Optimax优迈

JC-4C96E2

Using instruction

Using instruction

Inverter debugging steps

1 Initialization

Note: This step has been completed at the factory and does not need to be done again at the construction site. If replacing the motor or inverter, it needs to be reinitialized.

Inverter dial switch SW2 is turned to ON, SW3 is turned to OFF, and SW4 is turned to OFF. Then, press and hold the run button button button for about 3 seconds. After the door is closed in place and the door is opened in place indicator light flashes three times, the initialization is completed.

2 Positioning

Note: This step has been completed at the factory and does not need to be done again at the construction site. If replacing the motor or inverter, it needs to be repositioned.

Pull the car door to the middle position (without hall door), set SW2 to ON, SW3 to OFF, and SW4 to OFF. Then press the learn button, and you can see that the door has moved slightly. After about 5 seconds, the positioning is completed.

If the door panel does not move during positioning, pull the door open a bit and reposition it again until the door can move slightly, indicating successful positioning.

3 Self-learning

Place the door in the middle position, turn SW2 and SW3 to ON, SW4 to OFF, and then press the learn button. At this point, self-learning begins. The direction of movement is: close the door - close in place - open the door - open in place - close the door - close in place - lose torque retention, and self-learning is completed.

If the door moves in the direction of opening the door, set the status of SW1 to the opposite position.

During self-learning, there is no signal output for the door machine to open and close in place.

4 Demonstration Run

Turn SW2 and SW3 to ON, SW4 to OFF, and then press the run button. At this point, the door

will move towards the closing direction until it is fully closed. Press the run button again, and the door operator will repeatedly open and close the door to demonstrate operation.

During the demonstration run, when the door operator opens and closes the door in place, there are signal outputs indicating whether the door operator is functioning properly. If the signal output is not in place, follow fault diagnosis method 3 to find the cause.

5 Normal mode setting

Turn SW2, SW3, and SW4 to OFF, and the door operator will close in place with torque. At this point, debugging is completed, and the door operator waits for the control system to issue a door opening and closing command. If there is no torque maintained after the door operator is closed in place, the cause of the problem should be determined based on the actual phenomenon, as shown in the attached table for fault diagnosis methods.

Fault diagnosis method

1 No power display on the door operator

A： Is the power switch turned on.

B： Measure whether the voltage between L and N at plugin P5 is AC220V

C： Check the wiring between the back of the inverter, fuses, and switches for detachment and looseness

If there are no issues with the above, the inverter is damaged.

2 Judgment of motor damage

Power off the inverter, unplug the three-phase wire plug of the motor, and use a multimeter to measure the resistance between the three phases and the resistance between each phase to ground.

A: The resistance between the three phases of a 2.3N＊M motor is approximately 30 Ω, and the resistance between the three phases of a 5N＊M motor is 25 Ω

B： The resistance to ground should be infinite

3 Demonstrating that the door operator did not output the signal in place during runtime

A：When the door is opened or closed, observe whether the corresponding position light on the inverter converter is on. If it is on, proceed to step B; if it is not on, proceed to step C

B：Unplug the P1 plugin and let the door operator demonstrate operation. Check whether the connection and disconnection between P1-1 and P1-2 or P1-1 and P1-3 are normal. If they are normal, it indicates that the door operator inverter is normal, and there is a problem with the signal of the control system (control cabinet wiring or parameter settings). If they are not normal, it indicates that the door operator inverter is damaged.

C：It may be that the width of the self-learning door is too large, causing the door to open properly and the back door width to not be fully opened. Check the value of DR half range or F0-3 (door width) in 3311. If it is a center open door operator, the value is about 1/2+50mm of the actual door width. If it is a side open door operator, the value is+50mm of the actual door width. If the self-learning door width differs significantly from the calculated value above, it can be manually changed.

4 No holding torque for door operator in control system mode

A：Control system mode (change the value of run comd source or F0-2 in menu M3311 to 3), which has been set before leaving the factory.

B：After debugging, when controlling the system mode, the door will slowly close until it is fully closed and there is a torque to maintain. During this process, a prerequisite is that there is a door closing signal (the first time the door is closed after power outage). After the door operator closes in place, the door closing signal can be cancelled, and then the door operator will operate normally.

If there is no door closing signal under the above circumstances, there is no torque to maintain after the door operator is closed in place.

5 When closing the door, the speed is very slow or there is a slight impact on the door.

A： Use the server to change the door cam parameters: M3315's door coupler or F4-18 selects parameters for the door cam, which is different from the low-speed closing operation curve of asynchronous door cam. Choose according to the actual door cam type.

B： If the door cam selection does not solve the problem, it is likely that the curve parameters have been changed. You can try initializing the parameters to debug again. The steps are as follows: set SW2 to ON, SW3 to OFF, and then press the run button for 3 seconds. You can see that the display lights for opening the door in place and closing the door in place flash three times at the same time, indicating that initialization is complete. After initialization, follow the debugging steps to re debug (no need to locate).

C： If the door cam selection does not solve the problem, it is likely that the curve parameters have been changed. You can try initializing the parameters to debug again. The steps are as follows: set SW2 to ON, SW3, and SW4 to OFF, and then press the run button for 3 seconds. The display lights for opening and closing the door in place will flash 3 times, and the initialization is complete. After initialization, self-learning door width needs to be performed again.

6 There is shaking phenomenon during the operation of the door operator

A： Unplug the motor plug and use fault diagnosis method 2 to determine if the motor is damaged.

B： The first four parameters in menu M3312 (or F1), namely the PI value, are changed to 1000, 800, 1000, and 800, respectively.

Dialing Definition Description

Motor forward and reverse rotation	Debug Mode	door width learning	Fault point memory	function	
SW1	SW2	SW3	SW4	Run Button	Learning button
*	ON	ON	OFF	Demonstration Run	self-learning
*	ON	OFF	OFF	Long press 3S to initialize to 0 asynchtonous door cam	positioning
*	OFF	ON	OFF	Control cabinet mode	
*	OFF	OFF	OFF		
*	ON	ON	ON	Long press for 3 seconds to initialize to "2 car door lock synchronization door cam"	self-learning
*	ON	OFF	ON	Long press and hold for 3 seconds to initialize to "1 Synchronize door cam parameters"	positioning

*	OFF	ON	ON	Control cabinet mode
*	OFF	OFF	ON	

Parameter Table.

Function Number	Name	Setting Range	Default Value
311 （Monitor paramator）			
0	Software version		
1	Frequency out Hz	0~50.00	※
2	Motor speed RPM		※
3	Rotor position	0~359.9	※
4	Dictated V mm/s		※
5	Output voltage V	0~900V	※
6	Mtr trp PU	1.0－> rated torque	※
7	Output current A	0~999.9A	※
8	Run count(10000)		※
9	Run count(1)		※
10	DC link V	9999v	※
11	Encoder position	0~65536	※
12	UVW position	00	※
13	Door position	00000	※
14	INPUT1		※
15	INPUT2		※
16	AD OFFSET(V)		※

Function Number	Name	Setting Range	Default Value
17	AD OFFSET(W)		※
18	Stop		※
F0　3311（Field Adjust）			
F0-0	Obstruction REM	0：disabled 1：enabled	invalid
F0-1	Rotate dir 1/0	0,1	SW1
F0-2	RUN command source	0~7	4
F0-3	DR Half range mm	0~65535	■
F0-4	Open low dis mm	0～100	5
F0-5	Open unlock mm/s	5~150mm/s	60
F0-6	Open unlock mm	0~300mm	50
F0-7	Open Accel mm/s2	10~2048mm/s/s	1000
F0-8	Open Jerk0 mm/s3	10~2048mm/s/s/s	1000
F0-9	Open Decel mm/s2	10~2048mm/s/s	800
F0-10	Open Jerk0 mm/s3	10~2048mm/s/s/s	800
F0-11	Close Arrival mm/s	5~100mm/s	20
F0-12	close low dis mm	5~100	55
F0-13	Close Accel mm/s2	10~2048mm/s/s	800
F0-14	Close Jerk0 mm/s3	10~2048mm/s/s/s	800
F0-15	Close Decel mm/s2	10~2048mm/s/s	600
F0-16	Close Jerk1 mm/s3	10~2048mm/s/s/s	600

Function Number	Name	Setting Range	Default Value
F0-17	Close unlock mm/s	5~150mm/s	35
F0-18	Close unlock S%	0~30.0% relay vibration resistance	0
F0-19	Password	0~9999	8888/4321
F1（3312）Regulator			
F1-0	1() SpdP1 gain	0~10000	400
F1-1	1() ISpdI1 gain	0~10000	300
F1-2	2() SpdP2 gain	0~10000	400
F1-3	2() ISpdI2 gain	0~10000	300
F1-4	PISGP tran21 thr%	0~100	5
F1-5	PISGP tran21 band%	0~100	5
F1-6	Sfbk filter	0～66	33
F1-7	Prop filter	0~3	0
F1-8	Coupler Speed	0~200	50
F1-9	Coupler Speed	0:VF 1:Asynchronous motor closed loop 2:Synchronous motor	2
F1-10	Feedback mode	0：DO/DC 1：ST	1
F1-11	Curp gain	0~9999	512
F1-12	Curi gain	0~9999	150

Function Number	Name	Setting Range	Default Value
F1-13	OP DRV Limit PU	0.00~2.50	2.50
F1-14	OP REG Limit PU	0.00~2.50	1.50
F1-15	CL DRV Limit PU	0.00~2.50	2.50
F1-16	CL REG Limit PU	0.00~2.50	1.50
F1-17	Mtr ovl I fac PU	0.1~2.0	1.2
F1-18	PVT PVT threshld min	0~10 0: disable The larger the value is, the lower the sensitivity is.	0
F2（3313）Motor Parameters			
F2-0	Rated power(W)	0.1~999.9 W	43.5/94.3
F2-1	Number of poles	2~100	016
F2-2	Rated RPM	1~9999	0180
F2-3	Rated frq	1.00Hz~99.99Hz	24.00
F2-4	Rated voltage	0~999V	100/125
F2-5	Rated I(A)	0.1~999.9	000.8/1.0
F2-6	Sheave_diam mm	10~10000mm	00045
F2-7	gear_ratio	1.0~100.0	001.0
F2-8	Rope ratio	1~6	1
F2-9	Rotor pos offset	0~65535	■
F2-10	resist s	0.000~9.999	7.730/2.790
F2-11	induct s(mH)	0.0~999.9mH	357.0/252.4

Function Number	Name	Setting Range	Default Value
F2-12	resist rotor	0.000~9.999	5.230/1.820
F2-13	induct r(mH)	0.0~999.9mH	357.0/252.4
F2-14	mutual induct	0.0~999.9mH	325.0/240.6
F2-15	No-load current	0.0~999.9A	001.0/2.7
F3（3314）Drive Scaling Parameters			
F3-0	Drive size	0~100	000
F3-1	Drv Rtd Volt(V)	0~1000	0220
F3-2	Drv Rtd I RMS(A)	0.0~999.9	002.5
F3-3	Drv I fscale(A)	0.000~4.000	1.6
F3-4	Bus fscale(V)	0.000~4.000	1.050
F3-5	Drv I limit(A)	0.0~999.9	005.0
F3-6	Bus ovt (PU)	0.00~2.00	1.6
F3-7	DC link UV(PU)	0.00~1.00	0.60
F3-8	Line fscale (V)	0.00~2.00	1.00
F3-9	M1 pick V(PU)	0.00~1.00 1.00:1000V	0.35
F3-10	Drv Deadtime us	2~20	03
F3-11	PWMDrv PWM copm PU	0.00~2.00	1.00
F3-12	Drv k mod(PU)	0~100	100
F3-13	Switch frq (PU)	2～10 KHz	10
F3-14	Run time hour	0~65535Hshould be saved with power	※

Function Number	Name	Setting Range	Default Value
		down	
F3-15	Running time second	0~59MINshould be saved with power down	※
F4（3315）（Enhanced Parameters）			
F4-0	Run hole time s	0~99.9s 0: keep continuous operation stop when the time is up	00.0
F4-1	Power on V mm/s	10~100mm/s	0100
F4-2	Learn V mm/s	10~100mm/s	0100
F4-3	Close arrival(ms)	200~3000ms	1400
F4-4	Open arrival(ms)	500~3000ms Hold torque after arrival	800
F4-5	Arr sw select	0:with open arrival and close arrival 1:without open arrival but close arrival 2:without open arrival or close arrival	1
F4-6	Open Hold torq%	0~200.0%	100.0%
F4-7	Close Hold torq%	0~200.0%	
F4-8	Baffle time ms	0~999ms 0:No function	200
F4-9	Baffle torq Hi%	0~200.0% Baffle torque during acceleration	180.0%
F4-10	Baffle torq Mid%	0~200.0%ACC=0Retarding torque for when ACC = 0	160.0%

Function Number	Name	Setting Range	Default Value
F4-11	Baffle torq Low%	0~200.0%Baffle torque during deceleration	150.0%
F4-12	RY1 RY1 function	0:open arrival signal (switch or pulse)	0
F4-13	RY2 RY2 function	1:close arrival signal (switch or pulse) 2:fault output 3:baffle detection output 4:open door output 5:close door output 6:limited open arrival signal 7:1SDelay 1S output after close limit 8:0.5SDelay 0.5S output after close limit 9:Direct output while close limit	7
F4-14	Power on mode	0~2	2
F4-15	Open limit mm	0~1000mm	10
F4-16	pen Speed mm/s	0~1000mm/s	0508
F4-17	Open Arrival speed	5~50mm/s	020
F4-18	Door coople 0~3	0:Asynchronous door cutter 1: Synchronous door cutter 3: Synchronous door cutter	3

Function Number	Name	Setting Range	Default Value
F4-19	Close limit mm	0~1000mm	5
F4-20	Close Speed mm/s	0~1000mm/s	508
F4-21	Ropen dece mm/s2	500~9999mm/s/s	5000
F4-22	Ropen Jerk mm/s3	500~9999mm/s/s/s	5000
F4-23	Demo open hold s	0~999.9s	003.0
F4-24	Demo clos hold s	0~999.9s	003.0
F4-25	Man accel mm/s2	10~2048mm/s2	0300
F4-26	Man decal mm/s2	10~2048mm/s2	0500
F4-27	Man speed mm/s	0~999mm/s	0050
F4-28	Master or Slave	0:Master status. Reopening door is possible 1:Slave status. Reopening door is impossible	0
F4-29	Empty	0	00000
F5（3316）(VF)			
F5-0	VF mode	0: linear 1: square	0
F5-1	Torque boost	0~50.0%	20.0%
F5-2	Automatic torque compensation limit	0~100%	000
F5-3	Pinch in judgment frequency ratio (high speed)	0~100%	070.0

Function Number	Name	Setting Range	Default Value
F5-4	Pinch in judgment frequency ratio (low speed)	0~100%	050.0
F5-5	Pinch in judgment switching frequency	0~99.99HZ	00.50
F5-6	Pinch in judgment time	0~5000MS	0100
F5-7	ErrorReset time	1000~9000ms	5000
F5-8	DCLPoweron DCL dly	0~9000ms	0
F5-9	Reset torq time	0~3000ms	500

Viewing faults
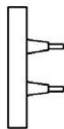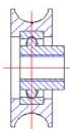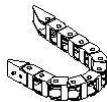
Use the operator to view the fault code (F6). Common fault related information is shown in

below   (Common Fault Codes):

No	Corresponding fault name	Possible fault causes	Solution measures
1	BASE FAULT	1，IPM module heating 2，power interference 3，door operator instantaneous current is too large	1，Inverter fault 2，Door operator power isolation, to determine whether it is caused by interference 3，Check the motor current parameters, if it cannot be self-recovery,

			inverter or motor is faulty
10	PVT lost	1， The encoder circuit of the inverter is abnormal 2，Encoder connection line broken or short circuited 3，Encoder signal abnormal	1，Replace inverter 2， Check the encoder connection line 3，Encoder fault
5	MOTOR OVERLOAD	1，Obstruction during door opening and closing, door operator overload 2，During the operation of the door operator, the motor is out of phase	1，Check if there are any foreign objects or mechanical blockages, or if the door panel itself is too heavy 2，Check the motor power line
7	DC link OVT	1，input voltage too high 2，Short circuiting of any phase to ground in the three phases of the motor	1，Check the input supply voltage 2，Check the motor power cable
8	POWER LOST	Input power is low	1,ACheck that the input power should be at AC220V±20%

Spare parts list

Name	Component drawing number	key
Contact switch - plug	XTA4386ABB001	
Contact switch - socket	XTA4386ABA001	
Adjusting roller of hanging board	XTA3117AHF001	
Hanging board roller	XTA3117AHE001	
Synchronous belt	XTB4215AAH (When purchasing spare parts, provide length)	
Drag chain	XTA4284AEY- (When purchasing spare parts, provide length)	

Door operator installation instructions

1　Definition of related parameters

OP----net opening width

OPH--net opening height

E------Car door sill width

L1----The installation space of the door operator refers to the distance between the car door sill line and the installation surface of the door operator bracket. The parameter values related to the door operator.

Table 1

Type	E	L1
Center opening door operator	60	95
	75	110
Side opening door operator	90	110
	96	116
	119	139
Center open two panel	90	110
	96	116

2　Check the general drawing of the door operator to determine the relevant installation dimensions

1、door operator installation height

2、door panel height

3、door cam installation position
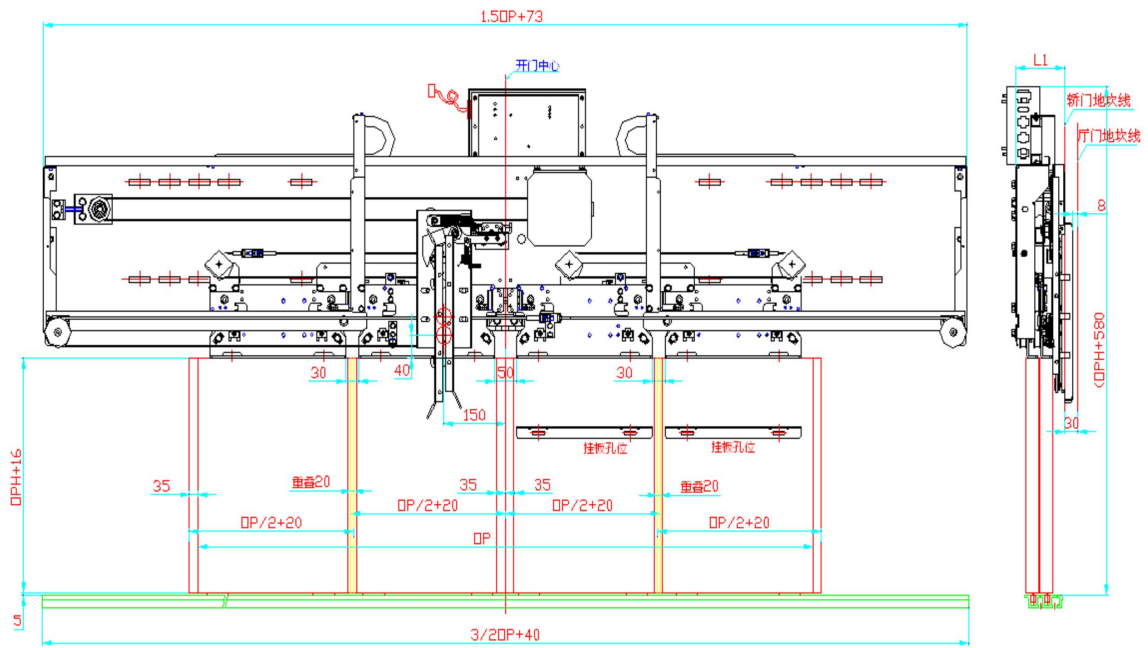
Center open four panel permanent magnet door operator
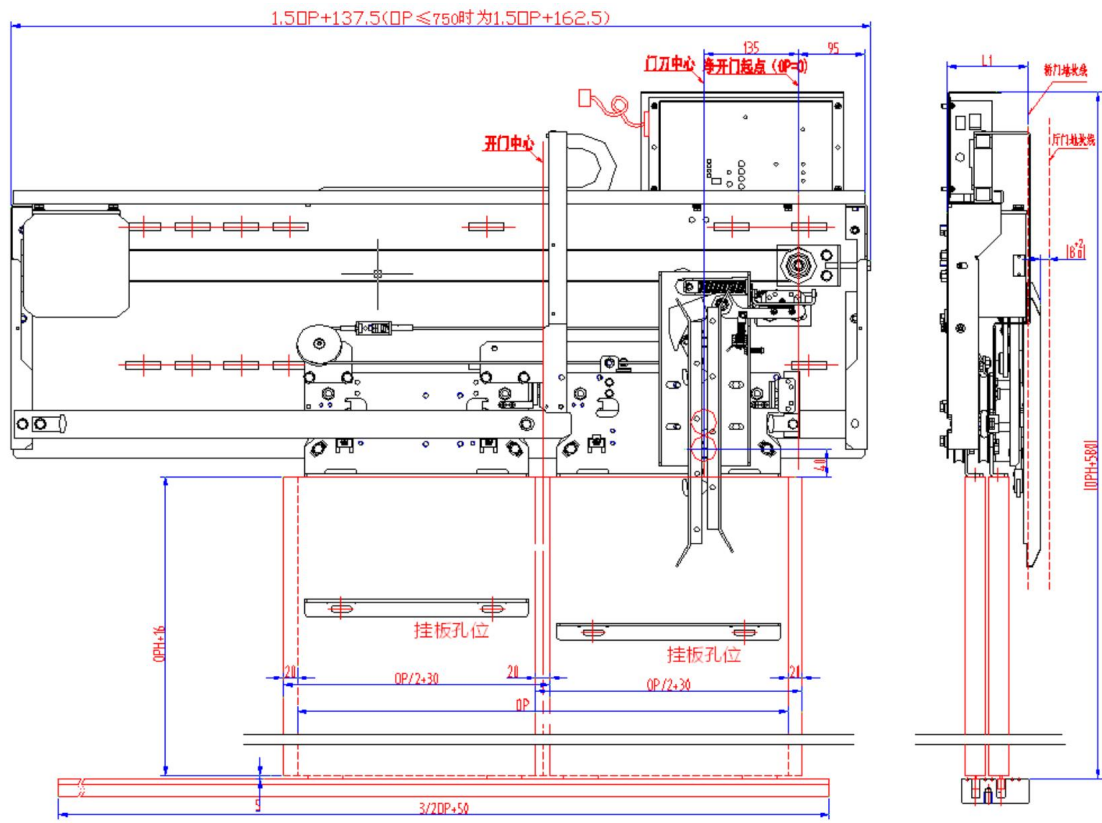
Side open four panel permanent magnet door operator

3   Fix the mounting bracket to the car

Take out the mounting bracket and its fasteners, and fix the mounting bracket on the C-groove on the car roof according to the actual installation method of the door operator.

a、Straight beam installation and column installation

①Fix the crossbar on the straight beam, and when installing the column, it is also necessary to fix the column on the car bottom and pre tighten the bolts.

②Fix the door operator mounting bracket on the crossbar.

③By adjusting the adjusting bolts at both ends of the straight beam, ensure that the L1 value shown in the diagram meets the requirements (refer to Table 1), and tighten the bolts.

④Adjust the bolts on the installation bracket, adjust the height of the bracket, and ensure the verticality of the bracket.

b、Car roof installation

⑤Fix the car roof installation bracket on the   C-groove of the car roof

⑥Adjust the horizontal spacing of the car roof mounting brackets and arrange them symmetrically with the center of the door.

⑦Adjust the distance between the mounting surface of the bracket and the front edge of the sill line of the car door so that the L1 value shown in the diagram meets the requirements (refer to Table 1), and tighten the bolts.
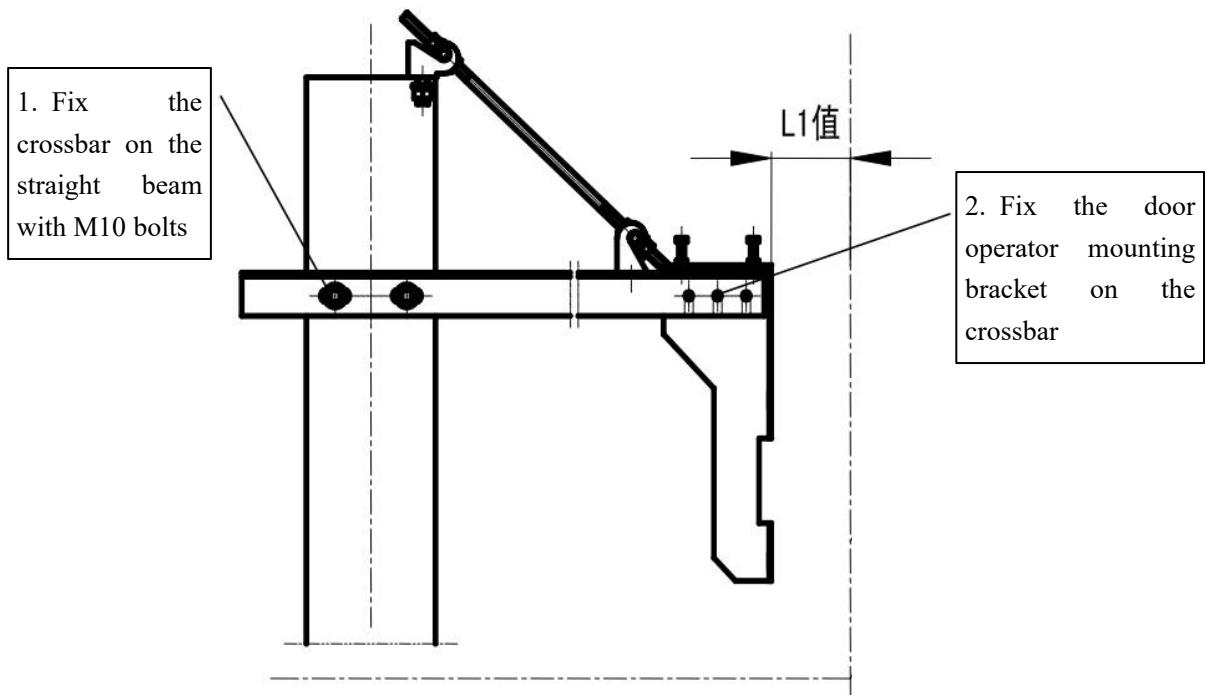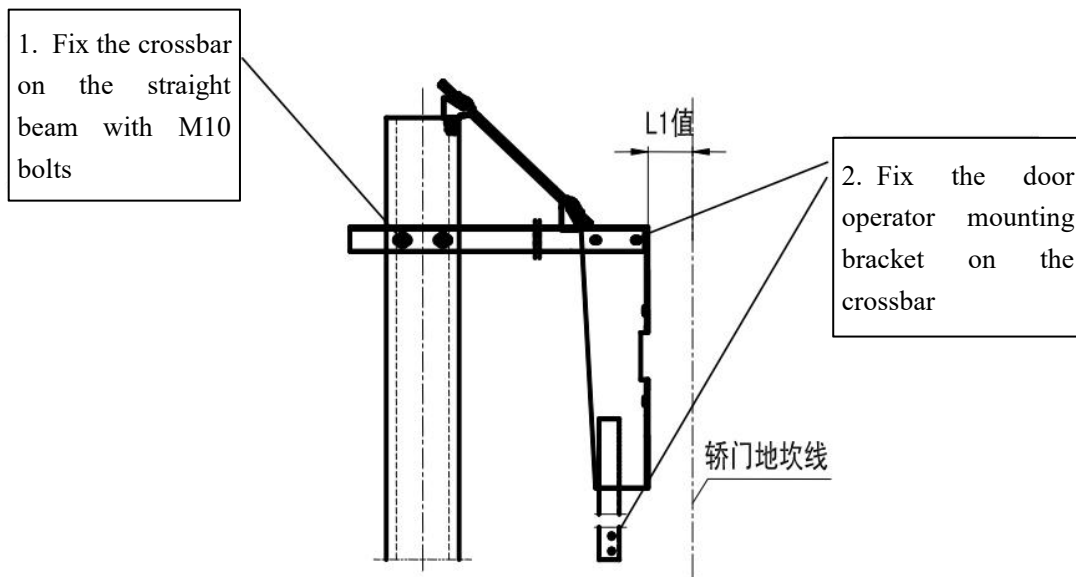
1. Fix the crossbar on the straight beam with M10 bolts

2. Fix the door operator mounting bracket on the crossbar

L1值

Figure 3   Straight beam installation diagram

1. Fix the crossbar on the straight beam with M10 bolts

2. Fix the door operator mounting bracket on the crossbar

L1值

轿门地坎线

Figure 4   Column installation diagram

3. Adjust the position of straight beam ensure that the L1 value meets the requirements

4. Adjust the height and verticality of the bracket.
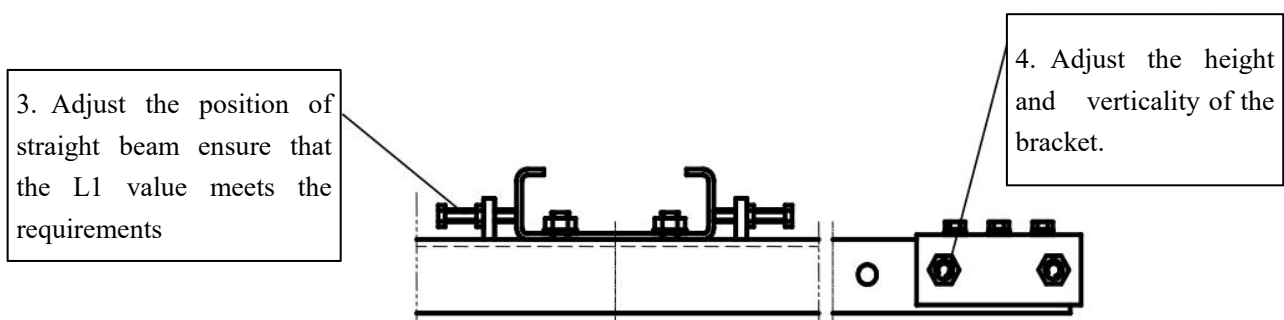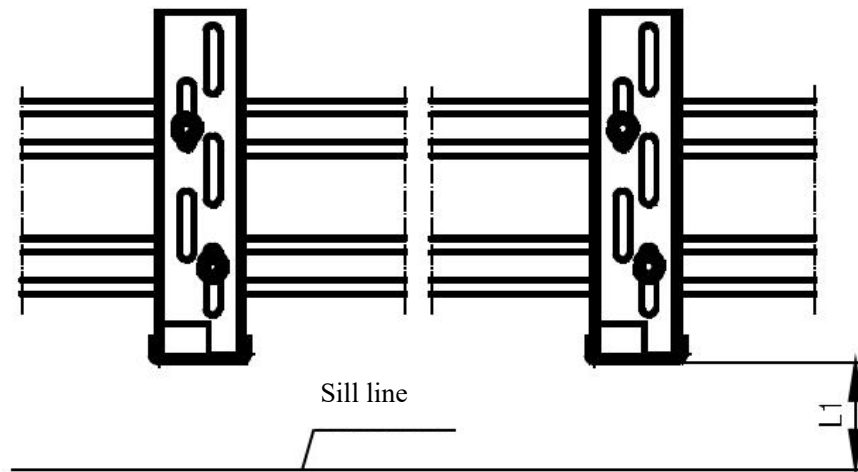
Figure 5

Figure 6 Car roof installation diagram

4　Install the door operator on the mounting bracket

①Connect the door operator to the mounting bracket and pre-tighten the nuts on the mounting bracket.

② Adjust the height and levelness of door operator , and the distance between the bottom surface of the hanging plate and the surface of the sill.

③Adjust the center of the door operator so that the center of the door operator coincides with the center of the door.

④ Tighten the nuts for installing the door operator.

5　Hang the door panel onto the door operator

①Install the door slider in the plastic packaging onto the car door panel.

② Attach the car door panel to the hanging panel and tighten the bolts

③Adjust the verticality of the hanging plate. If the hanging plate is tilted, insert shims at the connection between the hanging plate and the door panel. .

④Adjust the distance between the caster wheel and guide rail to 0.1-0.3mm

⑤Adjust the levelness of the two fast door panels to ≤ 0.5mm , as shown in Figures 4.

⑥Adjust the verticality of two door operator and the distance between door panel, car front and sill.

Figure 7

a'-a ≤1mm.

a'≤2mm;
a≤2mm;
a'-a ≤0.5mm.

Left hall door

Right hall door

<=1mm

3-6mm

4-6mm
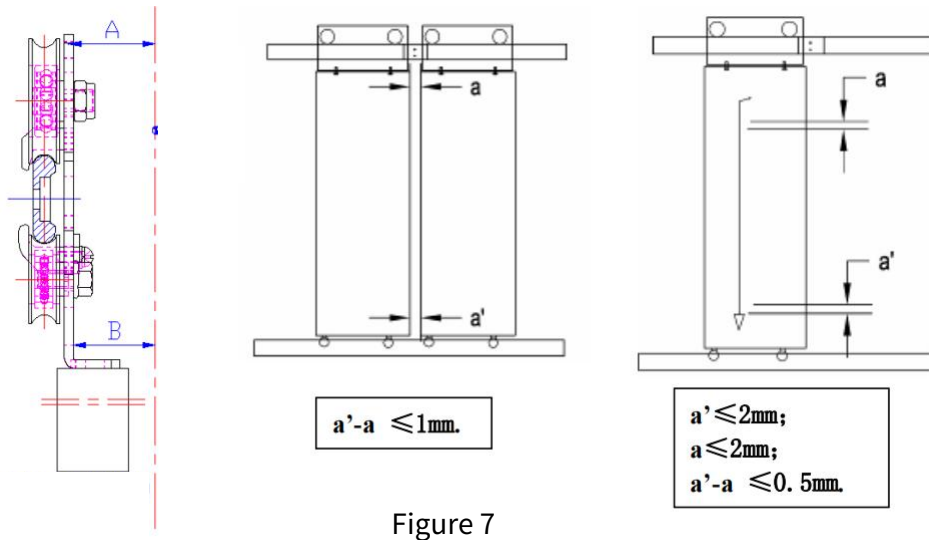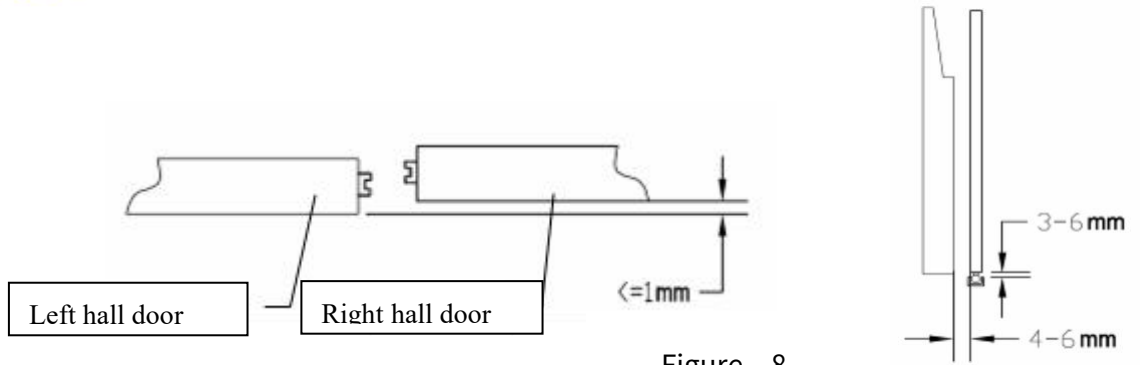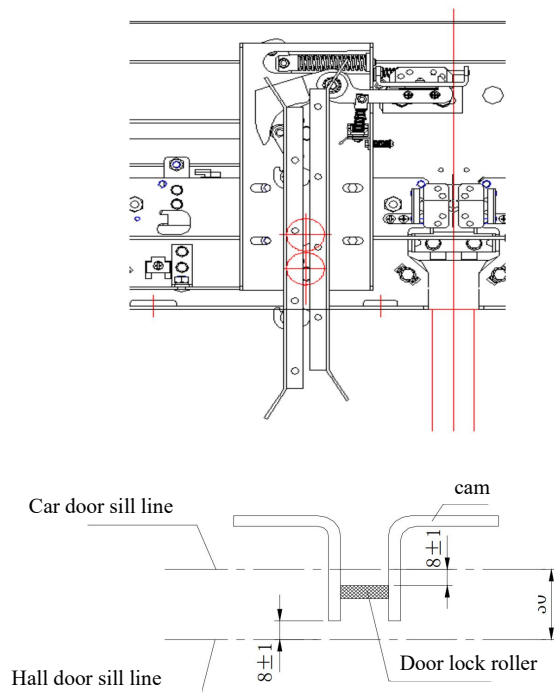
Figure 8

6　Install the door cam onto the door operator

Note: The door cam is assembled and shipped from the factory, and this item is only available

if needed

a 、Installation of synchronous door cam

cam

Car door sill line

8±1

Hall door sill line

8±1

Door lock roller

①1.Install the cam to hanging board, and install the bolt in the center of the waist hole on the cam base

②2.Measure the distance between the front edge of the door cam blade and the front edge of hall door sill . The size should be 8~10mm. According to the actual size, add gaskets between the bottom plate of the door cam blade and the door panel until the size meets the requirements.

③3.Adjust the verticality of the door cam blade to make it vertical

④4.Tighten the bolts for fix the cam

⑤5.Adjust the position of the waist hole at the connection point of integration car door lock synchronization door cam and hanging board   until the blade of the cam is vertical

⑥6.Adjust the position of the waist hole at the connection between the appendage hook and door operator until the cam   and the appendage hook can open and close the door smoothly

b 、 Synchronize door cam figure

Cam open up (close the door) Cam natural Stata (close the door)
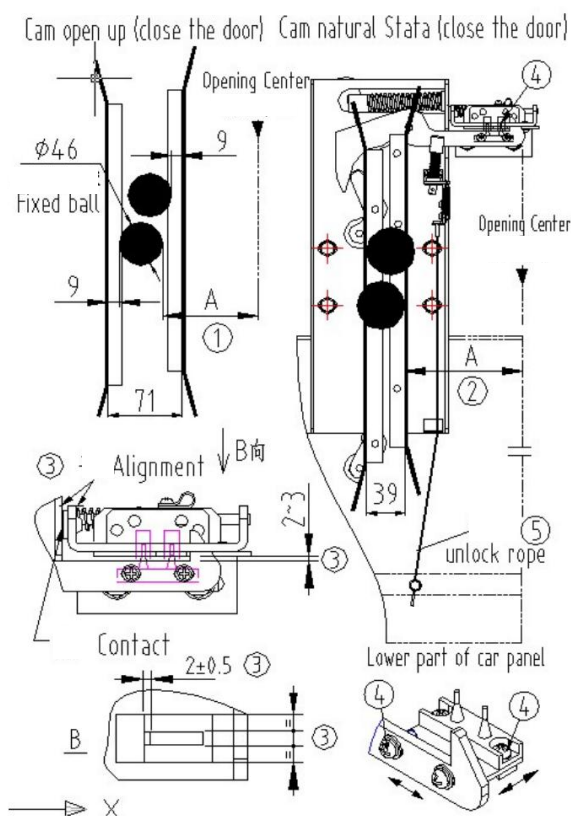
Determine the distance between the door fixed ball and the position A in the center of the door

Under the free state of the door knife, adjust the right blade to A position

Adjust the top of the door knife accessories to make it flush with the scale, ensure hook clearance 2~3mm.

Adjust the verticality of the door knife and the location of the pin to ensure to ensure the pin has been inserted into the middle of the socket

Fixed the unlock wire rope to the lower part of the car panel

7   Install the door operator pull rod

① Install the hooks onto the upper beam and the door operator crossbar respectively. If a reinforced tie rod is configured, another hook needs to be installed on the crossbar and door operator respectively.

② Install the pull rod (long) on the two hooks of the upper beam and crossbar, and adjust the tension of the pull rod until it has just tightened without pulling up the front section of the crossbar. If a reinforcing rod is configured, install the reinforcing rod on the two hooks of the crossbar and door operator, and adjust the tension of the reinforcing rod.

③   After the installation of the pull rod component, check the verticality of the door panel and the gap between the door panel and the front wall. If there are any changes, adjust the pull rod slightly until the verticality and gap meet the requirements.

8   Door protection wiring

a、   Door protection wiring

When installing a safety shoe , follow Figure 12 for the wiring of the light curtain. When installing a light curtain, follow Figure 13 for the wiring of the safety shoe . Tie the cable tightly on the car door with a pull-down strap, and connect it to control circuit   through drag chain   through drag chain   bracket.
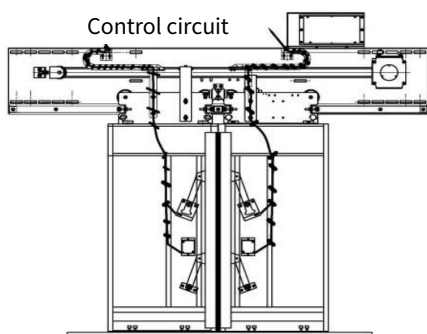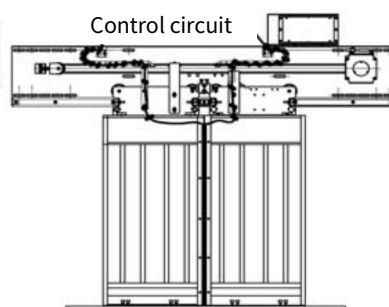

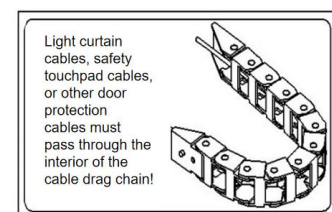| Figure 11 | Figure 12 | Figure 13 |

b、   Light curtain installation requirements

1.:The lower end face of the light curtain should be flush with the lower end face of the fixed bracket, and the distance from the lower end face of the light curtain fixed bracket to the lower end face of the car door panel should be greater than 10mm; The distance between the two light curtains should be maintained at 10-20mm when the door is closed; All assembly holes of the light curtain should be fixed to the door panel.

2.The light curtain wire is tied tightly along the door panel reinforcement with an inverted tie and connected to the car roof light curtain junction box.

3.After the installation of the light curtain, it must be grounded, and the grounding wire should be connected to the car door with screws and connected back to the car roof grounding wire.

Maintenance

1 Door operator regular maintenance and maintenance items

In order to ensure the reliable operation of the door operator, it is necessary to regularly maintain and maintain the door operator. Please refer to the table below for details.

No	Item	Content
1	Door guide shoe	Adjustment of gap between door guide shoe and sill groove and observation of wear degree
2	Adjusting roller below hanging plate	Adjust the distance between the caster wheel and guide rail, and observation of wear degree
3	Hanging roller	Observation of hanging roller running status

4	Guide	Clean the surface of the guide rail, add grease and replace it, and observe the degree of wear
5	Timing belt	Observation and adjustment of tension
6	Wire rope	Observation and adjustment of steel wire rope status, degree of tension, and degree of compression of steel wire rope pressure plate
7	Contact switch	Observe whether the contact switch contacts well and adjust the relative position
8	Cable drag chain	Observe the status and ensure the fixation is secure
9	Cable	Observe if the cable is damaged

2 Standard for replacing vulnerable parts of products

Table 8

Standard for replacing vulnerable parts of products		
No	Name	Replace standard
1	Contac switch	Plastic casing cracked, spring contacts blackened
2	Door guide shoe	The door guide shoe is severely worn and the door panel is shaking during operation
3	Adjusting roller below hanging plate	The adjustment wheel does not rotate smoothly or is severely worn
4	Hanging plate roller	Significant wear of polyurethane, shaking of wheels, and abnormal noise during rotation

5	Timing belt	Severe wear or obvious cracks
6	Timing belt wheel	The timing belt wheel does not rotate smoothly, there is obvious abnormal noise, and axial shaking
8	Wire rope	Hairing and breakage

3 Product scrapping standards

1.Severe plastic deformation of mechanical components of the door operator caused by transportation, installation, or abnormal faults.

2.After long-term use, the mechanical components of the door operator are worn, twisted, and deformed, making it impossible to complete normal door opening and closing or making loud noise. After replacing relevant vulnerable parts, they still cannot meet the requirements.

3.The controller and motor exceed the product life cycle and cannot be replaced with spare parts after a malfunction occurs.