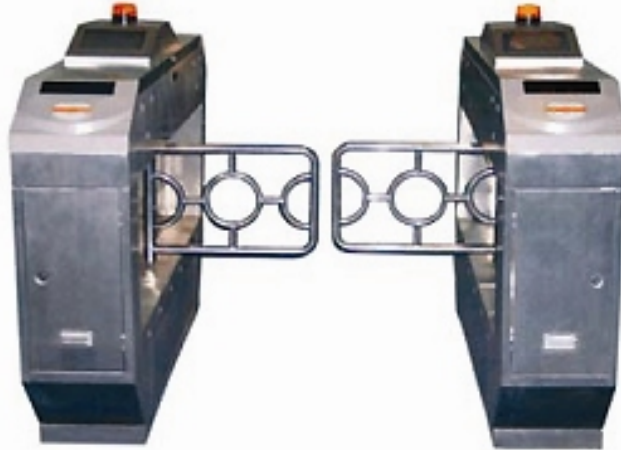


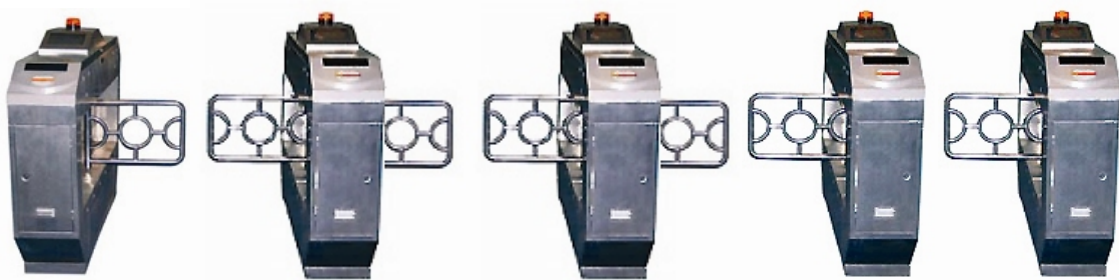
# **Securitex**

## **Mass Human movement automation division**



### **Securitex AFG1912**

#### **Intelligent Swing barrier**



The above system was designed and manufactured under the most stringent condition and using the best material available in the market. This is to ensure that the system was so reliable that it surpasses the international standard. At Securitex Electronic Systems Engineering we will intercept any substandard equipment from leaving the factor and reach our client. However if this do happen you can be assure that we will at all cost rectified the system.

## **Technical, Specification, instruction and installation manual**

**Securitex Electronic Systems Engineering**  
Block 9010 Tampines St 93 #04-145 Singapore 528844.

Tel: 0065-67852171 Fax: 0065-67863351

<http://www.securitex.com.sg>

# 1. General Description of the Product

## 1.1. Brief Description of the Product

The intelligent swing barrier Securitex AFG1912 is one of the serial products of intelligent passage management system from Securitex Electronic Systems Engineering. It possesses superiority incomparable with the traditional management mode. Whether on the control of right of passenger for passing, or on tolling, attendant or counting of the passenger, there will be a great deal of man power and material, a lot of spending, a large amount of work and a very low efficiency resulted with the traditional management mode. However, it is the strong merit point of the intelligent passage management product to solve the problems of this kind. It is the scientific crystallization of the highly development of social civilization and it opens a new era for the scientific management.

The outline of the product is formed after pressing the stainless steel plate. The shape is featured as a pleasing appearance, a good looking, stainless and durable. The system is provided with a standard electric interface and is easily integrated into the product with read/write facilities. A special control system is equipped in the product to meet the requirement of fire control, so that the smooth passage flow is ensured, realizing a timely diverting of passengers. The product is featured as stable in performance, safe and reliable, and can be used widely in the places where passenger flow is great and monitoring is needed such as stations, harbors and guest house.

## 1.2 Main Function and Features

- 1) Rapid identification technique, available to identify accurately and efficiently the magnetic card, bar code card, ID card and IC card.
- 2) On-line or off –line mode, optional.
- 3) Real time failure self-detect and alarm indication, ensuring system safe operation and facilitating maintenance and operation.
- 4) With direction indication, guiding passenger to entry and exit.
- 5) Automatic counting and displaying number of passenger, facilitating observation and with a displaying total amount as high as 90,000.
- 6) Light and sound alarm indication function, preventing illegal entry or irregular passing.
- 7) Powerful on-line intelligent control mode, facilitating you:
  - A) To adjust the speed of operation of the barrier according to the flow of passenger and improve the passing rate.
  - B) To set up operation mode for passage entry and exit.
  - C) To read a card of multiple times, the special function meeting the application requirements of a particular site.
  - D) To set up the card reading with or without memory.
  - E) To select a reasonable normally open or close mode, to divert effectively the flow of passengers.
  - F) To have humanized setting function for reset of over time passing.
- 8) After the system power is cut off, the plate barrier starts the standby power to withdraw the barrier, so that the passage is ensured to be smooth and to divert the flow of passenger timely.
- 10) The infrared sensing technique realizes real time monitor of passage, safe protection and tail-proof.

- 11) The treatment mode in emergency or in special conditions.
- 12) Having standard input/output port, facilitating the integration of the system and the other equipment, available for far end control and management.
- 13) Super strong combination capability, with the combined application of products of different passage types and series, not affecting the system performance.
- 14) Strong system expanding capability, available to add new product at any time.
- 15) Far end control management: function to far end control of barrier mode, meeting the special requirements of the users and the fire protection.

### 1.3 Main Technical Specifications

Name	Parameters	Requirements	Remarks
Operation environment temperature	-15°C ~ 60°C	Indoor application	1. The barrier of the system is not suitable for use in a bad environment such as inflammable, explosive and erosive environment.  2. It is required to install additionally rain-proof, sun shading broad meeting the requirements, if it is to be used outdoor.
Power voltage	AC220V (50HZ)	±10%	
Input port	+12V level signal, or pulse width >100ms pulse signal, driving current >10mA		
Relative humidity	At 25OC, relative humidity ≤90%,	Not condensed	
Communications port and distance	RS485 electric device standard, ≤1200m		
Passage width	≤1200mm		
Passing speed	≤40 man/m (IC card)		

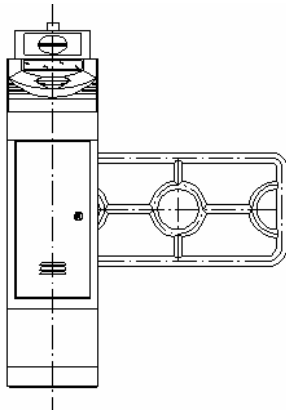
## 2. Product Definition

### 2.1 Product Classification

It may be divided according to the combination type of core mechanism: mono-core mechanism swing barrier and dual-core mechanism swing barrier.

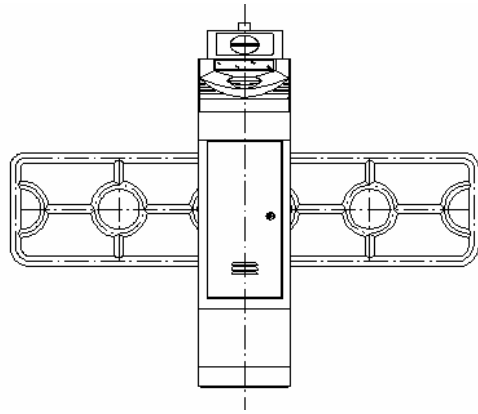
Mono-core mechanism swing barrier: the swing barrier only equipped with mono-core mechanism in the cabinet (as shown in Fig.1);

Dual-core mechanism swing barrier: the swing barrier equipped with independent dual-core mechanism in the cabinet (as shown in Fig.2);



Swing barrier with mono-core mechanism

Fig. 1



Swing barrier with dual-core mechanism.

Fig.2

## 2.2 Term Definition of Passing Mode

Controlled: the passenger can only be allowed to enter the entrance of the passage after the card is effectively read at the reading device;

Free: the passenger is allowed to enter the entrance of the passage only by following the direction indication, needing no card reading;

Bar: no passenger is allowed to enter the entrance of the passage;

Entrance: the direction way passing through the barrier passage from outside the control area and entering into the area controlled by the product as shown in Fig.3.

Exit: the direction way passing through the barrier passage from inside the control area and going into the area outside the control of the product;

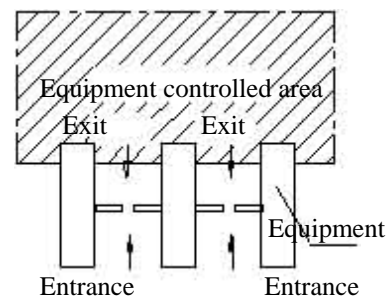


Fig. 3

### 2.3 Product Outline Dimensions

Fig. 4 shows the outline dimensions of Securitex AFG1912 swing barrier.

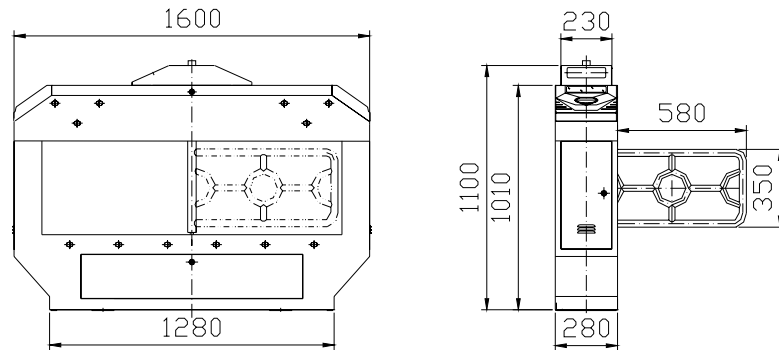


Fig. 4

## 3. Product Structure and Operation Principle

### 3.1 Product Structure

The structure of the product is mainly composed of mechanical system and the electronic control system.

#### 3.1.1 The structure of mechanical system

The mechanical system is composed of cabinet and core mechanism. The cabinet is equipped with reading device, counter, directional information device, light/sound alarm device, infrared sensor and door lock. The core mechanism is composed of motor, reducer, chassis, transmission axle and barrier, etc. as shown in Fig.5.

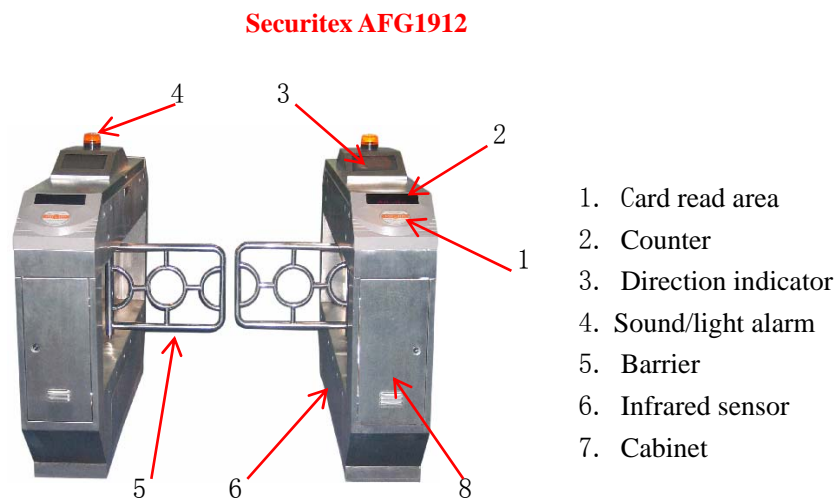


Fig. 5

#### 3.1.2 Electronic control system

##### 1) Composition and function of electric control system

Electric control system is mainly composed of reading device, main control board, infrared sensor, driving board, motor module, directional indicator, counter, alarm, voice board, limit switch, transformer, air switch, switching power and speaker, of which the function of the main components are given below:

- ◆ Reading device: To read the information on the card and issue barrier open signal to the main control board after signal processing;
- ◆ Main control board(JS6713A): As a control center of the product, it receives the signals from the card reader and infrared sensor and carries out signal processing, and then, it issues executive command to the direction indicator, motor driving board, counter and alarm.
- ◆ Infrared sensor: It detects the location of the passenger, and plays a safe protection function. The sensors at the both terminals of the passage determine the location of the passenger, and the medium sensor mainly functions as safe protection;
- ◆ Motor driving board (JS170A.03.01): It receives signal sent from the main control board and the limit switch and controls the motor running, realizing barrier open/close;
- ◆ Direction indicator: It indicates the present status of passage, and guides the passenger to pass the passage orderly and safely;
- ◆ Counter: It records the number of passenger effectively passing a certain passage in the same direction;
- ◆ Sound/light alarm device: It delivers alarm indication signal for the illegal passenger;
- ◆ Limit switch: It controls the rotation position of the barrier;

## 2) Connection diagram

Each passage is equipped with a set of electric control system, with the electric control devices installed respectively in the main cabinet and sub-cabinet as shown in Appendix D.

### 3.2 System Operation Principle

- 1) Turn on the power, 3 seconds later the system enters into operation mode.
- 2) After the legal card reading for the passenger, the system delivers to the main control board the barrier open signal;
- 3) The main control board receives the information from the card reader and infrared sensor and carries out signal processing, and then, it delivers control signal to the direction indicator, driving board, controlling the indication mark changing from red into green. At the normally close mode, it controls the driving board to drive the motor running and to open barrier (at normally open mode, no action for the barrier), allowing the passenger to pass through.
- 4) After the passenger passing through the passage in accordance with the direction indicator mark, the infrared sensor detects the complete process of the passenger passing through the passage, and issues signal continuously to the main controller board, until the passenger passes through the passage completely.
- 5) After the passenger passes through the passage completely, the main controller board delivers a signal to the counter, which will increase 1 automatically, ending the passing process.
- 6) If the passenger forgets to read card, or reads with an illegal card when passing through the passage, the system will bar the passing of the passenger (at normally open mode, the barrier will close, and at normally close mode, the barrier will not act). At the same time, sound/light alarm signal will be given. The alarm signal will not be cancelled until the passenger retreats from the passage and the passing is only allowed after reading again the effective card.

### 3.3 Product System Composition

Mono-passage management system is composed of two mono-core mechanism swing barriers as shown in Fig.6.

Multi- passage management system is composed of two mono-core mechanism swing barriers and multiple dual-core mechanism swing barriers as shown in Fig. 7.

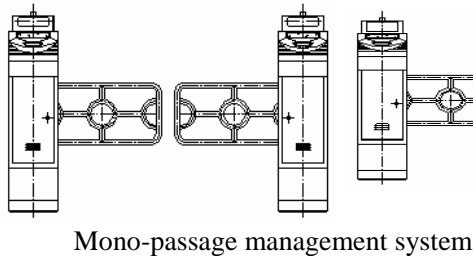


Fig. 6

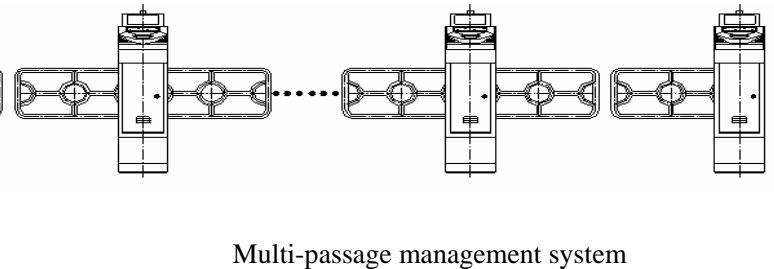


Fig. 7

### 3.4 System Operation Modes and Methods

To meet the requirements for different application sites, the system is provided with multiple modes and methods for user selection.

#### 3.4.1 System Operation Modes

Operation mode P01 (P01 indicating product status setting): There are three kinds of selections, i.e. test mode, normally open and normally close modes, the parameters of which may be set up with the help of the three built-in small keyboards SET、INC、DEC of main control board (JS6713A).

Among them, the settings of P01 are 000, 001 and 002, with the meaning of each being given as follows:

For 000, the system is at the test mode, used mainly for product aging test;

For 001, the system is at the normally close mode, and the barriers at both sides of passage are extended and are at the close mode when there is no passenger passing;

For 002, the system is at the normally open mode, and the barriers return back to the cabinet and are at open mode when there is no passenger reading the card;

#### 3.4.2 System Operation Methods

For the system operation methods, there are nine kinds of selections for the user, the parameters of which may be set up with the help of the three built-in small keyboards SET、INC、DEC of main control board (JS6713A). There are nine values for the operation methods P02:

- 1) For 000: in/out ways controlled, passing through both in/out way needing card reading
- 2) For 001: in way controlled, out way free, passing through in way needing card reading, but passing through out way needing no card reading;
- 3) For 002: in way controlled, out way barring, passing through in way needing card reading, but barring the out way;
- 4) For 003: in way free, out way controlled, passing through in way needing no card reading, but passing through out way needing card reading;

- 5) For 004: in way free, out way free, passing through in/out way needing no card reading;
- 6) For 005: in way free, out way barring, passing through in way needing no card reading, but barring out way;
- 7) For 006: in way barring, out way controlled, barring in way, but passing through out way needing card reading;
- 8) For 007: in way barring, out way free, barring in way , but passing through out way needing no card reading;
- 9) For 008: in/out way barring, passage is cut off;

### 3.4.3 Other Functions

In addition to the above system operation modes and methods, there are nine kinds of functions for the user to select. They are given as follows:

- P03: Reset the parameter default;
- P04: Reset in way counter value;
- P05: Reset out way counter value;
- P06: Max. time for each passenger to pass through the passage;
- P07: Setting product type;
- P08: Setting product communications address;
- P09: Product card reading with or without memory;
- P10: Setting indication mode for display;
- P11: Setting alarm indication or not;

【Note】 : For detail operation method and contents, refer to Appendix A.

## 4. Product Installation and Adjustment

### 4.1 Product Installation

- 1) Prepare the tools for product installation and sort out the auxiliaries according to the packing list;
- 2) Determine the system composition and operation mode, and prepare to install after carrying out the system planning;
- 3) After the surface of the base platform is prepared, draw parallel lines A and B based on the central line, then, determine the installation holes respectively on lines A, B and C. The installation size is given in Fig. 8
- 4) Drill the holes after determining the hole positions and bury before hand (N+1)X 4 pieces of M12 ground bolts or inflated screw bolts (as shown in Fig. 9, N indicating number of passage);

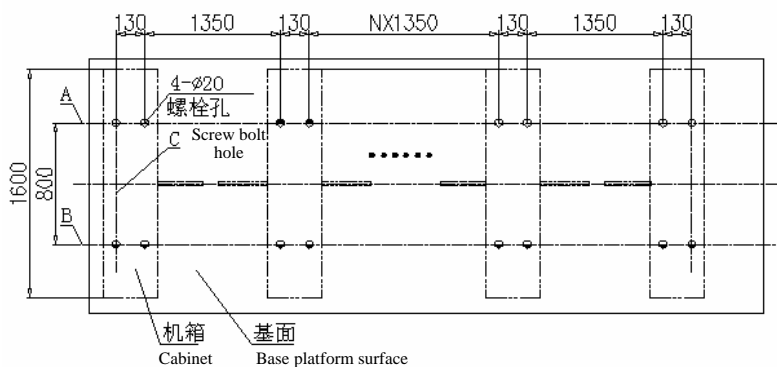


Fig. 8

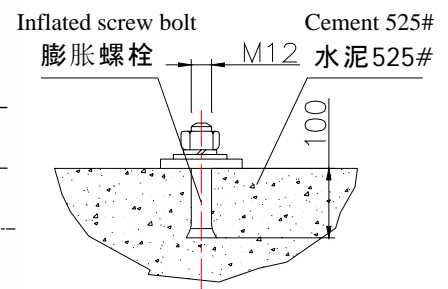


Fig. 9

- 5) Sheath the strong/weak power cables into 3/4" PVC tubes respectively, and bury them with cement to the corresponding position;
- 6) Move each cabinet to the respective installation position, and align with each ground screw bolt;
- 7) Check the system composition and operation mode, and carry out the next operation after confirming the above check;
- 8) Open the cabinet door, select one of the products as a reference (it is better to select the middle one as reference). Align the hole for screw bolt at the chassis with the respective ground screw bolt. Then, tighten the nut preliminarily;
- 9) Open an adjacent cabinet door. Align the hole for screw bolt at the chassis with the respective ground screw bolt and arrange properly on line with the reference product. Then, tighten the nut preliminarily. The rest products, if any, are installed just the same;
- 10) Connect properly the power line and control line in accordance with the connection diagram for electric controller, and connect properly the protection ground wire of the system;
- 11) After a certified check of status and function adjustment, fasten the ground screw nuts.

---

**Warnings:**

- 1). The depth of buried PVC tube should be greater than 60mm, and the exposed height above the ground should be greater than 50mm. The exit mouth should be bending back to avoid water dipping inside the tube;
  - 2). To install swing barrier, the right/left barriers of each passage should be at the same horizontal line;
  - 3). Connect properly the system protection ground;
  - 4). For product used outdoor, a cement platform of a height of 100mm~200mm should be set up at the installation site of the product to counter humidity and a ceiling or a shading facility should be added to guard against rain and sun;
  - 5). The product can only put into normal operation after a certified status check and functional adjustment;
- 

**4.2 Product Status Check**

After the product is properly installed, it is required to carry out firstly status check, the steps are given below:

- 1) Check for a correct terminal connection between various electric controlling components
- 2) Check the original state of the system after power on.
  - Counter is displaying number;
  - Check if the marks indicated in the direction indicator are the same as those of the system setting;
  - Check if the system operation mode is the same as that selected by the user (normally open mode, barrier open, and normally close mode, barrier close);
  - If the above status is abnormal, please refer to the section of “Common failures and remedies”;
- 3) Check infrared sensor for each passage

Check firstly the infrared sensor prior to putting the product into normal operation;

The checking method is given below:

- Check one by one, i.e. check and see if the corresponding indicator is lit on the main control board after shielding one by one each pair of infrared sensors;
- Check pair by pair, i.e. check and see if the corresponding indicator is lit on the main control board after shielding the two transmission and reception pairs of infrared sensors at the upper side of the product at the same time in turn;

- If the corresponding indicator is not lit, eliminate the failure by referring to Section 7.6.2;

4) Check the movement status of the main and sub-barriers of each passage.

- (1) Remove the connection line between the driving board and the main control board, and adjust the driving board for each passage;
- (2) Press the push button for opening barrier S8 (OPENTEST) at the driving board to adjust the barrier movement:
  - Check if the barrier open action is stable;
  - Check if the barrier movement is to the position;
  - Check if it is proper for the motor over current protection;
  - If the above movement is not meeting the requirement of the product performance, adjustment should be carried out referring to Section 7.6.2;
- (3) Similarly, press the push button for closing barrier S9 (CLOSETEST) at the driving board to adjust the barrier movement:
  - Check if the barrier close action is stable;
  - Check if the barrier movement is to the position;
  - Check if it is proper for the motor over current protection;
  - If the above movement is not meeting the requirement of the product performance, adjustment should be carried out referring to Section 7.6.2;
- (4) Connect the connection line between the driving board and the main control board, and adjust the barrier movement of the system;
  - Send an open (close) barrier signal, and check the movements of the two barriers of the passage are in synchronization;

**【Notes】** 1). The product had gone through inspection and adjustment of various technical specifications before delivery from the factory. However, to ensure a safe and reliable operation of the system, it is necessary to carry out status check for the system after the product has been installed properly in the site.

- 2). The above operation should be carried out by the certified personnel, who have gone through strict training. It is not allowed to modify at will the setting parameters of the system without approval.

#### **4.3 Product Functional Adjustment**

After finishing the product status check, it is necessary to carry out various functional check of the product immediately. The detail test contents are given below:

Connect the communications line of the main control board and carry out the adjustment of the system;

4.3.1 The personnel for adjustment and test should carry out the setting of product functional parameters required by the user. For detail, refer to “parameter setting of main control board”;

- 1) Selection of operation mode: normally open and normally close modes;
- 2) Selection of passing methods for swing barrier (9 kinds);
- 3) Setting passing method, the card reading at the controlled direction with/without memory;

Notes: normally close mode is adopted for swing barrier operation mode as far as possible.

### 4.3.2 Adjustment of in/out way passing method

#### 1) Single way passing:

Single way passing for a passage means that there is passenger passing in one way and no passenger passing in the other, or barring in the other.

- During adjustment, if the person carrying out the adjustment only reads effective card at the in (out) way card reader, the red barring mark at the in (out) way “⊘” will change into green “↻”. At the normally open mode, the barrier will not act (for normally close mode, barrier open), allowing the passenger to enter into passage for passing at the in (out) way;
- When the person carrying out the adjustment walks to the middle of the passage, the passing mark will change into red barring mark “⊘”. And if the person goes on reading card, the passing mark will change into green “↻” allowing the next person to pass;
- When the person carrying out the adjustment walks out of the passage, the indication number of the counter at the in (out) way will increase 1 automatically;
- If the person carrying out the adjustment does not pass after reading the card, the system will wait for N seconds (the time being adjustable by the user, the default being 10s). If there is no passenger passing through, the system will cancel the passing and the mark changes into red “⊘”. It is required to read the card again, if it is necessary to pass through;

Fig. 10 and Fig.11 are respectively representing the single way passing action process for normally open and normally close modes.

#### A. Single way passing at normally open mode:

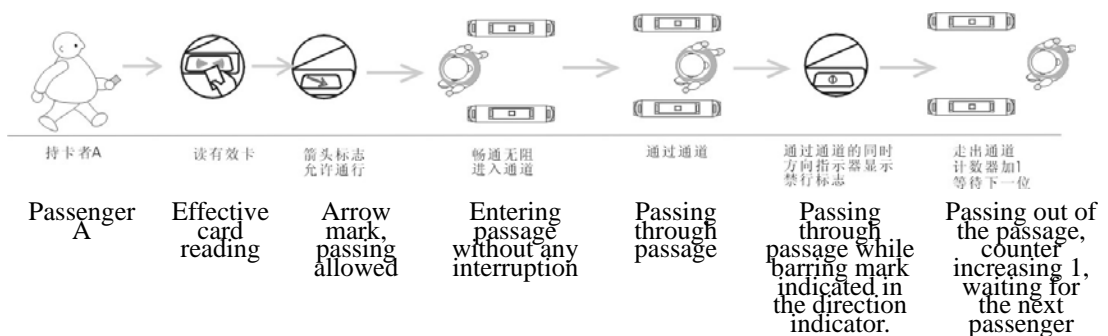


Fig. 10

#### B. Single way passing at normally close mode:

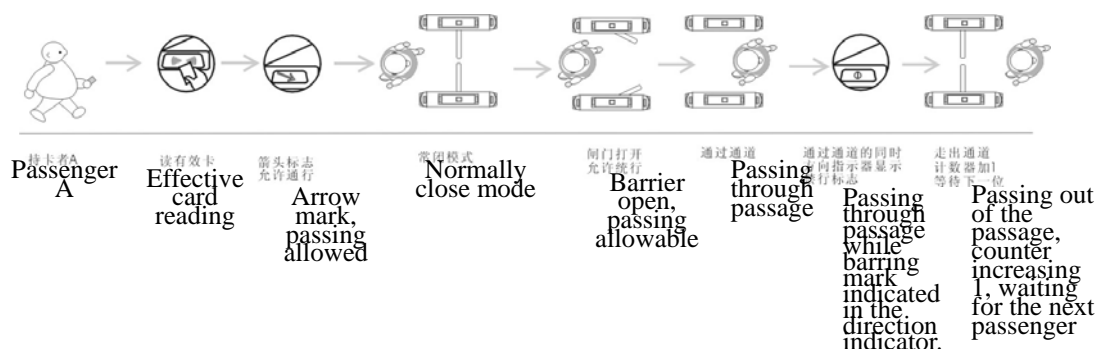


Fig. 11

2) Double way passing:

Double way passing to a passage is that the both sides of passage are with passengers passing in turn through the passage by reading card:

- During adjustment, the person carrying out the adjustment should read card at the in /out way card reading devices at the same time. In this case, the red barring mark at the both ways will change from red “⊘” barring mark into green passing mark “↔”. It allows the passengers at both sides to pass through the passage in turn;
- If passengers are passing through firstly the passage at a passing direction, the direction indication at the other passing way will change the green “↔” passing mark into red “⊘” barring mark. After the passenger firstly entered the passage has passed through the passage, the direction indication of the other passing direction will change into “↔” passing mark, allowing next passenger to pass through;
- When the passenger walks out of the passage, the indication number of the counter at the passing direction will increase 1 automatically;
- If the person carrying out the adjustment does not pass after reading the card at the specified time of the system, the system will cancel the passing and return back to the initial mode. It is required to read the card again if the passenger wants to pass through. The process is given in Fig.12 and 13 below.

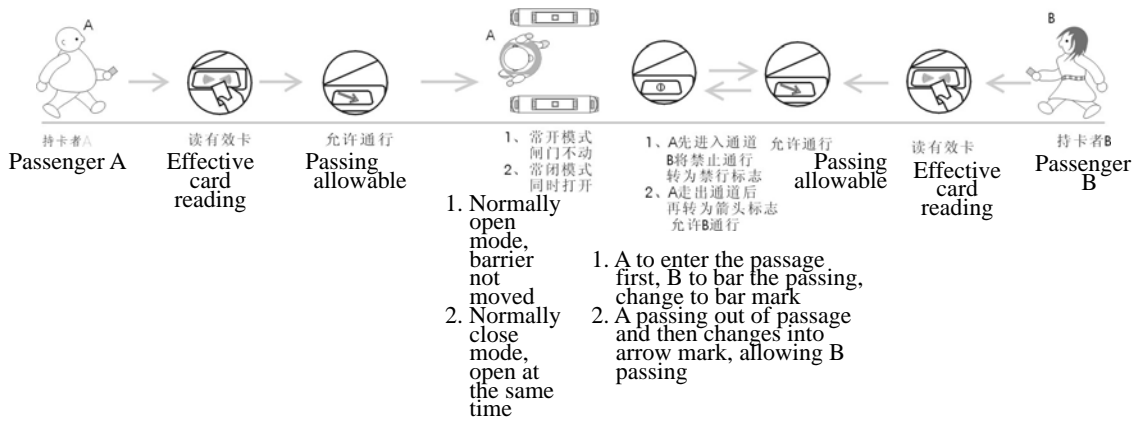


Fig. 12

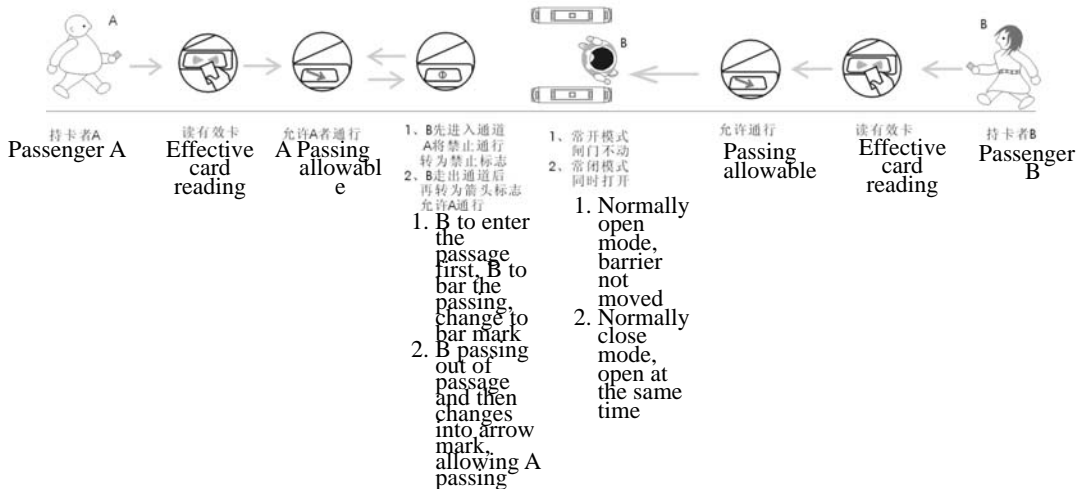


Fig. 13

### 3) Simultaneous passing

For a passage, simultaneous passing means that there are passengers passing through both sides of the passage by reading card, and the passengers entering the passage simultaneously;

- If the persons carrying out the adjustment simultaneous passing through the passage after reading cards at in/out ways, the system will deliver sound/light signal. The system will not release the alarm until passengers at either side retreat from the passage. The passengers at both ways may pass in turn in accordance with the passing mode for both ways;
- The process is as given in Fig.14

If B passing out of the passage the alarm will activates. Changes into arrow mark indication and A is allowed to pass

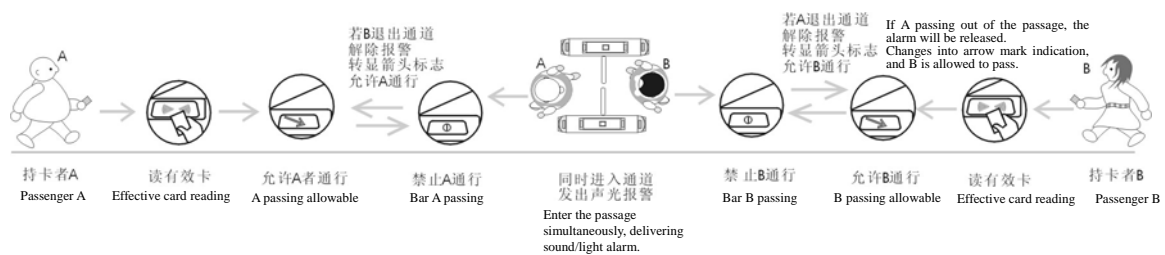


Fig. 14

- 4) Free passing: for a passage, the passengers may pass through following the indication mark of the direction indicator without reading card. The process is as given in Fig.15.

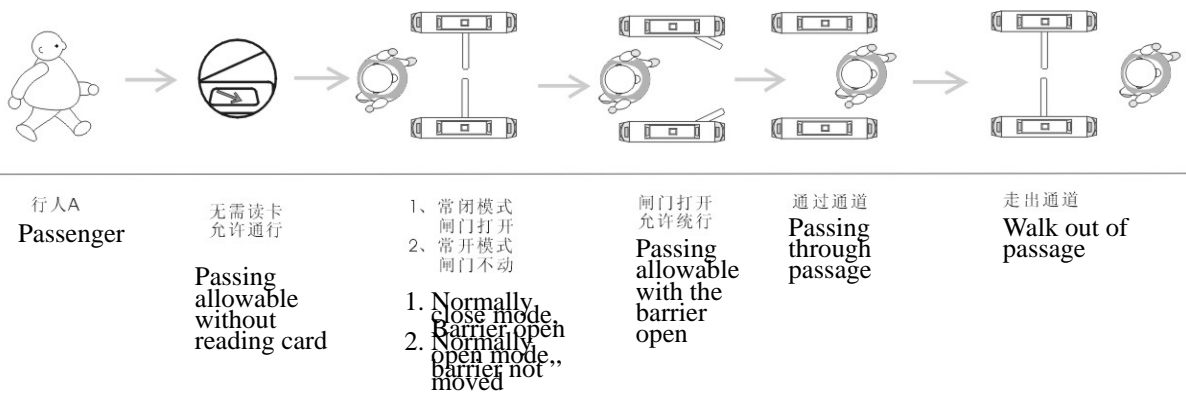


Fig. 15

- 5) Passing bar: for a passage, it is not allowed for any passenger to pass through the passage. The process is as given in Fig.16

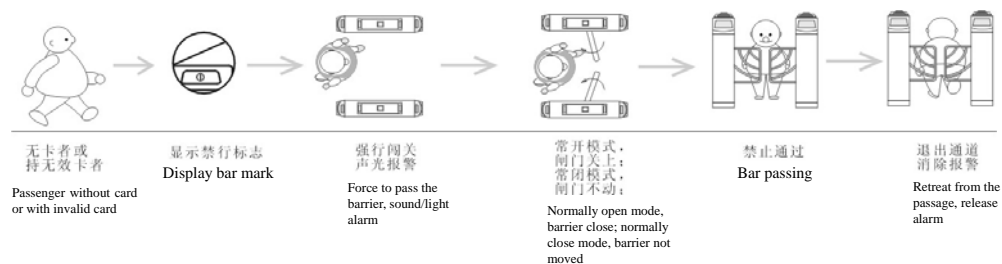


Fig. 16

#### 6) Multiple card reading and multiple passing

- To adjust the function, the person carrying out the adjustment should firstly set up the system into reading card with memory (double way or single way with memory). After the setting, the person carrying out the adjustment reads the card for N time at the side reading card with memory, and the system will allow N man/time passing. During the adjustment, if the man/time exceeds the card reading times, the system will close the barrier at the normally open mode (for normally close mode, no action for barrier) and deliver sound/light alarm, until the passenger retreats. The counting way of counter is that every time there is a passenger passing through the passage completely, the indication number of the counter at the entrance of passage will increase 1 automatically;
- In case the person carrying out the adjustment reads the card for N time, and there will be no more passengers passing through before N man/time is completed, the system will wait for N seconds. If there are no more passengers passing through when N second is past, the system will cancel the remnant man/time. Card reading is needed again if it is required to pass through:

#### 4.3.3 Alarm Function

- 1) In case the person carrying out the adjustment does not read card but enters the controlled or barred passage, the barrier will carry out barrier closing action when the system is at the normally open mode, and sound/light alarm will be delivered. The alarm will not be released, the barrier will not be opened and the system will not recover to the present operation mode, until the passenger retreats from the passage. The barrier will not carry out any action but only deliver sound/light alarm. The alarm will not be released until the passenger retreats from the passage.
- 2) When there are passengers simultaneously passing through the passage at both ways, the system will close the barrier and deliver sound/light alarm. The alarm will not be released and recovered to the original operation mode until the passenger retreats from the passage;

#### 4.3.4 Voice Function

After valid card reading, the system will deliver a warm voice to the passenger automatically. Similarly, when the passenger forgets to read card and enters the passage, the system will also deliver warming indication for the passenger;

#### 4.3.5. Power off Open Barrier Function

During adjustment, the system is at normal operation mode. In this case, cut off the power and 3-5 seconds later, the system should start the spare power and the barrier will withdraw at the normally close mode (at normally open mode, no action for the barrier). The spare power will be cut off automatically 5-8 seconds later.

#### 4.3.6. Safety Protection Function

When the person carrying out the adjustment shields the infrared sensor at the middle of passage during the product is closing the barrier, the barrier will stop the closing action immediately and will deliver sound/light alarm.

#### **4.3.7. System Reset Function**

In case the person carrying out the adjustment reads the effective card but not firstly entering the passage for N seconds, the system will automatically clear the passenger number not passing through and will cancel the passing of this time. The card reading is needed again, if it is required to pass through. The N second value may be set up by the user with the help of menu at P06;

#### **4.3.8. Far End Control**

The following set up and test should be carried out when the management computer is used for far end control of the product;

- ◇ Setting of communications address: set up P08 parameter in the range of 0-255 following the method given in Appendix A;
- ◇ The product should be reliable when carrying out the operation of open/close barrier, read/reset counter with the help of computer management software;

#### **4.3.9. Control Function of Emergent Barrier Open**

In a particular site or emergent situation, the barrier will be opened automatically when the management person presses only the emergency push button;

#### **4.3.10. Please Remember to Reset the Counter after Function. Adjustment;**

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- Notes:
- 1). It is not allowed to add peripheral products to the system without approval;
  - 2). The setting of the above function parameters is referred to Appendix A for detail;
  - 3). Please refer to Chapter 7 if the adjusted result does not confirm with the functions as described;
- 

### **5. Description of Product Operation**

- 5.1 The product should be adjusted for the functions prior to application and can only be used after a normal adjustment;
  - 5.2 It is forbidden to stand on the passage when the product is powered on.;
  - 5.3 It is forbidden for the card reading passenger to enter the passage before the indicator turns to green;
  - 5.4 It is not allowed for the passenger entering the passage to stay in the passage;
  - 5.5 It is not allowed for the passenger entering the passage to be crowded in the passage, and a certain separation should be kept between the passengers;
  - 5.6 It is forbidden to pass through the passage in a high speed;
  - 5.7 It is forbidden to strike or rock the product and the product should be managed properly when it is not in operation;
  - 5.8 It is forbidden to push or pull with force or impact the barrier when the product is at the close mode;
- 

Warnings:

- 1) Please do not use the system when there is lightning, otherwise, the system may be damaged.
  - 2) To avoid personnel injury, the system protection grounding should be reliably connected to the ground.
- 

### **6. Product Maintenance**

- 6.1 It is forbidden for those non-specialists to open the cabinet to carry out adjustment, maintenance and service of the product;

- 6.2 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 good looking 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;
- 6.3 It is required to check regularly the connection of various movement sections of the equipment to avoid loosen fasteners, otherwise, turnstile failure may be resulted due to long term operation;
- 6.4 It is required to apply lubricant regularly to the movement sections;
- 6.5 It is required to check regularly the connection socket and connectors of the lines to ensure a reliable connection;
- 6.6 It is required to check regularly the protection grounding of the system to ensure a reliable connection;
- 6.7 It is required to recover the protection housing of the circuit and close properly the cabinet door after checking and maintaining properly the product:

## 7. Product Failure and Remedy

The user may refer to the section of common failures and their remedies to eliminate the failures when there is any failure during operation.

### 7.1 No Power for Some Part or Entire System after Power on

Failure	Symptoms and Causes	Remedies
No power for the system	1. Damaged to 220V/AC power line	➤ Connect the line again or replace it;
	2. Loose or damaged contact in power socket	➤ Repair or replace the socket;
	3. Failure in air switch	➤ Repair or replace the switch;
No power for the main control board.	1. L17 and L19 lamp not lit	➤ Check the switching power for damage ➤ Check terminals 3 and 4 of J5 for the switching power and the main control board for bad contact or broken line;
	2. L17 lamp lit. L19 lamp not lit	Check 2A fuse for damage;
	Notes: After power on, the main control board is normal while L19 lamp is lit but L17 lamp is not lit	
No power for the driver board	Power indicator LED6 of the driver board is not lit	➤ Check the connection between switching power and terminals 1, and 2 of J5; ➤ Check for damage of F1 fuse of driver board;
When power off, the system can not recover	1. Spare battery charging indicator LED7, L19 not lit	➤ Check connection between terminals 7 and 8 of J2 and transformer; ➤ Check the driver board.
	2. Spare battery and driver board with bad contact	➤ Check terminals 3, 4 of J5 at driver board. ➤ Spare battery polarity is not correct.

	3. Spare battery voltage not sufficient (LED17 lit)	➤ Spare battery should be with sufficient capacity so that the voltage meets the requirements;
	4. Spare battery is aged	Replace the spare battery;
<b>【Note】</b> : Under normal conditions, LED6, LED7, LED16, LED19 should be lit when the system is powered on;		

## 7.2 Failure of Card Reader and the Remedy

Failure	Symptoms and Causes	Remedies
The card reader does not read card and no voice announce	1. Invalid card	➤ Issue the card again or replace with a new card
	2. Failure in antenna board	<ul style="list-style-type: none"> <li>➤ The connection between the card reader and the antenna board is loose</li> <li>➤ The antenna board is damaged, needing repair or replacement</li> </ul>
	3. The card reader is with failure	➤ The card reader should be repaired or replaced
The card reader reads card but no voice announce	The buzzer in card reader is with failure	➤ The circuit board of card reader should be repaired

## 7.3 Failure of Counter and the Remedy

Failure	Symptoms and Causes	Remedies
Right/left counter no indication	1. Counter board without power	➤ Counter board terminals 1, 2, 3 with bad contact and the connection is with problem;
	2. Problem in the main control board and its terminals	<ul style="list-style-type: none"> <li>➤ Check with multimeter the terminals 7, 8 of J1 of the main control board for output level;</li> <li>➤ If no output, cut off the power and check if the chip is inserted properly. If no indication yet, it means that the main control board is with failure, repair or replace it;</li> <li>➤ If there is output, check if terminals 7, 8 of J1 of the main control board are with a good contact with terminal 4 of the counter board;</li> </ul>
	3. Counter board circuit is with failure	➤ Counter board should be repaired or replaced if the failure can not be eliminated;

Counter display tube is with partial indication	Counter circuit board is with failure	➤ Counter board should be repaired or replaced
The counter does not increase 1 after passenger passing normally through the passage.	1. Bad connection between paired infrared sensor and the terminals of J4 of the main control board;	➤ Check for a good connection
	2. The paired sensors are damaged or not aligned properly pair to pair;	➤ Check the pair sensors, referring to Section.7.1.6
	3. The counter board is with failure	➤ The counter circuit board should be repaired or replaced
The counter counts the number for the other side	Terminals 7, 8 of J1 of the main control board are inversely connected	➤ Change terminals 7 and 8 position

#### 7.4 Failure of Direction Indicator and the Remedy

Failure	Symptoms and Causes	Remedies
No direction indication.	1. No power for direction indication board.	➤ Check for good contact of counter board terminals 1、2、3 and see if the connection is good.
	2. Failure in the main control board and its terminals.	➤ Check with multi-meter the terminals 5, 6 of J1 of for output level. If no, check if the chip is properly inserted. If there is still no indication, it means that the main control board is with failure, needing repair or replacement.
		➤ If there is no output level, check to see if the chip is properly plugged after the power is off. If there is no indication, it means that there is failure in the main control board, and it is required to repair or replace the board.
		➤ If there is output level, check terminals 5, 6 of J1 of the main control board and terminal 4 of direction indication board for good contact.
	3. Failure in direction indication board	➤ If the failure can not be eliminated, it means that direction indication board should be repaired or replaced;
Broken code for direction indication board.	Failure in direction indication board	➤ Direction indication board should be repaired or replaced;

No change for direction indication during card reading or after the passenger passing.	1.Failure in connection between infrared sensor and J4 terminal of the main control board;	➤ Check the connection lines for correctness and good contact;
	2. The infrared sensor at entrance is damaged or the pairs are not aligned with each other;	➤ Check the paired infrared sensor. Refer to Section7.2.6;

### 7.5 Failure of Abnormal Barrier Action after Card Reading and the Remedy

Failure	Symptoms and Causes	Remedies
No barrier action is given after card reading	1. No open barrier signal is received from card reader by the main control board	<p>➤ Check connection between terminals of card reader and terminals 1, 2, 3, 4 of J1 of the main control board for good contact;</p> <p>Note: 1. A passage can be installed with at most 4 card readers, the number of which is determined by the user;</p> <p>2. The output level of in/out card readers of the main cabinet is connected to terminals 1, 3 of main control board;</p> <p>3. The output level of in/out card readers of the sub-cabinet is connected to terminals 2, 4of main control board;</p>
	2. No power for the main control board and driver board	➤ Check various terminals to ensure a good connection. Refer to Section 7.2.1
	3. Loose connection of various terminals of driver board and motor module	<p>➤ Check J3, J1 of driver board and various terminals of motor module to ensure a good connection.</p> <p><b>Note:</b> 1. It is forbidden to remove the plug of motor module when the system is power on;</p>
	4. Deliver a barrier open/close signal, but there is no output signal of the main control board (L20 or L21 lamp not lit)	<p>1. Deliver a barrier open signal;</p> <p>2. Measure with a multimeter the terminals 3, 6 or 2, 5 of J3 of the main control board to see if there is any signal output;</p> <p>✧If there is no signal output, it means that the failure is in main control board, which needs maintenance or repair;</p> <p>✧If there is no signal output, check the downward;</p>

	<p>5. Deliver a barrier open/close signal, but there is no on/off output signals of the driver board</p>	<ol style="list-style-type: none"> <li>1. First, cut off the power for the product and open the failure cabinet;</li> <li>2. Remove plugs of J1 and J3 of driver board, and then switch on the power;</li> <li>3. Press the push buttons S8 or S9 at the driver board to check: <ul style="list-style-type: none"> <li>➤ If the barrier acts, it means that the drive board is normal;</li> <li>➤ If the barrier does not act, measure with a multimeter MOTOR+ of J3 at driver board to see if there is any signal output: <ol style="list-style-type: none"> <li>① If there is no normal signal output, it means that the failure is in driver board, which needs repair;</li> <li>② If there is normal signal output, check the motor module, motor</li> </ol> </li> </ul> </li> </ol>
	<p>6. There is no power for motor or the motor is damaged</p>	<ul style="list-style-type: none"> <li>➤ If L19 indicator is not lit at the driver board, it means that no power is supplied to the motor and it is required to repair driver board;</li> <li>➤ The system is cut off. Send directly a 24V/DC voltage to the motor and check the motor. If the motor does not run, replace the motor;</li> </ul>
	<p>7.Failure in motor module</p>	<ul style="list-style-type: none"> <li>➤ Cut off the power. Replace with a new and good module. Connect correctly the lines. Power on again, press down S8/S9 push button, and check if the motor is with any action. If no, repeat the above steps and eliminate the faults one by one;</li> </ul>

Failure	Symptoms and Causes	Remedies
The barrier movement is not up to the position, or the action is out of control.	Failure in limit switch	<p>1. Open the failure cabinet and cut off the power;</p> <p>2. Power on after removing the J1, J3 plugs of driver board.</p> <p>3. Check S8/S9 push buttons on driver board;</p> <p>If L1/L10 indicator is not lit, it means that the limit switch may be with following failure:</p> <ul style="list-style-type: none"> <li>➤ Check connection between limit switch and terminals 3, 4 of J4 in driver board;</li> <li>➤ Check connection between limit switch and terminals 6, 1 or 2 of J4 in driver board to ensure there is power;</li> <li>➤ Installation position of limit switch is deviated, and it can not sense out when the barrier is up to the position. In this case, it is required to carry out adjustment for the position of the limit switch. Refer to Appendix B</li> <li>➤ If the failure can not be eliminated yet, put a metal to the sensing location of the limit switch and see if the L1/L10 lamp is lit or not. If the lamp is not lit it means that the limit switch is damaged, and it is needed to replace;</li> </ul> <p>Note: To replace the new limit switch, it is required to adjust again the position. Refer to Appendix B</p>
Barrier movement is not stable	1. Loose screw at the connection;	Fasten the screw again
	2. Abnormal loose at each connection;	Repair the connection
	3. Bearing is damaged;	Replace the bearing
	4. Part is worn out naturally	Repair or replace the part

### 7.6 Failure of a Continuous Sounding Buzzer when Power on and the Remedy

Failure	Symptoms and Causes	Remedies
The buzzer delivers a sound continuously	1. The transmitter of paired infrared sensor is with a loose terminal or component damage	<p>Check the indicator of the transmitter of paired infrared sensor at the sub-cabinet</p> <ul style="list-style-type: none"> <li>➤ If it is lit, it means that the transmitter is normal;</li> <li>➤ If it is not lit, check firstly for a good connection with the power line of driver board J2;</li> <li>➤ If the indicator is not lit after the above check, it means that the transmitter is damaged and needed replacement;</li> </ul>
	2. The receiver of paired infrared sensor is with a loose terminal or component damage	<p>Open the cabinet and check:</p> <ul style="list-style-type: none"> <li>➤ Firstly, do not shield the transmitter light, and if the receiver indicator is not lit, it can preliminarily be considered as normal;</li> <li>➤ Then, shield the light of transmitter in turn, the indicator in the receiver should be lit in turn and is taken as normal. If not, it means there is a failure, carry out the following check;</li> </ul>
	3. The transmitter and receiver of paired infrared sensor are not aligning with each other	<ul style="list-style-type: none"> <li>➤ Shield the light of a transmitter. If the indicator in the corresponding receiver is not lit, but the adjacent indicator is lit, or, when shielding the light of the adjacent transmitter, if the indicator of receiver is lit, it means that the cabinet is not aligned properly. It is necessary to adjust again the position of the cabinet, ensuring the alignment of the transmitter and the receiver;</li> <li>➤ Shield the light of adjacent transmitter and if the indicator in the receiver is still not lit, check for good contact of the connection line between the receiver and J5 of the main control board. If the indicator is not lit after re-connection, replace the receiver;</li> </ul>

**7.7 The Alarm Delivers no Sound/Light Signal for Illegal Passing of Passage**

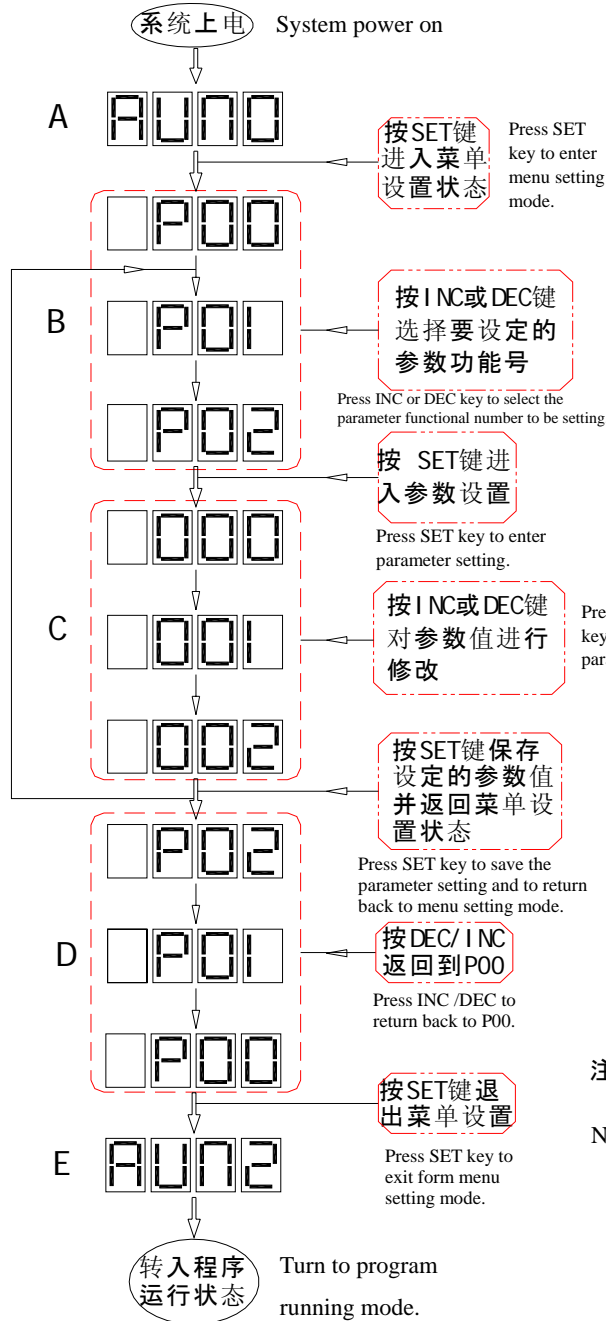
Failure	Symptoms and Causes	Remedies
The alarm delivering no sound/light signal for illegal passing of passage	1. Bad line contact with the main control board	<ul style="list-style-type: none"> <li>➤ Check terminal 9 of J1 of the main control board, and check if there is any output signal for illegal passing of passage;</li> <li>➤ If there is no signal output, check and repair the main control board;</li> </ul>
	2. No power for the alarm	<ul style="list-style-type: none"> <li>➤ Check the power terminal of the alarm</li> </ul>
	3. The alarm is damaged	<ul style="list-style-type: none"> <li>➤ Replace with a new alarm</li> </ul>

**【Warnings】**

- 1) When the failure component is located for the product as the result of check, please do not use component of other kind to replace, otherwise the system performance may be affected.
  
- 2) If the above methods can not eliminate the failure, please contact the after sale service of the company or the authorized service facilities.

## Appendix A (Parameter Setting of Main Control Board)

### 1). Operation steps and example of operation



#### 操作步骤说明

- 系统处于运行状态
- 按SET键系统进入菜单设置界面,可按INC/DEC加减1, 选要设定功能界面;
- 按SET键进入系统功能参数设置界面后,可通过按INC/DEC键加减1, 选取功能参数值;
- 按SET键保存设定的参数值, 返回菜单设置界面, 通过按INC/DEC键, 返回到P00;
- 按SET键退出菜单设置, 转入程序运行状态;

#### Description of operation steps

- The system is at operation mode.
- Press SET key, the system enters into menu setting interface. It is available to press INC/DEC to increase or decrease 1 to select the functional interface to be set up.
- Press SET key, the system enters into menu setting interface. It is available to press INC/DEC to increase or decrease 1 to select the functional parameters.
- Press SET key to save the parameter setting and to return back to menu setting interface. Press INC /DEC to return back to P00.
- Press SET key to exit form menu setting mode, and change to program running mode.

#### 操作举例说明

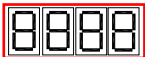



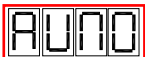



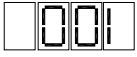


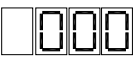









- 设定设备工作方式, 其工作方式为: 入口受控, 出口禁止;
- 设备工作方式的菜单设置状态为P02; 功能参数值为002;
- 具体操作过程如左边举例说明;

#### Description of operation example

- Set up the operation mode of the equipment. Its operation mode is in way controlled, out way barred;
- The menu setting mode of equipment operation mode is P02; the functional parameter is 002;
- The specific operation process is given as the example description on the left;

注: P03、P04、P05功能设置有所不同, 请参阅下一节  
Note: the function setting for P03, P04, P05 varies a little.

## 2). List of Parameter Setting of Main Control Board

	4 bit LED indication (from left to right) at the main control board
 SET	1. Enter and exit from the menu. 2. Enter and exit from the function setting.
 INC	Increase 1 for the setting parameter.
 DEC	Decrease 1 for the setting parameter.
	For system power on, LED displays " RUN " , the right most bit indication is related with the setting status.
	1. Press SET key, after releasing, indicate P00, the system enters menu setting. 2. For indication P00, press SET key, exit from the menu setting.
	Product operation mode setting
	Product at test mode
	Product at normally close mode
	Product at normally open mode
	<b>Product operation mode setting, default: 0.</b>
	In way controlled, out way controlled.
	In way controlled, out way free.
	In way controlled, out way barred.
	In way free, out way controlled.
	In way free, out way free.
	In way free, out way barred.
	In way barred, out way controlled.
	In way barred, out way free.
	In way barred, out way barred.
	<b>Recover parameter default:</b> When P03 appears, press SET key to enter and display P-3, press INC key to confirm and exit, press SET key or DEC key to cancel.

<input type="checkbox"/> P04	<b>Clear in way counter counting value:</b> When P04 appears, press SET key to enter and display C-L, press INC key to confirm and exit, press SET key or DEC key to cancel.
<input type="checkbox"/> P05	<b>Clear out way counter counting value:</b> When P05 appears, press SET key to enter and display C-R, press INC key to confirm and exit, press SET key or DEC key to cancel.
<input type="checkbox"/> P06	<b>Setting the max. time for each passenger entering the passage.</b> the value effective range is 1-60, unit is second. Default: 10.
<input type="checkbox"/> P07	<b>Setting product type;</b> the value effective range is 0-3, Default is 0;
<input type="checkbox"/> 000	Barrier, wing barrier
<input type="checkbox"/> 001	Single barrier plate, single way wing barrier
<input type="checkbox"/> 002	Double barrier plate, single way wing barrier
<input type="checkbox"/> 003	Single barrier plate, double way wing barrier
<input type="checkbox"/> P08	<b>Setting product communications address;</b> the value effective range is 1-255, default: 1;
<input type="checkbox"/> P09	<b>Setting card reading with /without memory;</b> the value effective range is 0-3, default: 0;
<input type="checkbox"/> 000	Double way with memory
<input type="checkbox"/> 001	In way without memory, out way with memory.
<input type="checkbox"/> 002	In way with memory, out way without memory.
<input type="checkbox"/> 003	Double way without memory

<input type="checkbox"/> P10	<b>Setting display indication mode;</b> the value effective range is 0-3, default: 0;
<input type="checkbox"/> 000	Indication RUN?/TEST
<input type="checkbox"/> 001	Display SOB/SIB status list
<input type="checkbox"/> 002	Display ALARM
<input type="checkbox"/> 003	Display in/out card reading number.
<input type="checkbox"/> P11	Setting alarm indication.

**Note: The above operation should be carried out by the certified personnel having gone through strict training. It is not allowed to modify the system setting at will without approval.**

## Appendix B (driver board parameter setting)

1、 Operation method of driver board and parameter setting please refer to “Main control board parameter setting”.

Various functional parameters setting for driver board and their meaning description:

- P00: enter/exit menu functional number;
- P01: setting motor starting speed. The greater the value the greater the starting torque and the stronger the impact. It is recommended to set the value to 450, the value range: 50-999
- P02: setting the reducing speed after the motor reaches the limit switch, the range is: 50-999
- P03: setting the running time of reducing speed for motor, unit: mS; the range is: 1-255;
- P04: setting the high speed running speed of the motor, the range is: 50-999;recommended value 999;
- P05: setting the flatness at accelerating of the motor, recommended value 80;the range is 1-255;

## Appendix C (Motor Installation and adjustment)

### 1. Adjustment of Limit Switch

- ⇒ Firstly, install and adjust the B position limit switch so that the barrier is at b mode, and then, install and adjust limit switches at A and C positions;
- ⇒ Barrier b-a (b-c) is not open to position: move the relative limit switch A (B) clockwise (counter clockwise) . Adjust repeatedly, until the barrier a (b) reaches position;
- ⇒ When barrier b-a (b-c) is exceeding the open position, move the relative limit switch A (B) counter clockwise (clockwise) . Adjust repeatedly, until the barrier a (b) reaches position;

Short of picture

### 2. Assemble again the motor

The following should be noted when assembling or replacing the motor:

- a. In case it is to change for a new motor, it is required to select a motor of the original type or the motor with the technical specifications same as the original one;
- b. The motor can only be applied in the product after the performances are tested to be qualified;
- c. Prior to assembling the motor, it is necessary to test for a normal reducer;
- d. During the assembling, the structural diagram of core mechanism may be referred, and special care should be taken to the assembling of the fitting parts;
- e. After assembling the motor, assemble other parts in turn;
- f. Prior to putting it into normal operation, it is required to carry out the status check (refer to the section for system status check);

### 3. Adjustment of Motor Running Speed

Prior to adjustment of motor running speed, it is required to pay attention to the status of jumper switch S2 at the driver board:

1. Short the upper two pins for manual control motor running speed. The motor speed can be adjusted by adjusting VR2(SPEED)adjustable potentiometer. Pay attention to that in the clockwise rotation, the motor running speed is increasing, and in the counter clockwise rotation, the motor running speed is decreasing;
2. Short the lower two pins for automatic control motor running speed. The motor speed can be adjusted by referring to “Parameter setting of driver board”.

### 4. Protection Time Adjustment

1. Protection time function:

In case the limit switch is with failure, the motor will stop automatically when the running time of motor exceeds the protection time of motor running, and the continuous running will not appear, playing the protection role;

2. Operation of VR3 knob:

At the driver board, the adjustable potentiometerVR3 (RUN TIME) can be used to adjust the motor protection time. The protection time is longer when it is adjusted in clockwise and vice versa;

3. Steps of adjustment for protection time

- a. Press S8 push button to open the barrier to the position;
- b. With a small  $\oplus$  bit screw driver, rotate adjustable potentiometer VR3. Firstly, adjust to the end counter clockwise and then,  $90^\circ$  clockwise
- c. Press S9 push button to close the barrier to the position
- d. If during the door closing process, the buzzer delivers an alarm with a separation of 1s, it means that the protection time is too short. Adjust finely in clockwise VR3, until the motor close to position and no buzzer alarm;
- e. If during the door closing process, the buzzer delivers no alarm, it means that the protection time is too long. Adjust finely in clockwise VR3, until the motor just close to position and the buzzer delivers alarm. Then, rotate VR3 counter clockwise a little;

- 
- 【Notes】** 1. The adjustment of protection can only be adjusted after adjusting properly the running speed of the motor;  
2. During adjustment of motor protection, it is required to firstly open the barrier to the position and then carry out the adjustment again;
- 

### 5. Adjustment of Motor Protection Current

- 1) During the motor running process, the motor load current will be increased

During the motor running, the load current will be increased due to the abnormal foreign resistance. The system will deliver alarm once it exceeds the setting protection current value. If the foreign resistance is withdrawn in the alarming time, the motor will move in the original direction. Otherwise, it will reset automatically, protecting the motor and passengers.

## 2. Application of VR2 knob

With a small + screw driver, adjust knob JS170A.03.01 VR1 (OVER-I) in clockwise direction, the operation current of motor will be greater and vice versa;

## 3. Step of adjustment of protection current

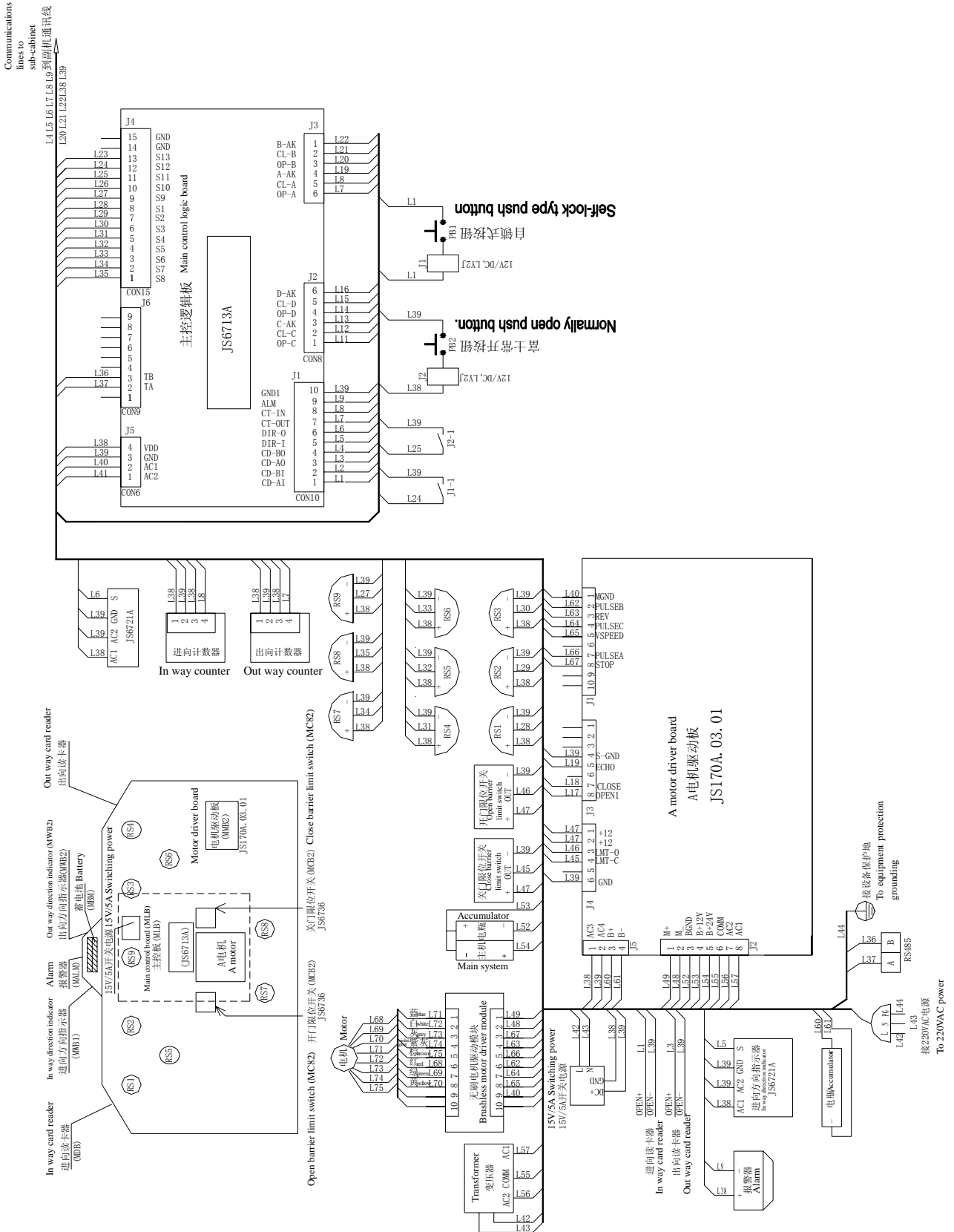
- a. Remove J1 plug at the driver board;
- b. Press down S8 (OPENTEST) knob, the motor runs and the barrier opens;
- c. Observe indicator LED8, if it is not flicking, it means that the protection current is too great, and VR1 should be adjusted in counter clockwise,
- d. Press push button S9, indicator LED8 will be flicking at the time the motor is started, and will be at a flicking dark in the process of motor running, otherwise, start the step b and adjust again VR1;

## 4. Test of protection current application:

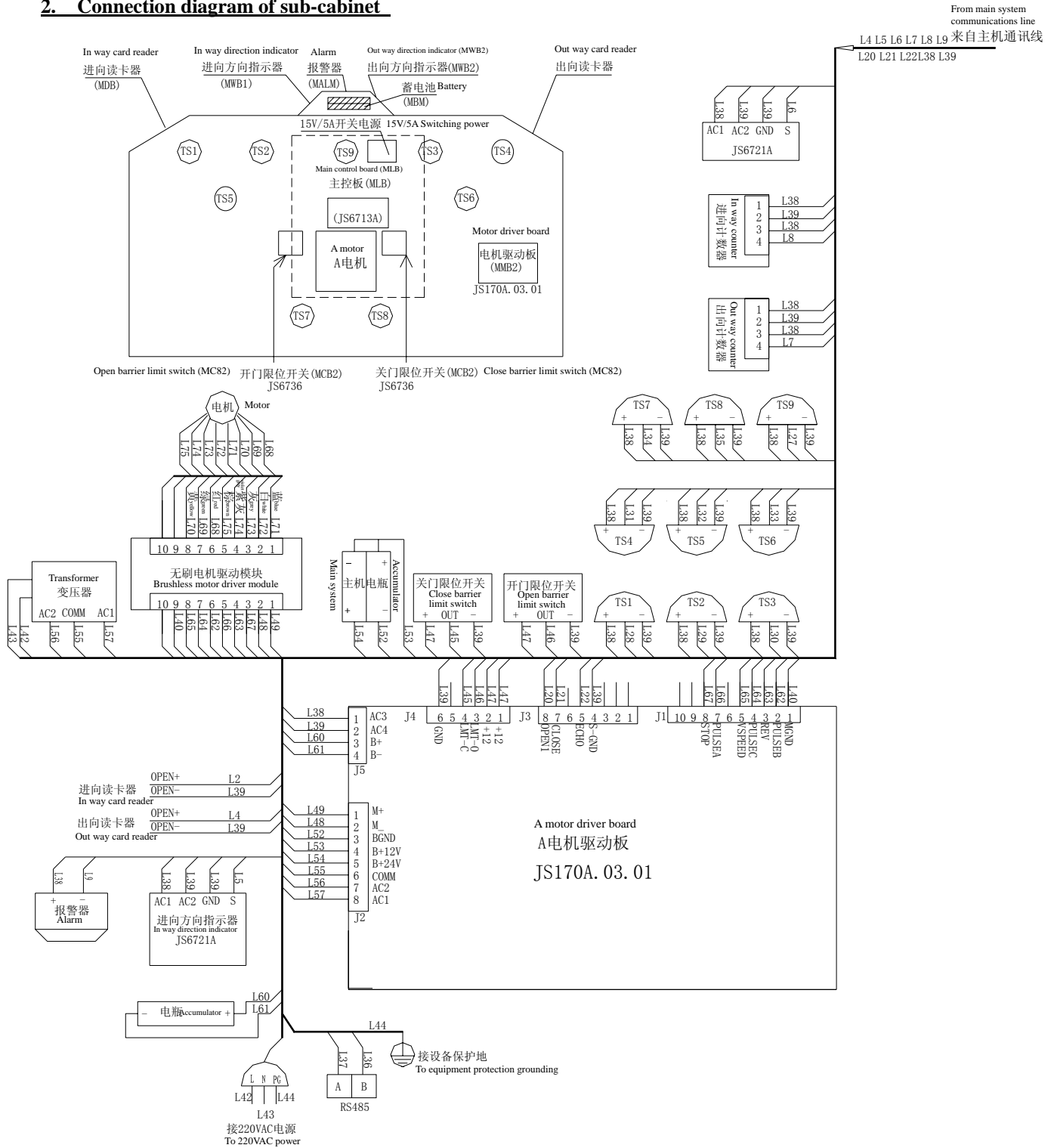
If a force is applied at the counter direction of the barrier movement to stop barrier movement, LED8 should be lit. 1s later, an alarm with a separation of 0.5s will be given. If the foreign force is withdrawn, the motor may full fill the travel successfully again, meaning the existence of protection current.

# Appendix D (connection diagram of electric control)

## 1. Connection diagram of main cabinet



## 2. Connection diagram of sub-cabinet



Securitex Electronic Systems Engineering

Block 9010 Tampines St 93 #04-145 Singapore 528844.

Tel: 0065-67852171 Fax: 0065-67863351

<http://www.securitex.com.sg>

**Note: The above specification and design is subject to change without notice**