

Manual of heavy-duty swing door operator

OB-DD-01-V1.07



Contents

1、	Warning	1
1.1	Safety warnings	1
1.2	Installation warning	1
1.3	Use a warning	1
2、	Product Information	2
2.1	application range	2
2.2	Product specifications	2
2.3	Product Features	3
3、	Check before installation	4
3.1	Applicability check	4
3.2	Installation instructions	4
4、	Power on and motherboard instructions	8
4.1	Wiring instructions of heavy-duty swing door operator	8
4.2	Controller operation instructions	9
5、	Parameter setting and debugging	10
5.1	Parameter setting	10
5.2	Restore factory Settings	15
5.3	Remote controller match and clear	15
5.4	Motor direction adjustment	16
5.5	Debugging	16
5.6	Aging	16
6、	Troubleshooting	17
7、	After-sale service	17
8、	Appendix 1: heavy-duty swing door operator packing list (crank-linkage)	18

1、 Warning

1.1 Safety warnings

Important! This manual contains important safety- related information. Improper installation may result in serious safety accidents. Please read this manual thoroughly before installation. If you have any questions in installation, stop and contact the opener bear's technical service center.

Important! Please Store this manual for future reference.

1.2 Installation warning

Before installation, please confirm whether the product meets the application requirements (see "3.1 Pre-installation check"). If not, do not install the product. All installation, commissioning and maintenance work must be carried out with the main unit power cut off.

* The door operator body must have a safe grounding measure.

When installing, be careful not to touch this product, avoid collision, compression, dropping or contact with any liquid. This product should be placed away from high temperature and open flame. The above situation may cause motor damage. If this problem occurs, stop installation immediately and contact the opener bear's technical service center.

Do not modify any part without authorization. Otherwise, such operation may cause equipment failure. Opener bear declines all liability for any equipment damage caused by modification of products.

If the door body of this product is installed with a small door, the automatic door system should be installed with a control device, which can not run the automatic door when the small door is open to ensure safety.

Packaging materials and other wastes of this product shall be disposed of in accordance with local laws.

1.3 Use a warning

This product is not suitable for use by children, persons with disabilities, or person without relevant knowledge and experience.

Children, the elderly and pregnant women must be supervised when passing through to avoid accidental injury caused by contact.

Prevent children from touching motors and control equipment, and keep remote controller out of their reach.

2、Product Information

2.1 application range

Heavy-duty door operators are divided into two types: side-mounted and top-mounted, which are suitable for different installation scenarios respectively.

Heavy-duty door operator is designed for the automatic inward and outward opening control of single-leaf or double-leaf swing doors, fire doors and other door types, It can be automatically controlled by access control equipment, face recognition equipment, mobile phone remote and other devices.

2.2 Product specifications

Item	Specification
Working voltage	220VAC $\pm$ 15% 50Hz
Motor operating voltage	24VDC
Power of motor	1.2KW
Rated current	20A
Rated Rotational speed	3000rpm
Maximum output torque	650Nm
Angular speed	24°/s
Maximum opening Angle	$\pm 90^\circ$
Maximum length of door leaf	6m (single door)
Maximum weight of door leaf	1100Kg
Thermal protection on motor winding	F Class 155℃
Operating frequency	Continuous running below 70℃
Operating ambient temperature	-25-70℃
Working environment	Indoor or sheltered outdoor environments
Running noise	≤ 60 dB
Temperature rise	$\leq 15^\circ\text{C}$
Weight of main unit packaging	19.1Kg
Weight of controller packaging	3Kg
Body size (length * width * thickness)	510*305*255mm
Packing size	385*375*160mm

2.3 Product Features

❶ **Safe and Durable:** Adopts 24V low-voltage power supply to eliminate electric shock risks. The permanent magnet synchronous motor features a service life of up to 5 million cycles with high reliability.

❷ **Intelligent Regulation:** operator enables stepless speed regulation through collecting Hall-signals of motor, with an adjustable operating time of 3 to 10S. Built-in acceleration and deceleration zone ensures soft start and soft stop for stable operation, suitable for diverse application scenarios.

❸ **Advanced Technology:** An absolute encoder is used to replace traditional limit switches, achieving precise positioning of door opening and closing. Manual debugging is not required during installation, ensuring higher efficiency and more convenience.

3、 Check before installation

3.1 Applicability check

Before starting installation, check that the product components are complete and that the selected model is suitable for the intended use and installation environment.

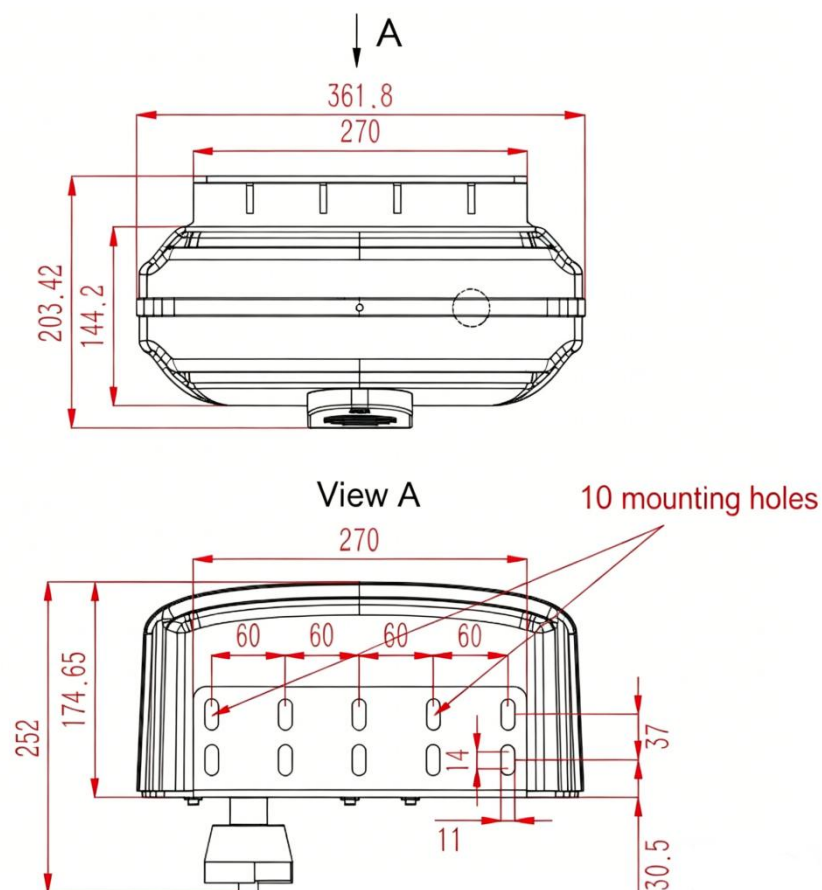
- Check that all accessories are in good condition and suitable for the intended use, and verify that the size and weight of the door leaf comply with usage limits;
- Check that the limit switch is installed on the door structure in the closed state (not provided). Manually move the door leaf to a arbitrary certain position, then release and check whether it remains stationary;
- Check whether the mechanical structure of the door is suitable for automatic installation (for example, whether the hydraulic hinge can be adjusted). This product shall not be used on door leafs in poor condition or with potential safety hazards;
- Check whether the fixing area meets the installation dimensions of the door operator. Ensure that the surface of the mounting and fixing area is sufficiently solid and has firm holding capacity;
- Ensure all equipment installation positions are protected and shall not be exposed to environments liable to accidental impact.

3.2 Installation instructions

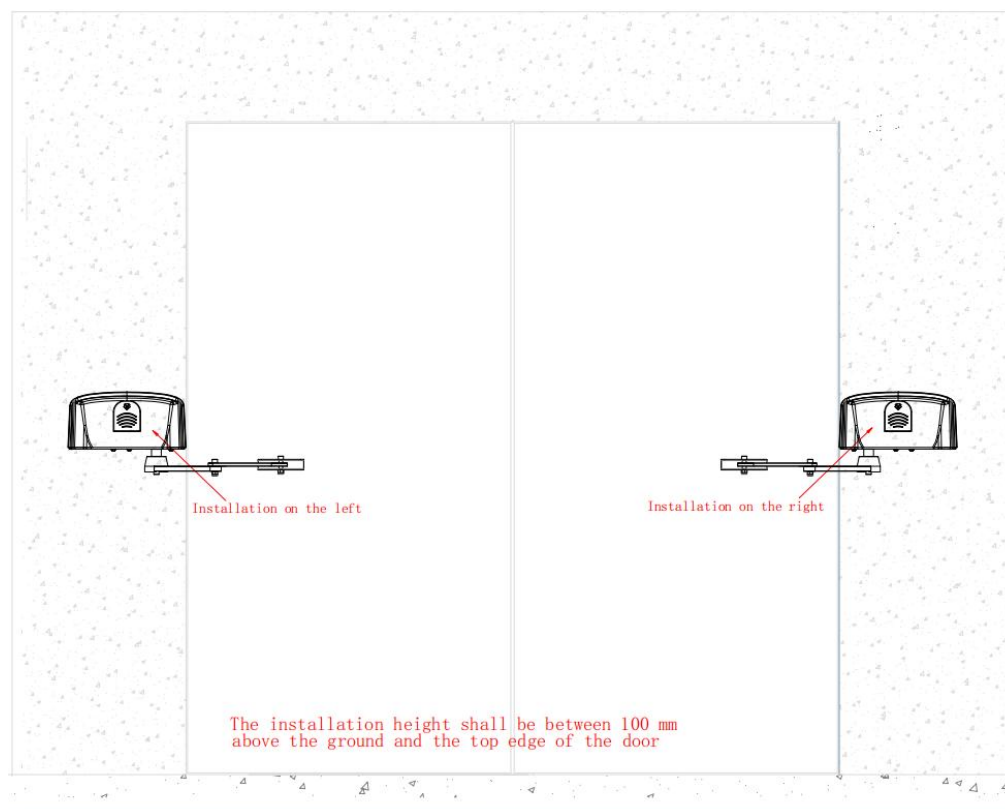
Incorrect installation may cause serious injury to the installer or user. Before starting the installation, check in strict accordance with 3.1 and proceed with installation only after all requirements are met.

3.2.1 Installation and positioning of heavy-duty swing door operator

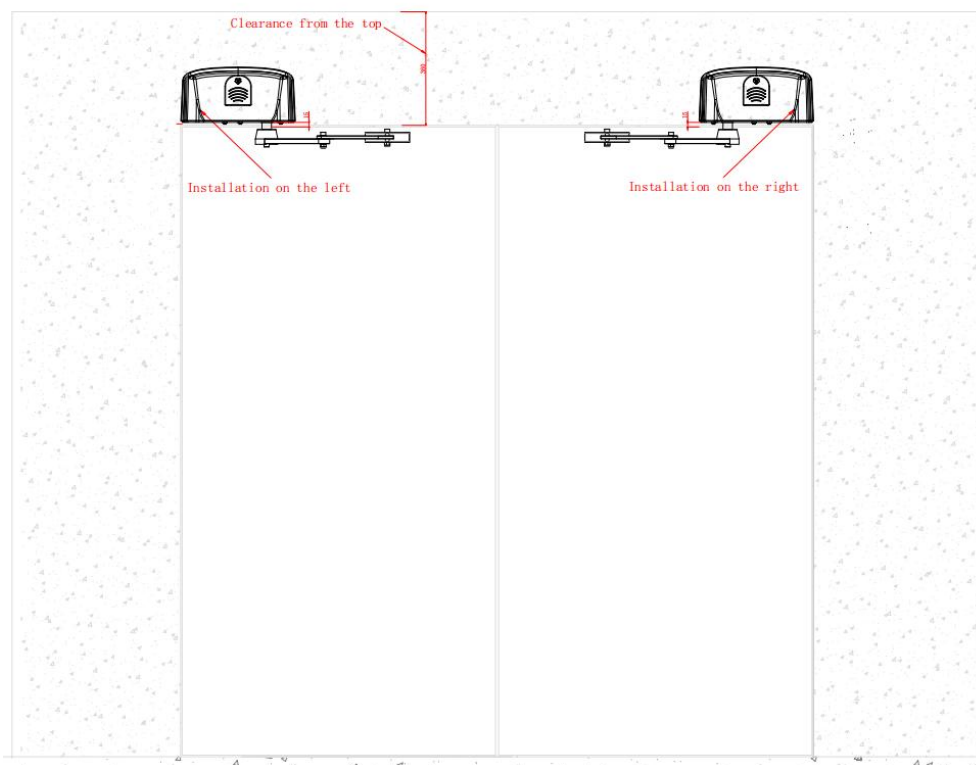
Before installation of the door operator, confirm the installation direction according to the type door operator and door opening direction. After the direction is confirmed, perform positioning based on the mounting hole dimensions of the bottom plate in accordance with the type. The positioning diagram is shown below:



Installation dimension diagram of heavy-duty swing door operator



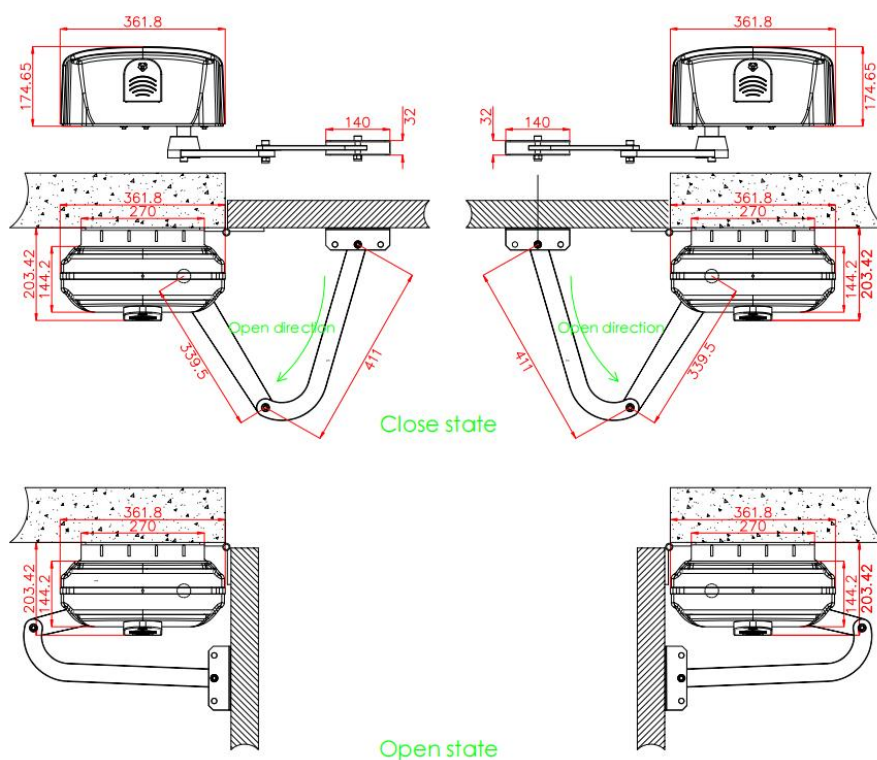
Schematic diagram of side-mounted heavy-duty door operator



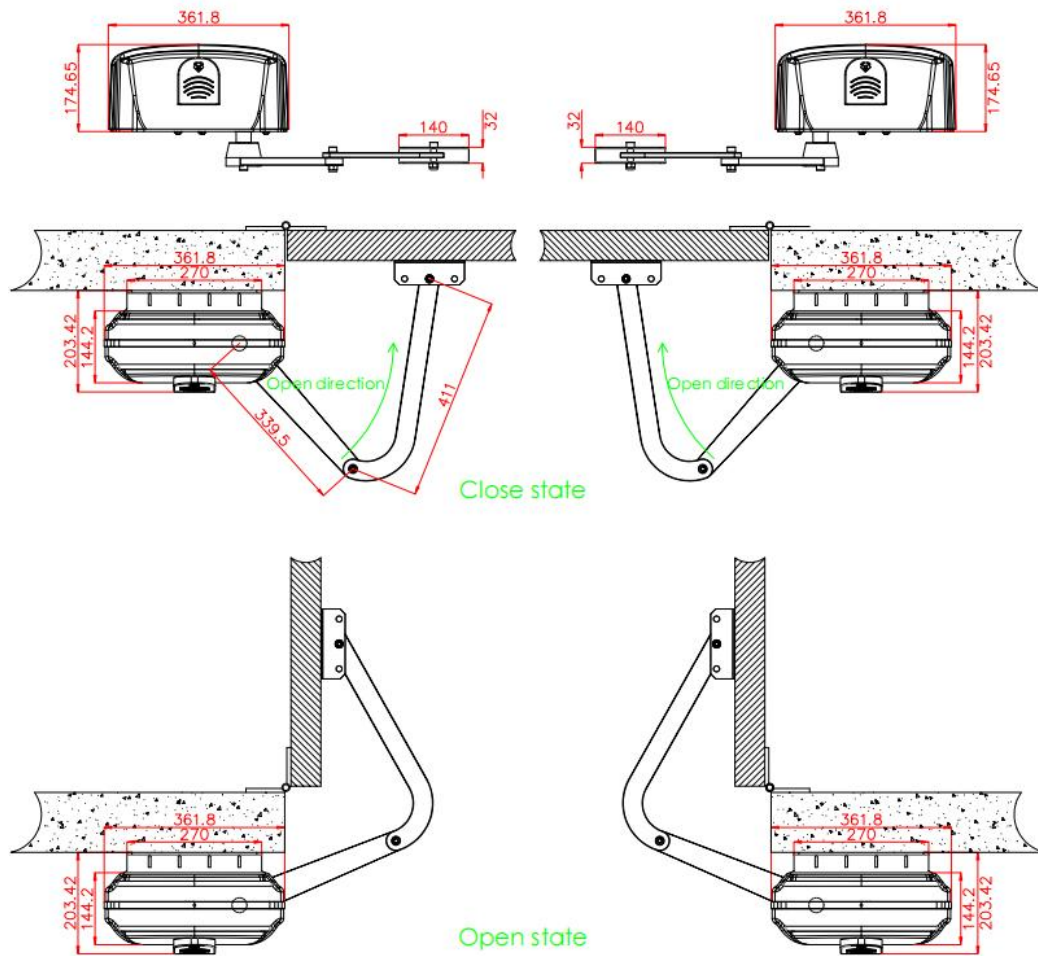
Schematic diagram of top-mounted heavy-duty door operator

3.2.2 Installation of heavy-duty swing door operator

3.2.2.1 Installation of main unit

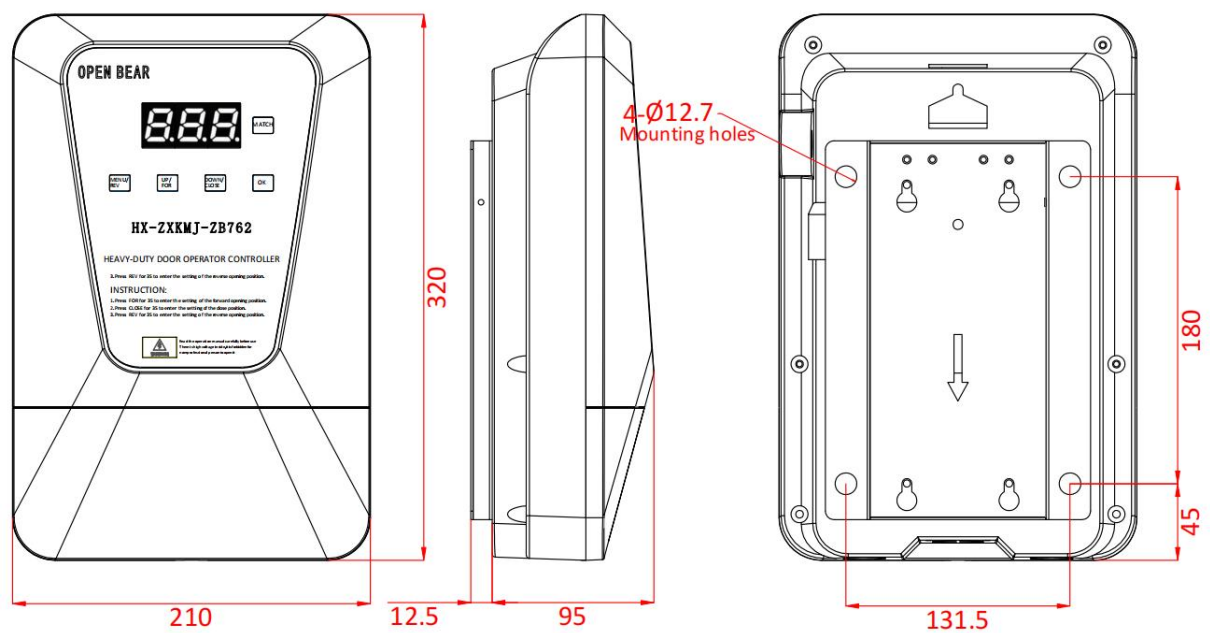


The door opening direction are on the same side of The main unit



The door opening direction are on the other side of The main unit

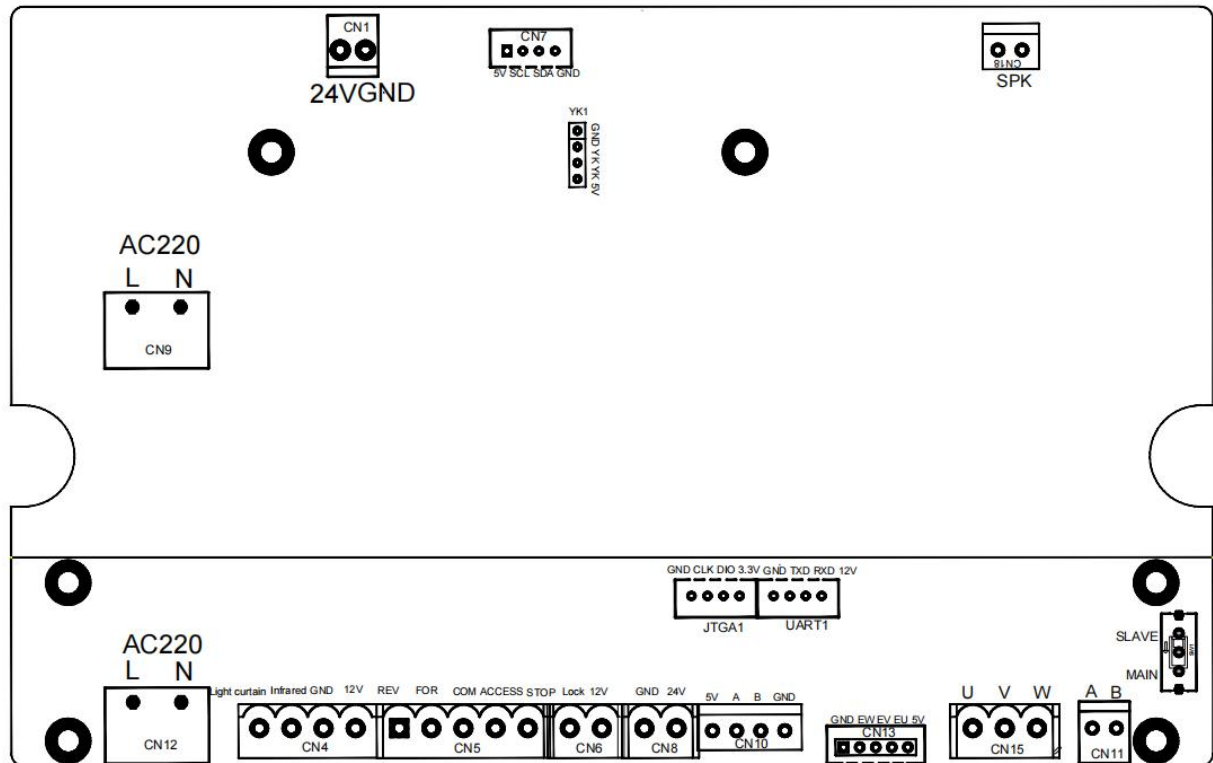
3.2.2.2 Installation of controller



Installation dimension diagram of controller

4、Power on and motherboard instructions

4.1 Wiring instructions of heavy-duty swing door operator



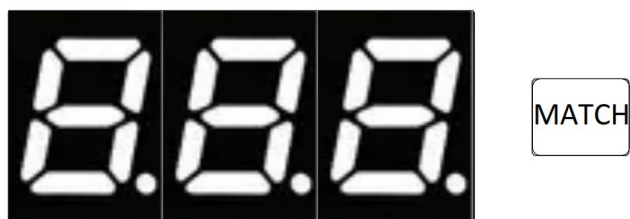
Terminal definition of main board

Interface Description :

Terminal SN	Interface description	Remarks
CN1	+24VDC GND	power output
CN4	Light curtain Infrared GND 12V	signal input
CN5	Reverse open Forward open COM Access Stop	signal input
CN6	Lock +12V	Control the lock
CN7	5V SCL SDK GND	Seven-segment display
CN8	GND 24V	Power supply
CN9/CN12	L N	AC220V input

CN10	5V A B GND	RS485
CN11	A B	RS485
CN13	GND EW EV EU 5V	Hall signal
CN15	U V W	Motor input
CN18	SPK SPK	Speaker
YK1	GND YK YK 5V	Remote controller
UART1	GND TX RX 12V	RS232 communication
JTGA1	GND CLK DIO 3.3V	Download
Definition of DIP-switch		
SW1	SLAVE MAIN	DIP-SWITCH

4.2 Controller operation instructions



MENU/
REV

UP/
FOR

DOWN/
CLOSE

OK

"UP/FOR": In normal operation, this key opens the door toward the operator side. When in the settings mode, it is used to select menu items upward. On the parameter setting interface, one time press increases the value by one unit each time; press and hold enables continuous increment until the maximum value is reached, and then it cycles upward from the minimum value.

"DOWN/CLOSE": In normal operation, this key closes the door. When in the settings mode, it is used to select menu items downward . On the parameter setting interface, one time press reduces the value by one unit each time. Press and hold enables continuous decrement until the minimum value is reached, after which it cycles downward from the maximum value.

"MENU/REV": In setting mode, enter the Settings interface and return to the parent menu; In work mode, this key opens the door toward the other side of operator.

"OK": Enter the setting value or return to the primary menu.

"MATCH": Remote controller code match or clear.

5、Parameter setting and debugging

The opening and closing time of the door and other parameters can be set through the setting keys under the seven-segment display. The keys are defined as shown in the figure above. The setting is divided into parameter setting, one-key recovery and remote controller match.

5.1 Parameter setting

5.1.1 Quick parameter entry

5.1.1.1 Quick access to right door opening position parameters

After pressing the "MENU/REV" key for 3S until the controller displays the "P2A", i.e. right door opening position setting interface. In this interface, the user can adjust the parameters of the right door opening position.

5.1.1.2 Quick access to left door opening position parameters

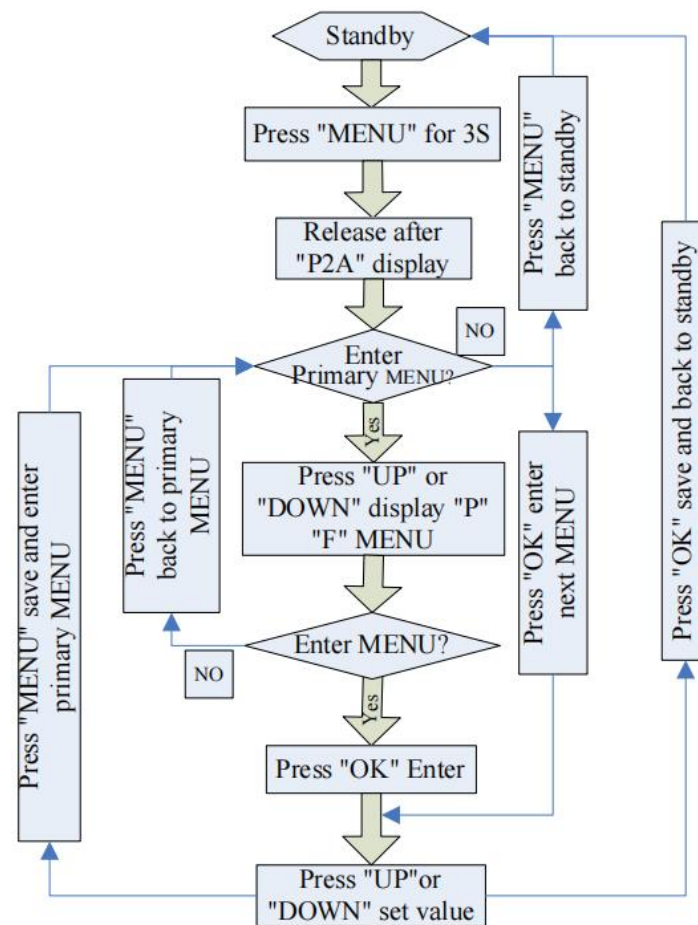
After pressing the "UP/FOR" key for 3S until the controller displays the "P2", i.e. left door opening position setting interface. In this interface, the user can adjust the parameters of the left door opening position.

5.1.1.3 Quick access to door closing position parameters

After pressing the "DOWN/CLOSE" key for 3S until the controller displays the "P3", i.e. door closing position setting interface. In this interface, the user can adjust the final position of the door to ensure that the door is closed fully.

5.1.2 Function parameter setting

The parameter setting method is shown as follow:



The parameter setting table is as follows:

SN	Parameter	Content	Default (factory setting)	Remarks
F menu				
1	F-1	The door opening mode is divided into: 0-90° door opening, 1-180° door opening	0	sync
2	F-2	Motor zeroing direction, This parameter is invalid; the direction shall be subject to the DIP switch. Setting range: 0-1,	1	sync
3	F-3	Door traffic control: 1.Bidirectional traffic controlled, 2.Left-direction traffic controlled,right-direction traffic prohibited; 3.Right-direction traffic controlled,left-direction traffic prohibited; 4.Left-direction traffic controlled,right-direction traffic free; 5.Right-direction traffic controlled,left-direction traffic free; 6.Left-direction traffic prohibited,right-direction traffic free; 7.Right-direction traffic prohibited,left-direction traffic free;	8	P-61

		8.Bidirectional traffic free; 9.Bidirectional traffic prohibited; 10. Anti-pinch function; Setting range: 1-10		
4	F-4	Induction Detection Setting,Setting range: 0–3, 0–Detect at any position; 1 – Detect only after left-direction door is fully closed; 2 – Detect only after right-direction door is fully closed; 3 – Detect after both left-direction and right-direction doors is fully closed	0	P-62
5	F-5	Single-direction door opening angle setting:Used to set the ratio of the single-direction door opening angle to the full door opening angle. The setting range is 0–100, which represents the percentage of the set door opening angle relative to the full door opening angle	50	P-67
P menu				
1	P-0	Set the door opening speed. The larger the value, the faster the speed; setting range: 20-100	80	sync
2	P-1	Set the door closing speed. The larger the value, the faster the speed;setting range: 20-100	80	sync
3	P-2	Left-direction door opening angle adjustment,After entering the menu, the door opens directly to 90°. Adjust the angle via the UP/DOWN keys, or by manual pushing. Setting range: unfixed, default 90.When set to 0, the door cannot open in this direction.	90. If it is 0, the direction cannot be opened.	
4	P-2A	Right-direction door opening angle adjustment,After entering the menu, the door opens directly to 90°. Adjust the angle via the UP/DOWN keys, or by manual pushing. Setting range: unfixed, default 90.When set to 0, the door cannot open in this direction.	90. If it is 0, the direction cannot be opened	
5	P-3	Door closing angle adjustment,when the menu F1 is 0, if the door fails to be fully closed, a negative value can be set. Setting range: -50~50, default value: 0.When the menu F1 is 1, the angle can be adjusted via the UP/DOWN keys, or by manual pushing.	0	
6	P-4	Angel value to begin deceleration during opening,deceleration starts at the set angle before the fully open. The larger the value, the earlier the door begins to decelerate (T-curve deceleration time).Setting range: 1–60, unit: degree.	30	
7	P-5	Angel value to begin deceleration during closing,deceleration starts at the set angle before the fully close. The larger the value, the earlier the door begins to decelerate (T-curve deceleration time).Setting range: 1–60, unit: degree.	30	
8	P-6	Acceleration time during opening,The larger the value, the slower the speed response of door opening(T-curve acceleration time).setting range: 1–900	300	
9	P-7	Acceleration time during closing,The larger the value, the slower the speed response of door closing(T-curve acceleration time).setting range: 1–900	300	
10	P-8	Adjust this value downward if door opening is not smooth; adjust it upward if the door shakes severely when reaching the end position (Speed Loop KP). Setting range: 1–200, accuracy: 0.1	15, represents 1.5	
11	P-9	Adjust this value downward if door closing is not smooth; adjust it upward if the door shakes severely when reaching the end position (Speed Loop KP). Setting range: 1–200, accuracy:	8, represents 0.8	

		0.1		
12	P-10	End speed during opening, The larger the value, the higher the speed. Setting range: 0-50	20	
13	P-11	End speed during closing, The larger the value, the higher the speed. Setting range: 0-50	15	
14	P-12	Rebound Sensitivity, The smaller the value, the higher the rebound sensitivity; Setting range: 0.1–30.0, accuracy: 0.1	7.0	sync
15	P-13	Rebound response time, unit S, 0.5 means 0.5S, setting range : 0-50.0S, precision of 0.1, 0-turn off this function	3.0	sync
16	P-14	Power supply, Maximum limited output power percentage during motor operation. Setting range: 10–100.	90	sync
17	P-15	Automatic Closing Time: The door will close automatically after waiting for X seconds upon opening. For example, 10 means the door closes automatically after 10S delay. If set to 0 this function will be disabled. Setting range: 0–999S	0	Only for main
18	P-16	Delayed Closing Time, unit: second. After receiving the close signal, the door closes with a delay of X seconds (delayed closing time when equipped with a sensor). Setting range: 0–255, accuracy: 0.1.	5, represents 0.5	
19	P-18	Emergency stop buffer time, unit: seconds. The smaller the time, the faster the emergency stop. Setting range: 1-40	10	sync
20	P-19	Lock shaft force in emergency stop, after emergency stop, the maximum lock shaft force, the larger the value, the greater the lock shaft force, setting range: 1-50	5	sync
21	P-21	Aging Test, 0-Disable aging test; 1-20 means waiting for X seconds after the door fully opens and closes, then reciprocal motion test.	0	
22	P-22	Remote control frequency, setting range 0-2: 0-433M, 1-430M, 2-315M	0	
23	P-24	End-of-stroke force for door closing, setting range: 1-50	30	
24	P-25	Duration of end-of-stroke force for door closing, Setting range: 2-10	6	
25	P-30	Zeroing Speed, setting range: 10–100	50	sync
26	P-32	Rebound Dead Zone, The door is regarded as fully opened or fully closed within this angle range. . Setting range: 0–90	5	sync
27	P-33	Magnetic lock engagement angle, unit: degree. The magnetic lock starts to engage only when the door closing angle is lower than the set angle X. If set to 0, the magnetic lock will engage only after the door is fully closed.	3	sync
28	P-35	Mainboard overvoltage protection, setting range: 0-20	15	sync
29	P-36	Maximum protection duration, in seconds. Setting range: 10-600	180	sync
30	P-37	Open door delay time after unlock magnetic lock & electric bolt lock, after the lock is disengaged, the door will open after a delay of X seconds. Setting range: 0.0–3.0, unit: s.	0.2	sync
31	P-38	Hardware overcurrent recovery time, the waiting time for the hardware to resume operation after repeated overcurrent, unit: S. Settings range: 1-100	3	sync
32	P-45	Closing Protection Shielding Angle, controller shields input signal within angle, setting range: 0–90	10	
33	P-46	Protocol type, 0-485 protocol, 1~900-MQTT protocol, indicates the upload interval time, set range: 0-900	0	
34	P-47	Serial communication address, setting range: 1-255	1	
35	P-48	Baud rate: 0:9600, 1:19200, 2:115200, 3:38400	1	
36	P-49	Initialization Parameter, 0-means no initialization; 1-means	0	sync

		restore to default settings.Setting range: 0–1		
37	P-50	Main/Slave option, 0-Main, 1-Slave, setting range: 0-1	0	
38	P-53	Duty cycle of magnetic lock , 100-full, setting range: 0-100	100	sync
39	P-54	Lock mode selection, 0-unlock after power on, 1-unlock after power off, setting range: 0-1	0	sync
40	P-57	Opening waiting angle of slave door, unit: °, setting range: 0–90	0	sync
41	P-58	Closing safety angle of master/slave door , unit: °, setting range: 0–90	0	sync
42	P-59	Door opening direction after receiving access open signal, 0–Left-direction open,1–Right-direction open,2–Access control disabled,Setting range: 0–2	0	sync
43	P-60	Door opening direction after receiving remote open signal, 0-left-direction open, 1-right-direction open, setting range: 0-1	0	
44	P-61	Door traffic control: 1.Bidirectional traffic controlled, 2.Left-direction traffic controlled,right-direction traffic prohibited; 3.Right-direction traffic controlled,left-direction traffic prohibited; 4.Left-direction traffic controlled,right-direction traffic free; 5.Right-direction traffic controlled,left-direction traffic free; 6.Left-direction traffic prohibited,right-direction traffic free; 7.Right-direction traffic prohibited,left-direction traffic free; 8.Bidirectional traffic free; 9.Bidirectional traffic prohibited; 10. Anti-pinch function; Setting range: 1-10	8	
45	P-62	Induction Detection Setting,Setting range: 0–3, 0–Detect at any position; 1 – Detect only after left-direction door is fully closed; 2 – Detect only after right-direction door is fully closed; 3 – Detect after both left-direction and right-direction doors is fully closed	0	
46	P-63	Slave Address Setting, serial communication address, setting range: 1–10	1	
47	P-64	Exerting force after door closed,The larger the value, the greater the door resisting force when fully closed.Setting range: 0–200; 0 means no force exerting.	20	sync
48	P-65	Rebound speed in case of resistance,the larger the value, the faster the rebound speed.Setting range: 20-100	40	sync
49	P-67	Single-direction door opening angle setting:Used to set the ratio of the single-direction door opening angle to the full door opening angle. The setting range is 0–100, which represents the percentage of the set door opening angle relative to the full door opening angle	50	sync
	...		...	...
50	P-75	Opening motor speed loop KP,setting range: 1-999.	150	sync
51	P-76	Opening motor speed loop KI,setting range: 1-999.	200	sync
52	P-77	Closing motor speed loop KP,setting range: 1-999.	150	sync

53	P-78	Closing motor speed loop KI,setting range: 1-999.	200	sync
54	P-79	Opening motor current loop KP,setting range: 1-999.	5	sync
55	P-80	Opening motor current loop KI,setting range: 1-999.	50	sync
56	P-81	Closing motor current loop KP,setting range: 1-999.	5	sync
57	P-82	Closing motor current loop KI,setting range: 1-999.	50	sync
58	P-83	Software current protection value: range 0.1-30.0, unit A	15.0	sync
59	P-84	Motor type selection: range: 0-2.	0	sync
60	P-85	Anti-freeze rotation cycles,setting range: 0-10. This parameter takes effect when Parameter D-8 is set to above 5.	3	sync
61	P-86	Anti-freezing rotation time interval,setting range: 0-90 minutes. The default setting is 0, which means the function is turned off. If the setting range is more than 5 minutes, the timer will run according to this interval.	0	sync
62	P-87	Opening position loop KP,setting range: 1-999.	55	sync
63	P-88	Opening position loop Ki,setting range: 1-999.	0	sync
64	P-89	Closing position loop KP,setting range: 1-999.	55	sync
65	P-90	Closing position loop Ki, setting range: 1-999.	0	sync
66	P-91	Rated rotation speed of motor: The rated rotation speed of motor is 1500rpm by default. Unit: hundred revolutions per minute. The setting range is 1-50.	15	sync
67	P-92	Voltage protection value, setting range:0-20.	15	sync
68	P-93	Positioning error,setting range: 1-99.	3	sync
69	P-94	Overcurrent threshold, setting range 0.1-90.0, unit:A.	10.0	sync
70	P-95	Overcurrent activation time,setting range: 0-99, unit: S; 0-disabled.	0	sync

5.2 Restore factory Settings

Press the "OK" key until the seven-segment display shows "---", press "UP" "Down" "UP" "Down" "UP" "Down" three times, and then press the "OK" key, finally, power off and restart to restore factory Settings.

5.3 Remote controller match and clear

5.3.1 Remote controller code match

Press the "Match" key for 3S until the seven-segment display shows "--0". Then press any key on the first remote controller to display "--1", followed by any key on the another remote controller to show "--2", and so on. Continue this process until the display shows "- N". Finally, press the "OK" key to complete match for all N remote controllers.

5.3.2 Remote Controller Code Clear

Press the "Match" key for 3S until the seven-segment display shows "--N" (N represent the number of successfully matched remote controllers). Then press the "UP/FOR" key for 3S until the seven-segment display shows "--0", which means remote controller code clearing is successful. Press the "OK" key to return to the normal standby state.

5.4 Motor direction adjustment

If the door opening and closing directions are reversed during debugging, enter menu P-31, after setting the motor direction, proceed with further debugging.

5.5 Debugging

After the door operator is fully assembled and inspected by QC, power-on testing can be progressed;The seven-segment display shows "000" each time the power is turned on. After the power-on self-check is completed, the seven-segment display shows the door angle, and it displays 0° at the fully closed position. When P-34 is set to 1, the door automatically finds the zero position; when P-34 is set to 0, press "DOWN/CLOSE" manually to perform zero position calibration

5.6 Aging

After debugging, the operator can be put into aging test. Press and hold the "DOWN" key for 3S to enter aging mode. During aging, the first segment of the seven-segment display shows a moving pattern converging from top and bottom to the center. The operator runs in reciprocating motion without sensor signal detection throughout the aging test. Press and hold the "DOWN/CLOSE" key for another 3S to exit aging mode.

6、 Troubleshooting

SN	Common Problems	Solution
1	Door opening direction is incorrect	Set the door opening direction via P-31
2	Incorrect door opening angle	The door opening angle needs to be set via P-2 and P-2A
3	Seven-segment display doesn't light up	Check the circuit for short circuit or open circuit
4	Magnetic lock fails to unlock	Check P-54 to confirm whether it is unlock by power-on or by power-off.
5	Door opening and closing is not smooth	Check the setting values of P-6 and P-7, and reduce the values
6	The door fails to close	1.Check if P-61 value is correct; 2.Check whether the access control door signal is always on; 3.CheckP-15 value,It cannot be set to 0.
7	Continuous door opening and closing	Check if P-21 is 0,if so,change the value.
8	Seven-segment display shows E-1	Check for short circuits
9	Seven-segment display shows E-2	Check whether the motor wiring is not connected or the contact is poor
10	Seven-segment display shows E-3	Check whether the motor is stuck or blocked
11	Seven-segment display shows E-4	Internal encryption abnormality, main board failure
12	Seven-segment display shows E-6	Check the communication between main and slave door operator
13	Seven-segment display shows E-7	Check for overload
14	Seven-segment display shows E-8	Voltage abnormality, check the power supply voltage
15	Seven-segment display shows E-9	Software overcurrent, waiting to recover, if it persists, control board failure
16	Seven-segment display shows E-13	Rebound in case of encountering resistance, check for blocking obstacles
	Seven-segment display shows E-14	Motor operation timeout, check if damping is applied.

7、 After-sale service

1. Check the contact condition of terminals regularly to ensure a firm connection;
2. Check whether the earthing is good;
3. Check the power supply carefully before use.

8、Appendix 1: heavy-duty swing door operator packing list (crank-linkage)

heavy-duty swing door operator packing list					
SN	name	picture	quantity	unit	Material number
1	Heavy-duty door operator		1	pcs	
2	Heavy-duty door operator controller		1	pcs	
3	Crank and linkage		1	set	
4	Remote controller		2	pcs	
5	Screw pack + wrench		1	set	