Barrier Gate

User Manual

Legal Information

About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the Hikvision website (***https:// www.hikvision.com/***).

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Symbol Conventions

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.

Contents

Chapter 1 Introduction

1.1 Product Introduction

Barrier gate is the entrance and exit management device to limit motor vehicle passing. It can control the boom pole automatically via parking lot management system. Or you can control the boom pole via buttons on remote controller.

Barrier gate is widely applicable to toll station, parking lot, the entrance and exit of community and unit, etc. Its working temperature ranges from -30 °C to 70 °C (-22 °F to 158 °F).

1.2 Key Feature

- Adopts direct current brushless motor which can run steadily, applicable to entrance and exit, ETC system, etc.
- The boom pole can rise rapidly and fall slowly. The barrier gate can learn the rising and falling limit positions automatically after it is powered on.
- Over-voltage and over-current protection to prevent the motor from being burnt caused by locked rotor during running.
- Supports anti-fall function via inductive loop, IR, etc., and protection functions including pressure wave, resistance rebound, etc.
- Adjustable boom pole direction from left to right or from right to left.

Chapter 2 Installation

2.1 Installation Environment

The installation environment of the barrier gate should meet the following requirements.

- The installation space should be large enough to guarantee the boom pole can rise or fall normally.
- Install the barrier gate on horizontal ground.
- Installation surface requirements:
  - If no base is installed, the installation surface must be firm enough to fix the host to guarantee the barrier gate can run stably.
  - If base is needed, it is recommended to install the base with quick setting cement. The base should be horizontal. The height should be larger than 300 mm. The length and width of base should be larger than those of the actual barrier gate installation surface. Bury the set bolts prepared by yourself before installation.
- If the barrier gate is anti-collision, the boom pole will flick 90° in reverse direction if it is impacted. Make sure there is no obstacle in the range.
- Bury the cables before installation. The conduit should be 50 mm higher than the ground to avoid the gathered water on the ground to enter into the cable and cause short circuit.

2.2 Install Barrier Gate

2.2.1 Fix Barrier Gate Host

Follow the steps below to fix the host of barrier gate.

Steps
1. Mark the positions of holes on the refuge island as shown below. The hole depth is approx. 120 mm.
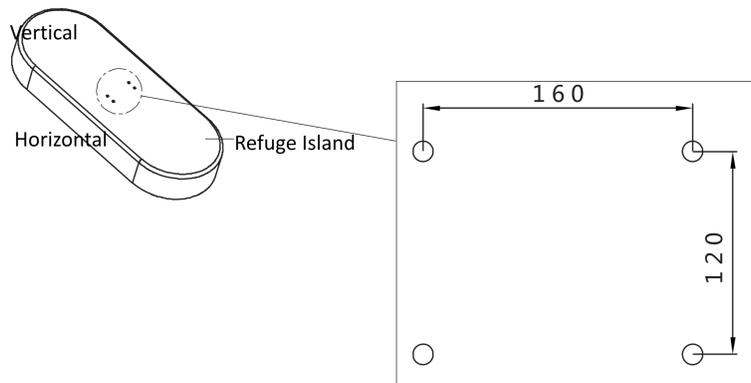
Figure 2-1 Mark Positions of Holes

ⓘNote

The suggestions for positions of holes:
- The holes in vertical direction should be near to the boom pole.
- If the entrance/exit is unidirectional, the holes should be in the horizontal center of the refuge island. If the entrance/exit is bi-directional, the holes in the horizontal direction should be far away from the entrance/exit.

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2. Punch the four M12 × 150 expansion screws in the package into the marked positions on refuge island, and fasten the nuts to make the screws expand to grip the ground. Then unfasten the nuts.
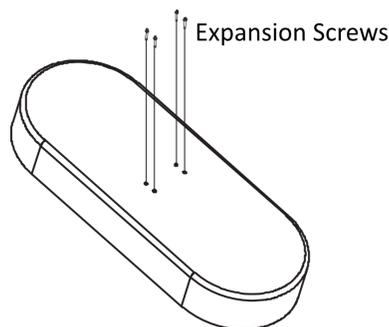
Figure 2-2 Install Expansion Screws

3. Uninstall the top and front covers.
   1) Use the L-type key to unlock the top cover.
   2) Lift the top cover gently and push it to take it down.
   3) Lift the front cover gently to take it down.
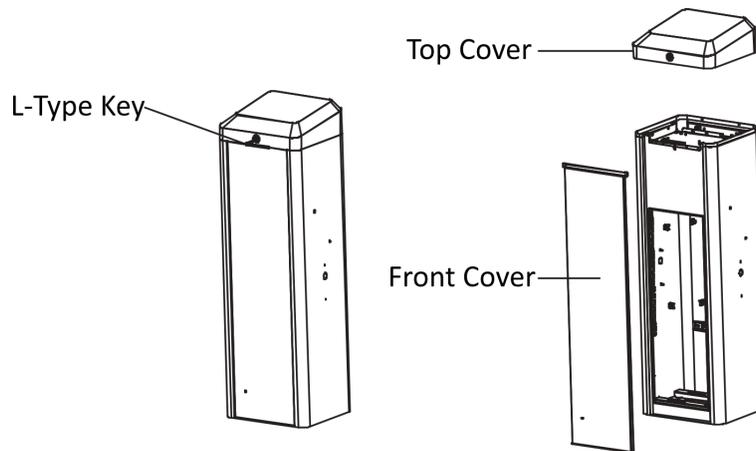
Figure 2-3 Uninstall Top and Front Covers

4. Fix the host.
   1) Put the layers on the host bottom and parallel them to the rising or falling direction of the boom pole.
   2) Put the host on the positions of expansion screws on the refuge island to make the screws pass through the layers. Keep the layers parallel to the rising or falling direction of the boom pole.
   3) Fasten the expansion nuts on the screws to fix the host.

Figure 2-4 Fix Host

⚠**Danger**
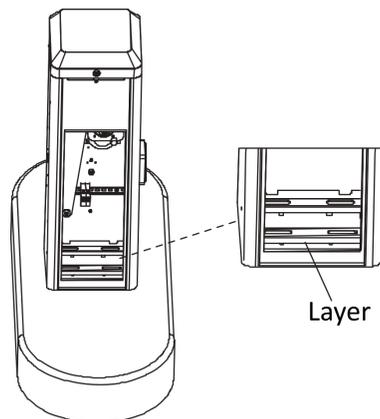
Keep the supporting bracket of the boom pole vertically upward to avoid accident.

2.2.2 Install Boom Pole

Follow the steps to install boom pole.

Steps

1. Align the holes on the supporting bracket with those on the boom pole.

2. Insert four M8 screws into the holes.

3. Install flat washers, spring washers, and nuts on both sides of the screws.

4. Fasten the nuts to fix the boom pole.

Boom
Pole

Supporting
Bracket
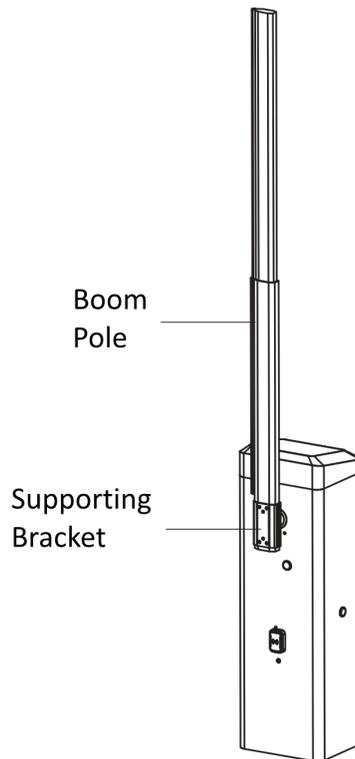
Figure 2-5 Install Boom Pole

⚠️ **Caution**

Contact the professional technical personnel to change the boom pole. You may damage the barrier gate if you change it by yourself.

2.3 Wiring

2.3.1 Connect to Peripheral Devices

The barrier gate can connect to peripheral devices such as entrance/exit capture unit.

Steps

1. Open the top cover of the host, and you can see the interfaces to connect peripheral devices.
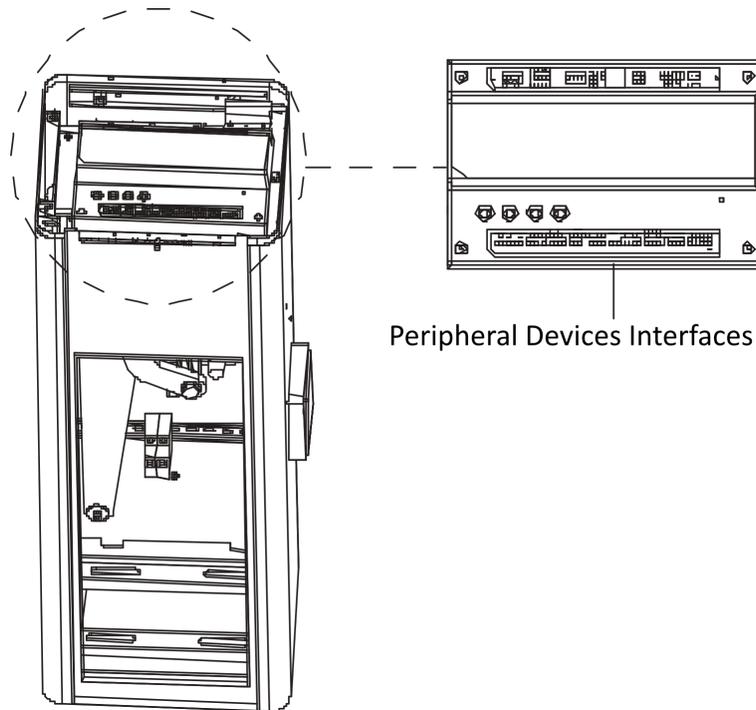
Figure 2-6 Peripheral Devices Interfaces

2. Connect peripheral devices to the interfaces as shown below.

ⓘ**Note**

Refer to "Peripheral Device Interfaces Introduction" for the detailed definition of the peripheral devices interfaces.
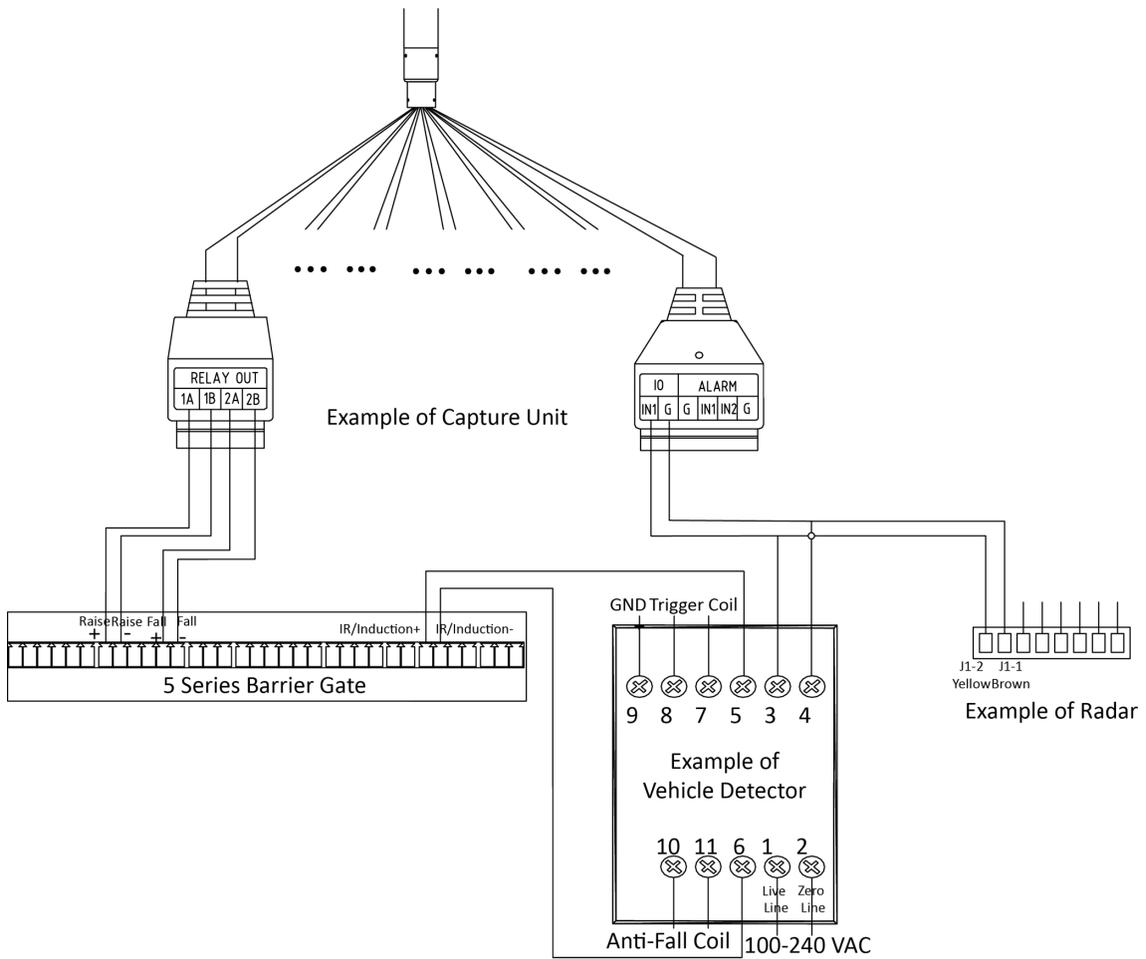
Figure 2-7 Connect to Peripheral Devices

2.3.2 Connect to Power Supply

Connect the laid power cord (RVV3 × 1.5 mm^2 or above) to the power input of barrier gate. Install the top and front covers. Use the L-type key to lock the top cover.

⚠**Danger**

- Cut off the power before wiring.
- The power voltage of barrier gate is 220 VAC ± 10%. If the voltage exceeds the range, voltage stabilizer is needed.
- Make sure the barrier gate is connected to the ground firmly, or it may cause electric shock.

Air switch, connecting to power supply

GND
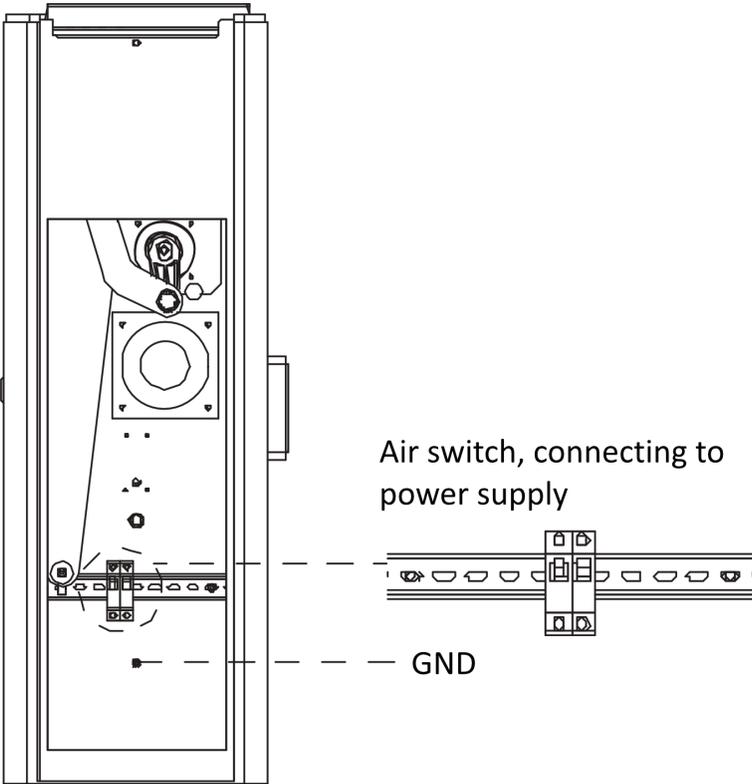
Figure 2-8 Power Input

Chapter 3 Debug

After the installation completes, power on the barrier gate, and it will operate self-check of rising to limit position. After the self-check completes, you can control the barrier gate via remote controller or buttons.

3.1 Remote Control

After the self-check completes, you can control the boom pole to rise, fall, and stop via the remote controller leaving factory with the barrier gate.

3.2 Button Operation

Open the top cover of the host, and you can see the buttons and nixie tube. You can control the barrier gate via the buttons and judge the status via the nixie tube.

There is respective initial status for the rising limit position, falling limit position, and rising speed of the barrier gate. You can adjust them via buttons if the initial status cannot meet the requirements of the installation site.
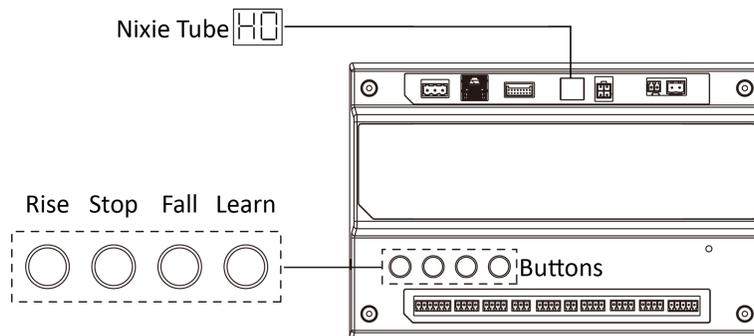
Figure 3-1 Control Buttons

ℹ️**Note**
- If you need to hold the buttons to trigger operations, hold for 3 seconds or above.
- The nixie tube shows the status (e.g., H0) and fault codes (hexadecimal characters, e.g., 1A). If the fault codes appear on the nixie tube, it means there is operation error. Contact the technical personnel of our company to solve the problems.

Table 3-1 Button Operation Description

| No.	Function	Button Operation
1	Rise/Fall/Stop	To rise/fall/stop the boom pole.
2	Adjust the rising limit position	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** until the nixie tube displays H1. 3. Hold **Learn** until the nixie tube displays OL. 4. Hold **Rise/Fall** to adjust the falling limit position. 5. Press **Learn** to save the settings and exit.
3	Adjust the falling limit position	1. Press **Fall** to let the boom pole fall to the limit position. 2. Hold **Learn** until the nixie tube displays H1. 3. Hold **Learn** until the nixie tube displays CL. 4. Hold **Rise/Fall** to adjust the falling limit position. 5. Press **Learn** to save the settings and exit.
4	Adjust the rising/ fall speed	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H2 status (rising speed)/H3 status (falling speed). 3. Hold **Learn** until the nixie tube displays L3. 4. Press **Rise/Fall** to adjust the speed. 5. Press **Learn** to save the current settings and exit. Press **Learn** again to exit from the settings.
5	Learn/Clear the code via the remote controller	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H4 status. 3. Hold **Learn** until the nixie tube displays PA. 4. Press the button on remote controller twice until the nixie tube displays 00 to complete the learning. Hold **Stop** until the nixie tube displays H4 to clear code. 5. Press **Learn** to exit from the settings. 📖**Note** The controller can learn no more than 48 operations.
6	Set the vehicle queue mode	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H5 status.

No.	Function	Button Operation
		3. Hold **Learn** until the nixie tube displays 0 (disabled mode). Press **Rise/Fall** until the nixie tube displays 1 (enabled mode). 4. Press **Learn** to exit and save the current settings. Press **Learn** again to exit from the settings.
7	Set the auto falling	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H6 status. 3. Hold **Learn** until the nixie tube displays 0 (disabled mode). Press **Rise/Fall** until the nixie tube displays 1 (enabled mode). 4. Press **Learn** to save the current settings and exit. Press **Learn** again to exit from the settings.
8	Set the auto falling duration	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H7 status. 3. Hold **Learn** until the nixie tube displays the current auto falling duration. Press **Rise/Fall** to adjust the duration. **Note** Displayed falling duration × 10 = actual falling duration. The unit of the duration is second. E.g., the displayed falling duration is 3. Thus the actual falling duration is 30 s.
9	Lock the barrier gate via the remote controller	1. Press **Rise** to let the boom pole rise to the limit position. The nixie tube displays rL. **Note** Apply control signal to let the boom pole rise to the limit position. The nixie tube displays Lc. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H8 status. 3. Hold **Learn** until the nixie tube displays 0 (disabled mode). Press **Rise/Fall** until the nixie tube displays 1 (enabled mode). 4. Press **Learn** to save the current settings and exit. Press **Learn** again to exit from the settings.
10	Set the rising limit output mode	1. Press **Rise** to let the boom pole rise to the limit position. 2. Hold **Learn** until the nixie tube displays H0. Press **Fall** to adjust the boom pole to H9 status.

No.	Function	Button Operation
		3. Hold **Learn** until the nixie tube displays 0 (disabled mode). Press **Rise/Fall** until the nixie tube displays 1 (enabled mode). 4. Press **Learn** to save the current settings and exit. Press **Learn** again to exit from the settings.

Chapter 4 Maintenance

4.1 Check Regularly

The barrier gate should be maintained every three months. Check according to the following instructions.

- Check mechanical drive.
- Check if the wiring and GND is firm.
- Check if the motor sounds abnormally.

4.2 Check After Collision

- Check if the slewer is damaged. Change it if it is damaged.
- Check if the boom pole is curved. Change it if it is curved.
- Check if the barrier gate sounds abnormally during running. Contact the qualified after-sales service agent in time.

4.3 Fault Code Description

When the barrier gate is abnormal, open the top cover, and observe the fault code on the nixie tube to troubleshoot.

Table 4-1 Fault Code Description

No.	Code	Description
1	01	• The barrier gate was hit.
2	02	• The boom pole does not match. • The control box was damaged.
3	03	• The boom pole was blocked from falling by obstacles. Remove them. • The spring is too tightened. • The boom pole does not match. • Learning limit positions failed. Learn again.
4	04	• There are obstacles on the boom pole or the connection components. Remove them. • The spring has reached the inner wall of the host in compression status. Adjust the spring. • The boom pole does not match.

No.	Code	Description
		• The gearbox was damaged. • The control box was damaged.
5	05	• The cables of encoder or motor were not connected well. • The boom pole or the connection component got stuck. • The motor was damaged. • The gearbox was damaged. • The control box was damaged.
6	06	• The power input is abnormal. • The power output of the transformer is abnormal. • The braking resistor was not inserted. • The control box was damaged.
7	07	• The power input is abnormal. • The power output of transformer is abnormal. • The control box was damaged.
8	0d	• The gearbox was damaged. • The encoder was interfered. • The boom pole was damaged.
9	0E	The radar, vehicle detector, or protection signal was triggered during learning.
10	10	The stopping control or stopping via hand shank terminal was short-circuited.
11	11	The stopping control or falling via hand shank terminal was short-circuited.
12	15	FOC timeout.
13	16	The software is abnormal.
14	17	• The braking resistor was damaged or not inserted firmly. • The control box was damaged.
15	18	The signal cable was not connected well.
16	64	If the device fail to rise to the limit position, but the motor is running well, the system will reboot if it receives the rise command.
17	65	If the device fail to fall to the limit position, but the motor is running well, the system will reboot if it receives the rise command.

No.	Code	Description
18	66	Learning failed. The system will reboot if it receives the rise command.
19	68	The motor wiring was not connected well.
20	69	FLASH is abnormal.

4.4 Troubleshooting for Failed Auto Rising/Falling of Boom Pole After Power Cutoff

If the boom pole cannot rise or fall automatically after the power is cut off suddenly, follow the steps to solve the problem.

Steps

1. Uninstall the top and front covers.

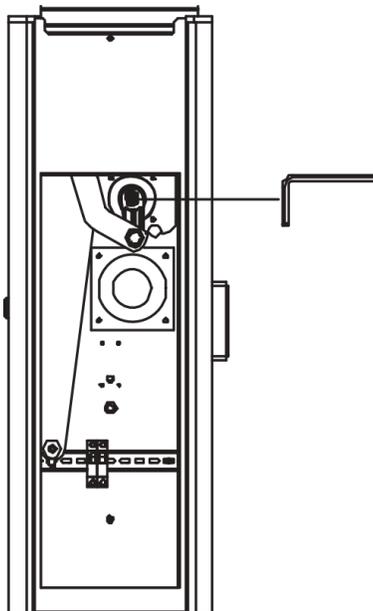**2.** Insert L-type wrench into the hexagonal hole on the host.

Figure 4-1 Rotate Wrench

3. Rotate the wrench according to the barrier gate status.
- If the barrier gate is in the falling limit status, rotate the wrench anticlockwise to raise the boom pole slowly until it can rise and fall automatically.
- If the barrier gate is in the rising limit status, rotate the wrench clockwise to make the boom pole fall slowly until it can rise and fall automatically.

Appendix A. Peripheral Device Interfaces Introduction

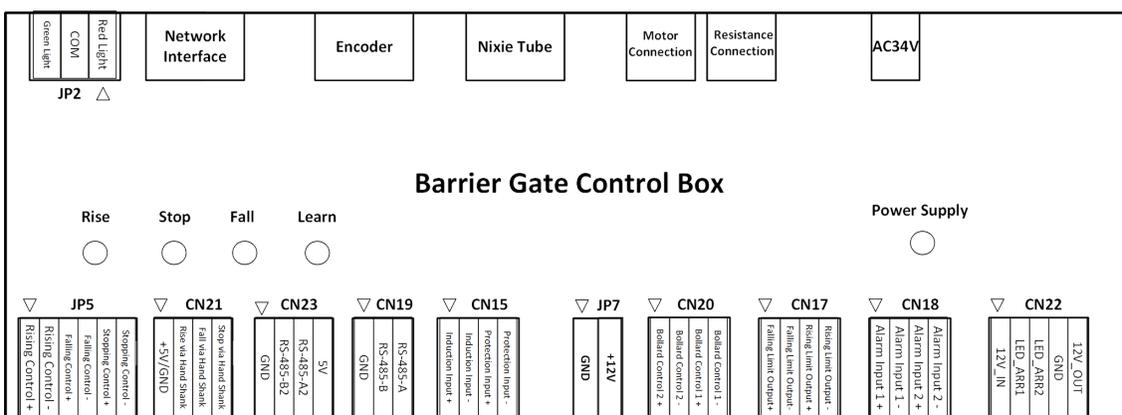Open the top cover of host, and you can see the interfaces as shown below.

Figure A-1 Interfaces

Table A-1 Interface Description

Name	Description	Name	Description
Red Light	Connects to the red traffic signal light.	Green Light	Connects to the green traffic signal light.
Rise via Hand Shank	Connects to hand shank control tool to control the boom pole to rise, fall, and stop remotely.	+12V	Connects to 12 V power supply.
Fall via Hand Shank		GND	GND
		12V-IN	Connects to power input.
		12V-OUT	Connects to the positive pole of LED strip light.
Stop via Hand Shank		GND	GND
		LED-ARR2	Connects to the negative pole of LED strip light, displaying green.
+5V/GND	Hand shank power supply.	LED-ARR1	Connects to the negative pole of LED strip light, displaying red.

Name	Description	Name	Description
Rising Control +	Connects to control signals (relay) to execute rising, falling, and stopping command.	Rising Limit Output +	• The alarm output of exceptional rising of the boom pole. • Relay signals to output the rising status of the boom pole to detection unit.
Rising Control -		Rising Limit Output -	
Stopping Control +		Falling Limit Output +	Relay signals to output the falling status of the boom pole to the detection unit.
Stopping Control -		Falling Limit Output -	
Falling Control +		Induction Input +	Connects to the relay output of vehicle detector to detect the vehicle status.
Falling Control -		Induction Input -	
Bollard Control 1 +	Reserved interfaces.	Protection Input +	Connects to pressure wave. The boom pole will rebound after the wave detects object is pressed.
Bollard Control 1 -		Protection Input -	
Bollard Control 2 +		GND	Inputs RS-485 control signals. A connects to RS-485 +, and B connects to RS-485 -.
Bollard Control 2 -		RS485-B	
Alarm Input 1 +		RS485-A	
Alarm Input 1 -		5V	Connects to the remote receiving module.
Alarm Input 2 +		RS485-A2	
Alarm Input 2 -		RS485-B2	
		GND	

See Far, Go Further

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