Electric Automatic Bollard

Electric Bollard Series

Technical Instruction
Copyright Statement

Respected customer:

Thank you for choosing Delos bollard provided by Delos Group International. This is a product with high technology, so please read this manual carefully before operation.

The appearance and technologies involved in this product belong to Delos Group International.

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All rights to improve and perfect our products are reserved. We can’t promise this manual is in full accord with the product you receive, but we will check and revise the manual at regular interval. No further notification will be sent in the case of any modifications to the manual.

Warranty Service Statement

We provide free maintenance and technical support within warranty period from the day of purchasing. This commitment will automatically terminate when any of the following actions occur.

1. User makes modification, dismantlement or anything else which may possibly impair the completeness of software and hardware.
2. User fails to operate correctly according to this manual and causes damage to the equipment completely or partly.
Safety Attentions

Pneumatic automatic bollard contains many mechanical and electronic parts. Any assembly or operation carelessness may threat your security.

Any person or agency which sell and install Delos bollard product should take corresponding responsibility and comply with the following requirements:

All the bollard moving positions should be clearly marked (such as audio and/or optical signal ground sign) to make sure that every passer-by notice the existence of bollard. You have compelling obligation to these signal signs and system.

**Warnings:**

This manual introduces correct use information and important cautions to prevent accidents from happening. Please read it carefully and use the product correctly. Any actions disobeying safety attentions or misusing the bollard will possibly threat people’s life.

Only professionals who are technically trained and know well about the electronic and mechanical risks of bollard are qualified to install and operate automatic bollard so as to avoid unnecessary dangers caused by incorrect operations.

We are not responsible for results caused by the following kinds of operations: operations unmentioned in this manual, vicious destructive operation, unprofessional operation by untrained technician.

Please keep this manual for future reference.

If you need more information and training, please contact the following E-mail:

engineer@delosgroup.com
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1 System Introduction

1.1 Brief Introduction

Electric automatic bollard system is usually located at the entrance and traffic control point. Command is sent by remote control or other control system to make bollard be retracted underground and realize barrier-free passing of authorized vehicles.

Electric automatic bollard system is the very choice of present access control. High-intensity anti-collision performance can effectively prevent illegal vehicle intrusion and protect the security of area surrounded by bollards. 1.5m spacings ensure pedestrians pass freely and realize pedestrian & vehicle separating function which traffic barrier fails to satisfy. Simplified cylinder perfectly integrates with various environment.

Bollard system is suitable for customs house, port & wharf, high-class residential estate, walking street, industrial park, government building, prison, military base and other places requiring vehicle control.
1.2 System Configuration

Electric automatic bollard mainly consists of cylinder and control box. It uses electric drive motor as dynamic to realize the rise/fall of bollard.

As a moving device, bollard is usually installed at vehicle entrance/exit. It rises to block the vehicle and falls to the ground level to authorize free passing.

As the control device, control box is mainly used to control bollard rise/fall.

- Each electric bollard has a corresponding control box. Aviation connector is used to connect bollard with control box.
- It is suggested that the distance between control box and bollard should be within 50m.
1.3 Function Features

- Pedestrian-vehicle separating control and 1.5m bollard spacing can effectively control vehicle entrance/exit and ensure pedestrian passes freely at the same time.

- Use control system which makes system performance stable and reliable; can be easily integrated to user’s system.

- Complete water-proof design; equipment can be used soaking in water for a long time.

- Optional cylinder materials. With elegant overall appearance, it can be integrated with all kinds of environment.

- Various control methods: manual button control, wireless remote control and other system control.

- Can be connected with road barrier, ticket dispenser, card reader and other systems to realize automatic control function.

- Can use traffic lights to control the access.

- Grounding to activate valid anti-collision function, leaving drivers no worries.

- Various working modes for your choice.

- Convenient installation and simple maintenance.
# 2 Product Introduction

## 2.1 Main technical parameters

<table>
<thead>
<tr>
<th>Basic Parameters</th>
<th>DBO-114E-600</th>
<th>DBO-168E-600</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>DBO-114E-600</td>
<td>DBO-168E-600</td>
</tr>
<tr>
<td><strong>Drive Mode</strong></td>
<td>Electric</td>
<td></td>
</tr>
<tr>
<td><strong>Power Producer</strong></td>
<td>24V DC motor</td>
<td></td>
</tr>
<tr>
<td><strong>Diameter</strong></td>
<td>114mm</td>
<td>168mm</td>
</tr>
<tr>
<td><strong>Block Height</strong></td>
<td>600mm</td>
<td></td>
</tr>
<tr>
<td><strong>Embedded Height</strong></td>
<td>1080mm</td>
<td></td>
</tr>
<tr>
<td><strong>Thickness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>3mm</td>
<td>5mm</td>
</tr>
<tr>
<td>Stainless</td>
<td>3mm</td>
<td>5mm</td>
</tr>
<tr>
<td><strong>Impact Resistance</strong></td>
<td>50,000J</td>
<td>200,000J</td>
</tr>
<tr>
<td><strong>Net Weight</strong></td>
<td>70kg</td>
<td>130kg</td>
</tr>
<tr>
<td><strong>Cylinder Material</strong></td>
<td>Iron/304 stainless steel/316 stainless steel (optional)</td>
<td></td>
</tr>
<tr>
<td><strong>Cylinder Surface Finish</strong></td>
<td>Iron: plastic coating; black, yellow, black and other colors for choice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stainless steel: brushed finish</td>
<td></td>
</tr>
<tr>
<td><strong>Operation Speed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rise</td>
<td>8cm/s</td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>10cm/s</td>
<td></td>
</tr>
<tr>
<td><strong>System Input Voltage</strong></td>
<td>AC 220V 60W</td>
<td></td>
</tr>
<tr>
<td><strong>Working Frequency</strong></td>
<td>Medium working frequency; service life&gt;2,000,000 times &amp;1,500 daily operations</td>
<td></td>
</tr>
<tr>
<td><strong>IP Class</strong></td>
<td>IP67</td>
<td></td>
</tr>
<tr>
<td><strong>Working Temperature</strong></td>
<td>-5~70°C</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Bollard Structure

Instruction: In order to realize complete waterproof effect, electric bollard doesn’t have LED alarm light. So it is suggested to use traffic light to help access control when using electric bollard system.

Electric bollard adopts integrated design, integrating dynamic system into the bollard. Only need one dedicated 7-core line to be connected with corresponding control box by using aviation waterproof connector to enable normal running. Simple installation.

Integrated design. No need to take out external cylinder during maintenance. Directly take out the whole internal cylinder parts.
<table>
<thead>
<tr>
<th>NO.</th>
<th>Accessory Name</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3M diamond grade reflective stripe</td>
<td>Have strong reflective effect under strong light, providing the most efficient and secure protection for pedestrians and night workers in darkness.</td>
</tr>
<tr>
<td>2</td>
<td>Stainless steel internal cylinder</td>
<td>Bollard moving part used for blocking vehicles.</td>
</tr>
<tr>
<td>3</td>
<td>Pre-buried external cylinder</td>
<td>Cylinder fixed part, pre-bury under the ground.</td>
</tr>
<tr>
<td>4</td>
<td>External cylinder flange</td>
<td>Anti-skid flange; can be opened during maintenance.</td>
</tr>
<tr>
<td>5</td>
<td>Anti-theft bolt</td>
<td>Protect the security of accessories inside the cylinder.</td>
</tr>
<tr>
<td>6</td>
<td>Internal cylinder top cover</td>
<td>Convenient for bollard maintenance.</td>
</tr>
<tr>
<td>7</td>
<td>Aviation waterproof connector (plug)</td>
<td>Waterproof connector, used for electric bollard pipe &amp; line connection.</td>
</tr>
</tbody>
</table>
2.3 Bollard & Control Box Size

Control Box

System composition:
A set of complete electric bollard consists of an electric bollard and a electric control box

Bollard

<table>
<thead>
<tr>
<th>CAD Dimension Drawing</th>
<th>DBO-168E-600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delos International Group</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.delosgroup.com">www.delosgroup.com</a></td>
<td></td>
</tr>
</tbody>
</table>

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2.4 Electric Bollard Control System

Electric bollard control system adopts one-to-one control mode, that is, one control system corresponds to one electric bollard. This system mainly consists of 3 parts: 24V switch power, logic and wireless module.

This system can be manually controlled, remotely controlled, or connected with car reader, ticket dispenser and other devices to realize rise/fall control. Loop detector, infrared and other detecting devices can be added to ensure vehicle safety.

<table>
<thead>
<tr>
<th>NO.</th>
<th>Accessory Name</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch power supply</td>
<td>Convert AC 220V into DC 24V to supply pneumatic control panel.</td>
</tr>
<tr>
<td>2</td>
<td>Air switch</td>
<td>Circuit on-off control; Protect electronic equipment from short circuit, severe overload and undervoltage conditions.</td>
</tr>
<tr>
<td>3</td>
<td>Wireless module</td>
<td>This wireless module can strengthen infinite remote control with a distance from 15 to 30m.</td>
</tr>
<tr>
<td>4</td>
<td>control module</td>
<td>Logic control unit, used to control bollard rise/fall; integrated with other control system</td>
</tr>
</tbody>
</table>
3 System Installation

3.1 Bollard Installation

Tool list:

You may need the following tools except conventional tools:

- Stick
- Bandage which can withstand 200kg
- Road smash hammer
- Small size forklift
- Small size excavator about 40kw (according to construction size and installation geological conditions)

Preparations:

1 ) Transport: Use small size forklift to transport bollard to installation spot. Keep bollard vertical or horizontal.

2 ) Package: Cylinder and control cabinet are packaged in wooden boxes separately. Control box and other parts together with pipes are all put inside the control cabinet.

3 ) Distance measurement: Measure the distance between bollard installation place and control cabinet referring to blueprint according to diagram. Too long distance may cause unwanted results such as wire & pipe winding and squeezing.

Geological Survey:

Try to install bollard in places without rainwater deposition, otherwise you may need to excavate drainage channel connecting with existed or additional drainage system.
Construction Illustration:

1. First-phase preparations: affirm construction site, excavate channels and custom drainage system

Construction Diagram
First Phase Preparation

Bollard Slotting

Slotting Length Computational Formula
\[ L = (N-1) \times 1.5 + 7.5 + 7.5 = 1.5 \times N \text{ m} \]
- \( N \) ---- bollard amount
- 1.5 ---- the central spacings of each bollard
- 7.5 + 7.5 ---- the distance sum between the two bollards on the very sides

1. Excavate a slot with depth 1380mm, width 800mm and length \( L \)

Pour about 40L water

If the water are drained within 30 minutes, select gravel drainage system.

If only a few water or even none is drained, select drainage pipe system.

2. Soil drainage ability test

First phase preparation: confirm pre-bury slot dimension, excavation and drainage system
2. Drainage System

**Construction Diagram**

**Drainage System**

**Fig No. : P_3-2**

① Select 300mm gravel porous layer as drainage layer
   a. Lay 300mm gravel layer used for seepage
   b. Cover a piece of tarpaulin on the surface of gravel layer to prevent cement infiltration
   c. Break the tarpaulin at the bottom of bollard installation site to make sure water inside the bollard can flow through drainage hole and sink into gravel layer

② PVC 110 drainage pipe, leading to river or drain well

③ Select drain pipe drainage system
   a. Use cement, brick or gravel to bottom the tunnel for 100mm.
   b. Place a PVC 110 pipe or galvanized pipe for drainage.
   Use three-way joint to connect PVC pipe with bollard bottom.
   c. Fasten the drainage pipe with cement brick, gravel or cement block 1080mm away from the ground.

**Drainage: gravel layer drainage & PVC pipe drainage**
3. Bollard Location and Fixing

**Construction Diagram**
**Placement and Fixture**

Fig No.: P_3-3

1. Place the bollards at a spacing of 1.5m each
2. Placing requirements:
   a. Spacing between bollards: 1.5m
   b. All bollards keep the same height after installation and are horizontal with the ground.
   c. Drainage hole at the bottom of the bollard must align with drainage pipe

3. Fill in concrete until it is 200mm from the ground

4. Fix bollards and cast concrete
   a. Make sure bollards keep vertical and horizontal and drainage system works well. Then cast concrete.
   b. To prevent bollard from inclining or moving, you can fix the footing first and then cast concrete for the whole construction.
   c. Stop casting when concrete surface is 200mm from the ground.
   d. Use concrete above BS 8110-2.

Bollard Placement & Fixture: location, horizontal adjustment and casting concrete
4. Pipe & Wiring Connection

Construction Diagram
Pipe & Line Connection

Ø50 PVC Pipe

Wreathe the ports of bellows and bollard with waterproof adhesive tape to prevent concrete and gravel from entering into the bollard.

© Pre-bury and connect pipes & lines
a. Use a PVC 50 pipe between bollard and its control box and thread a electric bollard dedicated line inside.
b. It is suggested to use galvanized for threading line in industrial park passages for Large size vehicles

Pipe & line Instruction
Pre-bury a dedicated line with aviation socket between each bollard and its corresponding control box.

Aviation plug
Aviation socket

Bollard wiring instructions: pipe & line connection instructions between bollard and control box
5. Function Detection and Ground Finish

Construction Diagram
Function and Ground

- Connect plug with socket and then push them into the cylinder. Connect control box to 220V power, turn on air switch inside control box, then use remote control to test its rise/fall function.

- Keep casting concrete till its surface is 100mm from the ground.

- Ground process: After air impermeability and function tests are finished, continue casting concrete till its surface is 100mm from the ground. Landscape and ground construction department will use the same material as the ground to lay on the upper part after bollards are installed.

Function Detection & Ground finish: check equipment work condition and lay surface material.
3.2 Control Box Installation

It is suggested to install control box within 50m of the bollard. After make sure installation position, purchase relative fixed size control box. Connect aviation connector (plug) on control box lead with aviation connector (socket) on bollard lead when wiring.

Various control box placing methods:

1. Drill a hole and fox it on the wall
2. Overlap and put in available places
3. Put in the cabinet
4. Fix it on the ground with expansion screw

It is suggested to install control box indoors. Please make suitable waterproof measures in the case of outdoor installation.
3.3 Port Instructions

**Control panel**

**Terminal Instructions**

**Elec-Bollard Controller**

Voltage: 24V
Controller Power: 5W
Motor Power: 50W (Peak: 10A)

**Signal output port instructions:**

<table>
<thead>
<tr>
<th>Motor Output</th>
<th>Motor- port output</th>
<th>Motor+ port output</th>
<th>Reserved port, unused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch</td>
<td>① 24V+</td>
<td>Clutch signal output +</td>
<td>Clutch signal output -</td>
</tr>
<tr>
<td></td>
<td>② Out1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buzzer</td>
<td>③ 24V+</td>
<td>Buzzer alarm output +</td>
<td>Buzzer alarm output-</td>
</tr>
<tr>
<td></td>
<td>④ Buzzer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED signal</td>
<td>⑤ 12V+</td>
<td>LED output+</td>
<td>LED output-</td>
</tr>
<tr>
<td>LED head</td>
<td>⑥ LED1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>⑦ 12V+</td>
<td>DC12V+ Output</td>
<td>Reserved port, unused</td>
</tr>
<tr>
<td></td>
<td>⑧ Null</td>
<td>Reserved port, unused</td>
<td></td>
</tr>
<tr>
<td>DC output</td>
<td>⑨ 12V+</td>
<td>DC 12V+ Output</td>
<td></td>
</tr>
<tr>
<td>GND</td>
<td>⑩ GND</td>
<td>Common port</td>
<td></td>
</tr>
</tbody>
</table>

485 通讯端口

| 485- GND | Common port |
| 485+ 485+ Communication with PC |
| 485- 485- Communication with PC |
| GND     | Common port  |
Control panel
Terminal Instructions

Elec-Bollard Controller
Voltage: 24V
Controller Power: 5W
Motor Power: 50W (Peak: 10A)

Signal input port instructions:

<table>
<thead>
<tr>
<th>Power Input</th>
<th>DC24V power input-</th>
<th>DC24V power input+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power_in-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power_in+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control signal input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12V+_Out</td>
<td>DC 12V output</td>
</tr>
<tr>
<td>21 GND</td>
<td>Common port</td>
</tr>
<tr>
<td>22 Down_dir1</td>
<td>Fall signal input direction 1</td>
</tr>
<tr>
<td>23 Down_dir2</td>
<td>Fall signal input direction 2</td>
</tr>
<tr>
<td>24 Up</td>
<td>Rise signal input</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loop signal input</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Anti_pump</td>
</tr>
<tr>
<td>26 Loop_dir1</td>
</tr>
<tr>
<td>27 Loop_dir2</td>
</tr>
<tr>
<td>28 Gnd</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limit switch input</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 Limit_down</td>
</tr>
<tr>
<td>30 Limit_up</td>
</tr>
<tr>
<td>31 Gnd</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Debugging button</th>
<th>Debugging button</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Test</td>
<td></td>
</tr>
</tbody>
</table>
3.4 Bollard Wiring Instructions

According to specific requirements of passages, electric bollards can not only be individually controlled, but rise/fall at the same time in multiple.

Fig. P.3-7 is the wiring between bollard and control box: pre-bury a Φ50 PVC pipe, thread a electric bollard indedicated line through it, then connect control box with bollard by using waterproof connectors (aviation plug/socket). Since water proof connector needs to be configured in factory, customer should calculate line length and buy control box of corresponding length when installing the bollard.
3.5 Wiring of Control Part

Standard configuration has 2 kinds of control methods:

a) Controlled by manual control box

b) Controlled by wireless controller

1) Manual control box installation:
   ① Confirm the position of control room (max. control distance: 100m)
   ② Connect the manual control box with control module according to Fig. P_3-8

2) Wireless remote control module

All is settled before delivery. Refer to Fig. P_3-8 for wiring. Wireless remote controller is put inside the control box for direct use. Wireless remote control distance is from 15-30m.
Instructions: Electric bollard is in individual control mode by default. Simultaneous rise/fall control can be realized through parallel control model as shown in Fig. P_3-9.
Instructions: After connecting as shown in Fig. P_3-9, use wireless controller of NO.1 or NO.2 control box to make NO.1 or NO.2 bollard rise/fall simultaneously.
3.7 Lead in External Power

Lead-in external power:

Pull a standard power line (above RVV3*1.0) to the air switch inside the control box. In order to ensure stable working of the equipment, external power must keep in 220V ±10V. It is suggested to use 10A air switch.

3.8 Entire Machine Debugging and Detection

After the installation is finished, please detect and debug the equipment according to the following steps.

1. Make sure all the wire & pipe connection are correct.
2. Make sure external power 220V is stable.
3. Enable the power supply and turn off the air switch inside the control box to see whether equipment is electrified.
4. Make sure the green indicator light of control module is normally on.
5. Make sure the rise/fall function of manual control box works correctly.
6. Make sure the rise/fall function of wireless controller works correctly.
7. Make sure bollard runs stably and smoothly.

If the above matters are all working well, it means equipment is correctly installed and suitable to be put into use.

Attention: passage must be closed during bollard rise/fall test to prevent accidents.
4.1 Lead In Anti-collision Loop detector

This is a kind of high security equipment. Incorrect use may cause injury to people.

Improper operation by managing personnel, accidental touching the controller by kids and other conditions may cause sudden bollard rise/fall and threat the safety of passing vehicles.

In order to avoid vehicle damage caused by improper operation, you can connect bollard system with vehicle detection system such as loop detector. When loop detector detects vehicles, bollard can’t rise. Only when vehicles leave the detection range can bollard rises normally.

It is suggested to detect vehicles with loop detector coil. Coil should be neither too large nor too small.

Refer to Fig. P_4-1 for detailed construction.
Instructions:

1) This wiring diagram is suitable for all control modes;

2) When flow control mode is not in use, you can connect the relay output signals of all the loop detector in parallel, and then connect to 25 (or any one between 26 and 27) and common port.
5 Working Mode

5.1 Working Modes Introduction

Bollard have the following 4 working modes:

- Command control mode
- Delayed control mode
- Anti-collision control mode
- Flow control mode

Instructions:

1. Relay signal (AKA dry contact signal) can be directly used as the rise/fall signal of this system or cascaded with ticket dispenser, road barrier, card reader and other systems.

2. X,Y as delayed waiting time: after connecting control module with upper computer through 485 protocol converter, this value can be adjusted through the debugging tool provided by us. Detailed operations are as follows.

3. The following instructions are based on the configuration of loop detector.

5.1.1 Command Control Mode

In this mode, it is necessary to input signal both for bollard rise/fall.

Scene: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal→vehicle passes/fails to pass the controlled passage →operator sends rise signal.

5.1.2 Delayed Control Mode

In this mode, you need to input signal to make bollard fall. To make it rise, you can input signal or just wait some time for the bollard to rise automatically.

Scene 1: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal→vehicle passes/fails to pass the controlled passage →operator sends rise signal.

Scene 2: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal→vehicle passes the controlled passage→bollard
Scene 3: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal → vehicle fails to pass the controlled passage → bollard rises automatically after X seconds.

5.1.3 Anti-collision Control Mode (default mode)

In this mode, you need to input signal to make bollard fall. To make it rise, you can input signal or just wait X seconds after passing the controlled area for the bollard to rise automatically.

Scene 1: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal → vehicle passes/fails to pass the controlled passage → operator sends rise signal.

Scene 2: vehicle needs to enter into/exit controlled passage → operator authenticates and sends fall signal → vehicle passes the controlled passage → bollard rises automatically after X seconds.

5.1.4 Flow Control Mode

In this mode, controlled passage has 2 directions (entrance & exit) and there’re 2 kinds of loop detector (inner loop detector & outer loop detector). Strictly follow Fig. P. 4-3 as wiring instructions. NO. 26 & 27 ports both need to be connected. NO.22 & 23 ports both needs control part wiring,

Scene 1: vehicle needs to enter into controlled passage → operator authenticates and sends entrance direction fall signal → vehicle passes the controlled passage from entrance direction → bollard rises automatically.

Scene 2: vehicle needs to enter into controlled passage → operator authenticates and sends entrance direction fall signal → vehicle fails to pass the controlled passage and leaves directly → bollard rises automatically after X seconds.

Scene 3: vehicle needs to enter into controlled passage → operator authenticates and sends entrance direction fall signal → triggers one loop detector and leaves without passing the controlled passage → bollard rises automatically after Y seconds.

Scene 4: vehicle needs to enter into controlled passage → operator authenticates and sends exit direction fall signal → vehicle passes controlled passage from entrance direction → bollard rises automatically and the control module outputs a reverse entrance alarm signal simultaneously.

Loop Detector Anti-collision Function

All modes have anti-collision function after connecting with loop detector.

Scene 1: bollard falls automatically when vehicle enters into the detection range of loop detector during bollard rise process.

Scene 2: any rise signal input is invalid when there’s vehicle with the detection range of loop detector.
5.2 Mode Modification

Electric Bollard
Working Mode

Computer

Step 1: Use 485 protocol converter to connect control panel with upper computer

Instructions:
Protocol converter and control panel need to be electrified to achieve successful communication

Step 2: enable the software to set the value

Setting step:
① Select correct serial port number
② Select site No. (default value:1)
③ Click “Query Online” (If communication is normal, “Operation Succeed” will show in bottom-left corner)
④ Click “Query Parameter” to check present parameters.
⑤ Click pulldown menu of “Working mode” and select the mode you need
⑥ Click “Set Parameter” to save the settings.
System mode, delayed rise time X, Y and other parameters can be modified according to Fig. P.5-1.

Notice:

1) Control panel and protocol converter should be electrified to communicate normally.

2) Finish the connection work and right click “My Computer” → Management → Check Port (COM and LPT) → USB Serial Port (COM4), serial port is COM4.

3) If communication is not successful, please check the connection line and serial port number. If it still doesn’t work, please contact us.
6 Daily Maintenance

Standard maintenance (once every half year):

- Clean the pit. Use pump/suction pump to clean up settlements.
- Clean the drainage facilities at the bottom of the pit.
- Clean and oil main slide track.
- Make sure the screws on the bollard are fastened.
- Check the power, set safety air switch if necessary.
- Check manual control function.
- Check wireless remote control device function.
- Check electronic control panel function.
- Check rise/fall function.
7 Common Failure Analysis

7.1 Bollard Fails to Rise

If bollard fails to rise, check the following possible conditions:

1. Open control cabinet and check whether power supply is enabled and switch power indicator light is on.

2. Make sure the green indicator light is normally on and red indicator light twinkles. If not, you should change the control panel.

3. Press the black Test button on control panel; check whether it can control rise/fall. If not, you need to change control panel.

4. Check whether manual control wiring is loose or there’s any disconnection.

5. Check whether limit switch is normal. Disconnect NO.29 & 30 ports on control module and the electricity. Then restart to test bollard rise/fall.

6. When remote control makes RISE command, measure the voltage between port ① and ② on control panel with multimeter and check whether the value is DC 24V and wire connection is fastened. Change the wiring panel if there’s no voltage output.

6. Check whether there’s stone stuck between the cylinder and flange. If so, clean them up and try again.

7.2 Different Rise/Fall Speed

When the rise/fall speeds of bollards differ more than 1s, the following tests should be made.

1. Open flange to clean sands or gravels stuck in the cylinder.

2. Use remote control to select RISE, measure the voltage between port ① and ② on control panel with multimeter and check whether the value is DC 24V. If voltage is much lower, please check the input power (18 & 19) of input control module is 24V. Then detect switch power and external input voltage.

3. If the above detections are all normal but problem still exists, please contact us to change motor or assembly.