# MONT75 Series

## Elevator Integrated Controller

### Starting Guide

V1.0 2020.12

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Thank you for using MONT75 Elevator Integrated Controller manufactured by Shenzhen Hpmont Technology Co., Ltd.

## Version and Revision Records

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| Revised | Revised Contents |
|---|---|
| | • V1.0 publish |

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# 1. MONT75 System Introduction

## 1.1 Controlling System Configuration

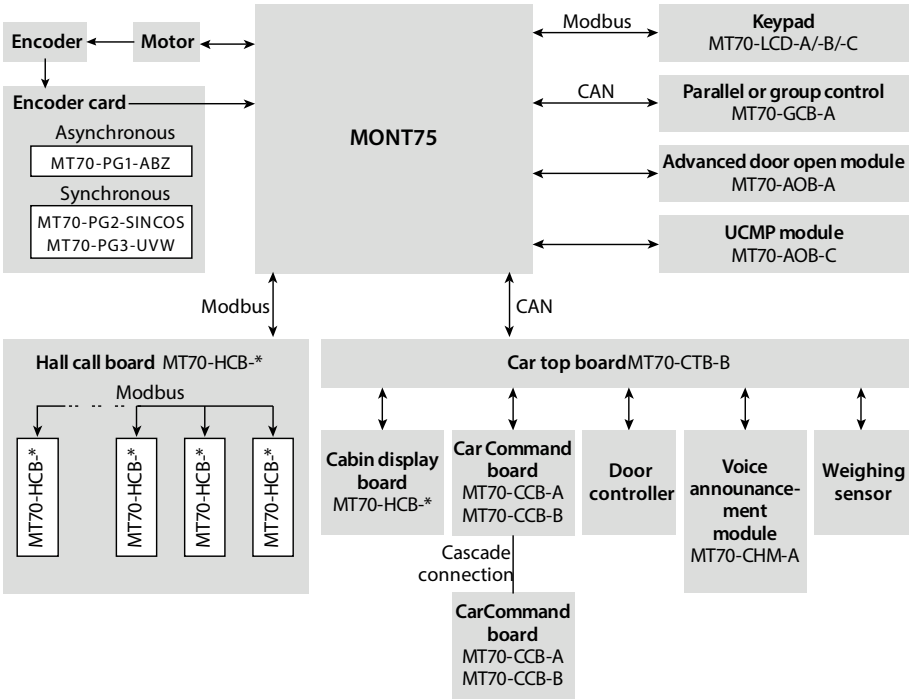



**Figure 1-1 MONT75 controlling system configuration**

## 1.2 Main Control Board (MT90-MCB-A)

The main control board (MT90-MCB-A) is the core of the control system and using the industry leading 32-bit DSP as the control core, which completes high-performance traction machine vector control, communicates with CTB (car top board), HCB (hall call board) and GCB (group control board), and achieves signal I/O processing and elevator logic control.

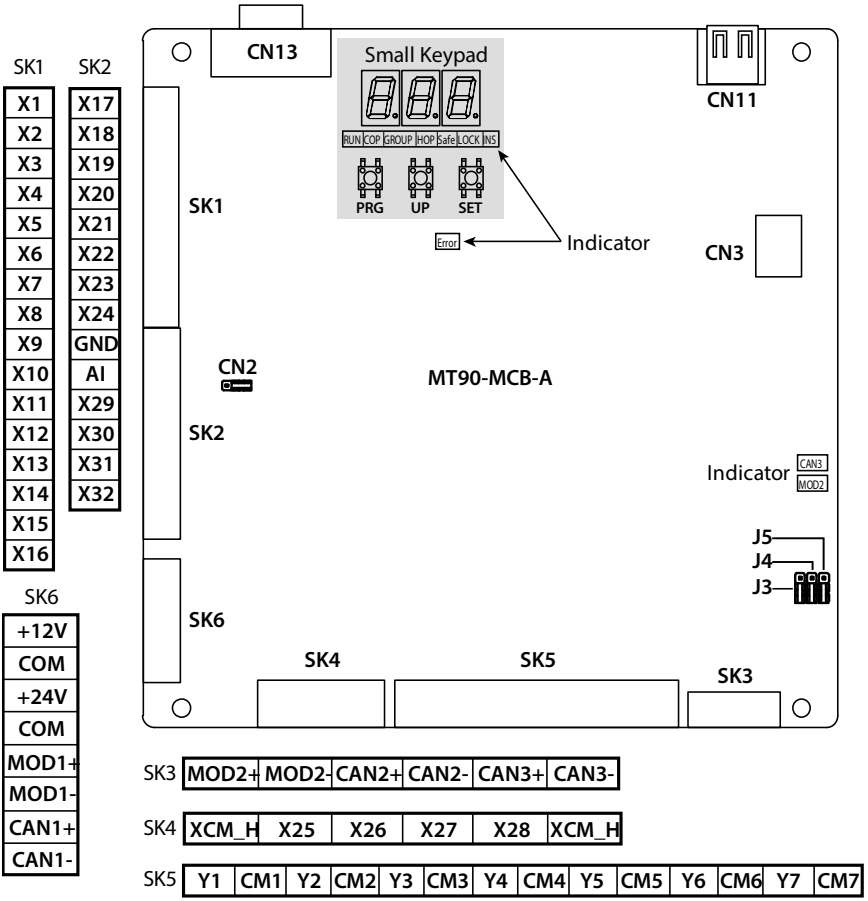



**Figure 1-2 MT90-MCB-A**

## 1.3 Terminal Description

**Table 1-1 Terminal description**

| Terminal | | Description |
|---|---|---|
| X1 - X24,<br>X29 - X32 | Digital input | Total 24 groups, programmable bipolar optional optocoupler-isolated input signals<br>• Input voltage: 0 - 30VDC<br>• Input impedance: 4.7kΩ<br>• The function is set by F12.01 - F12.24 |
| X25 - X28,<br>XCM_H | High voltage input terminal | Optocoupler-isolated input signals<br>• Input voltage: 110 - 220VAC/DC<br>• Input impedance: 22kΩ<br>• The function is set by F12.25 - F12.27 |
| AI, GND | Analogue input | Input voltage range: -10 - +10V; Input impedance: 34kΩ |
| Y1 - Y7,<br>CM1 - CM7 | Relay contact NO output | Programmable output<br>• Y1 - Y3 contact capacity: 250VAC/3A or 30VDC/1A<br>• Y4 - Y7 contact capacity: 250VAC/3A or 30VDC/1A<br>• The function is set by F12.28 - F12.33 |
| +24V, COM | +24V power supply | External DC 24V power input, as I/O circuits and communication circuit power |
| MOD1+,<br>MOD1- | Modbus communication | For Modbus communicating with HCB (MT70-HCB-*)<br>• Recommended to use shielded twisted pair |
| MOD2+,<br>MOD2- | Modbus communication | For Modbus communicating with IoT module (MT70-CIC-*)<br>• Recommended to use shielded twisted pair |
| CAN1+, CAN1- | CAN communication | For CAN communicating with CTB (MT70-CTB-A)<br>• Recommended to use shielded twisted pair |
| CAN2+, CAN2- | CAN communication | For CAN communicating with GCB (MT70-GCB-A), or with MCB which is in parallel<br>• Recommended to use shielded twisted pair |
| CAN3+, CAN3- | CAN communication | For CAN communicating with power regenerative unit |
| GND | CAN3 communication ground | |
| CN3 | RJ45 | Modbus communication terminals, extensional keypads<br>• Check or modify MCB parameter |
| CN11 | USB interface | Connect Bluetooth module (MT70-BLE-A) |
| +12V, COM | +12V power supply | Emergency power input |

## 1.4 Indicator Description

**Table 1-2 Indicator description**

| Indicator | | Description |
|---|---|---|
| RUN | Elevator operation indicator | • Flashing at run<br>• Lighting at stop |
| COP | CTB CAN communication indicator | • Flashing at normal communication<br>• Extinguishing at abnormal |
| GROUP | GCB CAN communication indicator | • Flashing at normal communication<br>• Extinguishing at abnormal |
| HOP | HCB Modbus communication indicator | • Flashing at normal communication<br>• Extinguishing at abnormal |
| Safe | Safety circuit indicator | • Lighting at safety circuit closing<br>• Extinguishing at disconnection |
| LOCK | Locked-door circuit indicator | • Lighting at locked-door circuit closing<br>Extinguishing at disconnection |
| INS | Inspection indicator | • Lighting at elevator inspection state<br>• Extinguishing at other states |
| Error | Fault indicator | • Lighting at serious fault, flashing at general fault<br>• Extinguishing at no fault |
| MOD2 | IoT module communication indicator | • Flashing at normal communication<br>• Extinguishing at abnormal |
| CAN3 | Power regenerative unit CAN communication indicator | • Flashing at normal communication<br>• Extinguishing at abnormal |

## 1.5 Jumper Description

**Table 1-3 Jumper descriptions**

| Jumper | Descriptions |
|---|---|
| J3   | At connecting MT70-GCB-A or two elevators in parallel, CAN2 communication resistor selection can be set:<br>• Pin1&2 are short-connected, no matching resistor (factory setting).<br>• Pin2&3 are short-connected, with matching resistor. |
| J4   | At connecting IoT module, Modbus 2 communication resistor selection can be set:<br>• Pin1&2 are short-connected, no matching resistor (factory setting).<br>• Pin2&3 are short-connected, with matching resistor. |
| J5   | At connecting power regenerative unit, CAN3 communication resistor selection can be set:<br>• Pin1&2 are short-connected, no matching resistor (factory setting).<br>• Pin2&3 are short-connected, with matching resistor. |
| CN2   | Digital input terminal X1 - X24 are high level/low level selections:<br>• Pin 1&2 are short-connected, the low level is valid;<br>• Pin 2&3 are short-connected, the high level is valid (factory setting). |

## 1.6 Small Keypad Description

### Keypad Description

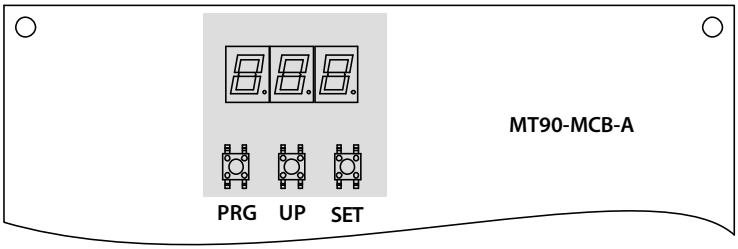



**Figure 1-3 Keypad key**

**Table 1-4 Keypad key description**

| Key | Description |
|---|---|
| **PRG** | • At any state, pressing **PRG** key can display the present function group number. |
| **UP** | • At function group number menu, via **UP** key to increase group number which can be changed cyclically.<br>• At specific functional data menu, you can also input simple command. |
| **SET** | • At function group number menu, pressing **SET** key can enter data menu of this function group.<br>• At data menu, after input simple command, press **SET** key to save, and then enter into data menu display of F0. |

### Display Function

The keypad displays the information about the MCB, and input simple command.

Make functions in group F0 - F17, as shown in Table 1-5. See Table 1-6 for detailed function.

**Table 1-5 Small keypad display function group**

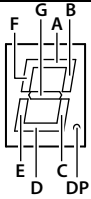
| Keypad Display Function | | |
|---|---|---|
| F0: Floor and run direction information | F6: Display present date | F12: Elevator running direction modify |
| F1: Call command input | F7: Shaft self-learning command input | F13: History fault |
| F2: Fault reset | F8: Test function | F14: Manual detection of brake force |
| F3: Carrier frequency | F9: OD and CD control | F15: UCMP start test |
| F4: Encoder direction | F10: Parameter auto-tuning | F16: Check hall call address |
| F5: Display run times | F11: Car top IO status inquiry | F17: Communicaiton parameter restore factory parameters |

**Table 1-6 Small keypad display description**

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>F0:<br>Floor and run direction information</td><td>After power on, the digital tube defaults to display the data of group F0 (floor and direction).<br>• The first digital tube displays the current elevator direction.<br>• Flashes when running, and does not light up when stopped.<br>• The last two digital tubes display the current elevator floor.<br>• Flashes when running, and always on when stopping.<br>When the system fault occurred (there is no fault before), the fault code and the data of group F0 are displayed alternately.<br>• If the fault disappears automatically, the data of F0 will be displayed.<br>During system shaft self-learning, when E50 occurs, “E50” and “bxx” will be displayed alternately.<br>• E50: Shaft self-learning failure.<br>• xx: Fault subcode, meaning see the table below.
<table>
<tr><th>bxx</th><th>Meaning</th></tr>
<tr><td>b01</td><td>When the upper limit switch is activated, the current floor is not the highest floor</td></tr>
<tr><td>b02</td><td>After the completion of shaft self-learning, the upper limit switch is not action</td></tr>
<tr><td>b03</td><td>When starting self-learning, the current running direction is down</td></tr>
<tr><td>b04</td><td>Start self-learning, the next forced slowdown switch is not action</td></tr>
<tr><td>b05</td><td>Start self-learning, the current floor is not the first floor</td></tr>
<tr><td>b06</td><td>Starting the self-learning, the current control mode (F00.01) is not closed loop vector control</td></tr>
<tr><td>b07</td><td>When the current floor is the highest level, the up forced Dec. switch 1 is not actuated</td></tr>
<tr><td>b08</td><td>After self-learning, F19.13 (the down forced Dec. switch 1 distance) is 0</td></tr>
<tr><td>b09</td><td>After self-learning, F19.12 (the up forced Dec. switch 1 distance) is 0</td></tr>
<tr><td>b10</td><td>After self-learning, F19.15 (the down forced Dec. switch 2 distance) is 0</td></tr>
<tr><td>b11</td><td>After self-learning, F19.14 (the up forced Dec. switch 2 distance) is 0</td></tr>
<tr><td>b12</td><td>After self-learning, F19.17 (the down forced Dec. switch 3 distance) is 0</td></tr>
<tr><td>b13</td><td>After self-learning, F19.16 (the up forced Dec. switch 3 distance) is 0</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>bxx</th><th>Meaning</th></tr>
<tr><td>b14</td><td>After self-learning, the down forced Dec. switch 2 is lower than the down forced Dec. switch 1</td></tr>
<tr><td>b15</td><td>After self-learning, the up forced Dec. switch 2 is higher than the up forced Dec. switch 1</td></tr>
<tr><td>b16</td><td>After self-learning, the down forced Dec. switch 3 is lower than the down forced Dec. switch 2</td></tr>
<tr><td>b17</td><td>After self-learning, the up forced Dec. switch 3 is higher than the up forced Dec. switch 2</td></tr>
<tr><td>b18</td><td>The up forced switch is effective, the elevator leveling zone, the current floor is not the highest floor</td></tr>
<tr><td>b19</td><td>After self-learning, D06.08 (the distance of the leveling plate) is more than 50cm</td></tr>
<tr><td>b20</td><td>Self-learning data overflow 1</td></tr>
<tr><td>b21</td><td>Self-learning data overflow 2</td></tr>
<tr><td>b22</td><td>Total height of floors is less than 50cm</td></tr>
<tr><td>b23</td><td>During self-learning, cancel the inspection command</td></tr>
<tr><td>b24</td><td>During self-learning, the permanent magnet synchronous motor does not perform angle self-learning</td></tr>
<tr><td>b25</td><td>Two floors, starting self-learning, down leveling switch is in inserting board (normally should be under leveling inserting board)</td></tr>
<tr><td>b26</td><td>When starting self-learning, the upper limit switch is active</td></tr>
<tr><td>b27</td><td>When start self-learning, the up forced Dec. switch is active</td></tr>
<tr><td>b28</td><td>Distance of down forced Dec. switch is higher than the up forced Dec. switch</td></tr>
<tr><td>b29</td><td>Down forced Dec. switch adhesion</td></tr>
<tr><td>b30</td><td>Up leveling switch adhesion</td></tr>
<tr><td>b31</td><td>Down leveling switch adhesion</td></tr>
</table>
The system is in the inspection state and no fault. When the keypad displays the data of group F0, press and hold the UP and SET key at the same time.<br>After more than 3s, the shaft self-learning will be carried out directly, which is equivalent to the keypad F07 = 1.
</td></tr>
<tr><td>F1:<br>Call command input</td><td>After enter group F1, digital tube displays “1” (physical floor).<br>• Press the UP key to set the destination floor, range [1 - Max. floor].<br>• After pressing the SET key, the data of group F0 is displayed.</td></tr>
</table>

| Function | Description |
|---|---|
| F2:<br>Fault reset | After enter group F2, digital tube displays "0".<br>• Press the **UP** key to set to 1, the range [0,1].<br>• After pressing the **SET** key, the current system fault will be cleared, and "F3" will be displayed after completion. |
| F3:<br>Carrier frequency | After enter group F3, digital tube displays actual carrier frequency (F18.00).<br>• In inspection mode, you can press the **UP** key to set the range [4 - 8].<br>• After pressing the **SET** key, " F4" is displayed. |
| F4:<br>Encoder direction | After enter group F4, digital tube displays actual encoder direction (F11.02).<br>• In inspection mode, you can press the **UP** key to set the range [0,1].<br>• After pressing the **SET** key, "F5" is displayed.<br>• Need to set F27.26 Bit6 = 1 (allow the keypad to modify the encoder direction). |
| F5:<br>Display run times | After enter group F5, digital tube cyclically displays the run times.<br>• Move to the left to cycle the display, after the display is over, restart the cycle from the highest digit.<br>• Display up to 999,999 times. |
| F6:<br>Display present date | After enter group F6, digital tubes cyclically display the time, such as "2012-08-21-14-30". |
| F7:<br>Shaft self-learning command input | After enter group F7, digital tubes display "0".<br>• Then press **UP** key to set and the range is [0 - 2].<br>  • 1: Start shaft self-learning (do not clear F27.01 - F27.25),<br>  • 2: Start shaft self-learning (clear F27.01 - F27.25).<br>• After pressing the **SET** key, when the self-learning conditions are met, the elevator starts self-learning, and displays the data of group F0.<br>• After the self-learning is completed, the data of group F7 returns to 0. |
| F8:<br>Test function | After enter group F8, digital tubes display "00".<br>• Press **UP** key to set, range [00 - 05].<br>  • 00: No function.<br>  • 01: Block hall call.<br>  • 02: Block the door open.<br>  • 03: Block overload.<br>  • 04: Block the limit switch.<br>  • 05: Allow the elevator to run 500 times randomly.<br>• After pressing **SET** key, digital tubes are flashing to display "E88" , which means the present setting of the elevator is at testing state.<br>• After pressing the **PRG** key, the data in group F8 returns to 0. |
| F9:<br>OD and CD control | After enter group F9, digital tube displays "1-1".<br>• Press the **UP** key to open the door, press the **SET** key to close the door, and press the **PRG** key to exit. |

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>F10:<br>Parameter auto-tuning</td><td>After entering group F10, the digital tube displays "0".<br>• In the inspection state or the keypad state, press the UP key to set, the range is [0 - 2].<br>  • 1: Static auto-tuning.<br>  • 2: Rotating auto-tuning.<br>• After pressing the SET key, the digital tube flashes "TnE", wait for 2s to confirm that the elevator meets the operating conditions, and then press the SET key to perform parameter auto-tuning.<br>  • Syn. motor, the value of F10.12 (initial angle of Syn. motor) will be displayed after completion. This value is displayed cyclically when it is larger than 99.9°, and displayed directly when it is smaller than 99.9°. After 3s, "F0" is displayed.<br>  • Asyn. motor, the value of F07.11 (Asyn. motor no-load current) will be displayed after completion. This value is displayed cyclically when it is larger than 99.9A, and displayed directly when it is smaller than 99.9A. After 3s, "F0" is displayed.<br>  • During auto-tuning, press PRG key to stop.<br>• Need to set F27.26 Bit5 = 1 (allow the keypad auto-tuning).<br>Note:<br>1. For static Auto-tuning of permanent magnet syn. motor, it needs the inspection condition and given the direction of the signal, the tuning process can be refered to section 2.4.<br>2. For static auto-tuning of Asyn. motor, it does not need the above conditions.</td></tr>
<tr><td>F11:<br>Car top IO status inquiry</td><td>After entering group F11, the digital tube displays the input status of the terminal.<br>• No.1 (left): Car top board.<br>• No.2 (middle): Car command board of main car operation panel.<br>• No.3 (right): Car command board of vice car operation panel.<br>The corresponding terminals of the digital tube segment are shown in the table below.<br>• When the digital tube segment lights up, the corresponding terminal has a signal input.
<table>
<tr><th>Digital Tube Mark</th><th colspan="2">Digital Tube Corresponding Terminal</th></tr>
<tr><td rowspan="4"> 
</td><td>A: X1 terminal</td><td>E: X5 terminal</td></tr>
<tr><td>B: X2 terminal</td><td>F: X6 terminal</td></tr>
<tr><td>C: X3 terminal</td><td>G: X7 terminal</td></tr>
<tr><td>D: X4 terminal</td><td>DP: X8 terminal</td></tr>
</table></td></tr>
<tr><td>F12:<br>Elevator running</td><td>After entering the group F12, the digital tube shows the actual elevator running direction (F00.10).</td></tr>
</table>

| Function | Description |
|---|---|
| direction modifying | • In the inspection mode, press the **UP** key to set, the range is [0,1], and "F0" will be displayed after completion.<br>• Need to set F27.27 Bit15 = 1 (allow to modify the elevator running direction).<br>  • After modification, the shaft self-learning needs to be performed again, otherwise it cannot high speed run. |
| F13: History fault | After entering the F13 group, the digital tube flashes "-01" "EXX" "-02" "EXX", until "-10" "EXX".<br>• "-01" is the first fault, "EXX" is the fault code, and "E00" is displayed without fault.<br>• 10 historical fault messages can be displayed. |
| F14: Brake force manual detection | In elevator automatic mode, after entering group F14, the digital tube displays "0".<br>• Press the **UP** key to set it to 1, and after pressing the **SET** key the brake force detection is started.<br>• If the brake is detected successfully, the value of F04.17 is automatically increased by 1.<br>• If the brake detection fails, the system reports E66 (brake force self-detection failure), and the fault can only be reset manually in the inspection mode. |
| F15: UCMP start test | After entering group F15, the digital tube displays "0".<br>• Press the **UP** key to set to 1, and press the **SET** key to turn on the UCMP test function. |
| F16: Hall call address verificaiton | After entering group F16, the digital tube displays "0".<br>• Press the **UP** key to set it to 1, after pressing the **SET** key, the HCB board enters the address verification mode when the MCB board and the HCB board communicate normally.<br>• External up and down call signals set the hall call address.<br>• After setting, modify the data of F16 to "0". |
| F17: Recover communica-tion parameter to default | After entering group F17, the digital tube displays "0".<br>• Press the **UP** key to set to 1, and press the **SET** key to restore the factory values of F14.00 and F14.01. |

# 2. Simple Debugging and Application

Introduce the basic steps of designing the system and the method of setting parameters when MONT75 constitutes the elevator control system.

## 2.1 Adjustment Process

After the mechanical installation and wiring are completed, it is recommended to debug MONT75 according to the following steps.

| | |
|---|---|
| 1. | Check, section 2.2, page 12 |
| 2. | Set Parameter , section 2.3, page 13 |
| 3. | Motor Auto-tuning, section 2.4, page 15 |
| 4. | Machine Room Inspection Operation, section 2.5, page 16 |
| 5. | Shaft Self-learning, section 2.6, page 18 |
| 6. | Check before High Speed, section 2.7, page 19 |
| 7. | High Speed Running, section 2.8, page 22 |
| 8. | Adjustment for Comfortable Feeling, section 2.9, page 24 |
| 9. | UCMP Function, section 2.10, page 33 |
| 10. | Brake Force Detection Function, section 2.11, page 34 |

*Note:*

*When debugging, it is recommended that more than two people work at the same time.*

*When abnormal conditions occur, immediately cut off the power supply.*

## 2.2 Check Wiring

| | |
|---|---|
| 1. | Refer to the manual to confirm that all parts are connected correctly. |
| 2. | Confirm that the hoistway is unblocked, no passenger in the car, and the elevator has the conditions for safe operation. |
| 3. | Check the wiring of the input power supply and the motor to confirm that the wiring is correct. |
| 4. | Confirm that the following are reliably grounded to ensure personal safety.<br>• Control panel.<br>• Motor.<br>• Car ground wire.<br>• Hall door ground wire. |
| 5. | Confirm that there is no short circuit.<br>• If there is a short circuit, remove it before powering on. |

## 2.3 Set Parameter

| | |
|---|---|
| 1. | Restore the factory parameter: Set F01.02 = 1, pree **ENT** key. |
| 2. | Set the parameters according to the actual situation, see the table below.<br>After setting the parameters, press the **ENT** key to set successfully.<br>You can view the status of the input and output terminals on the MCB board and the CTB board through group D. |

| Ref. Code | Function | Recommended | Remark |
|---|---|---|---|
| F00.00 | Motor type | Based on the actual setting | |
| F00.01 | Control mode | 2 (VC control) | |
| F00.02 | Elevator Max. running speed | Based on the actual setting | |
| F00.03 | Elevator rated speed | | |
| F00.04 | Elevator rated load | | |
| F00.05 | Controller Max. output frequency | | Generally set as the motor rated frequency |
| F03 | Acc. and Dec. curve parameter | Set in needing | |
| F04 | Speed parameter | Set in needing | |
| F07.00 | Asyn. motor rated power | Based on the actual setting | Set according to the value on the nameplate of the Asyn. motor |
| F07.01 | Asyn. motor rated voltage | | |
| F07.02 | Asyn. motor rated current | | |
| F07.03 | Asyn. motor rated frequency | | |
| F07.04 | Asyn. motor rated Rpm | | |
| F07.05 | Asyn. Motor power factor | | |
| F10.01 | Syn. motor rated power | Based on the actual setting | Set according to the value on the nameplate of the Syn. Motor<br><br>*Note:*<br>*If F10.00, F10.06 - F10.09 have no accurate parameters, please set it to 0, otherwise the elevator may not run normally* |
| F10.02 | Syn. motor rated voltage | | |
| F10.03 | Syn. motor rated current | | |
| F10.04 | Syn. motor rated frequency | | |
| F10.05 | Syn. motor rated Rpm | | |
| F10.09 | Syn. Motor counter emf | | |

| Ref. Code | Function | Recommended | Remark |
|---|---|---|---|
| F11.00 | Encoder card selection | Based on the actual setting | Setting by encoder |
| F11.01 | Encoder pulses/rotation | | |
| F11.02 | Encoder rotation direction setting | | |
| Group F12 | MCB input terminal setting | Set according to the drawings | Jumper CN2 selects inputing high or low level is valid.<br>Set normally open, normally closed input by parameter.<br>Observe the LED lights corresponding to the input terminals to determine the input status.<br>**X25 - X27 are high voltage safety circuit, door lock circuit input. To ensure safety, please ensure that the safety circuit and door lock circuit are correct.**<br>**F26.14 Bit4 sets X28 rear door high voltage door lock short circuit input.** |
| | MCB relay output setting | Set according to the drawings | Observe the corresponding LED lights of the relay to confirm the relay output status. |
| Group F13 | CTB input terminal setting | Set according to the drawings | Observe the LED lights corresponding to the input terminals to confirm the input status. |
| | CTB relay output terminal setting | Set according to the drawings | Observe the corresponding LED lights of the relay to confirm the relay output status. |
| Group F23 | Time parameters | Based on the actual setting | Confirm that F23.03 - F23.08 match the actual situation.<br>• If not, please reset. |

## 2.4 Motor Auto-tuning

### Asyn. Motor Auto-tuning

| | |
|---|---|
| 1. | Set F00.07 = 0 (keypad control). |
| 2. | **Static auto-tuning:** Set F07.06 = 1 (static auto-tuning), press **RUN** key on the keypad to start auto-tuning.<br>• Automatically open the run contactor.<br>• The motor will make a howling sound for about 30s.<br>• The motor rotates slowly once.<br>**Rotary auto-tuning**: Set F07.06 = 2 (rotary auto-tuning), press the **RUN** key on the keypad to start auto-tuning.<br>• The brake contactor needs to be opened manually.<br>• The motor rotates.<br>• If the motor vibration or overcurrent occurs, press the **STOP** key to terminate, adjust F07.21 and F07.22 (suppress vibration). |
| 3. | After finishing the auto-tuning, set F00.07 = 1 (distance control). |

### Syn. Motor - Static Auto-tuning

| | |
|---|---|
| 1. | Confirm that the door lock circuit and the safety circuit is connected. |
| 2. | Set F10.12 = 0 (Syn. motor initial angle), F00.07 = 1 (distance control), F10.10 = 1 (static angle auto-tuning).<br>• If the system is equipped with a Syn. shorting motor stator contactor, please set the related parameters of shorting motor stator contactor and run contactor.<br>• When auto-tuning, the system will automatically control the shorting motor stator contactor. Otherwise, the output may be short-circuited, and an overcurrent fault may be reported. |
| 3. | Give the inspection and direction signals, the elevator will do inspection running and start auto-tuning.<br>• The controller sends out a series of pulse voltages, and the motor buzzes.<br>• After the buzzing sound is over, the motor starts inspection running, and it stops automatically after turned a circle. |
| 4. | Check the parameter value, and record F10.12 (not 0).<br>• ABZ/UVW encoder: Get F10.12, indicating that the auto-tuning is correct.<br>• SINCOS encoder: Get F10.14 - F10.17 and F10.12, which means that the auto-tuning is correct. |
| 5. | Repeat the auto-tuning twice (steps 3 - 4), record F10.12, and subtract the three values in pairs.<br>• ABZ/UVW encoder: The difference is within 30°, otherwise it needs to be re-tuned.<br>• SINCOS encoder: The difference is within 5°, or within 5° of 360° / integral multiple of the number of pole pairs of the motor, otherwise it needs to be re-tuned. |
| 6. | Remove inspection and direction commands. |

| Note: | |
|---|---|
| 1. | The given direction is inconsistent with the actual running direction.<br>**Measures to be taken:** Reverse the value of F00.10 (elevator running direction), and perform auto-tuning again. |
| 2. | During auto-tuning, when the motor is just from standstill to starting, it reports E0030 (encoder reverse) or E0031 (encoder disconnection).<br>**Measures to be taken:** Change the encoder direction (F11.02). it is still invalid, try to reduce the speed loop KP, KI (group F08). |
| 3. | During the auto-tuning process, if there is a fault such as overcurrent or encoder reverse, it may be that the encoder direction is reversed.<br>**Measures to be taken:** Set F11.02 = 1 (reverse the encoder direction), and perform auto-tuning again. |
| 4. | Unsuccessful auto-tuning may cause a risk of motor overspeed. It is recommended that two people cooperate (one presses the INS button, the other presses the emergency stop button). When motor overspeed occurs, press the emergency stop button to switch the power supply. |
| 5. | When an abnormality occurs during auto-tuning, press the emergency stop button to stop auto-tuning. |

## 2.5 Machine Room Inspection Running

| | |
|---|---|
| 1. | Confirm that the door lock circuit and the safety circuit is connected. |
| 2. | According to the actual situation to set F03.06 (inspection running Acc. speed), F04.00 (inspection running speed), F26.12 (inspection parameter setting).<br>• For the first inspection run, set a lower inspection speed. |
| 3. | Give inspection and direction signals, and the elevator will start inspection running (or slow running).<br>If the elevator can run and the motor runs in the correct direction, it will succeed. |
| 4. | Check the up and down leveling switches and door zone signals to confirm the correct sequence:<br>• When do up inspection running, the effective signals are in order: Up leveling signal, door zone signal, down leveling signal.<br>• When do down inspection running, the effective signals are in order: Down leveling signal, door zone signal, up leveling signal.<br>If the sequence is wrong, please check the external wiring. |

| Note: | |
|---|---|
| 1. | The running direction of the traction motor is incorrect.<br>**Measures to be taken:** Check the up and down input terminals wiring and parameter settings, if the wiring is correct, set F00.10 = 1 (elevator running direction). |
| 2. | During elevator inspection running, the feedback speed of the motor displayed by MONT75 is unstable or has a large deviation from the given value.<br>**Measures to be taken:** Check the wiring between the encoder and the encoder card.<br>• Make sure that the connecting wire used is correct. If the encoder is a differential signal, a shielded twisted pair cable should be used; If not, can use general shielded cables.<br>• Make sure that the wiring is reasonable. The encoder connection cable and the power cable must be strictly separated, and can not run in the same wire slot.<br>• Check the grounding of the shielding wire and shielding net is reliable. |
| 3. | For Asyn. motor, the system reports E0030 (encoder reverse) during inspection running.<br>**Measures to be taken:** Encoder AB direction may be misconnected, change F11.02 (encoder direction). |
| 4. | For Syn. motor, such as SINCOS encoders, error or motor overspeed occur during inspection running.<br>**Measures to be taken:** Check the CD wiring of the SINCOS encoder, confirm that it is correct. |
| 5. | During inspection running, if the hoistway related switches are not installed in place, the system may report a fault.<br>**Measures to be taken:** Set F26.12 (inspection parameter setting) to shield the fault. |
| 6. | In many cases, the slow running of the machine room is not an inspection runing, but an emergency electric running.<br>During running, the safety circuit switch is shorted, and special attention must be paid. The switches include: Safety gear switch, governor switch, up overspeed protection switch, uplinit and downlimit switches, buffer reset switch.<br>**Suggestion:** The running time and distance should not be too long, and don't run the car to the terminal. |

## 2.6 Shaft Self-learning

| | |
|---|---|
| 1. | Set F19.00 (total floor). |
| 2. | Give inspection and direction signals. |
| 3. | Run the elevator to the downlimit position and confirm:<br>• The down forced Dec. signal is valid, and the corresponding indicator on the MCB board is on.<br>• The current floor is the first floor, which is displayed on keypad.<br>  • When the total floor is 2, make sure that the down leveling switch is below the leveling plate.<br>  • When the total floor is greater than 2, there must be at least one leveling switch in the leveling plate. |
| 4. | Perform any of the following operations to start shaft self-learning:<br>• Keypad set F26.01 = 1.<br>• Small keypad set F7 = 1.<br>• When the small keypad displays the data of group F0, press and hold the **UP** and **SET** keys at the same time for 3s. |
| 5. | The elevator runs at the self-learning speed (F04.03), and records the length of the leveling plate, the height of each floor, and the position of the up and down forced Dec. switch. |
| 6. | The elevator stops automatically when it reaches the uplimit, and the system has no faults, the self-learning is completed. |
| 7. | Confirm self-learning data:<br>• The system automatically calculates the elevator running speed curve according to the elevator floor distance, and stores it in F19.07 - F19.11 (the curve is the highest speed). Generally, no modification is required.<br>• Check F19.12 - F19.17 to confirm the forced Dec. position is correct.<br>• Check the group F20 to confirm that the floor data is correct.<br>• Check D04.02 (shortest floor distance), D04.03 (highest floor distance), make sure it matches the actual situation.<br>• Check D06.06 (number of leveling switches), D06.07 (length between leveling switches), D06.08 (length of leveling plate), make sure it matches the actual situation. |
| Note: | |
| 1. | In any of the following situations, shaft self-learning must be performed again:<br>• Adjust the position of the leveling plate.<br>• Adjust the position of the forced deceleration switch.<br>• Modify F00.10 (elevator running direction). |
| 2. | Self-learning is interrupted, system reports E50 (shaft self-learning failure).<br>**Measures to be taken:** Refer to section 3.3 to clear the fault, and restart the shaft self-learning. |

## 2.7 Check before High Speed

### Check the System Communication

| | |
|---|---|
| 1. | The CAN1+ and CAN- communication terminals of MCB SK3 terminal are respectively connected to the CAN+ and CAN- communication terminals of CTB.<br>The MOD+ and MOD- communication terminals of MCB's SK3 terminal are respectively connected to the MOD+ and MOD- communication terminals of HCB. |
| 2. | When the system is powered off manually, measure the impedance between CAN1+ and CAN1-, which should be 60Ω.<br>• If there is a short circuit, please eliminate it; If the impedance is wrong, please check the selection switch of the terminal resistance of each board. |
| 3. | Power on, confirm that the communication is normal, and the indicators on the MCB board flash evenly.<br>• COP: Communication status between MCB and CTB board.<br>• HOP: Communication status between MCB and HCB board. |

### Set Hall and Car Board Address

The hall call address settings are shown in the table below.

The car call address is set to 0, and the setting method is the same as that of the hall call board.

| **Set by Button (MT70-HCB-H, MT70-HCB-F, MT70-HCB-U1)** | |
|---|---|
| 1. | Press and hold the SW button on the back of the HCB board, and release it when the HCB board flashes to display the floor. |
| 2. | After 3s, when the display does not flash, press the up or down button to set the target floor address. |
| 3. | Press the SW button or wait for 5s, the HCB board flashes again to display the floor, it means the setting is successful. |
| 4. | After 3s, HCB board displays normally. |
| **Set by Jumper (MT70-HCB-I)** | |
| 1. | Short-circuit the jumper on the front of the HCB board, and remove the short-wire when the HCB board flashes to display the floor. |
| 2. | When the display is not flashing, press the up/down button to set the target floor address.<br>• For single elevator, the floor address is the actual physical floor; for parallel group control, please refer to the MONT75 user manual. |
| 3. | Wait for 5s, the HCB board flashes again to display the floor, it means the setting is successful. |
| 4. | After 3s, HCB board displays normally. |

| Set by Parameter (MCB ver. V1.07 and above, HCB ver. V1.6 and above) | |
|---|---|
| 1. | Set the MCB board F26.31 = 1 (the HCB board displays the hall call address). |
| 2. | The HCB board direction displays "T", when the floor displays the current HCB board address, press and hold the up and down buttons at the same time for 3s, or press the up or down button alone for 6s until the HCB board direction is empty and the floor is flashing displayed. |
| 3. | After 3s, when the display does not flash, press the up or down button to set the target floor address. |
| 4. | Wait for 5s, the HCB board flashes again to display the floor, it means the setting is successful. |
| 5. | After 3s, HCB board displays the hall call verification address. |
| Note: | |
| 1. | • For single elevator, the floor address is the actual physical floor.<br>• In parallel group control, if the bottom position of the elevator is inconsistent, please refer to the MONT75 user manual.<br>• When there is opposite door, please refer to the MONT75 user manual. |

Through group D parameters, you can view car and hall call elevator signals, communication status, communication interference and other signals, see the table below.

| Ref. Code | Function |
|---|---|
| D04.00 | Present floor |
| D04.01 | Present height |
| D04.02 | Distance of lowest floor |
| D04.03 | Distance of highest floor |
| D04.04 | Registration state of 16 - 1 car call floor |
| D04.05 | Registration state of 32 - 17 car call floor |
| D04.06 | Registration state of 48 - 33 car call floor |
| D04.07 | Registration state of 16 - 1 hall call up |
| D04.08 | Registration state of 32 - 17 hall call up |
| D04.09 | Registration state of 48 - 33 hall call up |
| D04.10 | Registration state of 16 - 1 hall call down |
| D04.11 | Registration state of 32 - 17 hall call down |
| D04.12 | Registration state of 48 - 33 hall call down |
| D04.13 | HCB communication state of 16 - 1 |
| D04.14 | HCB communication state of 32 - 17 |
| D04.15 | HCB communication state of 48 - 33 |
| D04.16 | Car communication state display |

| Ref. Code | Function |
|---|---|
| D04.17 | Hall call Modbus communication interference evaluation |
| D04.18 | Car top CAN communication interference evaluation |
| D04.19 | Parallel CAN communication interference evaluation |

## Debug Open and Close Door

| | |
|---|---|
| 1. | The elevator is under inspection. |
| 2. | Set the door controller parameters to ensure that the door controller has a normal operating curve, and can normally output the door open and close signal. |
| 3. | The door open and close signal of the door controller is connected to the control system. |
| 4. | The operation command input terminal of the door controller is connected to the door open and door close output terminals of the CTB board. |
| 5. | The elevator does inspection running to the leveling area. |
| 6. | Do any of the following operations to give the door open and close command:<br>• Press and hold the up and down inspection button at the same time to open the door; press and hold the up or down inspection button alone to close the door.<br>• Long press the **RUN** key on the keypad to open the door, and the **STOP** key to close the door.<br>• Press the open button of the car operation panel to open the door, and the close button to close the door. |
| 7. | Confirm that the door machine is running in the correct direction, the door opening and closing signal is normal, and the light curtain and touch plate signal are valid.<br>• View D05.00 and D05.01 on the keypad, monitor the door machine opening and closing door in place, light curtain, safety touch plate and other signals.<br>• In the inspection mode, the light curtain and safety touch plate activated, and the door is not opened, but the signal can be monitored. |
| Note: | |
| 1. | The keypad can be connected to the RJ45 port of MCB, CTB, CCB for debugging. |

## 2.8 High Speed Running

### Confirm before Running

| | |
|---|---|
| 1. | The safety circuit is connected. |
| 2. | Door lock circuits are connected. |
| 3. | The system doesn't have level 2 or 3 faults, and overload signal input. |
| 4. | Door controller CD arrival signal is valid. |
| 5. | Floor storey data is correct. |
| 6. | When the motor is synchronous, F10.12 (initial angle of the Syn. motor) is not 0. |
| 7. | The inspection running is normal, and the shaft self-learning is successful. |

### High Speed Commissioning

| | |
|---|---|
| 1. | The inspection switch is set to normal, and the elevator is in a normal state. |
| 2. | Use the keypad to set F26.00 (floor of car call), and perform automatic operation of single, double, multi-floor and total floor respectively.<br>Set F26.00, which is equivalent to registering car call floor command. |
| 3. | Confirm that the elevator can open and close doors, accelerate and decelerate, call the elevator, and stop normally. |

### Safe Test Running

| **Safety Circuit Test** | |
|---|---|
| 1. | When the elevator is on standby, the safety circuit is disconnected, the elevator cannot run, and the system reports E0041 (safety circuit disconnection). |
| 2. | When the elevator is running, the safety circuit is disconnected, the elevator stops in an emergency, and the system reports E0041. |
| 3. | After the door lock circuit is connected, the fault can be automatically reset. |
| **Door Lock Circuit Test** | |
| 1. | At the elevator standby, and the door lock circuit is disconnected, the elevator can not run. |
| 2. | At the elevator running, and the door lock circuit is disconnected, the elevator emergency stop and the system alarms E0042 fault (door locked disconnection during running). |
| 3. | After the door lock circuit is closed, the fault is automatically reset. |

| Contactor Adhesion Protection Test |
| --- |
| 1. For run contactors, brake contactors, synchronous star-cloesed contactors, door-closed contactors and other artificial adhesion situations, check that the system can report fault when above situation occurs.<br>• E0056: Run contactor feedback abnormality.<br>• E0057: Brake contactor feedback abnormality.<br>• E0054: Synchronous star-cloesed contactor feedback abnormality.<br>• E0047: Door-closed contactor feedback abnormality. |
| **Over-load Function Test** |
| 1. The elevator overload switch action, check the elevator is not closed, buzzer inside the car, car call board with overload display. |

## 2.9 Adjustment for Comfortable Feeling

### 2.9.1 Adjust Starting Confort Performance

**Phenomenon and Adjustment**

**Phenomenon**

There is a starting jerk in car when the elevator starts.

**Adjustment**

| Possible Cause | | Detection Method | Processing Measures | Remark |
|---|---|---|---|---|
| Parameter setting problem | Pre-torque is not turned on | Check whether the parameter, settings are reasonable | Set parameter related with pretorque | 1 |
| | Brake open slowly | whether the elevator starts with the brake | Check brake open time and increase F02.01 | |
| | Brake not open fully | Observe opening clearance | Adjust gap | 2 |
| Guide shoe is too tight, static friction force is too big | | Try shaking the car and feel the gap between guides | Adjust guide shoe clearance, add guide rail oil or adjust speed loop PI | 3 |

**Remark**

**1. How to set pre-torque parameter?**

For brake itself, the opening time is different, while the brake response time is affacted by the ambient temperature (too high brake coil temperature will cause the brake delayed response), the appropriate increase in curve run delay time F02.01. The pre-torque parameter is set below:

| Ref. Code | Function | Seting Range | Default | Remark |
|---|---|---|---|---|
| F02.01 | Curve running delay time | 0.000 – 2.000s | 0.500s | Elevator brake opened and then after F02.01 time, to run again |
| F05.00 | Start pretorque selection | 0: No pretorque<br>1: Analogue weighing<br>2: Digital weighing<br>3: Pretorque autocompensation | 0 | Select the pretorque according to requirement<br>• Generally set to 3 |
| F05.16 | No weighing current coefficient | 0 - 9999 | 3000 | Slipping in starting, increase F05.16 - F05.18<br>• Overlarge value will cause oscillation |
| F05.17 | No weighing speed loop KP | 1 - 9999 | 1000 | |
| F05.18 | No weighing speed loop KI | 1 - 9999 | 1000 | |

**2. The problem of brake interval**

- Confirm the brake can open, brake force is enough and brake coil loop is connected.
- Make sure that the brake opening clearance is sufficient. If the brake is fricting, adjust the brake clearance.
- Make sure that the brakes on both sides is synchronized, if not synchronized, please adjust it into the synchronization.
- If the brake opening sound is too loud, please make the sound small.

**3. Guide shoe is too tight, static friction is too large**

- Ensure whether the guide shoe is too tight, if too tight, adjust the guide shoe.
- Adjust starting speed or speed loop PI to overcome the static friction, the parameters are as follows.

| Ref. Code | Function | Setting | Default | Remark |
|---|---|---|---|---|
| F02.02 | Starting speed | 0.000 - 0.030s | 0.000 m/s | Initial speed of system startup<br>• Proper starting speed can overcome static friction |
| F02.03 | Start speed holding time | 0.000 - 2.000s | 0.000s | Holding time of starting speed |
| F02.06 | Start ramp time | 0.000 - 2.000s | 0.000s | The time required for the elevator to accelerate from zero speed to elevator rated speed (F00.03)<br>• Use with F02.02 |
| F08.00 | Low speed loop KP | 1 - 9999 | 500 | Increase the PI parameter to increase the dynamic response of the system<br>• Overlarge value will cause oscillation |
| F08.01 | Low speed loop KI | 1 - 9999 | 500 | |

### 2.9.2 Adjusting Running Confort Performance

**Phenomenon and Adjustment**

**Phenomenon**

Up and down vibration during Acc. and Dec. or constant speed.

**Adjustment**

| Possible Cause | Detection Method | Processing Measures | Remark |
|---|---|---|---|
| The guide shoe is too tight and the friction is too large | Judge the vibration time by F02.01 (curve running delay time): the moment of brake opening or the beginning of the curve | Adjust the gap between the guide shoe and the guide rail to reduce friction; increase the starting speed | 1 |
| Mechanical rotating parts problem | Check whether there is periodic vibration | Adjust or replace mechanical parts | Bearing |
| Guide rail problem | Shake left and right when running, or shake relative to a fixed position | Adjust the guide rail or polish the joints | The guide rail is not level, there are foreign matters, and the interface is not flat |
| System control (acceleration, deceleration, constant speed vibration) | Whether there is periodic vibration, the PI parameter value is too small | Adjust PI parameters | 2 |
| Resonance during operation | uring operation, the buzzing resonance in the car | Check mechanical problems or adjust PI parameters | |

**Remark**

**1. Judge the vibration time: Start slipping, or curve operation at the beginning.**

Set F02.01 to the maximum, and the elevator will run at speed after the brake has opened for F02.01.

- Vibration when starting to open the brakes and slipping: After vibration, the elevator's zero speed will remain stable within F02.01, and then start running.
- Vibration at the beginning of the S-curve: The brake is opened, the elevator stops, and the vibration occurs again after waiting for F02.01.

**2. System control issues**

Vibration during acceleration, deceleration or constant speed, adjust PI parameters as follows:

| Ref. Code | Function | Setting | Default | Remark |
|---|---|---|---|---|
| F08.00 | Low speed loop KP | 1 - 9999 | 500 | For vibration when the frequency is lower than frequency 1, increase F08.00/F08.01<br>For vibration when the frequency is higher than frequency 2, increase F08.02/F08.03<br>For vibration when the frequency is between frequency 1 and frequency 2, take the average of the low-speed PI and high-speed PI<br>• Excessive adjustment on parameter may cause oscillation |
| F08.01 | Low speed loop KI | 1 - 9999 | 500 | |
| F08.02 | High speed loop KP | 1 - 9999 | 500 | |
| F08.03 | High speed loop KI | 1 - 9999 | 500 | |
| F08.04 | Speed loop PI switching frequency 1 | 0.00 - 50.00 Hz | 10.00Hz | |
| F08.05 | Speed loop PI switching frequency 2 | 0.00 - 50.00 Hz | 15.00Hz | |
| F09.00 | Current loop KP | 1 - 4000 | 500 | Increase the current loop KP and KI appropriately to reduce vibration<br>• Excessive adjustment may cause system overcurrent |
| F09.01 | Current loop KI | 1 - 4000 | 500 | |

*Note: If F10.20 bit15 = 1 (enable vibration suppression function), adjust F09.04 (loop parameter) and F18.00 (carrier frequency) to avoid the mechanical resonance point.*

### 2.9.3 Adjust Running Curve

**Phenomenon and Adjustment**

**Phenomenon**

MONT75 adopts S-curve Acc. and Dec., which minimizes the impact during Acc. and Dec., and makes the start and stop smoother.

However, different applications require different Acc. and Dec. curve parameters.

Too fast Acc. and Dec. affects the confort performance, and too slow Acc. and Dec. reduce the operating efficiency of the elevator.

**Adjustment**

Please adjust the value of the parameter F03.00 - F03.05 when the Acc./Dec. is slow, otherwise increase the value of parameter F03.00 - F03.05.

- Acc. (F03.01, F03.02): Rate of Acc.
- Dec. (F03.04, F03.05): Rate of Dec.
- Rapid Acc (F03.01, F03.02): The rate of change of Acc.
- Rapid Dec (F03.04, F03.05): The rate of change of Dec.

### 2.9.4 Adjust End Station Confort Performance

**Phenomenon and Adjustment**

**Phenomenon**

The elevator is running to the position of forced Dec. switch, the rapid speed to the leveling area in crawl speed.

**Adjustment**

| Possible Cause | Detection Method | Processing Measures | Remark |
|---|---|---|---|
| Forced Dec. switch problem | Check whether the switch action is normal | Replace the switch | |
| | Check whether the circuit is normal | Wiring | |
| Forced Dec. switch distance problem | Check the forced Dec. switch installation distance | Adjust the installation distance | 1 |
| Rope slips | Check rope slip | Adjust the mechanical part | 2 |
| Incorrect mechanical parameter setting | Check whether the mechanical parameter (F00.06) is Acc.urate | mechanical parameters as well as the actual mechanical parameters | |

**Remark**

**1. Installation distance**

The installation distance between the forced deceleration switch and the leveling position of the end station is S, and the calculation formula is:

$$S > \frac{V^2}{2 \times F03.12}$$

| Rated speed (m/s) | 0.25 | 0.4 | 0.5 | 0.75 | 1 | 1.5 | 1.6 | 1.75 | 2 | 2.5 | 3 | 3.5 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| First-level forced Dec. distance (m) | 0.4 | 0.4 | 0.4 | 0.4 | 0.7 | 1.4 | 1.5 | 1.8 | 2 | 2 | 2 | 2 | 2 |
| Secondary forced Dec. distance (m) | No | No | No | No | No | No | No | No | 2.5 | 4 | 4 | 4 | 4 |
| Third forced Dec. distance (m) | No | No | No | No | No | No | No | No | No | No | 6 | 8 | 11 |

**2. Rope slips**

Step 1: Confirm that there is no oil leakage from the rope. If yes, wipe dry with a cloth

Step 2: Confirm that the wrap angle of the rope and the traction sheave is set reasonably.

Step 3: Confirm that the elevator balance system is correct. If it is not correct, make it correct first, generally between 0.4 - 0.5.

### 2.9.5 Adjust Parking Confort Performance

**Phenomenon and Adjustment**

**Phenomenon**

There is a jerk in the car when the elevator going to park in leveling area.

**Adjustment**

| Possible Cause | Detection Method | Processing Measures | Remark |
|---|---|---|---|
| The door lock is disconnected at the moment of parking | Check the gap between the door cam and the croquet | Adjust the gap | |
| System error | Check error | Solve error | |
| Speed loop PI cannot track | Increase PI parameters | Increase F08.00 and F08.01 appropriately | Increase the PI parameter, the system will respond faster, if the parameter is increased too much, oscillation may occur |
| Brake open too slowly | Adjust the brake force | Adjust the braking force, there is no resistance to open the brake | |
| | Cancel freewheeling delay | Ensure that the brake contactor is connected and immediately disconnect the brake force supply | |
| | Observe whether there is a car slipping when parking | | 1 |

**Remark**

**1. Why increase the stop zero speed hold time**

As the brake coil is powered for a long time, slow brake releasing is caused by heat, after running contactor release (the system does not output torque), the brake has not been fully closed, resulting in slipping, there is a jerk in car.

At this time, need to increase the torque output when stopping, that is, increase the stop zero speed hold time F02.05.

### 2.9.6 Leveling Accuracy Adjustment

**Phenomenon and Adjustment**

**Phenomenon**

When the elevator stops and car door opens, the car leveling is not consistent with the hall leveling. If the car leveling is higher than the hall leveling, it is higher-leveling, If the car leveling is lower than the hall leveling, it is less-leveling.

**Adjustment**

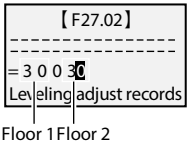
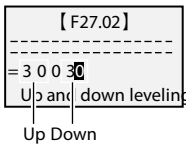
1. Esure that installation of the leveling plate is Acc.urate. And the length of each leveling plate should be the same.
2. Ensure there is no overadjustment in system running, speed loop parameters (group F08) have influence on leveling accuracy.
3. Ensure encoder signal works well. If the encoder gets interferences, the leveling accuracy will be affected.
4. When the elevator runs normally, adjusting leveling accuracy methods is as following form.

| | |
|---|---|
| **F19.06 = 0 Direct stop mode 0** | Set F19.03 (leveling distance adjustment) to tine-tuning.<br>• When elevator stops, higher-leveling decreases F19.03, less-leveling increases F19.03. |
| **F19.06 = 1 Direct stop mod 1** | Ensure elevator has a short ascend (ascend distance is set by F19.03), set F03.13 (parking emergency Dec) and F04.02 (asending speed) to fine-tuning.<br>• When elevator stops, higher-leveling increses by F03.13; less-leveling decreaseF03.13.<br>• F03.13 no need to modify generally, after shaftway self-learning F03.13 will upgrade automatically to ensure the leveling accuracy. |

### 2.9.7 Adjust All Levelings

| Adjustment (MCB ver. V1.10 and above) | |
|---|---|
| F03.17 = 0 | F19.03 fine-tune all the up levelings and down leveling. |
| F03.17 = 1 | F03.15 fine-tune all the up levelings, F03.16 fine-tune all the down leveling. |

### 2.9.8 Fine-tune Every Leveling

| Adjustment | |
|---|---|
| F27.01 = 0 | F27.02 - F27.25 per parameter can adjust 2 floors.<br>• Can fine-tune 48 floors.<br>Adjust methods (take the F27.02 as an example):<br>• Far left 2 numbers adjust floor 1, far right 2 numbers adjust floor 2.<br>• The Max. adjust range is 0 - 60mm, the defaultted value is 30mm.<br>• Less-leveling increase value (30), higher-leveling decrease value (30).<br>  |
| F27.01 = 1 | F27.02 - F27.25 per parameter can adjust 1 floor.<br>• Can fine-tune 24 floors.<br>Adjust methods (take the F27.02 as an example):<br>• Far left 2 numbers fine-tune the up leveling of floor 1, far right 2 numbers fine-tune down leveling of floor 1.<br>• The max adjust range is 0 - 60mm, the defaultted value is 30mm.<br>• Less-leveling incerease value (30), higher-leveling decrease value (30).<br>  |

### 2.9.9 Test New Elevator Fatigue

| Test New Elevator Fatigue |
|---|
| After the new elevator installed, need to have a run-in test on new elevator.<br>Set group F25 parameter, test the random operation time, and the fixed operation method of the floor. |

## 2.10 UCMP Function

### Description

When lock-door contactor outputs, controller detects that the door zone signal got invalid from valid, and door lock signal disconnected, system alarms E65 (UCMP fault), elevator stops running, lock-door contactor stops outputing.

When elevator stops, controller detects that the door zone signal got invalid from valid, door lock signal disconnects, and any leveling signal invalid, system alarms E65 (UCMP fault), elevator stops running.

### Test Step

| | |
|---|---|
| 1. | Make sure detect switch valid, elevator stops at door zone, keep closed status. |
| 2. | Switch to inspection status. |
| 3. | Open UCMP test function, by any operation below:<br>• Small keypad set F15 = 1.<br>• Keypad set F25.04 Bit7 = 1. |
| 4. | Disconnect system door lock signal (manual switch, control panel adds one door lock disconnect switch). |
| 5. | Press inspection up or down button maunally, lock-door contactor outputs, door lock shortcircuit, elevator starts, normal inspection running. |
| 6. | After that elevator runs off door zone, UCMP module disconnect door lock shortcircuit, system alalrms E65 (UCMP fault), elevator stops running |
| Additional remarks: | |
| 1. | Not in the inspection state, door zone and door lock closed, with keypad set F15 = 1 invalid. |
| 2. | With small keypad set F15 = 1, auto resetting after running once or power-off. |
| 3. | During test, system as 0.8m/s$^2$ accelerate automatically (no need to set),to ensure the average accelerated speed is greater than 0.5m/s$^2$. |

### Reset E65 Fault

E65 fault can not reset automatically, reset by excuting any operation below:

- In the inspection state, reset automatically.
- When F16.05 Bit10 = 1, reset by power-off (not recommended).

## 2.11 Brake Force Detection Function

### Description

Detection software is HpmontBrakeMonitor, software version is V1.00 (D06.48).

### Parameter Setting

| Ref. Code | Name | Setting Range | Recommended |
|---|---|---|---|
| F03.18 | Brake force detection method | 0: invalid<br>1: Manual start detection<br>2: Automatic start detection | Syn. motor 2<br>Asyn. motor 0 |
| F03.19 | Brake force detection cycle | 1 - 15 day | 1 |
| F03.20 | Brake force detection time point | 00:00 - 23:59 | 3:00 |
| F04.14 | Brake detection duration | 1 -10s | 5s |
| F04.15 | Brake detection torque | 60 - 150% | 100% |
| F04.16 | Brake detection allows pulse size | 1 - 99 | 5 |
| F04.17 | Brake detection success times | 0 - 65535 | 0 |
| *Note: F03.19 takes the time of the clock chip in the main board as reference. When control system do not set brake mechanical switch detection F03.19 is 1 day.* | | | |

### Detection Method

1. When the elevator is in the automatic state, the safety circuit is normal and the door lock circuit is closed.
2. **Automatic detection**
   Enable the brake force auto-detection function: set F03.18 = 2.
   When reaches to detection period and detection time, after elevator response to COP and LOP calling signal stop at leveling zone, running contactor outputs, enable brake force auto-detection.
   **Manual detection**
   Enable manual-detection function: set F03.18 = 1 or F25.04 Bit8 = 1 or small keypad F14 = 1.
   After elevator response to COP and LOP calling signal stop at leveling zone, running contactor outputs, enable brake force auto-detection
   **Manual inspection under inspection state**
   Start the manual detection function: set F03.18 = 1 or F25.04 Bit8 = 1.
   Press both down and com or up and com button in control panel, running contactor outputs, enable brake force auto-detection.
3. The running contactor stops and the brake force detection ends.
4. Confirm that F04.17plus 1 based on origin value, indicates the brake force detection success.
   If alarm E66fault, indicates, F04.17 do not change.

**Reset E66 Fault**

Excute any operation below to reset:

- **Do the brake force auto-detection again**: Set F17.07 Bit3 = 0, in auto mode, do the brake force auto-detection again, until pass the test.
- **Inspection manual reset once**: Set F17.07 Bit3 = 1, in inspection state, kaypad return to fault interface, press **STOP** key. F17.07 Bit3 can auto-resettig.
- **Power off and power on to reset**: Set F16.05 Bit10 = 1, power off, and power on.

## 2.12 Over Load and Full Load Description

MONT75 provide various over load, full load signal input methods.

Digital input terminal input

- Set MCB or CTB input terminal as over load or full load input, can set NO or NC.
- Can only set either of MCB or CTB digital input, if set two, the two will conflict.

Analog weighing signal input

- MCB AI terminal, set F05.01 = 3; CTB AI terminal, set F05.01 = 2.
- If exceeds 80% of the full load signal, think it full load; exceeds 110%, think it over load.

***Note:***

*Digital value can be used together with Analog value weighing.*

# 3. Faults and Countermeasures

## 3.1 Fault Sort Explanation

MONT75 has almost 70 pieces of protection functions.

MONT75 monitors every running condition all the time, once error occurs, protection function acts, displays fault code.

Error information produced by MONT75 can be divided into 4 sorts according to their influence to the system. Different fault has different disposal mode, which is as shown in the next table.

| Fault Sort | Relevant Disposal | Remark |
|---|---|---|
| Level 1 fault | • Display fault code<br>• Error relay output action | Any kind of working condition will not be influenced |
| Level 2 fault | • Display fault code<br>• Error relay output action<br>• Stop at the nearest landing when in distance control, then stop running<br>• Stop running at once in other work condition | After stop, the system will close off output at once, and close brake |
| Level 3 fault | • Display fault code<br>• Error relay output action<br>• The system blank off output at once, close brake and stop running | Forbid running |
| Level 4 fault | • Display fault code<br>• Error relay output action<br>• Forbiden fast running<br>• Allow slow running | Forbid fast running |

## 3.2 Fault Code Description

The fault's display code, cause, countermeasure and sort are seen in Table 3-3.

**The keypad displays five data: E+ Fault code**

**The MCB's small keypad displays three data: E+ Fault code**

## 3.3 Processing Failure

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| Lu<br>Lu | DC bus undervol-tage | 1: Power-on initial state, power-down end state<br>2: Input voltage is too low<br>3: Nonstandard wiring leads to undervoltage<br>4: Model setting fault | 1: Normal power-on or power-down, normal<br>2: Check input power voltage<br>3: Check wiring, regulate wiring<br>4: Set the correct model (Y00.01) | 3 |
| E0001<br>E01 | Controller output Acc. overcurrent | 1: Main circuit output grounding<br>2: Main circuit short circuit<br>3: The motor has not done the parameter self-tuning<br>4: Load is too heavy<br>5: Encoder signal is wrong<br>6: Encoder signal interefence is serious<br>7: Acc. curve is too steep | 1: Check the main circuit side whether ground is short-circited, and output phase is short-circuited<br>2: Check whether the power wiring is damaged and wiring is solid<br>3: Check whether the motor inernal exists short circuits or shorted to ground<br>4: Output side contactor is abnormal<br>5: Whether shorting motor stator contactor causes MONT75 output shorted-circuited<br>6: Set the correct motor parameters<br>7: Restart the motor parameter auto-tuning (group F07 or F10)<br>8: Check the brake, ensure the brake is normal<br>9: Check the menchanical, ensure it is not stuck<br>10: Check whether the elevator balance coefficient is correct<br>11: Check whether the encoder wiring is reliable<br>12: Set the correct group F11<br>13: Check whether the encoder is installed reliable<br>14: Encoder wire should be independent through the pipe, trace distance shouldn't be too long, shielding cable is single end ground<br>15: Set the appropriate Acc. and Dec. curve (group F03) | 3 |
| E0002<br>E02 | Controller output Dec. overcurrent | 1: Main circuit output is grounding<br>2: Main circuit output short-circuited<br>3: The motor has not done the parameter auto-tuning<br>4: Load is too heavy<br>5: encoder signal is wrong<br>6: Encoder signal interference is serious<br>7: Dec curve is too steep | | 3 |
| E0003<br>E03 | Controller output constant speed is overcurrent | 1: Main circuit output is grounding<br>2: Main circuit output short-circuited<br>3: The motor has not done the parameter auto-tuning<br>4: Load is too heavy<br>5: Encoder signal is wrong<br>6: Encoder signal interference is serious | | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0004<br>E04 | DC bus voltage Acc overvoltage | 1: Input voltage is too high<br>2: Acc curve is too steep<br>3: Brake resistor is too large<br>4: Brake unit is abnormal<br>5: Regenerative unit is abnormal | 1: Adjust the input voltage, check D01.06 (bus voltage), ensure it is normal<br>2: Check the balance coeffiecient<br>3: Select the appropriate brake resistor<br>4: When connect external brake unit or regenerative unit, check related equipments | 3 |
| E0005<br>E05 | DC bus Dec overvoltage | 1: Input voltage is too high<br>2: Acc curve is too steep<br>3: Brake resistor is too large<br>4: Brake unit is abnormal<br>5: Regenerative unit is abnormal | | 3 |
| E0006<br>E06 | DC bus constant speed overvoltage | 1: Input voltage is too high<br>2: Brake resistor is too large<br>3: Brake unit is abnormal<br>4: Regenerative unit is abnormal | | 3 |
| E0007<br>E07 | Static current is too high | When elevator stops, detected current > allowable static current (F09.05) | 1: Check there is no feedback load into the inverter output terminals,<br>2: Add F09.05 value<br>3: Set F09.05 = 0 to shield the fault | 3 |
| E0008<br>E08 | Power module fault | 1: Output between phases short-circuited or to ground short-circuited<br>2: Motor wiring is too long<br>3: Operating environment<br>4: Power module damaged | 1: Check the wiring, regulate the wiring<br>2: Intsall the rector pr filter<br>3: Check the fan and ventilation duct, ensure they work normally<br>4: Contact the supplier for repairing | 3 |
| E0009<br>E09 | Heatsink overheated | 1: Ambient temperature exceeds the specifications<br>2: The controller external ventilation is acverse<br>3: Fan is faulty<br>4: Temperature detection circuit is faulty | 1: Derated for using and increase power<br>2: Eectify controller external ventilation<br>3: Replace the fan<br>4: Search for technical support | 3 |
| E0010<br>E10 | Brake unit fault | Brake circuit is faulty | Search for technical supprot | 3 |
| E0011<br>E11 | CPU fault | CPU is faulty | 1: Power off completely then power on. and observe<br>2: Search for technical support | 3 |
| E0012<br>E12 | Parameter auto-tuning fault | 1: Parameter auto-tuning timeout | 1: Check the motor wiring<br>2: Set correct group F07 or F10 (motor parameter) | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | 2: Over current at parameter auto-tuning<br>3: Under the distance control (F00.07 = 1) doing Syn. motor ratating auto-tuning (F10.10 = 2)<br>4: When Syn. motor doing static auto-tuning, detection current is too little | 3: Set F00.07 = 0 (keypad control), and then doing the Syn. motor rorating auto-tuning<br>4: Decrease F10.02 (motor rated current) value, then doing Syn. motor static auto-tuning, when finished restore the F10.02 value | |
| E0013<br>E13 | Soft start | 1: Contactor fault<br>2: Control circuit fault | 1: Replace the contactor<br>2: Seek for technical support<br>3: Set F16.05 Bit11 = 1, shield the fault | 3 |
| E0014<br>E14 | Current detection circuit fault | 1: Current detection circuit is damaged<br>2: Syn. motor is out of control | 1: Please contact the supplier for repairing<br>2: Check the brake signal | 3 |
| E0015<br>E15 | Lack of input | Foe three-phase input controller, three-phase input power phase lost | 1: Check three-phase input power<br>2: Check F17.00 and F17.01 | 3 |
| E0016<br>E16 | Lack of output | 1: Controller three-phase ouput broken or loss of phase<br>2: Controller has serious imbalance in three-phase load | 1: Check the wiring between controller and motor, confirm the wiring is correct<br>2: Check th motor<br>3: CheckF17.02 and F17.03 | 3 |
| E0017<br>E17 | Controller overloaded | 1: Brake circuit is abnormal<br>2: Load is excessive<br>3: Encoder feedback signal is abnormal<br>4: Parameter of motor faults<br>5: Check motor power line | 1: Check the brake circuit<br>2: Reduce the load<br>3: Check the encoder feedback signal<br>4: Check the motor parameter, and restart parameter auto-tuning (group F07 or F10)<br>5: Check the power line | 3 |
| E0018<br>E18 | Excessive speed deviation | 1: Brake contactor faults or running contactor faults<br>2: Encoder pulse number setting faults<br>3: Excessive deviation of detection value and time setting is improper<br>4: Controller output torque is not enough | 1: Check the brake contactor or running contactor<br>2: Set appropriate F11.01 (encoder pulse number)<br>3: Set correct F04.11 (detected value), F04.12 (time)<br>4: Select larger capacity controller<br>5: Set correct group F08 (speed loop PI parameter) | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | 5: Speed loop PI parameter setting is improper<br>6: Encoder signal is wrong<br>7: Motor parameter is wrong<br>8: F10.12 is faulty | 6: Check encoder wiring and installation, ensure it is reliable<br>7: Check motor parameter<br>8: Restart parameter auto-tuning | |
| E0019<br>E19 | Motor overloaded | 1: Brake circuit is abnormal<br>2: Motor overload protection coefficient<br>3: Load is too heavy | 1: Check the brake circuit<br>2: Set approoriate F17.04 (motor overload protection coefficient)<br>3: Reduce the load | 2 |
| E0020<br>E20 | Motor overheated | 1: Motor is overheated<br>2: Motor overheating input signal acts<br>3: Motor parameter setting is wrong | 1: Reduce the load<br>2: Detect the overheating detection input terminal signal, ensure it is correct<br>3: Set correct group F07 or F10 (motor parameter) | 2 |
| E0021<br>E21 | MCB EEPROM writting or reading error | MCU EEPROM storage circuit occurs fault | Contact supplier for repairing | 3 |
| E0022<br>E22 | Keypad EEPROM writing or reading error | Keypad EEPROM storage circuit occurs fault | 1: Replace the keypad<br>2: Contact supplier for repairing<br>3: After the kaypad is reset manually, it can continue to be used normally (except download or upload parameters) | 1 |
| E0023<br>E23 | Parameter setting error | 1: At Asyn. motor doing parameter auto-tuning, Parameter self-tuning under control of non-keypad<br>2: Asyn. motor select ABZ encoder<br>3: At Asyn. motor parameter auto-tuning, select keypad control<br>4: Motor current is zero<br>5: Asyn. motor no load current > motor rated current<br>6: Distance control ascend speed (F04.02) > running curve maximum speed (F19.07 - F19.11) | 1: At Asyn. motor parameter auto-tuning, set F00.07 = 0 (keypad control)<br>2: for Syn. motor, set F11.00 = 2 (UVW encoder card) or 3 (SINCOS encoder card)<br>3: At Syn. motor parameterauto-tuning, set F00.07 = 1 (distance control)<br>4: Set correct F07.02 or F10.03 (motor current)<br>5: Set correct F07.11 (Asyn. motor)<br>6: Reset F04.02<br>7: Reset F21.07 - F21.09 (service floor) | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | 7: 0.000m/s < F19.07 – F19.11 < 0.100m/s<br>8: Set the fire base station, locking base station, and idle base station as non-service layer<br>9: Set the corresopnsed door machine service floor of locking station base, firefighting base station, and idle base station as on-service | 8: Set F22.01 - F22.06 (door machine service) permit serviving | |
| E0024<br>E24 | Input line voltage detection fault | Input bus voltage is normal, line voltage detection circuit is abnomal | 1: Power-off treatment<br>2: Contact the supplier for repairing | 1 |
| E0030<br>E30 | Encoder reversal | 1: Given speed direction differs from actual feedback direction<br>2: Load is too heavy<br>3: Controller output torque is not enough<br>4: Brake circuit is abnormal<br>5: Running contactor is abnormal<br>6: Output line disconnects or lacks of phase | 1: When adjusting elevator, reverse F11.02 (encoder rotating direction). when running normally, do not modify F11.02<br>2: Reduce the load<br>3: Select larger capacity controller<br>4: Check the brake circuit<br>5: Check the run contactor<br>6: Check the resistor between three-phase, confirm they are coherent | 3 |
| E0031<br>E31 | Encoder disconnect-tion | 1: Encoder has no input signal<br>2: Brake circuit abnormal<br>3: Output power line disconnects or lacks of phase | 1: Check the encoder wiring and installation, confirm it is reliable<br>2: Check the brake circuit<br>3: Check the resistor between three-phase, confirm they are coherent | 3 |
| E0032<br>E32 | Motor overspeed | 1: Encoder pulse number setting is wrong<br>2: Controller output is not enough<br>3: Speed loop parameter setting is improper<br>4: Encoder signal is wrong<br>5: F10.12 is wrong<br>6: Motor parameter is faulty | 1: Set appropriate F11.01 (encoder pulse number)<br>2: Select larger capacity controller<br>3: Set correct group F08 (speed loop PI parameter)<br>4: Check the encoder wiring and installation, confirm it is reliable<br>5: Restart the parameter auto-tuning<br>6: Check the motor parameter | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0033 E33 | ABZencoder Z signal lost | 1: Wiring problem<br>2: Jamming is so serious | Check the wiring | 3 |
| E0034 E34 | UVW encoder UVW fault | UVW encoder fan zone is certainly wrong | Check UVW wiring, confirm the wiring is correct | 3 |
| E0035 E35 | Sincos encoder CD fault | 1: Encoder is faulty<br>2: Encoder disconnects | 1: Check the encoder<br>2: Check the wiring of encoder C phase and Dphase | 3 |
| E0036 E36 | Sincos encoder CD fault | 1: Speed curve setting is improper<br>2: Acc. and Dec. setting is improper | 1: Set appropriate F19.07 - F19.11 (speed curve)<br>2: Set appropriateF03.00 - F03.05 (Acc. and Dec. curve parameter) | 3 |
| E0037 E37 | Abnormal control board logic | MCB logic is abnormal | Please contact the supplier for replacing MCB | 3 |
| E0038 E38 | Upforce Dec switch disconnect-tion | When elevator is on the top floor, Upforce Dec. switch disconnects | 1: Check the upforce Dec. switch<br>2: Restart the shaft self-tuning<br>3: Check the leveling switch signal | 3 |
| E0039 E39 | Downforce Dec switch disconnect-tion | When elevator is on 1st floor, downforce Dec. switch disconnects | 1: Check the downforce Dec. switch<br>2: Restart the shaft self-tuning<br>3: Check the leveling switch signal | 3 |
| E0040 E40 | Elevator running timeout | Within the tiem of F23.02, leveling signal do not change | 1: Elcvator speed is too low or the height of floor is too high<br>2: Leveling signal is abnormal<br>3: Wire rope slipped | 3 |
| E0041 E41 | Safety circuit disconnect-tion | Safety circuit signal disconnects | 1: Check the state of all the switches in safety circuit<br>2: Check the supply circuit of safety circuit<br>3: Check safety circuit contactor signal<br>4: Check the features of safety circuit feedback contactor signal (NO or NC) | 3 |
| E0042 E42 | Door lock disconnectio n during running | When elevator is running, door lock signal disconnects | 1: Check the hall door lock and car door lock, confirm the contact is normal | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | | 2: Check door lock contactor action, confirm it is normal<br>3: Check door lock contactor feedback contact feature (NO or NC)<br>4: Check the door lock supply circui<br>5: If equipped with advanced door open module (MT70-AOB-A), please check the corresponding signal | |
| E0043<br>E43 | Uplimit signal disconnect-tion during running | 1: When elevator is going up, uplimit signal disconnects<br>2: Encoder signal interference makes the elevator wrong | 1: Check the uplimit switch, confirm the contact is normal<br>2: Check the uplimit signal feature (NO or NC)<br>3: The uplimit switch is installed on the low side, when elevator runs to top floor, the uplimit switch should act<br>4: Check the encoder wiring and installation, confirm it is reliable | 3 |
| E0044<br>E44 | downlimit signal disconnect-tion during running | 1: When elevator is going down, downlimit signal disconnects<br>2: Encoder signal interference makes the elevator wrong | 1: Check the downlimit switch, confirm the contact is normal<br>2: Check the downlimit signal feature (NO or NC)<br>3: The downlimit switch is installed on the high side, when elevator runs to bottom floor, the downlimit switch should act<br>4: Check the encoder wiring and installation, confirm it is reliable | 3 |
| E0045<br>E45 | Up and down force Dec. switch disconnect-tion at the same time | Up and down force Dec. switch disconnect at the same time | 1: Check the up and down force Dec. switch, confirm it is normal<br>2: Check the up and down force Dec. switch (NO or NC)<br>3: Set F26.12 Bit4 = 1 | 3 |
| E0046<br>E46 | Releveling abnormal | 1: Elevator actual speed > releveling speed + 0.050m/s<br>2: When elevator is releveling, elevator is not on leveling zone | 1: Check the encoder signal<br>2: Check the leveling signal<br>3: Check the advanced door open module | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0047<br>E47 | Lock-door contactor feedback abnormal | Lock-door contactor feedback signal is abnormal | 1: Check the lock-door contactor feedback contact signal feature (NO or NC)<br>2: Check the lock-door contactor action, confirm it is normal<br>3: Check the lock-door contactor feedback signal<br>4: Check the advanced door open module | 3 |
| E0048<br>E48 | OD fault | The number of the door continuouse not opening in place exceeds F22.09 | 1: Check the door machine<br>2: Check the CTB, confirm it is normal<br>3: Check the opening in place signal, confirm it is normal | 3 |
| E0049<br>E49 | CD fault | The number of the door continuouse not closing in place exceeds F22.09 | 1: Check the door machine<br>2: Check the CTB, confirm it is normal<br>3: Check the closing in place signal, confirm it is normal<br>4: Check the door lock circuit | 3 |
| E0050<br>E50 | Shaft self-learning fault | **When starts self-learning, if fulfill with any following condition, it alarms fault:**<br>1. Present floor is not the first floor<br>2. Self-learning direction is not up<br>3. Down force Dec signal is invalid<br>4. Syn.motor initial angle is 0<br>5. Up limit signal is valid<br>6. When the total floor is 2, down leveling sensor do not get off leveling plate<br><br>**When runs to second floor, if fulfilled with following conditions, alarms fault:**<br>The leveling adjustment distance in second floor after self-learning exceeds 50cm | 1: Check up and down Dec. switch signal<br>2: Confirm the actual munber of floor is same as F19.01 (setted number of floor)<br>3: Syn. motor should do parameter auto-tuing<br>4: Check the motor actual running direction, confirm it is correct<br>5: Check the leveling plate, confirm the installation is correct<br>6: Check the leveling switch NO and NC setting, confirm it is correct<br>7: Check the uplimit anf downlimit signal | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | **When runs to top floor, if fulfill with any following condition, it alarms fault:**<br>1. When up force Dec. 1 is valid and elevator is in door zone, current floor differs from setted highest floor<br>2. When elevator reaches setted floor and elevator is in door zone, up force Dec. 1 does not act<br>3. The learned total height exceeds 50cm<br>4. The learned up and down force Dec. 1 position is 0<br>5. If set 2 and 3 rank force Dec. switches, the learned corresponding up and down force Dec. position is 0<br>6. If select several groups force Dec. signal, once do not fulfill the following conditions, it alarms fault:<br>• Down force Dec. position 1 < down force Dec. position 2 < down force Dec. position 3<br>• up force Dec. position 1 > up force Dec. position 2 > up force Dec. position 3 | | |
| E0051<br>E51 | CAN communication fault | CAN communication do not receive the correct data | 1: Check the communication cables<br>2: Check the CTB power supply<br>3: Check the 24V power supply<br>4: Check D04.18 (degree of communication interference)<br>5: Check the matched resistance ensure it is valid | 1 |
| E0052<br>E52 | Hall call communiacation fault | Hall call communiacation do not receive the correct data | 1: Check the communication cables<br>2: Check the 24V power supply<br>3: Check the HCB address, confirm there is no collides<br>4: Check D04.17 (degree of communication interference) | 1 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0053<br>E53 | Door lock short circuit fault | OD arrival signal and lock door closing signal are valid at the same time | 1: Check the door lock circuit action confirm it is normal<br>2: Check door lock contactor feedback, comfirm it is normal<br>3: Check the door machine opening in place signal<br>4: Set F26.12 Bit3 = 1 | 3 |
| E0054<br>E54 | Syn. shorting motor stator contactor feedback abnormal | Syn. shorting motor stator contactor feedback is abnormal | 1: Check contactor feedback contact and MCB parameter setting, confirm they are consistent (NO or NC)<br>2: Check the MCB output terminal indicator and contactor action, confirm they are consistent<br>3: After contactor action, confirm corresponding feedback contact acts, MCB corresponding feedback input point acts<br>4: Check contactor and MCB input point features, confirm they are consistent<br>5: Check the contactor coil circuit | 3 |
| E0055<br>E55 | Changed floor park fault | When elevator runs automatically, current floor do not receive opening signal | 1: Check the door motor opening in place signal<br>2: Check the door motor mechanical system | 1 |
| E0056<br>E56 | Running contactor feedback abnormal | Running contactor feedback is abnormal | 1: Check contactor feedback contact and MCB parameter setting, confirm they are consistent (NO or NC)<br>2: Check the MCB output terminal indicator and contactor action, confirm they are consistent<br>3: After contactor action, confirm corresponding feedback contact acts, MCB corresponding feedback input point acts<br>4: Check contactor and MCB input point features, confirm they are consistent<br>5: Check the contactor coil circuit | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | | | 6: Set F26.17 = 1, fault resets automatically | |
| E0057<br>E57 | Brake contactor feedback abnormal | 1: Brake contactor feedback is abnormal<br>2: Barke mechanical switche feedback is abnormal<br>3: Brake forced feedback is abnormal | 1: Check contactor feedback contact and MCB parameter setting, confirm they are consistent (NO or NC)<br>2: Check the MCB output terminal indicator and contactor action, confirm they are consistent<br>3: After contactor action, confirm corresponding feedback contact acts, MCB corresponding feedback input point acts<br>4: Check contactor and MCB input point features, confirm they are consistent<br>5: Check the contactor coil circuit<br>6: Check barke mechanical switch feedback signal<br>7: Check barke forced feedback signal<br>8: Check brake forced feedback contactor coil<br>9: Set F26.17 = 1, fault resets automatically | 3 |
| E0058<br>E58 | Leveling signal abnorma | Leveling and door zone switch adheres or disconnects | 1: Check the leveling, and door zone sensor, confirm it works normally<br>2: Check the vertical and depth of leveling plate installation<br>3: Check the MCB input signal | 3 |
| E0059<br>E59 | Receive OD and CD arrival signals at the same time | Receive door machine OD and CD arrival signals at the same time | 1: Check the door machine controller<br>2: Check OD and CD arrival signal features (NC or NO)<br>3: At inspection mode, set F26.12 Bit5 = 1, to shield this fault | 3 |
| E0060<br>E60 | Forced Dec. distance is too short | Forced Dec. distance is too shor | 1: Check up and down forced Dec. 1 switch installation<br>2: Check F03.12 (forced Dec. speed) | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0061<br>E61 | Parallel group control communication abnormal | CAN communication did not receive the correct data | 1: Check the communication cable<br>2: Check the parallel parameter setting<br>3: Check D04.19 (degree of communication interference) | 1 |
| E0062<br>E62 | Inspection running overcurrent | At inspection running, current > motor rated current * 110% | 1: Reduce the load<br>2: Set F26.12 Bit1 = 0<br>3: When Syn. motor is doing auto-tuning, the result angle does not match the actual value, retart the parameter auto-tuning<br>4: Encoder is abnormal<br>5: Brake circuit is abnormal | 3 |
| E0063<br>E63 | Advanced door open abnormal | 1: Speed > advanced door open speed + 0.050m/s<br>2: Advanced door open running is not in the leveling zone | 1: Check the encoder signal<br>2: Check the leveling signal<br>3: Check the advanced door open module (MT70-AOB-A) | 3 |
| E0065<br>E65 | UCMP fault | 1: When lock-door contactor outputs, controller detects that the door zone signal gets invalid from being valid, and door lock signal disconnects, elevator alarms fault, and stop running, lock-door contactor stop outputting<br>2: When stops, controller detects door zone signal gets invalid from valid, door lock signal disconnects, and if one leveling signal is invalid, elevator alarms fault, and stop running | 1: Check the brake, confirm it is normal<br>2: Check the door zone signal and leveling signal | 3 |
| E0066<br>E66 | Brake force auto-checking fault | 1: When brake force detection processes, pulse exceeds the setted F04.16<br>2: When brake force detection processes, detected speed exceeds 0.50m/s | Check the brake, confirm it is normal | 3 |
| E0067<br>E67 | Speed regulator contactor | Speed regulator contactor feedback is abnormal | 1: Check contactor feedback contact and MCB parameter | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| | feedback abnormal | | setting, confirm they are consistent (NC or NO)<br>2: Check the MCB output terminal indicator and contactor action, confirm they are consistent<br>3: After contactor action, confirm corresponding feedback contact acts, MCB corresponding feedback input point acts<br>4: Check contactor and MCB input point features, confirm they are consistent<br>5: Check the contactor coil circuit | |
| E0068<br>E68 | CIC-B communicati on abnormal | Communication between MCB and CIC-B is abnormal | 1: Check the communication line between MCB and CIC-B<br>2: Check the CIC-B internal SIM card, confirm the communication is normal | 2 |
| E0069<br>E69 | Logic fault | Logic fault | Return to factory | 2 |
| E0070<br>E70 | Bottom pit flooded fault | Control system detects the pit flooded protection signal is valid | 1: Check the pit flooded switch<br>2: Check the pit flooded signal NO or NC setting (group F12) | 2 |
| E0071<br>E71 | Overload switch fault | At elevator 0 speed starting detected current exceeds F02.07, overload switch do not act | 1: Check the overload switch<br>2: Check F02.07, confirm the setting is appropriate | 1 |
| E0072<br>E72 | Car illegal movement fault | When elevator stops, detects the car moves abnormaly | 1: Check the brake state<br>2: Adjust the stop order (confirm there is no slide in elevator stopping) | 3 |
| E0073<br>E73 | Forbidden fast car alarm | 1: Muti-function input terminal do not set forbidden fast car (49/149)<br>2: Muti-function set bypass input (50/150) | Check external signal | 4 |
| E0074<br>E74 | Internal fault | 1: Can not do parameter auto-tuning<br>2: Can not do shaft self-learning | Contact the elevator factory or agent | 3 |

| Fault | | Fault Reasons | Countermeasure | Sort |
|---|---|---|---|---|
| E0075 E75 | External regenerative unit fault | Muti-function input terminal sets regenerative unit fault input (51/151) | Check the external signal | 1 |
| E0076 E76 | External UPS fault | Muti-function input terminal sets UPS fault input (52/152) | Check the external signal | 1 |

### 3.4 Reset Fault

After the fault is solved, perform any of the following operations to reset:

- Press **STOP** key in keypad.
- MONT75 power down completely.
- Parts of faults can reset automatically, as the following form.

| Faults | | Reset Conditions |
|---|---|---|
| E0009 | Heatsink overheated fault | After heatsink temperarure drops to50℃, the fault reset automatically |
| E0020 | Motor overheated fault | After motor safety circuit switch recovers, the fault reset automatically |
| E0041 | Safety circuit disconnection fault | After safety circuit is connected, the fault reset automatically |
| E0042 | Door lock disconnection fault | After door lock is connected, the fault reset automatically, or after door zone signal is valid 1s the fault reset automatically |
| E0051 | Car top CAN communication fault | The fault only recorded once at power-on and after communication resumes, the fault will reset automatically |
| E0052 | Hall Modbus communication fault | The fault only recorded once at power-on and after communication resumes, the fault will reset automatically |
| E0055 | Changed floor stop fault | The fault only recorded once at power-on |
| E0059 | OD and CD arrival signals at the same time fault | The fault only recorded once at power-on and if OD/CD arrival signals are not valid at the same time, the fault will reset automatically |
| E0061 | Parallel group control communication abnormal | The fault only recorded once at power-on and after communication resumes, the fault will reset automatically |
| E0048, E0049, E0055 | | Can be reset by inspection button |
| E0001, E0002, E0003, E0008, E0017, E0030, E0031 | | in order to protect the internal device of the controller, the fault reset needs to be delayed for a period of time |
| E0070, E0071, E0073 | | Can reset automatically |