MONT10
Elevator Door Controller

MONT11
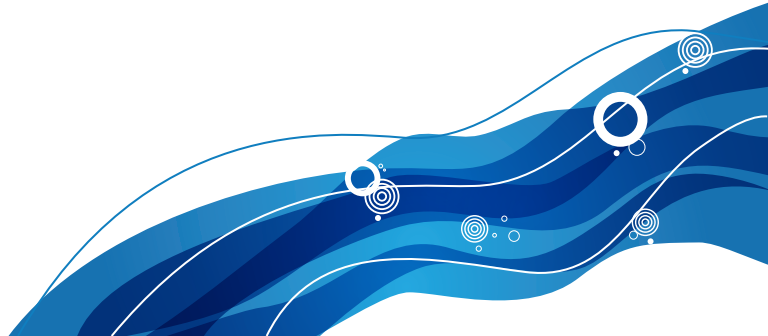
Asynchronous Elevator Door Controller

User Manual

Single-phase 200 − 240VAC, 0.4kW

V1.0
User manual

FOREWORD

Thank you for purchasing MONT11 asynchronous elevator door controller (hereinafter referred to as MOMT11) manufactured by Shenzhen Hpmont Technology Co., Ltd.

This User Manual describes how to use MONT11 and its installation wiring, operation and debugging, troubleshooting and daily maintenance etc. Before using the product, please read through this User Manual carefully. In addition, please do not use this product until you have fully understood safety precautions.

Note:

- Preserve this Manual for future.
- Due to product upgrade or specification change, and for the purpose of improving convenience and accuracy of this manual, this manual's contents may be modified.
- If you need the User Manual due to damage, loss or other reasons, please contact the regional distributor of our company or directly contact our company Technical Service Center.
- For the first time using, the user should carefully read this manual.
- If you still have some problems during use, please contact our company Technical Service Center.
- Telephone: 4008-858-959 or 189 4871 3800
- The product warranty is on the last page of this Manual, please preserve it for future.

CONTENTS

Chapter 1 Safety Information and Precautions

1.1 Safety Definition

Danger: A Danger contains information which is critical for avoiding safety hazard.

Danger

Warning: A Warning contains information which is essential for avoiding a risk of damage to product or other equipments.

Warning

Note: A Note contains information which helps to ensure correct operation of the product.

Note

1.2 Precautions

Before delivering, this product has been strictly checked and reliably packaged. Due to handling, loading and unloading in transit, it may cause damage. Therefore, after open the package please check product integrality carefully:

Check items	Check methods
Whether there is damage to parts or damaged	Check the overall appearance, check if there is damage in transit
If there is loose screws or other fasten parts	If necessary, use the screwdriver to check
Whether the manual intact	Check the manual

If has lacked, please contact manufacturer.

Chapter 2 Product Information

2.1 Model Explanation

MT11 - 2 S 0P4

Adaptive motor power
0P4：0.4kW

Input phase
S ：Single-phase

Voltage rating
2 ： 200－240V

Product series
Asynchronous elevator
door controller
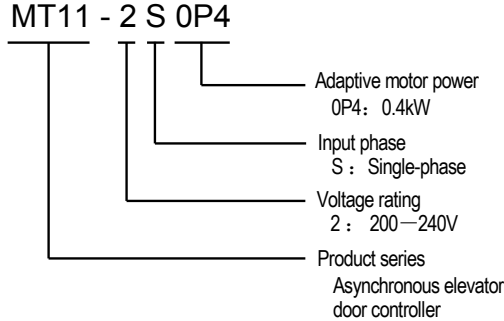
2.2 Specifications

	Item	Specification
Electrical	Rated voltage and frequency	Single-phase: 200－240V, 50/60Hz
	Accuracy	Voltage: fluctuation within ± 10%, imbalance rate < 3% Frequency: ± 5%
	Output voltage	0－input voltage
	Output frequency	0－99.99Hz
Performance	Control mode	Open-loop vector control (SVC); Closed-loop vector control (VC)
	Speed control range	1:100 (SVC); 1:1000 (VC)
	Speed control accuracy	± 0.5% (SVC); ± 0.05% (VC)
	Start torque	180% rated torque at 0.5Hz (SVC); 180% rated torque at 0Hz (VC)
	Frequency resolution	0.01Hz
	Current resolution	0.01A
Characteristic	Encoder OC output or push-pull output method.	
	Use the speed control mode or the distance control mode.	
	It supports the door width self-learning function, the auto demonstration function, the setback automatic identification function and the parameters uploaded and downloaded function (max 2 groups).	
Protection	It supports overload protection (150% rated current – 1min protection; 180% rated current – 1sec protection), overvoltage protection, under-voltage protection, overcurrent protection, inter-phase short-circuit protection, etc.	

2.3 Dimensions and Mounting Size

The dimensions and the mounting size of MONT11 are shown as Figure 2-1. The unit is mm.

Figure 2-1　Dimensions and mounting size of MONT11

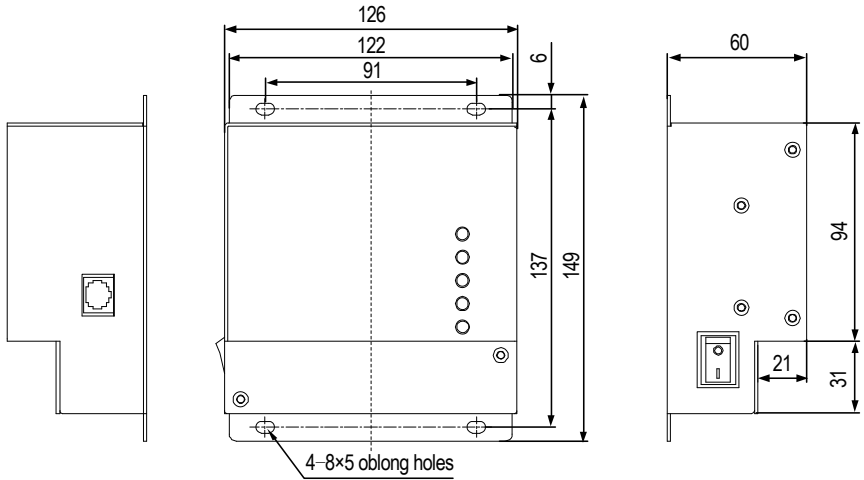# Chapter 3 Electrical Installation

Danger

- Do not install if the MONT11 is imcomplete or impaired.
- Make sure that the MONT11 is far from the explosive and combustible things.
- Bare metallic part of the power terminal wiring should be with insulating tape to wrap up.
- Only qualified electrical engineer can perform wiring job.
- Only when the power supply is completely cut-off 10 minutes later can you do the wiring job.
- The communication wire must use shielded twisted-pair cable with 20－30mm twisted interval, and the shielding layer must be grounded.
- The encoder must use a shielded wire, and the shielding layer must be connected to ground reliably.
- Do not connect the power input terminals to the output terminals (U/V/W) of the MONT11.
- The earth terminal PE of the MONT11 must be reliable earthing. It must use two separate earth wire due to the leakage current from the MONT11 to ground.
- Do not touch the wire terminals of the MONT11 when it is live. The main circuit terminals is neither allowed connecting to the enclosure nor short-circuiting.
- Only when the MONT11 terminal cover has been fitted can you switch on AC power source. Do not remove the cover after power is switched on.

Warning

- Do not play metal into the MONT11 when installing.
- Do not start and shutdown the MONT11 by connecting and disconnecting the contactor.
- Detection of signals during the operation shall only be conducted by qualified technician.
- Do not do dielectric strength test on the MONT11.

Ensure the installation site meeting the following requirements:

- Do not install at the direct sunlight, moisture, water droplet location;
- Do not install at the combustible, explosive, corrosive gas and liquid location;
- Do not install at the oily dust, fiber and metal powder location;
- Be vertical installation on fire-retardant material with a strong support;
- Make sure adequate cooling space for MONT11 so as to keep the ambient temperature among - 10－+ 40℃;
- Install at where the vibration is less than 5.9m/s^2 (0.6g).

Note:

1. It needs derating use if the MONT11 operation temperature exceeds 40℃. The derating value of the output current of MONT11 shall be 2% for each degree centigrade. Max. allowed temperature is 50℃.
2. Keep ambient temperature among -10－+40℃. It can improve the MONT11 operation performance if install at the location with good ventilation or cooling devices.

3.1 Terminals Description

The power supply switch, the connection terminal, the panel interface and indicators are on the control board shown as Figure 3-1.
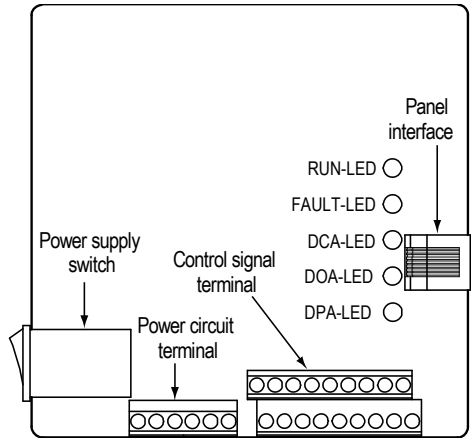
Figure 3-1   Position of schematic

3.1.1 Power Supply Switch

In order to make debugging and maintenance work easily, we have designed a power supply switch in the MONT11.

Danger

- When the power supply of MONT11 is cut down, the input 220V terminal still has high voltage. Do not touch or plug the 220V terminal until the external power supply cut down, or there will be danger of shocking.

3.1.2 Power Circuit Terminal Description

L	N	U	V	W	PE
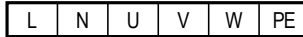
Figure 3-2   Power circuit terminal layout

Table 3-1   Function description of power circuit terminal

Terminal name	Function description
L、N	Single-phase AC 220V power supply input terminals
PE	Protective earth point
U、V、W	Motor connection terminal

3.1.3 Control Signal Terminal Description

P24	COM	A	B	COM	COM	PA	PB	PC

X1	X2	X3	X4	OD	CD	PAC	DOA	DCA
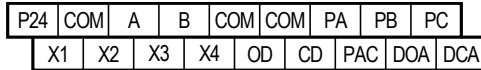
Figure 3-3   Control signal terminal layout

Table 3-2   Function description of control signal terminal

Symbol	Terminal name	Function description
X1－X4	Function terminal (refer to section 3.2)	The 24V level signal input, when the terminal is connected with COM, the terminal function is enabled
OD	Open-door command input terminal	
CD	Closed-door command input terminal	
P24	+24V power supply	+24V, the maximum output current is 100mA
COM	Signal ground	The +24V reference ground
A, B	Encoder's A and B phase signal	It supports the pulse signal input with under 40kHz frequency
PAC,DOA	OD arrival relay, normally closed	Contact rating: AC: 125VAC/0.5A DC: 24VDC/1A
PAC,DCA	CD arrival relay, normally closed	
PA,PB,PC	Programmable relay (PA,PB normally closed; PA,PC normally open)	

3

3.1.4　Panel Interface Description

MONT11 can be connected to the optional LED panel (HD-LED) through RJ45 interface by general network wires. It can be used for the user parameter settings, copy and operation monitoring state etc. RJ45 interface is described as Figure 3-4.
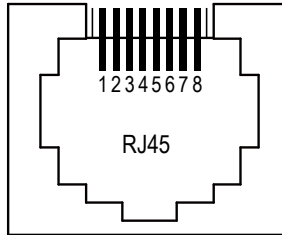
Figure 3-4　Panel interface

3.1.5　State Indicator Description

Table 3-3　Indicator description of MONT11

Symbol	Description
DOA-LED (green)	Set F06.00 as normally closed contact, when open door arrives, indicator is on.
	Set F06.00 as normally open contact, when open door arrives, indicator is off.
DCA-LED (green)	Set F06.00 as normally closed contact, when closed door arrives, indicator is off.
	Set F06.00 as normally open contact, when closed door arrives, indicator is on.
DPA-LED (green)	Set F06.00 as normally closed contact, when position arrives, indicator is on.
	Set F06.00 as normally open contact, when position arrives, indicator is off.
RUN-LED (green)	When MONT11 is not in running state at power on (standby), indicator is on.
	When MONT11 is in running state at power on, indicator is flashing.
FAULT-LED (red)	When MONT11 has fault, indicator is on.
	When MONT11 has no fault, indicator is off.

3.2 Terminal Wiring

MONT11 has two control modes: distance control and speed control. The follows are respectively introduced the connections of two control modes.

Distance control

Set F02.00 as non-zero value (namely the encoder's actual line number), the door machine will be in distance control and the connection is shown as Figure 3-5.
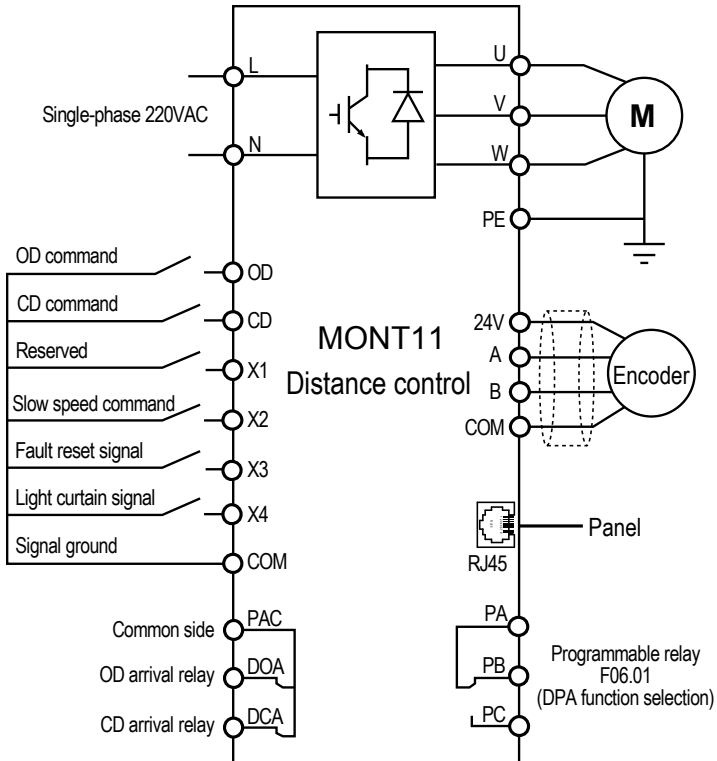
Figure 3-5   Connection of MONT11 distance control

Speed control

Set F02.00 as 0, the door machine will be in speed control and the connection is shown as Figure 3-6.
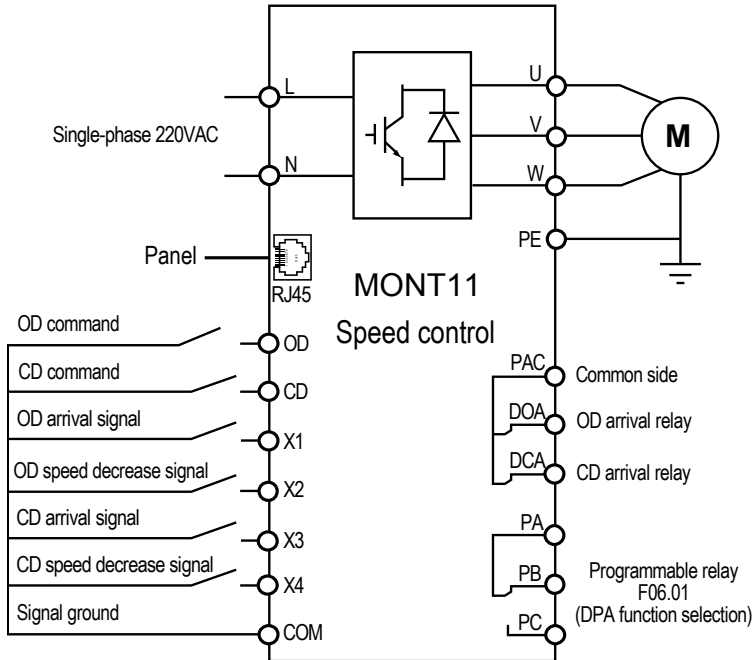
Figure 3-6   Connection of MONT11 speed control

Note:

1. The input MCCB rating should use 6A single-phase air breaker.

2. The input power wiring and the output motor wiring should use copper multi-stranded cable whose diameter should not be less than 1mm^2.

3. It suggested that reliably connect the PE terminal to the ground via using copper multi-stranded cable whose diameter should not be less than 2.5mm^2.

4. Control signal input &output wires are suggested to use copper multi-stranded cable (diameter $\geqslant$ 0.5). On serious interference condition you can use twisted-pair or shielded cable to improve the control system capacity.

Chapter 4 Function Introduction

This chapter will provide user with detail function introduction of each group.

4.1 Group d Display Parameters
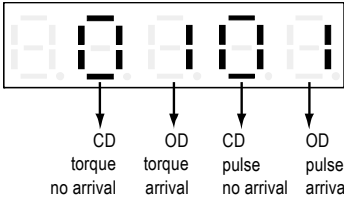
Group d is state display parameters. The users can directly check the state parameters by checking the function code of Group d.

4.1.1 Group d00 State Display Parameter 1

Code	Name Description	Range【factory setting】
d00.00	**Controller series**	**【T11】**
	Display MONT11 asynchronous elevator door controller.	
d00.01	**Rated power**	**【400W】**
	Display MONT11 rated power.	
d00.02	**Rated current**	**【2.2A】**
	Display MONT11 rated current.	
d00.03	**Control board software version**	**【actual value】**
	Display the control board software version.	
d00.04	**Special software version of control board**	**【actual value】**
	Display the special software version of control board.	
d00.05	**Panel software version**	**【actual value】**
	Display the panel software version.	

4.1.2 Group d01 State Display Parameter 2

Code	Name Description	Range【factory setting】
d01.00	**Door position pulse**	**【actual value】**
	Display the present door position pulse state. The door maximum pulse corresponds to open-door arrived positopn, and the door minimum pulse corresponds to closed-door arrived position.	
d01.01	**Open/closed-door arrival signal**	**【actual value】**
	Display the open/closed-door arrival signal. • It is represented by four-digit and from right to left followed by: open-door pulse arrival, closed-door pulse arrival, open-door torque arrival, closed-door torque arrival. • 0 represents that the signal does not arrive; And 1 represents that the signal arrive. Take "0101" for example to explain the meaning of each digital tube, as the right figure.	
d01.02	**Setting frequency**	**【actual value】**
	Display the setting frequency.	

Code	Name　Description	Range【factory setting】
d01.03	**Output frequency**	【actual value】
	Display the output frequency.	
d01.04	**Output voltage**	【actual value】
	Display the output voltage.	
d01.05	**Output current**	【actual value】
	Display the output current.	
d01.06	**Output torque**	【actual value】
	Display the output torque which is the relative percentage of the motor rated torque.	
d01.07	**DC bus voltage**	【actual value】
	Display the DC bus voltage.	
d01.08	**Input terminal state**	【actual value】
	Display X1－X4, CD, OD state of input terminal. Display in hex and each bit (binary) of this function parameter stands for different physical sources which are in the below table. • 0: The corresponding terminal and the common terminal are disconnected. • 1: The corresponding terminal and the common terminal are connected.	

Tens				Units			
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
X4	X3	X2	X1	Reserved	Reserved	CD	OD

4.2 Group F General Function Parameters

4.2.1　Group F00 Basic Parameters

Code	Name　Description	Range【factory setting】
F00.00	**User password**	00000－65535【00000】
	XXXXX: To enable the password protection function, set any non-zero number as the password. • After set the password, it need input the correct password when you enter into parameter setting state. Otherwise you can not change any parameter via panel, but only check. • After input the correct password, press **PRG** key to exit to stop/run state or detect that there is no press on the panel within 5 minutes, the user's password will be valid. If want to change the parameters, it need input correct password. If detect that there is press within 5minutes, it will restart 5 minutes timing again. 00000: The factory setting of MONT11 and no user's password. • If the user unlocks the password, it means clearing the user's password.	
F00.01	**Parameter batch disposal**	00－30【00】
	00: No function. It need manually set the parameter. 01: Reset parameter. Reset the default paramters of Group F00－F08. 02: Clear fault information. Clear fault information of Group F09.00－F09.06. 03－30: Reserved.	

Code	Name Description	Range【factory setting】
F00.02	**Parameter upload number**	0－2【0】
F00.03	**Parameter download number**	0－2【0】
	Define the number of parameter upload or download. • Parameter upload: Upload the present MONT11 parameter to the corresponding number (1 or 2) of LED panel. • Parameter upload: Download the corresponding number (1 or 2) of LED panel to the present MONT11. **Note: F00.00－F00.04, F01.09, F02.01 and Group F09 can not upload or download.**	
F00.04	**Manufacturer debugging parameter, prohibit to change**	
F00.05	**Mode selection**	0,1【1】
	0: Factory mode (Door machine specific function is invalid). 1: Door control mode.	
F00.06	**Control command selection**	0－2【0】
	0: Panel control. • The starting and stopping is controlled through the panel of MONT11. Press the key **RUN** opens the elevator door, press the **JOG** key closes the elevator door, and press the **STOP** key stops MONT11. 1: Terminal control (auto).	

		OD terminal	CD terminal	Run command
	• The MONT11 realizes door opening or closing via the control system sending OD and CD commands.	0	0	Stop
		0	1	Closed door
	• After open/closed curves optimize the paramters, set F00.06=1, then according to the open/closed command logic of elevator controller, the MONT11 integrates into elevator system to run automatically.	1	0	Open door
		1	1	Open door

	2: Auto-demo run. Auto-demo mode is used for demonstrating the operation or commissioning in the factory. There is no need to be controlled by the control system.
	  • The auto-demo mode can be set after door machine's operation curve is set in panel control mode (F00.06 = 0). The interval time between open and closed door demo can be set by F06.04.
	  • To start auto-demo run by pressing **RUN**/**JOG** key or closing external terminals OD / CD with COM. To stop auto-demo run by pressing **STOP** key.

F00.07	**Maximum output frequency**
	Define the maximum allowed output frequency of MONT11.
F00.08	**Manufacturer debugging parameter, prohibit to change**
F00.09	**Control mode**
	0: Asynchoronous motor open-loop distance control. 1: Asynchoronous motor closed-loop distance control.

Code	Range【factory setting】
F00.07	1.00－99.99【50.00Hz】
F00.09	0,1【0】

4

4.2.2 Group F01 Motor Rated Parameters

Code	Name Description	Range【factory setting】
F01.00	Motor rated power	1－750【250W】
F01.01	Motor rated voltage	1－300【220V】
F01.02	Motor rated current	0.10－10.00【0.55A】
F01.03	Motor rated frequency	1.00－99.99【50.00Hz】
F01.04	Motor rated Rpm	1－6000【900rpm】
F01.05	Deceleration ratio	1.00－9.99【4.67】
	Generally set F01.05 as 1.00. If the encoder is not mounted on the motor shaft, it should be set for the actual condition.	
F01.06	Motor parameter auto-tuning	0,1【0】
	0: No action. 1: Motor auto-tuning. • First set F00.06 = 0 or 2 before auto-tuning, then input correct motor parameters as per its nameplate (F01.00－F01.04). • Set F01.06 as 1 firstly, then press **RUN** or **JOG** key to start auto-tuning. And press **STOP** key to stop motor parameter auto-tuning. When the auto-tuning is completed, the F01.06 will be reset to 0. • Refer to section 5.1 Parameter Auto-tuning Description for more details (page 23).	
F01.07	No load current	0.01－10.00【0.36A】
F01.08	Manufacturer debugging parameter, prohibit to change	
F01.09	Manufacturer debugging parameter, prohibit to change	

4.2.3 Group F02 Encoder Door Width Parameters

The door width of door machine is the basis of distance control, open/closed door running curve adjustment and open/closed door arrived judgment. The door width accurately to be obtained is the guarantee which is the premise to realize the normal distance control.

Note: When F02.00 = 0 (speed control), parameters of F02.01－F02.07 are disabled.

Code	Name Description	Range【factory setting】
F02.00	Encoder pulse number per revolution	0－9999【200】
	0: Speed control (it can be achieved by four switches). • The door width self-learning is not needed. • The slow speed location is not needed at first time power on. • The door position information can be located by the four switches, which eliminates encoder's total error that may result in wrong location. • The speed control keeps the same as the distance control in holding other torques. The detecting range of CD resistance is the invalid area of CD arrival signal. The detecting range of OD resistance is the invalid area of OD arrival signal. • **Terminal defination:** X1 is the OD arrival signal; X2 is the OD speed decrease signal; X3 is the CD arrival signal; X4 is the CD speed decrease signal.	

Code	Name Description	Range【factory setting】
	1－9999: Distance control (encoder's actual line number). • The door width self-learning must be done before distance control. • The distance control is based on the door width information obtained by self-learning. During the door machine OD/CD process, the realtime calculation of running pulses are compared with the setting pulses, which achieves the switching and arrival disposal of the OD/CD running speed. **Terminal defination:** X1 is reserved; X2 is the slow speed signal; X3 is the fault reset signal; X4 is the light curtain signal.	
F02.01	**Encoder direction setting**	0,1【1】
	0: The same direction as the encoder actual connection. 1: The reverse direction to the encoder actual connection. • In the distance control (set F02.00 as non-zero), after power off the power is on again, the panel defaults to display the door position pulse. • Pull the door board manually, if OD increases and CD decreases, the encoder direction is correct. If OD decreases and CD increases, take the reverse value of F02.01.	
F02.02	**Operating speed of slow speed**	0.01－15.00【7.00Hz】
	When external terminal slow speed (SS) is enabled and there is door open or closed command, the door machine will operate at this speed.	
F02.03	**Operating speed at first time power on**	0.01－15.00【7.00Hz】
	It defines the door machhine operating speed at first time power on. • Due to unknowing the door position at first time power on, when receives the run command, the door machine will operate at this speed to obtain the position.	
F02.04	**Door width self-learning speed**	0.01－15.00【7.00Hz】
	It defines the operating speed in door width self-learning process. • In order to reduce the door width error, this parameter must not be too big so as to avoid the shock when the door is in open/closed door arrived state.	
F02.05	**Door width self-learning enable**	0,1【0】
	0: Disabled. 1: Door width self-learning is enabled. Refer to 5.2.1 (page 24) for door width self-learning.	
F02.06	**Low digits of pulse count**	0－9999【780】
	The parameter saves the four low digits of pulse count obtained by door width self-learning (max: four digits).	
F02.07	**High digits of pulse count**	0－9999【0】
	The parameter saves the high digits of pulse count obtained by door width self-learning (min: four digits). • Door width calculating method: Door width= F02.07 × 10000+F02.06. • The pulse number of door width obtained by auto-learning can be changed via the panel.	

4

4.2.4 Group F03 OD Curve Parameters

Refer to Chapter 5 MONT11 Debugging (on page 23).

Note: When F02.00 = 0 (speed control), parameters of F03.04, F03.07, F03.08 are disabled.

Code	Name Description	Range【factory setting】
F03.00	**OD start distance/OD start time**	0－9999【90】
	At distance control: start distance (pulse number). At speed control: start time (unit: ms).	
F03.01	**OD start speed**	0.00－15.00【5.50Hz】
F03.02	**OD Acc time**	0.1－99.9【1.3s】
	OD Acc time is the time accelerated from zero frequency to the maximum frequency.	
F03.03	**OD speed**	0.00－F00.07【36.00Hz】
	It defines the high operating speed (frequency) during OD process.	
F03.04	**OD Dec point position**	50.0－90.0【60.0% door width】
	When the pulse number ≥F03.04×door width, the door machine will decelerate from F03.03 (OD speed) to F03.06 (creeping speed at OD ending). • The bigger F03.04 is set, the shorter Dec distance is.	
F03.05	**OD Dec time**	0.1－99.9【1.4s】
	OD Dec time is the time decelerated from maximum frequency (F00.07) to zero frequency.	
F03.06	**Creeping speed at OD ending**	0.00－15.00【4.00Hz】
	It defines the low creeping speed (frequency) of door machine during OD process.	
F03.07	**OD limit point**	80.0－99.9【95.0% door width】
	When door position pulse ＞F03.07×door width, the door machine output OD arrival signal.	
F03.08	**Re-open curve high-speed area**	10.0－90.0【90.0% door width】
	F03.08 defines the re-open curve high-speed area at re-opening. • This parameter setting may improve the re-open efficiency. **Example:** F03.08 = 70.0% and 100 - 70 = 30, which represents when the door position is in 0－30% range, it will auto accelerate to high speed at re-open, when the door position is in 30－100% range, it will auto-calculate out the run curve according to the present position at re-open.	

4.2.5 Group F04 CD Curve Parameters

Refer to Chapter 5 MONT11 Debugging (on page 23).

Note: When F02.00 = 0 (speed control), parameters of F04.04, F04.07-F04.09 are disabled.

Code	Name Description	Range【factory setting】
F04.00	**CD start distance**	0－9999【0】
	At distance control: start distance (pulse number).	
	At speed control: start time (unit: ms).	
F04.01	**CD start speed**	0.00－15.00【4.00Hz】
F04.02	**CD Acc time**	0.1－99.9【1.4s】
	CD Acc time is the time accelerated from zero frequency to the maximum frequency.	
F04.03	**CD speed**	0.00－F00.07【33.00Hz】
	It defines the high operating speed (frequency) during CD process.	
F04.04	**CD Dec point position**	50.0－90.0（door width）【62.0%】
	When the pulse number ≤(1－F04.04)×door width, the door machine will decelerate from F04.03 (CD speed) to F04.06 (creeping speed at CD ending). • The bigger F04.04 is set, the shorter Dec distance is.	
F04.05	**CD Dec time**	0.1－99.9【1.1s】
	CD Dec time is the time decelerated from maximum frequency to zero frequency.	
F04.06	**Creeping speed at CD ending**	0.00－15.00【4.50Hz】
	It defines the low creeping speed (frequency) of door machine during CD process.	
F04.07	**Door blade acting position at CD ending**	1－500【65】
	When pulse number≤F04.07 setting number, the door machine will carry out CD ending and door blade action.	
F04.08	**Door blade acting speed at CD ending**	0.00－15.00【6.00Hz】
	Defines the run speed (frequency) of door blade action position in F04.07 range during the CD process.	
F04.09	**CD limit point**	1－500【60】
	When the door position is in the CD limit point position, the door machine will output CD arrival signal.	

4

4.2.6 Group F05 Torque Parameters

Note: When F02.00 = 0 (speed control), parameter of F05.10 is disabled.

Code	Name Description	Range【factory setting】
F05.00	**OD switching torque**	20.0－F07.07【50.0%】
	In OD process, if the running pulse count reaches the product of F03.07×door width, the door machine will continue to run at low speed in the ending phase of OD. When the door has reached the limited position, the motor will be caught. When the motor catching torque≥the product of F05.00×motor's rated torque, the door will be in complete OD state and maintaining the current torque till the door reversely opens or stops.	
F05.01	**OD holding torque**	30.0－F07.07【55.0%】
	When the motor is in OD operating process, the OD position limiting function will be enabled. When the torque of catching spinning motor≥F05.00×motor rated torque, the door machine will maintain in complete OD state with the holding torque (F05.01×motor rated torque).	
F05.02	**OD end torque**	0.0－F07.07【45.0%】
F05.03	**Time from OD holding to OD end torque**	0.1－999.9【60.0s】
	Define the torque holding state in OD process. • Torque holding state: After the switching time (F05.03), the OD holding torque (F05.01) reaches the OD end torque (F05.02).	
F05.04	**CD switching torque**	20.0－F07.07【50.0%】
F05.05	**CD holding torque**	30.0－F07.07【45.0%】
F05.06	**CD end torque**	0.0－F07.07【35.0%】
F05.07	**Time from CD holding to CD end torque**	0.1－999.9【60.0s】
	Refer to F05.00－F05.03 for F05.04－F05.07.	
F05.08	**Passenger protection torque**	0.0－F07.07【50.0%】
	The setting value of F05.08 is relative to motor rated torque. The smaller the value is, the more sensitivity it is. • If set F05.08 as 0, this function is disabled. • In the CD process the CD arrival signal is output so that the CD obstruction will not be detected. • At the CD resistance, according to the Dec time of open & close resistance (F06.03) to decelerate to zero speed, then reopen again.	
F05.09	**Manufacturer debugging parameter, prohibit to change**	
F05.10	**Torque setting under slow speed**	30.0－F07.07【50.0%】
	Define the judgment of door width self-learning and torque switching value at first time powe-on. This value is relative to the percentage of motor rated torque.	
F05.11	**OD resistance torque**	0.0－F07.07【0.0%】
F05.12	**OD resistance time**	0.1－9.9【3.0s】
	The setting value of F05.11 is relative to motor rated torque. The smaller the value is, the more sensitivity it is. • If set F05.11 as 0, this function is disabled. • In the OD process the OD arrival signal is output so that the OD obstruction will not be detected. • At OD resistance, there is no response to the OD command. And after the setting time of F05.12, it will respond the OD command. • At OD resistance, if there is CD command, it will be responded immediately.	

4.2.7 Group F06 Advanced Parameters

Note: When F02.00 = 0 (speed control), parameters of F06.01 and F06.02 are disabled.

Code	Name Description	Range【factory setting】
F06.00	**DOA, DCA, DPA output selection**	**0,1【0】**
	0: The signal is open which represents the OD/CD arrival and door position output (equal to the relay normally closed contact).	
	1: The signal is closed which represents the OD/CD arrival and door position output (equal to the relay normally open contact).	
F06.01	**DPA function selection**	**0,1【0】**
	0: Door position output.	
	1: The re-open signal is output at the CD resistance.	
	• Set F06.01=1, the re-open signal is valid. When the CD resistance signal is enabled, the re-open signal is started to be output. When the re-open arrives, the re-open signal will stop being output.	
F06.02	**Door position output setting**	**0.1－99.9【90.0%】**
	When the door position is excess to this function setting value, the door position output signal (DPA) is enabled.	
	• Only when set F06.01 as 0 (door position output), can this function be enabled.	
F06.03	**Dec time of open & close resistance**	**0.1－2.0【0.5s】**
	This function parameter defines the Dec time from the present CD speed decelerating to zero speed when the CD resistance occurs.	
	• If the setting is too small, it will result in door shaking when decelerates; If the setting is too big, it will result in too slow decelerating speed.	
F06.04	**Open & close holding time on demo mode**	**0.1－360.0【3.0s】**
	Defines the holding time of OD or CD arrival on the demo mode (F00.06 = 2).	
F06.05	**Mode selection on open & close invalidation**	**0－2【2】**
	0: Holding the torque at the OD&CD arrival range, but zero-speed running at other position.	
	1: Stop running.	
	2: Only holding the torque at the OD&CD arrival range.	
F06.06	**Manufacturer debugging parameter, prohibit to change**	

4

4.2.8 Group F07 Vector Control Parameters

Code	Name Description	Range【factory setting】
F07.00	**High speed ASR KP**	**10－3000【500】**
F07.01	**High speed ASR KI**	**0－1000【100】**
F07.02	**Low speed ASR KP**	**10－3000【500】**
F07.03	**Low speed ASR KI**	**0－1000【100】**
F07.04	**ASR switching frequency**	**0.00－99.99【8.00Hz】**
	The parameters of F07.00－F07.04 comfirm the PID parameters of ASR. The structure of ASR is shown in figure. • The system's response can be expedited through increasing the KP (F07.00, F07.02), but oscillation may occur if the value of KP is too high. • The system's response can be expedited through increasing the KI (F07.01, F07.03), but oscillation and high overshoot happen easily if value of KI is too high. • If set KI as 0 and the integral function is disabled, the speed-loop works only as a proportional regulator. • Generally, the KP should be adjusted firstly to the maximum on condition that the system does not vibrate, and then the KI should be adjusted to shorten the response time without overshoot. • It need increase KP and decrease KI, on condition that shorter dynamic response time is required during low frequency operation.	
F07.05	**Current loop KP**	**10－9999【100】**
F07.06	**Current loop KI**	**0－9999【800】**
	F07.05 and F07.06 define the PI regulator parameters of current loop. • It can expedite the system's response to the output torque through increasing the KP or KI of current loop; and improve the system's stability through decreasing KP or KI. • If KP or KI of current loop is too big, the system is easy to occur oscillation; if KP or KI is too small, the system's output torque capacity will be influenced. **Note: For most places, it does not need to adjust the PI parameters of current loop and users are advised to carefully change this parameters.**	
F07.07	**Torque limit**	**0.0－200.0【120.0%】**
	Defines the limit torque current of MONT11 output. The setting value is relative to the percentage of motor rated current (F01.02).	
F07.08	**Speed filter time constant**	**0－7【2】**
	It is used to filter the output of ASR regulator. • When F07.08 = 0, the speed-loop filter is disabled.	

4.2.9　Group F08 Motor Auto-tune Parameters

Note: When F02.00 = 0 (speed control), parameter of F08.12 is disabled. When F02.00 = 1 (distance control), parameter of F08.13 is disabled

Code	Name　Description	Range【factory setting】
F08.00	**Stator resistance**	0.00－99.99Ω【depend on model】
F08.01	**Rotor resistance**	0.00－99.99Ω【depend on model】
F08.02	**Stator inductance**	0－9999mH【depend on model】
F08.03	**Rotor inductance**	0－9999mH【depend on model】
F08.04	**Mutual inductance**	0－9999mH【depend on model】
F08.05	**Slip compensation gain**	50.0－200.0【100.0%】
F08.06	**Curve selection**	0,1【0】
	0: Line. 1: S curve.	
F08.07	**LCD contrast**	1－10【0】
	To select LCD display contrast.	
F08.08	**LCD screen color**	0,1【0】
	0: White background (normal). 1: Black background (anti).	
F08.09	**LCD language**	0,1【0】
	0: Chinese. 1: English.	
F08.10	**Manufacturer debugging parameter, prohibit to change**	
F08.11	**CD door blade closed speed**	0.00－5.00【0.00Hz】
F08.12	**CD door blade closed speed position**	0－500【0】
F08.13	**X1－X4 normally open/closed selection in speed control**	0,1【0】
	0: Normally open. 1: Normally closed.	
F08.14	**Manufacturer debugging parameter, prohibit to change**	

4

4.2.10   Group F09 Diagnostics Parameters

Code	Name Description	Range【factory setting】
F09.00	NO.3 fault type (last fault)	【actual value】
F09.01	NO.2 fault type	
F09.02	NO.1 fault type	
F09.03	DC bus voltage for last fault	
F09.04	Output current for last fault	
F09.05	Running frequency for last fault	
F09.06	Door position for last fault	
F09.07	Open-close cycle lower value	
F09.08	Open-close cycle upper value	
F09.09	Running hour	
F09.10	Running day	
F09.11	Manufacturer debugging parameter, prohibit to change	
F09.12	Controller software version	
F09.13	Panel software version	
	Fault types: E0001: Controller overvoltage. E0002: Controller hardware overcurrent. E0003: Controller software overcurrent. E0006: Motor parameter auto-tuning fault. E0007: Controller overloaded. E0014: Controller EEPROM faulty. E0017: Module faulty. E0018: Current detect faulty. E0022: Panel EEPROM faulty. E0023: Encoder error. E0026: Door width self-learning failure. -Lu-: Undervoltage.	

4.3 Group y Manufacturer Function Parameters

The Group y is the manufacturer parameters group for debugging at the factory before delivery.

Chapter 5 MONT11 Debugging

5.1 Motor Parameter Auto-tuning Description

MONT11 uses the high performance vector control technology to control the door motor to run. It need do the motor parameter auto-tuning before operating the motor to obtain correct motor parameters, therefore achieve good control effect.

1. Firstly set F00.06 as 0 (panel control) or 2 (auto demo run).

2. Secondly set F00.09 as 0 (open-loop distance control) or 1 (closed-loop distance control).

3. Thirdly unload the belt and the load. According to the motor nameplate set F01.00 (motor rated power), F01.01 (motor rated voltage), F01.02 (motor rated current), F01.03 (motor rated frequency), F01.04 (motor rated Rpm), F01.05 (Dec ratio).

4. Finally set F01.06 as 1 (motor parameter auto-tuning), press **RUN** key or **JOG** key to start parameter auto-tuning and the panel displays the "tunE". When this is over, the motor parameters will be auto stored and F01.06 will auto reset as 0.

Observe the rotation direction of motor shaft. If rotate toward the CD direction and after finish the auto-tuning, you should change any two phases of the connections between MONT11 and motor. The motor parameter auto-tuning is not needed again.

Note:

1. It must unload the belt when do the asynchronous motor parameter auto-tuning.
2. When motor parameter is auto-tuning, if the panel displays fault, you should press **STOP** key to reset.

5

5.2 Distance Control

In the distance control mode, the encoder and the encoder's gear are needed to detect the door's position.

The main debugging steps:

1. Door width self-learning.

2. Set the OD/CD curve parameters.

3. According to the actual needs of elevator main control cabinet, make sure the door arrival signal (F06.00) (F06.00 = 0 is relay normally closed, F06.00=1 is relay normally open, which is defaulted normally closed).

4. Enter into elevator operation, set F00.06 as 1 (terminal control mode).

5.2.1   Door Width Self-learning

The door width of door machine is the basis of distance control, open/closed door running curve adjustment and open/closed door arrived judgment. The door width accurately to be obtained is the guarantee which is the premise to realize the normal distance control.

Set the door width self-learning

1. Firstly set F00.05 as 1 (door control mode).

2. Secondly set F00.06 as 0 (panel control) or 2 (auto demo run).

3. Finally set F02.05 as 1 (door width self-learning is enabled), press **RUN** key or **JOG** key to start self-learning. When it is finished, F02.05 will be reset as 0. If something abnormal occur in the process, press **STOP** key to stop door width self-learning.

Normal running process of self-learning

1. Firstly open door, open door arrived then enter 2.

2. Secondly closed door, closed door arrived then enter 3.

3. Thirdly open door, open door arrived then enter 4. In OD process, the pulse will increase.

4. Fourthly closed door, closed door arrived then it is over. In CD process, the pulse will decrease.

Countermeasures of abnormal problem of door width self-learning:

1. Send out the door width self-learning command, the first running direction is CD.

Take measure: Stop running and change any two phases of the connections between MONT11 and motor.

2. During self-learning process check the OD/CD pulse signal, OD pulse numbers decrease and CD pulse numbers increase.

Take measure: Change the setting value of F02.01 (encoder direction).

3. During self-learning process, it alarms E0026 fault (door width self-learning failure).

Take measure: Check the encoder signal. For the heavy duty door, please properly increase the value of F05.10 (self-learning torque).

4. In asynchronous motor self-learning process, the door machine just shakes then stops.

Possible reason: The setting error of F02.00 (encoder pulse number), F02.01 (encoder direction) and F01.05 (Dec ratio).

5.2.2 OD Operation in Distance Control

The well-run door effect is the passenger protection of premise good comfort. The operation curve requirement of elevator is rapid and smooth during open process.

A full itinerary OD curve has four stages: OD start, OD high-speed run, OD creep and OD holding. According to the Figure 5-1 we can set reasonable parameters to achieve the desired OD effect.
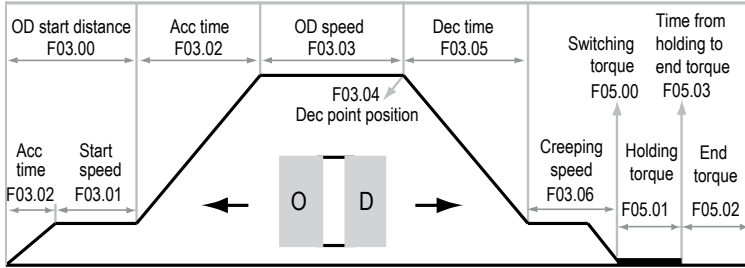

Figure 5-1   Relationship of OD curve and curve parameters

OD start: From closed state to the OD startup, the door blade needs action. You need use a lower speed (F03.01) to close the door blade in order not to damage it. After the startup state ends, it will accelerate to high-speed for OD.

If MONT11 receives OD command and the door position is exceeded the OD start distance (F03.00) and the door blade has closed at the moment, the open door process will be no longer from startup but directly accelerate from zero-speed to OD speed (F03.03). Just as Figure 5-2.

Figure 5-2   Optimum OD startup curve

OD high-speed run： After OD startup ends, OD will accelerate from start speed (F03.01) to OD speed (F03.04) The run speed will not decelerate to creeping speed (F03.06) until it runs to Dec point (F03.04).

OD creep: To prevent door and other mechanical equipment from collision damage caused by high-speed, before OD position arrives, door should slow down to creeping speed (F03.06).

OD holding: After door creeps through the OD limit point (F03.07), it will output the OD arrival signal. When door torque＞OD switching torque (F05.00), it will switch to OD torque holding state.

After some time the door is in the fully open state, then switch to a small torque holding state, which can save energy and prevent motor heating, therefore ensure that the door has certain open tension.

5.2.3 CD Operation in Distance Control

A full itinerary CD curve has five stages: CD start, CD high-speed run, CD creep, door blade action and CD holding. According to the Figure 5-3 we can set reasonable parameters to achieve the desired CD effect.
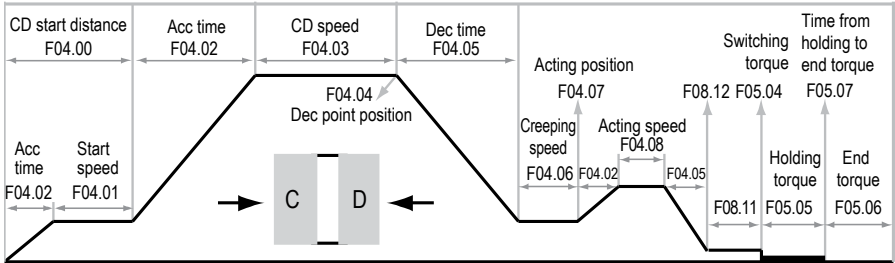
Figure 5-3   Relationship of CD curve and curve parameters

CD start: The CD starts to run at start speed (F04.01).

In order to improve the CD efficiency, generally cancel the startup state and directly accelerates to the CD speed (F04.03) to enter into high-speed run state. Just as Figure 5-4.
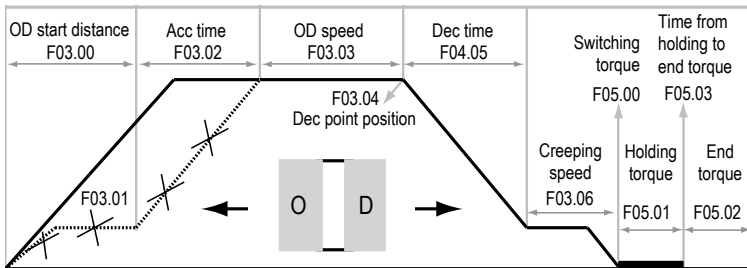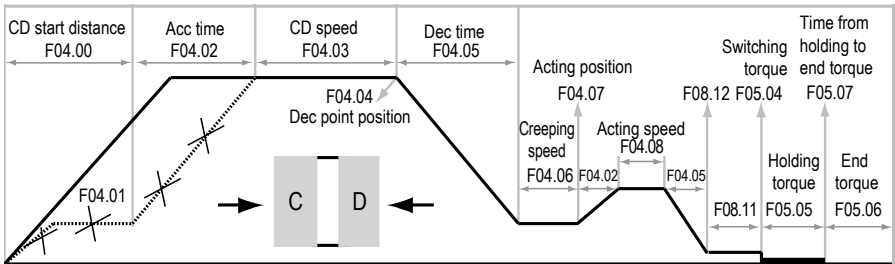

Figure 5-4   Optimum CD startup curve

CD high-speed run: After CD startup ends, CD will accelerate from CD start speed (F04.01) to CD speed (F04.03). The run speed will not decelerate to creeping speed (F04.06) until it run to Dec point (F04.04).

CD creep: Before CD position arrives, to prevent door board and door blade from collision damage caused by high speed, the door should slow down to creeping speed to run.

Door blade action: From CD process to two door boards close state, a short time relative higher than creeping speed (F04.08) is needed to achieve door blade action safe and reliable as soon as possible, while it can improve the CD efficiency.

At the door blade action end, to prevent door crash because of high-speed, you can set a relative low speed via F08.11 and this speed range in pulses of F08.12 is valid.

CD holding: After door creeps through the CD limit point (F04.09), it will output CD arrival signal. When CD torque＞switching torque (F05.04), it will switch to CD torque holding state.

After CD holds for some time, the door has been in the fully close state. Then switch to a small torque holding state, which can prevent motor heating and save energy, therefore ensure that the door has certain closed tension.

5.3 Speed Control

In speed control mode, the encoder and the encoder's gear are not needed, but the four switches are needed to control the speed control.

The main debugging steps:

1. Respectively connect the OD arrival signal, the OD speed decrease signal, the CD arrival signal, the CD speed decrease signal to X1－X4 terminals, and then connect the common point to the COM, finally connect to MONT11 power supply.

2. Switch the display state of panel to the input terminal state (d01.08).

3. Manually slow pull the door from CD arrival to OD arrival position. In the normal situation, d01.08 has two variable laws:

- First: C0→80→00→20→30, it can do the OD/CD operation.
- Second: 30→70→F0→D0→C0, it need set parameter of F08.13 as 1 (speed control X1－X4 normally closed), and then do the OD/CD operation.

Note:

If the variation of display signal is abnormal (order is not consistent or lack of signal), the photoelectric switch installation corresponding to the abnormal signal and the connection between photoelectric switch and MONT11 should be check. If no fault, operate the step 2 and step 3 again.

4. According to the actual needs of elevator main control cabinet, make sure the door arrival signal (F06.00) (F06.00 = 0 is relay normally closed, F06.00=1 is relay normally open, which is defaulted normally closed).

5. Enter elevator running, set F00.06 as 1 (terminal control mode).

5

5.3.1   OD Operation in Speed Control

Correctly set the parameters in Group F03 and Group F05 related to speed control, define the speed decrease contacts (F03.04) and position limiting signal (F03.07) accurately. The OD operation curve is shown as Figure 5-5.

Figure 5-5   OD operation curve in speed control

OD process description of speed control:

1. When the OD command is active, the door machine will start at OD start speed (F03.01), and then operate at constant speed in low-speed section.

2. Timing begins when OD starts. When the timing arrives to the OD start time (F03.00) of speed control, the door machine accelerates at OD Acc time (F03.02) until the speed arrives to the OD speed (F03.03), and then operates at high speed after the acceleration.

3. When the OD speed decrease signal is active, the door machine decelerates at the OD Dec time (F03.05) until the speed arrives to the creeping speed at OD ending (F03.06), and then operates at constant ending speed in low-speed section after the deceleration.

4. When OD position limiting signal is active, the door machine continues to run at F03.06 and judges the output torque. If the output torque ⩾ switching torque (F05.00), the door machine will enter the OD torque holding state and the holding torque value will be set by F05.02, ending the whole OD process.

5. When OD command is invalid, according to the F06.05 (mode selection on open & close invalidation) the OD torque will judge the action.

5.3.2 CD Operation in Speed Control

Correctly set the parameters in Group F04 and Group F05 related to speed control, define the speed decrease contacts (F04.04) and position limiting signal (F04.07) accurately. The CD operation curve is shown as Figure 5-6.
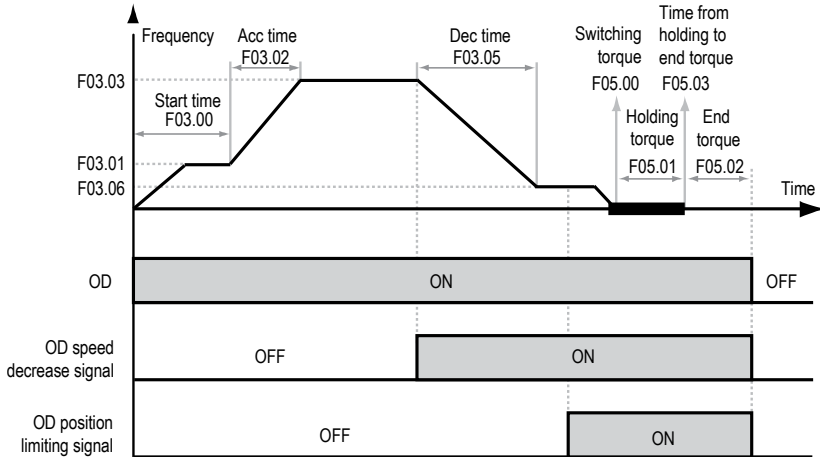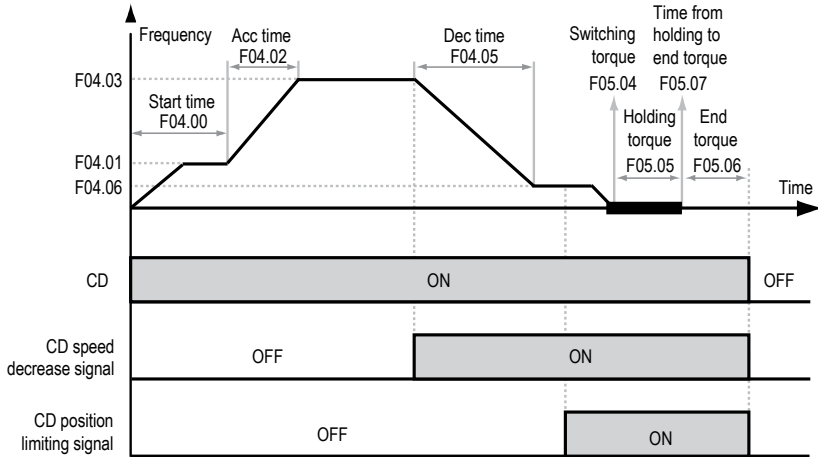

Figure 5-6   CD operation curve in speed control

CD process description of speed control:

1. When the CD command is active, the door machine will start at CD start speed (F04.01), and then operate at constant speed in low-speed section.

2. Timing begins when CD starts. When the timing arrives to the CD start time (F04.00) of speed control, the door machine accelerates at CD Acc time (F04.02) until the speed arrives to the CD speed (F04.03), and then operates at high speed after the acceleration.

3. When the CD speed decrease signal is active, the door machine decelerates at the CD Dec time (F04.05) until the speed arrives to the creeping speed at CD ending (F04.06), and then operates at constant ending speed in low-speed section after the deceleration.

4. When CD position limiting signal is active, the door machine continues to run at F04.06 and judges the output torque. If the output torque $\geqslant$ switching torque (F05.04), the door machine will enter the CD torque holding state and the holding torque value will be set by F05.06, ending the whole OD process.

5. When CD command is invalid, according to the F06.05 (mode selection on open & close invalidation) the CD torque will judge the action.

Chapter 6 Panel Accessory

It can use the optional LED panel (HD-LED) to debug MONT11. Refer to the follows.

6.1 Panel Description

The MONT11 may installs with LED panel (HD-LED) which is shown as Figure 6-1.
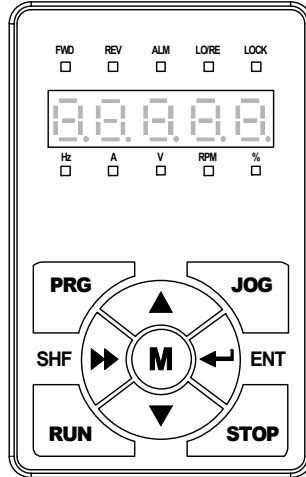
Figure 6-1   Panel of MONT11

There are keys on the panel and their functions, as shown in Table 6-1.

Table 6-1   Key function description

Key	Name	Function
PRG	Programmable or exit	Entry or exit programming key
RUN	OD key	OD running command
JOG	CD key	CD running command
STOP	Stop/reset key	To stop running; and to manually reset the fault
M	Multi-function key	Reserved
↵	ENT enter/confirm key	Confirm saving the data
▶▶	SHF shift key	Selecting display parameter and shift bit
▲	Increment key	Increase value or parameter
▼	Decrement key	Decrease value or parameter

6

The LED panel has 5-digit LED digital tubes and the meanings are shown as Table 6-2.

Table 6-2　Digital tube display description

LED display	Meaning	LED display	Meaning	LED display	Meaning	LED display	Meaning
	0		A		J		U
	1		b		L		u
	2		C		n		y
	3		c		o		—
	4		d		P		Point
	5		E		q		All display
	6		F		r		No display
	7		H		S		Flash Changeable
	8		h		T		
	9		i		t		

The LED panel has 5 state and 5 unit indicators and their meanings are shown as Table 6-3.

Table 6-3　Indicator description

Identification	Name	Description
FWD	OD run state indicator (SI)	■：The present MONT11 is in OD state ▨：The present MONT11 is in stop state
REV	CD run SI	■：The present MONT11 is in CD state
ALM	Warning SI	■：The present MONT11 is faulty
LO/RE	Auto run SI	■：The present MONT11 is in terminal control mode
LOCK	Password lock SI	■：The present MONT11 password is enabled
Hz	Freq. unit indicator (UI)	■：The preset unit is Hz ▨：The output frequency state display in running state
A	Current UI	■：The present unit is A
V	Voltage UI	■：The present unit is V
RPM	Rpm UI	■：The present unit is rpm
%	Percentage UI	■：The present unit is %

The indicator has off/on and flash 3 states. In the manual the identification is as follows:

□ The indicator is off; ■ The indicator is on; ▨ The indicator is flashing.

6.2 Display State

The LED panel can display the parameters at stopping, running, editing and alarming.

Parameter display state at stopping

When MONT11 stops running, the panel will display stopping state and its parameter, as shown in Figure 6-2.

By pressing ▶▶ key to display other parameters: d01.00 (door position pulse), d01.01 (OD/CD arrival signal: OD/CD pulse arrival, OD/CD torque arrival), d01.02 (setting frequency), d01.07 (DC bus voltage) and d01.08 (input terminal state).
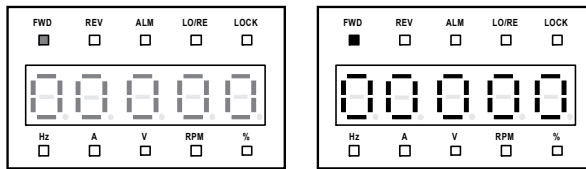
Display state of stopping parameters   Display state of running parameters

Figure 6-2   Display state of the panel

Parameter display state at running

When MONT11 is running, the panel will display running state and its parameter, as shown in Figure 6-2.

By pressing ▶▶ key to display other parameters: d01.00 (door position pulse), d01.01 (OD/CD arrival signal: OD/CD pulse arrival, OD/CD torque arrival), d01.02 (setting frequency), d01.03 (output frequency), d01.04 (output voltage), d01.05 (output current), d01.06 (output torque), d01.07 (DC bus voltage) and d01.08 (input terminal state).

Fault alarming state

If MONT11 is faulty, the panel will be flashing to display the fault code. After troubleshooting, press **STOP** key to reset and the panel restores to stop state. Refer to Chapter 7 Troubleshooting (page 39) for the display content.

6

Parameters editing state

At stop, run or fault alarm state, press **PRG** to enter function parameter editing state.

The panel uses four-level menu configuration for parameter setting or other operations. As follows:

Mode setting (first-level menu)→function parameter group setting (second-level menu)→function parameter setting (third-level menu)→parameter setting (fourth-level menu).

The operation process is shown in Figure 6-3 and the description of the keys is shown in.Table 6-4.
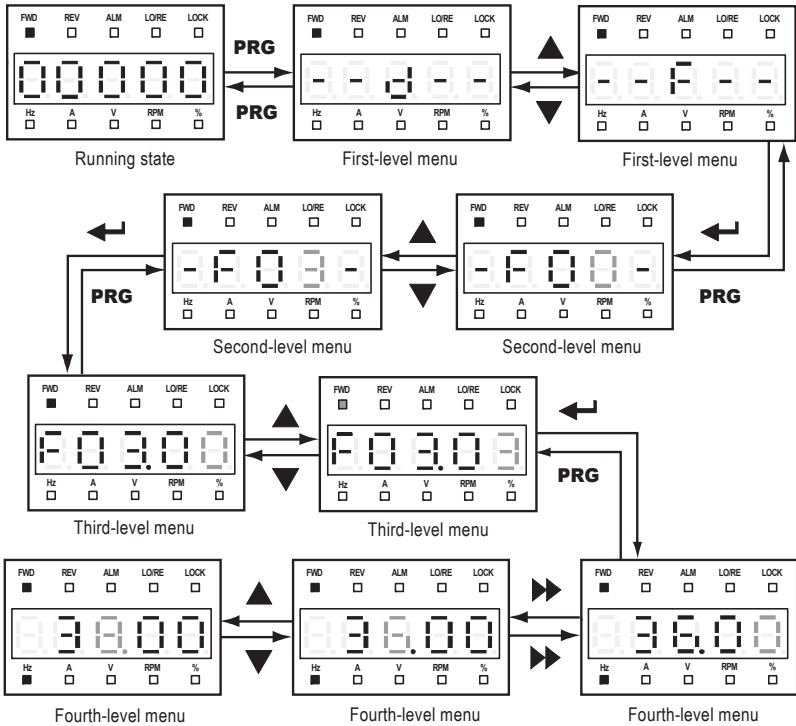
Figure 6-3   Parameter editing state

Table 6-4   Switching description of the keys

Key	First-level menu	Second-level menu	Third-level menu	Fourth-level menu
PRG	Fault, return to faulty display; Fault cleared, return to run or stop state display.	Return to first-level menu	Return to second-level menu	Do not save the present value and return to third-level menu
←	Enter to second-level menu	Enter to third-level menu	Enter to fourth-level menu	Save the present value and return to third-level menu
▲	Select function group	Modify No. function. Increase by 1 when press this key one time	Modify the internal No. of function group. Increase by 1 according to the present modified bit	Modify function value. Increase by 1 according to the present modified bit
▼	Select function group	Modify No. function. Decrease by 1 when press this key one time	Modify the internal No. of function group. Decrease by 1 according to the present modified bit	Modify function value. Decrease by 1 according to the present modified bit
▶▶	Invalid	Invalid	Switch GSunits and tens	Switch units, thousands, hundreds, tens

In the setting fourth-level menu situation, if the parameter is not flashing to display, it indicates that this parameter can't be modified. The possible reasons are as follows:

- The function parameter can't be modified, such as the actual detected parameters or recorded parameters etc.
- Only when in stopping state can it modify the function parameter.
- Only input the correct password can it edit the function parameter due to the valid password.

6

6.3 Panel self-testing

The panel of MONT11 has self-testing function which facilitates periodic inspection for itself and the keys.

The process of panel self-testing:

1. In stopping state, press ▶▶ key and ◀┘ key simultaneously for 2－3 seconds, the 5 LED will cyclically display "8." from left to right in turn for three times which is as shown in Figure 6-4. Later, the indicator will be cyclically bit by bit clockwise lighting from the first upper left for three times.
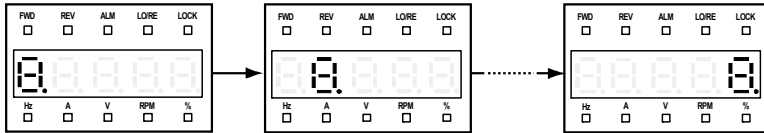
Figure 6-4   Starting panel self-testing

2. Press any key of the panel and observe the LED and the state indicators to detect the corresponding key whether valid. And the correct correspondence is as shown in Figure 6-5.

During this process, if there is no press in 4－5 seconds, it will directly jump to the step 4. If the self-check is success, it will jump to the step 3.
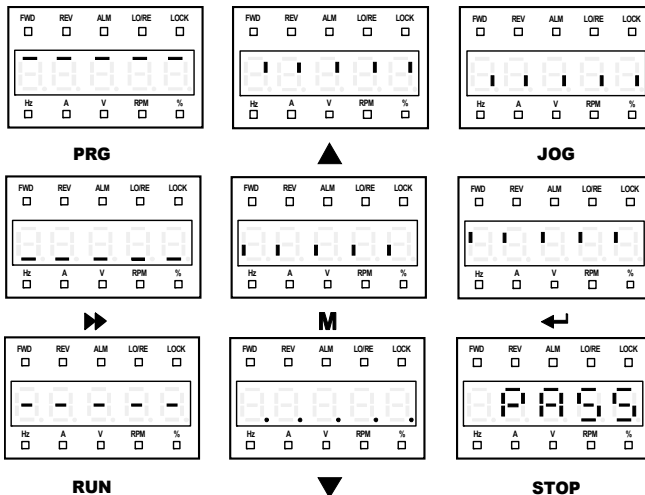
Figure 6-5   Correct correspondence of the keys and the displays

3. If the self-testing is success, the panel will display "PASS" and all keys are valid. The "PASS" will auto-disappear 3－5 seconds later and back to display state before self-testing.

4. If the self-testing is failure, the panel will display "FAiL". The "FAiL" will auto-disappear 3－5 seconds later and back to display state before self-testing.

The possible reasons of self-testing failure: no press within 5s or invalid key.

6.4 Reset Parameter and Clear Fault Information

Reset default parameter

After set F00.01=1, the parameter value of F00－F08 will be reset to the default parameter.

At reset default parameter, the panel display as Figure 6-6.
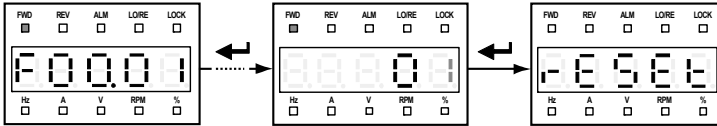
Figure 6-6　Reset default parameter

Clear fault information

After set F00.01=2, the fault information of F09.00－F09.06 will be cleared.

6.5 Parameter Uploaded and Downloaded

Parameter uploaded

For example: upload the present MONT11 parameters to the panel group 1.

Set F00.02=1, the panel displays "UPLd", shown as Figure 6-7. When the parameters are completed the upload, it will enter stop state.
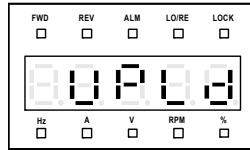
Uploading parameters

Figure 6-7　Display the parameter upload

Parameter downloaded

For example: download panel group 2 parameters to the present MONT11.

Set F00.03=2, the panel displays "dnLd", shown as Figure 6-8. When the parameters are completed the download, it will enter stop state.
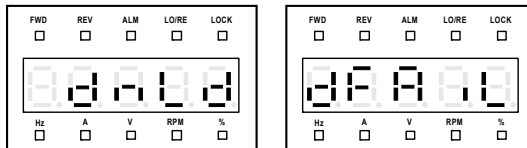
Downloading parameters　　　　　　　Download parameters failure

Figure 6-8　Display the parameter download

Note:

1. Before download parameters, this group should have been uploaded parameters.

2. If displays "dFAiL" at downloading parameters, which means that parameters of panel and function parameters of present MONT11 do not match, firstly you should correctly upload the parameter, then you can download.

Chapter 7 Troubleshooting

When fault alarm occurs, please take proper action according to the Table 7-1.

Table 7-1   Fault alarm description and counter-measures

Fault code	Fault name	Possible reasons of fault	Counter-measures
-Lu-	DC bus undervoltage	• At the beginning of power on and at the end of power off • Input voltage is too low • Improper wiring leads to undervoltage of hardware	• It is normal state of power on and power off • Please check input power voltage • Please check wiring and wire properly
E0001	DC bus overvoltage	• Input voltage is too high • Deceleartion time is too short • Improper wiring leads to overvoltage of hardware	• Please check power input • Please set a proper value for Dec time (F03.05, F04.05) • Please check wiring and wire properly
E0002	Controller output instantaneous overcurrent (hardware)	• Improper connection between controller and motor • Improper motor parameters • The encoder signal error	• Connect the controller and motor properly • Please set correct motor parameters (F01.00－F01.04) • To ensure correct encoder signal, check the encoder connection • Please check system wiring and wire properly • Please set proper Acc time (F03.02, F04.02) and Dec time (F03.05, F04.05)
E0003	Controller output overcurrent (software)	• Improper wiring leads to overcurrent of hardware • Acceleration/deceleration time is too short	
E0006	Motor parameter auto-tuning fault	• Motor rated parameters improperly set • Motor incorrect connection	• Set proper motor parameters (F01.00－F01.04) • Please check the motor's connection
E0007	Controller overloaded	• The load is too big • There are obstacles in door machine	• Regulate the mechanical • Check machinery, to exclude obstacles
E0014	Controller EEPROM faulty	• Memory circuit fault of controller EEPROM	• Please contact the supplier for repairing
E0017	Module faulty	• Short circuit between phases output or the ground • Short circuit for the ground • Output current is too high	• Please check the connection and connect the wire properly • Please check the connection and connect the wire properly • Please check the connection and mechanism

7

Fault code	Fault name	Possible reasons of fault	Counter-measures
E0018	Current detect faulty	• Current detection circuit is damaged	• Please contact the supplier for repairing
E0022	Panel EEPROM faulty	• Memory circuit fault of panel EEPROM	• Replace the panel • Please contact the supplier for repairing
E0023	Encoder error	• The damaged encoder • The wrong connection of encoder • Wrong setting of encoder pulse number per revolution	• Check the encoder, replace it • Check the encoder connection and wire correctly • Please set correct value of pulse number per revolution (F02.00)
E0026	Door width self-learning failure	• The faulty encoder • The wrong connection of encoder • Improper setting self-learning parameters of speed or torque	• Check the encoder, replace it • Check the encoder connection and wire correctly • Please set correct value of self-learning speed (F02.04) and self-learning torque (F05.10)

Chapter 8 Maintenance

<table>
<tr><td align="center">⚡
Danger</td></tr>
<tr><td>
• Only a trained and qualified professional person can maintain the MONT11.
• Maintenance personnel should take off all metal jewellery before carrying out maintenance or internal measurements in MONT11. Suitable clothes and tools must be used.
• High voltage exists when the MONT11 is powered up or running.
• Checking and maintaining can only be done after MONT11's AC power is cut off. And wait for at least 10 minutes if maintain the cover.
</td></tr>
</table>

<table>
<tr><td align="center">⚠
Warning</td></tr>
<tr><td>
• For the MONT11 stored for more than 2 years, please use voltage regulator to increase the input voltage gradually.
• Do not leave metal parts like screws or pads inside the MONT11.
• Do not make modification on the inside of MONT11 without instruction from the supplier.
• There are IC components inside the MONT11, which are sensitive to static electricity. Directly touch the components on the PCB board is forbidden.
</td></tr>
</table>

8.1 Daily Maintenance

Some unexpected accidents may occur during operation. Therefore you should maintain MONT11 conditions according to the Table 8-1, record the operation data, and investigate problems immediately.

Table 8-1　Daily checking items

Items	Content	Criteria
Operating environment	Temperature and humidity	-10－+40℃, derating at 40－50℃
	Dust and water dripping	No water dripping
	Gas	No strange smell
MONT11	Oscillation and heating	Stable oscillation and proper temperature
	Noise	No abnormal sound

8

8.2 Periodical Maintenance

Customer should check MONT11 in short time or every 3 to 6 months according to the actual environment so as to avoid hidden problems and make sure the MONT11 runs well for a long time.

General Inspection:

- Check whether the screws of control terminals are loose. If so, tighten them with a screw driver;
- Check whether the main circuit terminals are properly connected; whether the mains cables are over heated;
- Check whether the power cables and control cables are damaged, especially check for any wear on the cable tube;
- Check whether the insulating tapes around the cable lugs are stripped, and for signs of overheating near terminations;

Note:

1. Dielectric strength test of MONT11 has already been conducted in the factory. Do not do the test again. Otherwise, the MONT11 might be damaged.
2. If insulation test to MONT11 is necessary, it must be done to the ground after all input/output terminals are short-connected by conductors. It is forbidden for each terminal to ground test. It is recommended to use the 500V megger.
3. For MONT11 stored for a long time, must be powered up every 2 years. When supplying AC power to MONT11, use a voltage regulator to gradually raise the input voltage to rated input voltage at least 5 hours.

8.3 Replacing Damaged Parts

The easily damaged component is the electrolytic capacitors of filters.

Generally, the life of electrolytic capacitor is $40,000-50,000$ hours. Due to high ambient temperature and large pulse current induced by rapid changing loads, the electrolyte capacitors are aging.

Criteria: Check if frequent overcurrent or overvoltage failures occur during MONT11 start-up with load. Check if there is any leakage of liquids. Check if the safety valve protrudes. Measure the static capacitance and insulation resistance.

8.4 Unwanted MONT11 Recycling

When disposing MONT11, please pay attention to the following factors:

The capacitors may explode if they are burnt.

Poisonous gas may be generated when the plastic parts like front covers are burnt.

Disposing method: Please dispose unwanted MONT11 as industrial waste.

Appendix A Parameters

Attributes are changed:

"*": It denotes that the value of this parameter is the actual value which cannot be modified.

"×": It denotes that the setting parameter cannot be modified in run state.

"○": It denotes that the setting parameter can be modified in run state.

About the Name:

"Manufacturer debugging parameter", it denotes that parameter is prohibited to change.

Note:

1. When F02.00 = 0 (speed control), the following parameters or settings are disabled:
   F02.01－F02.07、F03.04、F03.07、F03.08、F04.04、F04.07－F04.09、F05.10、F06.01 = 0、
   F06.02、F08.12.

2. When F02.00 = 1 (distance control), the following parameter is disabled: F08.13.

Code	Name	Range	Default	Attributes	Setting
Group d00 State Display Parameter (on pages 11)					
d00.00	Controller series	MONT11 asynchronous elevator door controller	T11	*	
d00.01	Rated power	200－400W	400W	*	
d00.02	Rated current	0.01－9.99A	2.2A	*	
d00.03	Control board software version	1.00－9.99	Actual value	*	
d00.04	Special software version of control board	1.00－9.99	Actual value	*	
d00.05	Panel software version	1.00－9.99	Actual value	*	
Group d01 State Display Parameter 2 (on pages 11－12)					
d01.00	Door position pulse	0－Max door width	Actual value	*	
d01.01	Open/closed-door arrival signal	The digital tube display from right to left followed by: OD pulse arrival, CD pulse arrival, OD torque arrival, CD torque arrival 0: No arrival 1: Arrival	Actual value	*	
d01.02	Setting frequency	0.00－99.99Hz	Actual value	*	
d01.03	Output frequency	0.00－99.99Hz	Actual value	*	
d01.04	Output voltage	0－999V	Actual value	*	
d01.05	Output current	0.00－9.99A	Actual value	*	
d01.06	Output torque	0.0－200.0%	Actual value	*	
d01.07	DC bus voltage	0－999V	Actual value	*	
d01.08	Input terminal state	Bit7－Bit4 corrosponds to X4－X1 Bit1－Bit0 corrosponds to CD, OD 0: The input terminal and the common terminal are disconnected 1: The input terminal and the common	Actual value	*	

A

Code	Name	Range	Default	Attributes	Setting
		terminal are connected			
Group F00 Basic Parameters (on pages 12－14)					
F00.00	User password	00000－65535	00000	○	
F00.01	Parameter batch disposal	00: No function. It need manually set the parameter 01: Reset parameter 02: Clear fault information 03－30: Reserved	00	×	
F00.02	Parameter upload number	0－2	0	×	
F00.03	Parameter download number	0－2	0	×	
F00.04	Manufacturer debugging parameter			○	
F00.05	Mode selection	0: Factory mode (door machine specific function is invalid) 1: Door control mode	1	×	
F00.06	Control command selection	0: Panel control 1: Terminal control (auto) 2: Auto-demo run	0	×	
F00.07	Maximum output frequency	1.00－99.99Hz	50.00Hz	×	
F00.08	Manufacturer debugging parameter				
F00.09	Control mode	0: Asychoronous motor open-loop distance control 1: Asychoronous motor closed-loop distance control	0	×	
Group F01 Motor Rated Parameters (on pages 14)					
F01.00	Motor rated power	1－750W	250W	×	
F01.01	Motor rated voltage	1－300V	220V	×	
F01.02	Motor rated current	0.10－10.00A	0.55A	×	
F01.03	Motor rated frequency	1.00－99.99Hz	50.00Hz	×	
F01.04	Motor rated Rpm	1－6000rpm	900rpm	×	
F01.05	Deceleration ratio	1.00－9.99	4.67	×	
F01.06	Motor parameter auto-tuning	0: No action 1: Motor auto-tuning	0	×	
F01.07	No load current	0.01－10.00A	0.36A	×	
F01.08	Manufacturer debugging parameter				
F01.09	Manufacturer debugging parameter				
Group F02 Encoder Door Width Parameters (on pages 14－16)					
F02.00	Encoder pulse number per revolution	0－9999	200	×	
F02.01	Encoder direction setting	0: The same direction as the encoder actual connection	1	×	

Code	Name	Range	Default	Attributes	Setting
		1: The reverse direction to the encoder actual connection			
F02.02	Operating speed of slow speed	0.01－15.00Hz	7.00Hz	○	
F02.03	Operating speed at first time power on	0.01－15.00Hz	7.00Hz	○	
F02.04	Door width self-learning speed	0.01－15.00Hz	7.00Hz	○	
F02.05	Door width self-learning enable	0: Disabled 1: Door width self-learning is enabled	0	×	
F02.06	Low digits of pulse count	0－9999 (pulse number)	780	×	
F02.07	High digits of pulse count	0－9999 (pulse number)	0	×	
Group F03 OD Curve Parameters (on pages 16)					
F03.00	OD start distance/ OD start time	0－9999 At distance control: start distance (pulse number) At speed control: start time (unit: ms)	90	○	
F03.01	OD start speed	0.00－15.00Hz	5.50Hz	○	
F03.02	OD Acc time	0.1－99.9s	1.3s	○	
F03.03	OD speed	0.00－F00.07	36.00Hz	○	
F03.04	OD Dec point position	50.0－90.0% (door width)	65.0%	○	
F03.05	OD Dec time	0.1－99.9s	1.4s	○	
F03.06	Creeping speed at OD ending	0.00－15.00Hz	4.00Hz	○	
F03.07	OD limit point	80.0－99.9% (door width)	95.0%	○	
F03.08	Re-open curve high-speed area	10.0－90.0% (door width)	90.0%	○	
Group F04 CD Curve Parameters (on pages 17)					
F04.00	CD start distance/ CD start time	0－9999 (pulse number) At distance control: start distance (pulse number) At speed control: start time (unit: ms)	0	○	
F04.01	CD start speed	0.00－15.00Hz	4.00Hz	○	
F04.02	CD Acc time	0.1－99.9s	1.4s	○	
F04.03	CD speed	0.00－F00.07	33.00Hz	○	
F04.04	CD Dec point position	50.0－90.0% (door width)	62.0%	○	
F04.05	CD Dec time	0.1－99.9s	1.1s	○	
F04.06	Creeping speed at CD ending	0.00－15.00Hz	4.50Hz	○	
F04.07	Door blade acting position at CD ending	1－500 (pulse number)	65	○	
F04.08	Door blade acting speed at CD ending	0.00－15.00Hz	6.00Hz	○	
F04.09	CD limit point	1－500 (pulse number)	60	○	

A

Code	Name	Range	Default	Attributes	Setting
Group F05 Torque Parameters (on pages 18)					
F05.00	OD switching torque	20.0－F07.07 (motor rated torque)	50.0%	○	
F05.01	OD holding torque	30.0－F07.07 (motor rated torque)	55.0%	○	
F05.02	OD end torque	0.0－F07.07 (motor rated torque)	45.0%	○	
F05.03	Time from OD holding to OD end torque	0.1－999.9s	60.0s	○	
F05.04	CD switching torque	20.0－F07.07 (motor rated torque)	50.0%	○	
F05.05	CD holding torque	30.0－F07.07 (motor rated torque)	45.0%	○	
F05.06	CD end torque	0.0－F07.07 (motor rated torque)	35.0%	○	
F05.07	Time from CD holding to CD end torque	0.1－999.9s	60.0s	○	
F05.08	Passenger protection torque	0.0－F07.07	50.0%	○	
F05.09	Manufacturer debugging parameter				
F05.10	Torque setting under slow speed	30.0－F07.07 (motor rated torque)	50.0%	○	
F05.11	OD resistance torque	0.0－F07.07	0.0%	○	
F05.12	OD resistance time	0.1－9.9s	3.0s	○	
Group F06 Advanced Parameters (on pages 19)					
F06.00	DOA, DCA, DPA output selection	0: The signal is open which represents the OD/CD arrival and door position output (equal to the relay normally closed contact) 1: The signal is closed which represents the OD/CD arrival and door position output (equal to the relay normally open contact)	0	×	
F06.01	DPA function selection	0: Door position output 1: The re-open signal is output at the CD resistance	0	×	
F06.02	Door position output setting	0.1－99.9%	90.0%	○	
F06.03	Dec time of open & close resistance	0.1－2.0s	0.5s	○	
F06.04	Open & close holding time on demo mode	0.1－360.0s	3.0s	○	
F06.05	Mode selection on open & close invalidation	0: Holding the torque at the OD&CD arrival range, but zero-speed running at other position 1: Stop running 2: Only holding the torque at the OD&CD arrival range	2	○	
F06.06	Manufacturer debugging parameter				
Group F07 Vector Control Parameters (on pages 20)					

Code	Name	Range	Default	Attributes	Setting
F07.00	High speed ASR KP	10－3000	500	○	
F07.01	High speed ASR KI	0－1000 0: Disabled	100	○	
F07.02	Low speed ASR KP	10－3000	500	○	
F07.03	Low speed ASR KI	0－1000 0: Disabled	100	○	
F07.04	ASR swicthing frequency	0.00－99.99	8.00Hz	○	
F07.05	Current loop KP	10－9999	100	○	
F07.06	Current loop KI	0－9999	800	○	
F07.07	Torque limit	0.0－200.0%	120.0%	○	
F07.08	Speed filter time constant	0－7	2	×	
Group F08 Motor Auto-tune Parameters (on pages 21)					
F08.00	Stator resistance	0.00－99.99Ω	depend on model	×	
F08.01	Rotor resistance	0.00－99.99Ω		×	
F08.02	Stator inductance	0－9999mH		×	
F08.03	Rotor inductance	0－9999mH		×	
F08.04	Mutual inductance	0－9999mH		×	
F08.05	Slip compensation gain	50.0－200.0%	100.0%	×	
F08.06	Curve selection	0: Line 1: S curve	0	○	
F08.07	LCD contrast	0－10	0	○	
F08.08	LCD screen color	0: White background (normal). 1: Black background (anti).	0	○	
F08.09	LCD language	0: Chinese. 1: English.	0	○	
F08.10	Manufacturer debugging parameter				
F08.11	CD door blade closed speed	0.00－5.00Hz	0.00	○	
F08.12	CD door blade closed speed position	0－500	0	○	
F08.13	X1－X4 normally open/closed selection at speed control	0: Normally open 1: Normally closed	0	○	
F08.14	Manufacturer debugging parameter				
Group F09 Diagnostics Parameters (on pages 22)					
F09.00	NO.3 fault type (last fault)	E0001: Controller overvoltage E0002: Controller hardware overcurrent E0003: Controller software overcurrent E0006: Motor parameter auto-tuning	*	*	

A

Code	Name	Range	Default	Attributes	Setting
F09.01	NO.2 fault type	fault E0007: Controller overloaded E0014: Controller EEPROM faulty E0017: Module faulty	*	*	
F09.02	NO.1 fault type	E0018: Current detect faulty E0022: Panel EEPROM faulty E0023: Encoder error E0026: Door width self-learning failure -Lu-: Undervoltage	*	*	
F09.03	DC bus voltage for last fault	0－999V	*	*	
F09.04	Output current for last fault	0.00－99.99A	*	*	
F09.05	Running frequency for last fault	0.00－99.99Hz	*	*	
F09.06	Door position for last fault	0－65535	*	*	
F09.07	Open-close cycle lower value	0－9999	*	*	
F09.08	Open-close cycle upper value	0－9999	*	*	
F09.09	Running hour	0－23	*	*	
F09.10	Running day	0－9999	*	*	
F09.11	Manufacturer debugging parameter				
F09.12	Controller software version	1.00－99.99	*	*	
F09.13	Panel software version	1.00－99.99	*	*	

Shenzhen Hpmont Technology Co., Ltd
Product Warranty Card

<table>
<tr><td rowspan="4">Clinet info</td><td colspan="2">Unit:</td></tr>
<tr><td colspan="2">Add. Of unit:</td></tr>
<tr><td>P.C.:</td><td>Contact person:</td></tr>
<tr><td>Tel.:</td><td>Fax:</td></tr>
<tr><td rowspan="3">Product info</td><td colspan="2">Barcode on the product body (paste here):</td></tr>
<tr><td>Power:</td><td>Model:</td></tr>
<tr><td>Contrat number:</td><td>Purchasing date:</td></tr>
<tr><td rowspan="4">Service unit info</td><td colspan="2">Service unit:</td></tr>
<tr><td>Contact person:</td><td>Tel.:</td></tr>
<tr><td>Maintenance staff:</td><td>Tel.:</td></tr>
<tr><td colspan="2">Maintenance date:</td></tr>
</table>

User's quality evaluation for the service:

☐ Better ☐ Good ☐ Common ☐ Poor

Other opinions:

User signature: Date:

Interview record of Customer Service Center:

☐ Interviewed by telephone ☐ Interviewed by letters

Others:

Technical service engineer signature: Date:

Shenzhen Hpmont Technology Co., Ltd
Warranty Agreement

1. The warranty period of the product is 18 months (refer to the barcode on the product body). During the warranty period, if the product fails or it is damaged under condition of normal use by following the user's manual, our company will be responsible for free maintenance.

2. The starting time of the warranty period is manufacturing date (see the barcode on the product body), but we could negotiate settlement under special condition.

3. Within warranty period, maintenance will be charged for damages caused by the following reasons:

   A. The damage is caused by improper use or repair/modification without prior permission;

   B. The damage is caused by abnormal voltage, fire, flood, other disasters and second disasters;

   C. The damage is caused by dropped or transportation after purchase;

   D. The damage is caused by the operation not following this user's manual;

   E. The damage or failure is caused by the trouble out of the equipment (e.g. external device).

4. If there is any failure or damage to the product, please correctly fill out the Product Warranty Card in detail.

5. The maintenance fees are charged according to the newly adjusted Maintenance Price List by our company.

6. In general, the warranty card will not be reissued. Please keep the card and present it to the maintenance personnel when asking for maintenance.

7. If there is any problem during the service, please contact the agent of our company or our company directly.

8. This agreement should be interpreted by Shenzhen Hpmont Technology Co., Ltd.

Shenzhen Hpmont Technology Co., Ltd
Address: 3F, Building 28, Wangjingkeng Industry Park, Xili Dakan, Nanshan District, Shenzhen, China
Telephone: *4008-858-959 or 189 4871 3800*
P.C.: 518055
Http://www.hpmont.com
E-mail: marketing@hpmont.com