User Manual

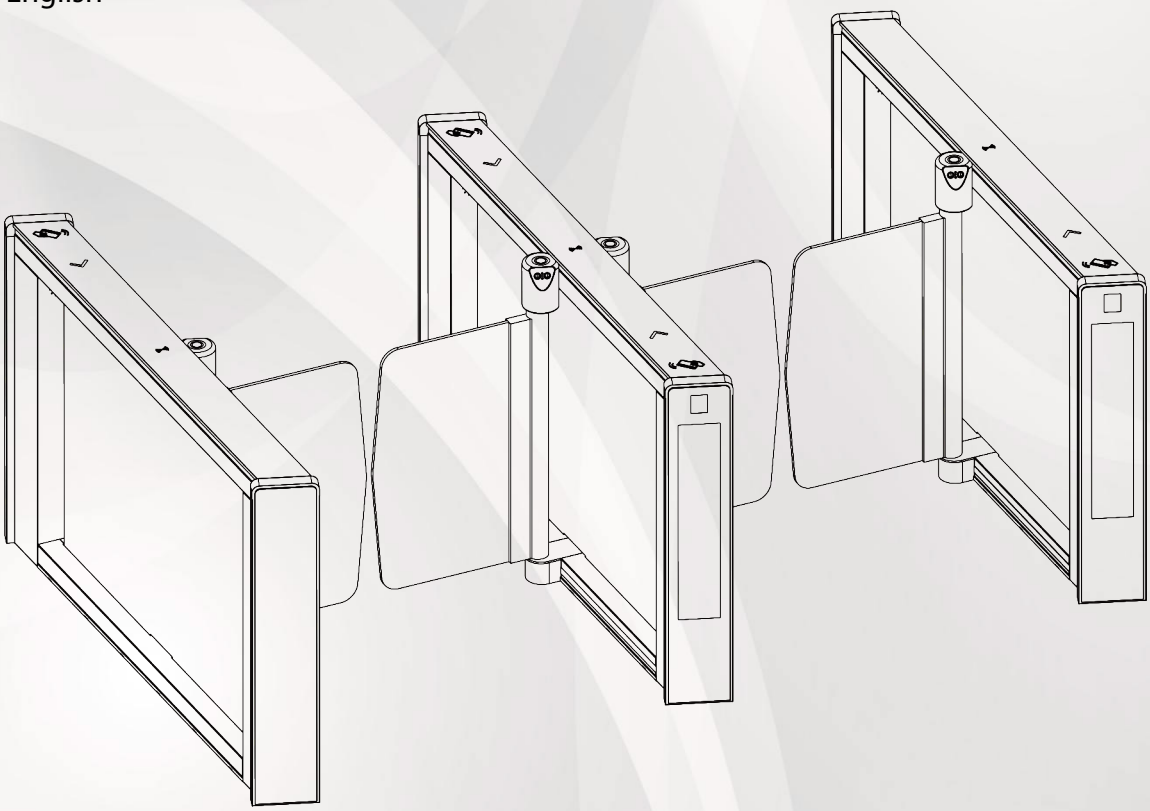
Saturn-S4000 Series

Applicable Model(s): Saturn-S4000, Saturn-S4200

Date: March 2026

Doc Version: 1.0

English



Trademark

ZKTeco is a registered trademark of ZKTeco. Other trademarks involved in this manual are owned by their respective owners.

Disclaimer

This manual contains information on the operation and maintenance of the ZKTeco equipment. The copyright in all the documents, drawings, etc. in relation to the ZKTeco supplied equipment vests in and is the property of ZKTeco. The contents hereof should not be used or shared by the receiver with any third party without express written permission of ZKTeco.

The contents of this manual must be read as a whole before starting the operation and maintenance of the supplied equipment. If any of the content(s) of the manual seems unclear or incomplete, please contact ZKTeco before starting the operation and maintenance of the said equipment.

It is an essential pre-requisite for the satisfactory operation and maintenance that the operating and maintenance personnel are fully familiar with the design and that the said personnel have received thorough training in operating and maintaining the machine/unit/equipment. It is further essential for the safe operation of the machine/unit/equipment that personnel has read, understood and followed the safety instructions contained in the manual.

In case of any conflict between terms and conditions of this manual and the contract specifications, drawings, instruction sheets or any other contract-related documents, the contract conditions/documents shall prevail. The contract specific conditions/documents shall apply in priority.

ZKTeco offers no warranty, guarantee or representation regarding the completeness of any information contained in this manual or any of the amendments made thereto. ZKTeco does not extend the warranty of any kind, including, without limitation, any warranty of design, merchantability or fitness for a particular purpose.

ZKTeco does not assume responsibility for any errors or omissions in the information or documents which are referenced by or linked to this manual. The entire risk as to the results and performance obtained from using the information is assumed by the user.

ZKTeco in no event shall be liable to the user or any third party for any incidental, consequential, indirect, special, or exemplary damages, including, without limitation, loss of business, loss of profits, business interruption, loss of business information or any pecuniary loss, arising out of, in connection with, or

relating to the use of the information contained in or referenced by this manual, even if ZKTeco has been advised of the possibility of such damages.

This manual and the information contained therein may include technical, other inaccuracies or typographical errors. ZKTeco periodically changes the information herein which will be incorporated into new additions/amendments to the manual. ZKTeco reserves the right to add, delete, amend or modify the information contained in the manual from time to time in the form of circulars, letters, notes, etc. for better operation and safety of the machine/unit/equipment. The said additions or amendments are meant for improvement /better operations of the machine/unit/equipment and such amendments shall not give any right to claim any compensation or damages under any circumstances.

ZKTeco shall in no way be responsible (I) in case the machine/unit/equipment malfunctions due to any non-compliance of the instructions contained in this manual (ii) in case of operation of the machine/unit/equipment beyond the rate limits (iii) in case of operation of the machine and equipment in conditions different from the prescribed conditions of the manual.

The product will be updated from time to time without prior notice. The latest operation procedures and relevant documents are available on http://www.zkteco.com

If there is any issue related to the product, please contact us.

ZKTeco Headquarters

Address ZKTeco Industrial Park, No. 32, Industrial Road,

Tangxia Town, Dongguan, China.

Phone +86 769 - 82109991

Fax +86 755 - 89602394

For business-related queries, please write to us at: sales@zkteco.com.

To know more about our global branches, visit www.zkteco.com.

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-S4000 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
	**Dangers:** Follow these safeguards to prevent serious injury or death.
	**Cautions:** 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.

Table of Contents

1 Overview

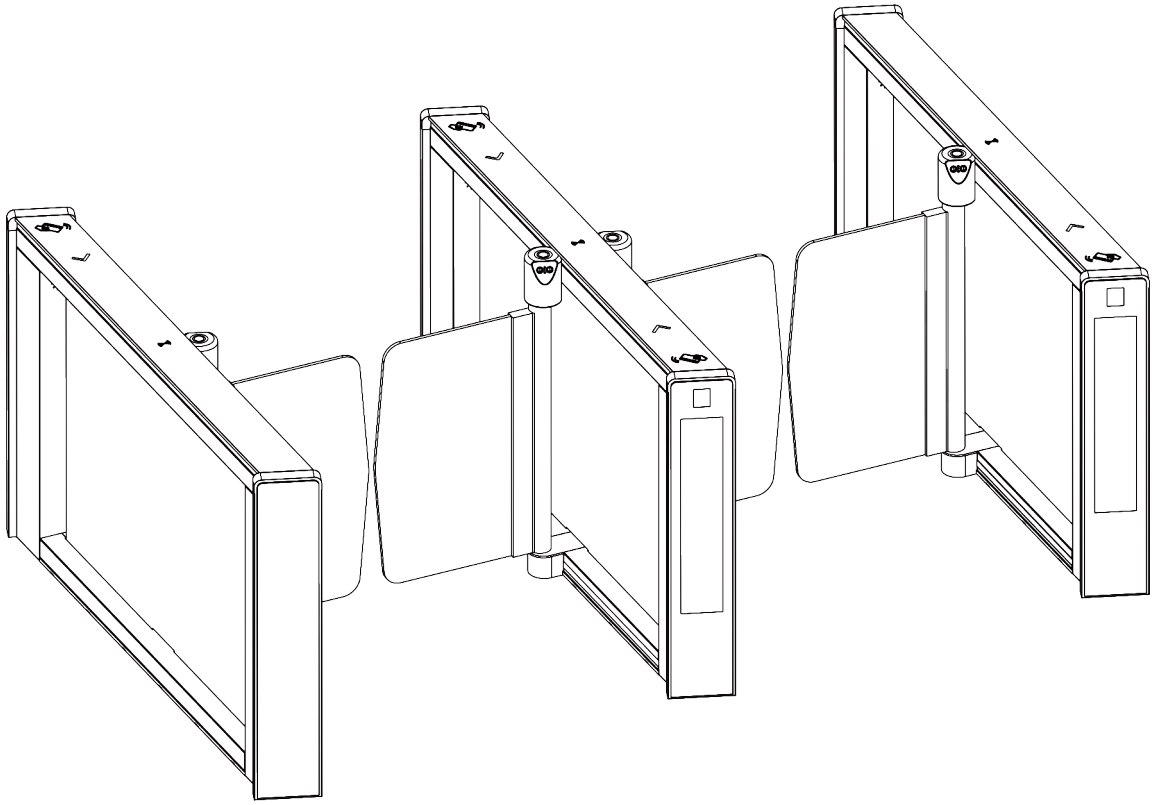
ZKTeco's Saturn-S4000 series redefines entrance control, fusing elegant industrial design with intelligent security via advanced dToF sensors and multi-modal biometric authentication.

Saturn-S4000 series is driven by DC brushless motors, delivering smooth and quiet swing barrier operation in just 0.3 to 0.6 seconds per movement. At its core, the 12 pieces dToF sensors enhances detection accuracy, providing robust anti-tailgating and anti-pinch protection.

Available in single-lane (S4000) and dual-lane (S4200) configurations, the series offers a standard lane width of 650mm and an optional 1,000mm wide lane width configuration to accommodate wheelchair users and trolleys for enhanced accessibility.

What makes the Saturn-S4000 series stands out is its versatile multi-modal biometrics authentication. User can choose under-mount RFID and fingerprint readers that preserve the tempered glass lid, or add contactless QR code verification for visitor and temporary access. When facial and palm authentication is required, simply mount the ZKTeco's Zophon facial recognition module on the motor post—no hardware replacement needed.

Additionally, the Saturn-S4000 series maximizes business value with its integrated 23.9-inch vertical dual LCD display. This full-color screen delivers promotional and branding content through vivid video and photo slideshow playback, all managed remotely via Wi-Fi using the ZKDigimax Screen Direct.



1.1 Key Features

- **Aesthetic and Reliability**

  The top cover is covered with a single piece of black tempered glass. This design resists daily wear while maintaining long-term operational stability.

- **User Experience**

  Tri-color LED indicators give clear status at a glance: blue for standby, green for entry, and red for barrier closing or alarm, ensuring smooth and intuitive passage..

- **Compact Core Drive**

  A 60mm-diameter core drive module frees up internal space, enabling tighter cabinet dimensions and slimmer gate profiles.

- **Front and Rear LCD Displays**

  The turnstile is equipped with dual LCD displays -- one on the front and one on the rear. A 23.9-inch vertical color LCD display seamlessly embedded in the Saturn-S4000 gate column transforms the lane into a dynamic digital media platform.

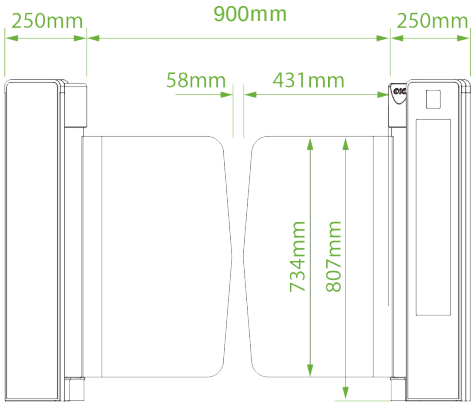
1.2 Specification

1.2.1 Appearance

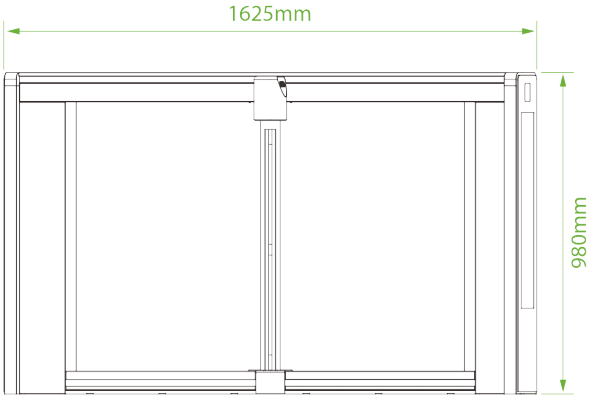
- **Saturn-S4000:**

Unit: mm

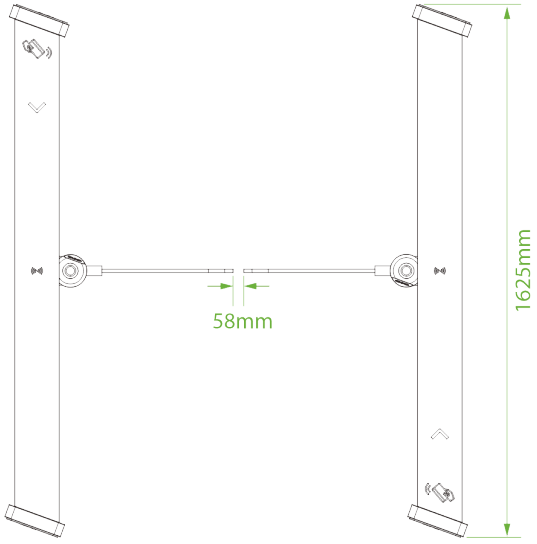
Front View



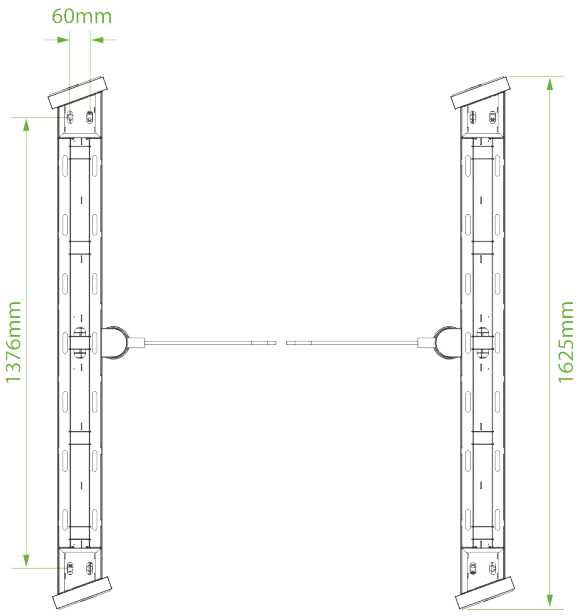
Side View



Top View



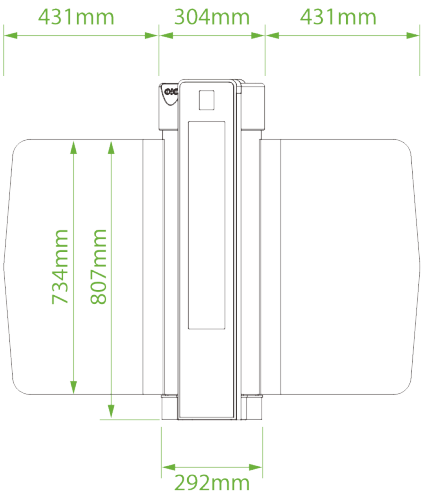
Bottom View



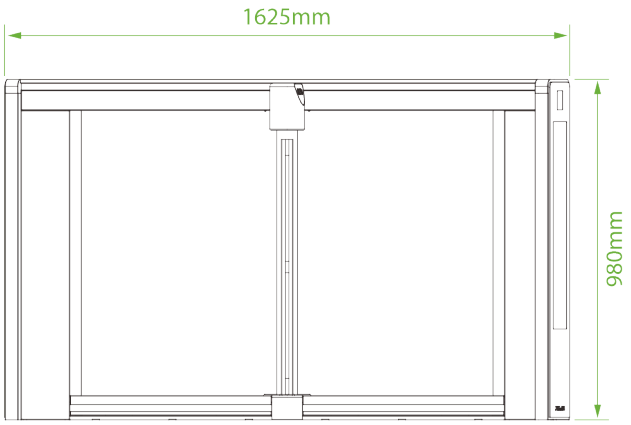
- **Saturn-S4200:**

Unit: mm

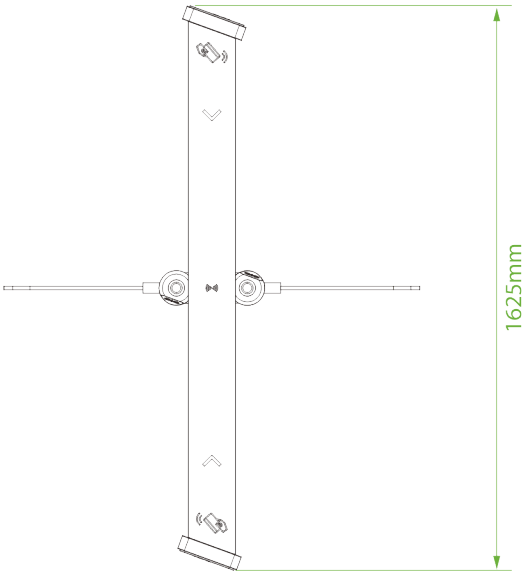
Front View



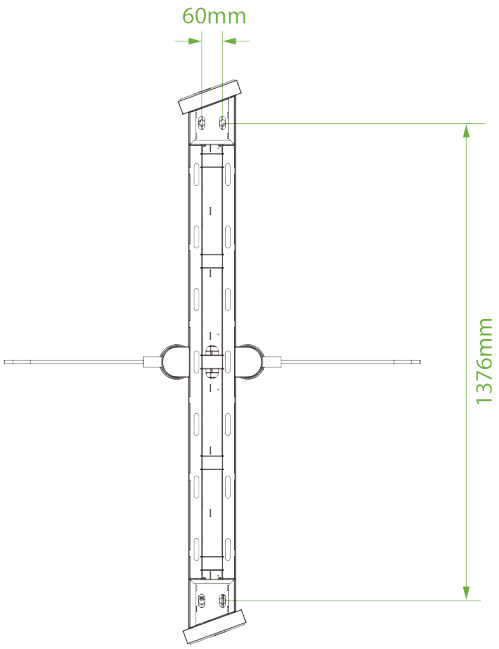
Side View



Top View



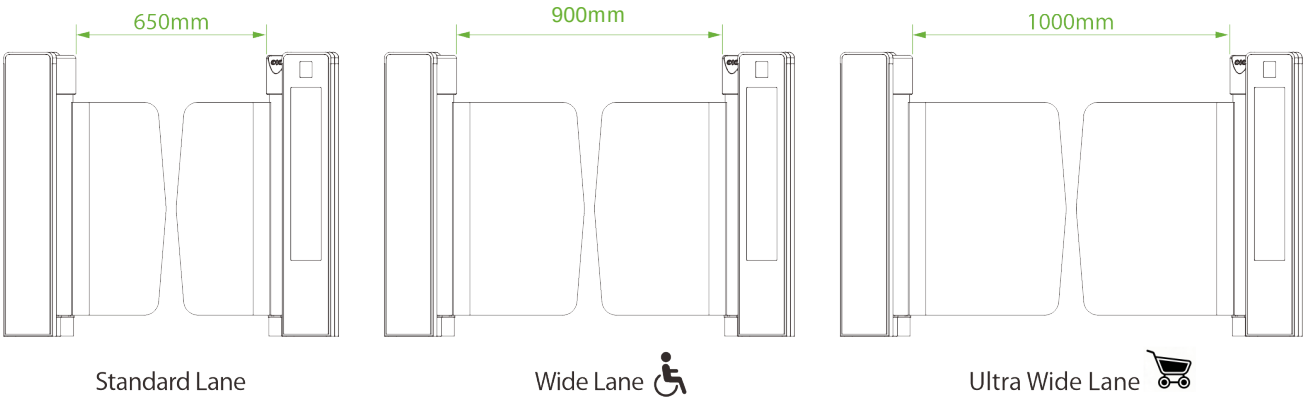
Bottom View



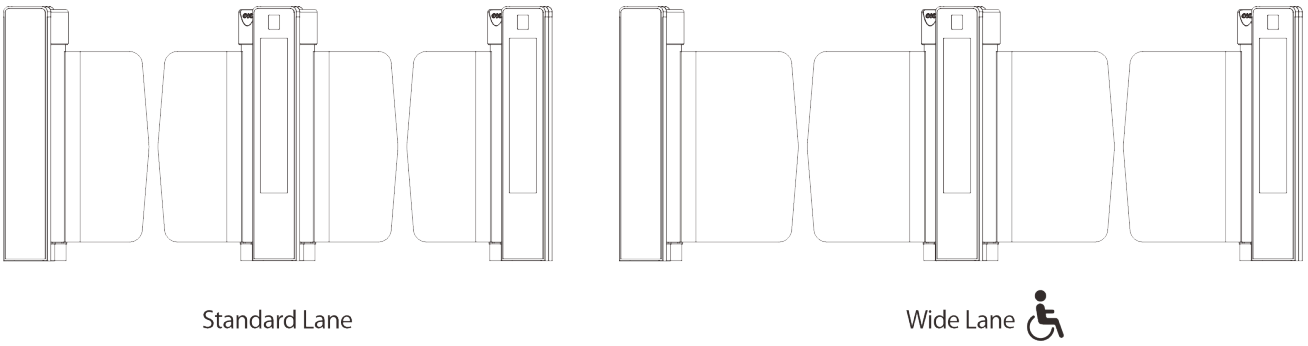
Swing Barriers Specifications

The Saturn-S4000 and Saturn-S4200 can be combined to form a single, dual or multi-lane system, allowing the user to select the appropriate swing arm size according to actual needs. It should be noted that Saturn-S4200 needs to be used in conjunction with Saturn-S4000.

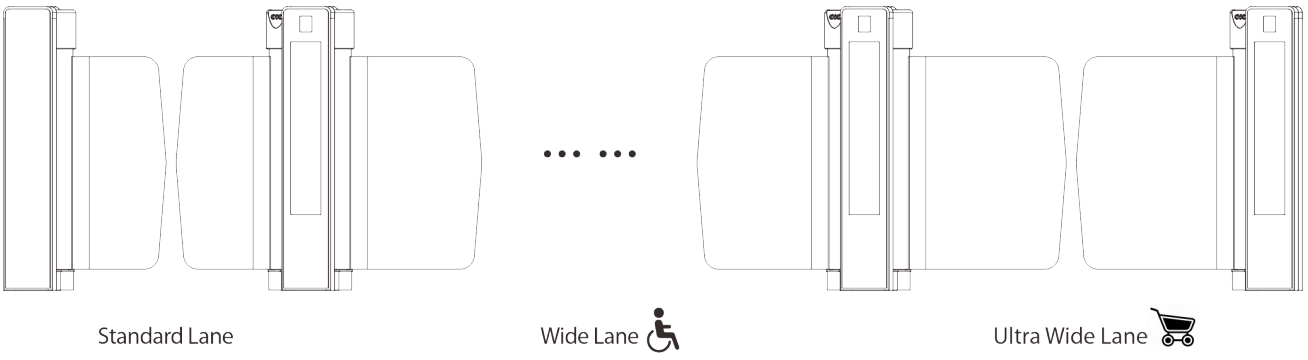
1) Single-lane



2) Dual-lane

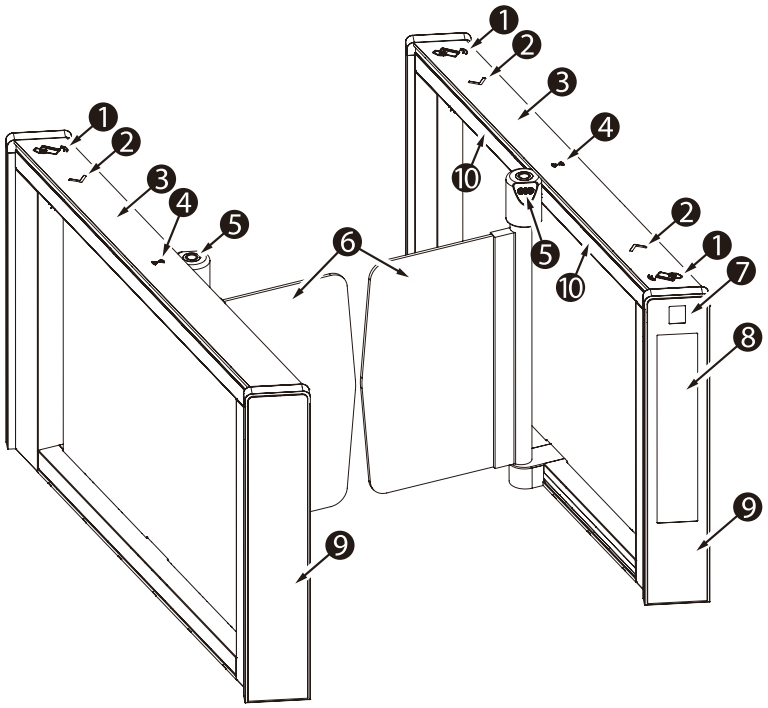


3) Multi-lane

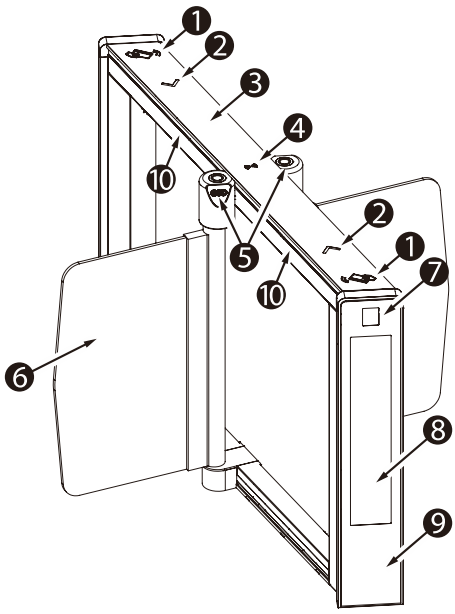


1.2.2 System Components

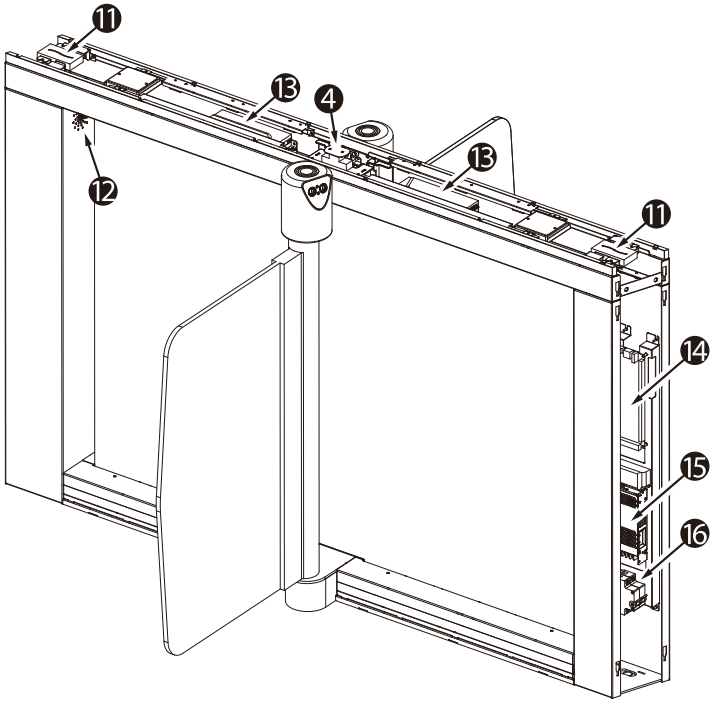
- **Saturn-S4000:**



- **Saturn-S4200:**



- **Core Component**



No.	Components	Descriptions
1	Card Reading Area	RFID card module standard configuration.
2	Traffic Indicator	Top LED indicator: Blue=Door closed/stand by Green=Door opening Red=Door closing/alarm
3	Top Lid	Cold-rolled SPCC Steel (GB700)
4	NFC	Optional
5	Multimodal Camera	Facial Recognition Module (Zophon-S1000) (optional)
6	Door Leaf	Door Leaf Material: Clear Acrylic(optional: Tempered Glass)
7	QR Code Module	Optional
8	LCD Screen	Optional
9	Side Pedestal	
10	Sensor	It detects the position of the pedestrian and plays a role in ensuring safety and protection.
11	Reader Module	Not standard equipment
12	Speaker	To play alarms or alert voices. (On the back of the turnstile controller board.)
13	Access control board （Zophon-S1000）	Not standard equipment
14	Controller Board	Primary/ Secondary Board, the system's control center

15	Power Supply	110V / 220V ±10% AC @50Hz/ 60Hz
16	Circuit Breaker	It provides reliable protection by automatically disconnecting the circuit in the event of overload, short circuit, under voltage, or power loss.

1.2.3 Technical Specifications

Model	Saturn-S4000	Saturn-S4200
Audio Indicator	Internal speaker	
Visual Indicator	Top LED indicator: Blue=Door closed /stand by Green=Door opening Red=Door closing/alarm	
Display	23.9" LCD vertical non-touch dual display (1920x360) Support file formats: jpg, jpeg, png, mp4; max. file size: 1GB (Max. no. of uploads: 6 via ZKDigimax Screen Direct) Support video and photo slideshow playback	
Lane Type	Single lane	Dual Swing (additional lane)
Lane Width	650mm (Standard) 1000mm (Optional)	
Barrier Movement Type	Swing	
Motor	DC brushless motor	
Movement Speed	0.3 to 0.6s per movement (Adjustable open / close timing)	
Lid Material	Tempered glass	
Lid Options **Authentication Methods**	Streamlined under mount: QR Code / RFID/ Fingerprint Motor mount: palm, facial authentication	
Chassis Material	Cold-rolled SPCC Steel (GB700)	
Chassis Colour	Black & Matte White	
Door Leaf Material (H*W)	Acrylic (734*300mm) ; (optional: 1734*438 mm)	
Sensors	12 pcs of dToF sensors (standard) ; 20 pcs of dToF sensors (optional)	
Motherboard Function	Supports four passage modes: Verified Passage (requires identity verification before entry), Free Passage (no verification required for direct entry), Forbidden Passage (channel locked), Constantly Open Passage (channel remains open continuously).	
Motherboard Communication	Fire alarm port (relay)*1, RS485 port*1	

Controller	N/A (Compatibility with C3-200 Plus / InBio260 Pro Plus series controller available upon request)	
Credential Options	Under mount RFID reader: ProID Series, KR Series Under mount fingerprint reader: FR1200 / FR1500S Under mount QR code reader: QR 500 Motor mount palm and facial recognition module: Zophon-S1000 facial recognition module	
Flow Rate	Facial Authentication: 30 passengers per minute QR Code: 30 passengers per minute RFID: 35 passengers per minute Fingerprint: 25 passengers per minute Palm: 25 passengers per minute	
Accessibility	Adult, children(with care), Disability(with care)	
Power Supply	110V / 220V ±10% AC @50Hz/60Hz	
Power Rating	40VA(Standby) 120VA(Operation)	
Fire Signal	Input for voltage free contact	
Noise Level	Less than 60dB	
MTTR	Less than 60 minutes	
MCBF	10 million	
Weight	220Kg	130Kg
Dimension (L*W*H)	1625*183*980mm	
Dimensions With Packing(L*W*H)	1770*370*1125mm (2 boxes)	1770*370*1125mm (1 box)
Operating Temperature	-10℃ to 70℃	
Operating Humidity	5% to 90% RH (Non-condensing)	
Certifications	CE, FCC	
Supported Software	ZKDigimax Screen Direct/ZKBio CVAccess / ZKBio CVSecurity (Depends on equipped access controller)	
Safety Features	Voltage free contact, input for fire alarm, fail-safe state, automatic swing barrier open during power off	
Security Features	Anti-tailgating, anti-pinch	
Product Delivery	Pre-assembled	
Application Environment	Indoor	
Site Preparation	Flat & level finished floor (base plate for unfinished floor)	
Security Level	Middle	
Emergency Mode	Support swing barrier open automatically	

1.3 Mechanical System

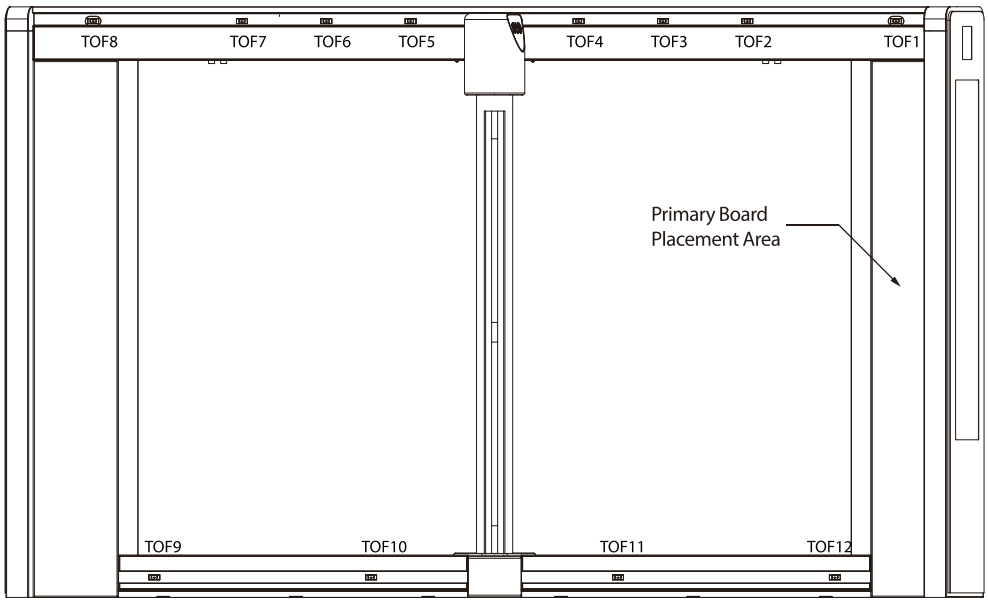
The mechanical system of the turnstile includes the chassis and the core component.

- **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, Clutch and Swing Barrier.

1.4 Electronic Control System

The electronic control system of a turnstile is mainly composed of the Motor Driver, 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.
- **Turnstile Control Board:** The Turnstile control board is the system's control center that receives signals from the access controller. The IR performs logical calculation and processing of these signals and then sends executive commands to the Traffic Indicator, 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.
- **Sensor:** It detects the position of the pedestrian and plays the role of safety protection. The exact location is shown below:

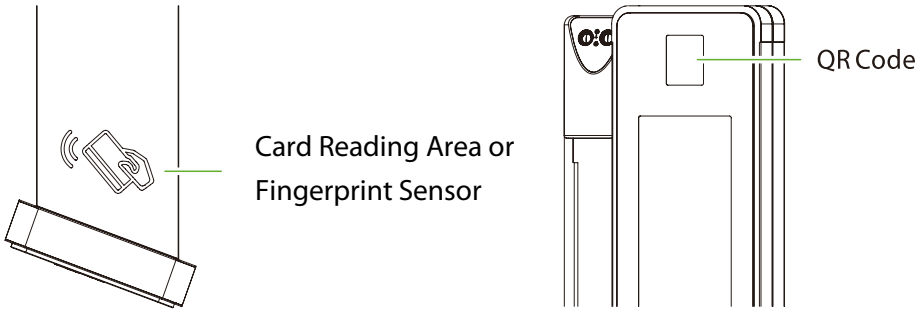


2 Authentication Methods

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

Streamlined Under Mount Options:

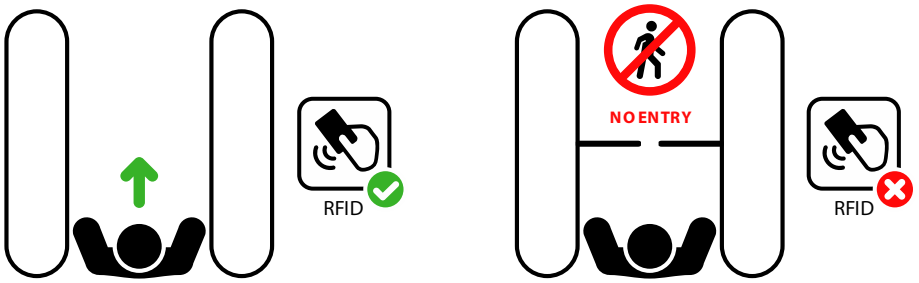
RFID only, Fingerprint, RFID & QR Code.



2.1 Card Verification

When the device is configured with a card reader 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.

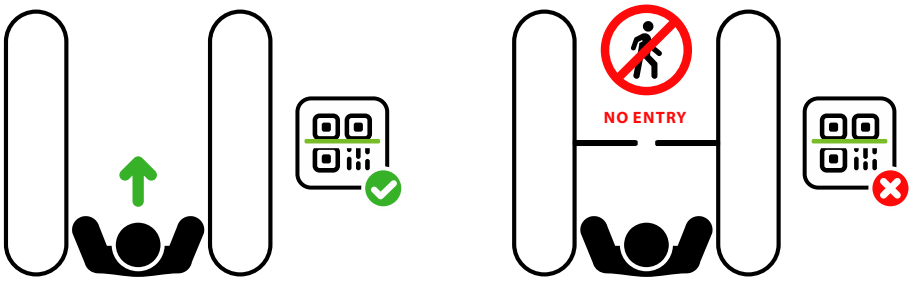
When a user presses his / her card on the card reading area, the device enters card authentication mode.



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.

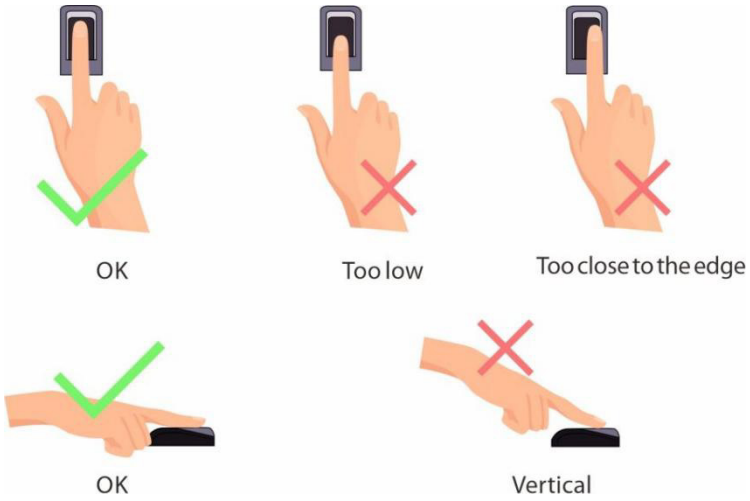


2.3 Fingerprint Verification★

In this verification mode, the device compares the fingerprint that is being pressed onto the fingerprint reader with all the fingerprint data sends it to the Access Controller.

The device enters the fingerprint authentication mode when a user presses his/her finger onto the fingerprint scanner.

Recommended fingers: It is recommended to use index, middle, or ring finger for registration and avoid using the thumb or little finger, as they are difficult to accurately press onto the fingerprint reader.



Note: Please use the correct method when pressing your fingers onto the fingerprint reader for registration and identification. Our company will assume no liability for recognition issues that may result from incorrect usage of the product. We reserve the right of final interpretation and modification concerning this point.

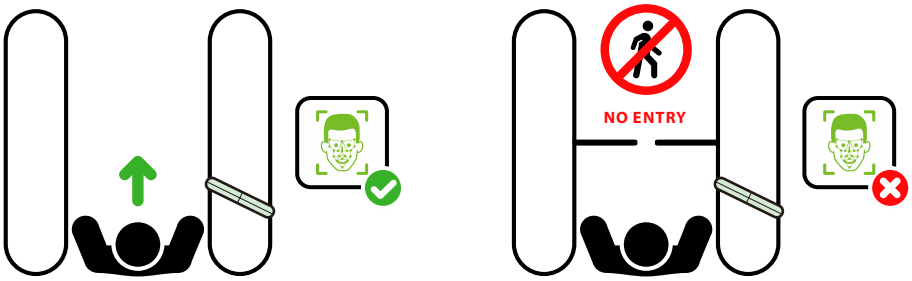
2.4 Facial Verification★

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

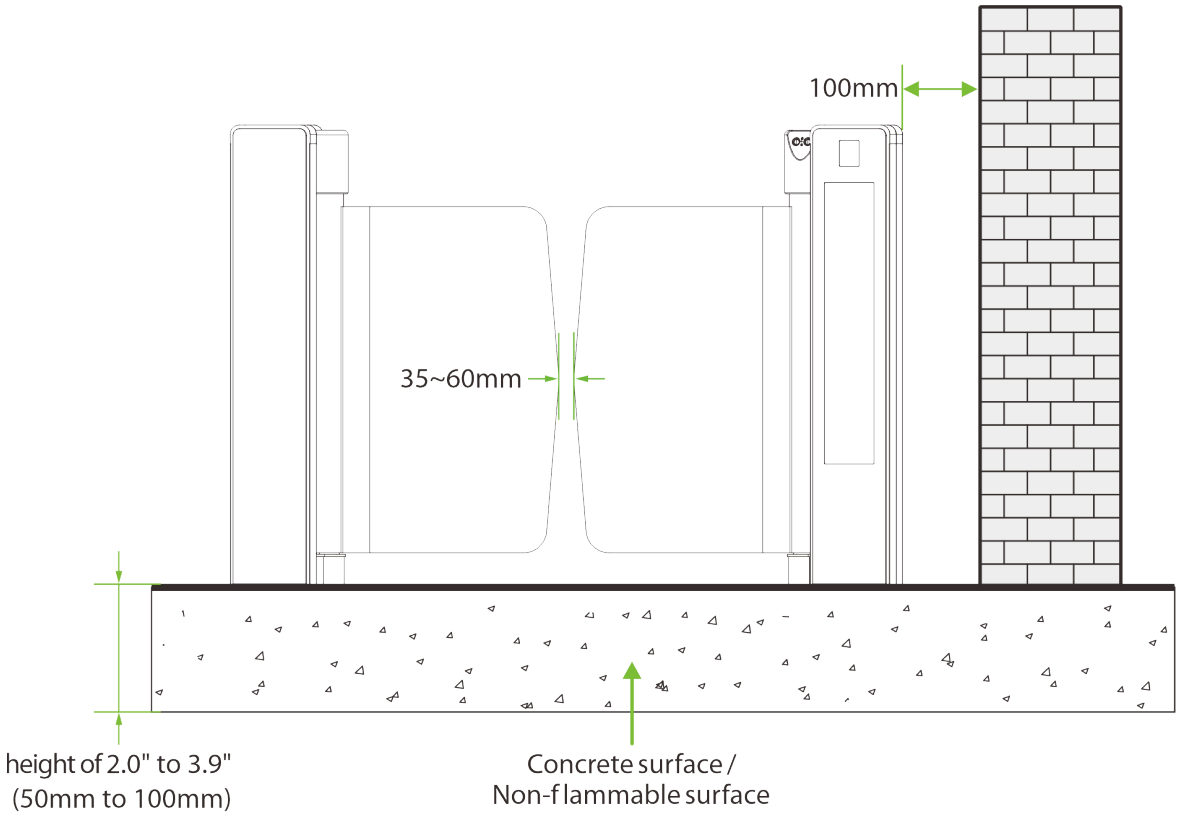
- Tapeline
- Marker Pen
- Pencil
- Percussion Drill
- Screwdriver
- Wrench
- Hex Wrench
- Cutting Machine

3.2 Installation Requirements

1. It is recommended that the turnstile must be installed on a horizontal solid platform with a height of **2.0" to 3.9"(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

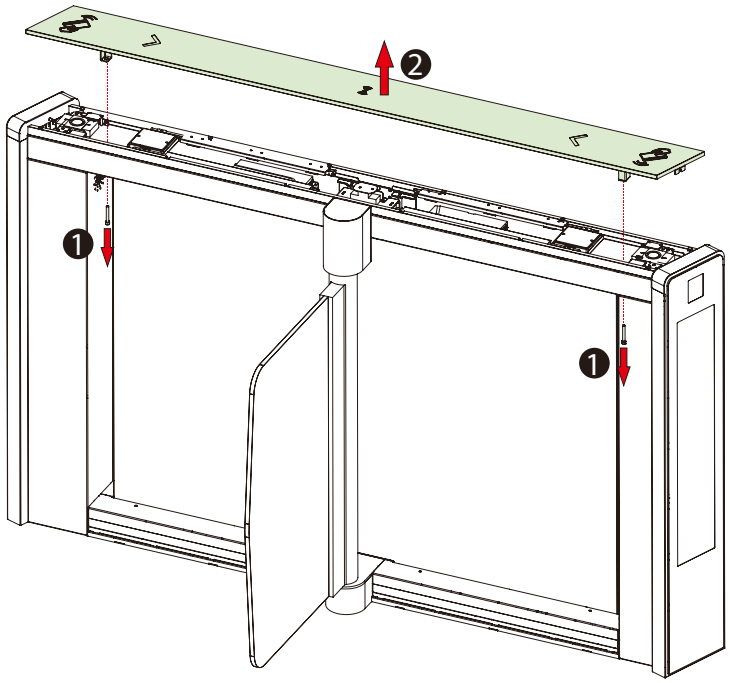
1. Before installation begins, prepare installation tools, check the device and the accessories, and clear the installation base.
2. Make sure that the appliance is mounted on a concrete surface or other non-flammable surfaces surfaces.
3. The installation position of the turnstile depends on its size. A distance of **3.9"(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:



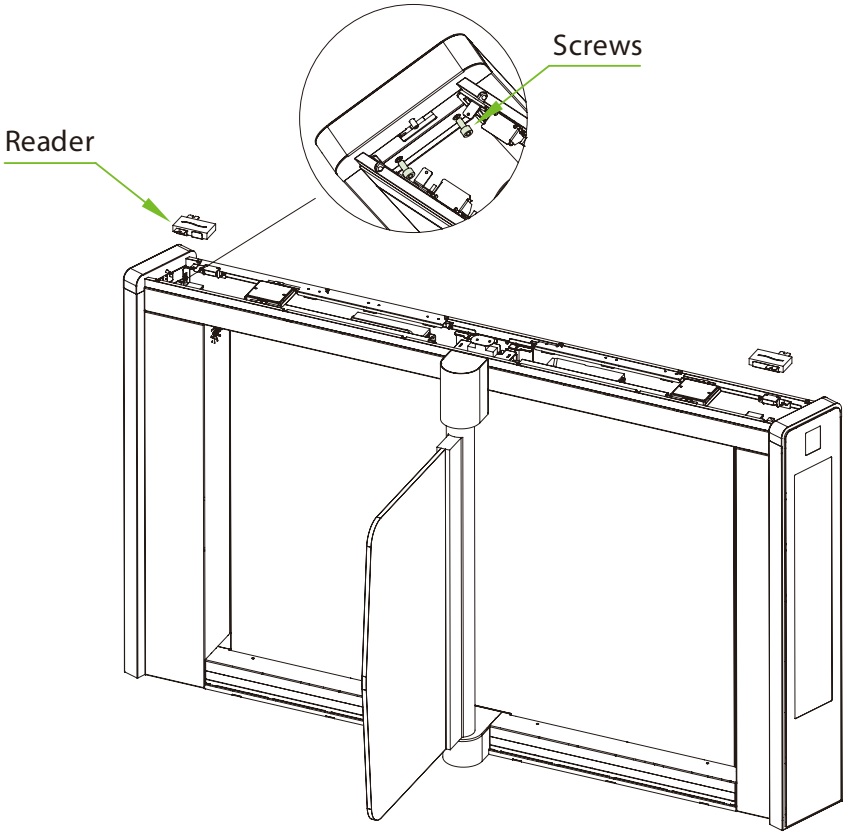
3.4 Installation Cabinet

Step 1 Remove the Top Lid

1. Use a screwdriver to loosen the two fixing screws at the indicated locations, then remove the top lid in the direction shown.

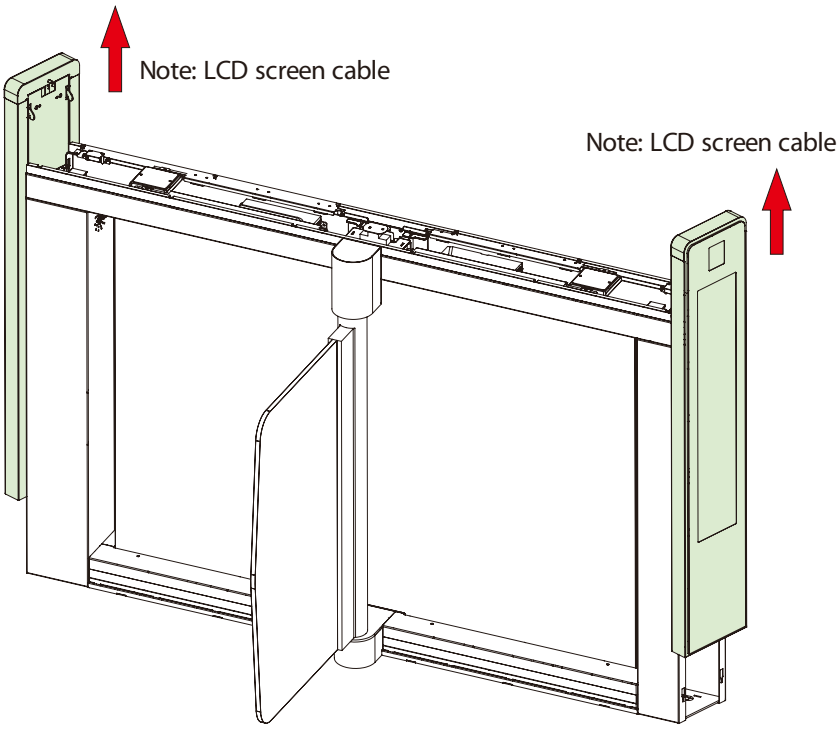


2. Loosen the screws and the readers as shown in the figure below.



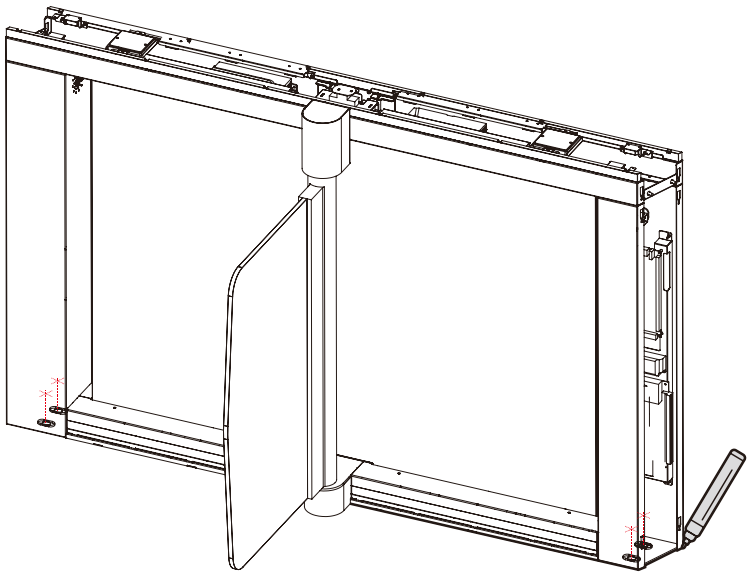
Step 2 Remove the Side Pedestal

1. Push the side pedestal on both sides upward and then remove them.



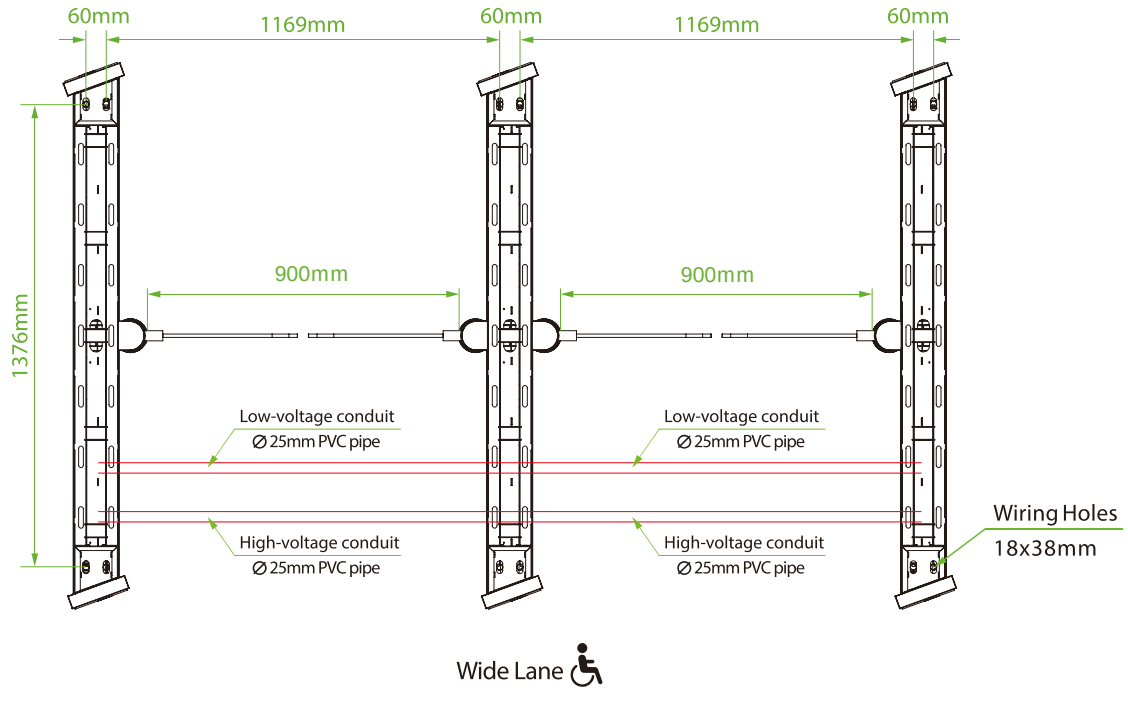
Step 3 Marker Position

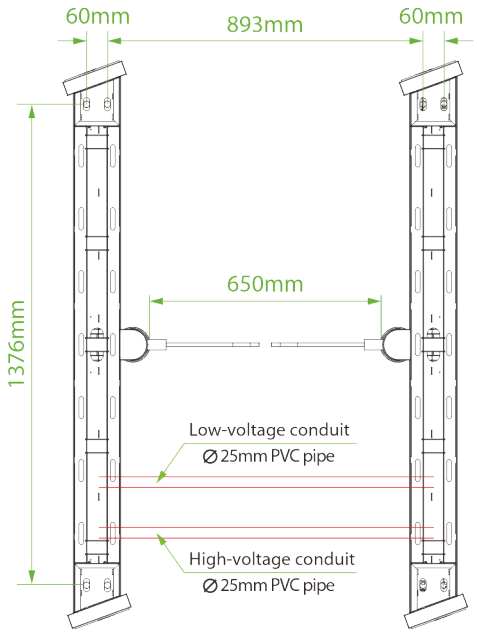
1. Draw the location of the cabinet with a marker and mark each location of the mounting holes. There will be a total of four mounting holes and two wire holes per cabinet.
2. Remove the cabinets when finished.



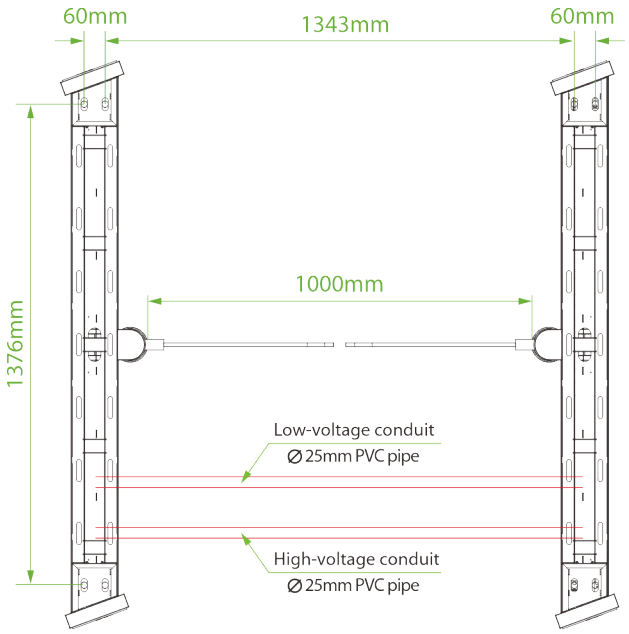
Step 4 Determine the Mounting Location

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.





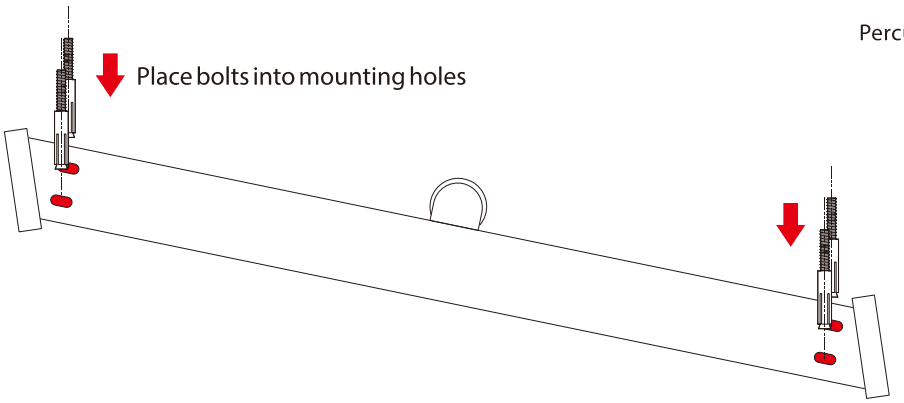
Standard Lane

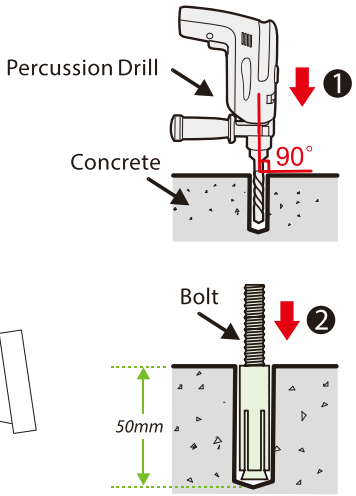


Ultra Wide Lane

Step 5 Drill Holes and Place Bolts

1. Using a concrete drill bit, drill the mounting holes **2.0" (50mm)** 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.

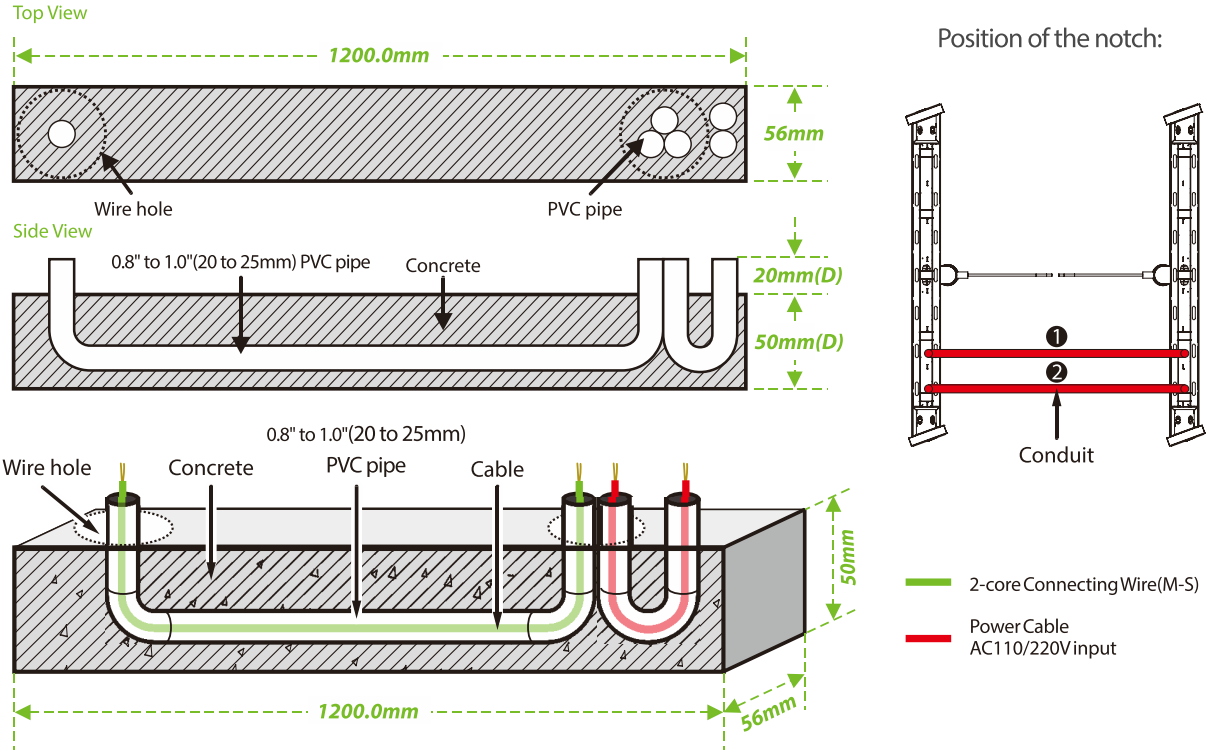




Step 6 Wireway Laying

1. Dig a recess of **2.0" (50mm)** depth between the wire holes on both sides of the channel with the dimensions shown below. Recesses can be dug at positions ❶ and ❷.
2. Then lay two **0.8" to 1.0" (20 to 25mm)** diameter PVC pipes as shown below.

3. After threading the cable out of the PVC pipe, pour concrete to f ix it in place.

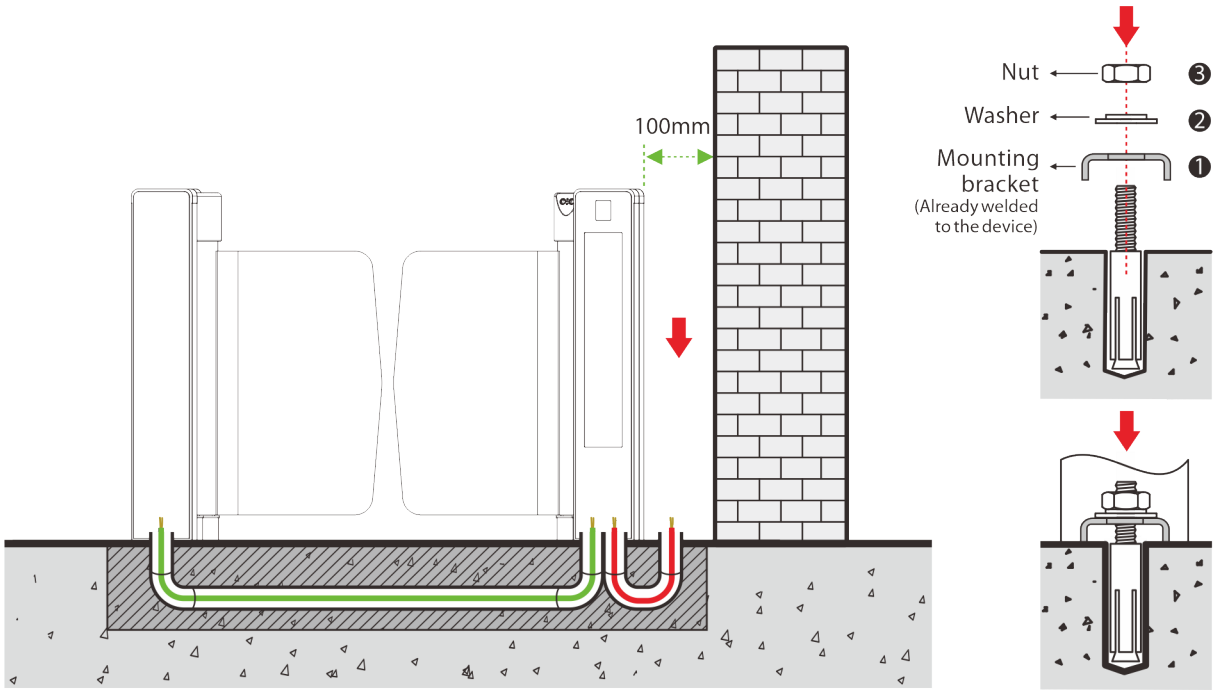


Step 7 Secure the Cabinet

1. After laying the PVC pipe, place the cabinet alignment bolts back into the mounting position.

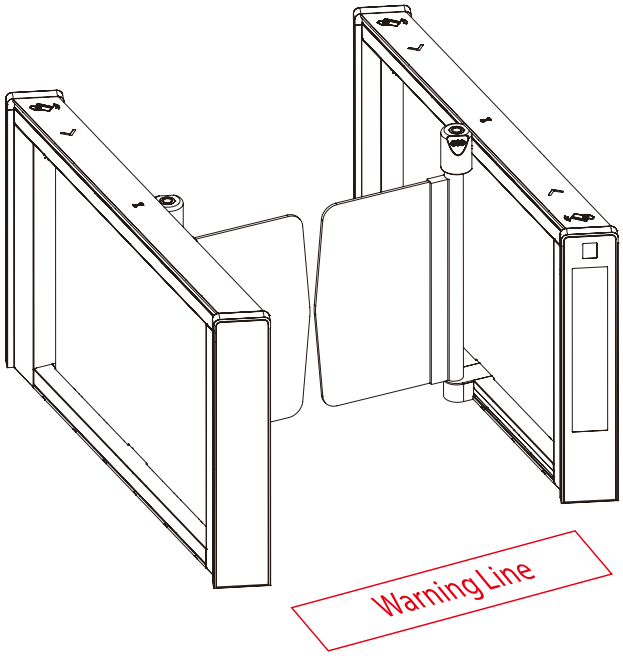
2. Then insert the eight washers and nuts into the bolts one by one.

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:



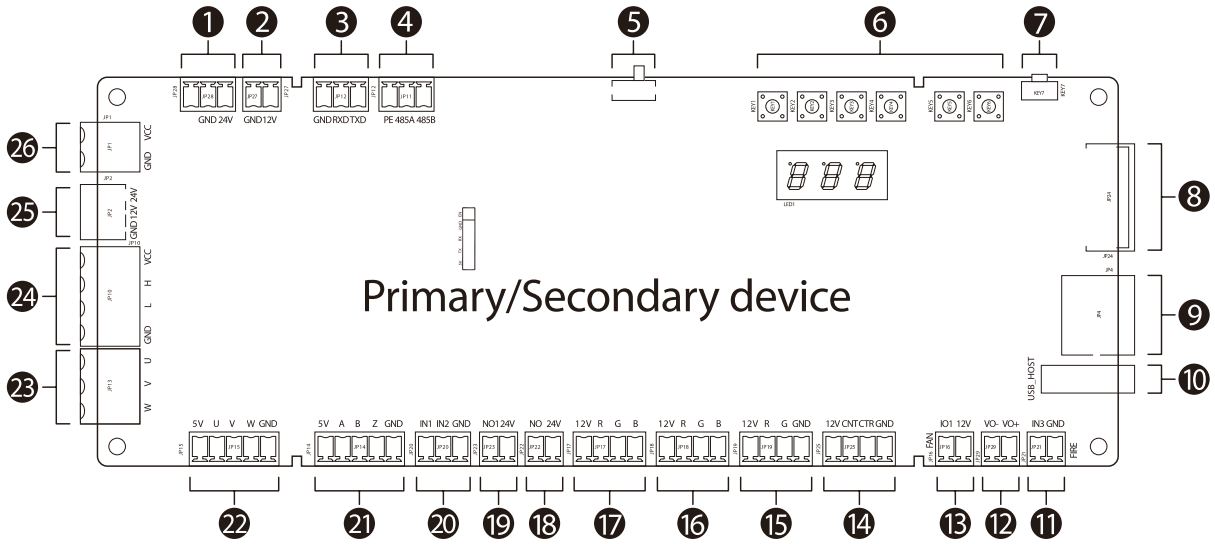
Step 8 Marking the Warning Line

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.



4 Terminal Description

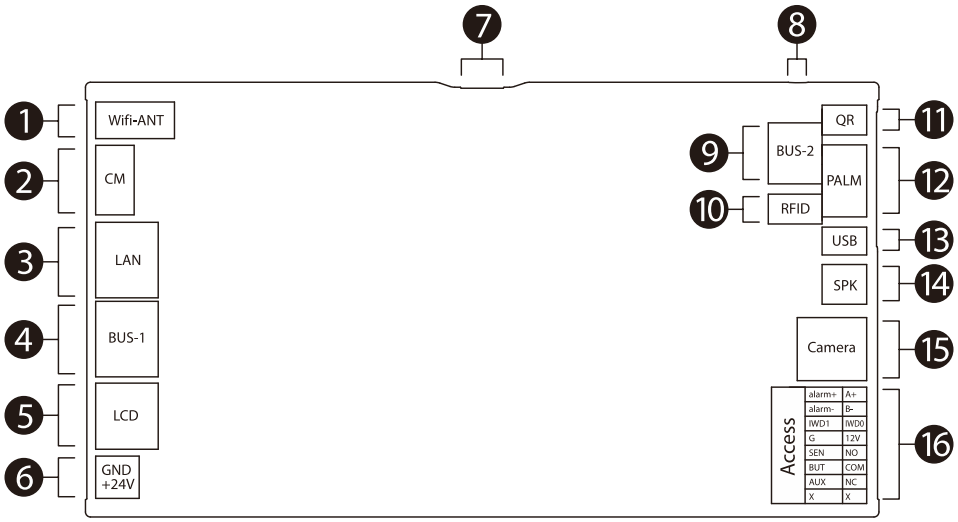
4.1 Primary and Secondary Board



NO.	Terminal	Descriptions
1	/, GND, 24V	24V DC power supply output
2	GND, 12V	12V DC power supply output
3	GND, RXD, TXD	RS232 communication
4	GND, 485A, 485B	RS485 communication
5	KEY8	DIP switch Used to switch between the main and sub boards. When dialled to **1** it is the main board and when dialled to **ON** it is the sub device.
6	KEY1-6	Operation keys KEY1: Return, exit menu KEY2: Decrease the value until the lower limit KEY3: Incremental value up to the upper limit KEY4: Start menu/Confirm KEY5: In KEY6: Out
7	KEY7	KEY7: Restore Defaults / Reboot 1. **Long press key KEY7 for more than 3 seconds** to restore default settings, short press for reboot. If the firmware changes affect menu items, you must restore defaults after the update, then restart the main board. 2. The **KEY7** button on the secondary unit is **only for firmware updates**; it has no function in normal operation.

8	Upper layer GND GND 8 16 7 15 6 14 5 13 4 12 3 11 2 10 1 9 12V 12V Lower layer	Interface board infrared communication interface
9	/	Network interface
10	USB_BOST	Program download port Operation: **Upgrade Firmware** a. Press and hold the **KEY1** button continuously, then power off and restart the device, or press the **KEY7** button once. b. At this time, the **RUN** light on the motherboard will slow down its flashing, indicating that the device has entered the **Program Download Mode**. You can now release the **KEY1** button. c. Then insert the **USB** drive containing the upgrade program. The RUN light will flash rapidly. Once the rapid flashing ends and returns to the normal flashing state, it indicates that the upgrade has been successful. You can then remove the USB drive. ***Note:** Do not remove the USB drive during the upgrade process.*
11	IN3, GND	Fire interface
12	VO-, VO+	Speaker
13	GND, 12V	Fan
14	12V, CNT, CLR, GND	Counter
15	12V, R, G, GND	Dot Matrix Board LED
16	12V, R, G, B	Traffic Indicator
17	12V, R, G, B	Visual Indicator
18	NO, 24V	Clutch / Push-pull solenoid 1
19	NO1, 24V	Push-pull solenoid 2
20	IN1, IN2, GND	Door opening signal input
21	IN1, IN2, GND	Encoder Interface
22	5V, A, B, Z, GND	Hall interface
23	5V, U, V, W, GND	Motor cable interface
24	U, V, W	Over machine communication line
25	24V, H, L, GND	Super capacitor input
26	24V, 12V, GND	Power input

4.2 Access Control Module★



No.	Terminals	Descriptions	Functional Description
1	Wi-Fi ANT	Wi-Fi Antenna	Connect the Wi-Fi antenna.
2	CM	Verification Tip Light	The camera connected to the facial recognition module.
		NFC	
		Camera Fill Light	
3	LAN	Network	RJ45, Yellow holder The default device IP address is: **192.168.1.201** **Note:** In LAN, IP addresses of the server (PC) and the device must be in the same network segment when connecting to the software.
4	BUS-1	Synchronised LAN	Networking, synchronising main and sub devices RJ45, Blue holder
5	LCD	LCD display module	Used to connect the 7'' LCD display module.
6	GND	Power Input	24V DC power supply input
	+24V		
7	MicroUSB	Burn-in Port	
8	RESET	Reset	For resetting account password, IP address
9	BUS-2	485-1	Connecting gate control board
		485-2	Synchronous sub device
10	RFID	RFID recognition module	Used to connect the RFID recognition module.
11	QR	QR code reader module	Used to connect the QR code reader module

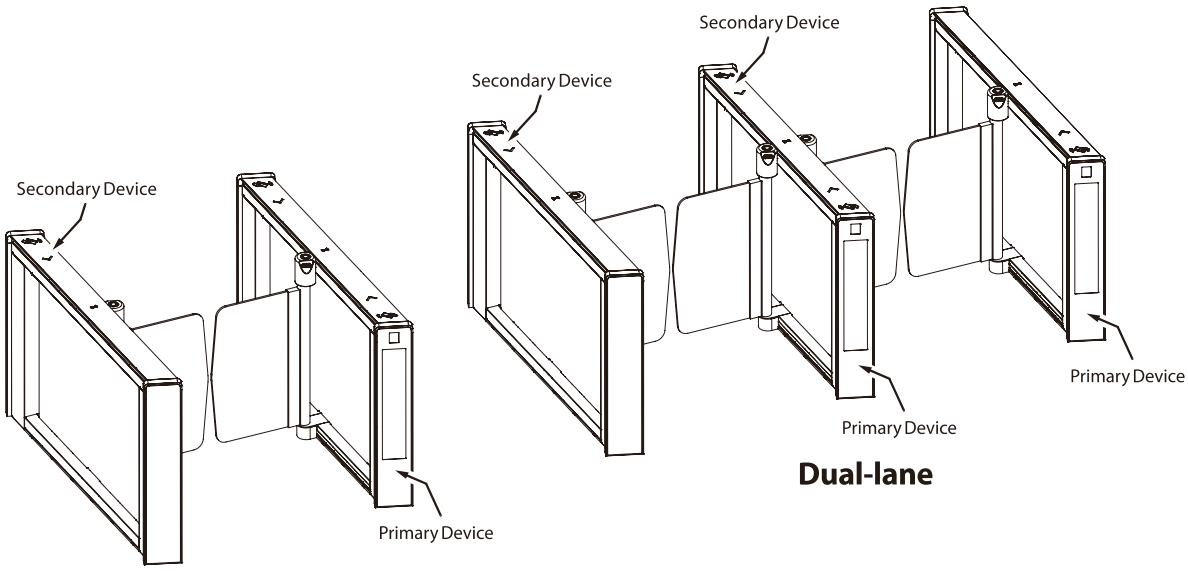
<table>
<tr><td>12</td><td>PALM</td><td>Palm recognition module</td><td>Used to connect the palm recognition module (optional).</td></tr>
<tr><td>13</td><td>USB</td><td>USB Reservation</td><td></td></tr>
<tr><td>14</td><td>SPK</td><td>Speaker</td><td>To play alarms or alert voices.</td></tr>
<tr><td>15</td><td>Camera</td><td>Camera / Facial recognition module</td><td>Used to connect the camera.
Can be docked to the camera of the facial recognition module. MIPI Port</td></tr>
<tr><td>16</td><td>Access</td><td>
<table>
<tr><td rowspan="8">Access</td><td>alarm+</td><td>A+</td></tr>
<tr><td>alarm-</td><td>B-</td></tr>
<tr><td>IWD1</td><td>IWD0</td></tr>
<tr><td>G</td><td>12V</td></tr>
<tr><td>SEN</td><td>NO</td></tr>
<tr><td>BUT</td><td>COM</td></tr>
<tr><td>AUX</td><td>NC</td></tr>
<tr><td>X</td><td>X</td></tr>
</table>
</td><td>Used to connect the reader, Access control all-in-one machine. And the relay can be connected directly to the gate control board.

Included:
2 pcs Relays
1 pc 485
1 pc Wiegand input
3 pcs Auxiliary inputs</td></tr>
</table>

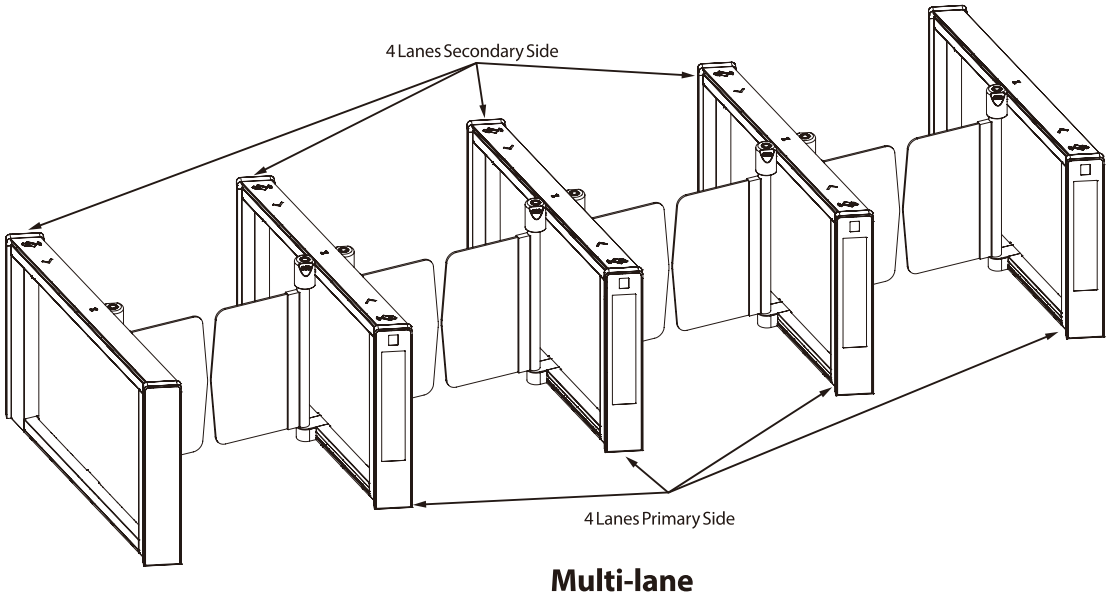
5 Wiring Instructions

5.1 Primary and Secondary Location

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



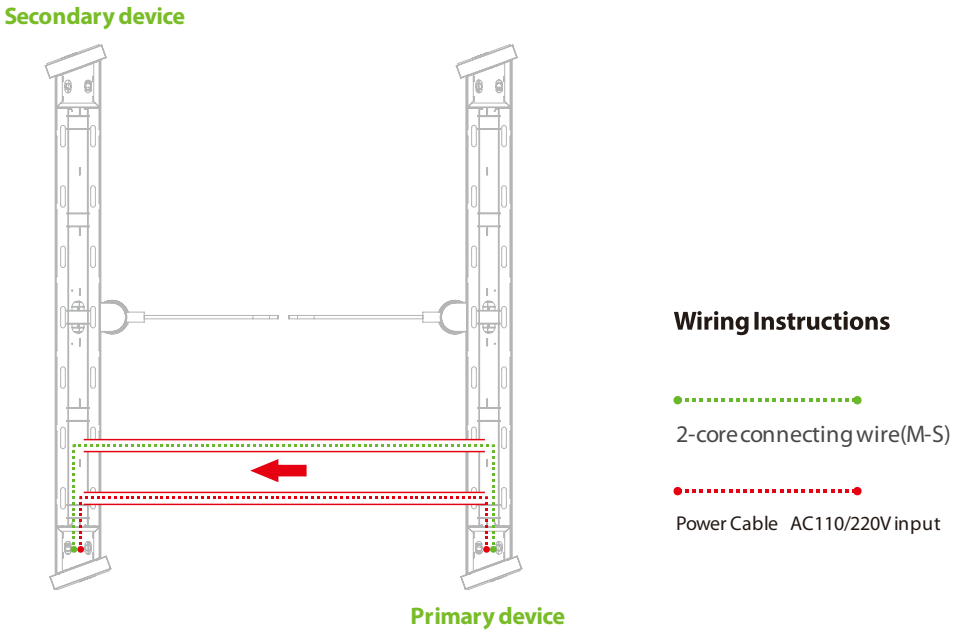
Single-lane **Dual-lane**



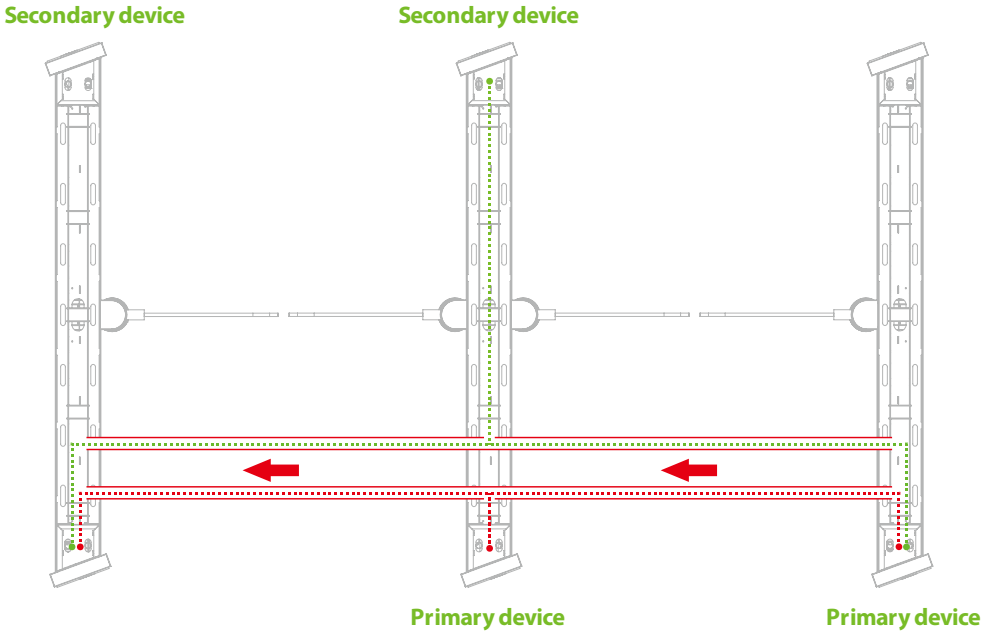
Multi-lane

5.2 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.



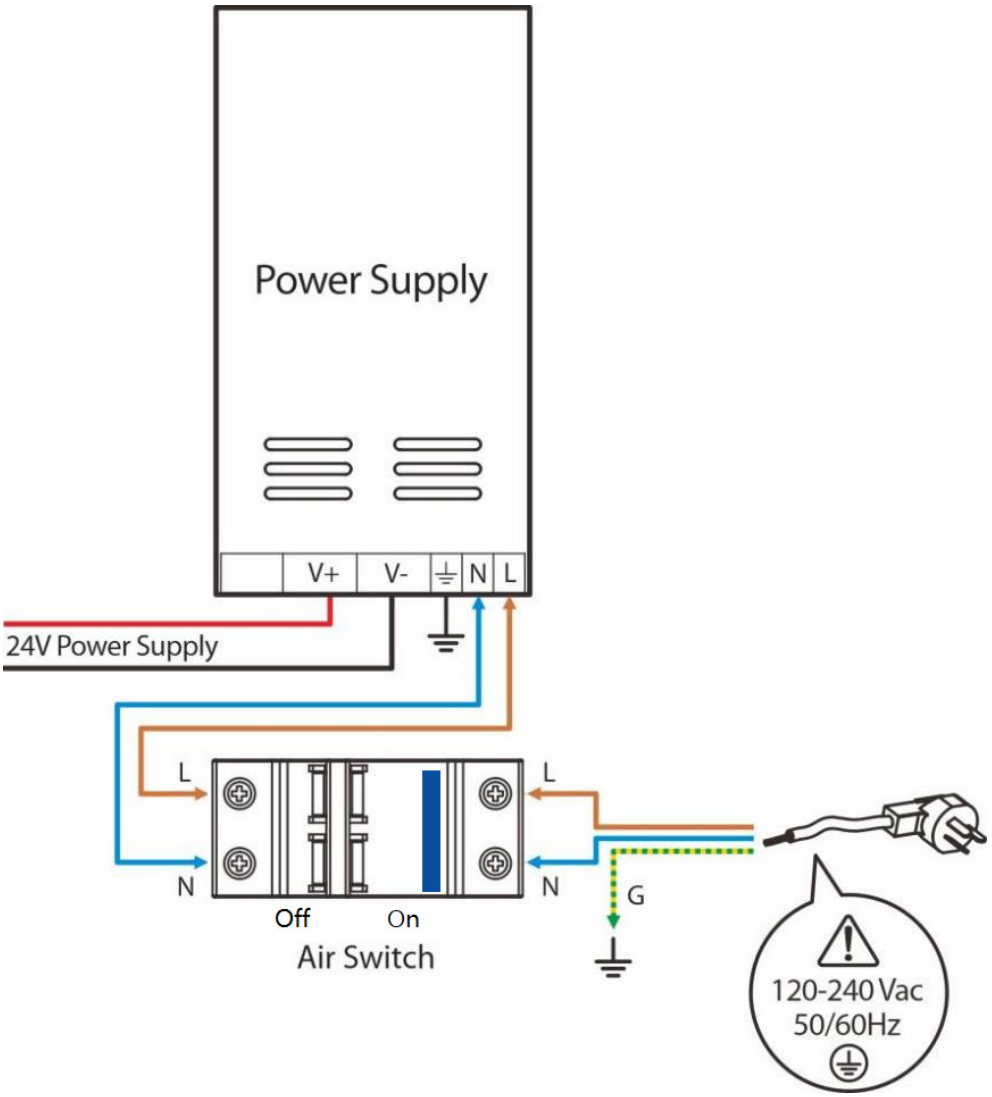
Single-lane



Multi-lane

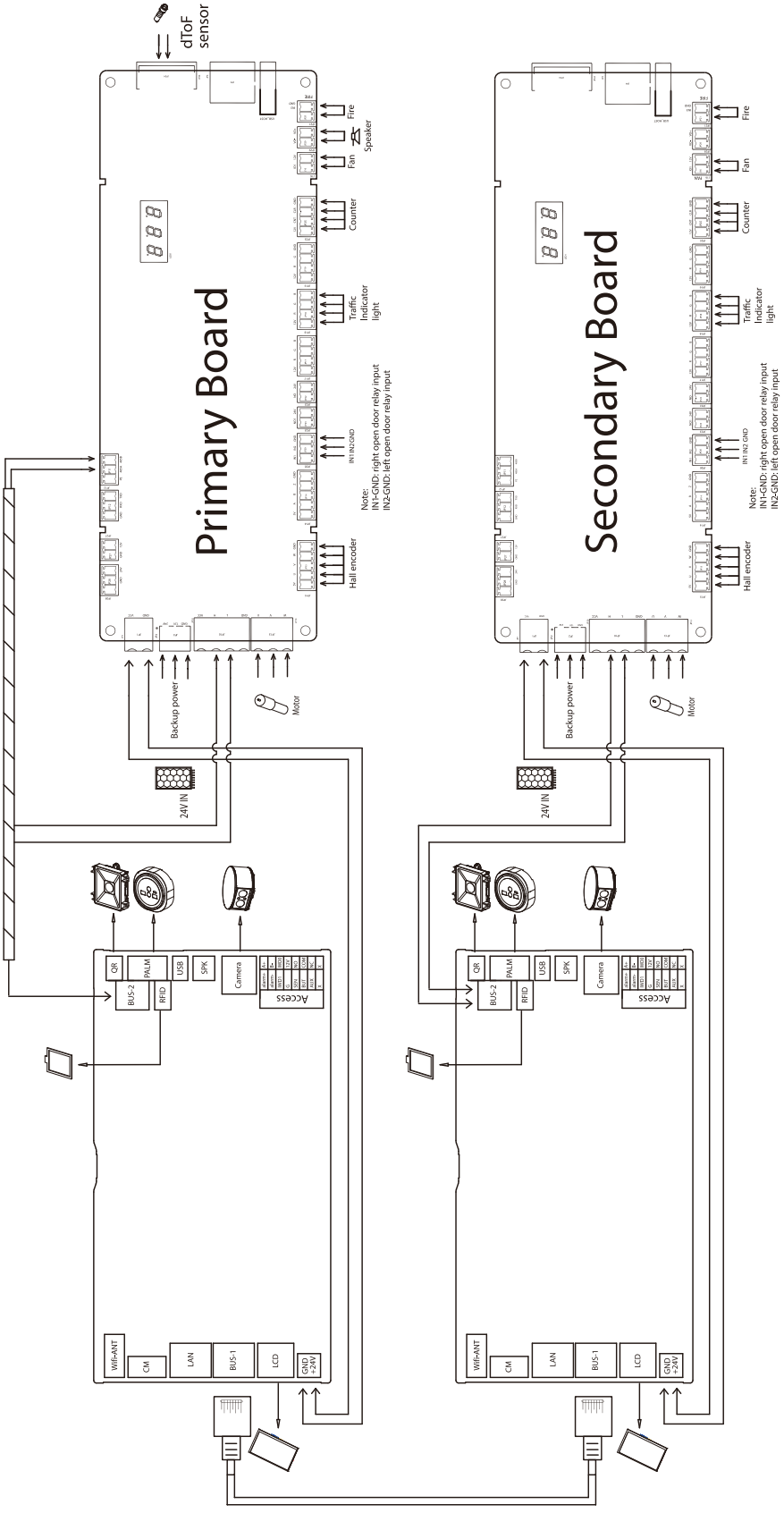
5.3 Power and Circuit Breaker Wiring

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.

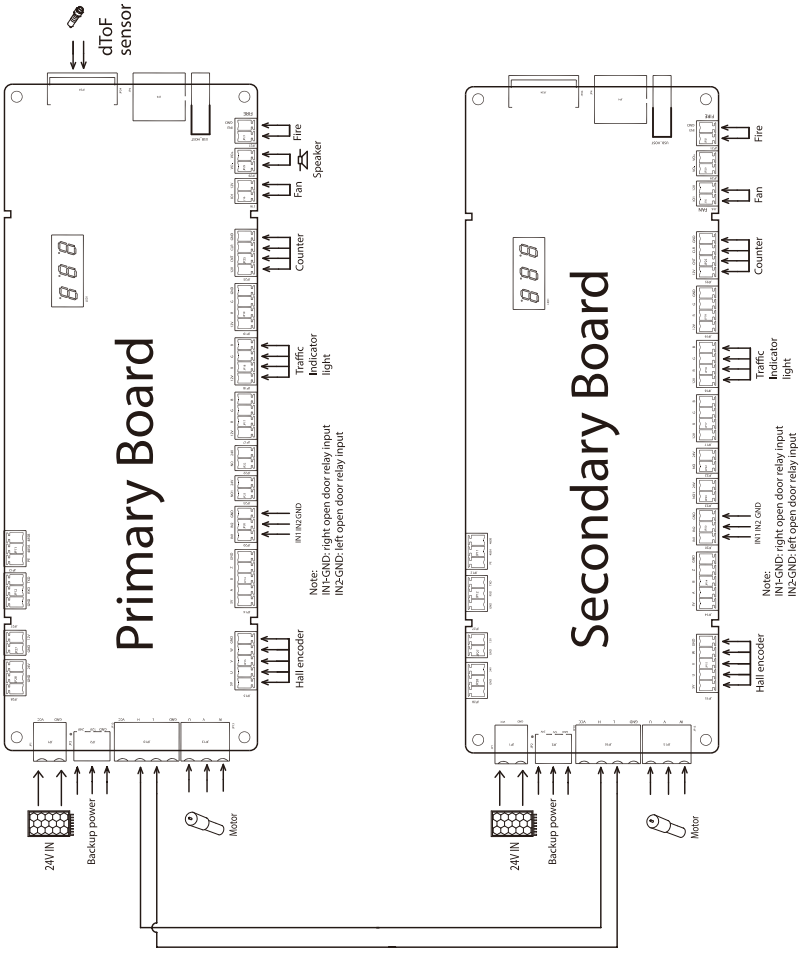


5.4 System Wiring Diagram

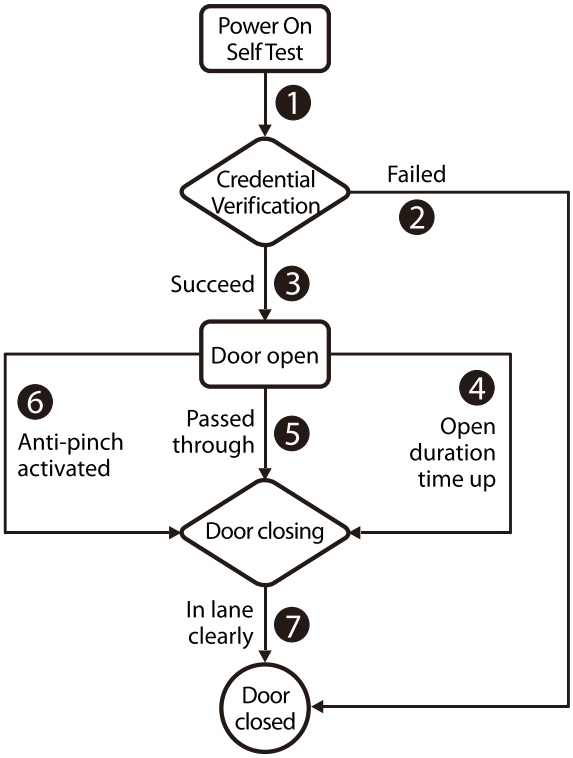
- **Multimodal + dToF Sensor Version**



- **dToF Sensor Standard Version**



6 Operation Process

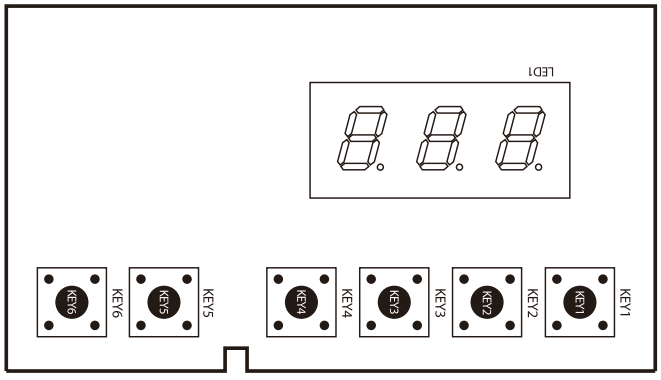


1. POST (Power On Self Test)

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 5.3 Power and Circuit Breaker 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 **KEY 5/ KEY 6** button on the motherboard.



When the user presses the **KEY 5/ KEY 6** 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.

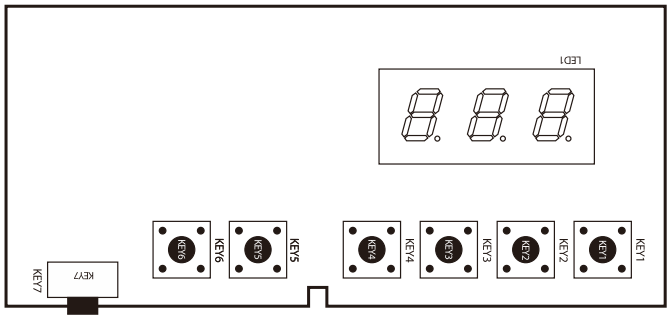
3. Passed Through

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 six menu operation buttons on the primary/secondary board.

Operation Buttons Description:

- **KEY1:** Return / Exit menu
- **KEY2:** Decrease the value until the lower limit
- **KEY3:** Incremental value up to the upper limit
- **KEY4:** Start menu/Confirm
- **KEY5:** In
- **KEY6:** Out
- **KEY7:** Restore Defaults/Reboot

Notes:

1. **Long press key KEY7 for more than 3 seconds** to restore default settings, short press for reboot. If the firmware changes affect menu items, you must restore defaults after the update, then restart the main board.
2. The **KEY7** button on the secondary unit is **only for firmware updates**; it has no function in normal operation.

7.2 Menu Parameter Settings

Code	Parameter Definition	Default Value	Range Value
C01	Motor Type	0	0: Null Type 1: GPG 2: BUE-1.25.037.400 3: LINIX 4: LINIX High Temperature 5: LINIX Low Temperature 6: X (Note: Option 6 has not yet been officially activated.)

C02	Lane Width Settings	2	1: 600 to 700 2: 800 to 900 3: 1000 to 1200 4: Auto Adjust **Note:** When selecting automatic adjustment, initialization defaults to starting from the first item. If initialization fails, the system automatically restarts and switches to the next item. Upon successful initialization, the configuration is saved. (If initialization fails, wait 3 minutes before restarting.)
C03	Sensor Type	1	1: Through-beam infrared 2: Diffuse reflection radar
C04	Number of Sensors	12	0 to 32 **Note:** The number of sensors must be manually selected and confirmed (currently only supports logic for 12 sensor pairs). When using a cylindrical swing gate, set the sensor count to 0.
C05	Set Door Closing Position	0	0: Ignore 1: Effective
C06	Set Right Door Opening Position	0	0: Ignore 1: Effective
C07	Set Left Door Opening Position	0	0: Ignore 1: Effective
C08	Aging Test	0	0: Exit 1: Enable
C09	Fan	1	0: Close 1: Open

C10	Passage Mode	1	1: Entry authorized, exit authorized 2: Entry authorized, exit free 3: Entry free, exit authorized 4: Entry free, exit free 5: Entry authorized, exit prohibited 6: Entry prohibited, exit authorized 7: Entry free, exit prohibited 8: Entry prohibited, exit free 9: Entry prohibited, exit prohibited 10: Right always open 11: Left always open 12: Entry peak, exit authorized 13: Entry peak, exit free 14: Entry peak, exit prohibited 15: Entry authorized, exit peak 16: Entry free, exit peak 17: Entry prohibited, exit peak **Note:** In peak mode, it automatically switches to non-pinch mode at the beginning and end.
C11	Memory Gate Opening	0	0: Off 1: On
C12	Verify Regional Settings	0	0: in-channel authentication is allowed 1: in-channel validation not allowed
C13	Set Door Opening Speed	100	0 to 100
C14	Set Door Closing Speed	100	0 to 100
C15	Passage Timeout	5	2 to 60 seconds
C16	Door Closing Delay	0	0 to 60 seconds
C17	Dwell Time	10	5 to 60 seconds, default 10 seconds
C18	Electric Lock Type	1	0: No lock 1: Clutch 2: Electromagnet
C19	Reverse Intrusion Setting	1	0: Alarm on Door Closure 1: Alarm 2: Ignore **Note:** When C19 is set to 0, it will automatically switch to non-squeeze mode at the beginning and end.

C20	Tailgating Setting	1	0: Alarm on Door Closure 1: Alarm 2: Ignore **Note:** When C20 is set to 0, it automatically switches to non-pinch mode at the beginning and end.
C21	Anti-Pinch Setting	0	0: Flap stops 1: Flap stops and reverses to open 2: Ignore **Note:** a. When parameter C19 or C20 is set to 0, the reverse opening function of anti-pinch setting option 1 is invalid. b. When the parameter is set to 1, during the door closing process, if a pedestrian enters from the opposite direction, triggering the anti-pinch function will only stop the door without opening it to avoid causing injury.
C22	Anti-pinch Zone	0	0: All Infrared 1: Excluding First and Last Infrared
C23	Fire Mode	0	0: Open Right Door 1: Open Left Door 2: Ignore
C24	Door Closing Mode	0	0: Close the door after exiting the lane 1: Close the door after passing through the anti-pinch zone **Note:** The C22 settings must be modified accordingly.
C25	Alarm Sound Setting	1	0: Close 1: Open
C26	Voice Switching	1	0: Voice Announcement 1: Alert Tone
C27	Voice Volume	80	0 to 100
C28	Inbound Voice	0	0 to 30
C29	Outbound Voice	17	0 to 30

C30	Inbound Passage Count Reset	0	0: No 1: Yes
C31	Outbound Passage Count Reset	0	0: No 1: Yes
C32	Developer Mode	0	0: No 1: Yes (Ignore, used for obtaining exception data) **Note:** Used to obtain exception feedback data
C33	Turnstile Type	0	0: None 1: Bridge Swing Gate 2: Single Swing Gate/Cylindrical Swing Gate **Note:** The entry and exit directions of the dual swing gate connect to separate mode lights and passage indicator lights respectively; The entry and exit directions of the single swing gate share the passage indicator light JP17, while the entry/exit mode lights connect to JP18 and JP19.

Error code	Instruction	Solution
E00	Sensor type error	
E01	Radar quantity error	
E02	Radar ranging anomaly	
E03	CAN communication anomaly	Check for poor contact at the connecting wire terminals or verify that the secondary device is receiving power.
E04	Motor type error	
E05	Motor zeroing anomaly	Lane Width Settings C01 (Select 03 for Saturn-S2000/2200, Select 02 for Saturn-S4000/4200) C02 Select 01, Change to 03 For on-site dual-core installation, refer to the manual and rotate 180 degrees.
E06	Turnstile type error	
Er0	Unauthorized entry	
Er1	Reverse passage	

Er2	Tailgating	
Er3	Timeout without passage	
Er4	Stalled	
ST	Self-checking in progress	
PO	Power loss	
FF	Fire alarm activation	
AT	Aging test initiated	

8 LCD Advertising Screen Operating Instructions

8.1 Digital Signage App Installation Guide

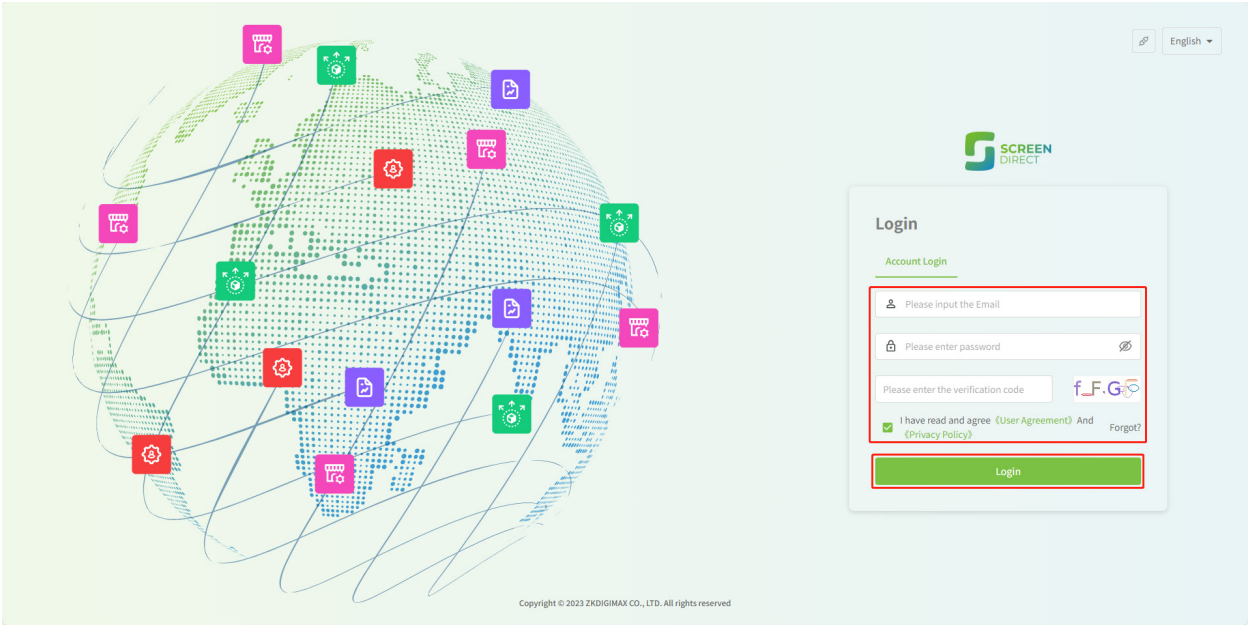
1. First, configure the device's network. Enter the Main Menu interface, click [**Device**] - [**System Settings**] - [**Connect to Network**] (either WiFi or wired network is acceptable; the network must have external internet access).
2. Install the APK on the digital signage device via USB drive: (i) Copy the APK file to a USB drive on a computer. (ii) Insert the USB drive into the device. (iii) Navigate to the file manager and locate the APK file. (iv) Execute the installation.
3. After installing the APK, open the application (ZKDigimax CMS). The home screen displays the device name, serial number, network IP, and system information. (Please verify that all information is correct before proceeding.)

8.2 CMS System User Guide

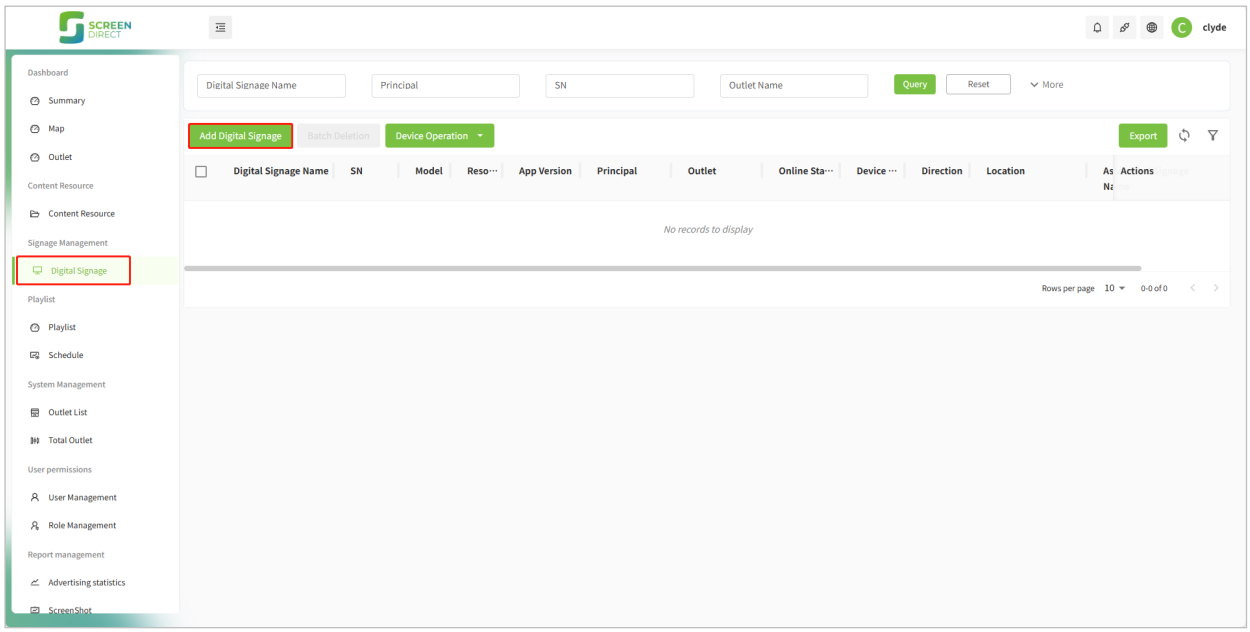
Please follow the instructions below to log in to the Screen Direct Website:

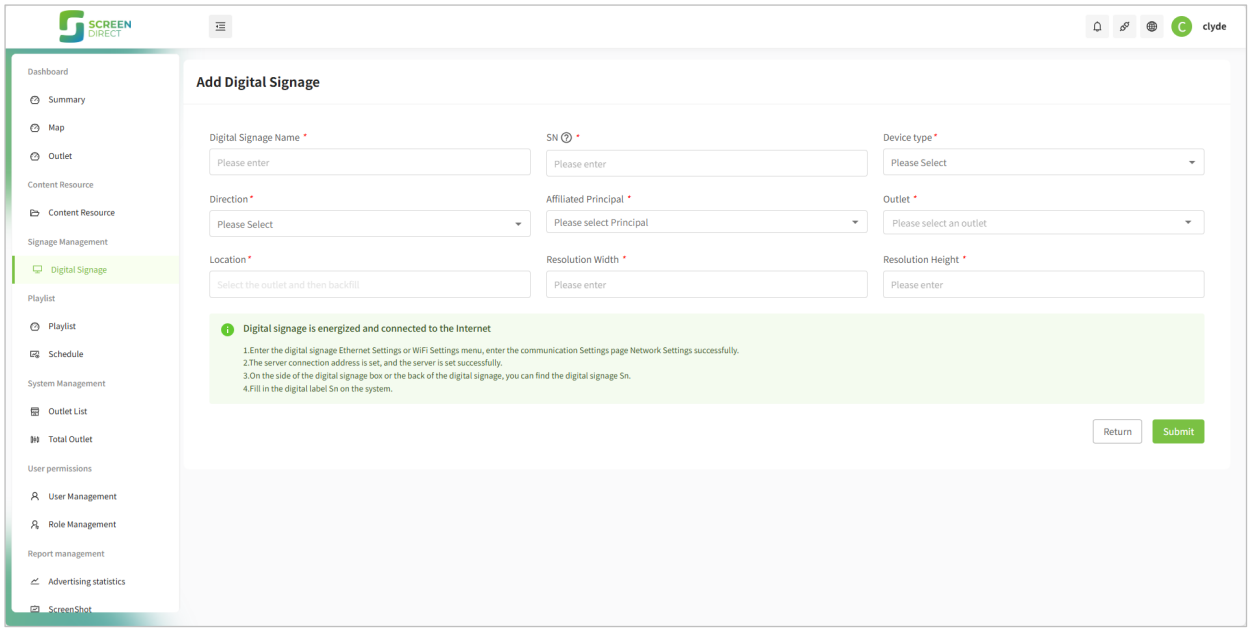
If the user has an account, follow these steps:

1. Access the Screen Direct Web at cmsl2.zkdigimax.com.
2. Log in using your user credentials: email, password and enter the verification code.
3. Then click "**I have read and agree user agreement and privacy policy**" and click **Login**.

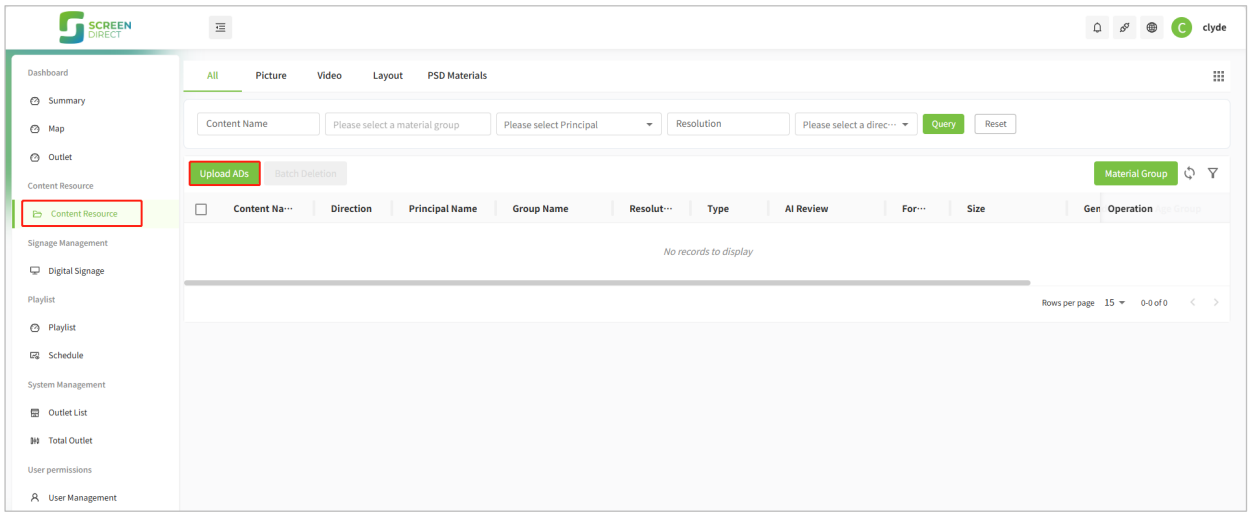


4. To add a device, click [**Signage Management**] > [**Digital Signage**] > [**Add Digital Signage**]. In the pop-up Add New Digital Signage interface, enter the serial number displayed on the device to bind it.

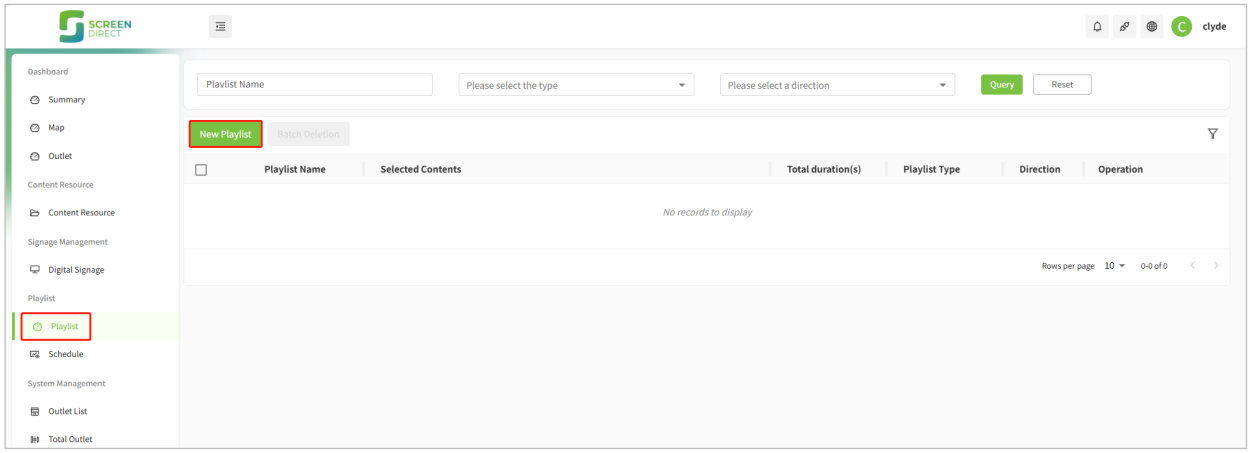


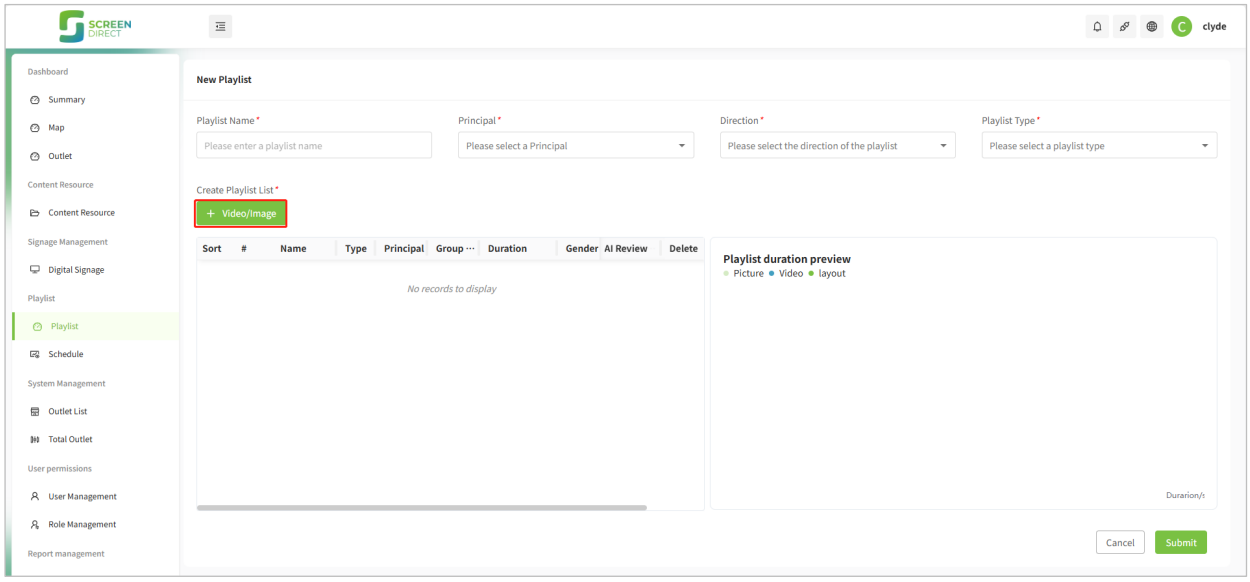


5. Upload content assets. Click [**Content Resource**] - [**Content Resource**] - [**Upload ADs**].

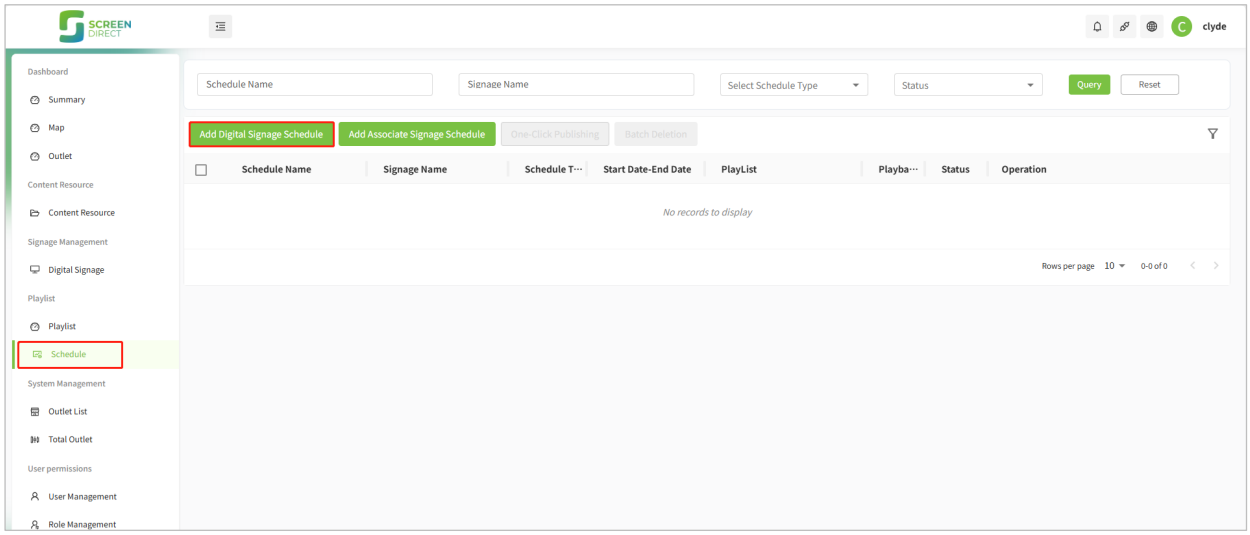


6. Create a playlist. Click [**Playlist**] - [**Playlist**] - [**New Playlist**] to add a new playlist. Then select the recently uploaded media, and finally save.

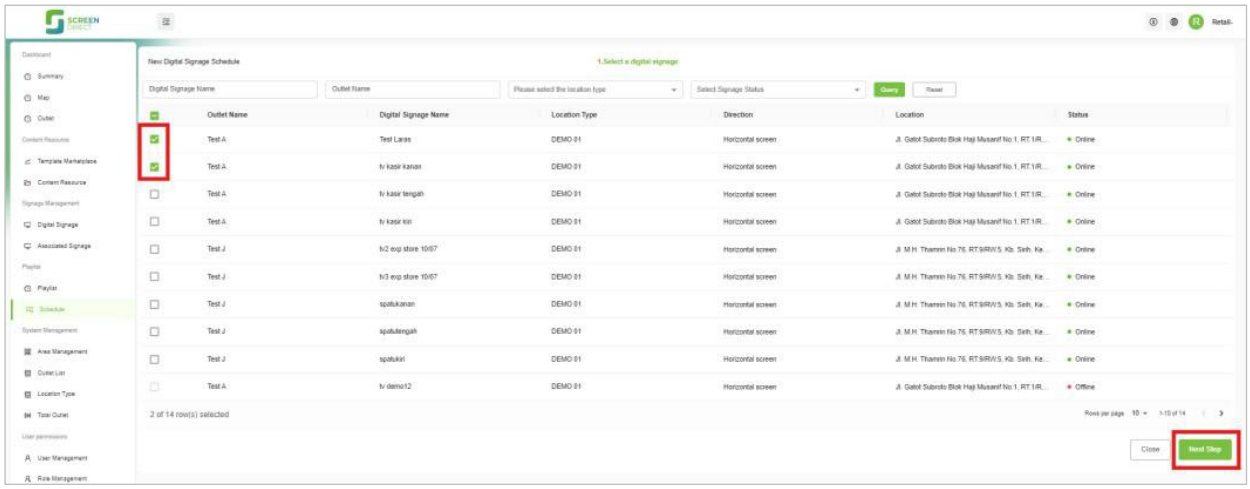




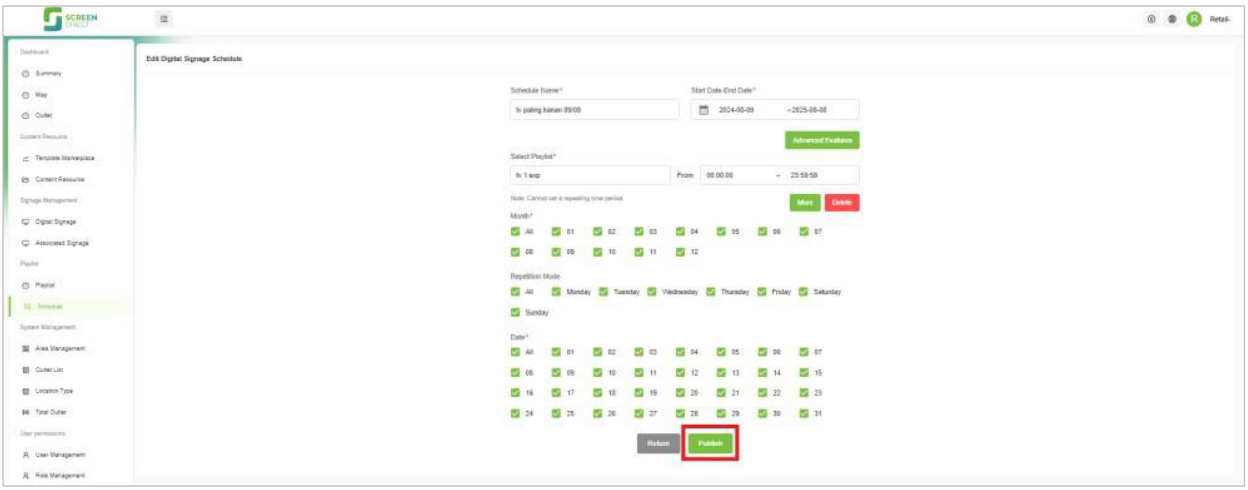
7. Create a schedule. Click [**Playlist**] - [**Schedule**] - [**New Digital Signage Schedule**]. Then to select a digital signage.



8. After that select one or more digital signage that we want to set the schedule and click [Next Step], as shown below.



9. Next, enter the basic information for the digital signage schedule. This includes setting the schedule name, defining the playback time, selecting the playlist, set the playback time for each item, and configuring the month, repetition mode, and date of the schedule. Once you have completed these settings, click [**Publish**] to finalize.



9 Maintenance

9.1 Cleaning and Maintenance

1. **Regular Cleaning:** Regularly wipe the surface of the cold plate spray-painted area with a soft cloth or soft brush to remove dust and dirt. Avoid using hard objects or rough tools to prevent scratching the surface.
2. **Special Situation Handling:** If there are difficult-to-remove stains such as paint or glue on the surface, use professional cleaning agents for cleaning. Avoid using highly corrosive chemicals to prevent damage to the spray-painted coating.

9.2 Coating Inspection and Repair

1. **Regular Inspection:** Regularly check the integrity of the spray-painted coating, looking for scratches, wear, or peeling. If coating damage is found, it should be repaired in a timely manner.
2. **Coating Repair:** For minor scratches or wear, use professional spray-painting repair tools and materials for local repair. Ensure the coating is smooth and aesthetically pleasing after repair.

9.3 Mechanical Component Maintenance

1. **Fastener Inspection:** Regularly check all fastening bolts and connecting parts to ensure they are not loose. If any looseness is found, tighten them promptly.
2. **Lubrication Maintenance:** Regularly lubricate the transmission and moving parts to maintain good lubrication. Use suitable lubricating oil or grease to avoid damage to components due to insufficient lubrication.

9.4 Electrical Component Maintenance

1. **Cleaning and Inspection:** Keep electrical components clean and regularly check that electrical connections are secure. Avoid electrical failures due to dust accumulation or loose connections.
2. **Safe Operation:** When inspecting and maintaining electrical components, the power must be disconnected to ensure operational safety.

Caution: By following the above methods, the service life of the equipment can be effectively extended, and its appearance and performance can be maintained in good condition. It should be noted that the maintenance and care must be carried out by personnel who have undergone professional training, especially for the core mechanism and electrical control parts. The power supply must be disconnected first to ensure safe operation.

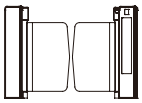
10 Troubleshooting

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 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 expired.	Check to see if the opening delay time is too long or whether the sensor is covered.
4	When the gate is self-tested, the swing arm is not in the normal closing position.	During self-test, if obstacles are detected, remove them and restart the self-test after powering on.

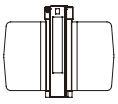
11 Packing List

The package consists of the following items:

- **Saturn-S4000:**

	Saturn-S4000 (Primary and Secondary)	2
	Power Cable	1
	Expansion Screw M12*100	8
	Stainless Steel Maintenance Wipes	1
	Hex Wrench	1

- **Saturn-S4200:**

	Saturn-S4200	1
	Power Cable	1
	Expansion Screw M12*100	4
	Stainless Steel Maintenance Wipes	1
	Hex Wrench	1

Revision History

Revision	Date	Author	Reviewer	Description
V1.0	20/01/2026	Julia Huang		Original Document
V1.0	24/03/2026	Stella Xia		Modify the parameters

ZKTeco Industrial Park, No. 32, Industrial Road,

Tangxia Town, Dongguan, China.

Phone : +86 769 - 82109991

Fax : +86 755 - 89602394

www.zkteco.com