



Door Operator

User Manual

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The symbols that may be found in this document are defined as follows.

Symbol	Description
 Danger	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
 Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 Note	Provides additional information to emphasize or supplement important points of the main text.

Regulatory Information

FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

EU Conformity Statement



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under the EMC Directive 2014/30/EU, RE Directive 2014/53/EU, the RoHS Directive 2011/65/EU



2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info



2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info

Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

The precaution measure is divided into Dangers and Cautions:

Dangers: Neglecting any of the warnings may cause serious injury or death.

Cautions: Neglecting any of the cautions may cause injury or equipment damage.

	
Dangers: Follow these safeguards to prevent serious injury or death.	Cautions: Follow these precautions to prevent potential injury or material damage.

Danger:

- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- CAUTION: To reduce the risk of fire, replace only with the same type and rating of fuse.
- The equipment must be connected to an earthed mains socket-outlet.
- Keep body parts away from motors. Disconnect the power source during servicing.
- This product is powered by 100 ~ 240 VAC, and a warning label is attached to the high-voltage area after the equipment shell is disassembled. The warning label has insulating properties. Please do not tear the warning label if it is operated with electricity.
- This equipment is for use only with DS-K4DC210 and DS-K4DC211 mounting plate, bracket. Use with other (carts, stands, or carriers) may result in instability causing injury.

Cautions:

- Ensure correct wiring of the terminals for connection to an AC mains supply.
- The equipment has been designed, when required, modified for connection to an IT power distribution system. The device cover for indoor use shall be kept from rain and moisture.
- No naked flame sources, such as lighted candles, should be placed on the equipment.
- The serial port of the equipment is used for debugging only. 1. Install the equipment according to the instructions in this manual. 2. To prevent injury, this equipment must be securely attached to the floor/wall in accordance with the installation instructions.
- The shaft extension of the device should be 200 mm away from the door hinge.
- With safety beam sensors installed, the door wing will automatically pause or back if the sensors detect personnel intrusion during the process of opening or closing the door.
- When personnel blocks the door wing intentionally or unintentionally, this product will automatically detect this situation, and automatically pause or back according to DIP8.
- Only supports indoor use.

Available Models

Product Name	Model	Type
Door Operator	DS-K4DC210	Slide Rail
	DS-K4DC211	Scissor Arm

Manufacturer	Model
Hangzhou Hikvision Technology Co., Ltd.	Hikvision Sci-Tech Park, No. 299 Qiushi Road, Tonglu County, Zhejiang, China

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Chapter 1 Overview

1.1 Overview

Door operator is a kind of access control device designed to automatically open and close door, which supports indoor installation with adjustable door opening/closing angle and speed.

1.2 Features

- Two types of transmission structures
- Supports external device connection for automatic and safer door opening and closing
- Supports multiple door types for various scenarios
- Supports dual-motor communication
- (Optional) Controls one or more doors via 868 MHz wireless keyfob

1.3 Appearance

Refer to the following contents for detailed information of the door operator:

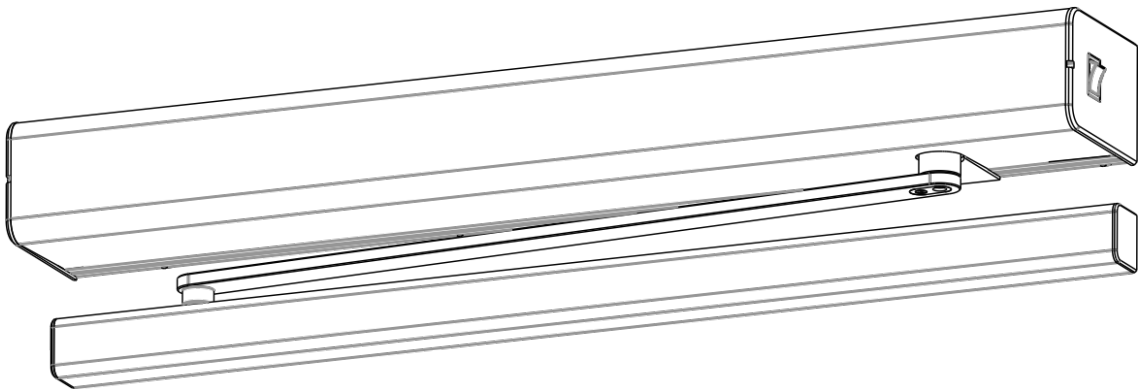


Figure 1-1 Slide Rail Type Diagram



Slide rail type corresponds to DS-K4DC210.

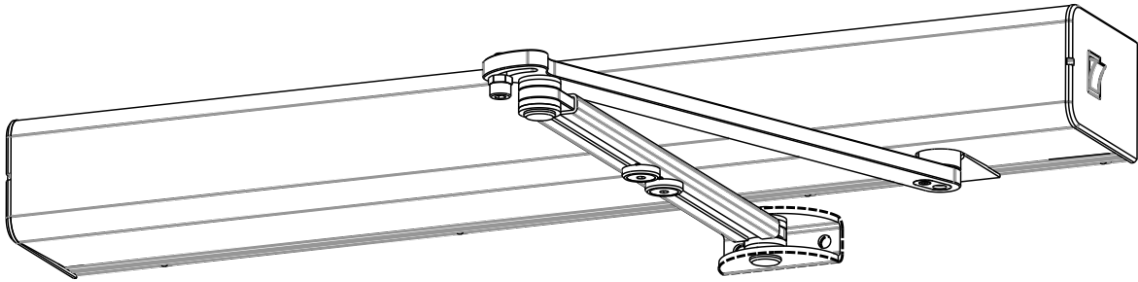


Figure 1-2 Scissor Arm Type Diagram

Note

Scissor arm type corresponds to DS-K4DC211.

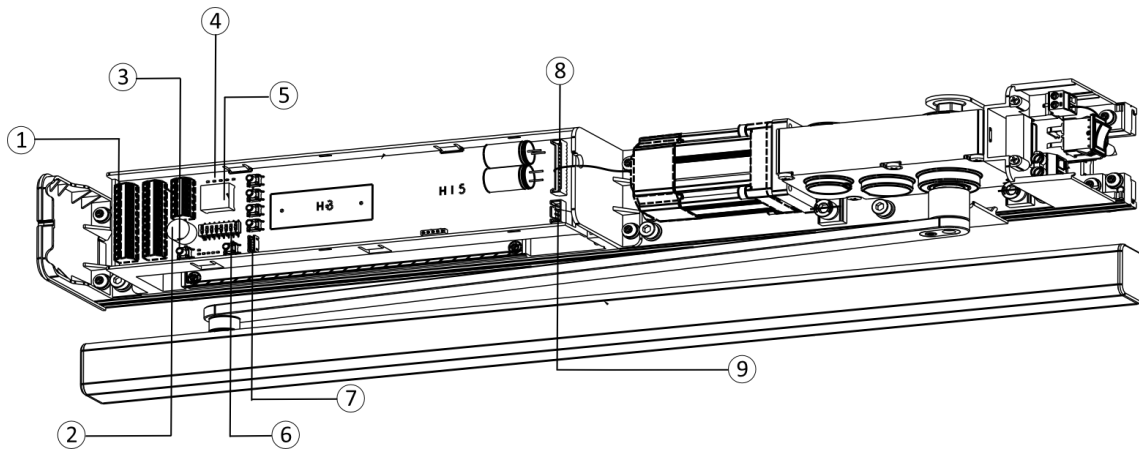


Figure 1-3 Door Operator Diagram

Table 1-1 Description of Door Operator

No.	Description
1	Wiring Terminal
2	Buzzer
3	Keyfob Pair Button
4	Indicator
5	Digital Tube
6	DIP Switch
7	Debugging Port (For debugging only)

No.	Description
8	Motor Input
9	24 V Input Interface

Chapter 2 Installation

2.1 Installation Environment

- The device only supports indoor installation. The slide rail type is applicable to opening door inward, while the scissor arm type is applicable to opening door outward.
- The door operator is divided into slide rail type and scissor arm type according to different transmission structures. Choose proper installation environment for different transmission structures.

2.1.1 Slide Rail

Use slide rail as the transmission structure to connect device main body and door.

Installation Requirement

The door operator can be installed on wall or door frame.

- It cannot be installed on walls with poor strength, such as gypsum board.
- When installing slide rail series device, the wall or door frame should be in line with the door.

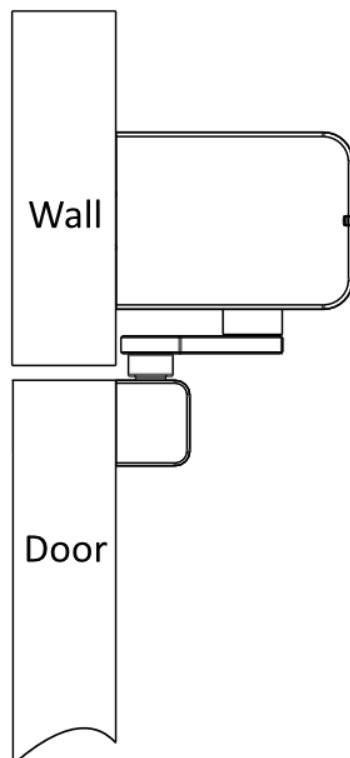


Figure 2-1 Installation Requirement

2.1.2 Scissor Arm Type

Use scissor arm as the transmission structure to connect device main body and door.

Installation Requirement

The door operator can be installed on wall or doorframe.

- It cannot be installed on walls with poor strength, such as gypsum board.
- When installing scissor arm series device, the wall or door frame cannot protude more than 200 mm from the door.

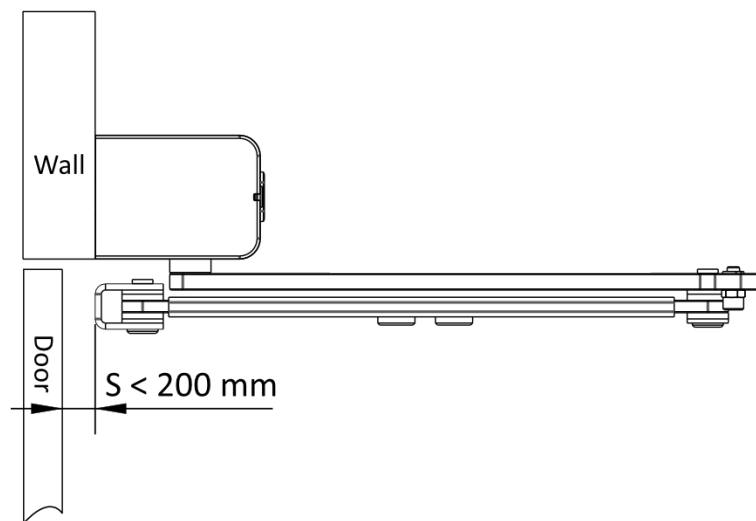


Figure 2-2 Installation Requirement

2.2 Door Description

Door Requirement

The door that can be applied to the door operator is required as follows:

- Door weight supports max. 120 kg.
- Door width should be 670 mm to 1200 mm.
- Door thickness should be more than 30 mm.
- The height difference between wall or door frame and door upper edge should be less than 12 mm.

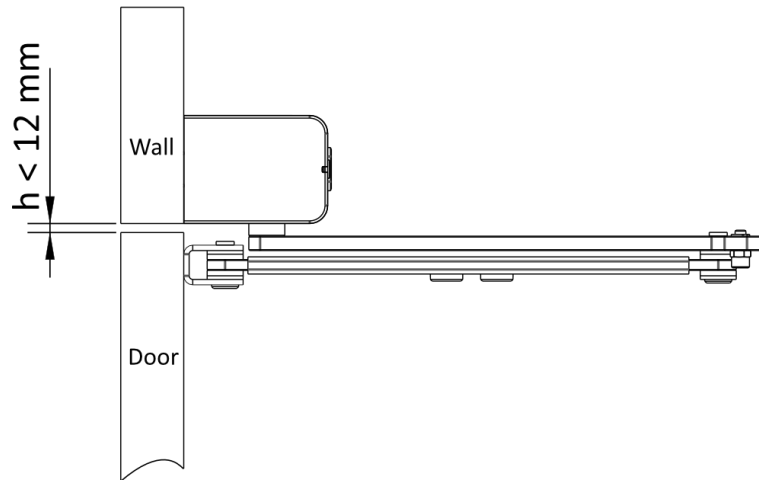


Figure 2-3 Height Difference



Note

- Door weight should be evenly distributed.
- The door operator is applicable to wooden doors and icon doors that can be screwed.
- The door weight and door width should conform to the following diagram.

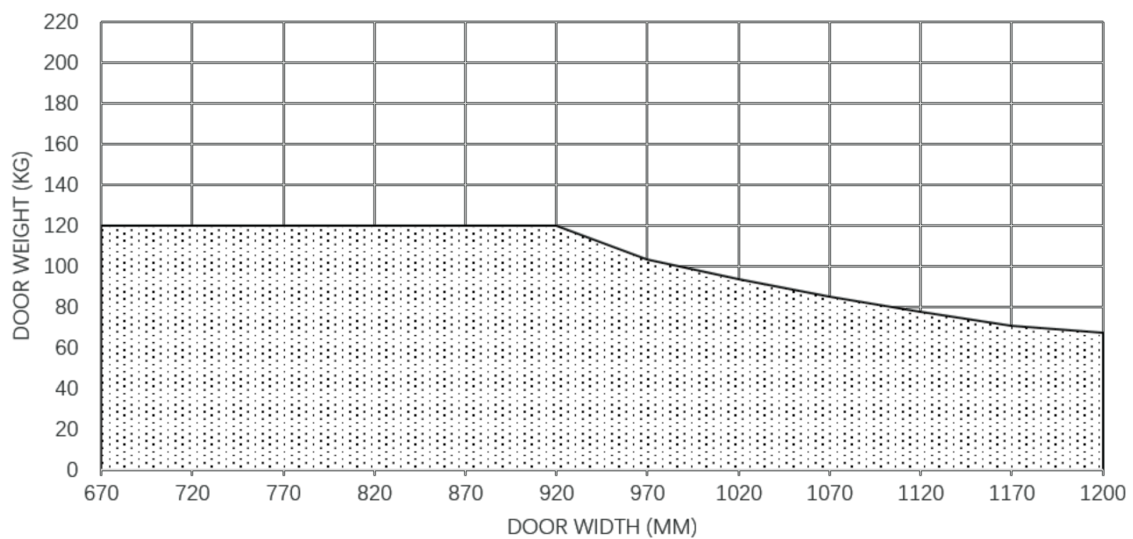


Figure 2-4 Relation between Door Weight and Door Width

2.3 Door Scene Description

Choose single door, left and right doors, or front and back interlocking doors according to your actual needs.

Single Door

One device is installed on one door to control the opening and closing of the door.

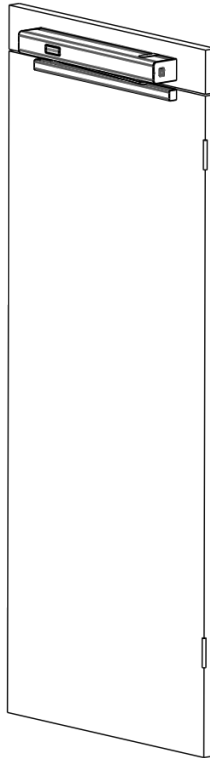


Figure 2-5 Single Door

Left and Right Doors

Two devices are installed on left and right doors to control the opening and closing of two doors. The Left and Right Doors can be divided into Side-Hung Door and Tongue and Groove Door according to the door edge.

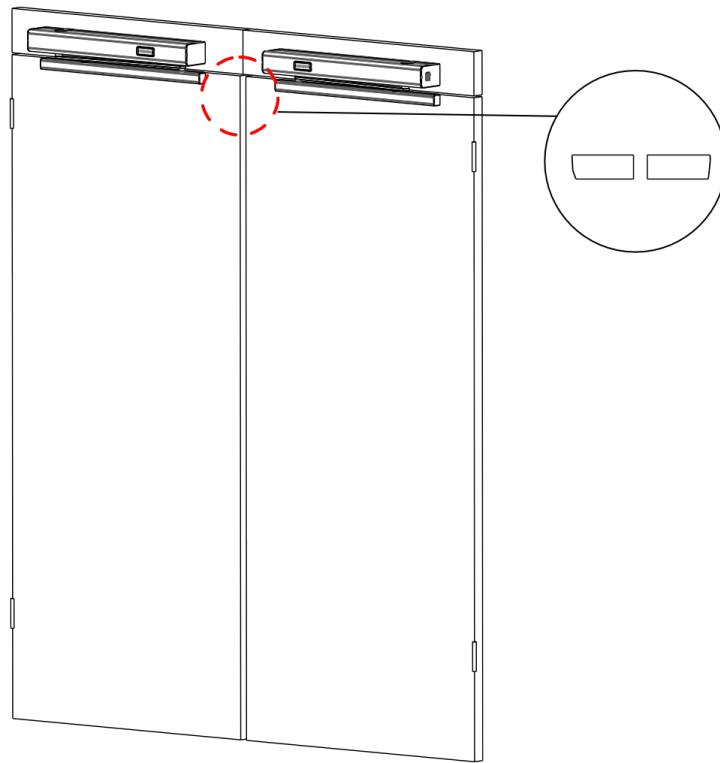


Figure 2-6 Side-Hung Door

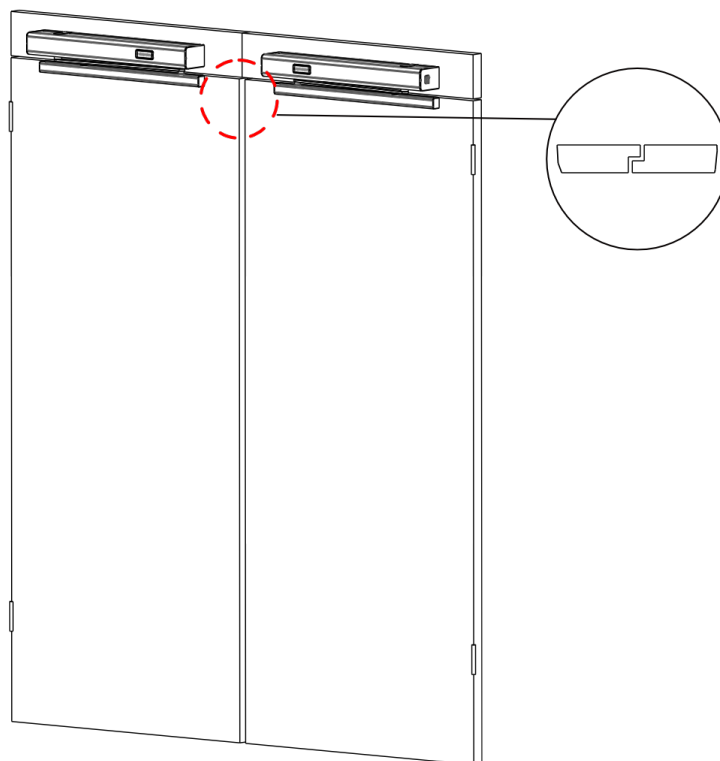


Figure 2-7 Tongue and Groove Door



Note

The two door wings of Left and Right Doors simultaneously open and close after receiving door opening or closing signal.

Front and Back Interlocking Doors

Two devices are installed on the front and back doors to separately control to the opening and closing of two doors.

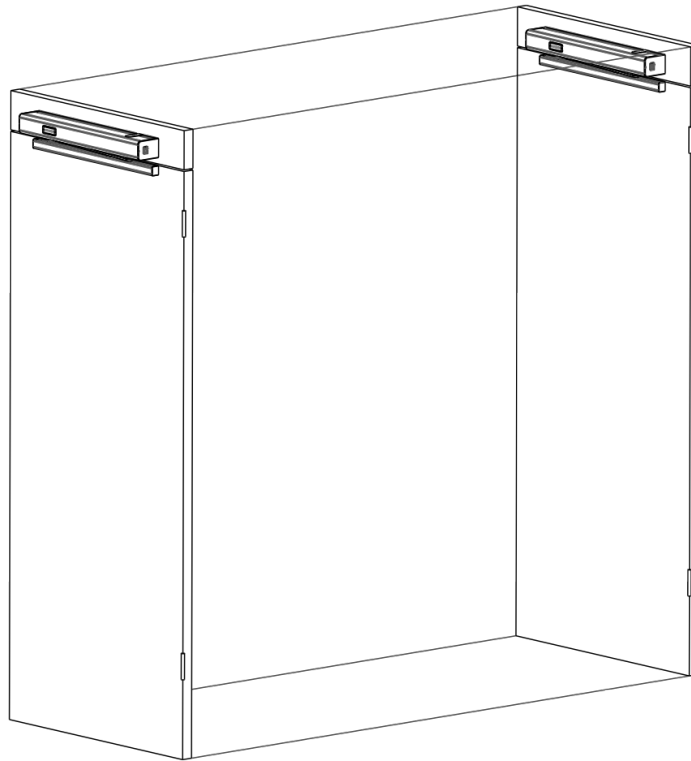


Figure 2-8 Front and Back Interlocking Doors



Note

One door can receive opening signal and open only when the other door is closed.

2.4 Installation

2.4.1 Slide Rail Type Installation

Slide rail series device only supports indoor installation and is applicable to opening door inward.

Steps

1. Before installation, use the supplied screwdriver to unclench the device shell out of the dismantling positions of the two end caps.

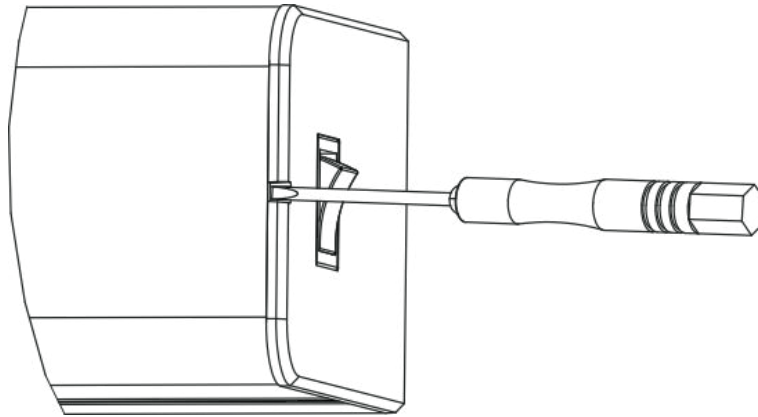


Figure 2-9 Open Device Shell

2. Dig installation holes according to the positions of Hole 1 on the mounting template, and secure the mounting plate on the door frame with eight M6 expansion bolts. Secure the device main body on the mounting plate with eight M5 bolts.

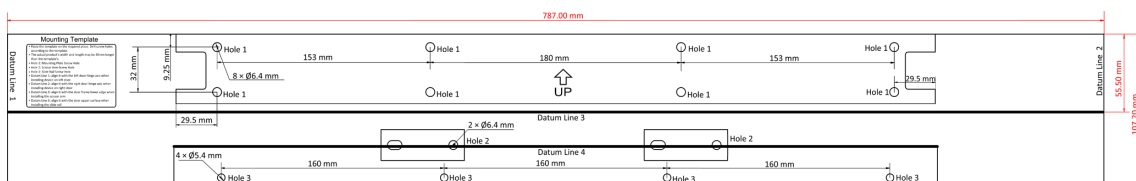


Figure 2-10 Mounting Template

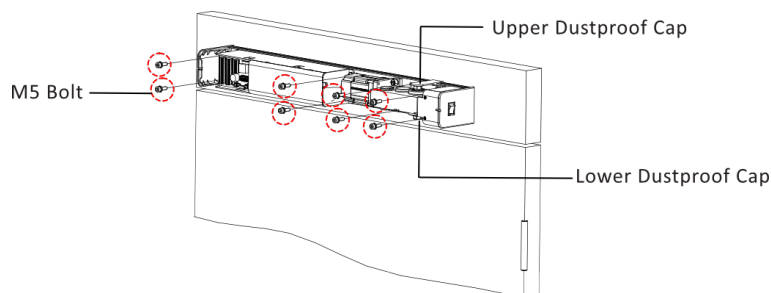


Figure 2-11 Secure Device

Note

- Make sure the upper dust proof cap is complete, and the lower one is notched.
 - (Optional) You can remove the plastics parts from the device's left end to reveal a cable hole for wiring.
 - Remove the two screws from the device's right end and take off the cap to reveal a cable hole for 220 VAC power input.
3. Dig installation holes according to the positions of Hole 3 on the mounting template, and secure the slide rail on the door with four M5 bolts.

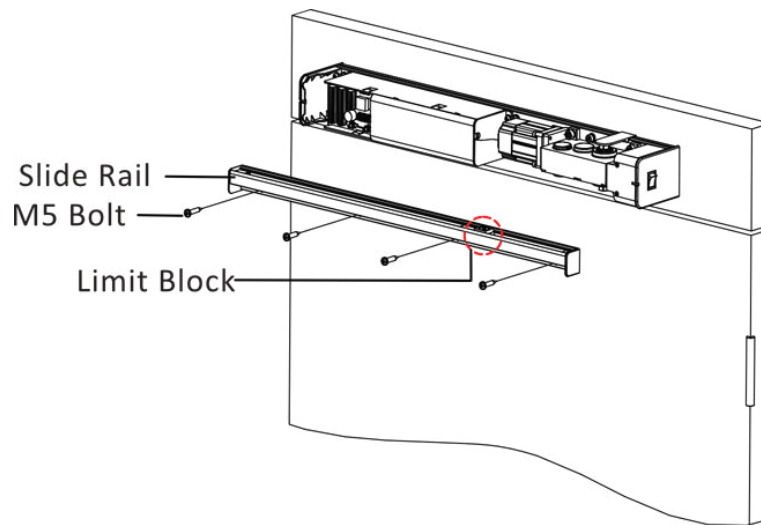


Figure 2-12 Secure Slide Rail



Note

Align the upper edge of the slide rail with door upper surface.

4. Align the screw holes of pull arm and shaft extension, and secure with one M6 bolt. Secure the cover plate on the pull arm with one M3 screw. Open the door to an appropriate angle, and adjust the limit block position.

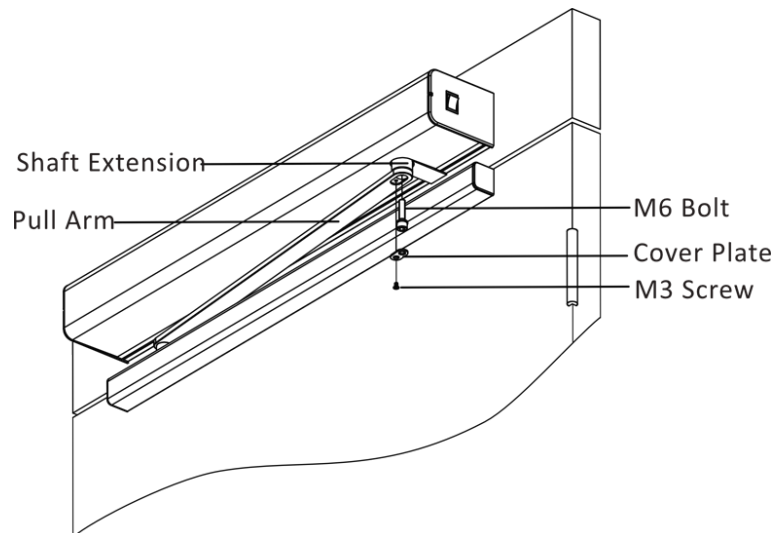


Figure 2-13 Secure Device and Slide Rail

5. After debugging, align the device shell with device main body, fasten the shell. Slide the rail shell from left to right, fasten the shell, and buckle the end cap to complete the installation.

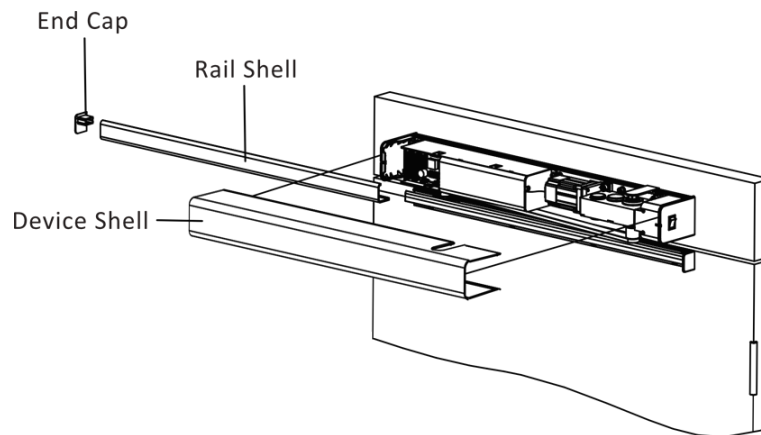


Figure 2-14 Complete Installation

2.4.2 Scissor Arm Type Installation

Scissor arm series device only supports indoor installation and is applicable to opening door outward.

Steps

1. Before installation, use the supplied screwdriver to unclench the device shell out of the dismantling positions of the two end caps.

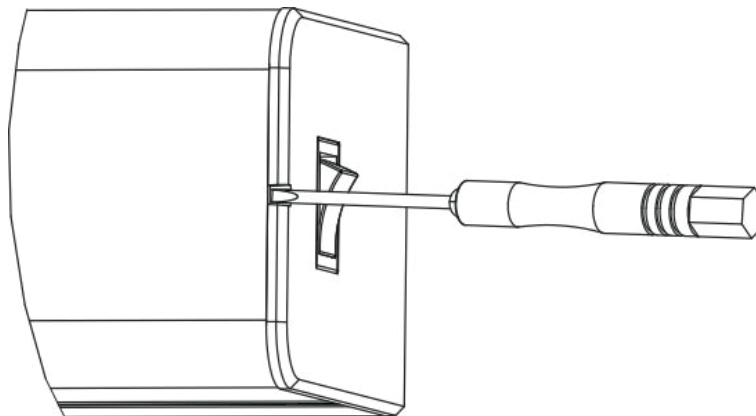


Figure 2-15 Open Device Shell

2. Dig installation holes according to the positions of Hole 1 on the mounting template, and secure the mounting plate on the door frame with eight M6 expansion bolts. Secure the device main body on the mounting plate with eight M5 bolts.

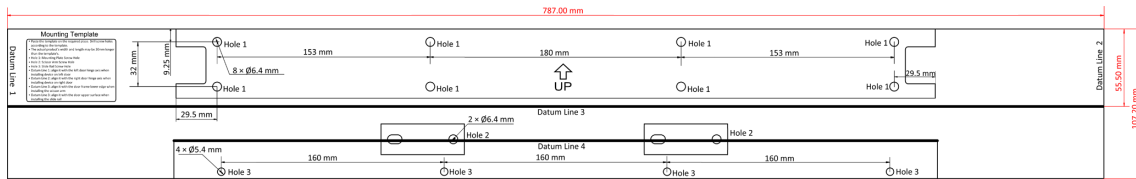


Figure 2-16 Mounting Template

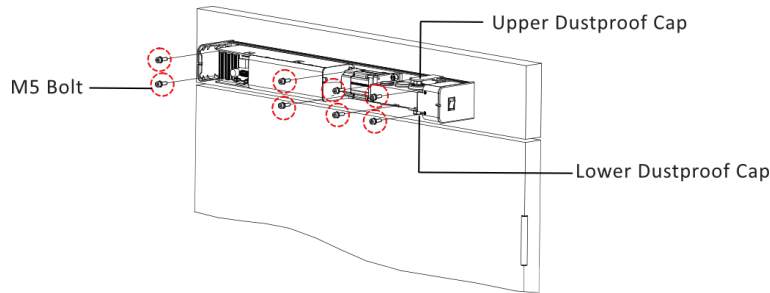


Figure 2-17 Secure Device



Note

- Make sure the upper dust proof cap is complete, and the lower one is notched.
- (Optional) You can remove the plastics parts from the device's left end to reveal a cable hole for wiring.
- Remove the two screws from the device's right end and take off the cap to reveal a cable hole for 220 VAC power input.

3. Dig installation holes according to the positions of Hole 2 on the mounting template, and secure the scissor arm and pedestal on the door with M6 bolts. Secure the scissor arm on the shaft extension with one M6 bolt. Secure the cover plate on the scissor arm with one M3 screw. Adjust the scissor arm to make it vertical to door, and fasten the tuner screw.

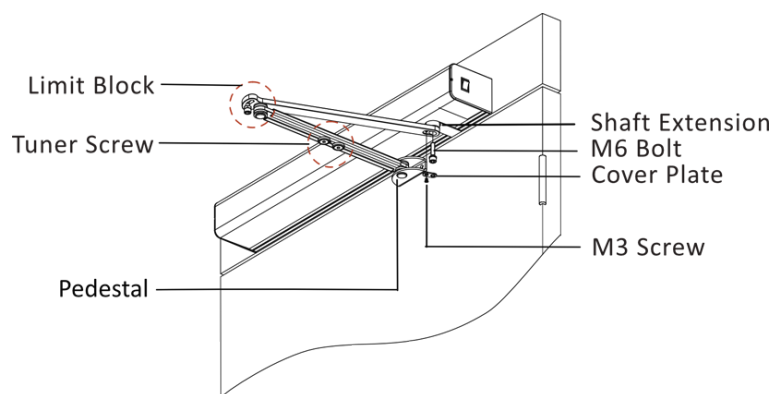


Figure 2-18 Secure Scissor Arm



Note

Align the lower edge of the device with door frame lower edge.

4. Open the door to an appropriate angle, and adjust the limit block position.

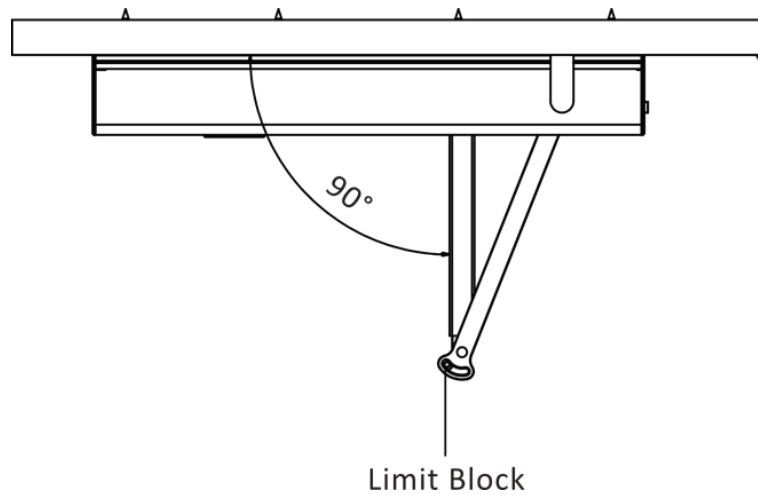


Figure 2-19 Adjust Limit Block

5. After debugging, align the device shell with device main body, and fasten the shell to complete the installation.

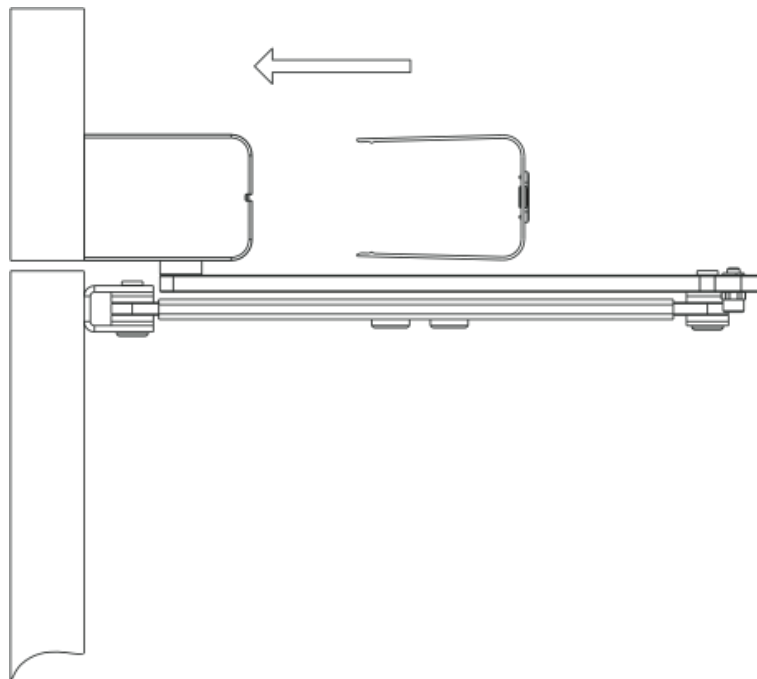


Figure 2-20 Complete Installation

Chapter 3 Terminal Description

Introduces the wiring terminals of the door operator.

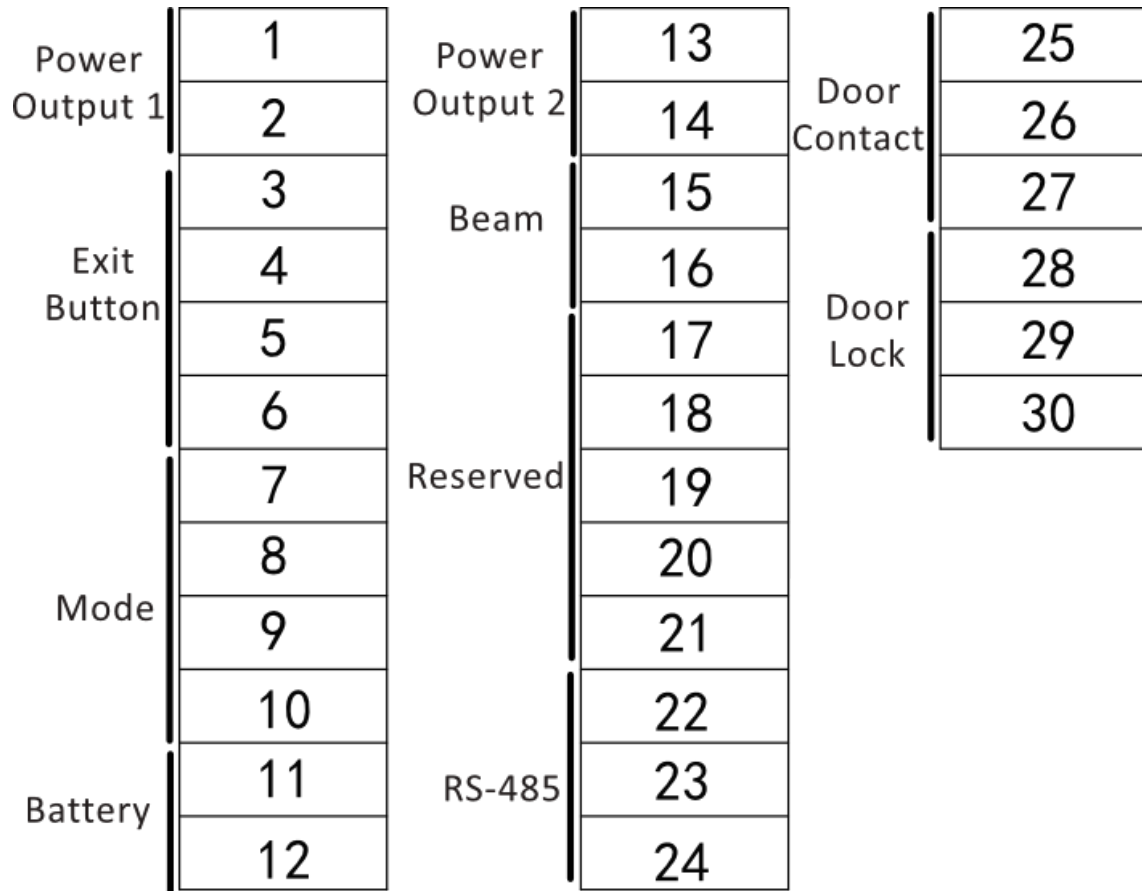


Figure 3-1 Wiring Terminal Diagram

The descriptions of the terminals are as follows:

Table 3-1 Terminal Descriptions

Group	No.	Name	Description
Power Output 1	1	+24 V	Power Output
	2	GND	Ground
Exit Button	3	OA	Access Control Interface
	4	OB	Exit Button Interface
	5	GND	Ground

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Group	No.	Name	Description
	6	XF	Fire Output
Mode	7	OP	Remain Open
	8	CO	Remain Closed
	9	CC	Controlled
	10	GND	Ground
Battery	11	BAT	Battery Output
	12	GND	Ground
Power Output 2	13	+ 12 V	Power Output
	14	GND	Ground
Beam	15	OS	Safety Beam Sensor (Open Door)
	16	CS	Safety Beam Sensor (Close Door)
Reserved	17	Reserved	Reserved
	18	Reserved	Reserved
	19	GND	Ground
	20	Reserved	Reserved
	21	Reserved	Reserved
RS-485	22	GND	Ground
	23	C+	Main and Sub Motor Synchronization/ Interlocking
	24	C-	Main and Sub Motor Synchronization/ Interlocking
Door Contact	25	NO	Door Contact Output (NO)
	26	COM	Common
	27	NC	Door Contact Output (NC)
Door Lock	28	GND	Ground

Group	No.	Name	Description
	29	NO	Lock Output (NO)
	30	NC	Lock Output (NC)

Chapter 4 Peripheral

4.1 Peripheral Description

The door operator can connect peripherals for opening or closing doors automatically and safely.

Note

In high-security application scenarios, when the door is in the closed state, an additional electric lock device is suggested to install for dual locking, effectively enhancing the door impact resistance and preventing forced entry.

Microwave Sensors

Detecting mobile signal by microwave sensors will trigger door opening signal, and the door operator opens door

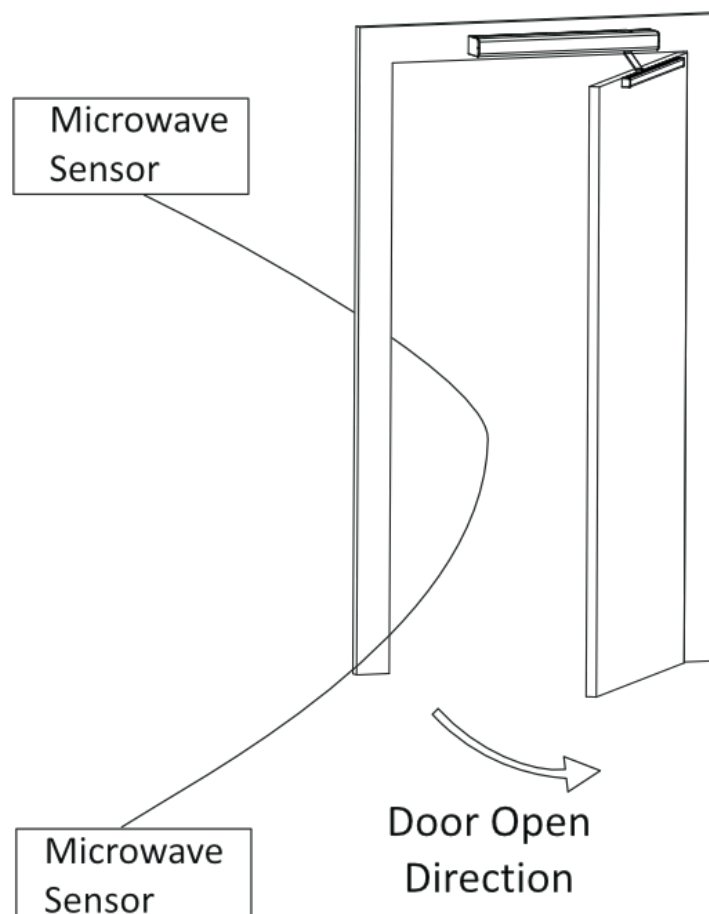


Figure 4-1 Microwave Sensors Diagram

Exit Button

After the exit button (IR-type or touch-type) is triggered, the door operator opens door.

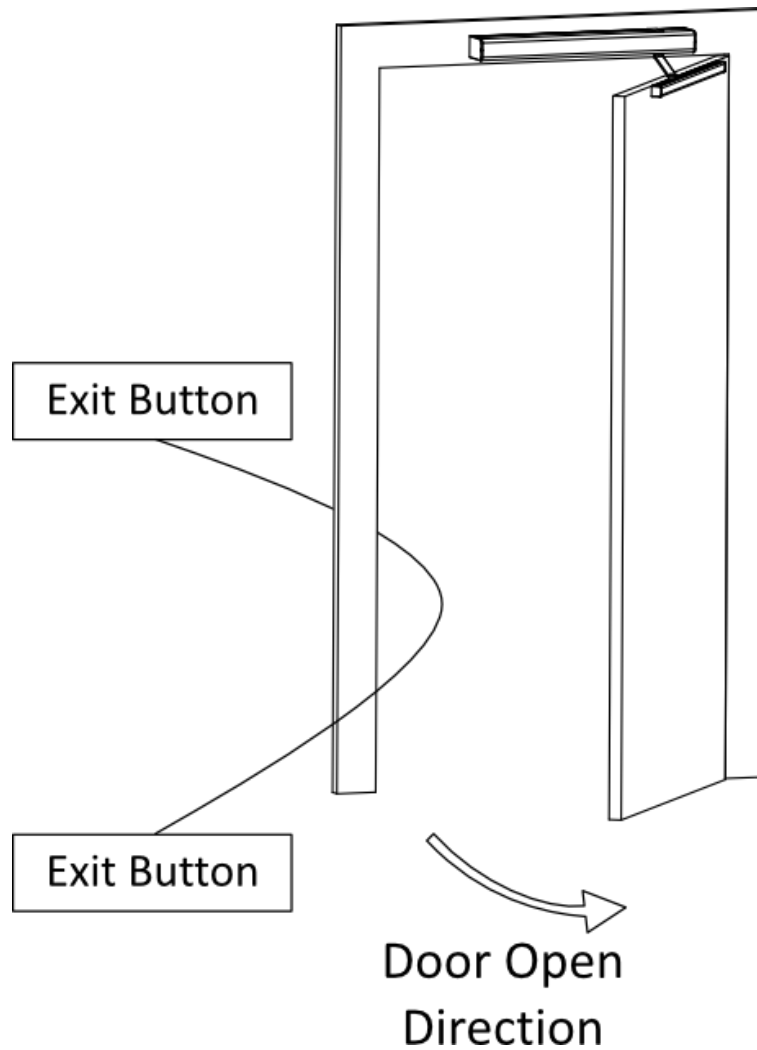


Figure 4-2 Exit Button Diagram

Access Control Devices

Connected to access control devices, the door operator is controlled by the access control devices.

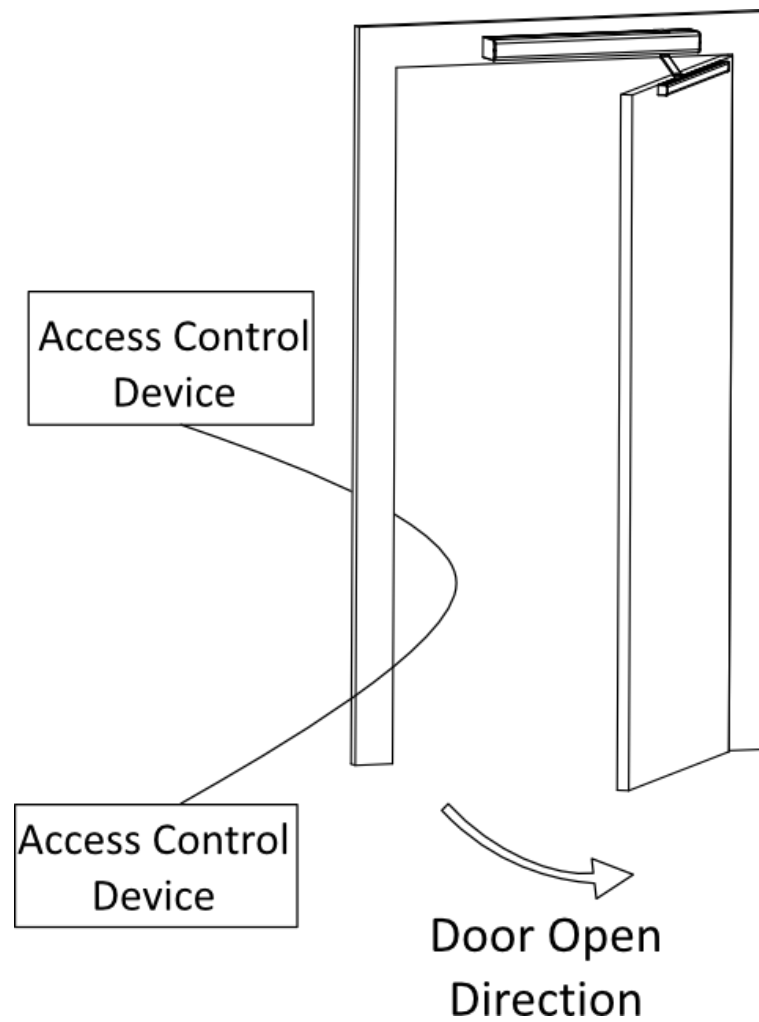


Figure 4-3 Access Control Devices Diagram

Safety Beam Sensor (Open)

If the safety beam sensor detects personnel approaching when door is opening, the door operator stops opening door, in order to avoid hitting the personnel.

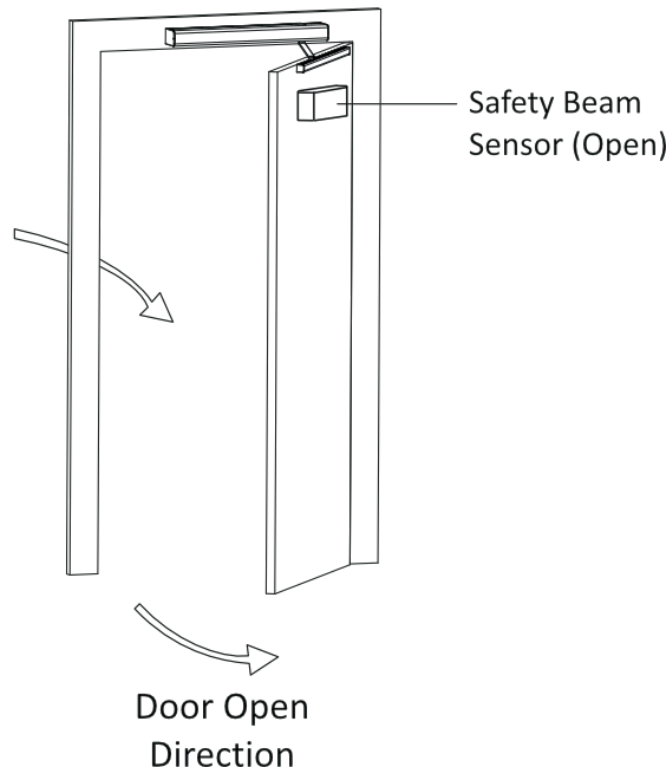


Figure 4-4 Safety Beam Sensor (Open) Diagram

Safety Beam Sensor (Close)

If the safety beam sensor detects personnel approaching when door is closing, the door operator stops closing door, in order to avoid hitting the personnel.

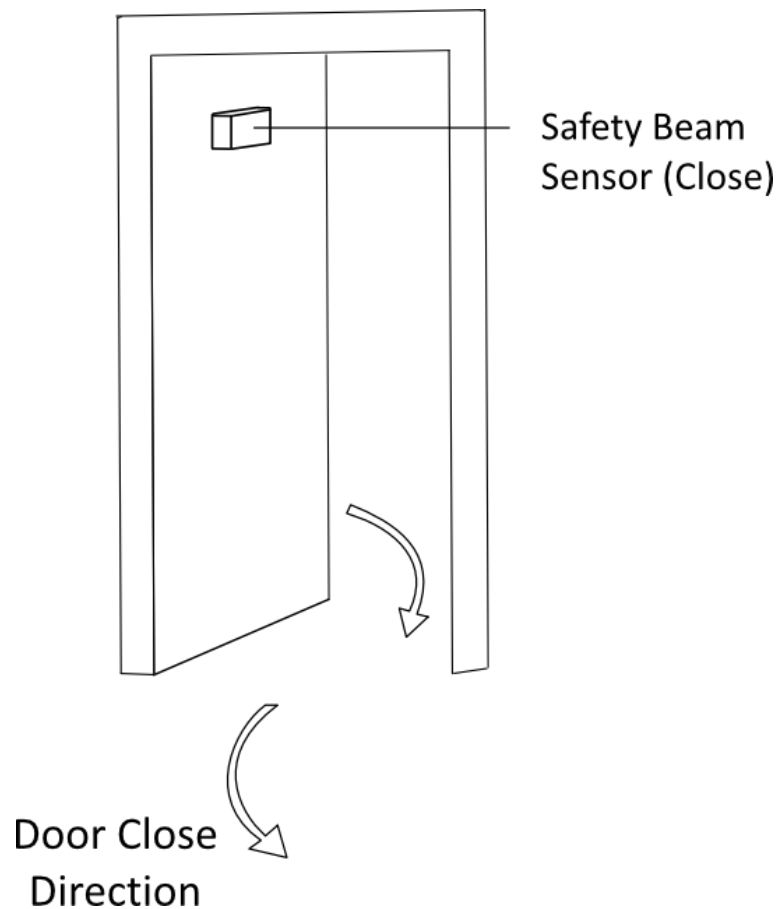


Figure 4-5 Safety Beam Sensor (Close) Diagram

Rotary Switch

Rotary switch is used to debug device working modes, including remain open, remain closed, and controlled modes.

4.2 Peripheral Wiring

Peripherals' communication cables and power cables should be plugged into the device's wiring terminal.

Note

- The door operator supports 12 V and 24 V power output. Select power output terminal according to your actual needs.
- In the case of single door or left and right doors, all peripherals, except for door lock of the sub device, should be connected to the main motor. In the case of front and back interlocking doors,

rotary switch should be connected to the main motor, and other peripherals should be separately connected to the two motors.

Microwave Sensors

Microwave sensors are installed both inside and outside door, with the same wiring position and method.

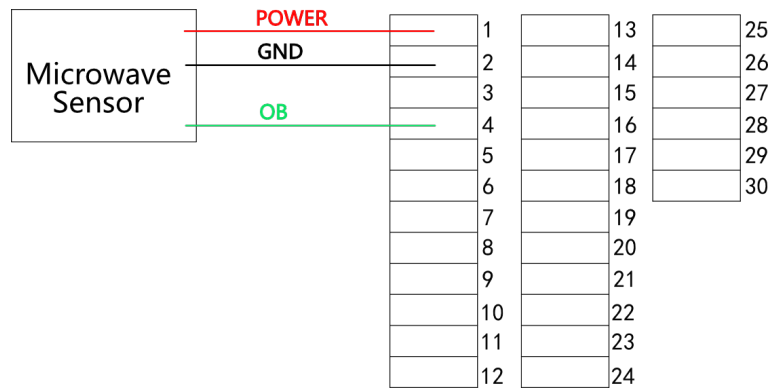


Figure 4-6 Wiring of Microwave Sensors

Exit Button

Exit buttons (IR-type or touch-type) are installed both inside and outside door, with the same wiring position and method.

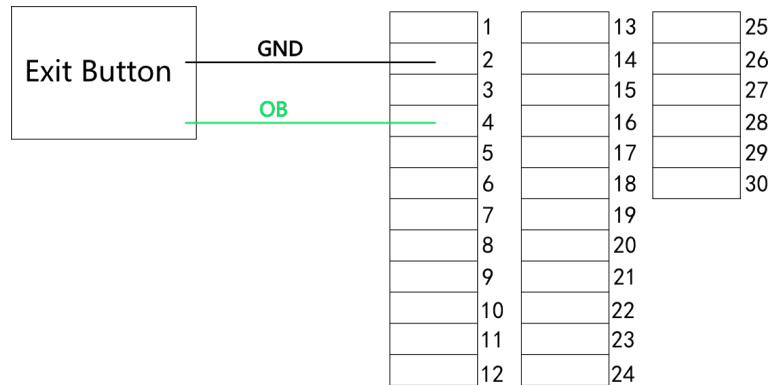


Figure 4-7 Wiring of Exit Button

Access Control Devices

Access control devices are installed both inside and outside door, with the same wiring position and method.

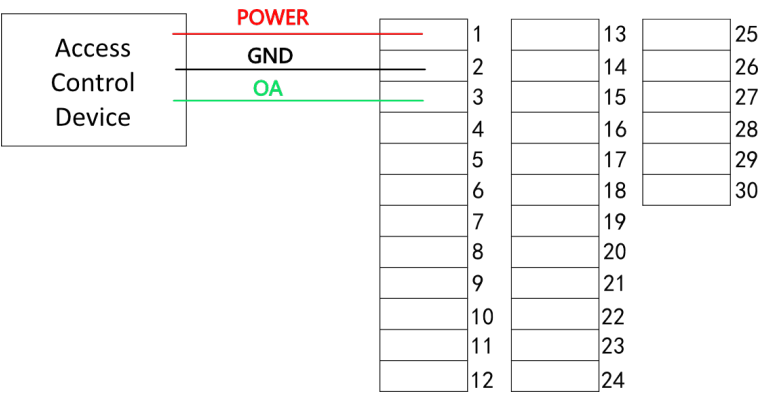


Figure 4-8 Wiring of Access Control Devices

Safety Beam Sensor (Open)

The safety beam sensor (open) is installed in the door open direction.

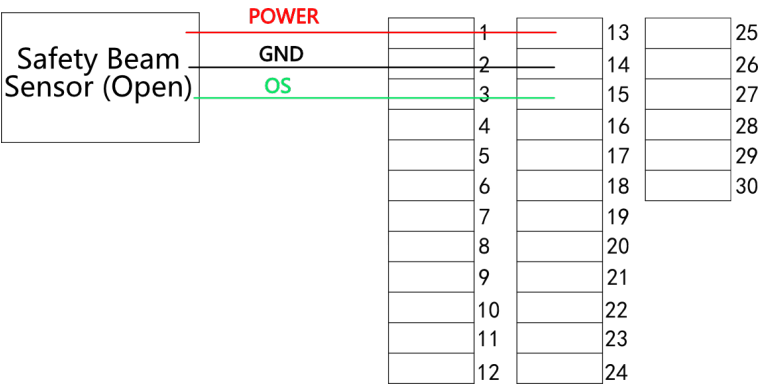


Figure 4-9 Wiring of Safety Beam Sensor (Open)

Safety Beam Sensor (Close)

The safety beam sensor (close) is installed in the door close direction.

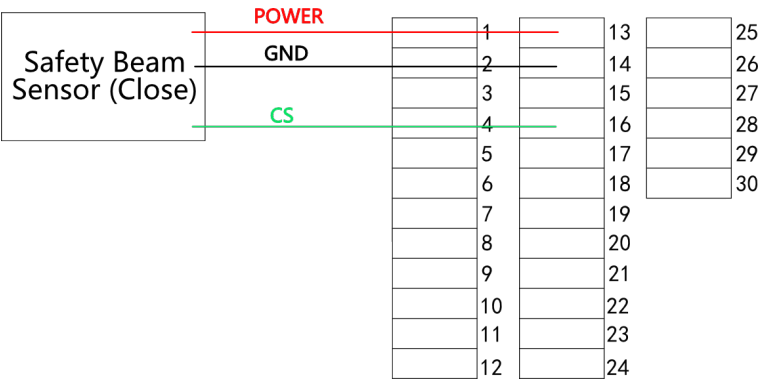


Figure 4-10 Wiring of Safety Beam Sensor (Close)

Rotary Switch

Rotary switch should be installed on the main motor.

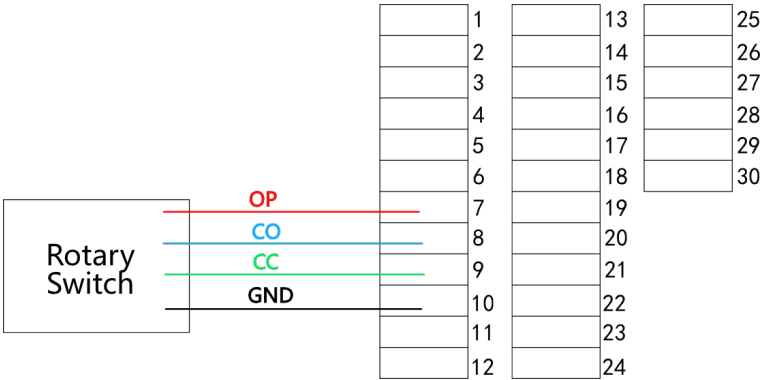


Figure 4-11 Wiring of Rotary Switch

Door Contract

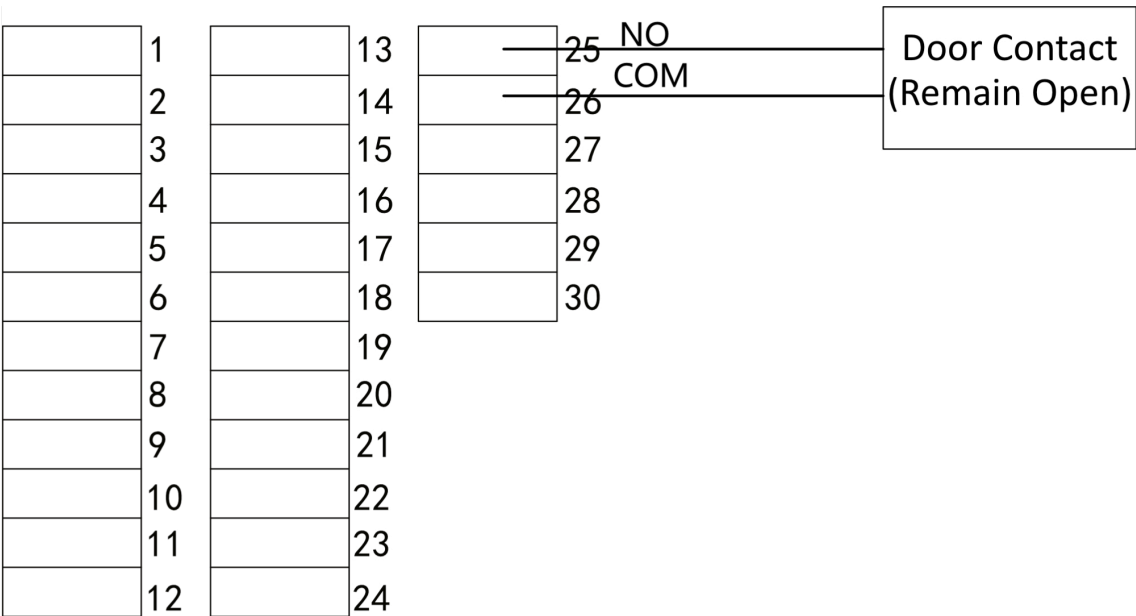


Figure 4-12 Door Contact Wiring (Remain Open)

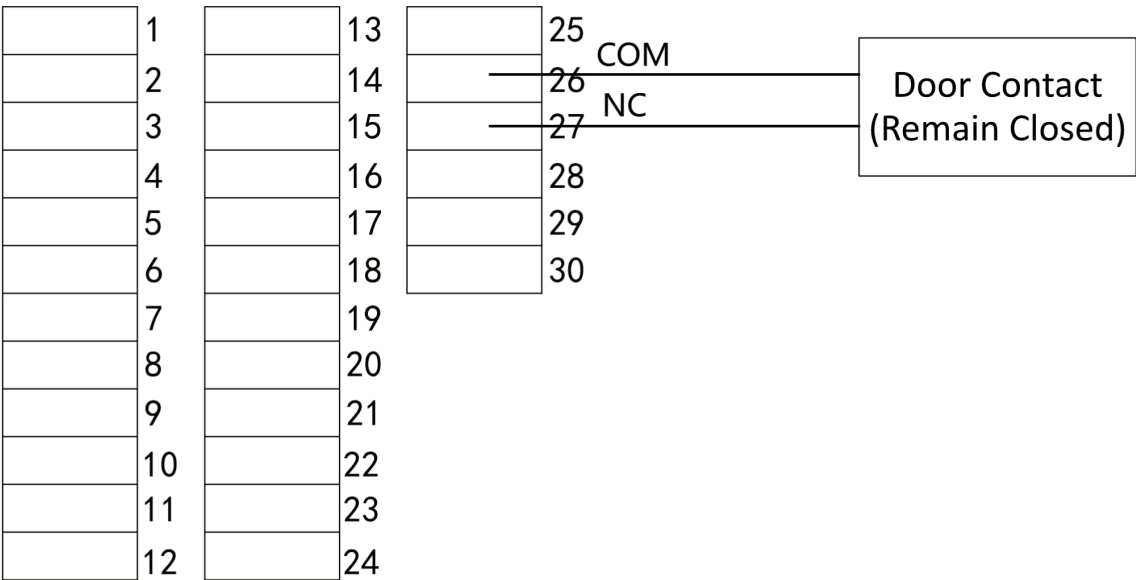


Figure 4-13 Door Contact Wiring (Remain Closed)

Door Lock

 Note

The door lock interface can only connect to 1 door lock and cannot be connected in parallel to multiple door locks. The door lock must be the recommended model.

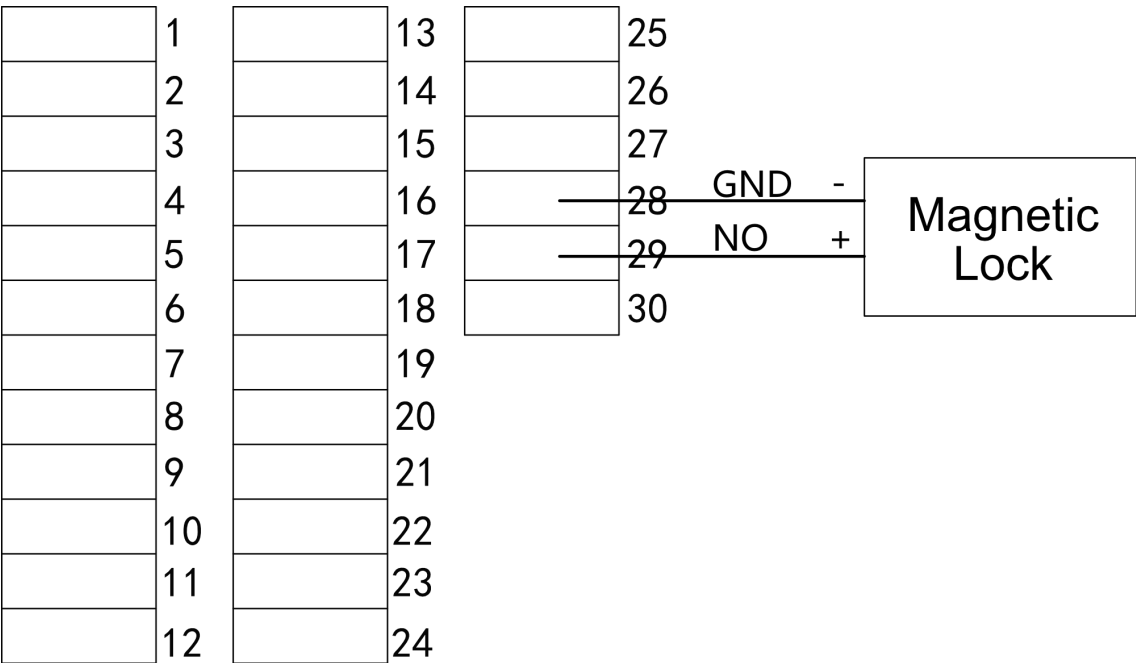


Figure 4-14 Door Lock Wiring (Magnetic Lock)

 Note

- The door lock interface can only connect to 1 door lock and cannot be connected in parallel to multiple door locks. The door lock must be the recommended model.
- The device already has a 12V/1.5A power supply to power the lock, and no external power source is required.

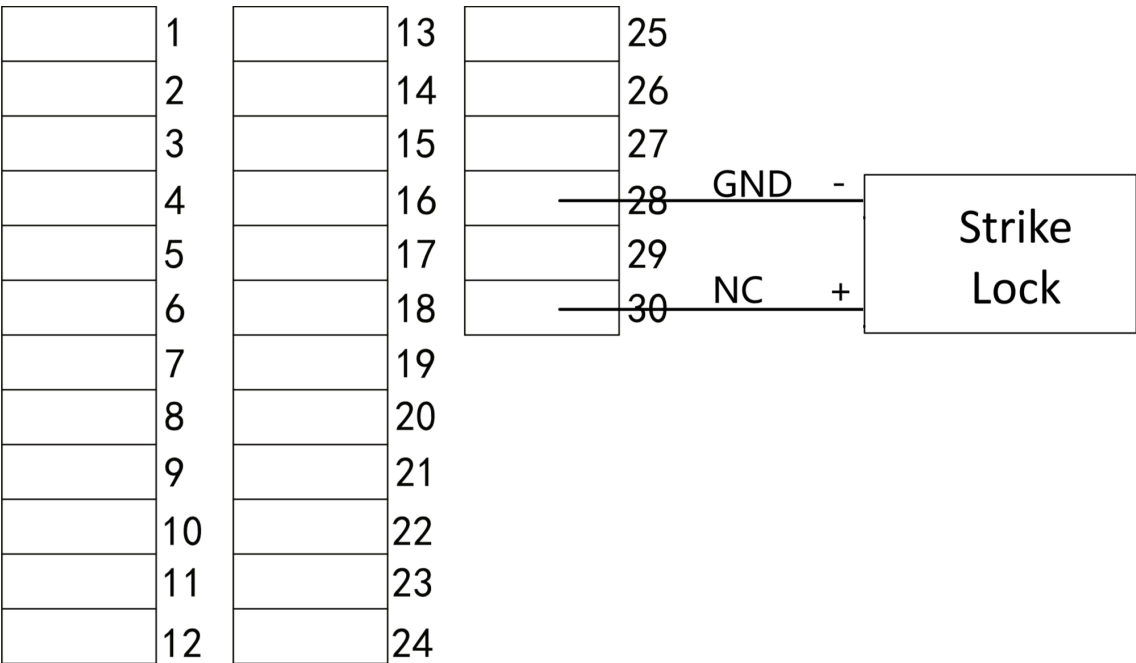


Figure 4-15 Door Lock Wiring (Strike Lock)

 Note

- The door lock interface can only connect to 1 door lock and cannot be connected in parallel to multiple door locks. The door lock must be the recommended model.
- The device already has a 12V/1.5A power supply to power the lock, and no external power source is required.

Chapter 5 Quick Operation

5.1 DIP Switch Description

After installation, set DIP switches according to your actual needs.

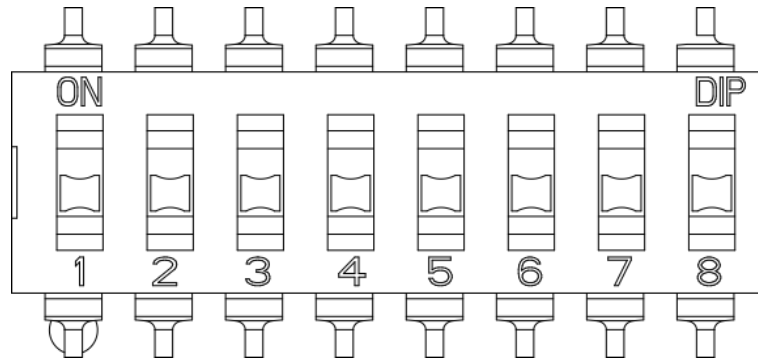


Figure 5-1 DIP Switch

Table 5-1 DIP Switch Description

DIP Switch	Status	Command
1	ON	With Locker
	OFF	No Locker
2	ON	Push and Go
	OFF	Push and Go Forbidden
3	ON	Scissor Arm
	OFF	Slide Rail
4	ON	Main Motor
	OFF	Sub Motor
5	ON	Left and Right Doors
	OFF	Front and Back Interlocking Doors
6	ON	Side-Hung Door

DIP Switch	Status	Command
	OFF	Tongue and Groove Door
7	ON	Tongue and Groove Door: Main First
	OFF	Tongue and Groove Door: Sub First
8	ON	Suspend when Blocked
	OFF	Back when Blocked

Locker

In the case of high security requirements, an additional locker can be installed, so that the door is locked more tightly to achieve the performance of anti-shock door opening.

Push and Go

After enabling "Push and Go" function, push the door wing when the door is closed, and the motor will be triggered to open the door.

Scissor Arm/Slide Rail

The door operator adopts scissor arm or slide rail as the transmission structure.

Main Motor/Sub Motor

Distinguish main motor and sub motor when two devices are installed separately on left and right doors. Set the device as main motor in the case of single device installation.

Left and Right Doors/Front and Back Interlocking Doors

For the description of door scene, please refer to **Door Scene Description**

Side-Hung Door/Tongue and Groove Door

For the description of door scene, please refer to **Door Scene Description**

Tongue and Groove Door: Main First/Tongue and Groove Door: Sub First

Set the main door or sub door to open first according to your door installation.

Suspend when Blocked/Back when Blocked

When the door encounters an obstacle during door opening or closing, the door will stop or retreat to a certain angle.

Note

- Single Motor: set DIP4=ON, DIP5= ON, DIP6=ON.
 - Dual Motor: DIP 2, 5, 6, 7, 8 of the main motor should be set same. Wire all the external devices on the main motor.
 - Side-Hung Door: set DIP4=ON for main motor, and set DIP4=OFF for sub motor. Set DIP5=ON, DIP6=ON for the two motors.
 - Tongue and Groove Door: set DIP4=ON for main motor, and set DIP4=OFF for sub motor. Set DIP5=ON, DIP6=OFF for the two motors.
 - Front and Back Interlocking Doors: set DIP4=ON for main motor, and set DIP4=OFF for sub motor. Set DIP5=OFF, DIP6=ON for the two motors.
-

5.2 Power-On and Self-Test

After powering on, the device will enter the self-test status to check if the device has any errors. If yes, the device will alarm. If not, the device will automatically close doors.

Note

- When the door operator is powered off, you can push the door wing to open the door.
 - When the door operator remains closed, you can push the door wing with more than 120 N to open the door.
-

5.3 Digital Tube Status Description

The display of digital tube can be used as a prompt for normal device, abnormal device, and other operation.

Table 5-2 Description of Digital Tube Status

Digital Tube Status	Description
00	Normal device
E0	Fail to start motor algorithm; underlying algorithm overload, undervoltage, or overvoltage
E1	Fail to find door opening and closing positions
E2	Over-current
E3	Motor winding pulled out or the motor is damaged
E4	Underlying algorithm is not SPIN
E5	Rotation command execution timed out

Digital Tube Status	Description
E6	Hall wire or coding disk pulled out
E8	Flash chip error
E9	Flash data read and write error
EA	inproper DIPs of main motor, sub motor, dual motors
EB	Communication errors of single motor or dual motors, or the DIPs are inproperly set
66.	Pair wireless keyfob
77.	Clear wireless keyfob
88.	Synchronize parameters of main and sub devices

5.4 Key and Parameter Settings

The key is located on the main body of the device, it can be configured for switch operation speed, etc.

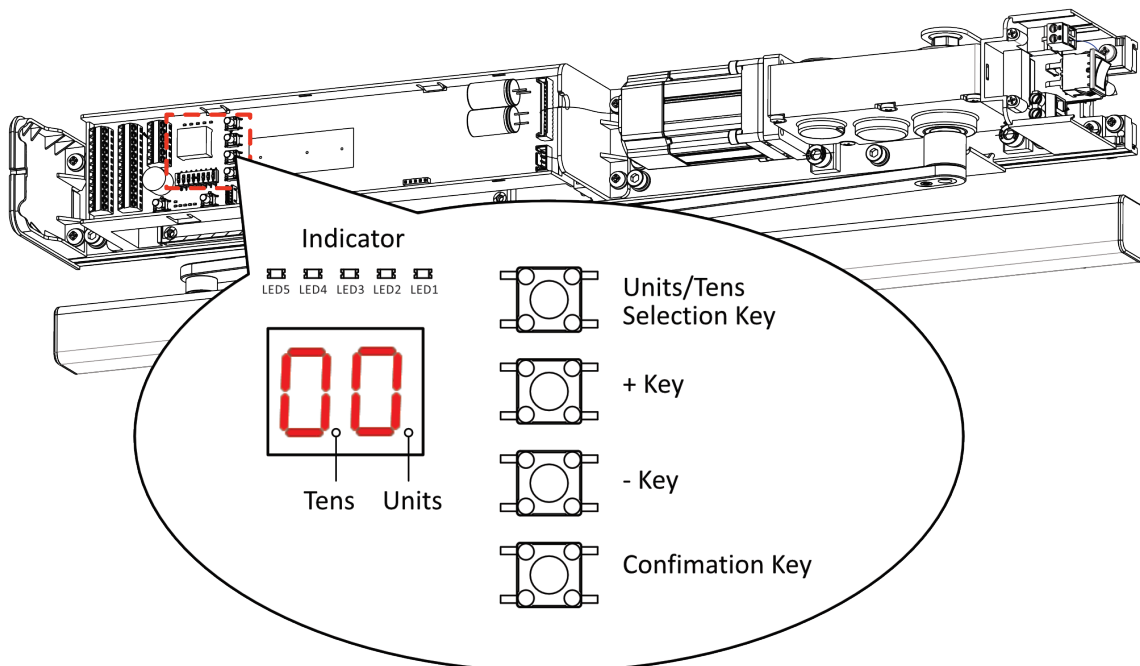


Figure 5-2 Key Position

Indicator Instructions

The indicator displays the current parameter sequence number as a binary-coded decimal (BCD). For example, the indicator shown below indicates that the third parameter is being set, with the binary code being "000011".

Note

For details about the parameters that can be configured, see the table below.

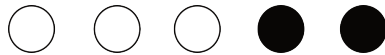


Figure 5-3 Indicator Example

Key Instructions

Selection

Choose the current setting's parameter among the tens or units place.

- First Menu: When the right indicator of the digital tube lights on, it indicates the units place.
- Second Menu: When the middle indicator of the digital tube lights on, it indicates the tens place.

+ Key

Press the key to increase the value (not applicable).

- Key

Press the key to decrease the value.

Confirmation Key

Select the parameter and confirm.

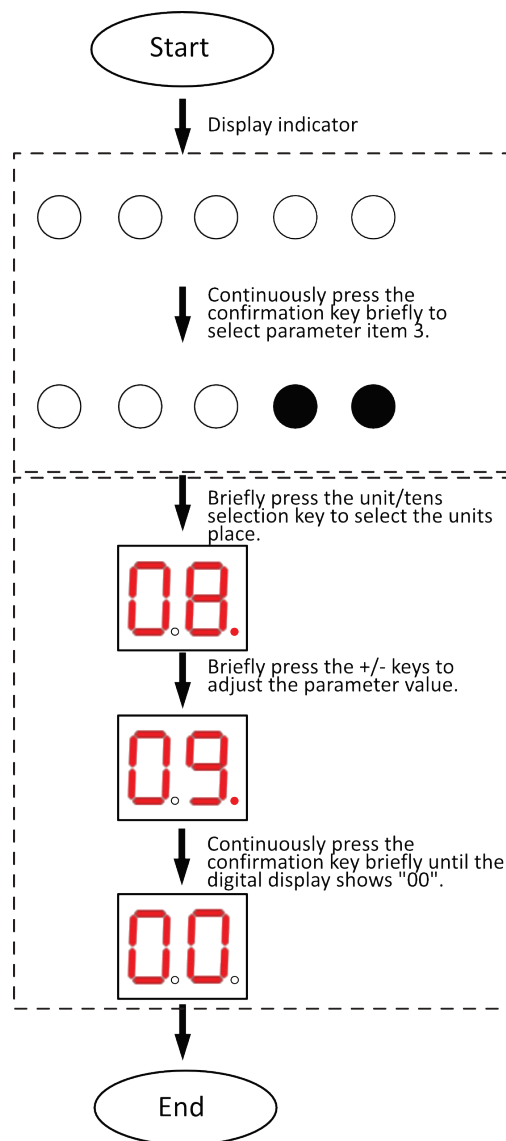


Figure 5-4 Configuration Flowchart

Table 5-3 Description of Parameter Settings

No.	Parameter	LED Status (LED 5 to LED 1 sequence, 0 means light off, 1 means light on)	Digital Tube Status	Description
1	Motor Type	00001	00	Brushless motor with Hall wire
2	Door Opening Speed	00010	00 to 09	The larger the value, the higher the speed
3	Door Closing Speed	00011	00 to 09	The larger the value, the higher the speed
4	Door Opening Buffer Angle	00100	05 to 60	Reduce speed when door is 5° to 60° near door opening position
5	Door Closing Buffer Angle	00101	05 to 60	Reduce speed when door is 5° to 60° near door closing position
6	Delayed Door Closing Time	00110	00 to 60	Door closing can be delayed by 0 to 60 s.
7	Tongue and Groove Door Early Open	00111	00 to 30	Tongue and Groove Door can open 0° to 30° in advance
8	Min. Door Opening & Closing Angle	01000	64 to 96	The minimal door opening & closing angle is 50° to 150°
9	Max. Door Opening & Closing Angle	01001	6E to C8	The maximal door opening & closing angle is 60° to 200°

No.	Parameter	LED Status (LED 5 to LED 1 sequence, 0 means light off, 1 means light on)	Digital Tube Status	Description
10	Back when Blocked	01010	00 to 45	Back 0° to 45° when blocked
11	Push and Go	01011	05 to 10	Pushing the door by 5° to 10° will trigger door opening
12	Pair Keyfob	01100	0 or 1	0 means one-to-many mode, 1 means one-to-one mode.



Note

- If the numeric displayed on the digital tube no longer increases, the corresponding parameter value reaches the upper limit or lower limit.
 - The largest Min. Door Opening & Closing Angle can be 5° smaller than the current Max. Door Opening & Closing Angle.
 - The smallest Max. Door Opening & Closing Angle can be 5° larger than the current Min. Door Opening & Closing Angle.
 - When setting **Min. Door Opening & Closing Angle** and **Max. Door Opening & Closing Angle**, the digital tube is in hexadecimal format. When setting other parameters, it is in decimal format.
-

5.5 Parameter Synchronization

In the case of dual motors, you can synchronize the sub motor parameters with main motor parameters.

Steps

1. Set the main motor parameters according to your actual needs.
2. Press **Synchronous** (DPSW10) button on the main device, and the digital tube shows 88. Release the button to start synchronization.



Note

Parameter synchronization is only applicable to the case of dual motors.

Appendix A. Dimension

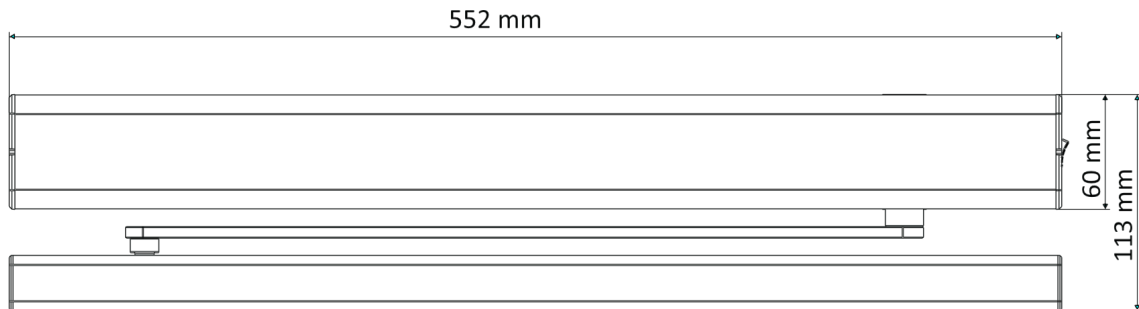


Figure A-1 Dimension of Slide Rail Type Device

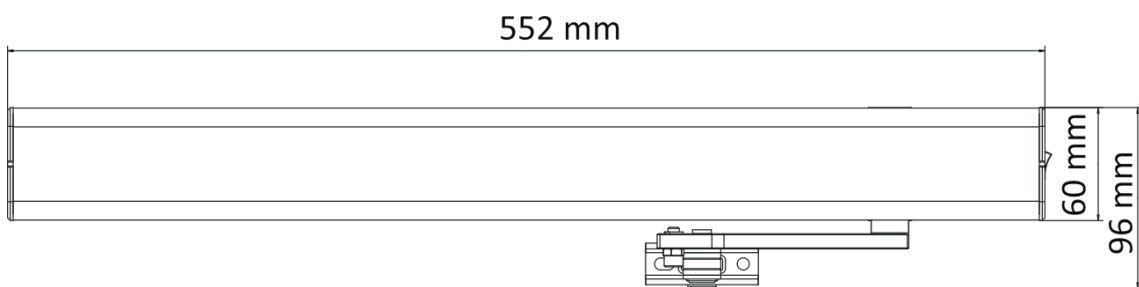


Figure A-2 Dimension of Scissor Arm Type Device



See Far, Go Further