MB
Door Drive
User Manual

Version : 1.0

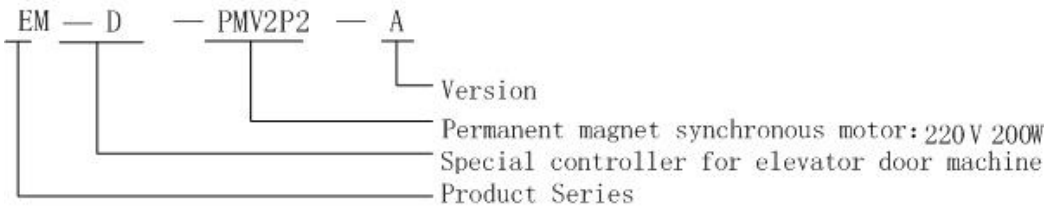
Contents

1. Safety Notes

- The equipment should be handled carefully, otherwise the equipment may be damaged.
- Metal materials like screw and gasket should be prevented from entering into the controller, otherwise damage or fire may be occurred. In case that bare metal is shown in the cable end, it should be wrapped with the insulating tape. Otherwise, a significant safety risk or function failure would be occurred .
- Please do proper grounding, otherwise it may run abnormally or cause a risk of electric shock.
- Don't touch any input or output terminals of the controller after power-on, otherwise there is a risk of electric shock.
- During operation, any nonprofessionals are not allowed to test the signal. Otherwise, personal injury may happen and the equipment may be damaged.
- All plugging parts should not be inserted or pulled out until power off. Repairs and maintenance of equipment is not allowed if power on, otherwise there is a risk of electric shock.

2. Product Information

2.1 Model definition



2.2 Operating environment

Environmental Requirements	Operation place	Free from direct sunlight, dust, corrosive gas, combustible gas, oil mist, etc.
	Altitude	Lower than 3000 meters.
	Temperature	-20 ~ +45 °C (Over 40°C, measures should be taken to derate or reduce the temperature.)
	Humidity	Less than 90%RH without condensation or ice
	Vibration	Less than 5.9m/s^2 (0.6g)
	Storage Temperature	-40℃ ~ +70℃
	Protection grade	IP20

2.3 Technical Specifications

Items		Description
Controller power	Working voltage	Single phase, AC180V ~ AC264V;
	Working Frequency	50 Hz±5%, 60Hz±5%;
Signal input	Opening door signal	Optocoupler isolation input;
	Closing door signal	
	Nudging signal	
	Reserved input	
Signal output	Opening entirely signal	1. Contact Max. Capacity: AC250V/2A, DC30V/5A; inductive load require derating. 2. According to the needs of the elevator system, select the connection of normally open contact or closed contact.
	Closing entirely signal	
	Locked-rotor signal	
	Safety edges signal	
Operation mode	Default terminal run mode.	
Learning	No Self - Learning	

3. System Debugging

3.1 Terminal definition

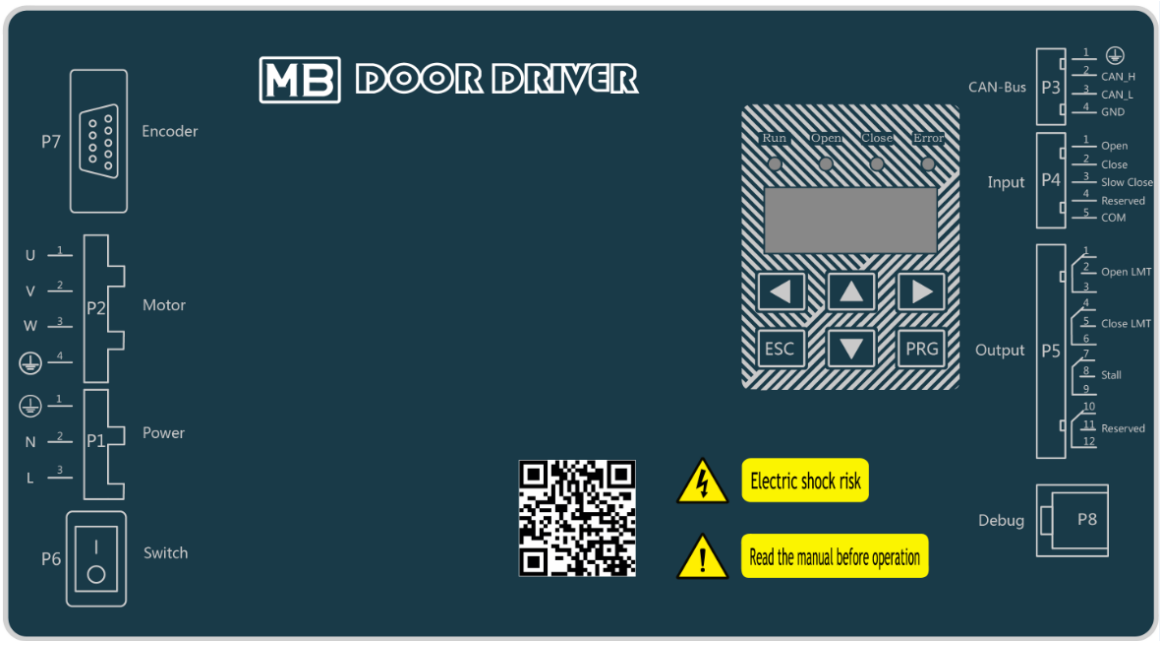


Fig 3.1 Terminal schematic diagram of door drive controller

3.2 System wiring

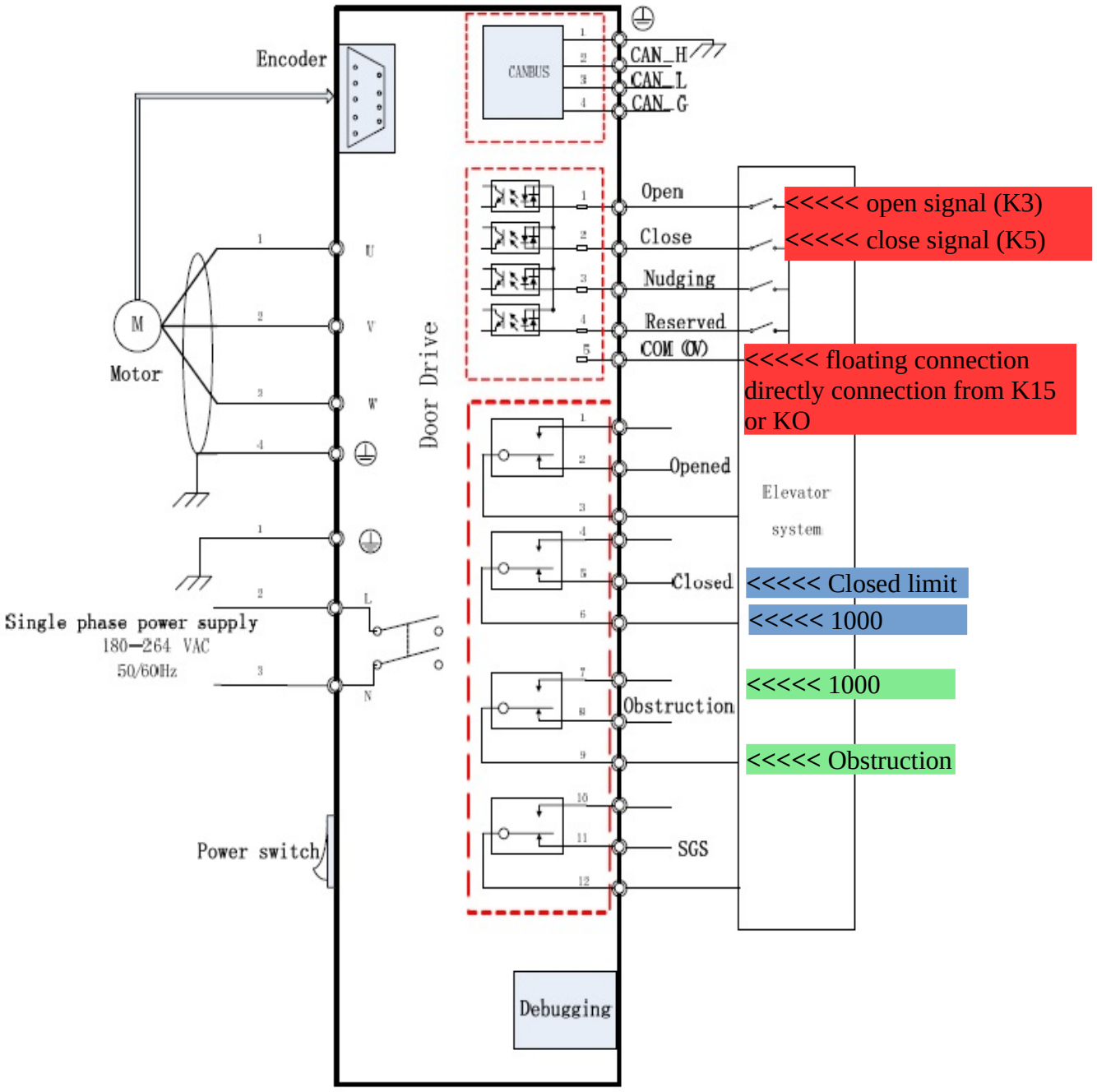


Fig 3.2 Wiring diagram of Door Drive operator contoller

Check and confirm the following:

- The site must be wired in accordance with the elevator system requirement of normally opening and closing, and it need to be confirmed that the connection is correct and the plug-in is put in place.
- Especially for Aybey Electronic panels, the output signals are connected type is COM to 1000.
- Do not forget about floating connection from panel or Revision (Maintenance) Box (directly connection from K15 or KO)

3.3 Debugging steps

Step 1: Preparations

- Check whether the door operator is properly and reliably connected and whether the wiring of encoder and motor is loose.
- Input AC power supply 180V-264V (single phase)

Step 2:

Repeat the Step 1 twice to ensure that the wiring is normal. Then it can be put into normal operation.

Attention !!!!!
Door drive controller contains no learning function!

（**Note**：If you need to learn manually, please refer to the "F02.02 parameter

in Chapter **4** Functional Parameters"）

4. Function Parameters

4.1 U group monitoring functional group parameters

Function code	Name	Setting range	Minimum unit	Factory default	Change of validity
U00.00	Encoder pulse	——	1	——	
U00.01	Speed	——	0.001m/s	——	
U 00.02	Output current	——	0.01A	——	
U 00.03	DC bus voltage	——	1V	——	
U 00.04	Motor temperature	——	1℃	——	
U 00.05	Heat-sink temperature	——	1℃	——	
U 00.06	Software Version	——	——	——	
U 00.07	Actual door position	——	0.1mm	——	
U 00.08	Input terminal status	——	——	——	
U 00.09	Output terminal status	——	——	——	
U 00.10	Self-learning door width	——	0.1mm	——	
U 00.11	Running times high	——	——	——	
U 00.12	Running times low	——	1℃	——	
U 00.13	First Fault record	——	——	——	
U 00.14	Second Fault record	——	——	——	
U 00.15	Third Fault record	——	——	——	
U 00.16	Reserved				
……					
U 00.31	Reserved				

4.2 F group debugging functional group parameters

Function code	Name	Setting range	Minimum unit	Factory default	Change of validity
F01.00	Operating command selection	0：Keypad mode; 3：CAN mode; 4：Demo mode;	1	0	
F01.04	Running direction setting	0：The same as the setting direction; 1：Opposite to the setting direction;	1	0	
F01.05	Carrier frequency	5~15kHz	1kHz	15 kHz	
F01.08	Door width no learning enable	0~1	1	1	
F01.14	Parameter initialization	0：No operation; 1：Reset to factory default;	1	0	
F01.17	Motor back EMF	0~220V	1V	80V	
F01.18	Motor rated voltage	0~220V	1V	85V	
F01.19	Motor rated current	0~2.2A	0.01A	0.65A	
F01.20	Motor rated frequency	0~99.99Hz	0.01Hz	83.33Hz	
F01.21	Motor rated speed	0~9999r/m	1r/m	500r/m	
F01.22	Motor pole number	0~50p	1p	20p	
F01.29	Motor D-axis inductance	0~9999mH	1mH	60mH	
F01.30	Motor Q-axis inductance	0~9999mH	1mH	60mH	
F01.31	Motor stator resistance	0~9999Ω	1Ω	25Ω	
F02.02	Self learning. Note: if you make the door wide learning, you must set F01.08 to 0!	1:Door width learning; 2. Magnetic pole learning;	1	0	
F02.07	Driving wheel diameter	0~200.0mm	0.1mm	23.4mm	
F02.20	Door motor reference running speed	0~0.96 m/s	0.001m/s	0.600m/s	
F02.25	OD reference speed percent	0~100%	1%	55%	
F02.30	Safety edges short-connection distance	0~ 200.0mm	0.1mm	90.0mm	

Function code	Name	Setting range	Minimum unit	Factory default	Change of validity
F03.09	CD reference speed percent	0~100%	1%	45%	
F03.13	Cam running speed	0~ 100.0mm	0.1mm	45.0mm	
F03.14	Skate set creeping speed	0~1.000m/s	0.001m/s	0.0870m/s	
F03.18	Maximum torque for OD	0.0%~150.0%	0.1%	100.0%	
F03.23	Maximum torque for CD	0.0%~150.0%	0.1%	60.0%	
F04.23	OD locked-rotor signal output	0：No output; 1：Output;	1	0	
F05.02	CD locked-rotor handling	0：Follow the elevator command; 1：Automatic reverse opening;	1	0	
F05.04	Locked-rotor memory enabling	0：Invalid 1：Enable	1	0	
F05.13	Login password setting	0~9999	1	0	

Fault code list：

Code	Description	Code	Description
17	Under-voltage	28	Encoder fault
18	Over-voltage	29	Temperature sensor fault
19	IPM Over-temperature	31	IPM module fault
21	Motor-blocked	49	OD timeout
22	E2PROM fault	50	CD timeout
23	Self-learning fault	52	Over-speed protection
24	Current detection fault 1	53	CAN bus fault
25	Current detection fault 2	55	Motor over-temperature
26	Belt slipping error	56	Motor temperature sensor fault
27	Over-torque fault	57	Door width learning fault

4.3 Changing the specification based on the curve

4.3.1 Changing the specification based on the curve of door opening

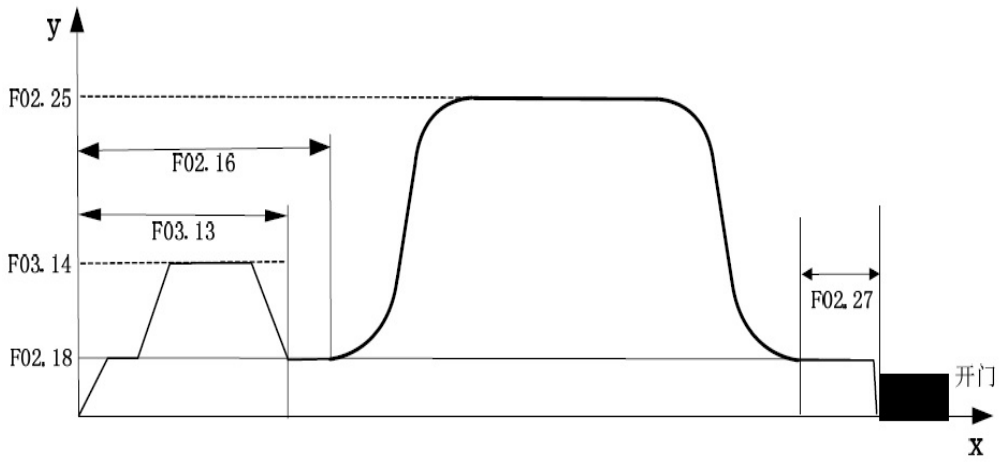


Fig 4-1 The curve of door opening diagram of MB Door Drive Operator Contoller

Instructions for curve of door opening

A: After drive received the order of door opening, the door open the cam with a start speed of F02.18 and a middle max speed of F03.14, cam route is F03.13, when the running distance over F02.16, it starts to run at the curve speed, and the max speed of the curve is F02.25;

B： When the door runs at F02.27 with the speed of F02.18 in place of door opening, arrive at the end of door opening and output the in place single at the same time.

Note： x means route， y means speed；

4.3.2 Changing the specification based on the curve of door closing

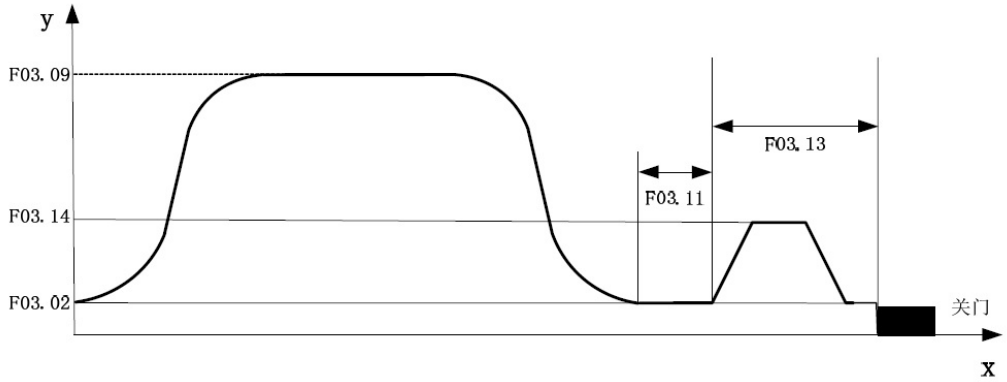


Fig 4-2 The curve of door closing diagram of MB Door Drive Operator Contoller

Instructions for curve of door opening

A: After drive received the order of door closing, the door run curve with a start speed of F03.02 and a middle max speed of F03.09;

B: At the end of the curve reaches the distance of F03.11 again, it will enter the cam-receiving phase. After the door runs F03.13, it will arrive at the end of door closing and output the in place single at the same time.

Note：x means route，y means speed；

5. Installation Size

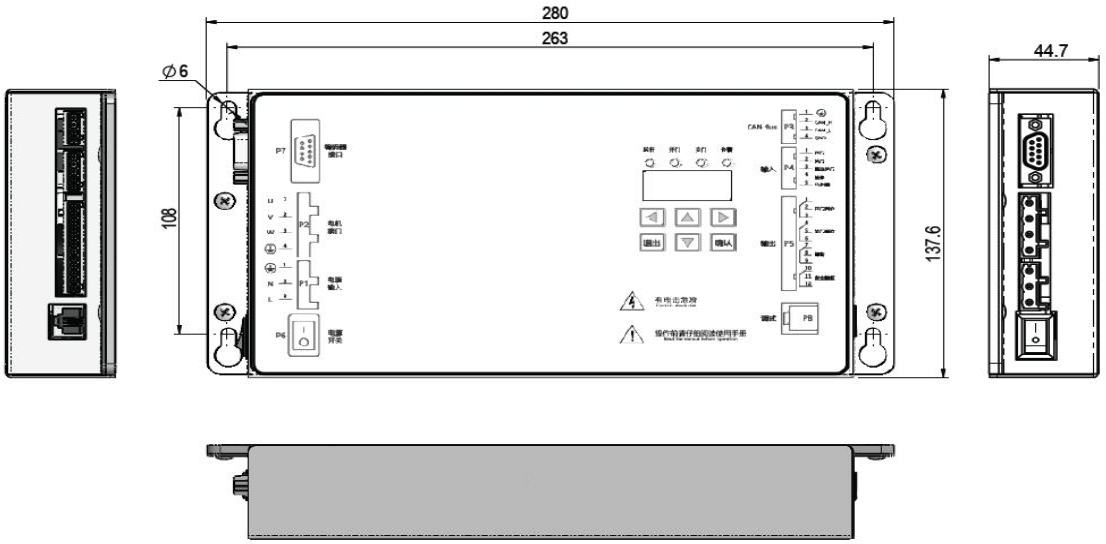


Fig 5.1 The schematic diagram of MB Door Drive Controller size

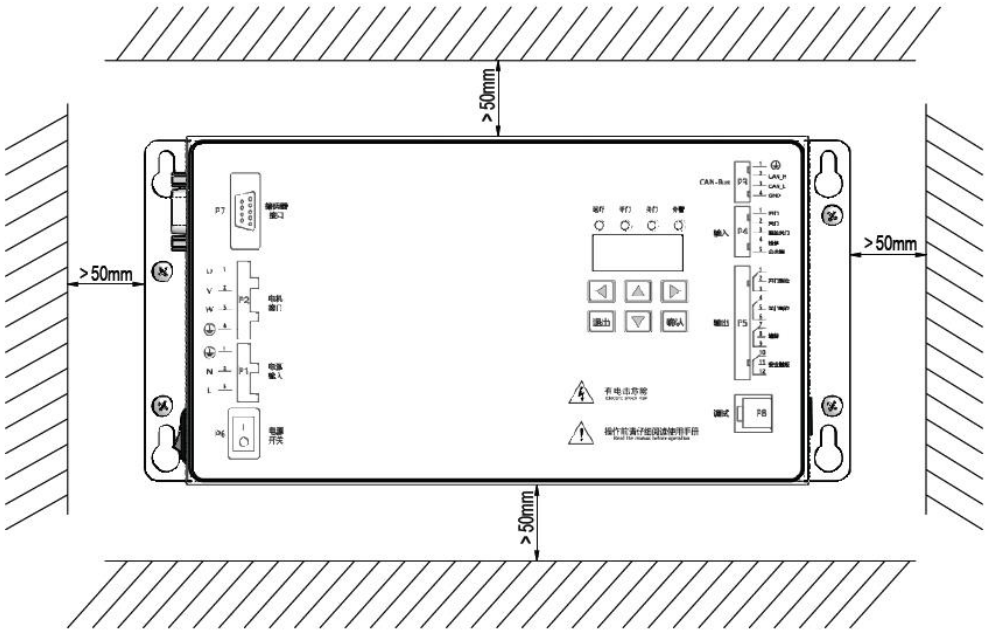


Fig 5.2 Installation diagram of MB Door Drive Controller

6. Maintenance

6.1 Maintenance

Lots of factors such as ambient temperature, humidity, PH value, dust, and vibration, internal component aging and wearing may raise the chance of the occurrence of potential faults. Therefore, it is quite necessary to do monthly checking and periodical maintenance to the drive during store or use.

User shall operate drive according to user manual, do the periodical maintenance (12 months as general) to ensure reliable running of drive. Maintenance includes:

- Check the heat dissipation of the door drive is normal or not;
- Check the terminal wiring has been loosened or not;
- Clean dust inside drive at regular intervals;
- Check the foreign matter has fallen into the drive or not, do not directly touch the door drive internal circuit.
- Do not modify the door drive without authorization, otherwise there is a risk of damage to it and personnel safety.

6.2 Store

Environmental Features	Requirements	Remark
Environment Temperature	-40 ℃~70℃	Storage temperature for a long time should not be higher than 30 ℃ to avoid the capacitance characteristics degradation. Avoid any condensation and freezing environment caused by temperature shock.
Relative Humidity	<90%RH	Forbid to expose the drive to the sun and rain, otherwise the drive will be damaged or can't be used any more. Recommend taking desiccant and plastic film sealing measures.
Store Environment	Free from direct sunlight, dust, corrosive gas, combustible gas, vibration, oil mist, steam, gas, water. The environment also needs to be with less salt.	

7. Appendix

Locale information feedback

<table>
<tr><td colspan="2">Locale contact</td><td>Locale Email</td></tr>
<tr><td colspan="2">Drive S/N
S/N= serial number?</td><td>Door type</td></tr>
<tr><td rowspan="11">Problem type</td><td colspan="2">• Forget the password</td></tr>
<tr><td colspan="2">• Controller fault, fault code（Error .....）</td></tr>
<tr><td colspan="2">• Cannot modify the parameters (parameter modification need to be in accordance with several conditions, please refer to the parameter table description)</td></tr>
<tr><td colspan="2">• Door fails to open</td></tr>
<tr><td colspan="2">• Door fails to close</td></tr>
<tr><td colspan="2">• Collision while opening</td></tr>
<tr><td colspan="2">• Collision while closing</td></tr>
<tr><td colspan="2">• Can not open entirely</td></tr>
<tr><td colspan="2">• Can not close entirely</td></tr>
<tr><td colspan="2">• Other problems</td></tr>
<tr><td colspan="2">Note: Please check whether the installation of the mechanical parts is correct, and whether the movement of the hand drawing machine is normal and smooth.</td></tr>
<tr><td>Description of the problem</td><td colspan="2">Your description is very important for us to quickly help you solve the problem.</td></tr>
</table>

Note: The door type refers to the action direction of opening the door from the outgoing hall: medium / left / right open.