OPERATING MANUAL AUTOMATIC SWING GATE TPW-321ASP

CONTENTS

1. Introduction

The Automatic Swing Gate was developed to be precise, reliable and aesthetically pleasing. Its rounded lines house a sturdy blocking mechanism designed for very low maintenance. The equipment is provided with a standard electric interface and is easily integrated into a system with write/read facilities such as magnetic card, bar code card, ID card and IC card. The product is of a series one and there are multiple types and specifications for your choice. It can be used widely in the sites requiring intelligent management for the passage such as hotel, school, factory, mine, underground and guest house, etc.

The Automatic Swing Gate you purchased is researched and produced in accordance with CE quality management system and is a product having gone through strict and careful inspection.

The product is equipped with sophisticated technology. To ensure a safe and reliable operation and to ensure the safety operation, the operation manual is provided with special precautions for the operation of the system. It is recommended that the user read carefully the operation manual prior to application of the equipment, otherwise, your right may be infringed due to an improper application of the equipment.

This manual presents a detailed description of Automatic Swing Gate operation and components.

2. Safety Precautions

1) The product is equipped with sophisticated technology. In case there is a failure in the system during application, it is recommended that the after sale service department of the company or the authorized organization be informed and not to disassemble before consultation. Otherwise, the internal structure may be damaged or your right may be infringed due to an improper operation of the equipment.
2) During application of the product, it is forbidden to sit on or press with force on the barrier rod, otherwise, unnecessary damage may be caused to the barrier.
3) The product has a dangerous voltage during application, hence it is required to check regularly the system protection grounding otherwise personnel injury may result.
4) It is recommended to use correctly the equipment interface regarding to the electric characteristic, otherwise, damage to the equipment and other equipment of the user

may be resulted.

5) The equipment is not equipped with explosion-proof design, and it is not allowed to apply the equipment to an environment with danger of inflammable or explosion. However, it is optional for the user to purchase products of other type for the purpose.

3. Product Description

3.1 Technical Details

1) The mechanism is locked until a valid open signal is received.

2) The system adopts the exclusive technique of clutch. As a result, the turnstile is more accurate and reliable for zero point locking and unlocking.

3) The entire system runs smoothly, with a small noise and free of mechanical impact.

4) Two or one direction can be controlled by switch- button and access controller.

5) All controls are housed within the unit, therefore no separate switches or control boxes are required.

6) It has failure self-detect and alarm indication function, facilitating maintenance and application for the users

7) Control of the tripod is achieved usually by an electro-mechanism mounted within the top section of the Automatic Swing Gate and accessible by open the Top Cover. Purely mechanical control is also possible.

8) It is provided with multiple operation modes for selection. It can either read card in double way for flow limit, or reading card in a way while barring in the other, more over, the operation mode of turnstile may be set up with software.

9) The barrier of the Automatic Swing Gate can be open automatically when the power is off.

10) The equipment is provided with a unified, standard electric interface and is available to be integrated with various read/write facilities to facilitate the system integration. It is able to realize far end control and management with the help of administrative computer.

11) It is available to calculate automatically the number of personnel passing through the passage and to display directly in LED for the administrator, who can understand very clearly the personnel passing in a certain direction.

3.2 Main Technical Specifications

1) Power voltage: AC100~240V, 50Hz
2) Operation environment temperature: -15℃~ 60℃
3) Relative humidity: less than 95% not condensed
4) Passage width: 600mm

5)   Passing speed: 20-40 person/min

6)   Main-board voltage: 24VDC

7)   Max current: 5A

8)   Working Environment: Indoor/Outdoor

9)   Input port: dry contact signal;

10) Communications port: RS232/RS485 electric standard, communications range: ≤1200m.

3.3 Equipment Outline Dimensions

Automatic Swing Gate is with a complete set of types and specifications and can be divided into types as given below. Figure 1 shows the outline dimensions of CPW-321ASP01. Besides, there are also different types and specifications depending on different read/write equipment installed.
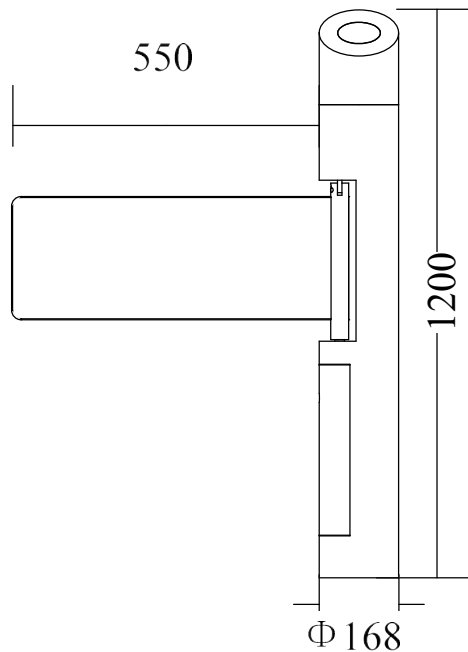
Figure 1

4. Basic Operation Principle

4.1 Basic Operation Principle

When card in/card out signal is given from the access control system or from a push-button, the main controller controls the motor to drive the barrier rotate to 90° for unlocking. After the pre-set time, the main controller controls the motor drives the barrier rotate to the limit position and lock automatically, the counter will automatically increase 1 at the passing direction. Go signal will be cancelled if passage through is not completed within pre-set

time. The standard default is 5 seconds.

As to the read/write system such as magnetic card, bar code card and ID card are the same as that given above, except that the determination of legal card and the barrier open signal of turnstile main control board are carried out by the administrative computer.

4.2 Equipment Operation Mode

To facilitate the application of users, the equipment is set up with various operation modes as given below for selection by the users in the practical application:

    1) Double way reading card, double way flow limit

    2) One way reading card, the other way barring

4.3 System Composition

The product can either be used independently to form a passage or be combined into multiple passages of intelligent management, as shown in figure 2, at the same time; it may be interconnected with management computer and fed back in real time the passing condition of the passage and the turnstile status to the administrator, forming various kinds of management report lists. The administrator may also carry out far end control of the operation for the turnstile through the management computer.
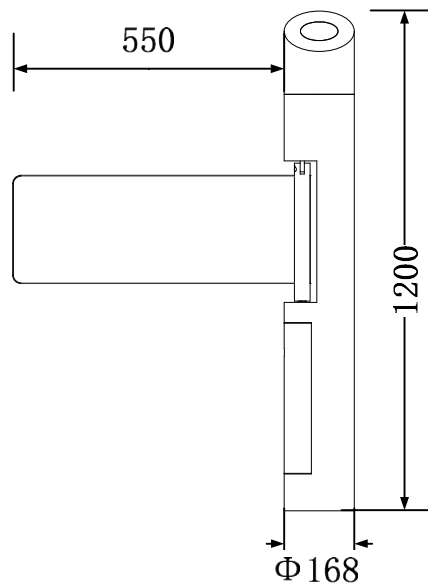

Figure 2

5. Equipment Assembly and Installation

5.1 Equipment Installation

    1) Prepare all the tools for installing the equipment and check the spare parts.

2) After making sure of the system constitution and working principles, please make an overall plan to be ready for the installation.

3) Please arrange the equipment in order after neatening the ground surface.

4) After fixing the positions of the holes, drill and pre-embed the ground bolt or the expansion bolt of M12.

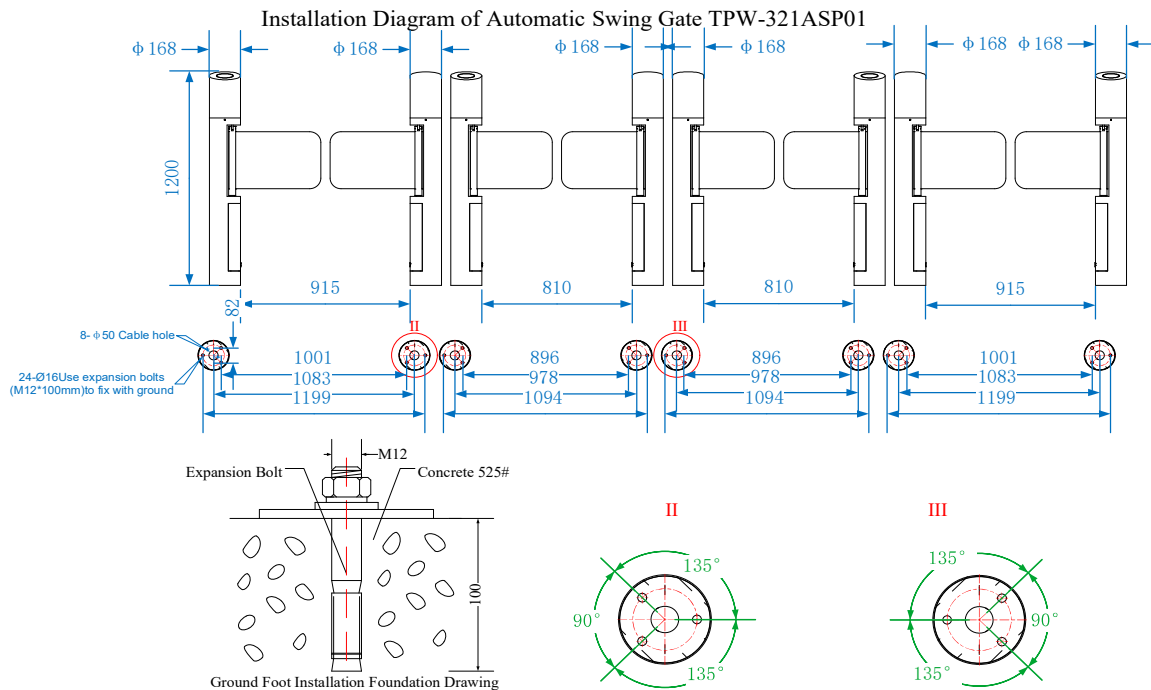Installation Diagram of Automatic Swing Gate TPW-321ASP01

Fig.3 Foundation Drawing for Ground Installation

5) Pull the cable of the heavy current & light current through the 3/4'' PVC tubes respectively; and bury them into the relevant position with cement.

6) Move the equipment to the corresponding installation position and aim at the ground bolt one by one first.

7) Check whether the system constitution and working mode is correct before proceeding to next step.

8) Open the door of the equipment case, choose one of the equipment to be the reference standard. Make the bolt hole of the equipment foundation aim at the ground bolt, and pre-fasten the nut.

9) Open the door of the neighboring equipment. Make the bolt hole of the equipment foundation aim at the ground bolt, and pre-fasten the nut. Any more equipment just needs to be installed analogically.

10) Connect the power cable, control cable and the system protection ground cable.

11) Screw the nuts after all equipment has been tested to work well.

Notice:

1. The depth of the PVC tubes buried shall be more than 60mm. The height above the ground shall be more than 50mm. And the exit of the PVC tube shall be bent return so as to avoid the water falls in.

2. All the above steps shall be operated under the condition of power off and make sure that the system protection ground cable is connected.

3. If the equipment is used outdoors, please build a cement platform for the equipment with the height of 100mm---200mm to resist humidity. Meanwhile, an awning or other facility is needed to resist rain. It's forbidden to use the equipment directly in the open air.

5.2 Equipment Functional Test

The operating procedure is shown below and given the sequence of passage through the turnstile in either direction. The barrier swing will normally be locked, unless a free entry/exit option has been specified operate the Access Control Device if fitted. On the acceptance of a signal from the Access Control Device the barrier swing rotate to 90° for unlocking, After the pre-set time, the main controller controls the motor drives the barrier rotate to the limit position and lock automatically, the counter will automatically increase 1 at the passing direction. Go signal will be cancelled if passage through is not completed within pre-set time. The standard default is 5 seconds. The user may carry out one or several functional tests as given below in accordance with the requirements on the passage function of the turnstile.

5.2.1 Single time card reading passage:

When the passenger read an effective card, the main controller electrifies the barrier swing rotate to 90° for unlocking, After the pre-set time, the main controller controls the motor drives the barrier rotate to the limit position and lock automatically, the counter will automatically increase 1 at the passing direction. Go signal will be cancelled if passage through is not completed within pre-set time (the default pre-set time being 5s).

5.3.2 Function of barrier swing open at power off

The barrier swing should be open automatically when the power of the system is cut off

5.3.3 Far end control

The following setting and test should be carried out when the management computer is used for far end control of the barrier swing.

The turnstile should carry out the relative actions reliably when the upstream management software is used to carry out operations for the turnstile such as rod up/down, open barrier, counting value of read/reset counter. If not, it is necessary to check carefully the communications lines and connectors.

For detail operation method and contents, refer to Appendix A1.

6. Operation Instruction of the Equipment

Once the mechanical and electrical installation of the turnstile has been completed, it can be put into service.

Check before startup

6.1 The equipment can only be used after the above test to ensure a normal operation of the equipment.

6.2 It is forbidden for the passenger to push, lean or pull the barrier rod during the card reading or prior to the indicator changing into a green lamp. Otherwise, the normal operation of equipment may be affected.

6.3 It is forbidden to sit or press with force on the barrier rod when the equipment is not in use, otherwise, the turnstile may be damaged.

6.4 It is recommended that the equipment not be used directly in the exposed site, or in humidity or corrosive environment. Otherwise, the application life of equipment may be affected due to rain, humidity or corrosive subject (for application in outdoor, rainproof facilities such as sun shading board should be used).

6.5 For passing, it is only needed for the passenger to push slightly the barrier rod and the equipment will then drive the barrier rod to move automatically. It is not allowed to push the barrier rod with strong force during the passing.
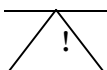
⚠ Precautions:
1) Please do not use the system when there is lightning, otherwise the turnstile may be damaged.
2) It is required to connect reliably the protection grounding of the system to avoid accident of personnel injury.

7. Regular Maintenance

1) The housing of the equipment is of a sub-polish stainless steel. It is required to clean regularly with soft cloth so as to keep a clean and polish surface. It is forbidden to clean the surface with a hard object; otherwise, the appearance may be affected. It is also forbidden to wash it with water, otherwise, short circuit may occur in the electric control system and the equipment may be damaged.

2) It is required to check regularly the connection of various movement sections of the equipment. Fasten timely the loose fasteners such as nut and screw; otherwise, turnstile failure may be resulted due to long term operation.

3) It is required to check regularly the protection grounding of the system to ensure a reliable connection.

4) It is required to check regularly the connectors and line connection points to ensure a reliable connection.

8 Common Failures and the Remedy

1) No indication for direction and counter, and not able to read card after power on.
   The failure is due to power system. It is required to check carefully the 5A fuse in the main board of the equipment (refer to Attached Figure 3, Appendix A.2) for damage, and see if there exists any loose connector, and broken power line.

2) Not available to read card normally.
   The failure is mainly due to a loose connection between reading device and the main controller or the reading device may be damaged. Replace the reading device and carry out functional test for it
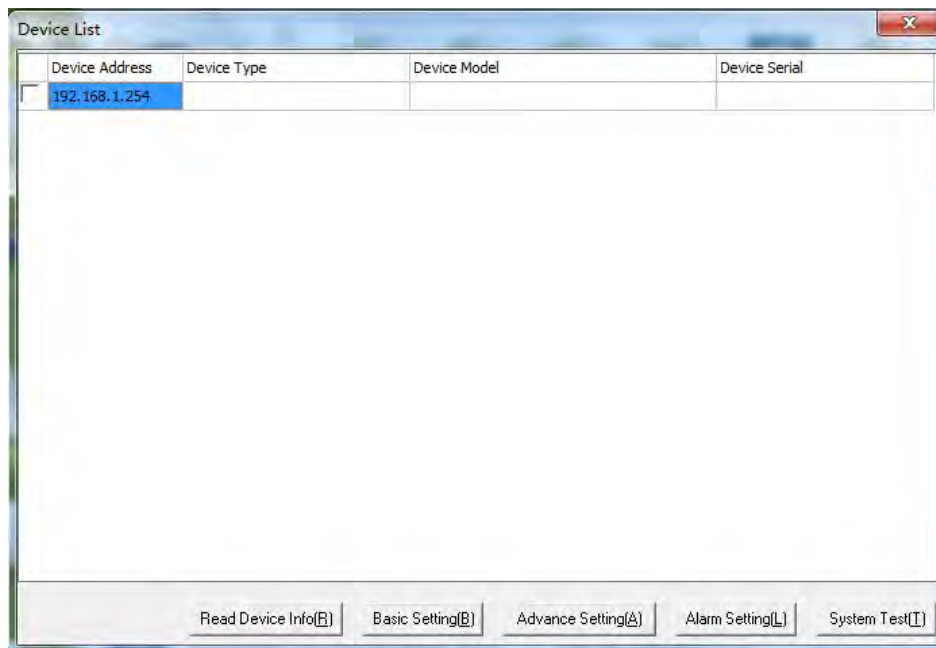
Appendix A

A.1 Software manual

Login

Click the cmoloturnstile.exe it will open up the Login windows, as follows in attached figure 1:
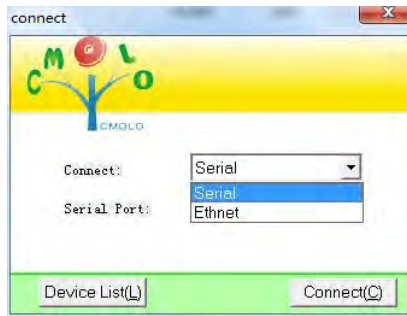
Attached Figure 1

After login, it will show the main window, as follows:

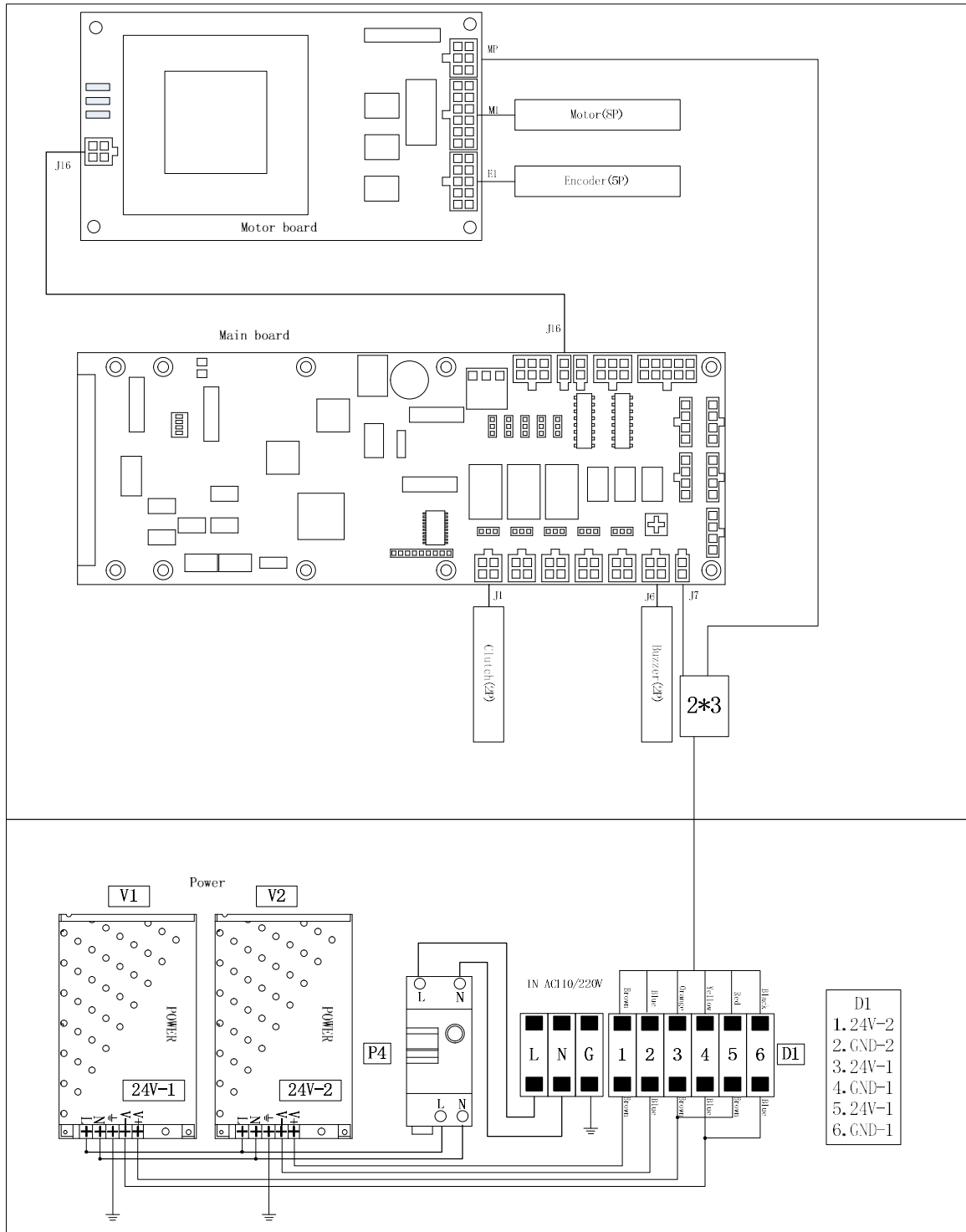Attached Figure 2

System setting

Control information

1) Working mode setting (for optical turnstile):
    ➢ NO mode: normal open, gate stay in open state, if passenger sign-in/sign0out successfully; gate will be closed and sound alarm if passengers get into the gate area without sign-in/sign-out.
    ➢ NC mode: normal close, gate stay in close state, gate will open if passenger sign-in/sign-out successfully; gate will return to close state after passenger pass through or timeout.
2) Status options: to set up operation mode for passage entry and exit.
    ➢ Entry/exit controlled: entry/exit direction controlled by push button and access controller, passenger pass through with sign-in/sign-out or press push button.

> ➢ Entry/exit forbidden: entry/exit way barring.
>
> ➢ Entry/exit free: gate in free mode, let passenger pass through freely without sign-in/sign-out.

3) Door closing time: setting the max time for each passenger entering the passage. The value effective range is 1-60, unit is second. Default: 5

4) Entry counter reset: clear entry counting value.

5) Exit counter reset: clear exit counting value.
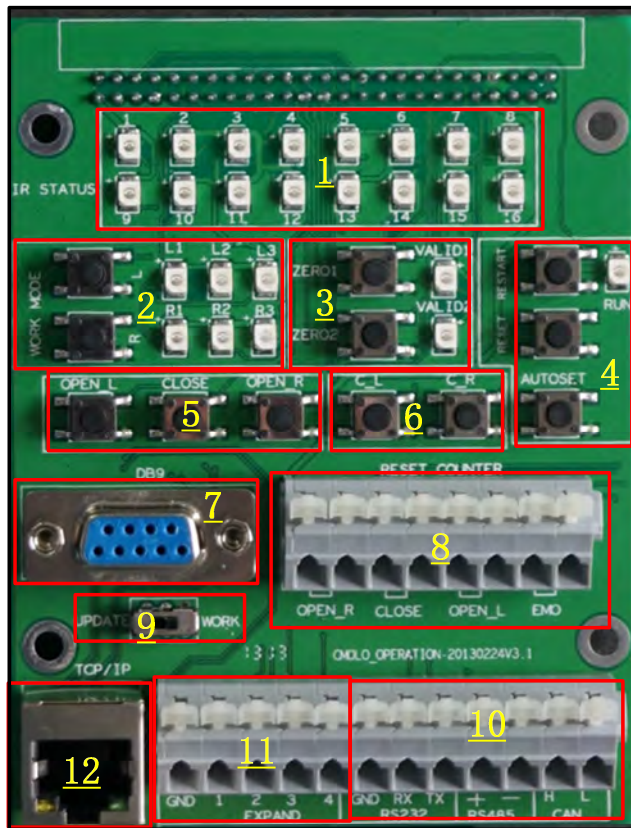
6) Save: confirm and save setting.

Appendix B

1）Connection diagram of Automatic Swing Gate (for dry contact signal)

Attached Figure 4

2) The instructions of turnstile control panel

Turnstile control panel instructions shown as Attached Figure 4 .

1. Infrared sensor status indication
invalid

2. Working modes setting for entry and exit direction
Use these two buttons can switch the working modes of entry and exit direction.
L: switch the working mode of entry direction (controlled-free-forbidden, switch circularly)
R: switch the working mode of exit direction (controlled-free-forbidden, switch circularly)
Direction Indicator lights indicate the working modes at the corresponding direction.
L1 (green): the light on means entry direction is free passing mode
L2 (red): the light on means entry direction is forbidden passing mode
L3 (yellow): the light on means entry direction is controlled passing mode
R1 (green): the light on means exit direction is free passing mode
R2 (red): the light on means exit direction is forbidden passing mode
R3 (yellow): the light on means exit direction is controlled passing mode

3. Zero adjustment
ZERO1: the closed position adjustment . After pressing the ZERO1, the VALID1 lights up, manually adjust the arms to the closed position and press ZERO1 again, and the VALID1 light is off.
ZERO2: invalid.

4. Reset, restart and automatically adjustment
RESTART: restart the turnstile systems
RESET: reset the default setting of the turnstile systems
AUTOSET: The turnstile will alarm and indicate after Long pressing for 3S, and enter into the "AUTOSET" mode, the swing gate will open 5 times to the left and right, to adjust the motion parameter; shortly press to enter into the testing mode, the turnstile will open left and right in turn.
RUN indicator light: the indicator light of running status. The light will flicker per second when the turnstile works normally.

5. Testing buttons
There are three buttons on the panel can directly test the left gate open, right gate open and close the gate.
OPEN_L: open gate at entry direction
OPEN_R: open gate at exit direction
CLOSE: CLOSE

6. The reset button of counter
C_L: clearing entry counting
C_R: clearing exit counting

7. DB9
1. Used for downloading and upgrading the firmware of turnstile control panel.
2. One of the default communication interfaces of turnstile

8. Turnstile dry contact control input
Use the switch signals such as relay signal and buttons and so on can control turnstile's opening & closing.

OPEN_R: entry direction open
OPEN_L: exit direction open
CLOSE: close
EMO: emergency open the gate (normally open signal).

9. Download protection lock
When the turnstile needs to download and upgrade the new program, please toggle the switch to "UPDATE" position, and then download and upgrade the program through 7. (DB9) interface.

Attention! When turnstile is normally working, user must toggle the switch to the "WORK" position.

10. RS232 RS485

The default communication interfaces of turnstile
RS232 GND: Ground
        RX: RS232 receiving terminal
        TX: RS232 transmitting terminal
RS485 +: RS485 + terminal
        -: RS485 - terminal

11.Extend input interface
Use it to achieve the extend function.

12. Ethernet Interface
Ethernet communication interface can be customized.

Attached Figure 4

3) The wiring instructions for the external interface of control panel

The common wirings for customer:

      1、 OPEN_R: Entrance open signal access (dry contact signal)

      2、 OPEN_L: Exit open signal access (dry contact signal)

      3、 EMO: Emergency signal access (dry contact signal)

Connection mode and method shown as Attached Figure 5,
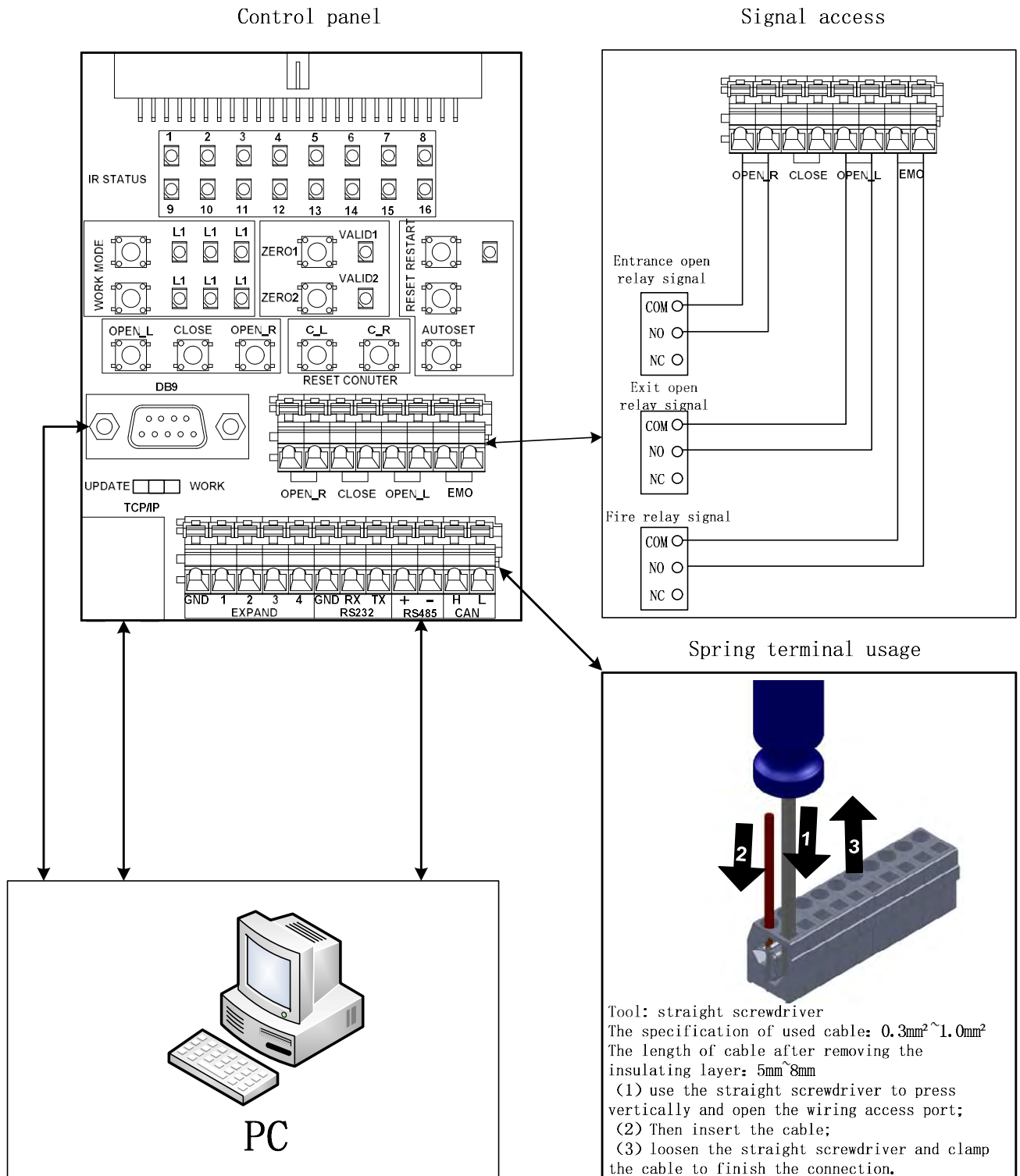
Attached Figure 5

Appendix C Turnstile Control Board

1Communication Protocol Specifications

Could choose RS232, RS485 OR UDP interface to Communicate between control board & PC

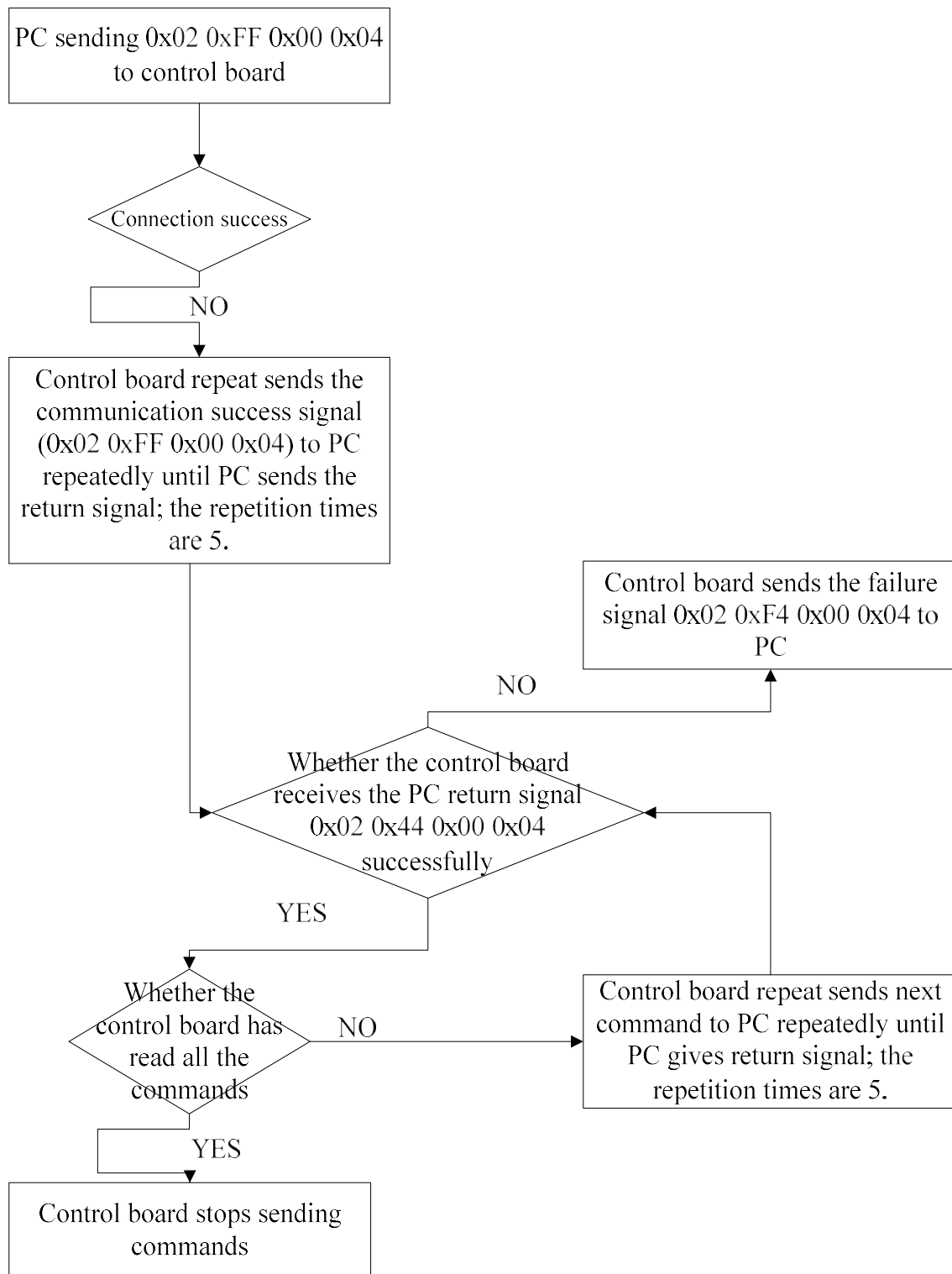## 1.1 Initialization & reading control board parameters

PC send communication demand [address(if you choose UDP interface, no need address)+ 0x02 0xFF 0x00 0x04] to control board. Control board receive communication demand and send feedback signal [address(if you choose UDP interface, no need address)+ 0x02 0xFF 0x00 0x04] to PC, until PC send feedback signal [address(if you choose UDP interface, no need address)+ 0x02 0xFF 0x00 0x04] or overtime (waiting time is 2 seconds). The control board of turnstiles will send related parameters after received feedback signal. Every parameter sent by main board needs the feedback signal [address(if you choose UDP interface, no need address)+ 0x02 0xFF 0x00 0x04] from PC, then send the next parameter. Or overtime (waiting time is 2 seconds).

Sending parameters as follows:

1) Equipment Model Number
2) Software Version Number
3) Equipment ID Number
4) Turnstile Working Mode
5) Working Mode of Entry & Exit
6) Door Closing Delay
7) Door Opening & Closing Speed (inapplicable to tripod turnstiles)
8) Entry Counting
9) Exit Counting
10) IR Sensors' Sensitivity (inapplicable to tripod turnstiles)

For detailed corresponding command formats, please refer to 2. Control Board Sending Command. Below is the flow Chart:

```
┌─────────────────────────────┐
│  PC sending 0x02 0xFF 0x00   │
│      0x04                    │
│      to control board        │
└─────────────────────────────┘
              │
              ▼
         ◇ Connection success ◇
              │
              │  NO
              ▼
┌─────────────────────────────┐
│ Control board repeat sends the │
│ communication success signal   │
│ (0x02 0xFF 0x00 0x04) to PC    │
│ repeatedly until PC sends the  │
│ return signal; the repetition  │
│ times are 5.                   │
└─────────────────────────────┘
```

┌─────────────────────────────┐
│ Control board sends the failure │
│ signal 0x02 0xF4 0x00 0x04 to   │
│ PC   │
└─────────────────────────────┘

NO

◇ Whether the control board receives the PC return signal 0x02 0x44 0x00 0x04 successfully ◇

YES

◇ Whether the control board has read all the commands ◇

NO

┌─────────────────────────────┐
│ Control board repeat sends next │
│ command to PC repeatedly until │
│ PC gives return signal; the   │
│ repetition times are 5.   │
└─────────────────────────────┘

YES

┌─────────────────────────────┐
│ Control board stops sending   │
│ commands   │
└─────────────────────────────┘

## 1.2 Setting control board parameters via PC

After PC connects with control board successfully, corresponding commands can be sent to the control board to set the parameters. The control board will send success return signal (0x02 0x44 0x00 0x04) to PC if the setting is successful, or the control board will send failure return signal (0x02 0xF4 0x00 0x04).

The control board is now available for PC to set the following parameters:

1) Turnstile Working Mode
2) Working Mode of Entry & Exit
3) Door Closing Delay
4) Door Opening & Closing Speed (inapplicable to tripod turnstiles)
5) Entry & Exit Counter Reset
6) Entry & Exit Counter Switch
7) IR Sensors' Sensitivity (inapplicable to tripod turnstiles)
8) Auto-Drop & Raise (only applicable to fully automatic tripod turnstiles)

For detailed command formats, please refer to 3. Control Board Receiving Command. Below is the flow Chart:
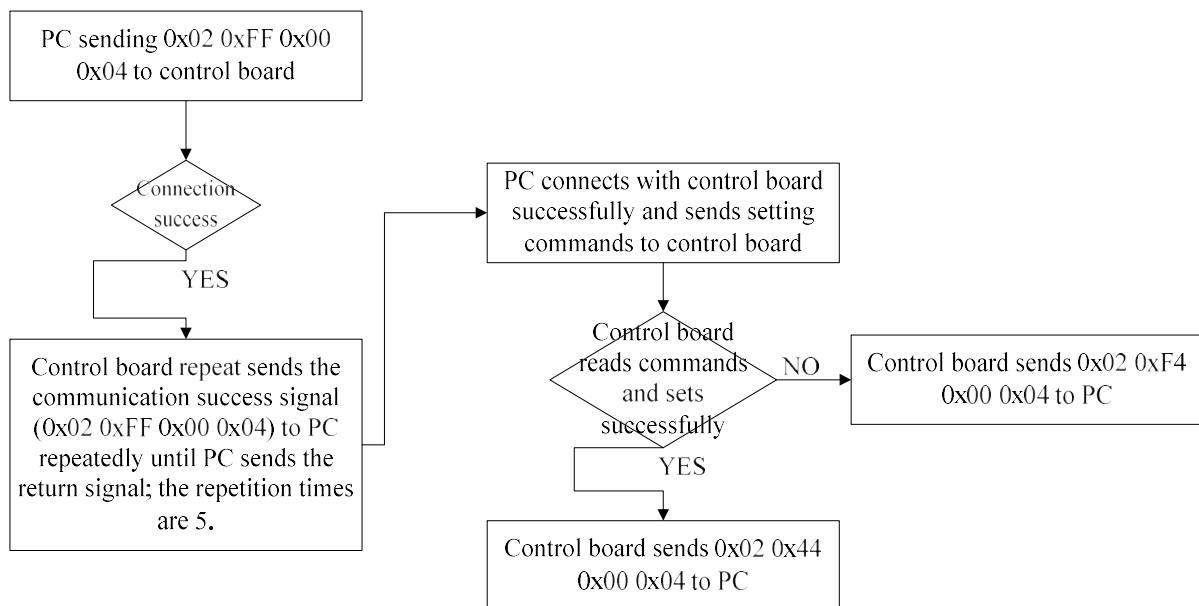
2. Control Board Sending Command

Control Board Sending Command Format

Command Start Symbol	Command Type	Command Length	Command Content	Command End Symbol	Command Descriptions
	0xFF	0x00	NULL		Connection success return signal
	0x44	0x00	NULL		Receiving command success return signal
	0xF4	0x00	NULL		Receiving command failure return signal
	0xF1	Command Content Length	Equipment Model ASCII Code		Equipment model name
	0xF2		Software Version ASCII Code		Software Version

0x02	0xF8	(unit: word)		Equipment ID ASCII Code	0x04	Number
						Equipment ID Number
	0x21			Entry Counting ASCII Code		Entry Counting
	0x22			Exit Counting ASCII Code		Exit Counting
	0x24			Equipment Type ASCII Code		Exit Counting
	0x41	0x01		0x30-0x33		Corresponding working mode to command content: 0x30：NO Mode 0x31：NC Mode 0x32：Entry Open (Test Mode); 0x33：Exit Open (Test Mode);
	0x14	0x02	0x30-0x33	0x30-0x33		Working mode of entry & exit, the first word shows entry status, the second word shows exit status. 0x30：Controlled Mode; 0x31：Free Passing Mode; 0x32：Forbidden Passing; 0x33：Barrier-free passing after swiping card
	0x18	0x03	0x30-0x39	0x30-0x39 0x30-0x39		Door closing delay time (0-999 seconds) The first word: the ASCII code for the hundred digit of delay time; The second word: the ASCII code for the tens digit of delay time; The third word: the ASCII code for the units digit of delay time;
	0x42	0x01		0x31-0x37		ASCII code of the door opening & closing speed ranking (1-7) (inapplicable to tripod turnstiles)
	0x81	0x01		0x31-0x35		ASCII code of the IR sensors' sensitivity ranking (1-5) (inapplicable to tripod turnstiles)

3. Control Board Receiving Command

Control Board receiving Command Format

Command Start Symbol	Command Type	Command Length	Command Content			Command End Symbol	Command Descriptions
0x02	0xFF	0x00	NULL			0x04	Connecting control board request
	0x44	0x00	NULL				Reading command success return signal
	0x41	0x01	0x30-0x33				Setting equipment working mode: 0x30：NO Mode; 0x31：NC Mode; 0x32：Entry Open (Test Mode); 0x33：Exit Open (Test Mode);
	0x14	0x02	0x30-0x33	0x30-0x33			Setting working mode of entry & exit, the first word shows setting entry working mode, the second word shows setting exit working mode. 0x30：Controlled Mode; 0x31：Free Passing Mode; 0x32：Forbidden Passing; 0x33：Barrier-free passing after swiping card
	0x18	0x03	0x30-0x39	0x30-0x39	0x30-0x39		Setting door closing delay time (0-60 seconds) The first word: the ASCII code for the hundred digit of delay time; The second word: the ASCII code for the tens digit of delay time; The third word: the ASCII code for the units digit of delay time;
	0x21	0x01	0x30-0x33				Entry & exit counter switch setting: 0x30：entry counter on; 0x31：entry counter off; 0x32：exit counter on;;

				0x33：exit counter off;
0x22	0x01	0x30-0x31		Counter Reset: 0x30：entry counter reset; 0x31：exit counter reset;
0x24	0x01	0x30-0x31		Setting tripod turnstile auto-drop & raise (only applicable to fully automatic tripod turnstiles): 0x30：auto-drop; 0x31：auto-raise
0x28	0x01	0x30-0x31		Reading entry & exit counting: 0x30: reading entry counting; 0x31: reading exit counting; After receiving the command, the control board will send the corresponding counting (see the sending command format table)
0x42	0x01	0x31-0x37		Setting the door opening & closing speed ranking (1-7) 0x31-0x37: ASCII code of 1-7 (inapplicable to tripod turnstiles)
0x81	0x01	0x31-0x35		Setting the IR sensors' sensitivity ranking (1-5) 0x31-0x35: ASCII code of 1-5 (inapplicable to tripod turnstiles)
0x82	0x02	0x31-0x32	0x31-0x35	Control LED panel, after receiving this command, control panel will control LED panel to display, and then return to the feedback command. The first word refers to LED panel address: 0x31: LED panel 1 0x32: LED panel 2 The second word refers to the image which LED panel displays: 0x31: prohibition

					0x32: pass by upper left arrow 0x33: pass by bottom left arrow 0x34: pass by upper right arrow 0x35: pass by bottom right arrow
	0x84	0x02	0x31-0x32	0x31-0x35	Set the default display image of LED panel on both sides. After receiving this command, the control panel will set the display image of LED panel on both sides according to the command contents, and then return to the feedback command. The first word refers to LED panel address: 0x31: LED panel 1 0x32: LED panel 2 The second word refers to image which LED panel displays: 0x31: prohibition 0x32: pass by upper left arrow 0x33: pass by bottom left arrow 0x34: pass by upper right arrow 0x35: pass by bottom right arrow