

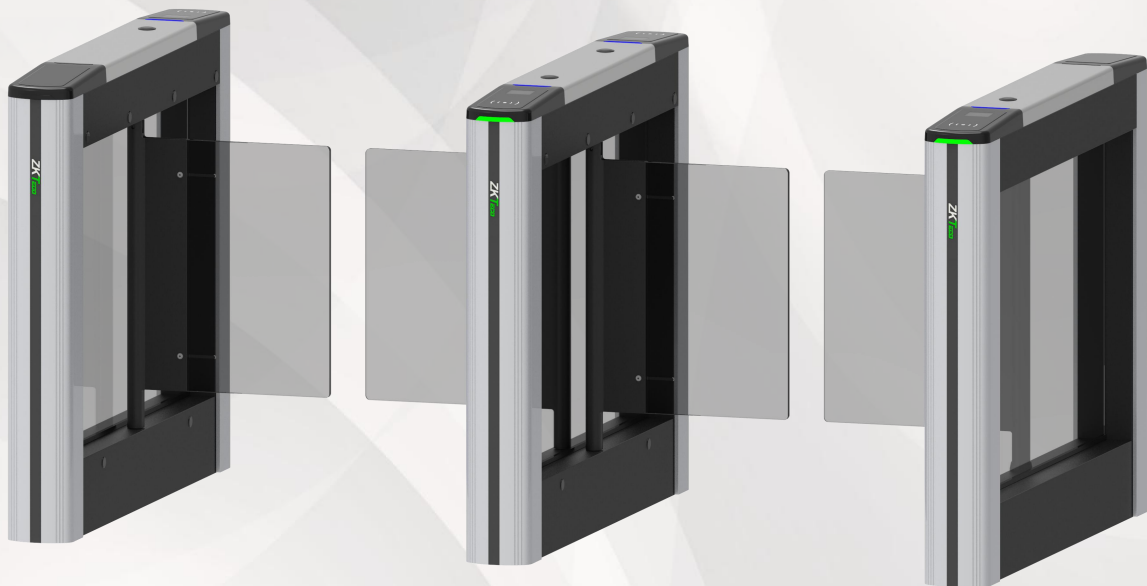
# User Manual

## Saturn Plus Series

**Applicable Model(s):** Saturn-S1000 Plus, Saturn-S1200 Plus

Doc Version: 1.0

English



Thank you for choosing our product. Please read the instructions carefully before operation. Follow these instructions to ensure that the product is functioning properly. The images shown in this manual are for illustrative purposes only.



For further details, please visit our Company's website  
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## About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face-reader Door Locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

## About the Manual

This manual introduces the operations of **Saturn Plus Series**.

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

Features and parameters with ★ are not available in all devices.

## Safety Instruction



These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

The precaution measure is divided into Dangers and Cautions:

**Dangers:** Neglecting any of the warnings may cause serious injury or death.

**Cautions:** Neglecting any of the cautions may cause injury or equipment damage.

### Symbols

Convention	Description
	<b>Dangers:</b> Follow these safeguards to prevent serious injury or death.
	<b>Cautions:</b> Follow these precautions to prevent potential injury or material damage.



#### **Dangers:**

- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- The equipment must be connected to an earthed mains socket-outlet.
- Shock hazard! Disconnect all power sources before maintenance.
- Do not touch the bare metal contacts of the inlets after the circuit breaker is turned off. Electricity still exists.
- To prevent possible hearing damage, do not listen at high volume levels for long periods.
- All the electronic operation should be strictly compliance with the electrical safety regulations, fire prevention regulations and other related regulations in your local region.
- Please use the power adapter, which is provided by normal company. The power consumption cannot be less than the required value.
- Do not connect several devices to one power adapter as adapter overload may cause over-heat or fire hazard.
- Please make sure that the power has been disconnected before you wire, install or dismantle the device.
- If the top caps should be open and the device should be powered on for maintenance, make sure:
  1. Power off the fan to prevent the operator from getting injured accidentally.
  2. Do not touch bare high-voltage components.
  3. Make sure the switch's wiring sequence is correct after maintenance.
- Please make sure that the power has been disconnected before you wire, install or dismantle the device.

- If smoke, odors or noise rise from the device, turn off the power at once and unplug the power cable, and then please contact the service center.
- If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the device yourself. (We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.)
- The Terminal PE of the switch should be connected to a ground wire.

 **Cautions:**

- Instructions must be read before installation. Please follow these instructions carefully, incorrect installation could affect gate operation.
- When mounting and positioning this product please ensure the power cable is unplugged.
- The motor cover will need to be removed to mount the motor to the mounting plate. Electrical-related operation of the main unit can only be made by a licensed electrician.
- To prevent injury, this equipment must be securely attached to the floor/base of the turnstile in accordance with the installation instructions.
- Keep straight down when moving or using the equipment.
- Never place the equipment in an unstable location. The equipment may fall, causing serious personal injury or death.
- Cold-rolled SPCC steel may be corroded in some circumstances. You need to clean and care the device by using the stainless steel cleaner. It is suggested to clean the device every month.
- Do not drop the device or subject it to physical shock, and do not expose it to high electromagnetism radiation. Avoid the equipment installation on vibrations surface or places subject to shock (ignorance can cause equipment damage).
- Do not place the device in extremely hot (refer to the specification of the device for the detailed operating temperature), cold, dusty or damp locations, and do not expose it to high electromagnetic radiation.
- The device cover for indoor use shall be kept from rain and moisture.
- Exposing the equipment to direct sun light, low ventilation or heat source such as heater or radiator is forbidden (ignorance can cause fire danger).
- Do not aim the device at the sun or extra bright places. A blooming or smear may occur otherwise (which is not a malfunction however), and affecting the endurance of sensor at the same time.
- Please use the provided glove when open up the device cover, avoid direct contact with the device cover, because the acidic sweat of the fingers may erode the surface coating of the device cover.
- Please use a soft and dry cloth when clean inside and outside surfaces of the device cover, do not use alkaline detergents.
- Please keep all wrappers after unpack them for future use. In case of any failure occurred, you need to return the device to the factory with the original wrapper. Transportation without the original wrapper may result in damage on the device and lead to additional costs.

- Improper use or replacement of the battery may result in hazard of explosion. Replace with the same or equivalent type only. Dispose of used batteries according to the instructions provided by the battery manufacturer.
- Biometric authentication products are not 100% applicable to anti-spoofing environments. If you require a higher security level, use multiple authentication modes.
- Do not stay in the lane when the device is rebooting.
- RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
- SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.
- The instructions shall require connection of the equipment protective earthing conductor to the installation protective earthing conductor.

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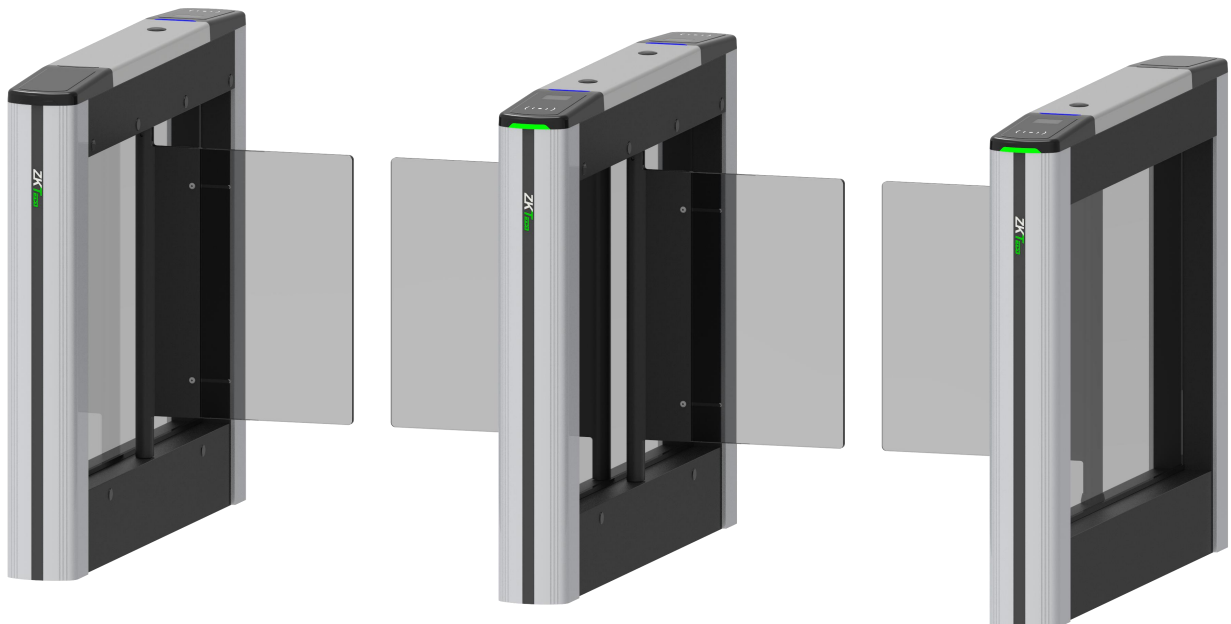
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# 1 Overview

Unveiling the ZKTeco Saturn Plus Series , an innovative swing barrier turnstile designed for an unparalleled passage experience. The Saturn Plus Series offers two models (S1000 Plus and S1200 Plus). Its chassis is made from cold-rolled steel SPCC (GB700), providing an IPX4 protection rating that ensures it can withstand water and dust.

The Saturn Plus Series has been upgraded with a notable feature: the addition of six pairs of infrared sensors for dual pinch protection. It ensures enhanced safety and improved obstacle detection. Also, the authentication area is enhanced with 2.5D tempered glass for scratch resistance.

Saturn Plus Series maintains its multi-authentication exibility as before, with facial, QR code and RFID card verication. Additionally, the pedestal removal design makes it easier to installation.



## 1.1 Key Features

- **Innovative Aesthetics**

The Saturn series is available in an array of contemporary colors, including silver, gray and brown.

- **Durability**

The lid is made using an integrated molding process, achieves an IPX4 protection rating, offering robust defense against water and dust. The product is designed to thrive in extreme conditions, maintaining functionality after an 8-hour period in sub-zero temperatures as low as -30°C.

- **Material Innovation**

The outer surface is treated with electrostatic spraying, which ensures excellent adhesion and prevents paint from dripping. This treatment also aids in thermal regulation, preventing surface burns due to high temperatures. The identification area is elegantly embedded with 2.5D tempered glass, which is resistant to scratches and wear, enhancing the clarity of the identification process.

- **DC Brushless motor**

The Saturn Series uses DC brushless motors, which are stable and reliable, and the movement life reaches 3 million MCBF. Barrier material made of acrylic, the default lane width is 600mm, can be optional 900mm width. Modular design, more convenient replacement and maintenance, more cost saving.

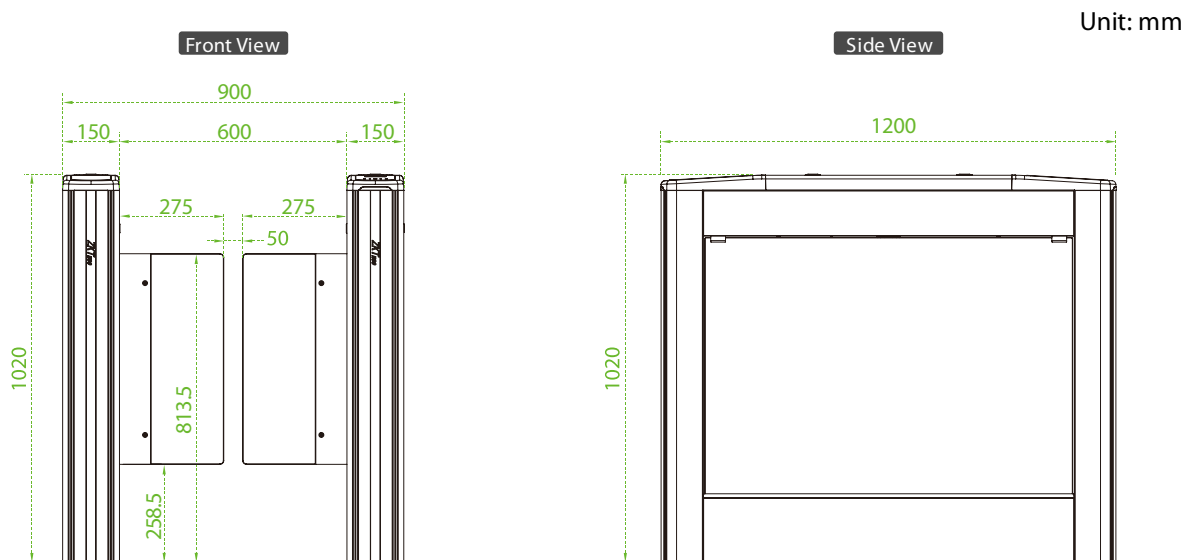
- **Safety and security**

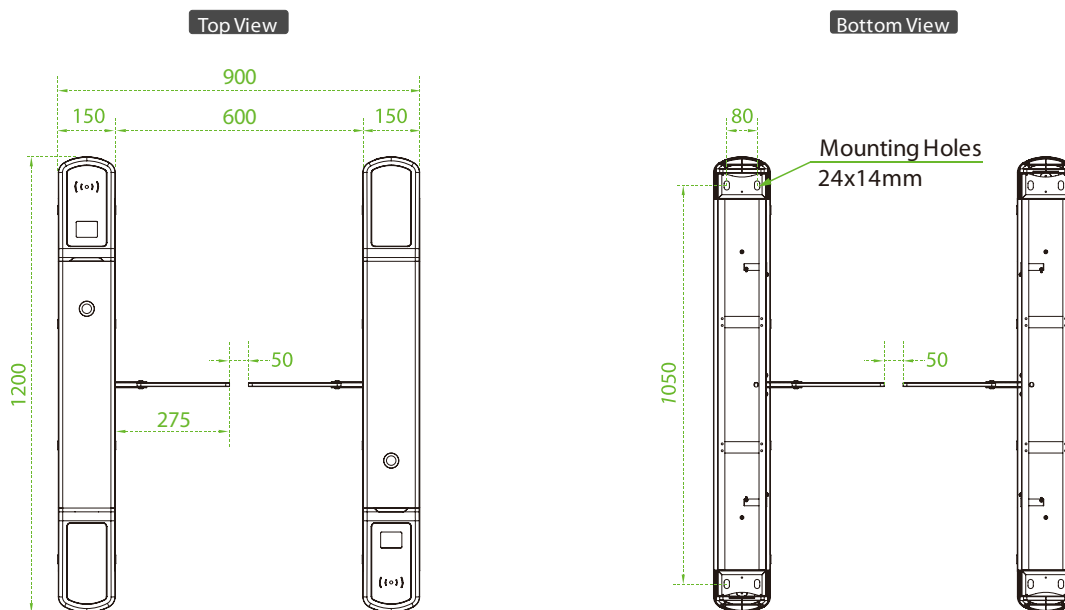
Safety features include a swing arm with the upper edge is more than 800mm from the ground and the lower edge is less than 200mm, allowing normal operation even when submerged in water up to 0.8m, effectively preventing unauthorized crossings. Additionally, the Saturn Plus Series is fortified with 6 pairs of infrared sensors for double anti-crushing protection and a leakage protection switch to protect against electrical hazards.

## 1.2 Specification

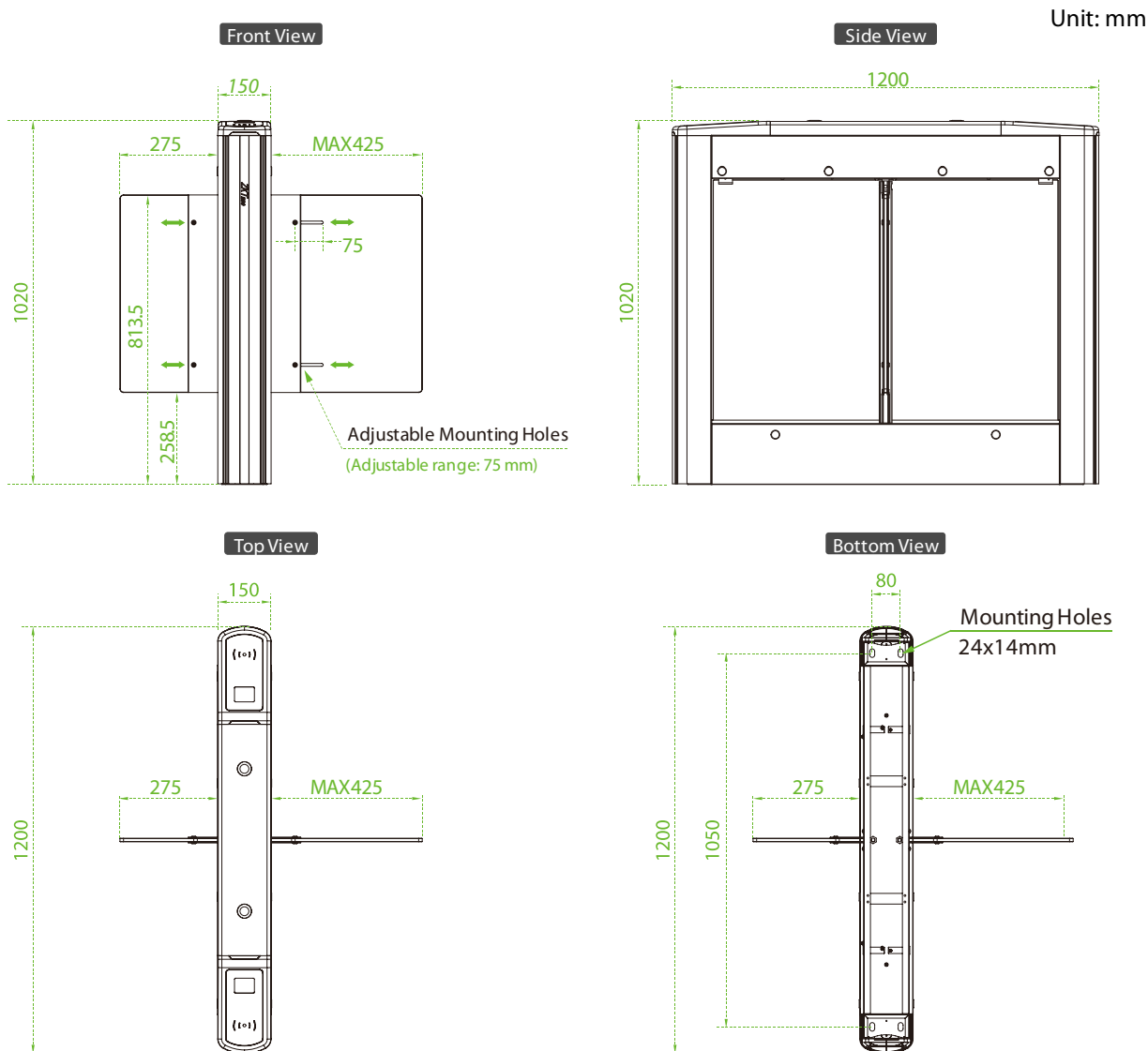
### 1.2.1 Appearance

- **Saturn-S1000 Plus:**





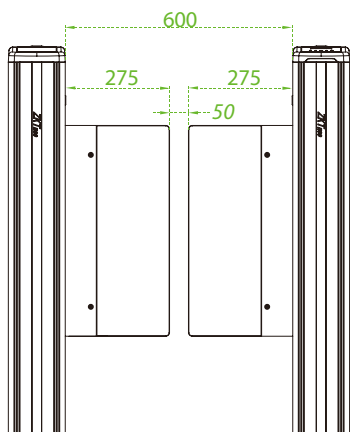
● **Saturn-S1200 Plus:**



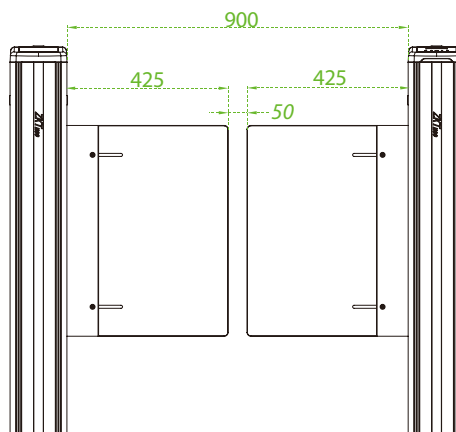
### ● Swing Barriers Specifications

The Saturn-S1000 Plus and Saturn-S1200 Plus can be combined to form a single, dual or multi-lane system, allowing the user to select the appropriate swing barrier size according to actual needs.

#### 1) Single-lane

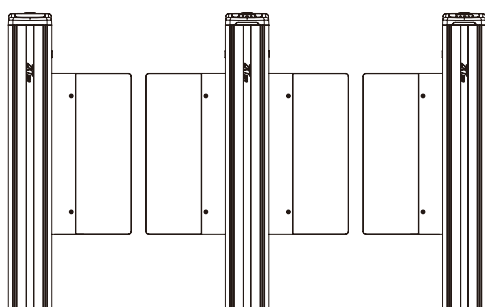


Standard Lane

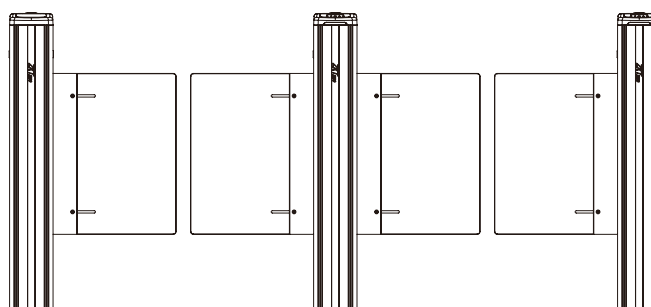


Wide Lane

#### 2) Dual-lane

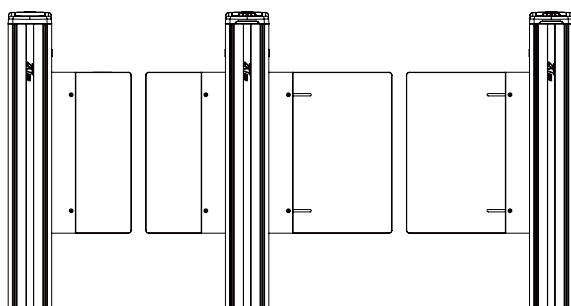


Standard Lane

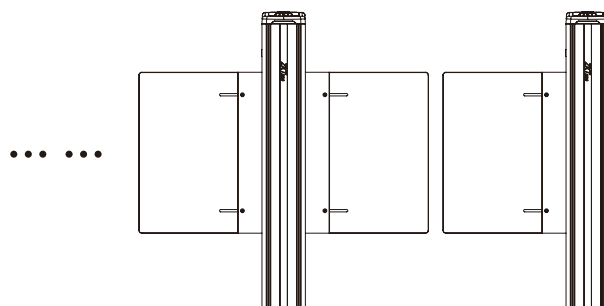


Wide Lane

#### 3) Multi-lane



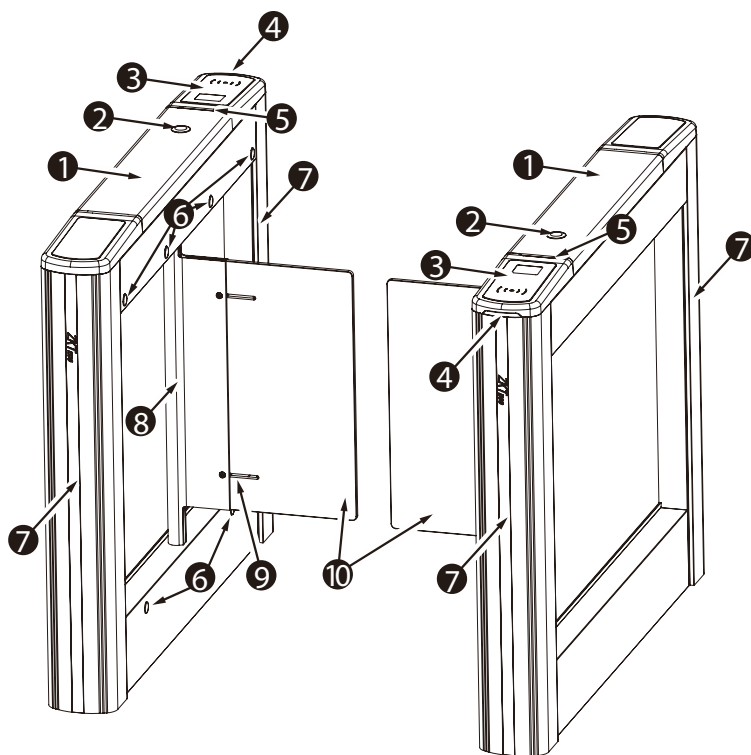
Standard Lane



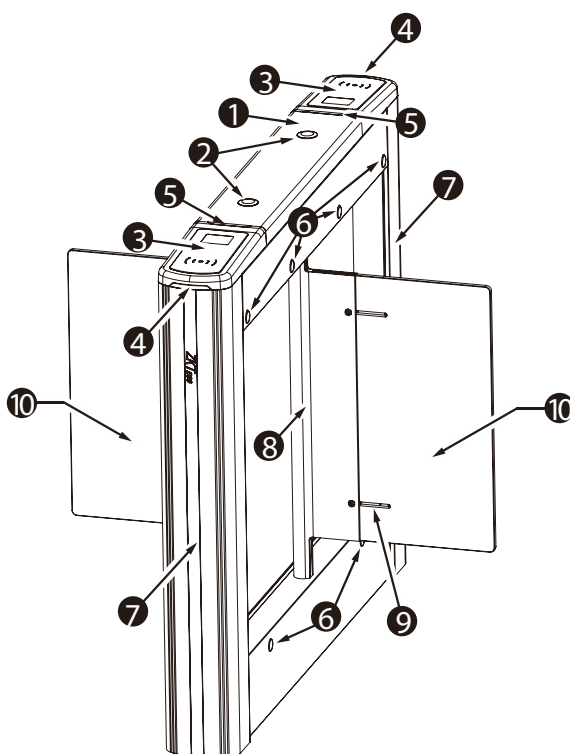
Wide Lane

### 1.2.2 System Components

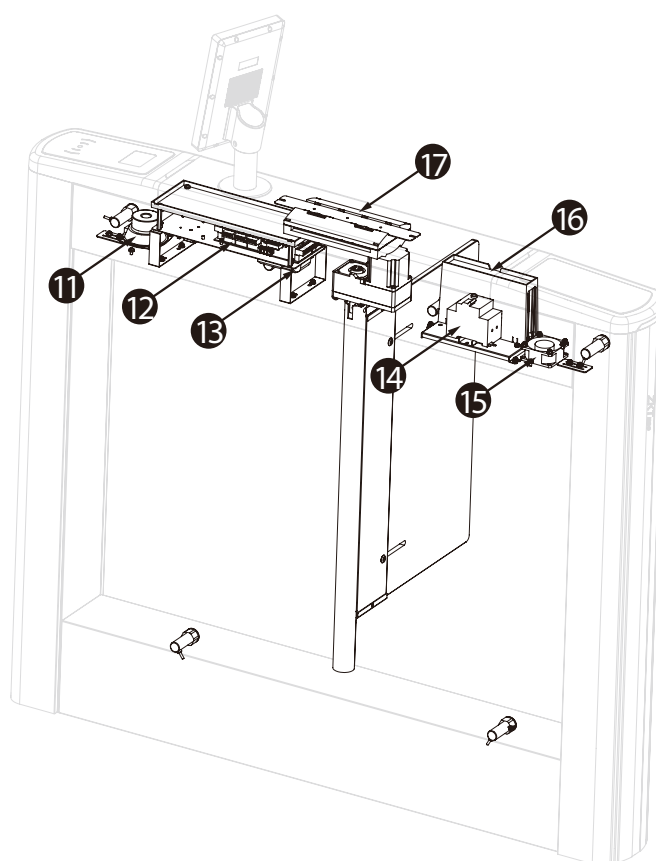
- **Saturn-S1000 Plus:**



- **Saturn-S1200 Plus:**



● **Core Component**



No.	Components	Descriptions
1	Top Lid	Polycarbonate+2.5D Tempered glass
2	Reserve Mounting Holes	Reserved mounting holes for facial authentication devices.
3	Verification Area	Card (RFID)/Facial/QR Code modules are available
4	Visual Indicator	Top LED indicator: Blue=Door closed/stand by Green=Door opening Red=Door closing/alarm
5	Traffic Indicator	Side LED indicator: Green=Lane available Red=Lane unavailable
6	Infrared Sensor	It detects the position of the pedestrian and plays a role in ensuring safety and protection
7	Side Lids	Acrylic
8	Core Component	Operating components of the turnstile
9	Adjustable Mounting Holes	For adjusting the width of the door over a range of 75 mm.
10	Barrier Material	Light gray transparent acrylic
11	Speaker	To play alarms or alert voices.

<b>12</b>	Turnstile Controller Board	The system's control center
<b>13</b>	IR Sensor Board	Used to control sensors.
<b>14</b>	Air Switch	It provides reliable protection by automatically disconnecting the circuit in the event of overload, short circuit, under voltage, or power loss.
<b>15</b>	Fan	Used for cooling.
<b>16</b>	Power Supply	110V / 220V ±10% AC @50Hz/ 60Hz
<b>17</b>	Access controller	To verify if the credential is valid. If successful, sends a door open signal to the turnstile controller. Otherwise will not.

### 1.2.3 Technical Specifications

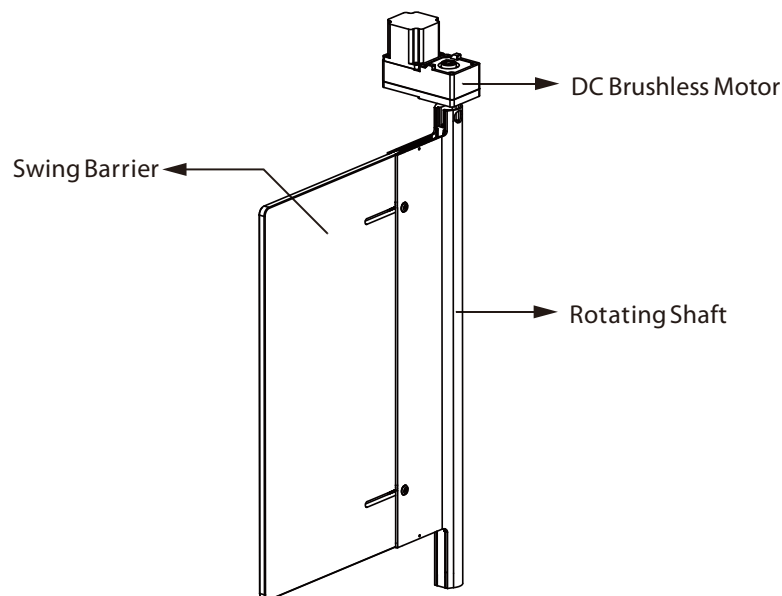
Model	Saturn-S1000 Plus	Saturn-S1200 Plus
<b>Audio Indicator</b>	Internal speaker	
<b>Visual Indicator</b>	Top LED indicator: Blue=Door closed /stand by Green=Door opening Red=Door closing/alarm	Slide LED indicator: Green=Lane available Red=Lane unavailable
<b>Display</b>	NA	
<b>Lane Type</b>	Single lane	Dual Swing(for additional lane)
<b>Lane Width</b>	600mm (Standard), Max 900mm (Optional)	
<b>Barrier Movement Type</b>	Swing	
<b>Motor</b>	DC brushless motor	
<b>Movement Speed</b>	Average 1s per movement (Adjustable open/close timing)	
<b>Movement Accuracy</b>	NA	
<b>Clutch</b>	NA	
<b>Lid Material</b>	Stainless steel & Polycarbonate	
<b>Lid Options Authentication Methods</b>	Streamlined under mount options: QR Code / RFID Surface mount option: Facial Authentication	
<b>Chassis Material</b>	Cold-rolled steel SPCC (GB700) (Chassis Body) / Aluminum Alloy (Gate Column)	
<b>Chassis Colour</b>	Sliver(standard), Gray(optional), Brown(optional)	
<b>Barrier Material</b>	Light gray transparent acrylic(555*300mm)(standard)/Light gray transparent acrylic(555*375mm)(optional)	
<b>IR Sensors</b>	6 pairs	

<b>Motherboard Function</b>	System configuration, access control	
<b>Motherboard Communication</b>	Fire alarm port (relay)*1, RS485 port*1	
<b>Controller</b>	Not equipped, allowing optional from C3/ InBio Series series or customization.	
<b>Credential Options</b>	Under mount RFID reader: (support model: Pro ID Series, KR Series) Under mount fingerprint reader: FR1200/FR1500S	
<b>Flow Rate</b>	Facial Authentication: 15 passengers per minute QR Code: 30 passengers per minute RFID: 35 passengers per minute	
<b>Accessibility</b>	Adult, children(with care), Disability(with care)	
<b>Power Supply</b>	110V / 220V ±10% AC @50Hz/60Hz	
<b>Power Rating</b>	10VA(Standby) 40VA(Operation)	
<b>Fire Signal</b>	Input for voltage free contact	
<b>Noise Level</b>	Less than 60dB	
<b>MTTR</b>	Less than 60 minutes	
<b>MCBF</b>	3 million	
<b>Weight</b>	50kg	30kg
<b>Dimension (L*W*H)</b>	1200*150*1020mm	
<b>Dimensions With Packing(L*W*H)</b>	Carton(standard): 1265*220*1070 mm(2 boxes) Wooden box(optional): 1300*480*1224(1box)	Carton(standard): 1265*220*1070mm(1 box) Wooden box(optional): 1300*260*1224(1 box)
<b>Operating Temperature</b>	-30°C to 70°C	
<b>Operating Humidity</b>	5% to 90% RH (Non-condensing)	
<b>Certifications</b>	CE, FCC	
<b>Ingress Protection Rating</b>	IPX4	
<b>Supported Software</b>	ZKBio CVSecurity	
<b>Safety Features</b>	Voltage free contact input for fire alarm fail state automatic swing barrier open during power off	
<b>Security Features</b>	Anti-tailgating, anti-pinch	
<b>Product Delivery</b>	Pre-assembled	
<b>Application Environment</b>	Indoor / outdoor (if sheltered)	
<b>Site Preparation</b>	Flat & level finished floor (base plate in options for unfinished floor)	
<b>Security Level</b>	Low	
<b>Emergency Mode</b>	Support (swing barrier open automatically)	
<b>Packing Material</b>	Carton(standard) / Wooden(optional)	

## 1.3 Mechanical System

The mechanical system of the turnstile includes the chassis and the core component.

- **Chassis:** It is a carrier where the Visual Indicator and Infrared Sensor are installed.
- **Core Component:** The core component mainly consists of the Frame, DC Brushless Motor, Rotating Shaft and Swing Barrier.

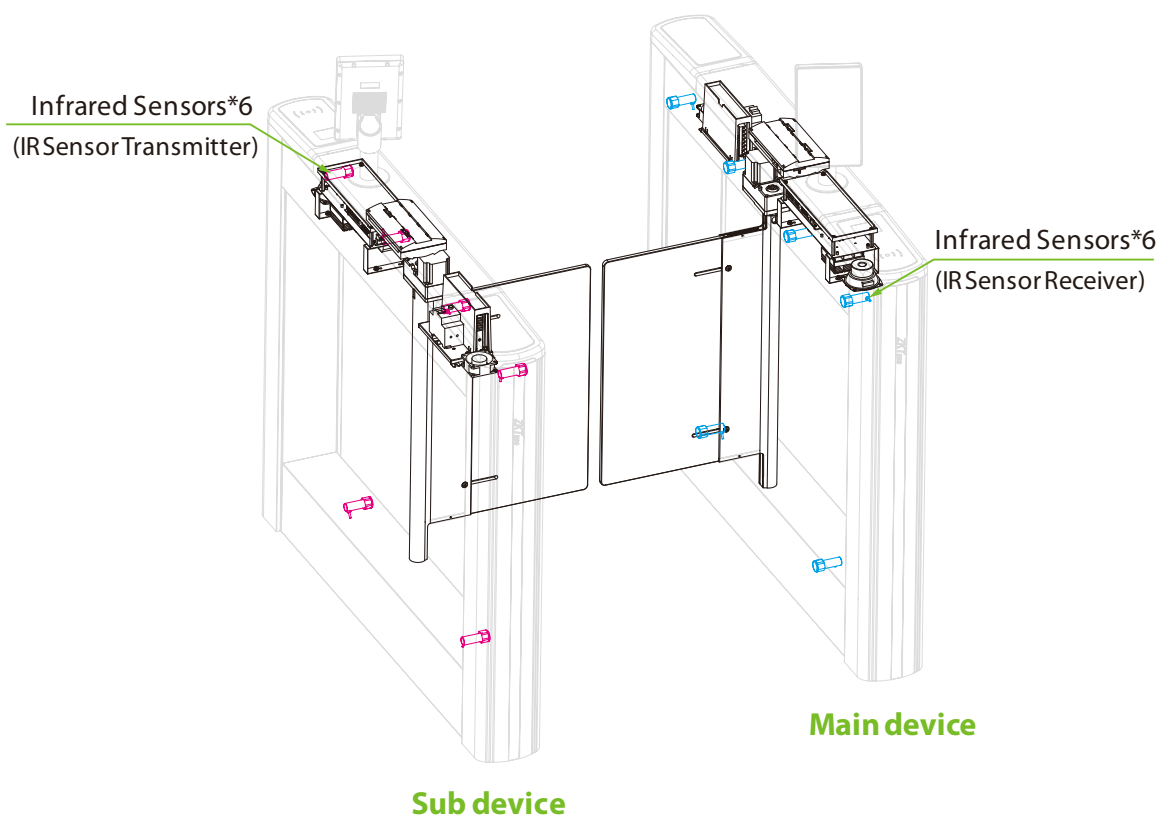


## 1.4 Electronic Control System

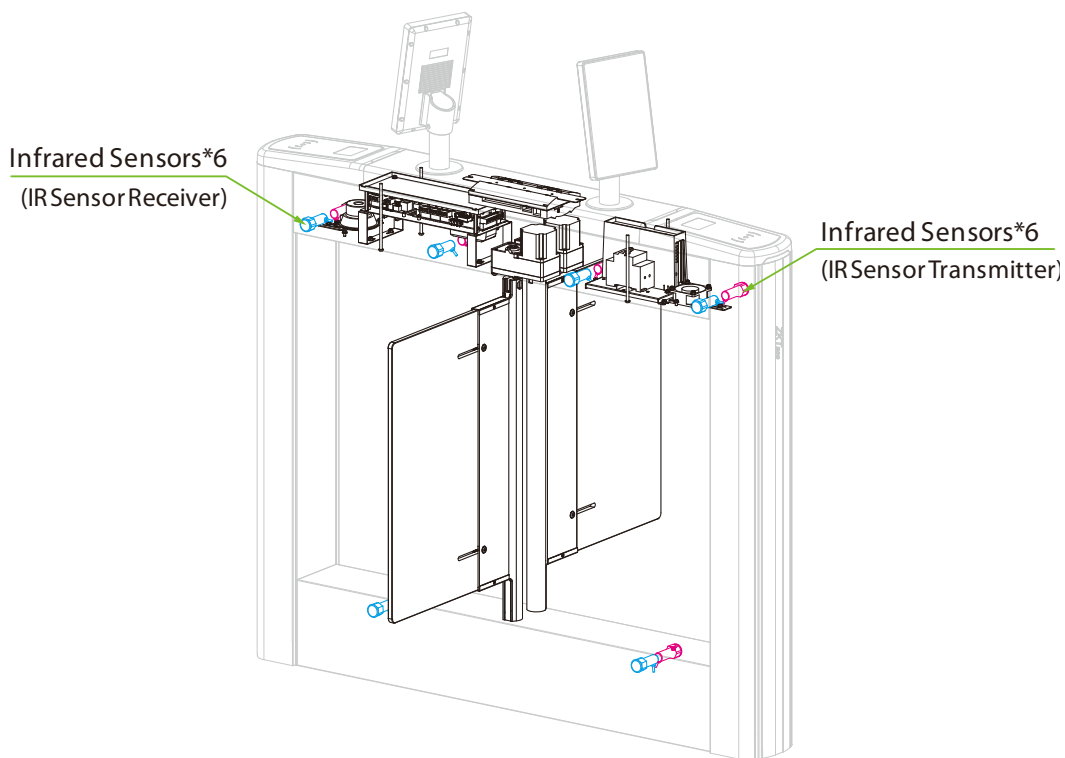
The electronic control system of a turnstile is mainly composed of the Servo Motor Driver, Infrared Sensor, Turnstile Control Board, Traffic Indicator and Alarm.

- **Power supply:** connected with AC power and converting to DC power for turnstile operating system.
- **Access control system:** including various types of readers such as RFID readers, QR code readers, and facial authentication devices, and access controllers.
- **Infrared Sensor:** It detects the position of the pedestrian and plays the role of safety protection.
- **Turnstile Control Board:** The Turnstile control board is the system's control center that receives signals from the reader. The IR performs logical calculation and processing of these signals and then sends executive commands to the Traffic Indicator, Electric Motor, and the alarm.
- **Traffic Indicator:** The system will light up the red indicator when the gate is closed. When someone passes the verification, the system will light up the green indicator.
- **Alarm:** The alarm gives the voice and light alarm if the system detects any unauthorized entry to the passage, false direction entry, anti-tailgate and other violations.

● **Saturn-S1000 Plus:**



● **Saturn-S1200 Plus:**

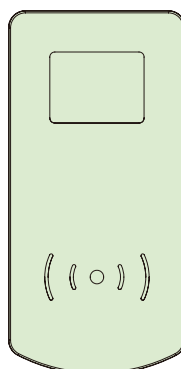


## 2 Authentication Methods

Users can freely choose to configure the authentication module according to actual needs. The following options are included.

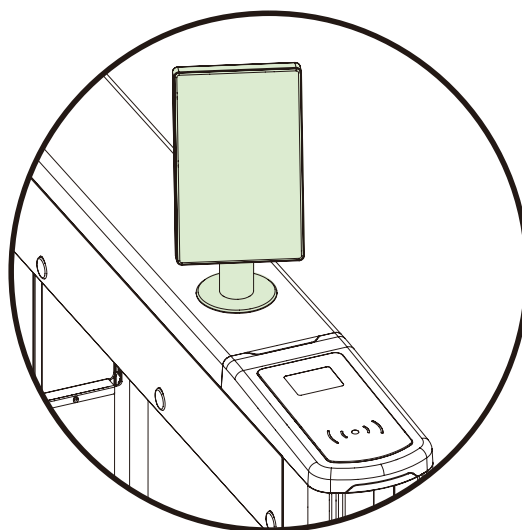
### **Streamlined Under Mount Options:**

RFID only,RFID & QR Code.



### **Surface Mount Option:**

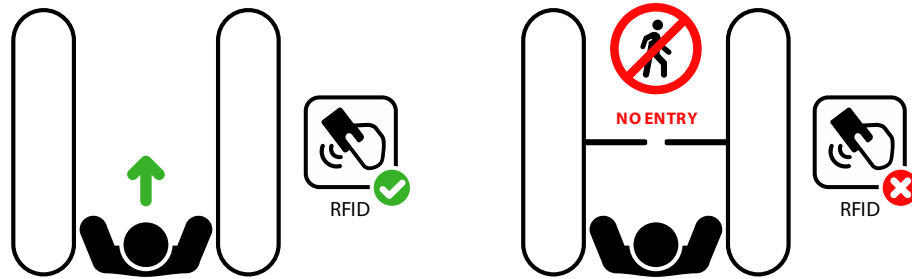
Mounting Pole (Compatible with ProFace X series / SpeedFace V5L / Elite Pass).



### 2.1 Card Verification★

When the device is configured with a card swipe module, the Card Verification mode compares the card number in the card induction area with all of the card number data registered in the device and sends it to the Access Controller.

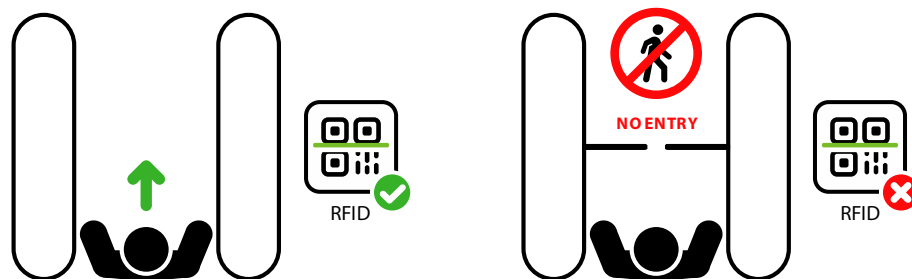
When a user presses his / her card on the card reading area, the device enters card authentication mode.



## 2.2 QR Code Verification★

The QR code Verification mode is to scan the QR code on the user's mobile phone through the QR code scanner and compare the data with the registered QR code, and then sends it to the Access Controller.

When the user places the mobile phone displaying with the QR code on top of the QR code scanner, the device enters the QR code authentication mode.



## 2.3 Facial Verification★

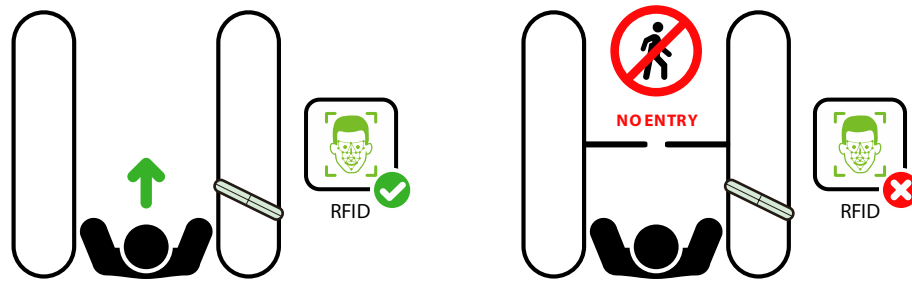
In this verification mode, the device compares the collected facial images with all face data registered in the device and then sends it to the Access Controller.

Try to keep the face in the centre of the screen during authentication. Please face towards the camera and stay still during face registration.

Recommended Standing Posture and Facial Expression:



**Note:** Please keep your facial expression and standing posture natural while enrollment or verification.



## 3 Installation

### 3.1 Installation Tools

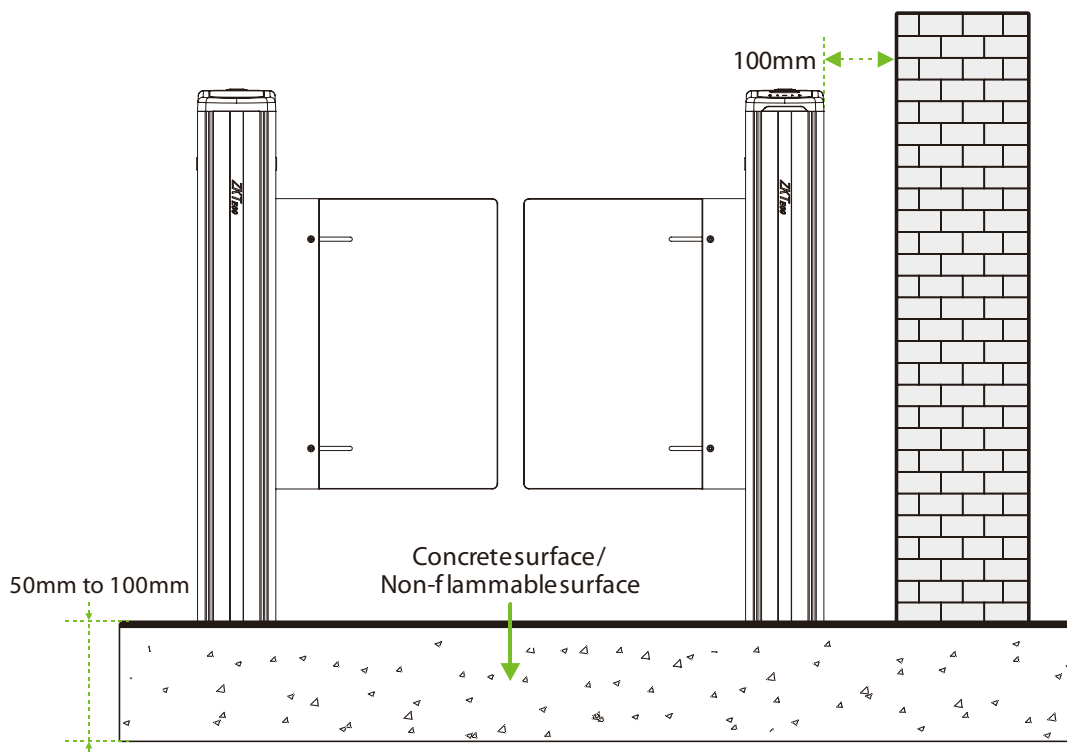
- Tapeline
- Marker Pen
- Pencil
- Percussion Drill
- Screwdriver
- Wrench
- Hex Wrench
- Cutting Machine

### 3.2 Installation Requirements

1. It is recommended that the turnstile must be installed on a horizontal solid platform with a height of **50mm to 100mm**.
2. It is recommended that the turnstile should not be used in the corrosive environment.
3. Make sure that the ground wire of the system is securely connected to avoid personal injuries or other accidents.
4. After installation, check if the connection has been done correctly at the connecting points of the ground wire, at the connector assemblies and wiring points of the circuits, as well as at each movable part of the turnstile. Any loose nuts, screws and other fasteners should be tightened in time to avoid any failures caused by long-time operations.

### 3.3 Installation Environment

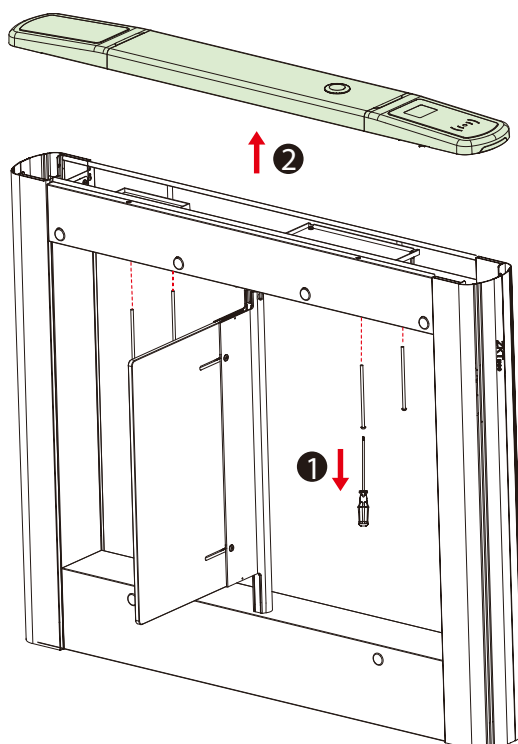
1. Before installation begins, prepare installation tools, check the device and the accessories, and clear the installation base.
2. Make sure that the appliance is mounted on a concrete surface or other non-flammable surfaces surfaces.
3. The installation position of the turnstile depends on its size. A distance of **100mm** between the turnstile and the wall needs to be reserved for ease of opening the top lid of the turnstile to perform maintenance and adjustment. The reference figure is shown below:

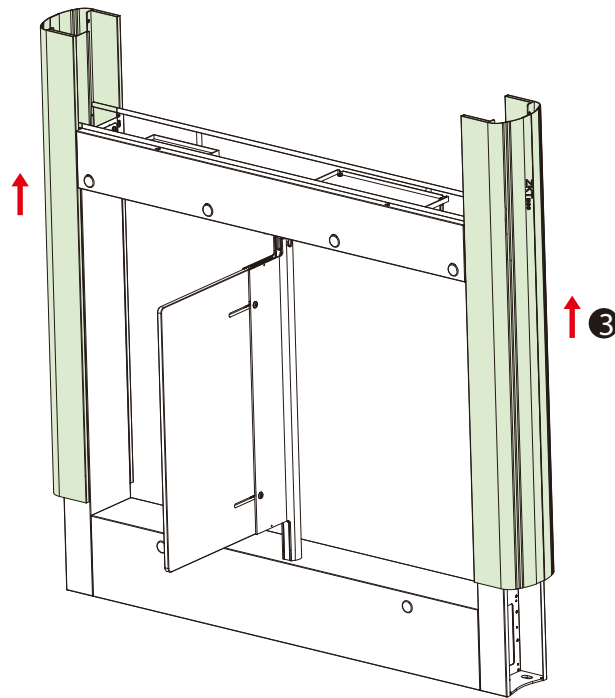


### 3.4 Installation Cabinet

#### Step 1 Remove the Top Lid and Push Up the Side Lid

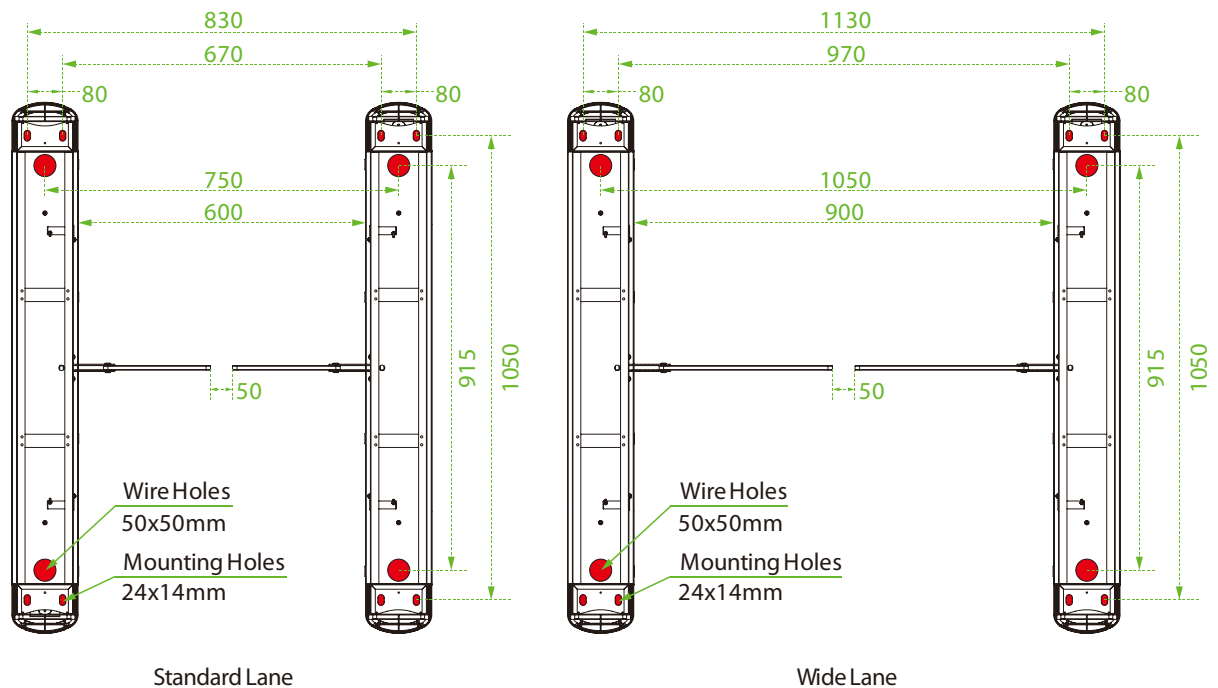
1. Remove the four screws hidden under the top lid, then remove the top lid.
2. Push the side lid upward to expose the expansion screw mounting holes.





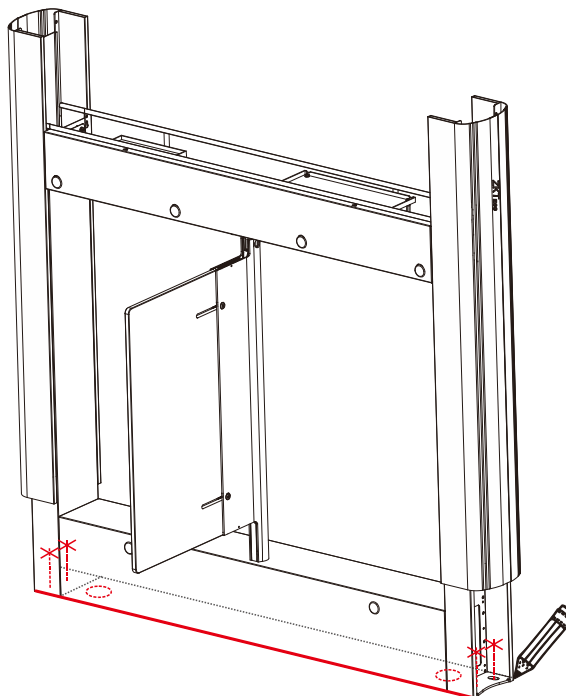
**Step 2 Determine the Mounting Location**

1. Please refer to the user's manual and complete the **power-on self test** operation before installation.
2. Then place the cabinet according to the mounting distances shown in the diagram below. Take care to measure the distance between the bottom inside walls of the cabinets on the entrance side and exit side of the channel and make sure that the measurements are consistent.



### Step 3 Marker Position

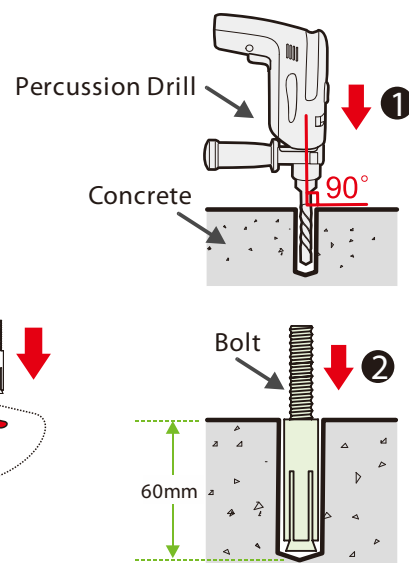
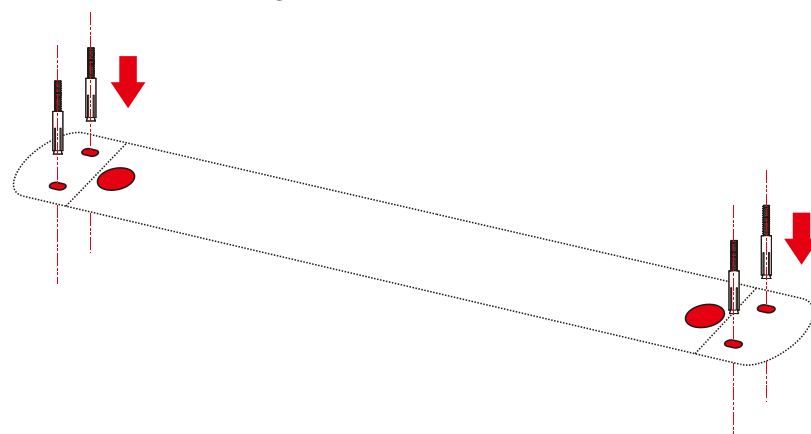
Draw the location of the cabinet with a marker and mark each location of the mounting holes. There will be a total of four mounting holes and two wire holes per cabinet.



### Step 4 Drill Holes and Place Bolts

1. Using a concrete drill bit, drill the mounting holes 60mm in depth at the center of each marked location.
2. Then insert the bolts vertically into the mounting holes as shown at right.
3. Make sure the bolts are placed in place. Use a hammer to tap the bolts into place, if needed.

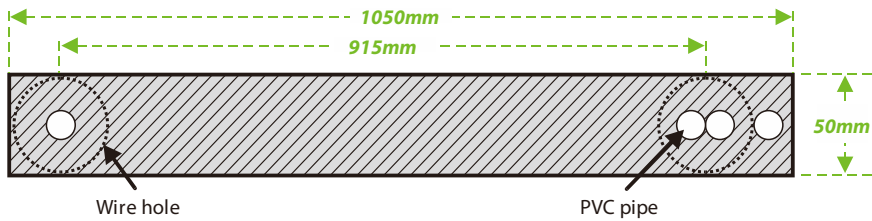
Place bolts into mounting holes



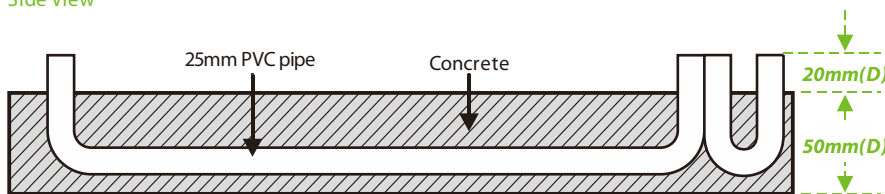
### Step 5 Wireway Laying

1. Dig a recess of 50mm depth between the wire holes on both sides of the channel with the dimensions shown below. Recesses can be dug at positions **1** and **2**.
2. Then lay two 25mm diameter PVC pipes as shown below.
3. After threading the cable out of the PVC pipe, pour concrete to fix it in place.

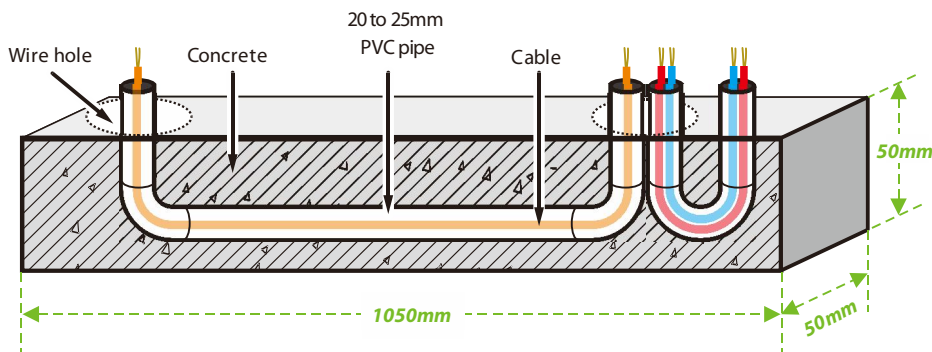
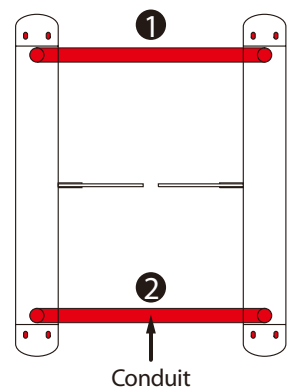
Top View



Side View



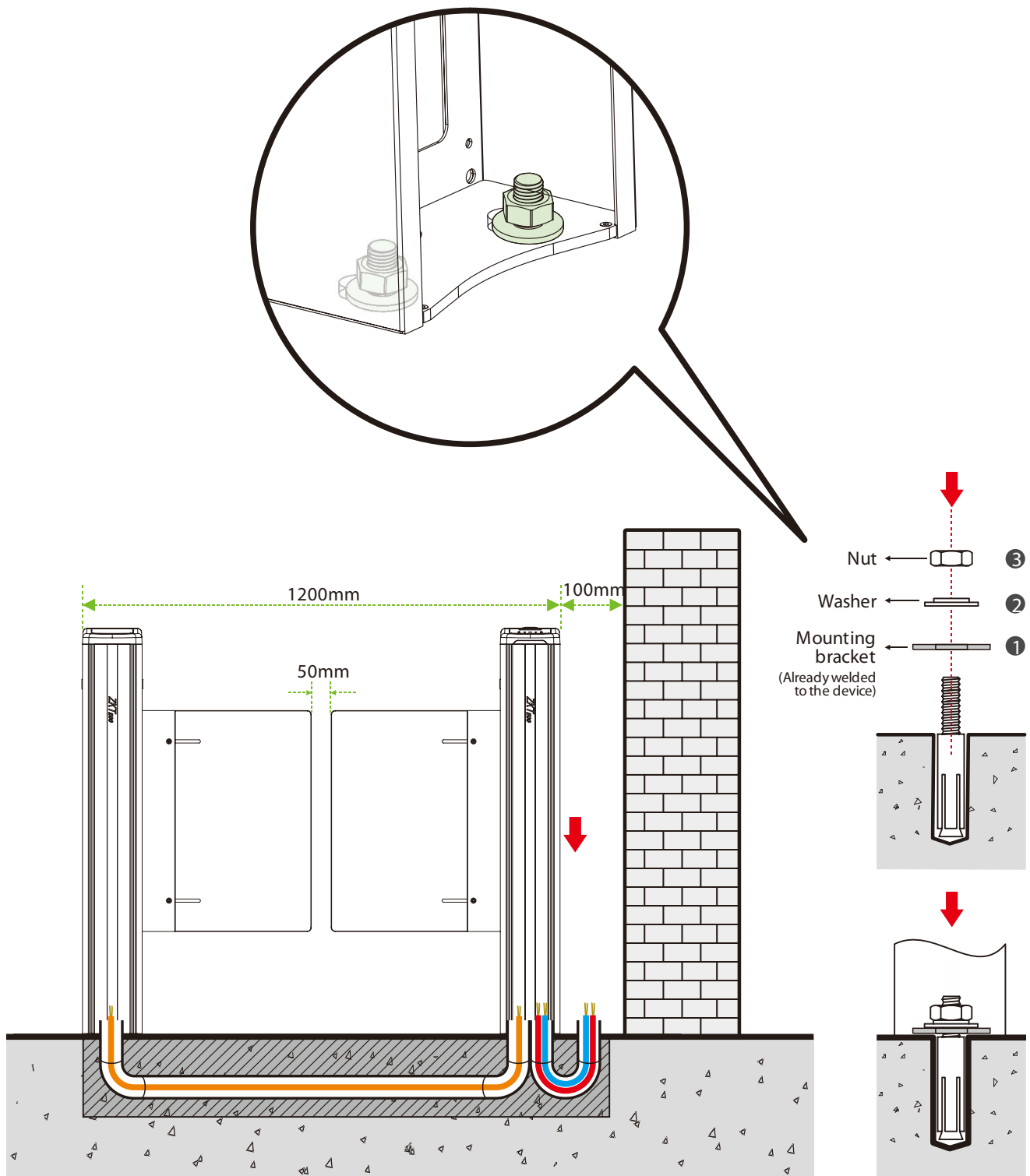
Position of the notch:



- ECU-panel connection wire
- Ethernet cable / Access control cable
- Power cable

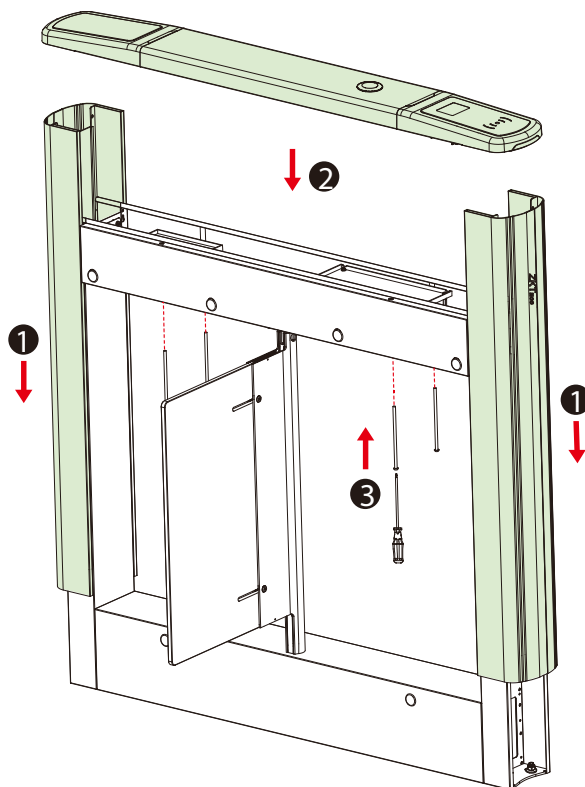
### Step 6 Fixed Cabinet

1. After laying the PVC pipe, place the cabinet alignment bolts back into the mounting position.
2. Then insert the four washers and nuts into the bolts one by one.
3. Tighten the nuts to hold the cabinet in place. Don't tighten it completely until after you're sure it won't move anymore. The finished result is shown below:



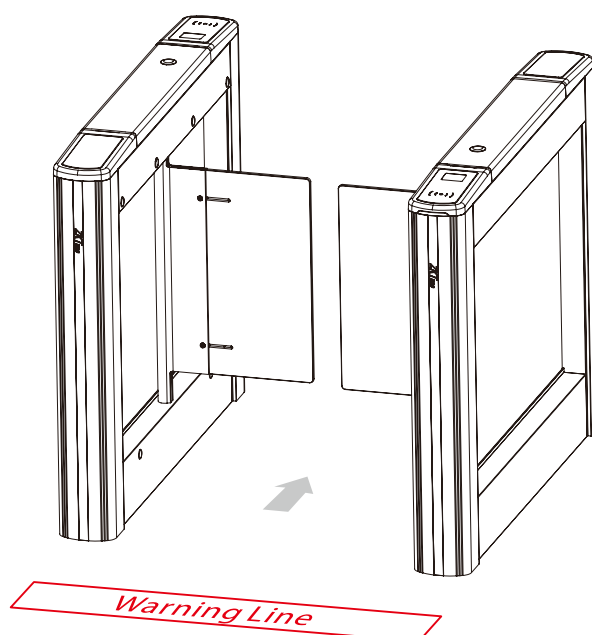
### Step 7 Close the Top Lid and Side Lid

Close the top lid and side lid, then secure the top lid with screws.



### Step 8 Marking the Warning Line

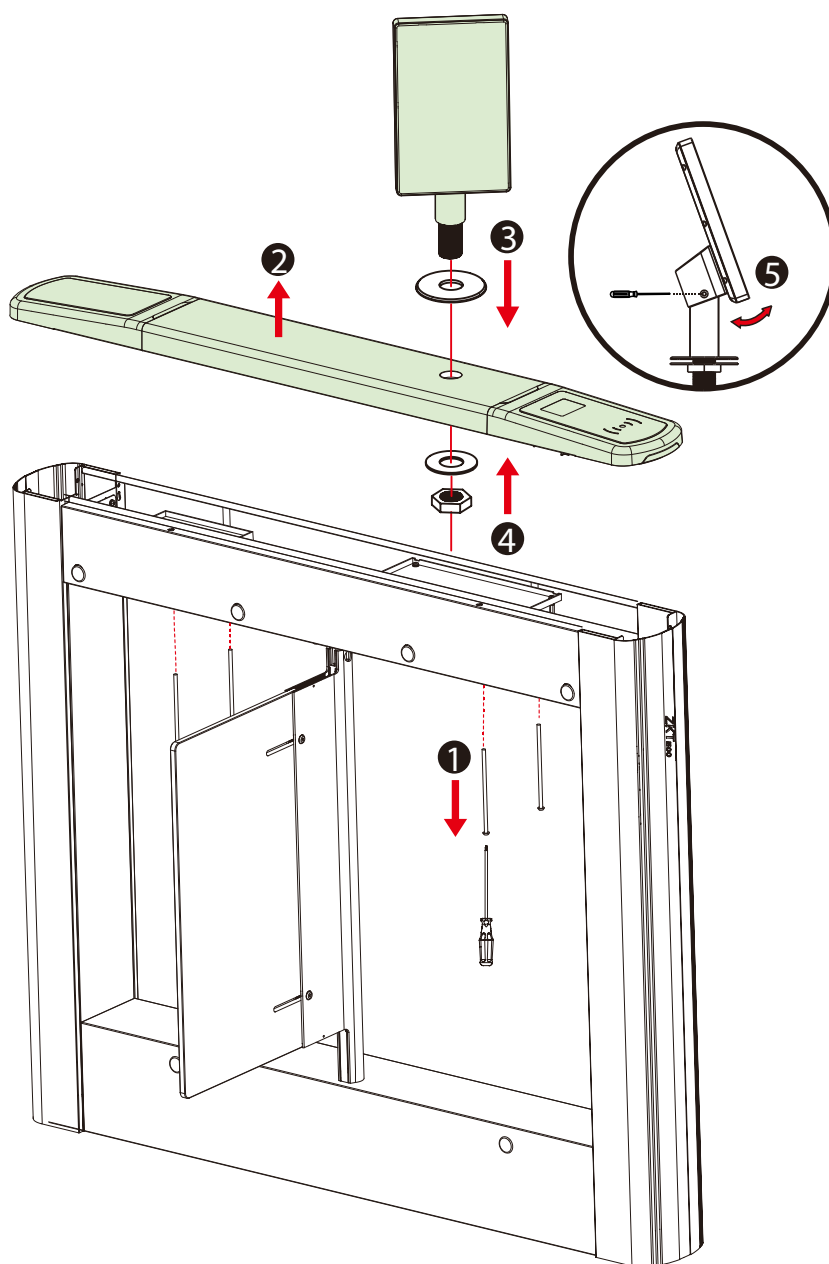
1. It is recommended that warning lines be marked on the ground and used to alert users.
2. A warning line can alert users to wait outside the line until the previous user completes the verification process and passes through the turnstile.



## 3.5 Accessory Installation

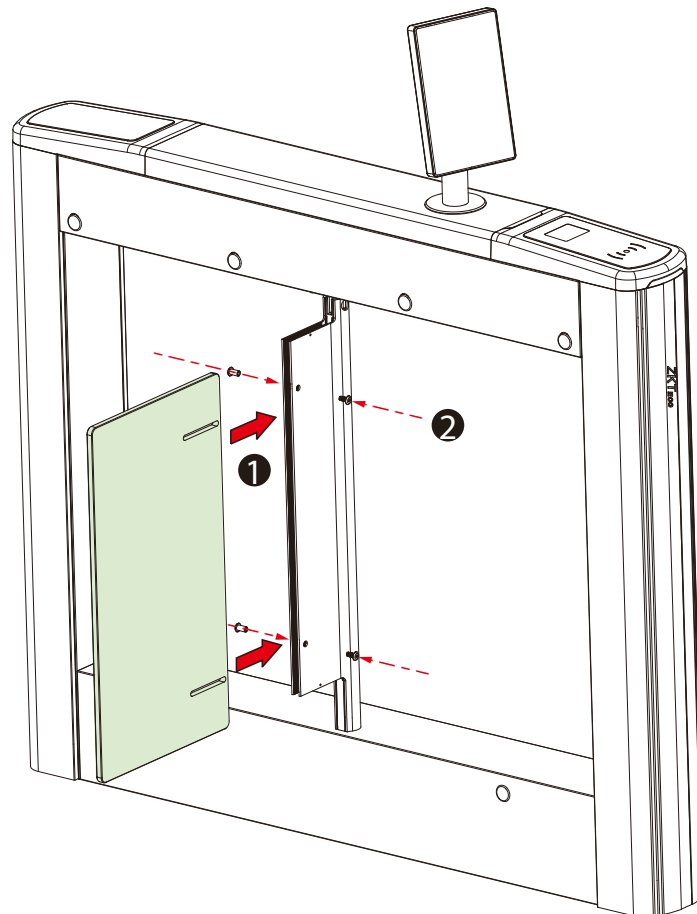
### 3.5.1 Facial Authentication Terminal Installation

1. Remove the top cover plate and route the unit's cables through the pre-drilled mounting holes.
2. Pass the mounting bracket through the mounting holes.
3. Place the gasket and nut and tighten the nut to secure the unit.
4. Adjust the unit to a suitable angle.



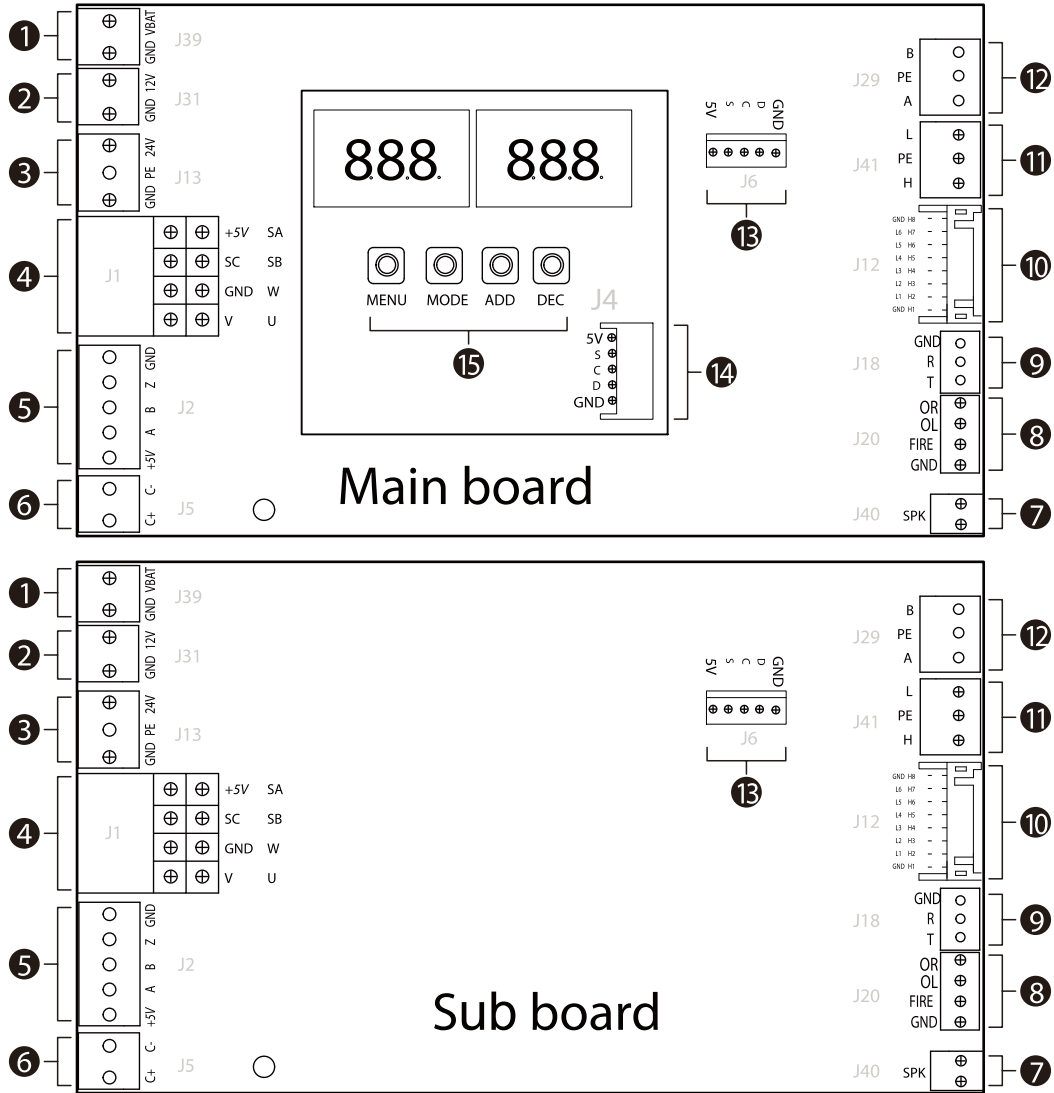
### 3.5.2 Swing Barrier Installation

1. Push the swing barrier into the clamping block.
2. Lock the swing barrier with the screws.



## 4 Terminal Description

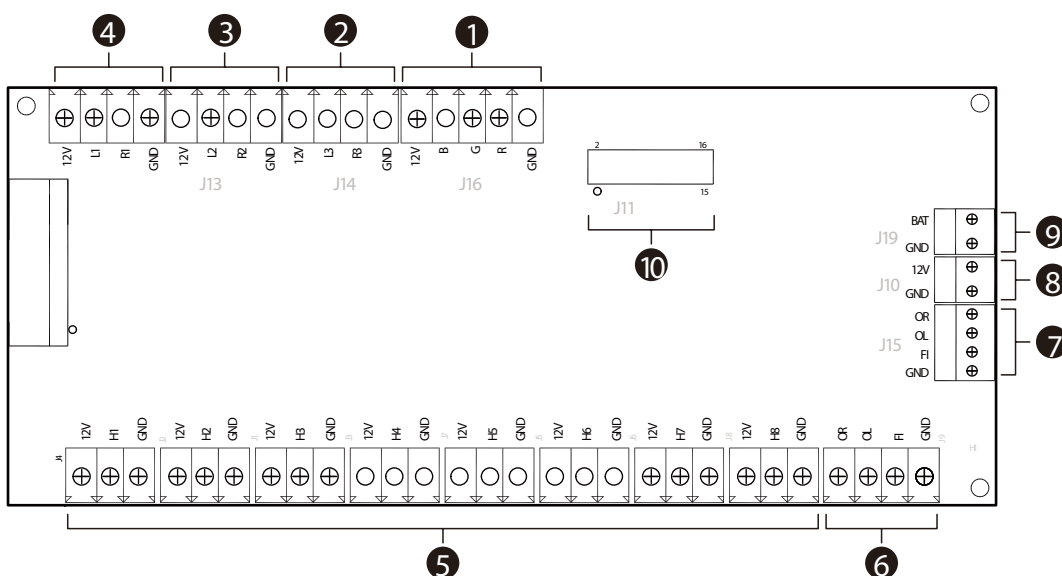
### 4.1 Main and Sub Board



NO.	Terminal	Descriptions
1	GND, VBAT	Fire panel interface
2	GND, 12V	12V DC power supply input
3	GND, PE, 24V	24V DC power supply input
4	+5V, SC, GND, V	Motor interface
	SA, SB, W, U	
5	+5V, A, B, Z, GND	Encoder interface
6	C+, C-	Clutch
7	SPK	Speaker

8	OR, OL, FIRE, GND	Fire Control Port, Right Open, Left Open
9	GND, R, T	RS232 communication
10	GND, L1-L6, GND; H1-H8	Interface board infrared communication interface
11	L, PE, H	CAN communication interface
12	B, PE, A	RS485 communication
13	5V, S, C, D, GND	Keypad interface
14	5V, S, C, D, GND	Keypad interface
15	MENU, MODE, ADD, DEC	Control buttons for setting menu parameters

## 4.2 IR Sensor Board

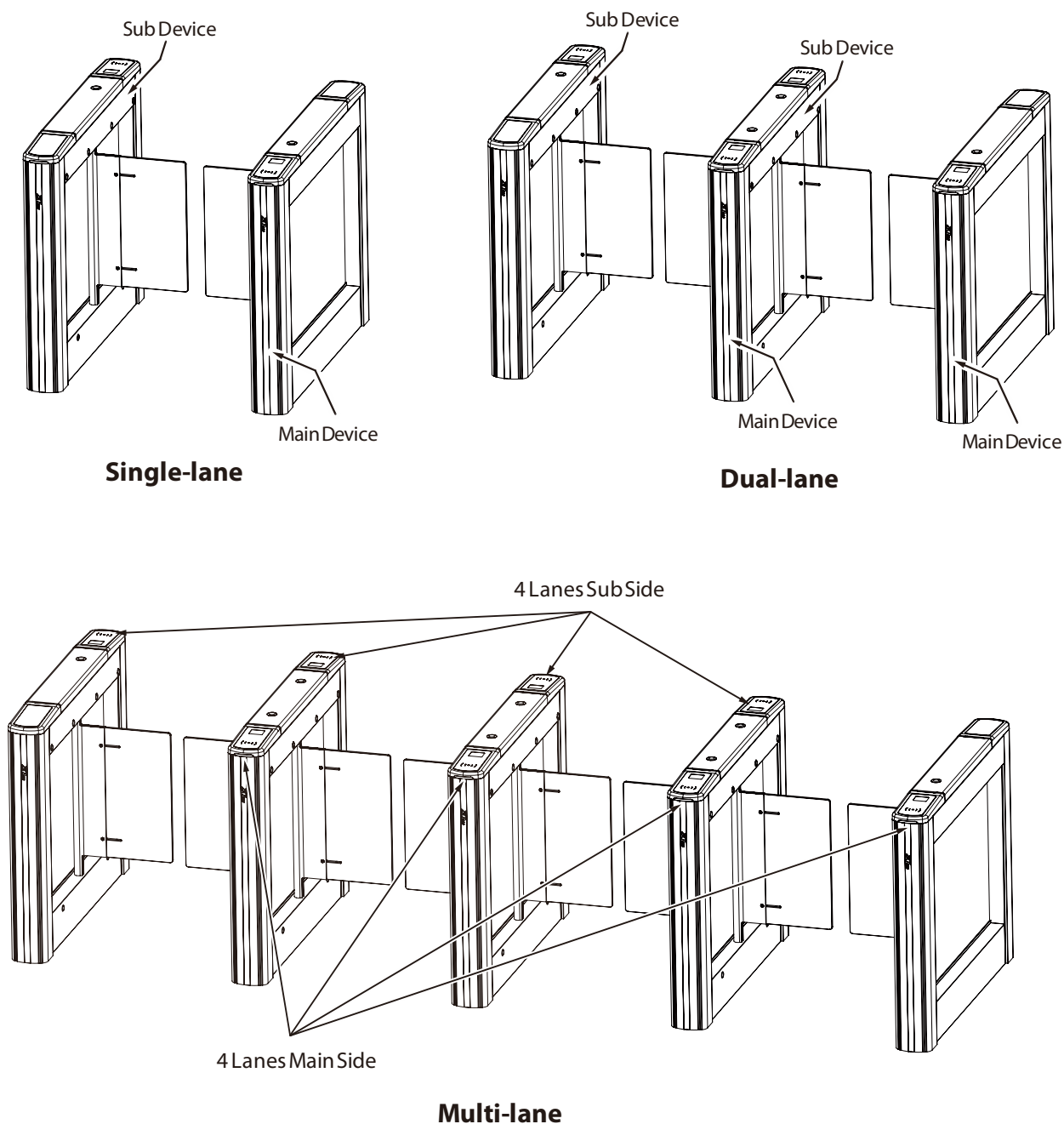


NO.	Terminal	Descriptions
1	12V, B, G, R,GND	Wing arm light bar interface
2	12V, L3, R3, GND	Top light interface
3	12V, L2, R2, GND	Top light interface
4	12V, L1, R1, GND	Top light interface
5	12V, H1-8, GND	Infrared sensor interface
6	OR, OL, FI, GND	External fire port
7	OR, OL, FI, GND	Alarm, fire opening port
8	12V, GND	12V DC power supply input
9	BAT, GND	Backup firefighting power interface
10	J11	Main board communication interface

## 5 Wiring Instructions

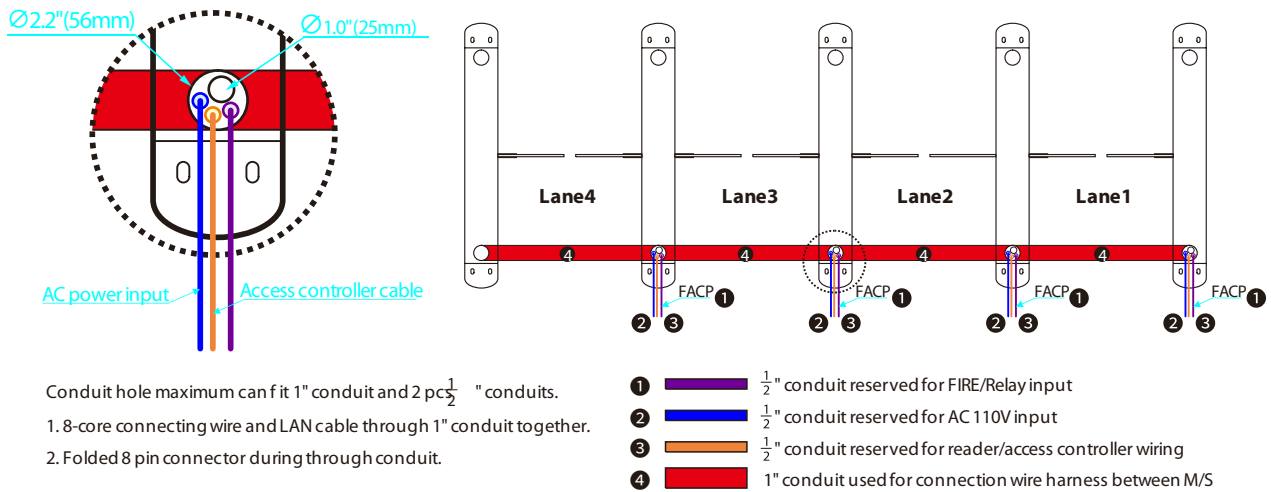
### 5.1 Main-sub Location

The positions of the main and sub corresponding to single-lane, dual-lane and multi-lane are shown in the figure below.



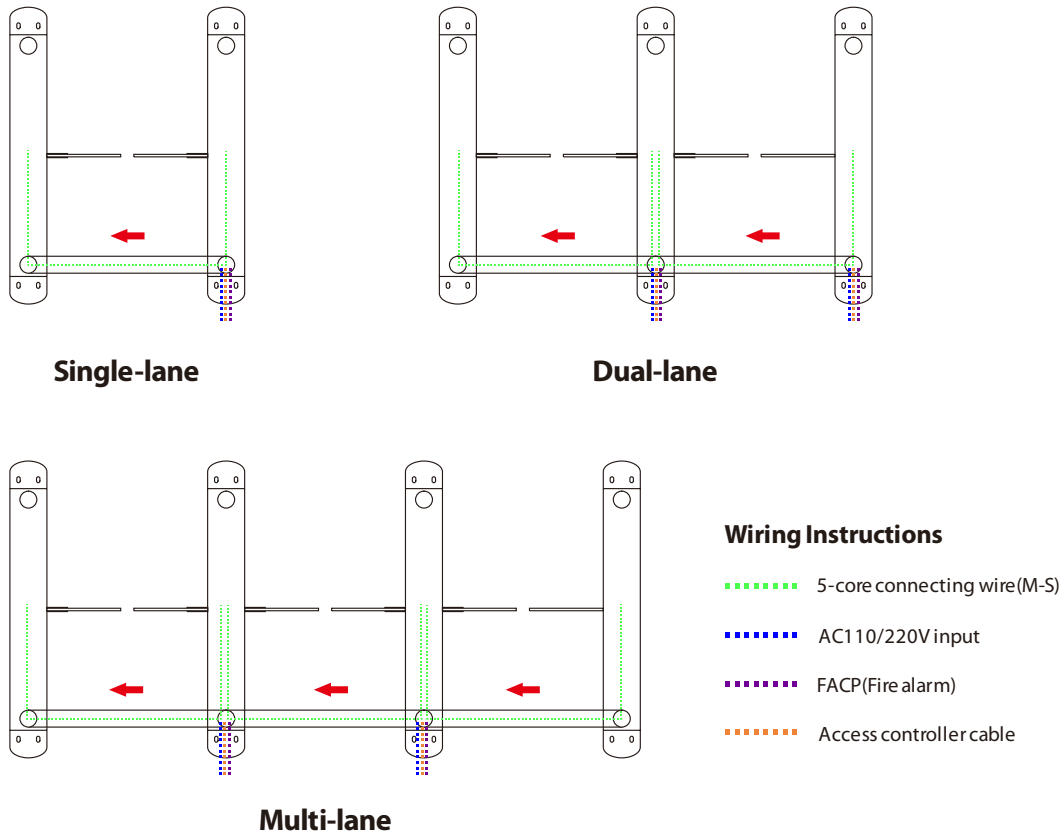
## 5.2 Slotting Position

For the different channels, the slotted locations are shown below.



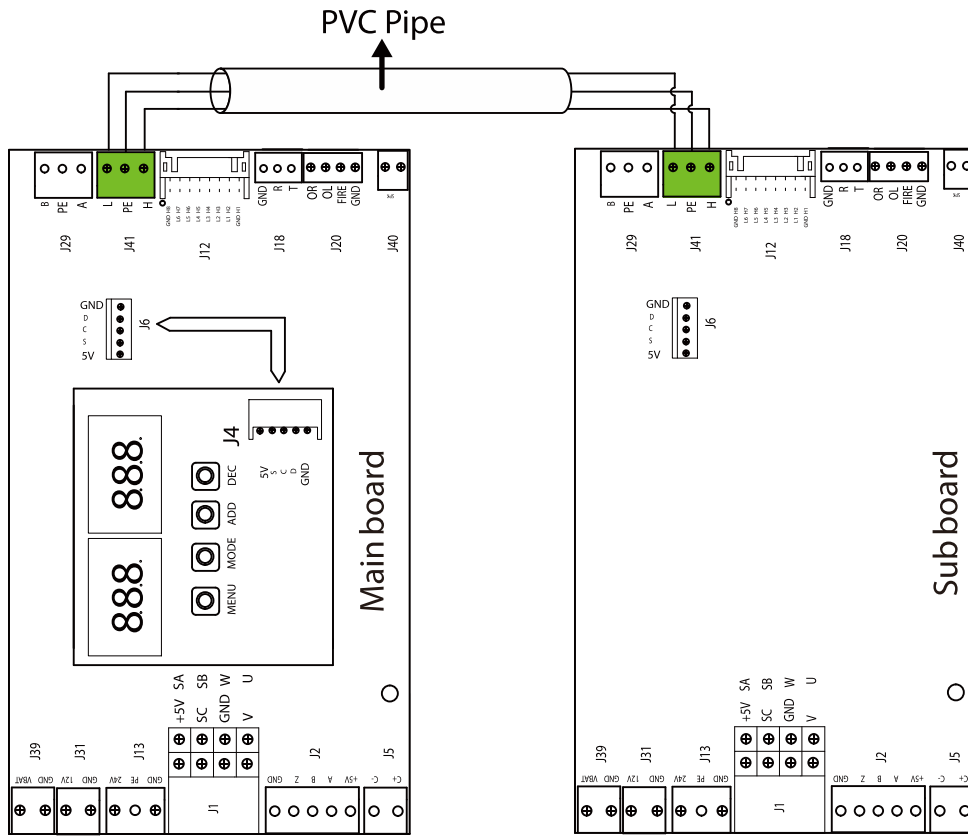
## 5.3 Wiring Methods

The wiring principle is to connect the main device to the sub device and communicate via the ECU-panel connection wire. Each main device is then powered individually. The following diagram shows how the different channels are wired.



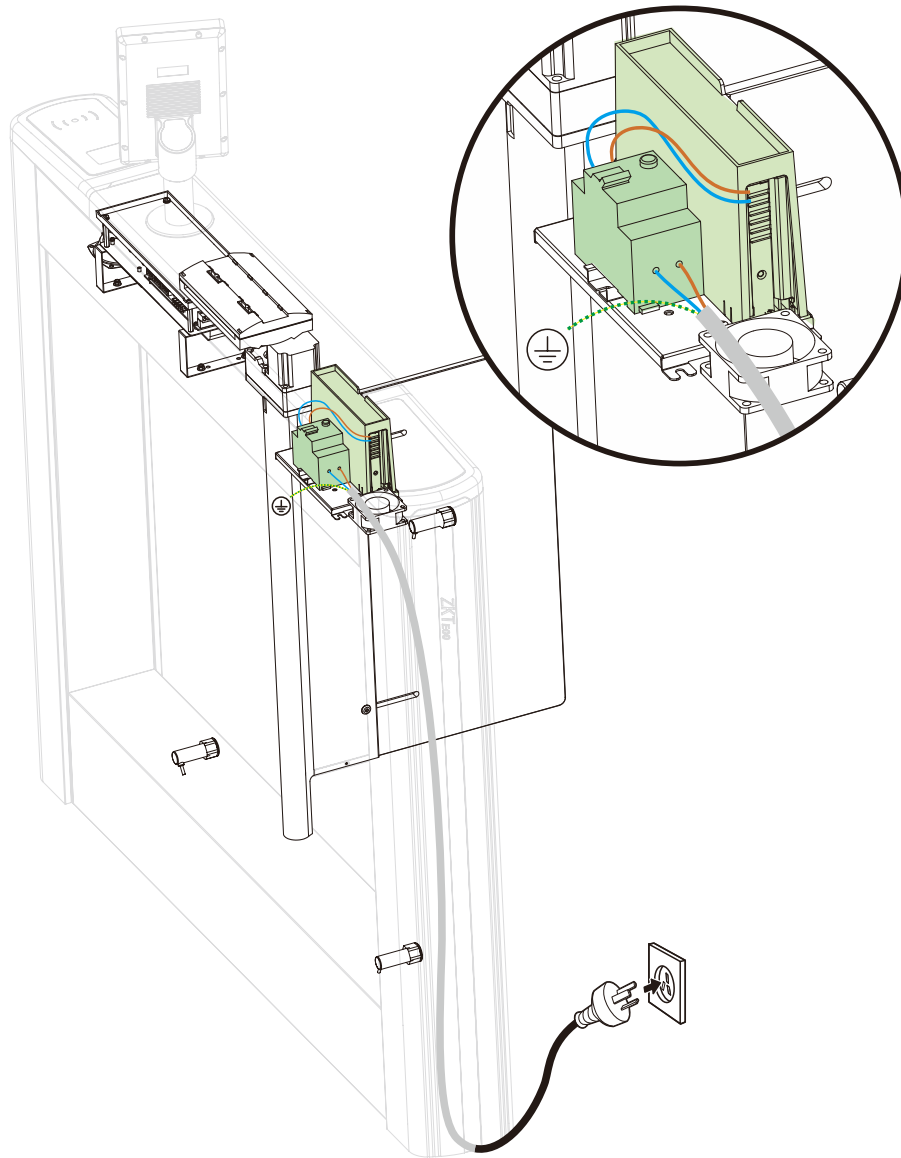
### 5.4 Main and Sub Connection Cable

Pass the Main and sub connecting wires through the PVC tubing and then plug them into the J41 ports respectively to communicate as shown below.

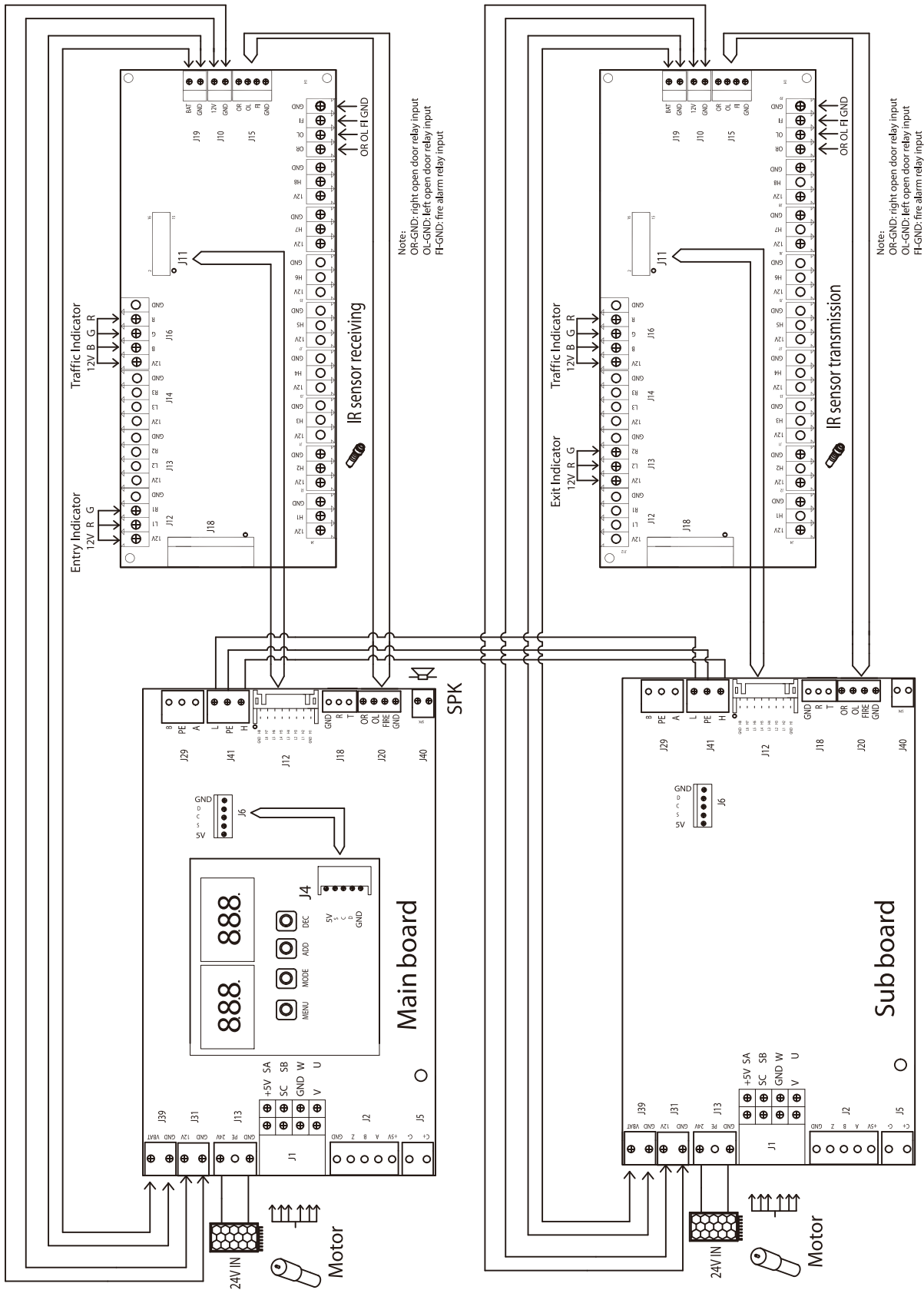


### 5.5 Power and Air Switch Wiring

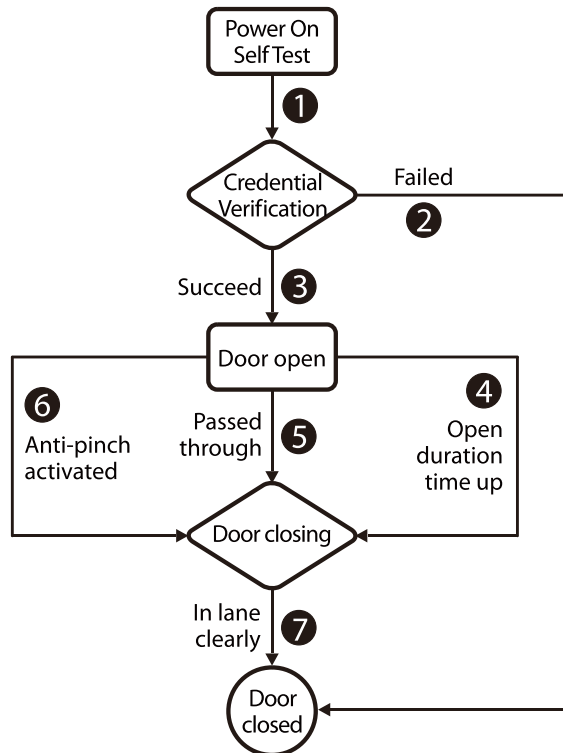
120VAC and 240VAC primary power must be hard wired in place (Note: must be grounded). It is strongly recommended that a licensed electrician perform this procedure in accordance with applicable local codes.



## 5.6 System Wiring Diagram



## 6 Operation Process

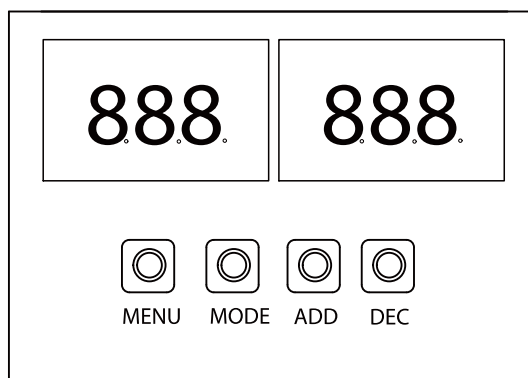


### 1. POST (Power On Self Test)

When powering up the unit, wait 30 seconds for the system to perform a POST (Power On Self Test) procedure. If no problems are detected, the unit will operate normally. If a fault is detected, the system will display a relevant message on the LCD display so that the user can quickly understand and solve the problem. (Reference [5.5 Power and air switch wiring](#) for connecting the air switch and power supply.)

### 2. Credential Verification

After the unit's power on self test is complete, you can test the door opening by pressing the **ADD/DEC** button on the motherboard.



When the user presses the **ADD/ DEC** button on the main board, it is equivalent to recognizing a valid card. The LCD display will show success and a buzzer will give a positive audible indication to the pedestrian that it has been successfully validated. The card reader then sends a signal to the access controller requesting permission to pass through the channel. The access controller will send a signal to the revolving door control panel. After receiving the signal from the card reader and the Infrared Sensor, the Turnstile Control Board will send valid control signals to the servo motor driver.

### 1) Verification Success

When the verification is successful, the door is opened.

### 2) Validation Failure

When verification fails, the door remains closed.

**Note:** At this time, if the system is in forbidden passing mode, the mode indicator light will turn red, and the Turnstile Control Board will not accept signals of card.

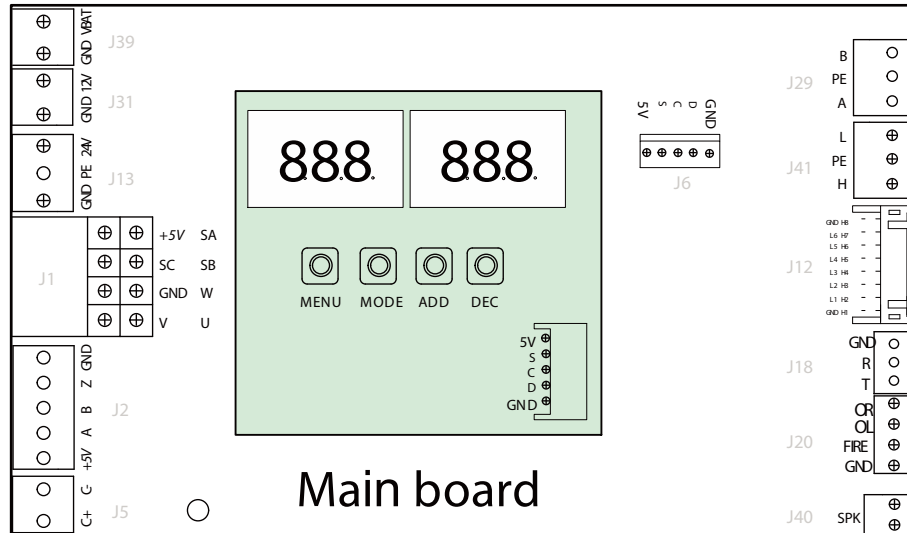
### 3. Passed Through

After the passenger passes the channel according to the opening direction of the swing arm, the Infrared Sensor will keep detecting the movement of the pedestrian throughout the passage and continue to deliver signals to the Turnstile Control Board until the pedestrian passes through the passage.

If the pedestrian enters without ID or an invalid card, the system will prompt an audible alarm. The alarm signal will not be canceled until the passenger retreats from the passage. The pedestrian can pass through the passage only after a valid card is successfully verified.

## 7 Machine Operation

### 7.1 Operation Buttons Description



There are 4 keys on the main motor driving controller, "MENU", "MODE", "ADD" and "DEC".

#### Operation Buttons Description:

- **MENU:** Used to access the Settings menu and confirm modified values
- **MODE:** Returns to the previous menu and cancels the current operation.
- **ADD:** Navigate to the upper menu item and increase the value.
- **DEC:** Navigate to the lower menu item and decrease the value.

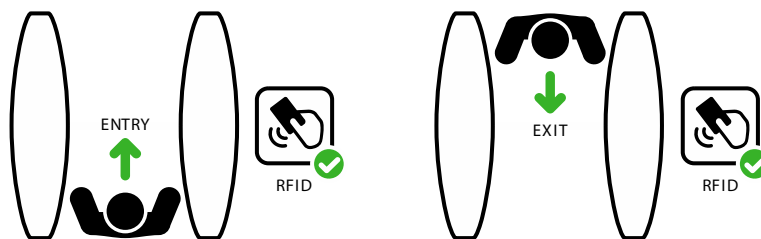
### 7.2 Menu Parameter Settings

#### 01EXXX : Display Mode

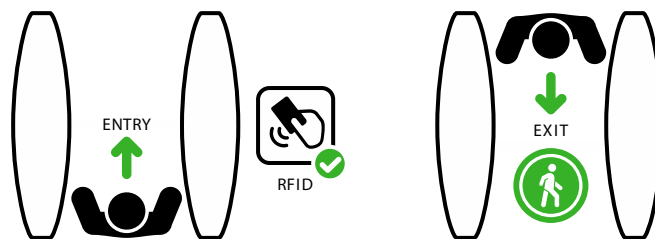
- **01E000:** Displays current position of the gate
- **01E001:** Infrared input signal
- **01E002:** Controls input signal
- **01E003:** Test mode (the digital LED displays "---" in the test mode)
- **01E004:** Version number

#### 02EXXX : Device Mode

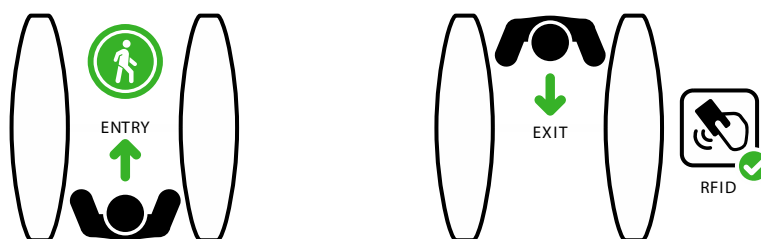
- **02E001:** Entry & Exit: access requires verification (Default)



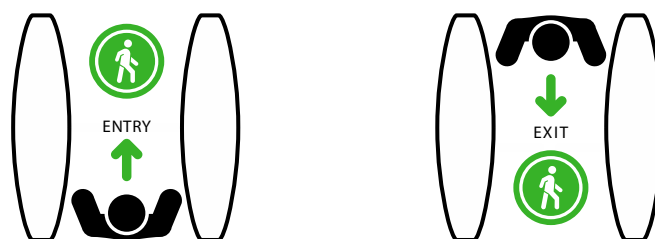
- **02E002:** Entry: access requires verification, Exit: free



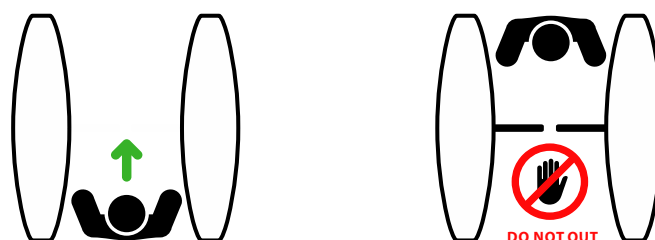
- **02E003:** Entry: free, Exit: access requires verification



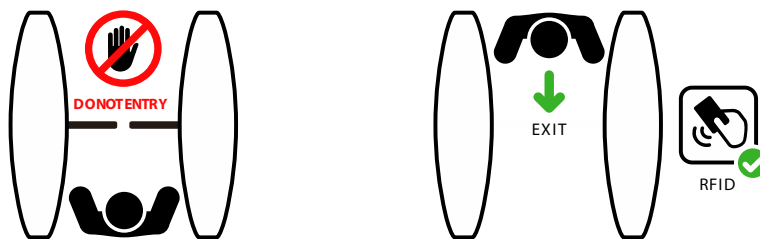
- **02E004:** Entry & Exit: free



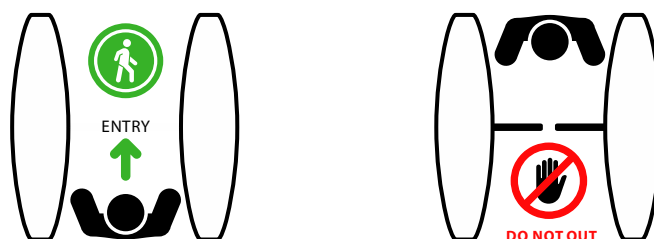
- **02E005:** Entry: free, Exit: prohibited



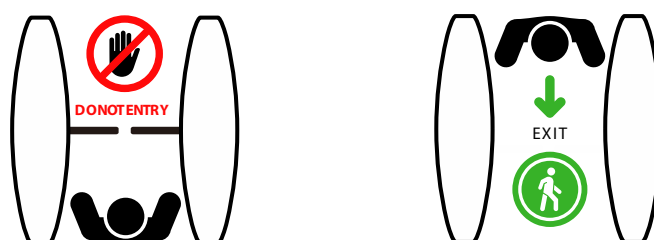
- **02E006:** Entry: prohibited, Exit: access requires verification



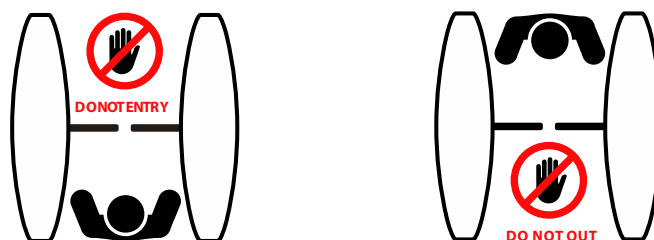
- **02E007:** Entry: free, Exit: prohibited



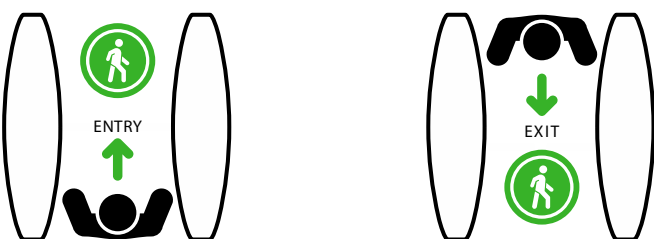
- **02E008:** Entry: prohibited, Exit: free



- **02E009:** Entry & Exit: prohibited

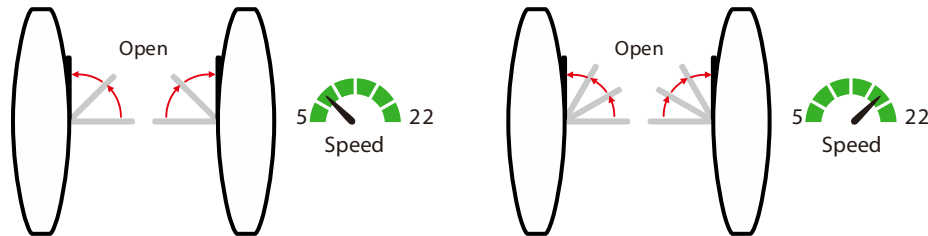


- **02E010:** Entry & Exit: free



### 03EXXX : Gate Opening Speed

To adjust the gate opening speed, you can set a larger number for a faster opening. The Gate Opening Speed can be configured between **5** and **22**, with a default value of **18**.



### 04EXXX : Gate Opening Deceleration Distance

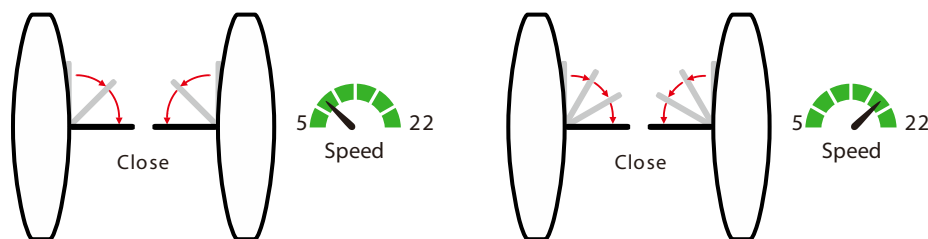
A larger number increases the deceleration time, enhancing the stability of the wing arm operation. The Gate Opening Deceleration Distance can be set between **0** and **50**, with a default value of **10**.

### 05EXXX : Gate Opening Compensation Speed

This setting is used when the wing arm cannot fully open or shakes during operation. A larger number results in faster compensation speed. The Gate Opening Compensation Speed can be set between **0** and **50**, with a default value of **12**.

### 06EXXX : Gate Closing Speed

To adjust the gate closing speed, you can set a larger number for a faster closing. The Gate Closing Speed can be configured between **5** and **22**, with a default value of **18**.



### 07EXXX : Gate Closing Deceleration Distance

A larger number increases the deceleration time, enhancing the stability of the wing arm operation. The Gate Closing Deceleration Distance can be set between **0** and **50**, with a default value of **10**.

### 08EXXX : Gate Closing Compensation Speed

This setting is used when the wing arm cannot fully close or shakes during operation. A larger number results in faster compensation speed. The Gate Closing Compensation Speed can be set between **0** and **50**, with a default value of **12**.

### 09EXXX : Main and Sub Settings

This setting is used to set the main and sub device.

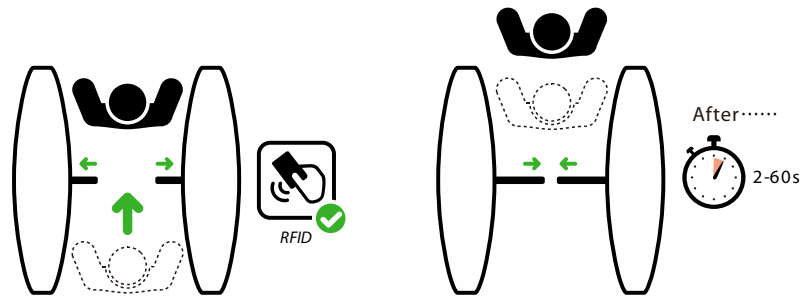
- **09E000** : Main device
- **09E001** : Sub device (Default)

### 10EXXX : RS485 Address

It can be set between **0** to **254** and the default value is **0**.

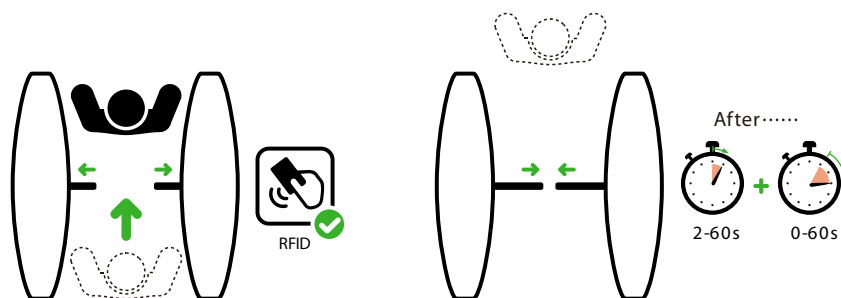
### 11EXXX : Open Duration Time

The valid time period after a successful verification can be configured. Once the set time is reached, the gate will automatically close. The longer the number set, the longer the valid time. The valid value ranges from **2** to **60** seconds, with a default value of **5** seconds.



### 12EXXX : Gate Closing Delay Time

Set the delay time of gate closing after passing. The valid value for gate closing delay time can be set between **0** to **60** seconds and the default value is **0** seconds.



### 13EXXX : In Place Position Adjustment

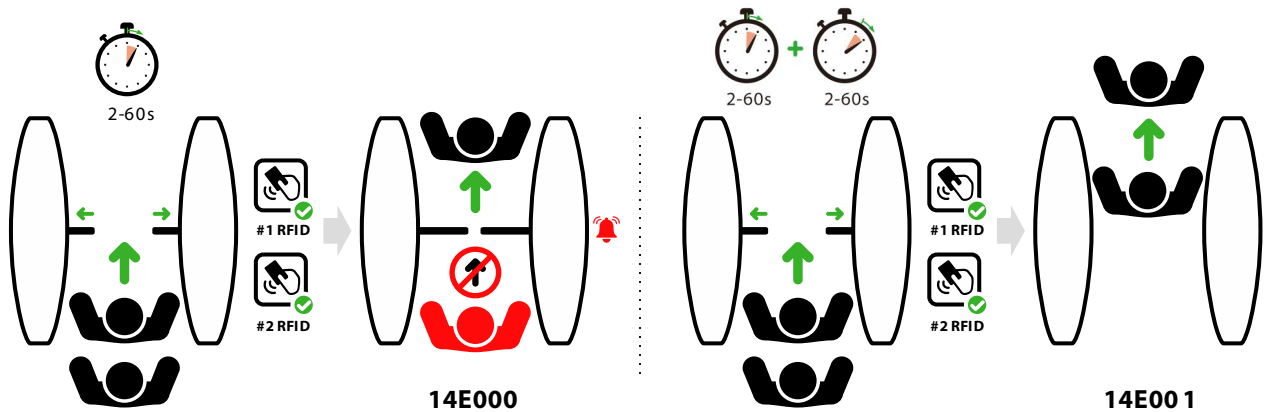
This setting is used to adjust the wing arm to close in place/open in place. **Note:** The wing arm needs to be in the corresponding position during commissioning.

- **13E001** : Wing arm close in place adjustment
- **13E002** : Right in place adjustment
- **13E003** : Left in place adjustment

### 14EXXX : Gate Opening Memory

When more than two legal access signals are given at the same time (including the same direction and the opposite direction), the system will remember all pass requests and complete each pass in turn.

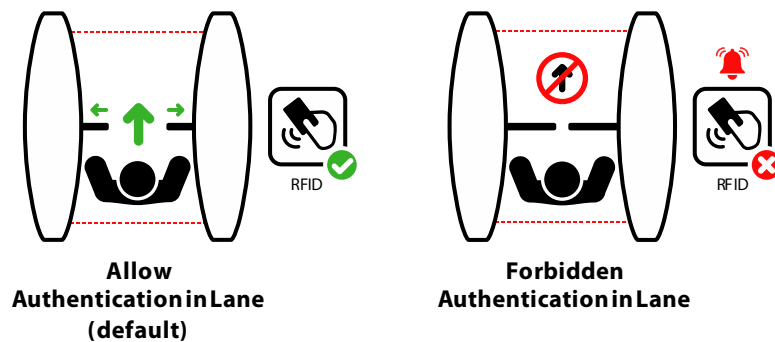
- **14E000:** Close (Default)
- **14E001:** Open



### 15EXXX : Authentication in Lane

It allows pedestrian verification during the IR sensor triggered.

- **15E000:** Allow (Default)
- **15E001:** Forbidden



### 16EXXX : Volume Setting

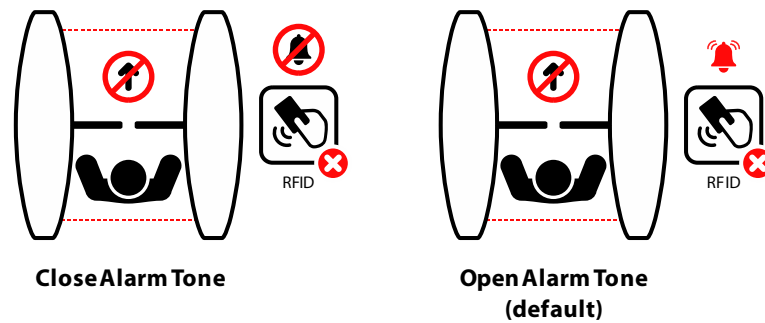
Volume Setting is used for adjusting the volume of the device. The larger the number is set, the louder the volume. The valid value for Volume Setting can be set between **1** to **100** and the default value is **70**.



**17EXXX : Close Alarm Tone**

When the alarm tone is turned off, the Turnstile will not emit an alarm tone when encountering an alarm situation. The following figure shows an example of the prohibition of authentication in lane:

- **17E000:** Close
- **17E001:** Open (Default)

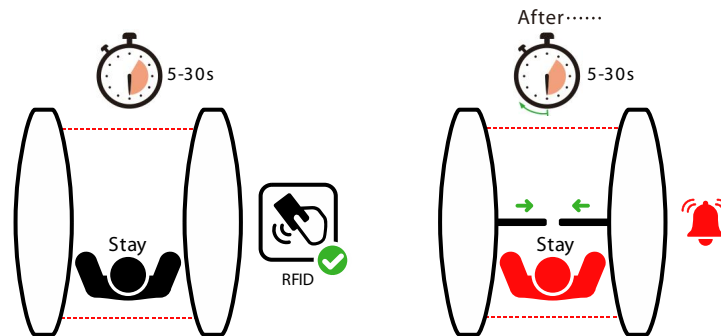


**18EXXX : Light Mode**

0 to 10 Light effect, 1 to 10 Reserved.

**19EXXX : Stay Duration Time**

Set the duration of stay in the channel after successful verification. After exceeding the set time, the device will alarm to indicate. The valid value for Stay Duration Time can be set between 5 to 30 seconds and the default value is 10 seconds.

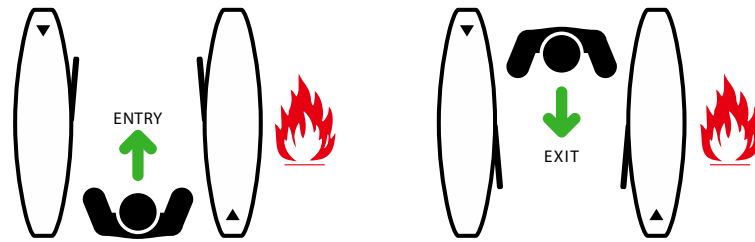


**20EXXX : Force Adjustment**

The larger the number, the greater the efficiency of the gate opening and closing force. The valid value for Force Adjustment can be set between 10 to 100 and the default value is 50.

**21EXXX : Fire Mode**

- **21E000:** Entry opening (Default)
- **21E001:** Exit opening



### 22EXXX : Clutch Start Angle

Set the angle at which the clutch starts. The larger the number, the bigger the angle. The valid value for Clutch Start Angle can be set between **0** to **99**, and the default value is **0**. 0 not locked, adapted to movements without clutch

### 23EXXX : Clutch Alarm Setting

- **23E000:** Automatic Unlock (Default)
- **23E001:** Authorized Unlock

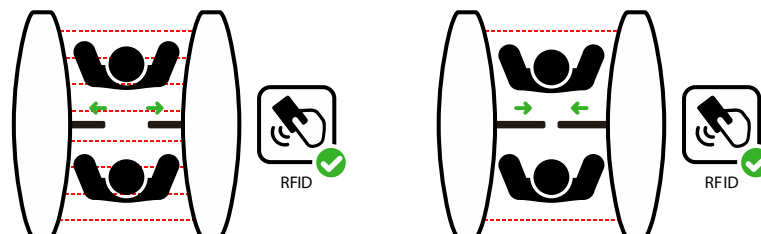
When the gate is unlocked in an unauthorized way, the clutch gets locked automatically.

### 24EXXX : Restore Factory Setting

- **24E001:** Restore factory settings
- **24E002:** Reboot

### 25EXXX : Anti-pinch Area Setting

- **25E000:** All Infrared anti-pinch (Default)
- **25E001:** First and last pair are not anti-pinch

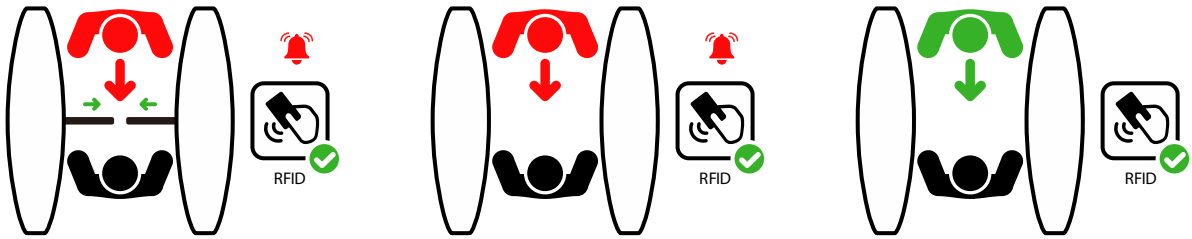


### 26EXXX : False Direction Entry

The False Direction Entry (**26E000**) will only be effective when the Anti-pinch Area Setting is set to (**25E001**).

- **26E000:** Close (For wing gates)
- **26E001:** Only alarm (Default)

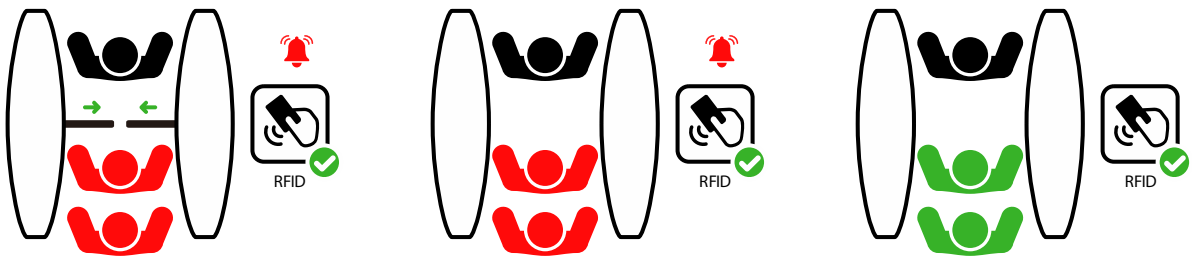
- **26E002:** No detection



**27EXXX : Anti-tailgate Setting**

The Anti-tailgate Setting (**27E000**) will only be effective when the Anti-pinch Area Setting is set to (**25E001**).

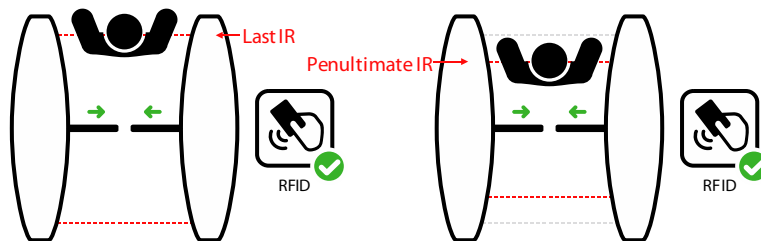
- **27E000:** Close (For wing gates)
- **27E001:** Only alarm (Default)
- **27E002:** No detection



**28EXXX : Gate Closing Position**

The Gate Closing Position (**28E001**) will only be effective when the Anti-pinch Area Setting is set to (**21E001**).

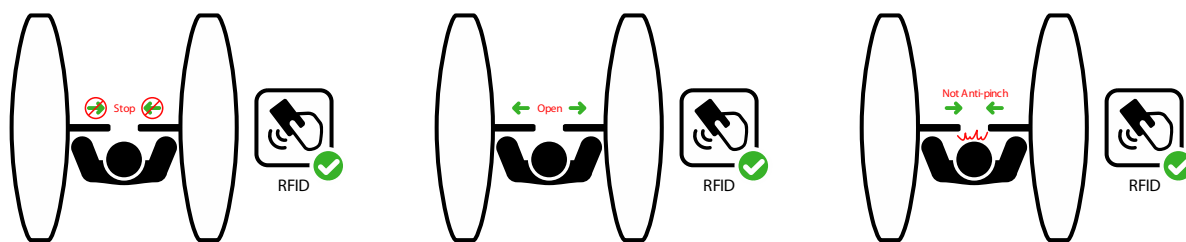
- **28E000:** Last pair (Default)
- **28E001:** Penultimate pair



**29EXXX : Anti-pinch Action Setting**

- **29E000:** Stop
- **29E001:** Open (Default)

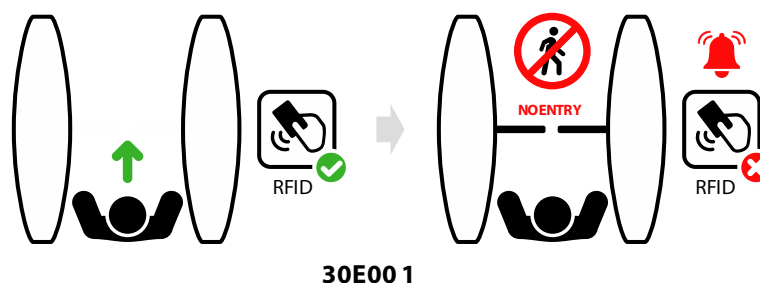
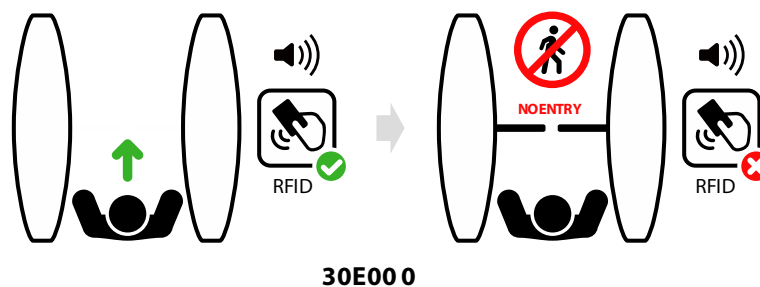
- **29E002:** Close the function



**30EXXX : Voice Switching**

Sets whether the device announces a voice or an alarm tone.

- **30E000:** Voice playback
- **30E001:** Alarm tone (Default)



**31EXXX : Movement Replacement**

- **31E000:** Swing Barrier A
- **31E001:** Swing Barrier B (Default)
- **31E002:** AA (Wing Gate)
- **31E003:** BB (Wing Gate)
- **31E004:** AB (Wing Gate)
- **31E005:** BA (Wing Gate)

**32EXXX : Swing arm selection**

- **32E000:** Normal Swing Arm (Default)
- **32E001:** High Swing Arm

### **33EXXX : Main Device Opening Compensation Speed**

A larger number results in faster compensation speed. The Main Device Compensation Speed can be set between **30** and **200**, with a default value of **100**.

### **34EXXX : Main Device Closing Compensation Speed**

A larger number results in faster compensation speed. The Main Device Closing Compensation Speed can be set between **30** and **200**, with a default value of **100**.

### **35EXXX : New and Old Motherboards**

The New and Old Motherboards can be set between **30** and **200**, with a default value of **102**.

### **36EXXX : Right Direction Voice**

Selects the right direction voice, the setting range lies between **0** to **21**, and the default value is **0**.

### **37EXXX : Left Direction Voice**

Selects the left direction voice, the setting range lies between **0** to **21**, and the default value is **17**.

### **38EXXX : Locking force adjustment**

Valid values are **1** to **10**, and the default value is **5**.

### **39EXXX : Motor Parameter Settings**

Valid values are **0** to **4**, and the default value is **3**.

### **40EXXX : Infrared Logarithm**

The Infrared Logarithm can be set between **1** and **8**, with a default value of **8**. Greater than **8** becomes **22**.

## 8 Maintenance

### 8.1 Chassis Maintenance

The chassis is made up of cold-rolled SPCC steel (GB700). If it is used for substantial period, then there may be rust stains on its surface. Regularly clean the surface with a clean cloth carefully. Coat the surface with anti-rust oil and do not cover the infrared sensor.

### 8.2 Movement Maintenance

Before doing maintenance, turn off the power. Open the door, wipe the surface dust, and apply lubricant for smooth movement.

### 8.3 Power Supply Maintenance

- **Switch off the power supply before maintenance.**
- **Check the power plug connection, if found loose, fix it properly.**
- **Do not change any connection position randomly.**
- **Check the external power supply insulation periodically.**
- **Do periodic check for any kind of leakage.**
- **Check if the technical parameters of interface are normal.**
- **Check the service life of the electronic components and replace accordingly.**

**Caution:** All the above-mentioned maintenance methods for swing barrier must be carried out by a professional technician, especially the movement and the electric control part. For ensuring operational safety, first switch off the power supply when the barrier is not in use. Perform the safety check on a weekly basis to ensure that the turnstile is safe and ready for user operation.

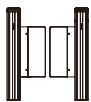







## 9 Troubleshooting

No.	Failure Descriptions	Analysis and Solution
1	The mode indicator light does not respond or the indication is incorrect.	Check that the control panel mode indicator wiring is correct or that the contact is poor.
2	After swiping the card, there is only a speed gate unlocked.	Check the mode setting of the main and sub devices and the 8-core, 2-core connection lines. See the wiring diagram for the specific connection circuit.
3	The barrier doesn't close when the opening delay time is ended.	Check to see if the opening delay time is too long or whether the IR sensor is covered.
4	When the gate is self-tested, the swing arm is not in the normal closing position!	In the process of self-test, there are obstacles, please remove the obstacles, restart the self-test after power-on!









## 10 Packing List

The package consists of the following items:

- **Saturn-S1000 Plus:**

	Saturn-S1000 Plus (Main and Sub)	2
	Power Cable	1
	Card	1
	Expansion Screw M12*100	8
	Washer	8
	Expansion Screw Washers	8
	Stainless Steel Maintenance Wipes	1
	Hex Wrench	1

● **Saturn-S1200 Plus:**

	Saturn-S1200 Plus	1
	Power Cable	1
	Card	1
	Expansion Screw M12*100	4
	Washer	4
	Expansion Screw Washers	4
	Stainless Steel Maintenance Wipes	1
	Hex Wrench	1

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