 |
| Bit8 | Time-based service floor function | Time-based service floor function is used. | 0 |
| Bit9 | VIP function | The VIP function is used. | 0 |
| Bit10 | Reserved | - | 0 |
| Bit11 | Car call deletion | A call can be deleted by pressing the button and holding for 3 seconds. | 1 |
| Bit12 | Hall call deletion | | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FE-33 | Elevator function selection 2 | 36 | 0～65535 | - | ○ | bit1: Door open holding at open limit<br>Bit2: Door close command not output upon door close limit<br>Bit4: Auto reset for RUN and brake contactor stuck<br>Bit5: Slow-down switch stuck | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| | | | | | | detection<br>bit7: Forced door close<br>bit13: High−speed elevator protection function<br>bit15: Opposite door independent control | |

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

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

FE−33 Elevator function selection 2

| Bit | Function | Description | Default |
|---|---|---|---|
| Bit0 | Reserved | − | 0 |
| Bit1 | Door open holding at open limit | The system still outputs the door open command upon door open limit. | 0 |
| Bit2 | Door close command not output upon door close limit | The system stops outputting the door close command upon door close limit.。 | 1 |
| Bit3 | Reserved | − | 0 |
| Bit4 | Auto reset for RUN and brake contactor stuck | 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.<br>With this function, the system resets automatically after the fault symptom disappears. A maximum of three auto reset times are supported. | 0 |
| Bit5 | Slow−down switch stuck detection | The system detects the state of slow−down switches. Once detecting that a slow−down switch is stuck, the system instructs the elevator to slow down immediately and reports a corresponding fault. | 1 |
| Bit6 | Reserved | − | 0 |
| Bit7 | Forced door close | When this function is enabled, if the door still does not close within the time set in Fb−17 in automatic state, the system outputs the forced door close signal; at this moment, the light curtain becomes invalid and the buzzer tweets. | 0 |
| Bit8 | Reserved | − | − |
| Bit10～ Bit12 | Reserved | − | − |
| Bit13 | High−speed elevator protection function | A maximum allowable speed is set when the car is in the slowdown switch position. When the elevator exceeds the speed at the position, the system outputs a protection signal. | 0 |
| Bit14 | Reserved | − | 0 |
| Bit15 | Opposite door independent control | The independent control function of the opposite door is enabled. | 0 |

Group FF Reserved

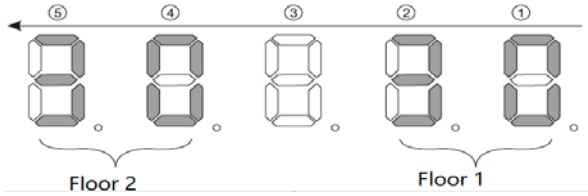
Group FJ Reserved

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| Group FP User parameters | | | | | | | |
| FP−00 | User password | 0 | 0～65535 | − | ○ | 0: No password<br>01～65535 | |
| FP−01 | Parameter update | 0 | 0～3 | − | × | 0: No operation<br>1: Restore default setting<br>2: Clear fault records<br>3: Clear shaft data | |
| FP−02 | User−defined parameter display | 0 | 0～1 | − | ○ | 0: Invalid<br>1: Valid | |
| FP−03 | Reserved | 0 | 0～65535 | − | ○ | 0～65535 | |
| FP−04 | Reserved | 0 | 0～65535 | − | ○ | 0～65535 | |
| FP−05 | Contract No. 2 | 0 | 0～65535 | − | ○ | 0～65535 | |
| FP−06 | Contract No. 1 | 5555 | 0～65535 | − | ○ | 0～65535 | |

FP−00 user password is used to prohibit unauthorized personnel from viewing and modifying parameters.
Note: Please use the user password function carefully and remember the password that you set. If the password is set incorrectly or forgotten, contact manufacture to replace the control board.
FP−01is used to reset parameters or clear some records.
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.
FP−03, FP−04: Reserved
FP−05 and FP−06 are used to set manufacturer contract No. The contract No. is used in the HCB or door machine software requiring contract No. check. If the contract No. check fails, the system cannot work properly.

| Group FrLeveling adjustment parameters | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fr−00 | Leveling adjustment function | 0 | 0～2 | − | × | 0: Leveling adjustment function is disabled.<br>1: Leveling adjustment function is enabled | |
| Fr−01 | Leveling adjustment record 1 | 30030 | 0～60060 | mm | × | 0～60060 | |
| Fr−02 | Leveling adjustment record 2 | 30030 | 0～60060 | mm | × | 0～60060 | |
| Fr−03 ～ Fr−20 | Leveling adjustment record 3 to 20 | 30030 | 0～60060 | mm | × | 0～60060 | |

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.




**Viewing the leveling adjustment record**

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| As shown in the figure, the left two LEDs show the adjustment bases of the first floor, the right two LEDsshow the adjustment bases of thesecond floor. If the value is larger than 30, it is upward leveling adjustment; if the value is smaller than 30, it is downward leveling adjustment. The default value "30" indicates that there is no leveling adjustment. The maximum adjustment range is ±30 mm.<br>The flowchart of single−floor leveling accuracy adjustment is shown in the following figure.<br>■ Ensure that shaft auto−tuning is completed successfully, and the elevator runs properly at normal speed.<br>■ Setting Fr−00 = 1 toenabling leveling adjustment function. The elevator shields hall calls, automatically runs to the top floor, and keeps the door open after arrival. If the elevator has been at the top floor, it directly keeps the door open.<br>■ 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.<br>■ After completing 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, 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. Note that if a certain floor need not adjustment, you also need to save the data once. Otherwise, you cannot register the car call.<br>■ Press the door close button to register a car call. The elevator runs to the next floor for adjustment and keeps the door open after arrival.<br>■ After completing adjustment for all floors, set Fr−00 to 0 to disable the leveling adjustment function. Otherwise, the elevator cannot be used. | | | | | | |
| Group AF Enhanced function parameters | | | | | | | |
| AF−00 | Distance control mode | 1 | 0～1 | − | × | 0: Creeping travel ride<br>1: Direct travel ride | |
| AF−01 | Creeping distance | 30 | 0～500 | 1 | × | 0～500 | |
| AF−02 | Deceleration rate at quick stop | 0.35 | 0.100～4.000 | $m/s^3$ | × | 0.100～4.000 | |
| AF−03 | Speed error detection width | 10.0 | 0.0～20.0 (elevator rated speed) | % | × | 0.0～20.0 | |
| AF−04 | Speed error detection time | 0.100 | 0.100～5.000 | s | × | 0.100～5.000 | |
| AF−05 | No−load current boost | 25 | 0～100 | % | × | 0～100 | |
| AF−06 | Switchover frequency for no−load current | 30.0 | 0～50.0 | Hz | × | 0～50.0 | |
| AF−07 | Speed feedback filter coefficient | 9 | 0～63 | − | ○ | 0～63 | |
| AF−08 | Switchover frequency for Speed feedback filter | 8.00 | 0～99.99 | − | × | 0～99.99 | |
| AF−09 | Current feedback filter coefficient | 2 | 2～32 | − | × | 2～32 | |
| AF−10 | No−load−cell feed−forward | 0 | 0～500 | − | × | 0～500 | |
| AF−11 | Torque feed−forward gain | 0 | 0～50 | − | × | 0～50 | |
| AF−12 | Excitation current loopKP | 1000 | 0～9999 | − | ○ | 0～9999 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| AF−13 | Excitation current loopKI | 500 | 0～9999 | − | ○ | 0～9999 | |
| AF−14 | Slip compensation gain | 100.0 | 50.0～250.0 | % | × | 50.0～250.0%<br>(Estimated slipcompensation) | |
| AF−15 | Compensation chain installation | 0 | 0～1 | − | × | 0: Compensation chain is not installed.<br>1: Compensation chain is installed. | |
| AF−16 | Wire rope compensation gain | 0 | 0～100 | − | × | 0～100 | |
| AF−17 | Pre−torque offset (down) | 50.0 | 0.0～100.0 | % | × | 0.0～100.0 | |
| AF−18 | Drive gain (down) | 1.000 | 0.000～7.000 | − | × | 0.000～7.000 | |
| AF−19 | Brake gain (down) | 1.000 | 0.000～7.000 | − | × | 0.000～7.000 | |
| AF−20 | Maximum floor height | 3.50 | 0.00～30.00m | m | × | 0.00～30.00 | |
| Group E0−E9 Fault record parameters | | | | | | | |
| These parameters record the last 10 faults and list the system states for every fault in detail.<br>The keyboard scrolls to display the current fault code and fault sub−code, such as “E22−101”。 | | | | | | | |
| E0−00 | 1st fault code | 0 | 0～9999 | − | * | 0～9999 | |
| E0−01 | 1st fault sub−code | 0 | 0～65535 | − | * | 0～65535 | |
| E0−02 | 1st fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| E0−03 | 1st fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| E0−04 | 1st fault logic information | 0 | 0～65535 | − | * | 0～65535 | |
| E0−05 | 1st fault curve information | 0 | 0～65535 | − | * | 0～65535 | |
| E0−06 | 1st fault reference speed | 0 | 0.000～4.000 | m−s | * | 0.000～4.000 | |
| E0−07 | 1st fault feedback speed | 0 | 0.000～4.000 | m−s | * | 0.000～4.000 | |
| E0−08 | 1st fault bus voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| E0−09 | 1st fault present position | 0 | 0.0～300.0 | m | * | 0.0～300.0 | |
| E0−10 | 1st fault output current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| E0−11 | 1st fault output frequency | 0 | 0.00～99.99 | Hz | * | 0.00～99.99 | |
| E0−12 | 1st fault torque current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| E0−13 | 1st fault output voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| E0−14 | 1st fault output torque | 0 | 0～200.0 | % | * | 0～200.0 | |
| E0−15 | 1st fault output power | 0 | 0.00～99.99 | kW | * | 0.00～99.99 | |
| E0−16 | 1st fault communication interference | 0 | 0～65535 | − | * | 0～65535 | |
| E0−17 | 1st fault encoder interference | 0 | 0～65535 | − | * | 0～65535 | |
| E0−18 | 1st fault input state 1 | 0 | 0～65535 | − | * | 0～65535 | |
| E0−19 | 1st fault input state2 | 0 | 0～65535 | − | * | 0～65535 | |
| E0−20 | 1st fault input state3 | 0 | 0～65535 | − | * | 0～65535 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| E0-21 | 1st fault input state 4 | 0 | 0～65535 | - | * | 0～65535 | |
| E0-22 | 1st fault input state5 | 0 | 0～65535 | - | * | 0～65535 | |
| E0-23 | 1st fault output state 1 | 0 | 0～65535 | - | * | 0～65535 | |
| E0-24 | 1st fault output state 2 | 0 | 0～65535 | - | * | 0～65535 | |
| E0-25 | 1st fault car input state | 0 | 0～65535 | - | * | 0～65535 | |
| E0-26 | 1st fault car output state | 0 | 0～65535 | - | * | 0～65535 | |
| E0-27 | 1st fault hall call state | 0 | 0～65535 | - | * | 0～65535 | |
| E0-28 | 1st fault system state 1 | 0 | 0～65535 | - | * | 0～65535 | |
| E0-29 | 1st fault system state 2 | 0 | 0～9999 | - | * | 0～9999 | |
| ..... | | | | | | | |
| E9-00 | 10th fault code | 0 | 0～9999 | - | * | 0～9999 | |
| E9-01 | 10th fault sub-code | 0 | 0～65535 | - | * | 0～65535 | |
| E9-02 | 10th fault month and day | 0 | 0～1231 | MM.DD | * | 0～1231 | |
| E9-03 | 10th fault hour and minute | 0 | 0～23.59 | HH.MM | * | 0～23.59 | |
| E9-04 | 10th fault logic information | 0 | 0～65535 | - | * | 0～65535 | |
| E9-05 | 10th fault curve information | 0 | 0～65535 | - | * | 0～65535 | |
| E9-06 | 10th fault reference speed | 0 | 0.000～4.000 | m/s | * | 0.000～4.000 | |
| E9-07 | 10th fault feedback speed | 0 | 0.000～4.000 | m/s | * | 0.000～4.000 | |
| E9-08 | 10th fault bus voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| E9-09 | 10th fault present position | 0 | 0.0～300.0 | m | * | 0.0～300.0 | |
| E9-10 | 10th fault output current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| E9-11 | 10th fault output frequency | 0 | 0.00～99.99 | Hz | * | 0.00～99.99 | |
| E9-12 | 10th fault torque current | 0 | 0.0～999.9 | A | * | 0.0～999.9 | |
| E9-13 | 10th fault output voltage | 0 | 0～999.9 | V | * | 0～999.9 | |
| E9-14 | 10th fault output torque | 0 | 0～200.0 | % | * | 0～200.0 | |
| E9-15 | 10th fault output power | 0 | 0.00～99.99 | kW | * | 0.00～99.99 | |
| E9-16 | 10th fault communication interference | 0 | 0～65535 | - | * | 0～65535 | |
| E9-17 | 10th fault encoder interference | 0 | 0～65535 | - | * | 0～65535 | |
| E9-18 | 10th fault input state 1 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-19 | 10th fault input state2 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-20 | 10th fault input state3 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-21 | 10th fault input state 4 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-22 | 10th fault input state5 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-23 | 10th fault output state 1 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-24 | 10th fault output state 2 | 0 | 0～65535 | - | * | 0～65535 | |

| No. | Name | Default | Setting range | Unit | Attribute | Description | User setting |
|---|---|---|---|---|---|---|---|
| E9-25 | 10th fault car input state | 0 | 0～65535 | - | * | 0～65535 | |
| E9-26 | 10th fault car output state | 0 | 0～65535 | - | * | 0～65535 | |
| E9-27 | 10th fault hall call state | 0 | 0～65535 | - | * | 0～65535 | |
| E9-28 | 10th fault system state 1 | 0 | 0～65535 | - | * | 0～65535 | |
| E9-29 | 10th fault system state 2 | 0 | 0～65535 | - | * | 0～65535 | |

# Chapter 6 Troubleshooting

## 6.1 Description of Fault Levels

TheAIEC3300 controller has perfect protection function to implement effective protection. If a fault occurs, the system implements the relevant protective function and displays the fault code. Please refer to the table below for analysis, determine the causes and eliminate the faults.

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

**Fault Levels**

| Fault level | Fault State | Solution |
|---|---|---|
| Level 1 | ■Display the fault code<br>■Output the fault relay action command<br>■ Elevator continue running | 1A—The elevator running is not affected on any condition. |
| Level 2 | ■Display the fault code<br>■Output the fault relay action command<br>■ Elevatornormal running | 2A—The parallel/group control function is disabled. |
| | | 2B—The door pre−open/re−leveling function is disabled. |
| Level 3 | ■Display the fault code<br>■Output the fault relay action command<br>■Stop output and apply the brake immediately after stop | 3A—In low−speed running, the elevator stops at special deceleration rate, and cannot restart. |
| | | 3B—In low−speed running, the elevator does not stop. In normal−speed running, the elevator stops, and then can start running at low speed after a delay of 3s. |
| Level 4 | ■Display the fault code;<br>■Output the fault relay action command<br>■In distance control, the elevator decelerates to stop and cannot run again | 4A—In low−speed running, the elevator stops at special deceleration rate, and cannot restart. |
| | | 4B—In low−speed running, the elevator does not stop. In normal−speed running, the elevator stops, and then can start running at low speed after a delay of 3s. |
| | | 4C—In low−speed running, the elevator does not stop. In normal−speed running, the elevator stops, and then can start running at low speed after a delay of 3s. |
| Level 5 | ■Display the fault code<br>■Output the fault relay action command<br>■The elevator stops immediately | 5A—In low−speed running, the elevator stops immediately and cannot restart. |
| | | 5B—In low−speed running, the elevator does not stop. In normal−speed running, the elevator stops, and then can start running at low speed after a delay of 3s. |

**Fault Information and Troubleshooting**

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E02 | Over current during acceleration | The main circuit output is grounded or short circuited | Check whether the motor and grounding cables are connected correctly. | 5A |
| | | | Check whether the motor cables have damaged jacket. | |
| | | | Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. | |
| | | Motor auto−tuning is performed improperly | Check the motor parameters and setting correctly. Perform motor auto−tuning again. | |
| | | The encoder signal is incorrect | Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft reliably and check whether the encoder is stable during normal−speed running. | |
| | | | Check whether encoder pulses per revolution (PPR) is set correctly. | |
| | | | Check whether the encoder signal is interfered, whether the encoder cable runs through the duct independently, whether the cable is too long, and whether the shield is grounded at one end. | |
| | | | Check whether the encoder wiring are correct. For the asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly. | |
| | | The phase sequence of the motor is incorrect | Exchange the motor UVW phase sequence | |
| | | The acceleration time is too short | Reduce the acceleration rate | |
| E03 | Over current during deceleration | The main circuit output is grounded or short circuited | Check whether the motor and grounding cables are connected correctly. | 5A |
| | | | Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. | |
| | | | Check whether the motor cables have damaged jacket. | |
| | | Motor auto−tuning is performed improperly | Check whether motor parameters comply with the nameplate. Perform motor auto−tuning again. | |
| | | The encoder signal is incorrect | Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft reliably by observing whether the encoder is stable during normal−speed running. | |
| | | | Check whether encoder pulses per revolution (PPR) is set correctly. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | | Check whether the encoder signal is interfered, whether the encoder cable runs through the duct independently, whether the cable is too long, and whether the shield is grounded at one end. | |
| | | | Check whether the encoder wiring are correct. For the asynchronous motor, perform open loop control and compare the current to judge whether the encoder works properly. | |
| | | The deceleration rate is too short | Reduce the deceleration rate. | |
| E04 | Over−current at constant speed | The main circuit output is grounded or short circuited | Check whether the motor and grounding cables are connected correctly. | 5A |
| | | | Check whether the shorting PMSM stator contactor causes short circuit at the controller output side. | |
| | | | Check whether the motor cables have damaged jacket. | |
| | | Motor auto−tuning is performed improperly | Check whether motor parameters comply with the nameplate. 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, whether the encoder cable runs through the duct independently, whether the cable is too long, and whether the shield is grounded at one end. | |
| | | | Check whether the encoder is installed reliably, whether the rotating shaft is connected to the motor shaft reliably by observing whether the encoder is stable during normal−speed running. | |
| | | | Check whether the encoder wirings are correct. For asynchronous motor, perform SVC and compare the current to judge whether the encoder works properly. | |
| E05 | Over−voltage during acceleration | The input voltage is too high. | Check whether the input voltage is too high. Observe whether the bus voltage is too high. (normal: 540–580 VDC for 380VAC voltage input) | 5A |
| | | The braking resistance is too large, or the braking unit is working abnormal. | Check for the balance coefficient. | |
| | | | Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. | |
| | | | Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper: | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | | Check whether the resistance is proper based on the recommendationand select a proper braking resistor. | |
| | | | If a braking unit is used, check whether the braking unit works properly and whether the model is proper. If the resistance of the braking resistor is proper and over−voltage occurs each time when the elevator reaches the target speed, decrease the values of F2−01 or F2−04 to reduce the curve following error and prevent over−voltage due to system overshoot. | |
| | | The acceleration rate is too short. | Reduce the acceleration rate. | |
| E06 | Over−voltage during deceleration | The input voltage is too high. | Check whether the input voltage is too high. Observe whether the bus voltage is too high (normal: 540–580 V for 380 voltage input). | 5A |
| | | The braking resistance is too large, or the braking unit is working abnormal | Check for the balance coefficient. | |
| | | | Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper: | |
| | | | Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. | |
| | | | Check whether the resistance is proper based on the recommendationand select a proper braking resistor. | |
| | | | If a braking unit is used, check whether the braking unit works properly and whether the model is proper. If the resistance of the braking resistor is proper and over−voltage occurs each time when the elevator reaches the target speed, decrease the values of F2−01 or F2−04 to reduce the curve following error and prevent over−voltage due to system overshoot. | |
| | | The deceleration rate is too short | Reduce the deceleration rate. | |
| E07 | Over−voltage at constant speed | The input voltage is too high | Check whether the input voltage is too high. Observe whether the bus voltage is too high (normal: 540–580 V for 380 voltage input). | 5A |
| | | The braking resistance is too large, or the braking unit is working abnormal | Check for the balance coefficient. | |
| | | | Check whether the bus voltage rises too quickly during running. If yes, the braking resistor does not work or its model is improper: | |
| | | | Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground, and whether the connection is reliable. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | | Check whether the resistance is proper based on the recommendationand select a proper braking resistor. | |
| | | | If a braking unit is used, check whether the braking unit works properly and whether the model is proper. If the resistance of the braking resistor is proper and over−voltage occurs each time when the elevator reaches the target speed, decrease the values of F2−01 or F2−04 to reduce the curve following error and prevent over−voltage due to system overshoot. | |
| E08 | Maintenance notification period reached | The elevator is not maintained within the notification period. | Power−off and maintain the elevator. | 5A |
| | | | Power−off and maintain the elevator. | |
| | | | Contact the agent or the manufacturer. | |
| E09 | Under−voltage fault | Instantaneous power failure occurs on the input power supply. | Check whether the power fails during running. | 5A |
| | | | Check whether the wiring of all power input cables is secure. | |
| | | The input voltage is too low. | Check whether the external power voltage is too low. | |
| | | The drive control board fails. | Contact the agent or the manufacturer. | |
| E10 | Controller overload | The mechanical resistance is too large. | Check whether the brake is released, and whether the brake power supply is normal. | 5A |
| | | | Check whether the guide shoes are too tight. | |
| | | The balance coefficient is improper. | Check whether the balance coefficient is correct. | |
| | | Encoder signal is abnormal. | Check whether the encoder feedback signal and parameter setting are correct. | |
| | | | Check whether the initial angle of the encoder for the PMSM is correct. | |
| | | Motor auto−tuning is not performed properly (the elevator running current is higher than the normal if auto−tuning is not performed properly). | Check the motor parameter setting and perform motor auto−tuning again. | |
| | | | If this fault is reported during slip experiment, setting parameter F3−24 correctly and perform slip experiment. | |
| | | The phase sequence of the motor is incorrect. | Check whether the UVW phase sequence of the motor is right. | |
| | | The controller model is too low power class. | Check whether the current has exceeded the rated current of the controller during stablespeed running of the elevator with empty car. | |
| E11 | Motor overload | The mechanical resistance is too large. | Check whether the brake is released, and whether the brake power supply is normal. | 5A |
| | | | Check whether the guide shoes are too tight. | |
| | | The balance coefficient is improper. | Check whether the balance coefficient is correct. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | Motor auto−tuning is not performed properly (the elevator running current is higher than the normal if auto−tuning is not performed properly). | Check the motor parameter setting and perform motor auto−tuning again. | |
| | | | If this fault is reported during slip experiment, setting parameter F3−24 correctly and perform slip experiment. | |
| | | The phase sequence of the motor is incorrect. | Check whether the UVW phase sequence of the motor is right. | |
| | | The motor model is too low power class. | Check whether the current has exceeded the rated current of the motor during stablespeed running of the elevator with empty car. | |
| E12 | Power supply phase loss | The power input phases are not symmetric. | Check whether the three phases of power supply are lost. | 5A |
| | | | Check whether the three phases of power supply are balanced. | |
| | | | Check whether the power voltage is normal. If not, adjust the power supply. | |
| | | | Setting bit14 of parameter FC−01 to 1 to cancel the input phase detect function for 220V controller. | |
| | | The drive control board is abnormal. | Contact the agent or the manufacturer. | |
| E13 | Power output phase loss | The output wiring of the main circuit is loose. | Check whether the motor wiring is secure. | 5A |
| | | | Check whether the RUN contactor on the output side is normal. | |
| | | The motor is damaged. | Check whether the motor is normal. | |
| E14 | Module overheat | The ambient temperature is too high | Lower the ambient temperature. | 5A |
| | | The fan is damaged | Replace the fan. | |
| | | The air filter is blocked. | Clear the air filter. | |
| | | | Check whether the installation clearance of the controller satisfies the requirement. | |
| E15 | Output abnormal | Sub−code 1: The braking resistor is short circuited. | Check wiring of the braking resistor and braking unit is correct, without short−circuit. | 5A |
| | | | Check whether the main contactor works properly and whether there is arch or stuck problem. | |
| | | Sub−code 2: The braking IGBT is short circuited. | Contact the agent or the manufacturer. | |
| E16 | Current control fault | Subcode 1: The excitation current deviation is too large. Subcode 2: The torque current deviation is too large. | Check whether the input voltage is low (often in temporary power supply) | 5A |
| | | | Check whether cable connection between the controller and the motor is secure | |
| | | | Check whether the RUN contactor works properly | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | Sub−code 3: The speed deviation is too large. | Check the circuit of the encoder:<br>①Check whether encoder pulses per revolution (PPR) is set correctly.<br>②Check whether the encoder signal is interfered.<br>③Check whether the encoder cable runs through the duct independently, the cable is too long, or the shield is grounded at one end.<br>④Check whether the encoder is installed reliably, the rotating shaft is connected to the motor shaft reliably, or the encoder is stable during normal−speed running. | |
| | | | Check whether the motor parameters are correct, and perform motor auto−tuning again. | |
| | | | Increase the torque upper limit in F2−08. | |
| E17 | Encoder interference during motor auto−tuning | Sub−code 1: Reserved. | Reserved | 5A |
| | | Sub−code 2: The SIN/COS encoder signal is abnormal. | Serious interference exists in the C, D, and Z signals of the SIN/COS encoder. So check whether the encoder cable is laid separately from the power cables, and whether system grounding is reliable. | |
| | | | Check whether the PG card is wired correctly. | |
| | | Sub−code 3: The UVW encoder signal is abnormal. | Serious interference exists in the U, V, and W signals of the UVW encoder. So check whether the encoder cable is laid separately from the power cables, and check whether system grounding is reliable. | |
| | | | Check whether the PG card is wired correctly. | |
| E18 | Current detection fault | The drive control board is abnormal. | Contact the agent or the manufacturer. | 5A |
| E19 | Motor auto−tuning fault | Sub−code 1: Stator resistance auto−tuning fails. | Check whether the motor wiring is correct. | 5A |
| | | Sub−code 5: Magnetic pole position auto−tuning fails. | | |
| | | Sub−code 8: Synchronous motor static auto−tuning is selected, but the encoder type is not SIN/COS encoder. | Select other auto−tuning modes or change the encoder type to SIN/COS encoder. | |
| | | Sub−code 9: CD signal fluctuation is too large in synchronous motor static auto−tuning. | Hardware interference exists in the CD signals of the SIN/COS encoder. Check whether grounding is normal. | |
| | | Sub−code 12: The encoder initial angle is not learned during angle−free auto−tuning of synchronous motor so that report fault. | For semi−automatic angle−free auto−tuning, the elevator can run at normal speed only after the encoder initial angle is obtained in inspection mode. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E20 | Speed feedback incorrect | Sub−code 1: The encoder signal is not detected during synchronous motor no−load auto−tuning. | Check whether the encoder signal circuit is normal. | 5A |
| | | | Check whether the PG card is normal. | |
| | | | Check whether the brake has been released. | |
| | | Sub−code 4: The Z signal cannot be detected during synchronous motor auto−tuning.<br>Sub−code 5: The cables of the SIN/COS encoder break.<br>Sub−code 7: The cables of the UVW encoder break.<br>Sub−code 14: The Z signal is lost during normal running. | Check whether the encoder signal circuit is normal. | |
| | | | Check whether the PG card is normal. | |
| | | Sub−code 2, 8: Reserved. | Reserved | |
| | | Sub−code 3, 15: The phase sequence is incorrect. | Exchange the cable sequence of any two of U, V, and W phases of the motor. | |
| | | | Check whether the brake is released during with−load auto−tuning of the synchronous motor. | |
| | | Sub−code 9: The speed deviation is too large. | The angle of the synchronous motor is abnormal. Perform motor auto−tuning again. | |
| | | | Reduce the position lock speed loop KP. | |
| | | | The speed loop proportional gain is excessive or integral time is insufficient. Decrease the proportional gain or increase the integral time properly. | |
| | | | Check the phase sequence of the motor. | |
| | | Sub−code 12: The encoder AB signals are lost at start−up. | Check whether the brake has been released. | |
| | | | Check whether AB signal cables of the encoder break | |
| | | | If the motor cannot be started at the slip experiment, perform the slip experiment by using the function set in F3−24. | |
| | | Sub−code 13: The encoder AB signals are lost during running. | AB signals of the encoder become loss suddenly. Check whether encoder wiring is correct, whether strong interference exists, or the motor is stuck due to sudden power failure of the brake during running. | |
| | | Sub−code 19: The signals of the SIN/COS encoder are seriously interfered with during running. | The encoder analog signals are seriously interfered with during motor running, or encoder signals are in poor contact. You need to check the encoder circuit. | |
| | | Sub−code 55: The signals of the SIN/COS encoder are seriously interfered with or CD signals are incorrect during motor auto−tuning. | The encoder analog signals are seriously interfered with during motor auto−tuning, or encoder CD signals are in wrong sequence. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E21 | Parameters are incorrectly set | Sub−code 2: The set value of the maximum frequency is smaller than the rated motor frequency. | Increase the value of F0−06 so that it is greater than the rated motor frequency. | 5A |
| | | Sub−code 3: The encoder type is incorrectly set. | The SIN/COS, absolute or ABZ encoder is incorrectly set to the UVW encoder. Test whether the set value of F1−00 is matched with the encoder. | |
| E22 | Leveling signal abnormal | Sub−code 101: The leveling signal is stuck.<br>Sub−code 102: The leveling signal is lost. | Check whether the leveling and door zone switches work properly | 1A |
| | | | Check the installation verticality and depth of the leveling plates. | |
| | | | Check the leveling signal input points of the MCB. | |
| | | Sub−code 103: The leveling position deviation is too large in elevator auto−running state. | Check whether the steel rope slips. | |
| E23 | Short circuit | Sub−codes 1, 2, 3: Short circuit to ground exists. | Check whether the three−phase output of the AC drive is short circuited to ground. | 5A |
| | | Sub−code 4: Inter−phase short circuit exists. | Check whether the three−phase output of the AC drive is short circuited between phases or to ground. | |
| E24 | RTC clock fault | Subcode 101: The RTC clock information of the MCB is abnormal. | Replace the clock battery. | 3B |
| | | | Replace the MCB. | |
| E25 | Storage data abnormal | Subcodes 101, 102, 103: The storage data of the MCB is abnormal. | Contact the agent or the manufacturer. | 4A |
| E26 | Earthquake signal | Subcode 101: The earthquake signal is active and the duration exceeds 2s. | Subcode 101: Check that the earthquake signal is consistent with the parameter setting (NC, NO) of the MCB. | 3B |
| E27 | Fault of special controller | Reserved | Contact the agent or the manufacturer. | − |
| E28 | Maintenance fault | Reserved | Contact the agent or the manufacturer. | − |
| E29 | Shorting motor stator contactor feedback abnormal | Sub−code 101: Feedback of the shorting motor stator contactor of the MCB is abnormal.<br>Sub−code 102: Feedback of the shorting PMSM stator contactor of the IO expansion board is abnormal. | Check that the signal feature (NO, NC) of the feedback contact on the contactor is correct. | 5A |
| | | | Check that the contactor and corresponding feedback contact act correctly. | |
| | | | Check the coil circuit of the shorting motor stator contactor. | |
| E30 | Elevator position abnormal | Sub−code 101、102: The leveling signal does not change in a certain period of time under normal speed running mode or re−leveling | Check whether the leveling signal cables are connected reliably and whether the signal copper wires may touch the ground or be short circuited with other signal cables. | 4A |
| | | | Check whether the distance between two floors is too large or the re−leveling time set in F3−21 is too short, causing over long re−leveling running time. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E31 | DPRAM: for AIEC3300 | DPRAM read and write abnormal | Please contact the agent or the manufacturer to replace the control board. | – |
| E32 | CPU abnormal: for AIEC3300 | CPU working abnormal | Check the short connector J9、J10of the CPU board whether only the right two pins of J9 short circuited. | – |
| | | | Please contact the agent or the manufacturer to replace the control board. | |
| E33 | Elevator speed abnormal | Sub−code 101: The detected running speed during normal−speed running exceeds the limit. | Check whether the parameter setting and wiring of the encoder are correct. | 5A |
| | | | Check the setting of motor nameplate parameters. Perform motor auto−tuning again. | |
| | | Sub−code 102: The speed exceeds the limit during inspection or shaft auto−tuning. | Attempt to decrease the inspection speed or perform motor auto−tuning again. | |
| | | Sub−code 103: The speed exceeds the limit in shorting stator braking mode | Check whether the shorting motor stator function is enabled. | |
| | | | Check whether the UVW phase sequence of the motor is right. | |
| | | Sub−codes 104, 105: The speed exceeds the limit during emergency running. | Check whether the emergency power capacity meets the requirements. | |
| | | | Check whether the emergency running speed is set properly. | |
| | | Sub−code 106: The MCB speed measuring deviation is too large. | Check the wiring of the encoder. | |
| | | | Check whether SPI communication quality between the MCB and the AC drive is excellent. | |
| E34 | Logic fault | Logic of the MCB is abnormal. | Contact the agent or manufacturer to replace the MCB. | 5A |
| E35 | Shaft auto−tuning data abnormal | Subcode 101: When shaft auto−tuning is started, the elevator is not at the bottom floor or the down slow−down switch is invalid | Check that the down slow−down switch is valid, and that F4−01 (Current floor) is set to the bottom floor number. | 4C |
| | | Subcode 102: Maintenance switch off during shaft auto−tuning state. | Check whether the elevator is under maintenance. | |
| | | Subcode 103: It is judged upon power−on that shaft auto−tuning is not performed. | Perform shaft auto−tuning again. | |
| | | Subcodes 104, 113, 114: 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 are inconsistent. | Check whether the elevator running direction is consistent with the pulse change in F4−03: F4−03 increases in up direction and decreases in down direction. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | Subcodes 106, 107, 109: The plate pulse length sensed at up/down leveling is abnormal. | Check that NO/NC state of the leveling switch is set correctly. | |
| | | | Check whether the leveling plates are inserted properly and whether there is strong power interference if the leveling switch signal blinks. | |
| | | Subcodes 108, 110: No leveling signal is received within 45s continuous running. | Check whether wiring of the leveling switch is correct. | |
| | | | Check whether the floor distance is too large, causing running time−out. Increase the speed set in F3−11 and perform shaft auto−tuning again to ensure that learning the floors can be completed within 45s. | |
| | | Subcodes 111, 115: The stored floor height is smaller than 50 cm. | Enable the super short floor function if the floor distance is less than 50 cm. If the floor distance is normal, check installation of the leveling plate for this floor and check the switch and its wiring. | |
| | | Subcode 112: The floor when auto−tuning is completed is not the top floor. | F6−00 (Top floor of the elevator) is incorrectly set or the leveling plate is missing. | |
| E36 | RUN contactor feedback abnormal | Sub−code 101: The controller has not output the RUN signal but receives RUN feedback.<br>Subcode 102: The controller outputs the RUN signal but receives no RUN feedback.<br>Subcode 104: When both feedback signals of the RUN contactor are enabled, their states are inconsistent.<br>Subcode 105: The feedback of the RUN contactor is active before re−leveling is enabled. | Check whether the feedback contact of the contactor acts properly. | 5A |
| | | | Check the signal feature (NO, NC) of the feedback contact. | |
| | | Subcode 103: The current of the asynchronous motor from the acceleration segment to the constant speed segment is too small ( ≤ 0.1 A). | Check whether the output cables UVW of the controller are connected properly.<br>Check whether the control circuit of the RUN contactor coil is normal. | |
| E37 | Brake contactor feedback abnormal | Sub−code 101: The output of the brake contactor is inconsistent with the feedback. | Check whether the brake contactor opens and closes properly. | 5A |
| | | | Check whether the feedback circuit of the brake contactor is normal. | |
| | | | Check that the signal feature (NO, NC) of the feedback contact on the brake contactor is set | |
| | | Sub−code 102: When both feedback signals of the brake contactor are enabled, their states are inconsistent. | Check the signal feature (NO, NC) of the feedback contact on the brake contactor is set | |
| | | | Check whether the states of the multi−way feedback contacts are consistent. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | Sub−code 103: The output of the brake contactor is inconsistent with the brake travel switch 1 feedback.<br>Sub−code 106: The output of the brake contactor is inconsistent with the brake travel switch 2 feedback. | Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback is set correctly. | |
| | | | Check whether the circuit of the brake travel switch 1/2 feedback is normal. | |
| | | Sub−code 105: The brake contactor feedback is valid before the brake contactor opens. | Check whether the feedback contact of the brake contactor malfunctions. | |
| | | Sub−code 104: When both feedback signal of brake travel switch 1 are enabled, their states are inconsistent. | Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback is set | |
| | | | Check whether the states of the multi−way feedback contacts are consistent. | |
| | | Sub−code 108: The brake contactor output is inconsistent with the feedback of brake travel switch 1 on the IO expansion board.<br>Sub−code 109: The brake contactor output is inconsistent with the feedback of brake travel switch 2 on the IO expansion board. | Check whether the signal feature (NO, NC) of the brake travel switch 1/2 feedback on the IO expansion board is set correctly. | |
| | | | Check whether the circuit of the brake travel switch 1/2 feedback is normal. | |
| E38 | Encoder signal abnormal | Sub−code 101: The pulses in F4−03 do not change within the time threshold in F1−13. | Check whether the brake works properly. | 5A |
| | | | Check whether the encoder is used correctly | |
| | | Sub−code 102: F4−03 increases in down direction.<br>Sub−code 103: F4−03 decreases in up direction. | Check whether the system grounding and signal grounding is secure.<br>Check the phase sequence of the motor. | |
| | | | Check whether the parameter setting and wiring of the encoder are correct. | |
| | | Sub−code 104: The SVC is used in distance control mode. | Set F0−00 (Control mode) to 1 (Closed−loop vector control) in distance control mode. | |
| | | Sub−code 105: The up limit switch acts when elevator down−direction running; | Check whether the wiring of up and down limit switches is normal. | |
| | | Sub−code 106: The down limit switch acts when elevator up−direction running; | | |
| | | Sub−code 107: The up slow−down switches act when elevator down−direction running; the down slow−down switches act when elevator up−direction running;https://fanyi.baidu.com/ −zh/en/javascript:void(0); | Check whether the slow−down switches are normal. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E39 | Motor overheat | Sub−code 101: The motor overheat relay input remains valid for a certain time. | Check whether the parameter setting (NO, NC) is correct.<br>Check whether the thermal protection relay socket is normal.<br>Check whether the motor is used properly and whether it is damaged.<br>Improve cooling conditions of the motor. | 3A |
| E40 | Reserved | Reserved | Contact the agent or manufacture | 4B |
| E41 | Safety circuit disconnected | Sub−code 101: The safety circuit signal becomes OFF | Check the safety circuit switches and their states.<br>Check whether the external power supply is normal.<br>Check whether the safety circuit contactor acts properly<br>Confirm the signal feature (NO, NC) of the feedback contact of the safety circuit | 5A |
| E42 | Door lock disconnected during running | Sub−codes 101, 102: The door lock circuit feedback is invalid during the elevator running | Check whether the hall door lock and the car door lock are in good contact.<br>Check whether the door lock contactor acts properly.<br>Check the signal feature (NO, NC) of the feedback contact on the door lock contactor.<br>Check whether the external power supply is normal. | 5A |
| E43 | Up limit signal abnormal. | Sub−code 101: The up limit switch acts when the elevator is running in the up direction | Check the signal feature (NO, NC) of the up limit switch.<br>Check whether the up limit switch is in good contact.<br>Check whether the limit switch is installed at a relatively low position and acts even when the elevator arrives at the terminal floor normally | 4A |
| E44 | Down limit signal abnormal | Sub−code 101: The down limit switch acts when the elevator is running in the down direction | Check the signal feature (NO, NC) of the down limit switch<br>Check whether the down limit switch is in good contact.<br>Check whether the limit switch is installed at a relatively high position and thus acts even when the elevator arrives at the terminal floor | 4A |
| E45 | Slow−down switch abnormal | Sub−code 101: The down slow−down distance is insufficient during shaft auto−tuning.<br>Sub−code 102: The up slow−down distance is insufficient during shaft auto−tuning.<br>Sub−code 103: The slow−down switch is stuck or abnormal | Check whether the up slow−down and the down slow−down are in good contact.<br>Check the signal feature (NO, NC) of the up slow−down switch and the down slow−down switch.<br>Ensure that the obtained slow−down distance satisfies the slow−down requirement at the elevator speed. | 4B |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | during normal running | | |
| | | Sub−code 106: The up and down slow−down switches 2 act improperly during shaft auto−tuning. | Check whether the signal of the up and down slow−down switches 2 is in wrong sequence. | |
| | | | Check the signal feature (NO, NC) of the up and down slow−down switches 2. | |
| | | Sub−code 107: The up and down slow−down switches 3 act improperly during shaft auto−tuning. | Check whether the signal of the up and down slow−down switches 3 is in wrong sequence. | |
| | | | Check the signal feature (NO, NC) of the up and down slow−down switches 3 | |
| E46 | Re−leveling abnormal | Sub−code 101: The leveling signal is inactive during re−leveling | Check whether the leveling signal is normal. | 2B |
| | | Sub−code 102: The re−leveling running speed exceeds 0.1 m/s. | Check whether the encoder is used correctly. | |
| E47 | Shorting door lock circuit contactor abnormal | Sub−code 101: The shorting door lock circuit contactor outputs for continuous 2s, but the feedback is invalid and the door lock is disconnected<br>Sub−code 102: The shorting door lock circuit contactor has no output, but the feedback is valid for continuous 2s.<br>Sub−code 106: The door lock feedback is detected as valid before re−leveling. | Check the signal feature (NO, NC) of the feedback contact on the shorting door lock circuit contactor. | 2B |
| | | | Check whether the shorting door lock circuit contactor acts properly. | |
| | | Sub−code 103: During re−leveling or pre−open running, the output time of the shorting door lock circuit contactor is larger than 15s. | Check whether the leveling and re−leveling signals are normal. | |
| | | | Check whether the re−leveling speed is set too low. | |
| E48 | Door open fault | Sub−code 101: The consecutive times that the door does not open to the limit reaches the setting in Fb−09. | Check whether the door machine system works properly. | 5A |
| | | | Check whether the CTB output is normal. | |
| | | | Check whether the door open limit signal and door lock signal are normal. | |
| E49 | Door close fault | Subcode 101: The consecutive times that the door does not close to the limit reaches the setting in Fb−09. | Check whether the door machine system works properly. | 5A |
| | | | Check whether the CTB output is normal. | |
| | | | Check whether the door open limit signal and door lock signal are normal. | |
| E50 | Consecutive loss of leveling signal | Sub−code 101: Leveling signal stuck is detected for three consecutive times.<br>Sub−code 102: Leveling signal loss is detected for three consecutive times. | Check whether the leveling and door zone switches work properly. | 5A |
| | | | Check the installation verticality and depth of the leveling plates | |
| | | | Check the leveling signal input points of the MCB. | |
| | | | Check whether the steel rope slips. | |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| E51 | CAN communication fault | Subcode 101: Feedback data of CANbus communication with the CTB remains incorrect. | Check whether the 24 V power supply of the controller is normal. | 1A |
| | | | Check whether there is strong−power interference on communication. | |
| | | | Check the communication cables. | |
| | | | Check the power supply of the CTB. | |
| E52 | HCB communication abnormal | Sub−code 101: Feedback data of Modbus communication with the HCB remains incorrect. | Check the communication cable connection. | 1A |
| | | | Check whether the 24 V power supply of the controller is normal. | |
| | | | Check whether the HCB addresses are repeated | |
| | | | Check whether there is strong−power interference on communication | |
| E53 | Door lock fault | Sub−code 101: The door lock feedback signal remains active after door open output, with shorting door lock circuit disabled.<br>Sub−code 102: The states of the door lock multi−way feedback contacts are inconsistent, or the feedback status is not consistent between the door lock 1 and door lock 2..<br>Sub−code 105: The door lock 1 shorting signal is enabled after door opening output signal for 3 seconds, with shorting door lock circuit.<br>Sub−code 106: The door lock 2 shorting signal is enabled after door opening output signal for 3 seconds, with shorting door lock circuit. | Check whether the door lock circuit is short circuited. | 5A |
| | | | Check whether the feedback contact of the door lock contactor acts properly. | |
| | | Sub−code 104: The higher−voltage and low−voltage door lock signals are inconsistent. | heck whether the higher−voltage and low−voltage door lock signals are inconsistent. If the time when the MCB receives the two signals has a deviation of above 1.5s, this fault is reported. This sub−code is reset at power−off and power−on again | |
| | | Sub−code 107: Theparameter for door lock short circuit input is selected, but the feedback signal is continuously disconnected or is not connected. | Check whether the door lock short circuit feedback signal cable is not connected or is broken. | |
| E54 | Over−current | Sub−code 102: The current at | Check the phase sequence of the motor. | 5A |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | at inspection startup | startup for inspection exceeds 120% of the rated current. | Reduce the load. | |
| | | | Change Bit1 of FC−00 to 1 to cancel the start−up current detection function. | |
| E55 | Stop at another landing floor | Sub−code 101: During automatic running of the elevator, the door open limit is not received within the time threshold in Fb−06. | Check the door open limit signal at the present floor. | 1A |
| E56 | Door open/close signal fault | Sub−code 101: The door open/close limit signal is active in running.<br>Sub−code 102: The door close limit signal is inactive in running.<br>Sub−code 103: door open limit and close limit signals are both valid | Check the setting of door open/close limit signal NO/NC of F5−25. | 5A |
| | | | Check the wiring of door open/close signal. | |
| | | Sub−code 104: The door close limit signal is continuously connected 3s after the door is open. This fault sub−code is detected after the door lock bypass is set. | Check whether the door close limit signal is always active. | |
| E57 | Serial peripheral interface (SPI) communication abnormal | Sub−codes 101, 102: The communication of the MCB with the DSP board of the drive unit is abnormal. | Check the wiring between the control board and the drive board | 5A |
| | | Sub−code 103: The MCB does not match the AC drive. | Contact the agent ormanufacturer | |
| E58 | Shaft position switches abnormal | Sub−code 101: The up slow−down switch and down slow−down switch are disconnected simultaneously.<br>Sub−code 102: The up limit feedback and down limit feedback are disconnected simultaneously. | Check whether the signal feature (NO, NC) of the slow−down switches and limit switches are consistent with the parameter setting of the | 4B |
| | | | Check whether malfunction of the slow−down switches and limit switches exists. | |
| | | | Whether the parameter for NO / NC settings is correctly. | |
| E59 | Special fault | Other | Please contact the agent or manufacturer | − |
| E60 | Special fault | Other | Please contact the agent or manufacturer | − |
| E61 | Special fault | Other | Please contact the agent or manufacturer | − |
| E62 | Analog input cable broken | Sub−code 101: The load cell analog input cable is broken. | Adjust the load cell switch function. | 3B |
| | | | Check whether the analog input cable of the CTB or MCB is connected incorrectly or broken. | |
| | | | Check whether F5−36 is set correctly. | |
| E63 | Special fault | Other | Please contact the agent or manufacturer | − |
| E64 | External fault | Sub−code 101: The external fault signal is continuously active for | Check the input signal state of the external fault terminal | 5A |

| Fault code | Name | Possible Causes | Solution | Fault Level |
|---|---|---|---|---|
| | | 2s. | Check the NO/NC setting of the external fault terminal | |
| E65 | UCMPtest abnormal | This fault is reported when the UCMP function test is enabled. This fault is reported when the car moves unintendedly | Check whether the brake is fully closed and whether the car does not move unintendedly | 5A |
| E66 | Braking forcetest abnormal | This fault is reported when the braking force test is enabled and insufficient braking force is detected | Check the brake clearance | 5A |
| E74 | STO fault | Sub−fault−code 1: STO fault | Check whether the safety circuit and door lock circuit are disconnected | 5A |
| | | | Checkwhether the STO board is normal | |
| | | | Check whether Y1 output is normal | |

# Chapter 7 Maintenance and Inspection

The application environment (such as temperature, humidity, dust and powder, wool, smoke and oscillation), burning and wearing of internal devices and other factors may reduces service life of elevator controller. To reduce the fault and prolong the service life, it is necessary to perform daily inspections and periodic maintenance.

Note:

◆ Only the professionals can dismantle and replace the controller components.

◆ Before inspection and maintenance, please make sure that the power supply to the has been shut down for at least ten minutes or the CHARGER indicator is OFF, otherwise, electric shock may be happened.

◆ Do not leave metal components and parts in the inner of the controller, otherwise, controller may be damaged.

## 7.1 Daily Inspections

The controller should be used under the allowable conditions as recommended in this manual and its daily inspections should be performed as the table.

| Item | Contents | Inspection Means | Criteria |
|---|---|---|---|
| Operating Environment | Temperature | Thermometer | −10 ~ +40ºC<br>Derated at 40 to 50ºC, and the rated output current shall be decreased by 1% for every temperature rise of 1ºC. |
| | Humidity | Humidometer | 5 ~ 95%, no condensing |
| | Dust, oil, water and drop | Visual check | No sludge, no oil stain, no water leakage trace. |
| | Vibration | Special test instrument | 3.5m/s$^2$, 2~ 9Hz;<br>10m/s$^2$,9~ 200Hz;<br>15m/s$^2$,200~ 500Hz |
| | Gas | Special test instrument, smell check and visual | No abnormal smell and smoke. |
| Elevator integrated controller | Overheat | Special test instrument | Normal ventilation |
| | Noise | Listen | No abnormal noise. |
| | Gas | Smell and visual check | No abnormal smell and smoke. |
| | Appearance | Visual check | Well−tended appearance |
| | Heat dissipation | Visual check | No dirt, no sundries blocking the air duct. |
| | Input current | Ampere−meter | Refer to the nameplate. |
| | Input voltage | Voltmeter | Refer to the nameplate. |
| | Output current | Ampere−meter | Rating condition. Overloaded for a short while. |
| | Output voltage | Voltmeter | In rating condition. |
| Motor | Overheat | Testing equipment and | No overheat fault, no burning smell. |
| | Noise | Listen | No abnormal noise. |
| | Vibration | Special test instrument | No abnormal oscillation. |

## 7.2 Periodic Maintenance

According to the use environment and working conditions, the elevator integrated controller shall be perform periodic maintenance regularly every 3−6 months.

| Item | Contents | Inspection Means | Criteria |
|---|---|---|---|
| Elevator integrated controller | Main circuit terminal | Screwdriver/sleeve | The screws are tightened and the cables not damaged. |
| | PE terminal | Screwdriver/sleeve | The screws are tightened and the cables not damaged. |
| | Control circuit terminal | Screwdriver | The screws are tightened and the cables not damaged. |
| | Reliability of internal connections and connectors | Screwdriver and hands | Connection is firm and reliable. |
| | Expansion card connector | Screwdriver and hands | Connection is firm and reliable. |
| | Mounting screws | Screwdriver/sleeve | The screws are tightened. |
| | Cleaning the dusts and powders | Cleaner | There are no dusts and wools. |
| | Internal foreign objects | Visual check | There are no foreign objects. |
| Motor | Insulation test | 500VDC mega−meter | Normal |

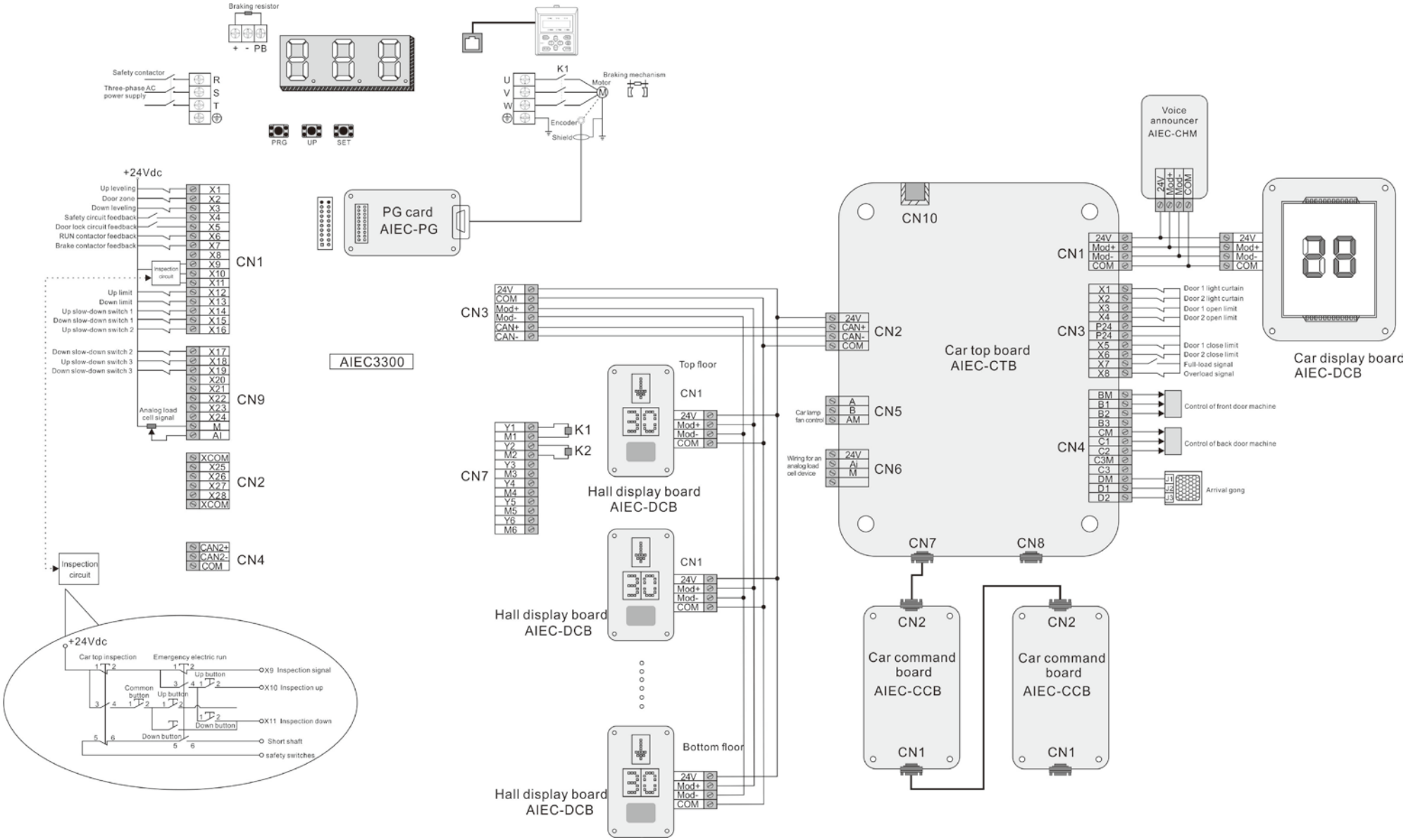
## 7.3 Component Replacement

Different types of components have different service lives. The service lives of the components are subject to the environment and application conditions. Better working environment may prolong the service lives of the components. The cooling fan and electrolytic capacitor are vulnerable components and should be periodic maintenance. If any fault occurs, the component should be replaced in time.

| Vulnerable Components | Damage Causes | Solutions | Items for Routine Inspection |
|---|---|---|---|
| Fan | Bearing wear, blade aging | Change | The fan blade has no cracks and rotates normally. The screws are tightened. |
| Electrolytic capacitor | Ambient temperature is relatively high and electrolyte volatilizes | Change | There are no electrolyte leakage, color change, crack and shell inflation. The safety valve is normal.<br>Static capacity is equal to or higher than the initial value times 0.85. |

**Note:**

When the elevator integrated controller is stored for a long period of time, power connection test shall be conducted once within two years and last at least five hours. It should use voltage regulator to gradually increase the voltage value to the rated voltage input value .




**Standard wiring diagram of the AIEC3300 elevator integrated controller**

English version: AIEC3300−201200319−1.0 (BOM: 37110278) printed for the first time