Parking Barrier

User's Manual

Foreword

General

This manual introduces the structure, installation, and maintenance of the parking barrier (hereinafter referred to as the "Barrier").

Models

Series	Model
DHI-IPMECD-3011	DH-IPMECD-3011-RM1515-T14
	DH-IPMECD-3011-LM1515-T14
	DH-IPMECD-3011-RM2020-T14
	DH-IPMECD-3011-LM2020-T14
	DHI-IPMECD-3011-RM1515-T09
	DHI-IPMECD-3011-LM1515-T09
	DHI-IPMECD-3011-RM1515-T14
	DHI-IPMECD-3011-LM1515-T14
	DHI-IPMECD-3011-RM2020-T20
	DHI-IPMECD-3011-LM2020-T20
	DHI-IPMECD-3011-RM1515-T09-AC110
	DHI-IPMECD-3011-LM1515-T09-AC110
	DHI-IPMECD-3011-RM1515-T14-AC110
	DHI-IPMECD-3011-LM1515-T14-AC110
	DHI-IPMECD-3011-RM2020-T20-AC110
	DHI-IPMECD-3011-LM2020-T20-AC110
DHI-IPMECD-3012	DH-IPMECD-3012-RM30-T09
	DH-IPMECD-3012-LM30-T09
	DH-IPMECD-3012-RM30-T14
	DH-IPMECD-3012-LM30-T14
	DH-IPMECD-3012-RM40-T14
	DH-IPMECD-3012-LM40-T14
	DH-IPMECD-3012-RM50-T20
	DH-IPMECD-3012-LM50-T20
	DH-IPMECD-3012-RM60-T30
	DH-IPMECD-3012-LM60-T30
	DHI-IPMECD-3012-RM30-T09
	DHI-IPMECD-3012-LM30-T09
	DHI-IPMECD-3012-RM30-T14
	DHI-IPMECD-3012-LM30-T14

Series	Model
	DHI-IPMECD-3012-RM40-T14
	DHI-IPMECD-3012-LM40-T14
	DHI-IPMECD-3012-RM50-T20
	DHI-IPMECD-3012-LM50-T20
	DHI-IPMECD-3012-RM60-T30
	DHI-IPMECD-3012-LM60-T30
	DHI-IPMECD-3012-RM30-T09-AC110
	DHI-IPMECD-3012-LM30-T09-AC110
	DHI-IPMECD-3012-RM30-T14-AC110
	DHI-IPMECD-3012-LM30-T14-AC110
	DHI-IPMECD-3012-RM40-T14-AC110
	DHI-IPMECD-3012-LM40-T14-AC110
	DHI-IPMECD-3012-RM50-T20-AC110
	DHI-IPMECD-3012-LM50-T20-AC110
	DHI-IPMECD-3012-RM60-T30-AC110
	DHI-IPMECD-3012-LM60-T30-AC110
DHI-IPMECD-3013	DH-IPMECD-3013-RM30-T14
	DH-IPMECD-3013-LM30-T14
	DH-IPMECD-3013-RM30-T20
	DH-IPMECD-3013-LM30-T20
	DH-IPMECD-3013-RM40-T20
	DH-IPMECD-3013-LM40-T2

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

Signal Words	Meaning
DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
CAUTION	Indicates a potential risk which, if not avoided, may result in property damage, data loss, lower performance, or unpredictable result.
NOTE	Provides additional information as the emphasis and supplement to the text.

Revision History

Version	Revision Content	Release Date
V1.0.0	First release.	January 2020

Privacy Protection Notice

As the device user or data barrier inverter, you might collect personal data of others such as face, fingerprints, car plate number, email address, phone number, GPS and so on. You need to be in compliance with the local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures include but not limited to: providing clear and visible identification to inform data subject the existence of surveillance area and providing related contact.

Interface Declaration

This manual mainly introduces the relevant functions when you use the device. The interfaces used for manufacture, returning to the factory for inspection, and locating fault are not described in this manual. Please contact technical support if you need information about these interfaces.

About the Manual

- The manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please refer to our final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- If there is any uncertainty or controversy, please refer to our final explanation.

Important Safeguards and Warnings

This chapter introduces the contents covering proper handling of the Barrier, hazard prevention, and prevention of property damage. Read these contents carefully before using the Barrier, comply with them when using, and keep the manual well for future reference.

Power Requirements

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- Improper battery use might result in fire, explosion, or inflammation.
- When replacing battery, make sure that the same model is used.
- Use the recommended power cables in the region and conform to the rated power specification.
- Use the power adapter provided with the Barrier; otherwise, it might result in people injury and device damage.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited power Source requirement according to IEC60950-1. Note that the power supply requirement is subject to the device label.
- Connect device (type-I structure) to the power socket with protective earthing.
- The appliance coupler is a disconnection device. Keep a convenient angle when using it.

Application Environment Requirements

- Transport, use and store the Barrier under the allowed humidity and temperature conditions.
- Prevent any liquid from flowing into the Barrier.
- Install the Barrier in a well-ventilated place, and do not block the ventilation of the Barrier.
- Do not press, vibrate or soak the Barrier during transportation, storage and installation.
- Pack the Barrier with packaging materials provided by its manufacturer or materials with the same quality before transporting it.
- Ground the Barrier to improve its reliability.

Operation and Maintenance Requirements

- Do not dissemble the Barrier.
- Clean the surface of the Barrier with a soft dry cloth or a clean soft cloth dipped in neutral detergent, and then dry the surface.

⚠️**WARNING**

- Use accessories suggested by the manufacturer, and install and maintain the Barrier by professionals.

- When using a laser beam device, avoid exposing the surface of the Barrier to laser beam radiation.
- Do not provide two or more than two kinds of power supply modes; otherwise, the Barrier might be damaged.
- Do not lengthen or truncate the barrier arm. Do not increase weights on the arm without permission.

Table of Contents

1 Introduction

1.1 Overview

The Barrier can be used together with radar for access control, and it primarily consists of top cover, casing, drive unit, control box, and barrier arm (either at the right side or at the left side).

Casing in aluminum alloy and sheet metal, and the surface is treated with spraying process of ultra-fine silver powder, ensuring high corrosion-resistance performance for 10 years.

Three types of barriers are available: Straight arm barrier, folding arm barrier, and fence arm barrier. See Table 1-1.

Table 1-1 Barrier type

Type	Description	Remark
Straight arm barrier	The arm can be either at the right side or at the left side. Radar is required. ● Barrier with 3 m (9.84 ft) straight arm enjoys opening/closing time of 0.9 s or 1.4 s. ● Barrier with 4 m (13.12 ft) straight arm enjoys opening/closing time of 1.4 s. ● Barrier with 5 m (16.40 ft) straight arm enjoys opening/closing time of 2 s. ● Barrier with 6 m (19.69 ft) straight arm enjoys opening/closing time of 3 s.	
Folding arm barrier	The arm can be either at the right side or at the left side. Radar is required. ● For barrier with 3 m (9.84 ft) arm, each of the two sections of the arm is 1.5 m (4.92 ft), and it enjoys opening/closing speed of 1.4 s. ● For barrier with 4 m (13.12 ft) arm, each of the two sections of the arm is 2 m (6.56 ft), and it enjoys opening/closing time of 2 s.	📖 Customization is available to meet your specific needs.
Fence arm barrier	The arm can be either at the right side or at the left side. Radar is required. ● Barrier with 3 m (9.84 ft) fence arm enjoys opening/closing time of 1.4 s or 2 s. ● Barrier with 4 m (13.12 ft) fence arm enjoys opening/closing time of 2 s.	

1.2 Features

- Driven by AC variable frequency motor, and equipped with well-designed drive unit and balance spring, the Barrier enjoys stable and reliable operation, with lifespan of motor and spring up to 5 million times.
- Designed with buffer strip on the arm for enhanced safety. The buffer strip is made of high-molecular-weight polyurethane (PU) which keeps soft and not stiff in cold environments, enjoying lifespan for more than 10 years.
- Automatic lifting when the barrier arm meets obstacle.
- Barriers with 3 m (9.84 ft) or 4 m (13.12 ft) straight arm support anti-collision function: A turning gear is installed between the arm and the main shaft, so the arm will swing off before it is collided.
- Automatic opening in case of power failure. The arm will lift 90° by default. Customization is available if you need other lifting angle.
- Anti-drop function realized by connected radar, coil, or IR sensor.
- 12V DC power adapter, capable of supplying power to connected radar.
- Support remote control, with maximum distance of 50 m (164 ft).
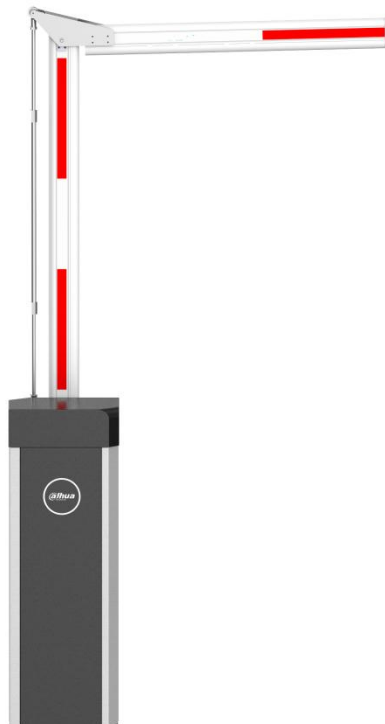
2 Structure

2.1 Appearance

Straight Arm Barrier
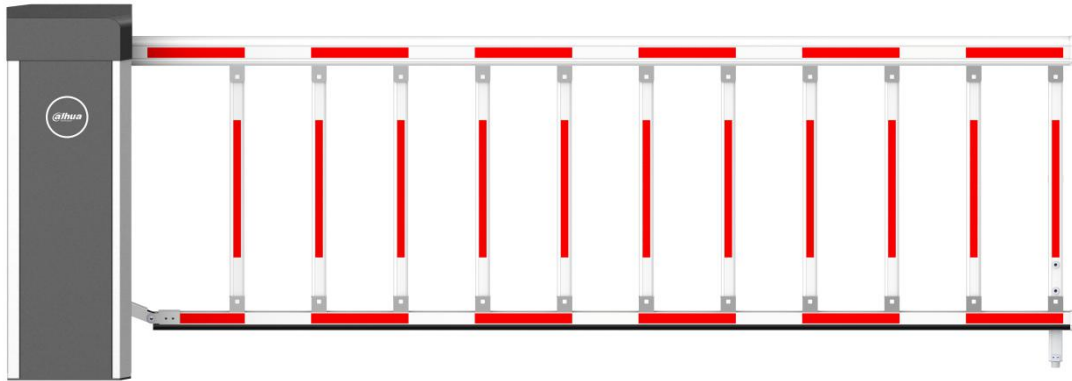
Figure 2-1 Straight arm barrier

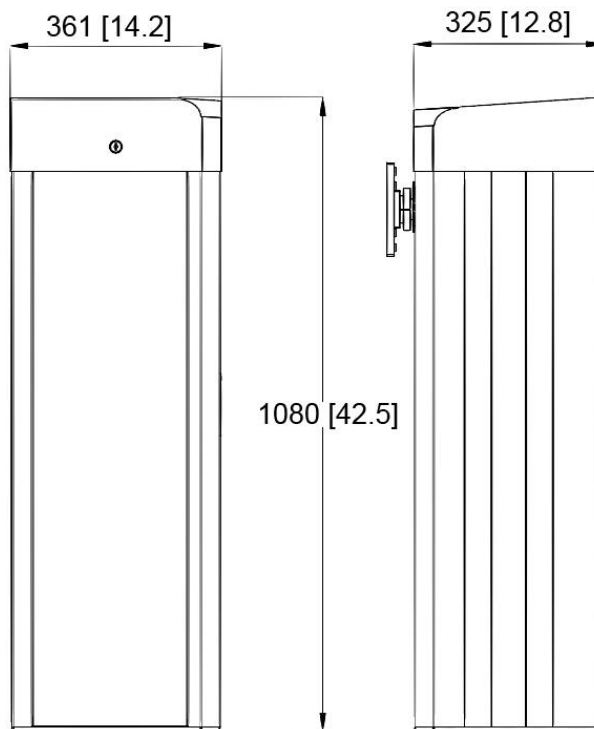Folding Arm Barrier

Figure 2-2 Folding arm barrier

Fence Arm Barrier

Figure 2-3 Fence arm barrier
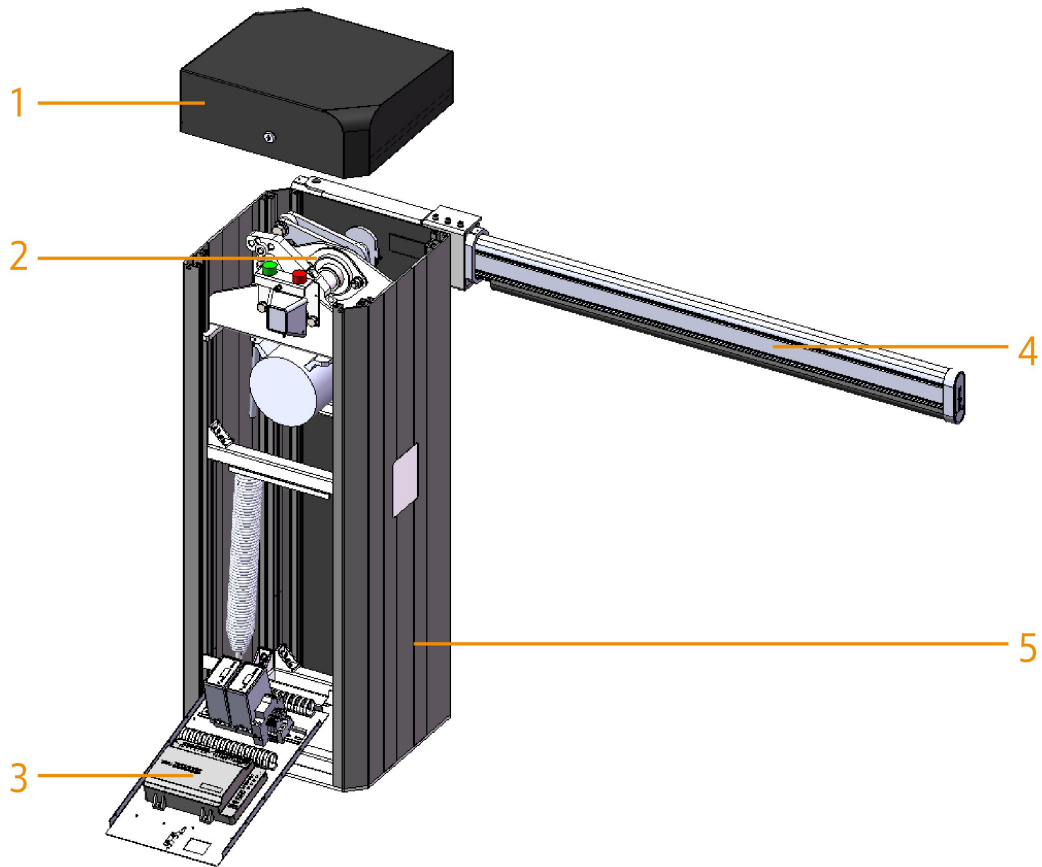

2.2 Dimensions

Figure 2-4 Dimensions (mm [inch])

361 [14.2]   325 [12.8]

1080 [42.5]

2.3 Components

Figure 2-5 Components

Table 2-1 Components description

No.	Name	Description
1	Top cover	The waterproof top cover is fixed to the casing by a lock, which can be unlocked with a key, easy for installation and maintenance.
2	Drive unit	Driven by a high-performance torque motor, and equipped with well-designed drive unit and balance spring, the Barrier enjoys stable and reliable operation.
3	Control box	The intelligent barrier inverter and connection terminals are installed on the control board inside the control box. The control board is fixed by a buckle, easy to remove and providing ease of wiring.
4	Barrier arm	Straight arm, folding arm, and fence arm are available.
5	Casing	Surface treated with spraying process, elegant and attractive. You can paint the casing with different colors according to your preferences.

3 Installation

## 3.1 Before You Start

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- This section introduces basic requirements on selecting and constructing the foundation. For details of installing the Barrier, see the construction guide.
- Foundation must be constructed before installing the Barrier.

Selecting Construction Site of Foundation

The center of the foundation should be more than 300 mm (11.81") away from the road side, and the barrier arm can open 90° vertical to the ground. See Figure 3-1.
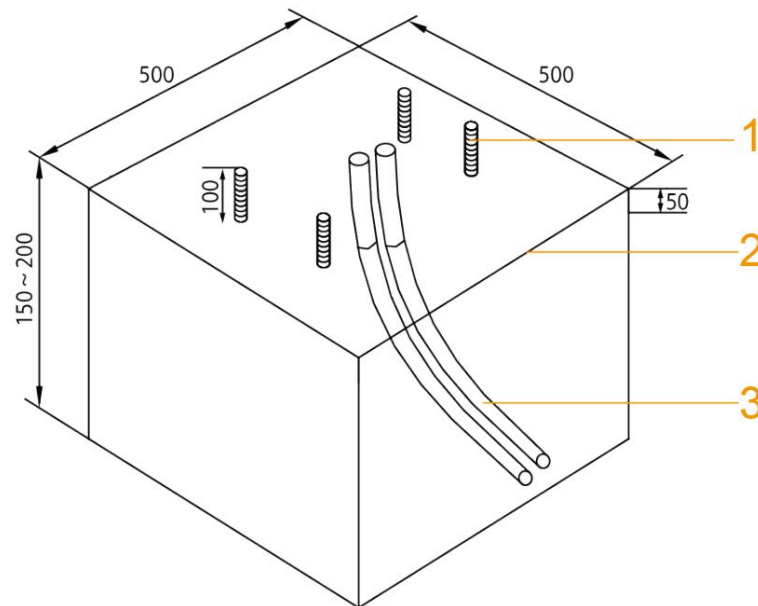
Figure 3-1 Installation site of foundation (mm)
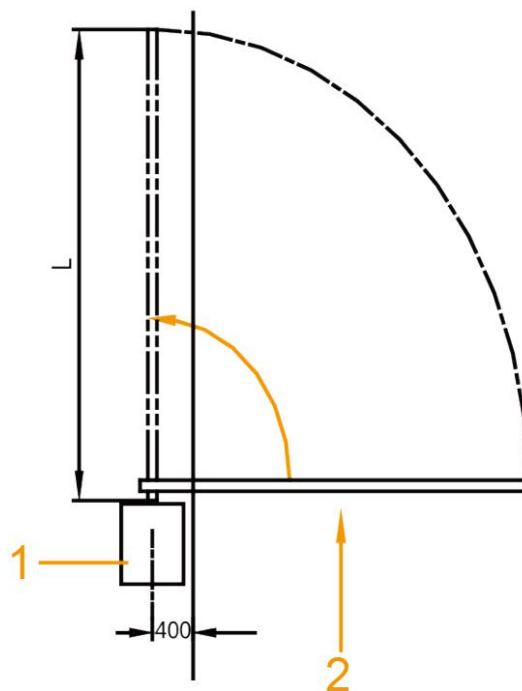
1: Barrier (installed on the foundation); 2: Vehicle movement direction.

Foundation Construction Requirements

Figure 3-2 Foundation construction requirements (mm)

1: Foundation bolt; 2: Foundation surface; 3: PVC pipe.

● Pouring concrete to construct a foundation of 500 mm × 500 mm (19.69" × 19.69") (L × W), and make sure that the depth is between 150 mm–200 mm (5.91"–7.87"). Depth not falling within this range will greatly influence the accuracy of radar detection.

● Use concrete of at least grade C15.

● Bury foundation bolts in the foundation. Make sure that the bolts are exposed 100mm (3.94") above the foundation.

Figure 3-3 Foundation bolt
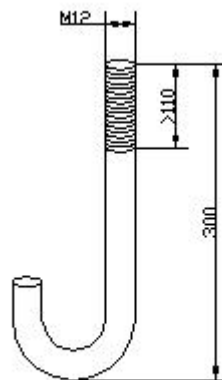
● (Optional) If no foundation bolts are buried, you can use the expansion bolts provided in the accessories of the Barrier.

◇ After the concrete foundation is hardened, drill 4 holes with diameter of 16mm (0.63") for installing the Barrier.

◇ The drilled holes and the installation position should meet the requirements shown in Figure 3-4 to facilitate installing the metal plates and fixing the Barrier.

◇ Use M12 expansion bolts. Make sure that the thread length of expansion bolt is more than 80 mm (3.15"), and its total length is more than 150 mm (5.91").

Figure 3-4 Install expansion bolt (top view)
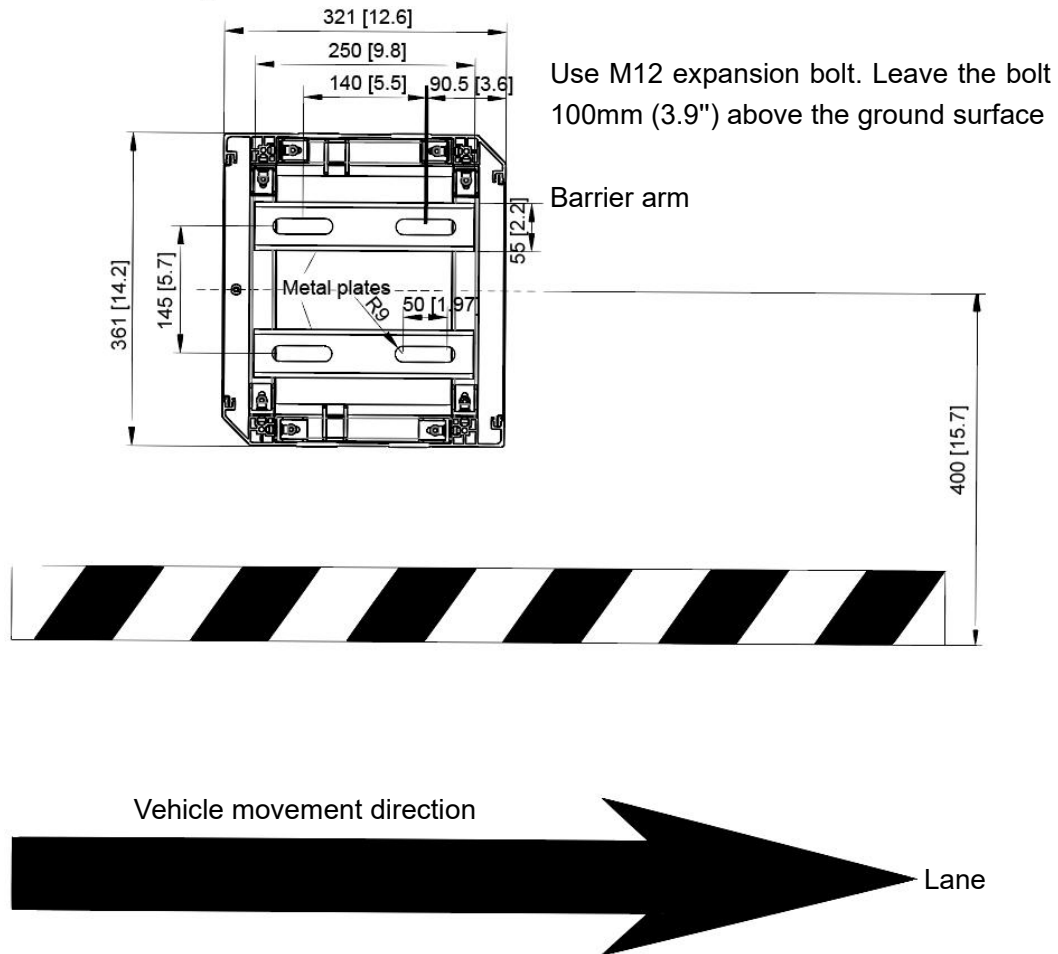
● Thread the power cable and the signal cable separately through two 1-inch PVC pipes (buried in the foundation) to the cable holes next to the foundation.
● After installation, make sure that when opening the Barrier, there are no obstacles within a 90° vertical range.

3.2 Installing Barrier

3.2.1 Before You Start

● Read the manual carefully before installation. Refer to the barrier drawing attached to the casing to know the working method of the Barrier and its wiring.
● Check whether the power cable, signal cable, or internal wiring is loose or dropped. If yes, connect the cables well before installation.

3.2.2 Installing Casing

⚠️

- Cut off the power before installation.
- Handle carefully to avoid damaging the sprayed coating of the casing.
- Keep the Barriers for vehicle access control of the same direction on a straight line.

Step 1   Unpack the packaging box.

Step 2   Place the casing on the foundation, and make the working direction of the arm vertical to the vehicle movement direction (we recommend to placing a layer of 3mm rubber under the casing to reduce vibration).

Step 3   Use the key to open the door, lower the panel with control box, and then place metal plates on the foundation bolts.

Step 4   Adjust the horizontal and vertical positions of the casing, and then tighten the nuts with a wrench.

3.2.3 Installing Radar

Step 1   Open the top cover, and pull out the access panel.

Step 2   Open the electrical plate, and cut off the power.

Step 3   Unscrew the butterfly nuts, and remove the radar bracket.

Step 4   Place the radar in the holes of the casing, with the cable outlet facing up.

Step 5   Secure the radar with the radar packet, and then screw the butterfly nuts.

Figure 3-5 Install radar (1)

Before installation   After installation
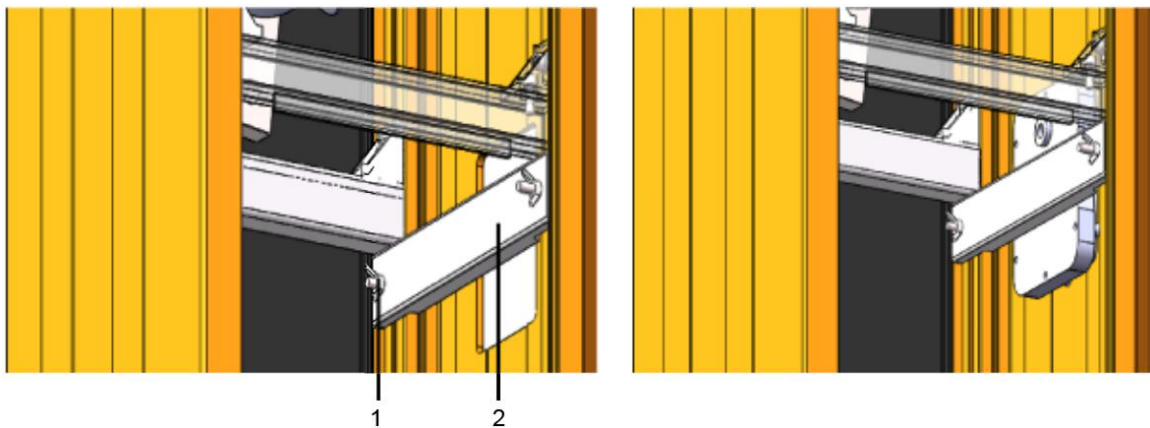
1: Butterfly nut; 2: Radar bracket.

Step 6   Apply silicone sealant around the radar on the outer surface of the casing for waterproofing.

Figure 3-6 Install radar (2)

Apply silicone sealant around the radar on the outer surface of the casing for waterproofing

3.3 Installing Barrier Arm

3.3.1 Installing Folding Arm

Figure 3-7 Install folding arm
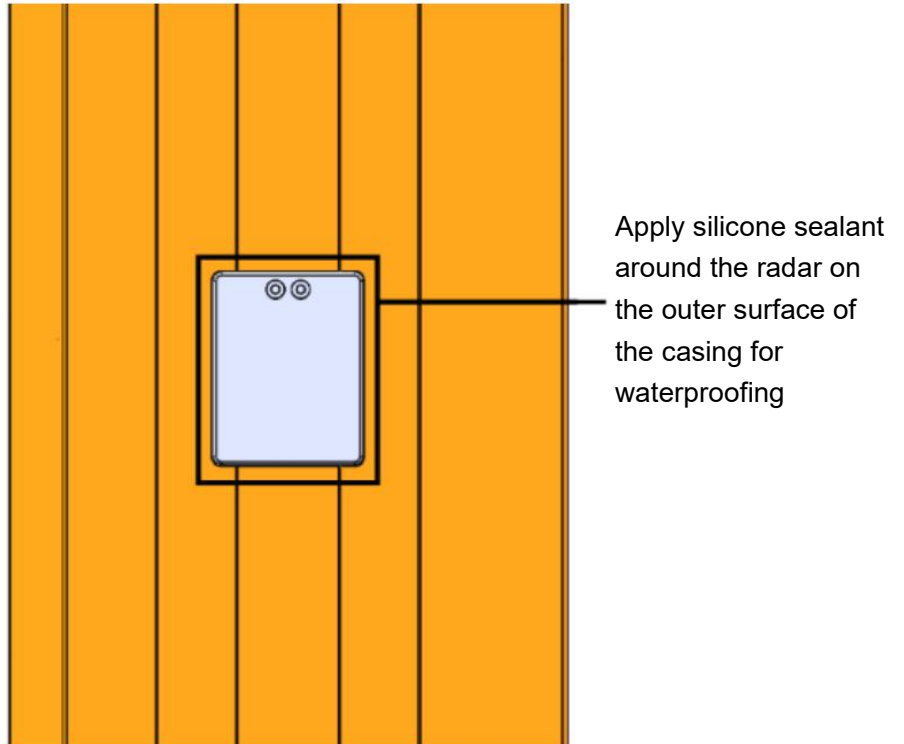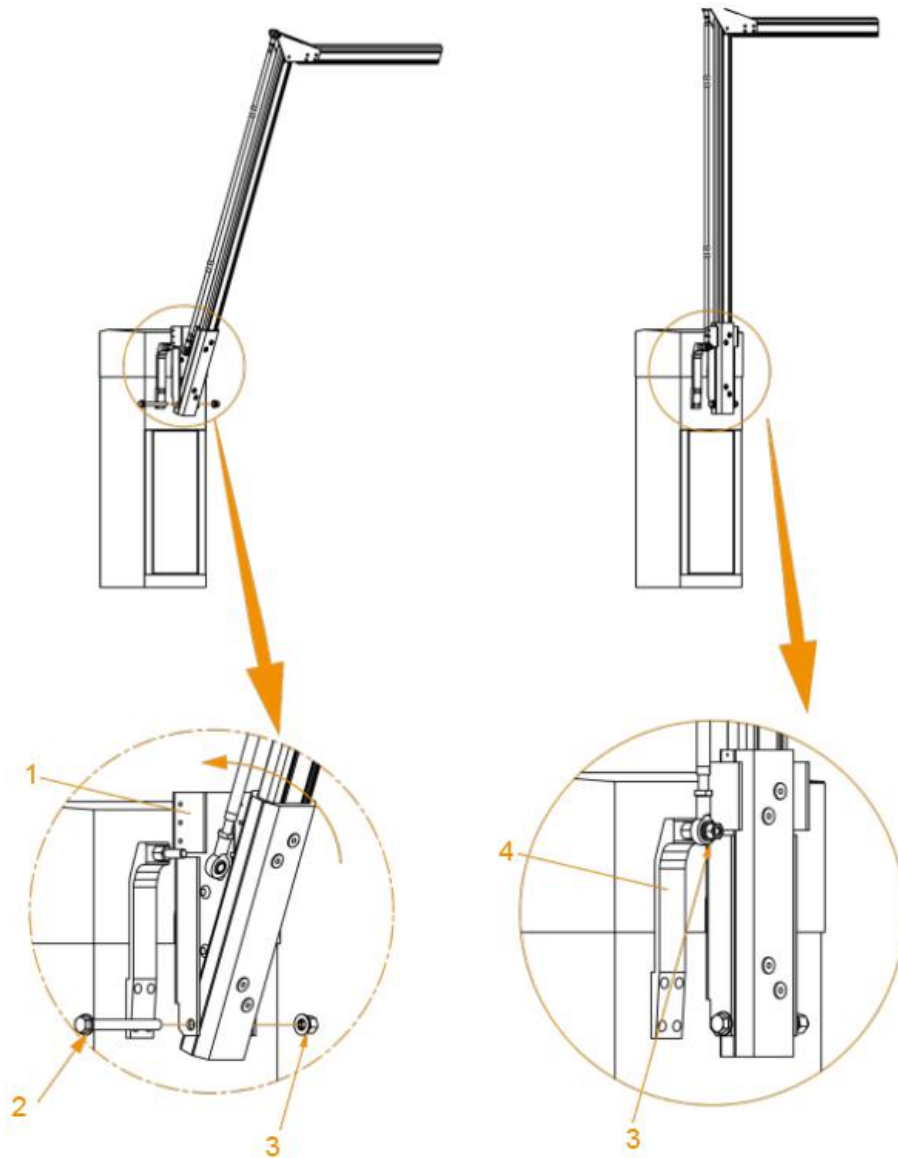

Table 3-1 Parts description

No.	Description	No.	Description
1	Mounting plate	3	M14 nut and spring washer
2	M14×140 hex head bolt and plain washer	4	Fixing plate

Step 1 Align the arm with the mounting plate, and fix the mounting plate to the arm with M14 M14×140 hex head bolt.

Step 2 Push the arm to make it fit with the mounting plate completely.

Step 3 Install the control arm (right above the barrier arm) and the fixing plate.

3.3.2 Installing Straight Arm

Installing Arm Less Than 4.5m (14.76ft)

Figure 3-8 Install straight arm
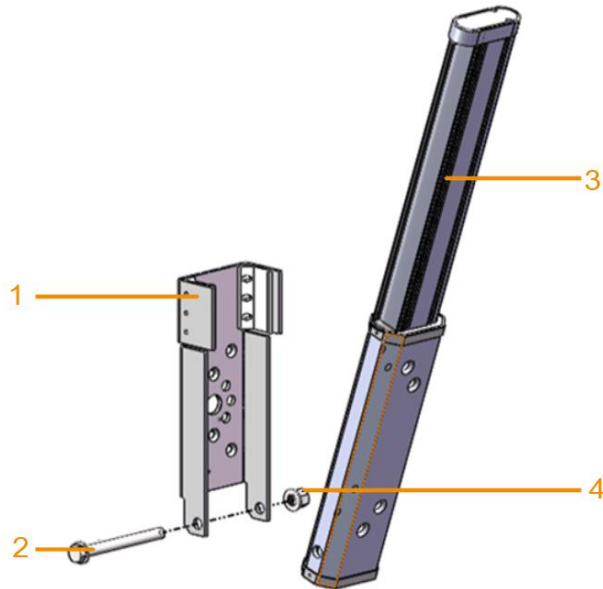
Table 3-2 Parts description

No.	Description	No.	Description
1	Mounting plate	3	Straight arm
2	M14×140 hex head bolt and plain washer	4	M14 nut and spring washer

Step 1 Place the arm in the mounting plate, and aign the holes of the arm with those of the plate.

Step 2 Thread the M14×140 hex head bolt through the plate and the arm, and fix the bolt with M14 nut, plain washer and spring washer.

Step 3 Push the arm to make it fit with the mounting plate completely.

Installing Arm of 4.5m (14.76ft)

Figure 3-9 Install straight arm

Four M10×75 hex head bolts and plain washers
Four M10 nuts and spring washers
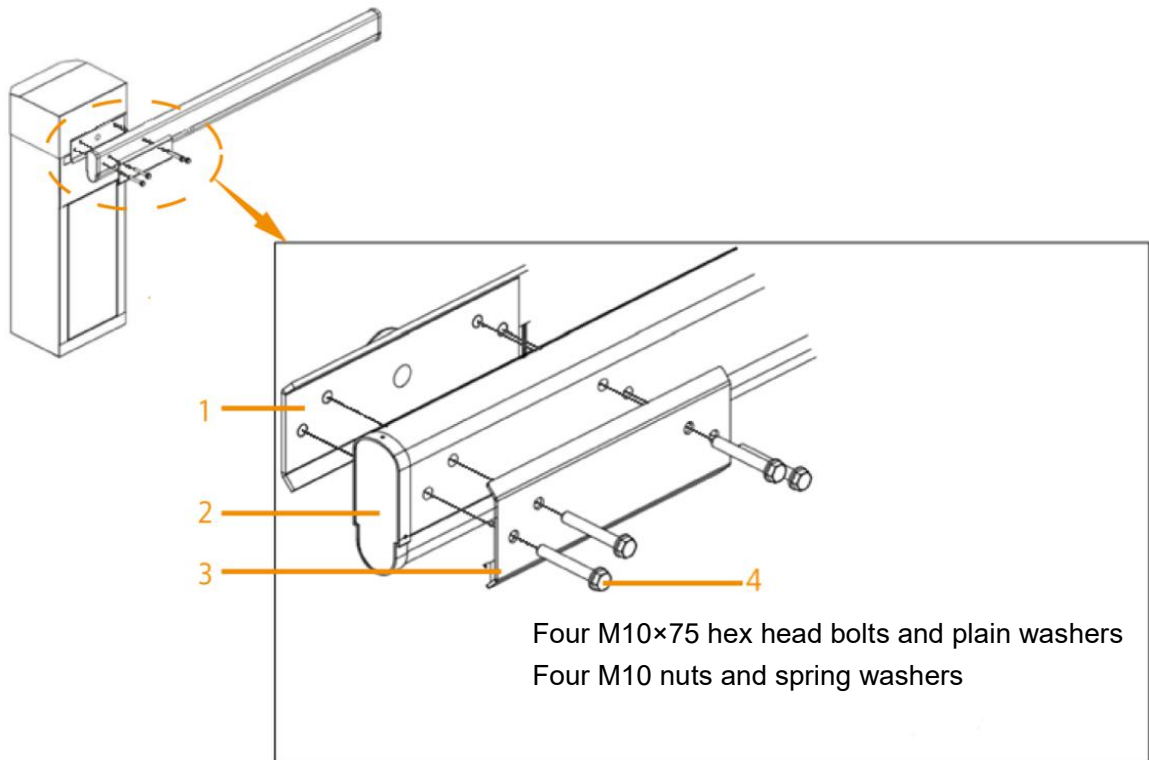
<u>Step 1</u> Thread four M10 × 75 bolts and plain washers through parts 1, 2, and 3.
<u>Step 2</u> Fix the bolts with four M10 nuts and spring washers.

3.3.3 Installing Fence Arm

Figure 3-10 Install fence arm

Step 1   Fix part 1 to the casing, and use M10 nut and spring washer to secure part 1.

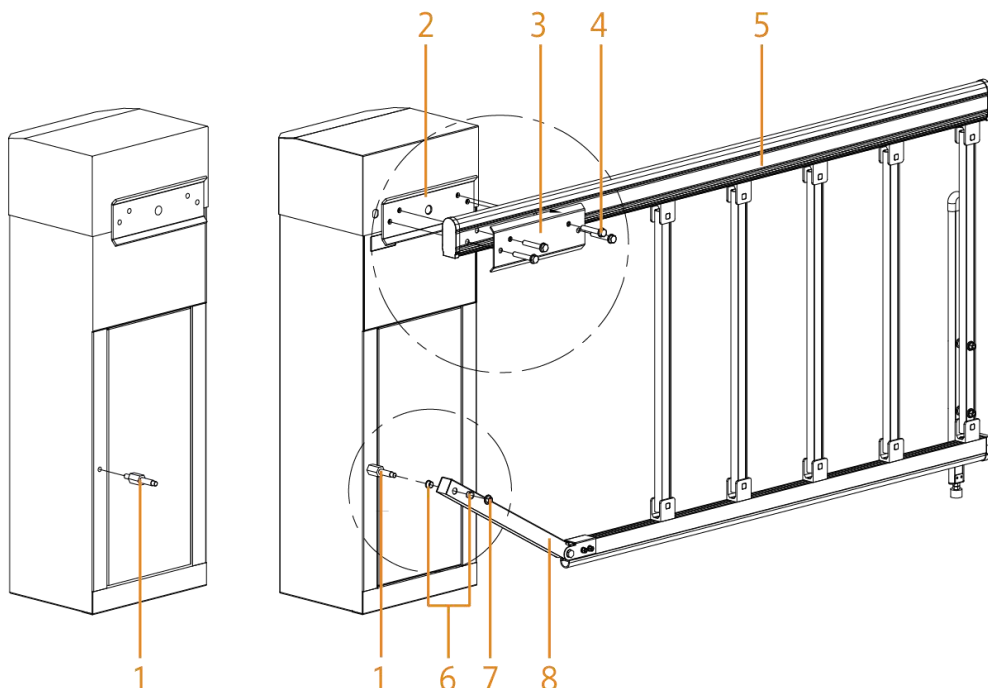Step 2   Align holes of part 3 with those of part 5, and thread four M10×60 hex head bolts and plain washers through the holes of parts 3 and 5.

Step 3   Fix parts 3 and 5 to part 2, and secure the bolts with M10 nuts and spring washers.

Step 4   Thread part 6 (two JFM-1214 flange bearings) through two sides of part 8.

Step 5   Thread part 8 through part 1, and fix the two parts with M10 nut and spring washer.

Step 6   Secure the bolts mentioned in step 2 with M10 nuts and spring washers. See a successful installation example in the following figure.

Figure 3-11 Successful installation example
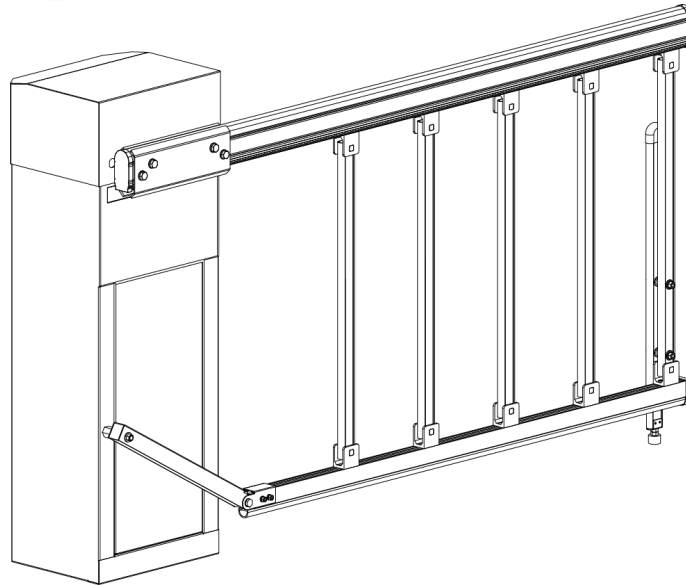
3.4 Cable Connection

3.4.1 Barrier Inverter Description

Figure 3-12 Barrier inverter

Table 3-3 Barrier inverter description

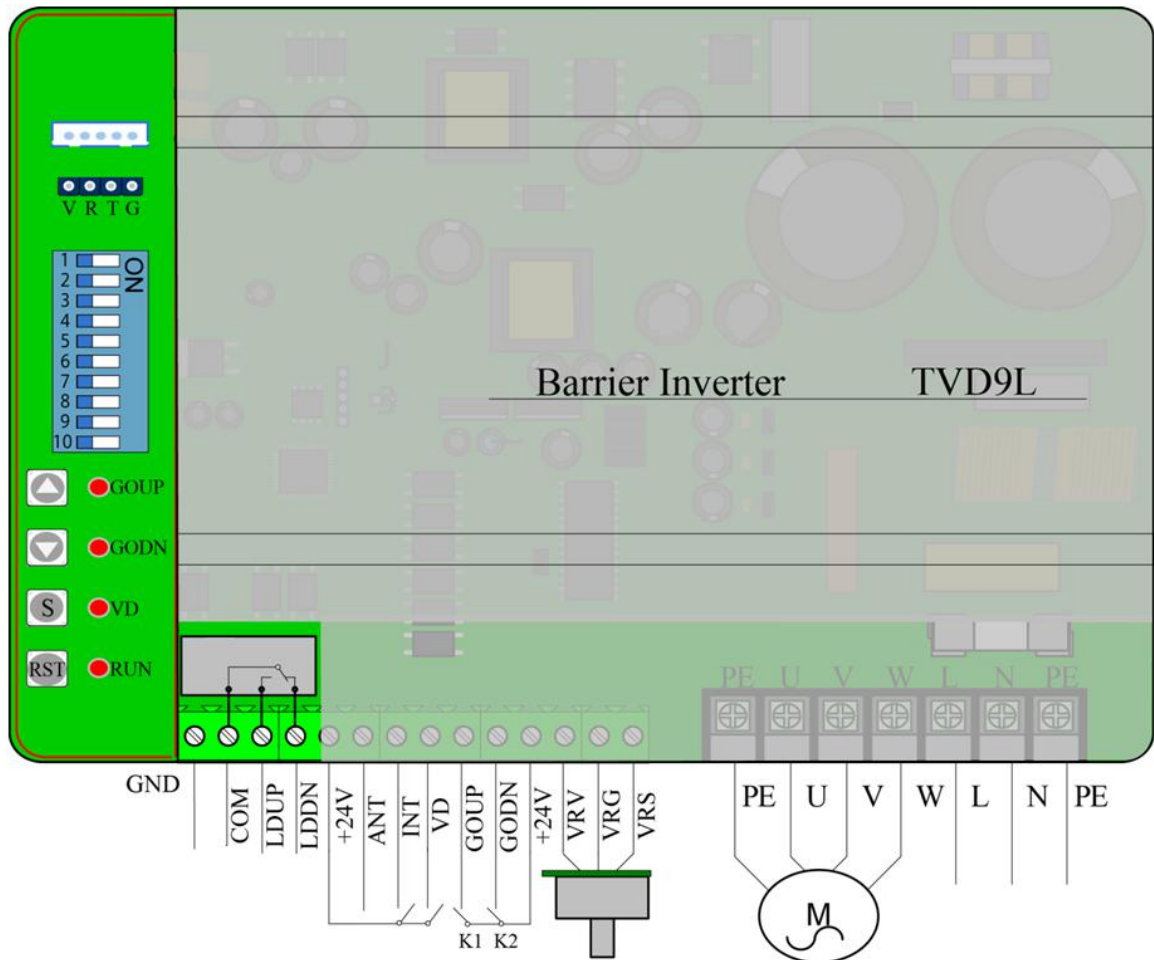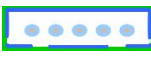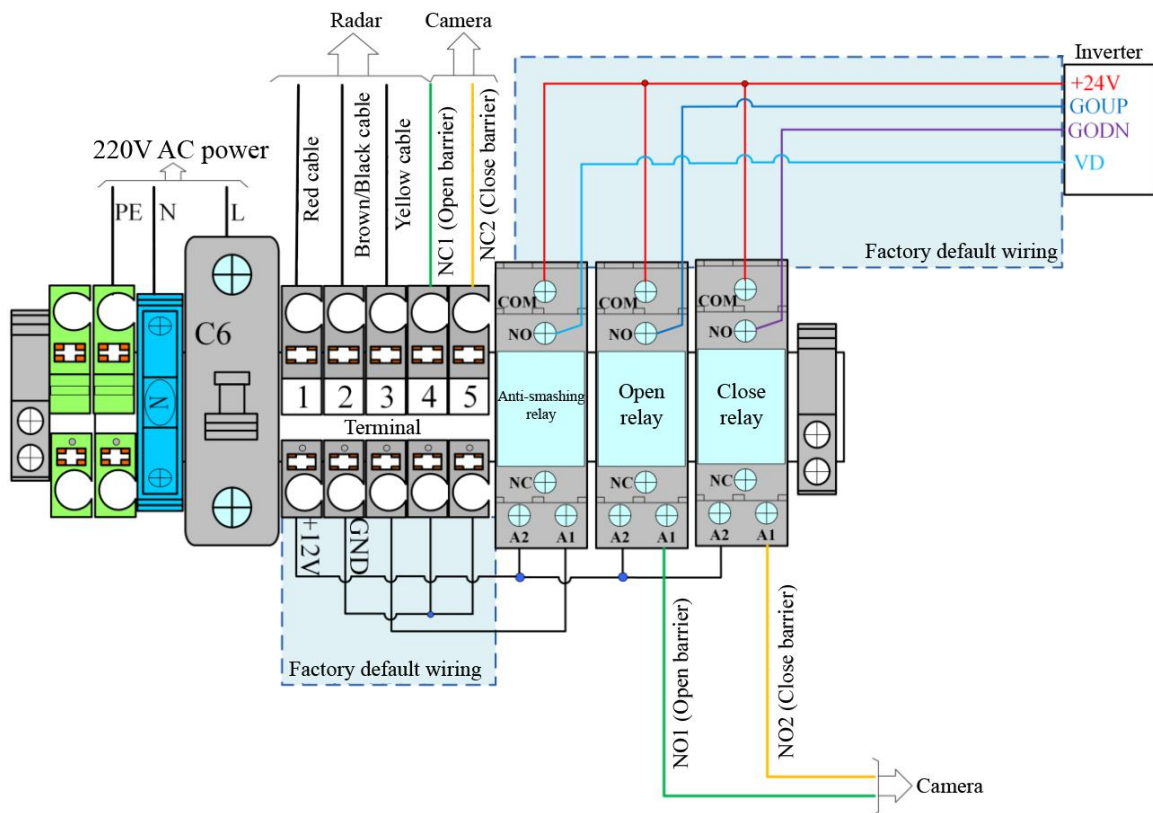| Parameter	Description
	Connects to remote control.
	Ports for adjusting parameters.

Parameter		Description
	1, 2	Set barrier control mode. ● 1/OFF and 2/ON (recommended): The Barrier receives opening and closing signals, and automatically opens when vehicle passes, and closes after vehicle leaves. ● 1/OFF and 2/OFF: The Barrier receives opening and closing signals, but does not automatically open or close. ● 1/ON and 2/OFF: The Barrier keeps open. It temporarily closes when there are continuous close signals. ● 1/ON and 2/ON: The Barrier keeps closed. It temporarily opens when there are continuous opening signals.
	3	ON by default.
	4	Set counting function. ● ON: Enable counting function. After receiving N opening signals, the barrier closes only after N vehicles pass. ● OFF (recommended): Disable counting function.
	5, 6	OFF by default.
	7	Set auto barrier opening in case of power failure. ● 7/ON: Enable auto barrier opening in case of power failure. ● 7/OFF: Disable auto barrier opening in case of power failure.
	8, 9, 10	OFF by default.
Buttons		Open barrier.
		Close barrier.
		● Pair with remote control. Press it for 1 s, and when the RUN indicator flashes, press and hold the open or close button on the remtoe control for 3 s to start pairing with the remote control. ● Clear remote control information. Press and hold it for 5 s, and after the RUN indicator flashes 10 s, the information of the paired remote control will be cleared.
		Press it to reset the barrier inverter.
Indicators	GOUP	The indicator is on when there is opening signal.
	GODN	The indicator is on when there is closing signal.
	VD	Vehicle signal indicator. The indicator is on when there is 24V voltage signal for the vehicle signal port, and it is off when there is no such signal.
	RUN	Indicates system activity status and remote control pairing status. The indicator flashes when it works normally.

Parameter		Description
Ports	GND	Ground.
	COM	Feedback signal common port.
	LDUP	Barrier open feedback signal.
	LDDN	Barrier close feedback signal.
	ANT	Reserved port.
	INT	Auxiliary anti-smashing port, which only triggers anti-smashing. It does not control automatic close of barrier.
	VD	Common anti-smashing interface. The barrier automatically closes after the anti-smashing signal disappears. ● Barrier switch control interface. ● GOUP: Opening signal interface. ● GODN: Closing signal interface. ● + 24V: Control signal common terminal.
	GOUP	Ports for control open and close of the Barrier.
	GODN	● GOUP: Open.
	+24V	● GODN: Close. ● +24V: Common signal port.
	VRV	Angle sensor ports.
	VRG	
	VRS	
	PE	Drive motor ports.
	U	
	V	
	W	
	L	220V AC power supply ports for the barrier inverter.
	N	
	PE	

3.4.2 Wiring Instructions

Figure 3-13 Wiring diagram

- Connect to power:
  - ◇ PE: Connect to earth wire.
  - ◇ N: Connect to neutral wire.
  - ◇ L: Connect to live wire.
- Connect to radar:
  - ◇ +12V: Connect to red cable of radar.
  - ◇ GND: Connect to brown/black cable of radar.
  - ◇ A1 (anti-smashing relay): Connect to yellow cable of radar through port 3 (terminal).
- Connect to camera:
  - ◇ Open barrier: Connect A1 (open relay) to NO1 (camera), and connect GND (terminal) to NC1 (camera) through port 4 (terminal). See green lines in the figure above.
  - ◇ Close barrier: Generally you do not need to connect cables for controlling barrier closing signals. If you want to, connect A1 (close relay) to NO2 (camera), and connect GND (terminal) to NC2 (camera) through port 5 (terminal). See yellow lines in the figure above.
- Connect to IR sensor for anti-smashing:
  To connect the IR sensor for anti-smashing, connect NO (close relay) to GODN (inverter), and connect A1 (close relay) and GND (through port 5 of the terminal) to anti-smashing terminals of the IR sensor.

4 Notes to Maintenance and Operation

4.1 Notes to Operation

1. Avoid bumping during use. If bumping occurs, do the following:
   - Check whether the slewing mechanism is damaged. If so, replace it in time.
   - Check whether the barrier arm is bent. If so, replace it in time.
   - Check whether there is any abnormal sound during operation. If so, contact after-sales service.
2. We recommend you to using standard arm of the Barrier to ensure the long service life.
3. Damages caused by improper operations and non-quality faults are not covered by the warranty.

4.2 Notes to Maintenance

4.2.1 Regular Maintenance

Maintain the Barrier every three months to check:
- The rubber buffer.
- Mechanical transmission.
- Whether there is abnormal noise during motor operation.
- Whether the wiring is loose and the ground is reliable.
- Whether the casing is loose.

4.2.2 Maintenance Methods

4.2.2.1 Replacing Rubber Buffer

The rubber buffer might be worn after long-term use, and should be replaced in time after wear to ensure smooth operation of the Barrier and the motor. Follow the steps below to replace the buffer:
- Cut off the power to the Barrier.
- Open the door, and lower the panel.
- Remove the top cover.
- Remove the worn rubber buffer, replace it with a good one, and fix the new buffer.

📖
- Do not increase or decrease the gasket when replacing the rubber buffer.

● After replacing the rubber buffer and fixing the top cover, manually lift and lower the arm several times to make sure that the mechanical movement is flexible and smooth, then you can power on and operate the Barrier.

4.2.2.2 Maintaining Drive Unit

● Check whether the fastening bolts of the drive unit are loose, and whether the bearing works normally when the Barrier opens or closes.
● Check whether the transmission part is loose and therefore affecting the running of the Barrier.
● Check whether there is any abnormal noise during the operation of the motor. If so, contact after-sales service.

4.2.2.3 Maintaining Angle Sensor

The angle sensor is connected to the main shaft to detect the running position and speed of the barrier arm real time. Check the angle sensor when the Barrier jitters obviously.

How to check angle sensor:

Step 1 Cut off power supply to the Barrier, and remove the three leads of the angle sensor (labeled 4, 5, 6).

Step 2 Use a multimeter (20KΩ resistance), and connect the red and black test leads to 4, 5 respectively.

Step 3 Manually make the barrier arm move slowly from the opening status to the closed status.
The resistance reading should change between 5KΩ ± 2% and 7.4KΩ ± 2%, and the reading becomes smaller when the arm is raised and larger when the arm falls. In the changing process of resistance, there is no jumping phenomenon. If anything is abnormal, adjust the angle sensor to make the resistance fall within the specified range.
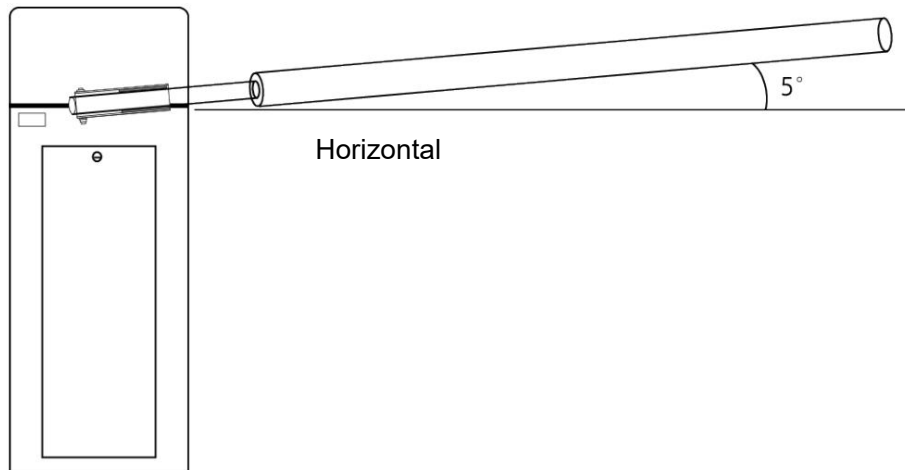
4.2.2.4 Adjusting Balance Spring

When changing the barrier arm, you need to adjust the balance spring to fit the new barrier arm.

How to adjust balance spring:

When the barrier arm is at an angle of about 5° from the horizontal, release the barrier arm (see Figure 4-1), and the arm can slowly rise to the vertical position.

Figure 4-1 Adjust balance spring

Appendix 1 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

Mandatory actions to be taken for basic equipment network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

   - The length should not be less than 8 characters;
   - Include at least two types of characters; character types include upper and lower case letters, numbers and symbols;
   - Do not contain the account name or the account name in reverse order;
   - Do not use continuous characters, such as 123, abc, etc.;
   - Do not use overlapped characters, such as 111, aaa, etc.;

2. **Update Firmware and Client Software in Time**

   - According to the standard procedure in Tech-industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the equipment is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
   - We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your equipment network security:

1. **Physical Protection**

   We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (such as USB flash disk, serial port), etc.

2. **Change Passwords Regularly**

   We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. **Set and Update Passwords Reset Information Timely**

   The equipment supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. **Enable Account Lock**

   The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. **Change Default HTTP and Other Service Ports**

    We suggest you to change default HTTP and other service ports into any set of numbers between 1024~65535, reducing the risk of outsiders being able to guess which ports you are using.

6. **Enable HTTPS**

    We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. **Enable Whitelist**

    We suggest you to enable whitelist function to prevent everyone, except those with specified IP addresses, from accessing the system. Therefore, please be sure to add your computer's IP address and the accompanying equipment's IP address to the whitelist.

8. **MAC Address Binding**

    We recommend you to bind the IP and MAC address of the gateway to the equipment, thus reducing the risk of ARP spoofing.

9. **Assign Accounts and Privileges Reasonably**

    According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

10. **Disable Unnecessary Services and Choose Secure Modes**

    If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

    If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

    ● SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.

    ● SMTP: Choose TLS to access mailbox server.

    ● FTP: Choose SFTP, and set up strong passwords.

    ● AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

11. **Audio and Video Encrypted Transmission**

    If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

    Reminder: encrypted transmission will cause some loss in transmission efficiency.

12. **Secure Auditing**

    ● Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.

    ● Check equipment log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

13. **Network Log**

    Due to the limited storage capacity of the equipment, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

14. **Construct a Safe Network Environment**

    In order to better ensure the safety of equipment and reduce potential cyber risks, we recommend:

    ● Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.

- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.

ENABLING A SAFER SOCIETY AND SMARTER LIVING