

Swing Barrier

User's Manual








Foreword

General

This manual introduces the functions and operations of the swing barrier (hereinafter referred to as "the Turnstile").

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
 DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
 TIPS	Provides methods to help you solve a problem or save time.
 NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V1.0.1	Revised the wiring diagram.	May 2023
V1.0.0	First Release.	March 2023

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or

visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.

- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the Turnstile, hazard prevention, and prevention of property damage. Read carefully before using the Turnstile, comply with the guidelines when using it, and keep the manual safe for future reference.



- Pregnant women, the elderly, and children must be accompanied when passing the turnstile.
- Children shorter than 1 m must pass the turnstile in the arms of or alongside an adult.
- Do not stay or play in the passage.
- Make sure that your suitcase passes in the front or alongside you.
- Only one person can pass through at a time. Do not trail a person, linger in the passage or break through the passage.
- Violent impact might damage the machine core and shorten the service life of the turnstile.
- Make sure that the turnstile is correctly grounded to prevent personal injury.
- Do not use the turnstile when thunder occurs.



- After the installation, remove the protective film and clean the turnstile.
- Regularly perform maintenance on the turnstile to ensure that it works properly.
- If the turnstile is installed near places with poor air, such as a swimming pool entrance, within 50 km of the sea or a construction site, then maintenance must be performed more frequently on the stainless cover.
- Do not use paint thinner or any other organic agent during maintenance.
- When using a face identification component, apply waterproof silicon sealant to the installation position.

Operation Requirements



- Make sure that the power supply is correct before use.
- Do not unplug the power cord on the side of the Turnstile while the adapter is powered on.
- Operate the Turnstile within the rated range of power input and output.
- Transport, use and store the Turnstile under allowed humidity and temperature conditions.
- Do not drop or splash liquid onto the Turnstile, and make sure that there is no object filled with liquid on the Turnstile to prevent liquid from flowing into it.
- Do not disassemble the Turnstile without professional instruction.

Installation Requirements



- Do not connect the power adapter to the Turnstile while the adapter is powered on.
- Strictly comply with the local electric safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the Turnstile.
- Do not connect the Turnstile to two or more kinds of power supplies, to avoid damage to the Turnstile.



- Install the Turnstile on a stable surface to prevent it from falling.
- Do not place the Turnstile in a place exposed to sunlight or near heat sources.
- Keep the Turnstile away from dampness, dust, and soot.
- Install the Turnstile in a well-ventilated place, and do not block its ventilation.
- Use an adapter or turnstile power supply provided by the manufacturer.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the Turnstile label.
- The Turnstile is a class I electrical appliance. Make sure that the power supply of the Turnstile is connected to a power socket with protective earthing.

Precautions

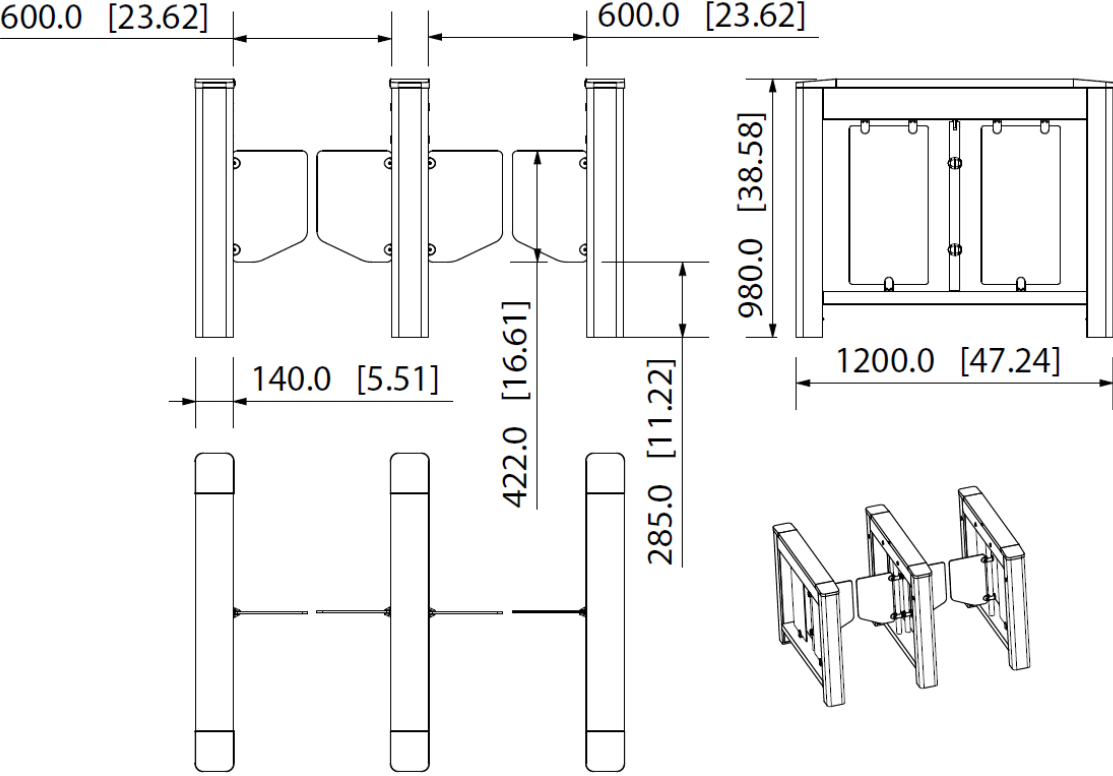
- When authorizing a person to pass through the turnstile, there should be no person on the opposite side of the turnstile, otherwise the barriers will remain unlocked until the person on the opposite side exits.
- Pass through the turnstile as soon as possible after authorization. If the person does not enter within the specified time, the system will automatically close the barriers.
- When multiple persons are entering, they can pass with continuous authorization when memory mode is enabled. But the interval between continuous authorizations is recommended to be 2 s–5 s.
- Pay attention to the status of the indicator when verifying a person's identity. Red indicates that the identity of the person was not verified. Green indicates that their identity was successfully verified, and that the person can pass through.
- Do not try to forcibly pass through the passage. This Turnstile supports intelligent anti-trailing and anti-reverse intrusion. If you forcibly break through, the system will automatically lock, closing off the passage. This can result in a person becoming injured.
- The Turnstile will not correctly recognize the authorized card if it is used together with other cards.
- Keep the authorized card well to make sure it works properly.
- Do not pass items through the turnstile, otherwise the turnstile will consider the item as unauthorized.

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1 Product Dimension

Figure 1-1 Dimensions (mm [inch])



2 Installation

2.1 Installation Precautions



WARNING

- Acrylic barriers cannot be used outdoor.
- Strictly conform to the requirements in the manual during installation. We will assume no responsibility for losses incurred due to incorrect installation of the device.
- Incorrect installation and improper use of the device might result in the device sustaining damage or people becoming injured.
- Any security and control devices that you use with the Turnstile must conform to the EN12978 standard.
- Power off the Turnstile before installing, wiring or disassembling it.
- The Turnstile consists of various mechanical and electrical modules. Please remain focused during installation to avoid damaging the device and injuring people.
- If smoke, strange smell or noises come out from the Turnstile, cut the power off immediately, and then contact the distributor or service center. Immediately cut the power and disconnect the power cord if smoke, noise or a strange smell comes from the Turnstile. Make sure to contact your local retailer or after-sales service.
- Do not disassemble the outer cover unless necessary to avoid damaging the device and injuring yourself.



- Make sure the Turnstile is firmly fixed to the ground.
- When connecting the Turnstile to mains electricity with a voltage range of 100 V to 240 V, make sure the Turnstile is properly grounded.
- Do not stand in the lane to operate the Turnstile when it is powered on.
- Gloves and goggles are recommended for the installation.

2.2 Before Installation

- Make sure that the ground the Turnstile is installed on is flat.
- Keep the installation area clear after the Turnstile is installed.
- Prepare an installation location that suits the width of the passage and installation diagrams.
- Build a concrete base that is 50 to 150 mm high (depending on the circumstance) when the Turnstile is installed in a location that is prone to high humidity and water accumulation. Apply silicone sealant to gaps between the concrete base and Turnstile to prevent condensation and water leaking into the device.

2.2.1 Preparing the Tools

The tools necessary for installation might vary depending on the installation location.

- Cement ground
 - Obtain an electric hammer drill, No. 16 drill bit, marker, tape measure, spirit level, plumb bob, hammer, wrench, angle grinder, cut-off saw, and screwdriver.
- Marble and ceramic ground

Because marble and ceramic are fragile, an electric hand drill must be used. First drill some small holes into the marble and ceramic ground, add some cooling water, and then drill them into round holes. Flush off the remains in the holes and drill again for the proper size holes you require for installation.

2.2.2 Cabling

The installation site must be evaluated before installation, including proper spacing, a firm foundation, and separate conduits with the power and communication lines running through it. Please refer to the cabling drawings to measure the installation location and mark the location where the turnstile will be installed.

- Before you install the Turnstile, drill conduit channels in the ground for wiring power lines, interconnecting cables and network cables.
- Make sure wires are clearly labelled and mark them.
- To avoid damaging the buried PVC conduits when you are drilling holes in to the ground, the conduits need to be laid no less than 150 mm under the ground, and the height of their exposed part must be no less than 50 mm to avoid water leaking into the conduit.
- The inner diameter of the conduit for the interconnecting cables is recommended to be greater than 20 to 25 mm.
- Strong currents and weak currents cannot be placed in the same conduit. Make sure the AC power line (strong current), interconnecting cables and network cables (weak currents) are placed separately in different conduits.
- Pull the wires through the conduit openings, and make sure they can run up into the turnstiles.

Figure 2-1 Space requirements (mm [inch])

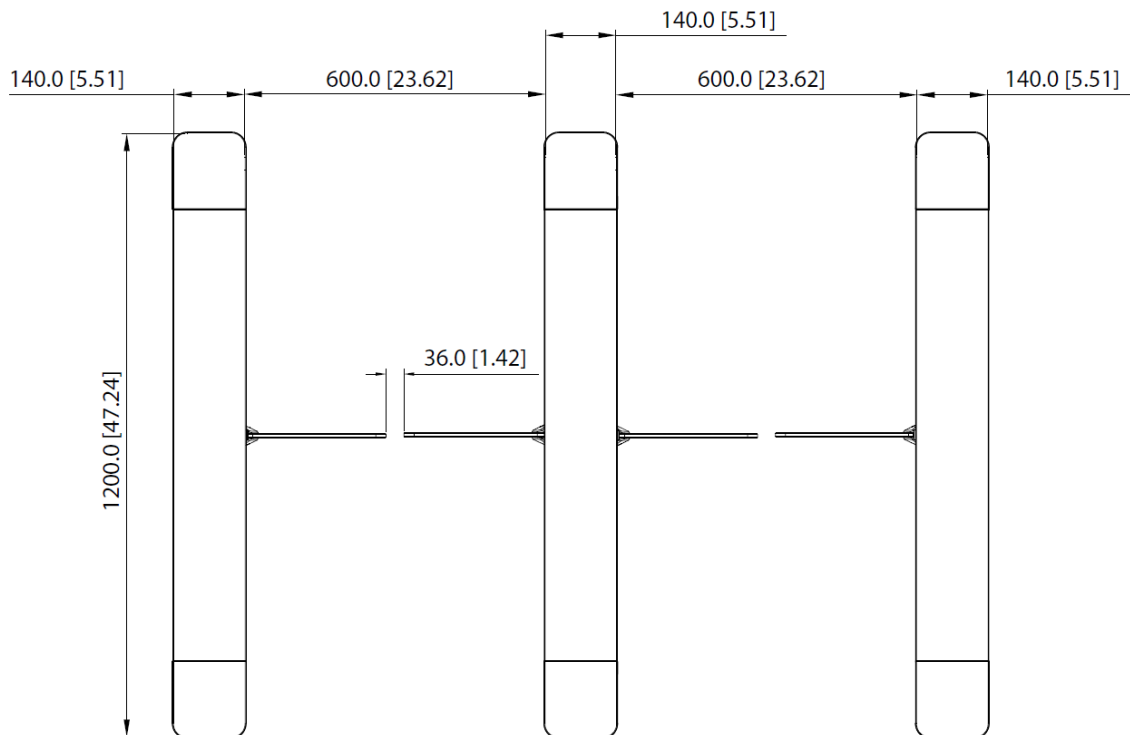


Figure 2-2 Conduit requirements (1) (mm [inch])

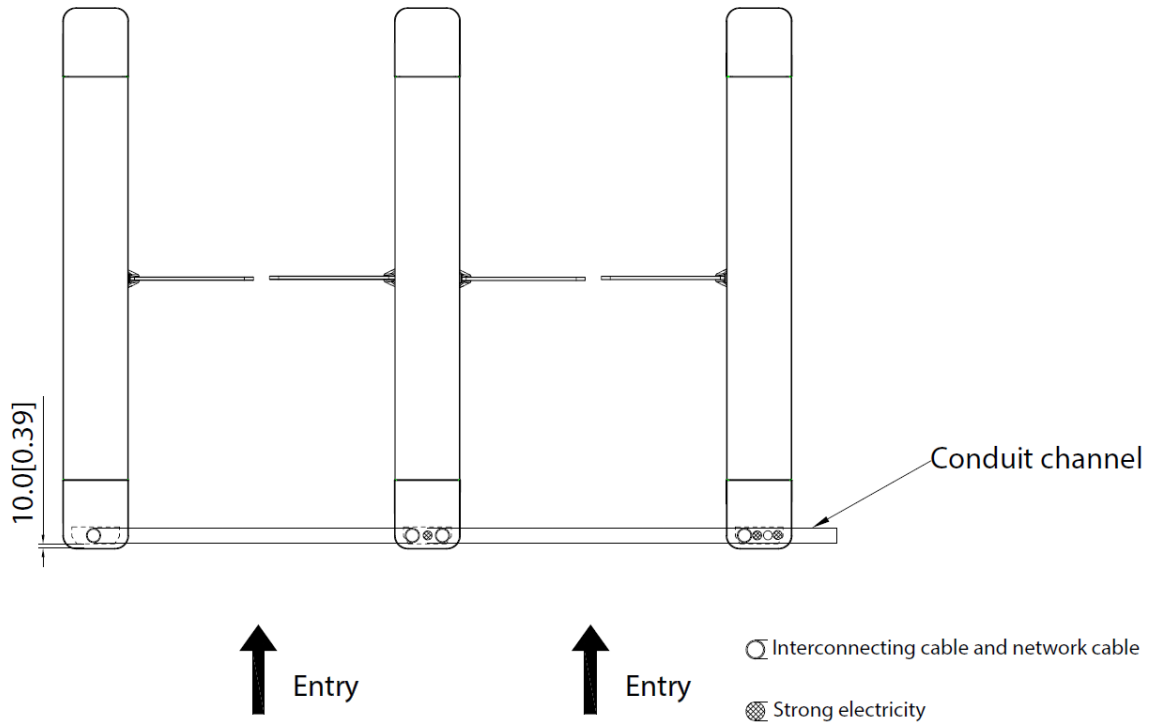
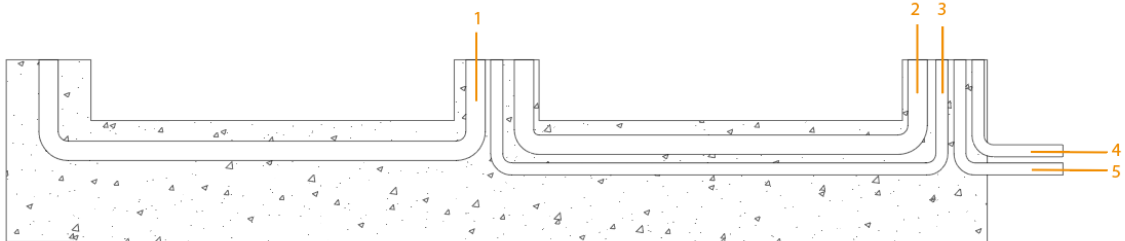


Figure 2-3 Conduit requirements (2)



Drill conduit channel under the ground. Depth is 100.0 mm and width is 37.7 mm.

Table 2-1 Conduit requirements description

Number	Description	Notes
1	Run an interconnecting cable and a network cable (CAT5) in the PVC conduit (D32).	Leave 3 extra meters on the network cable after passing it through the conduit opening.
2	Run an interconnecting cable and a network cable in the PVC conduit (D32).	
3	Run a power cord in the PVC conduit (D20).	14 AWG. LNPE
4	Run a network cable in the PVC conduit (D20).	Connect the Turnstile to a network.
5	Run a power wire in the PVC conduit (D20).	Connect the Turnstile to a power source.



A two-lane passage can be created using a left turnstile, middle turnstile and right turnstile. The left turnstile is the sub-turnstile, and the right turnstile is the main turnstile. The main turnstile sends signals to the sub-turnstile.

Figure 2-4 Wiring of interconnecting cables

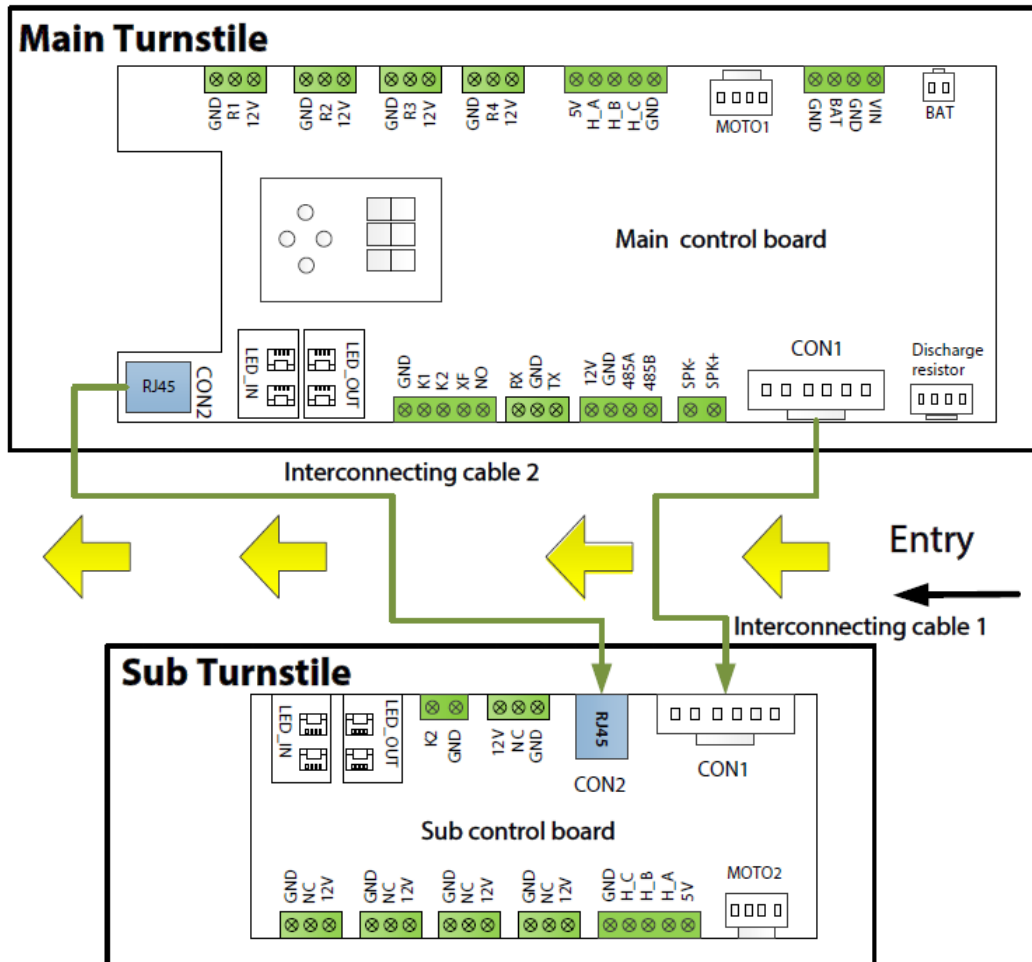


Table 2-2 Cable connection description

Cable type	Description
Network cable (CAT5)	Connect 1 network cable to the main turnstile and sub turnstile respectively, and connect 2 network cables to the center turnstile.
Interconnecting cable	Connect the main turnstile to the middle turnstile with the interconnecting cable, and connect the middle turnstile to the sub turnstile with the interconnecting cable.
Power wire (100 V–240 V strong current)	Connect a power wire (RVV3 × 2.5) to each turnstile respectively. Leave the power wire 3 meters long after passing it through the conduit opening.

2.3 Installation Procedure

2.3.1 Drilling Holes

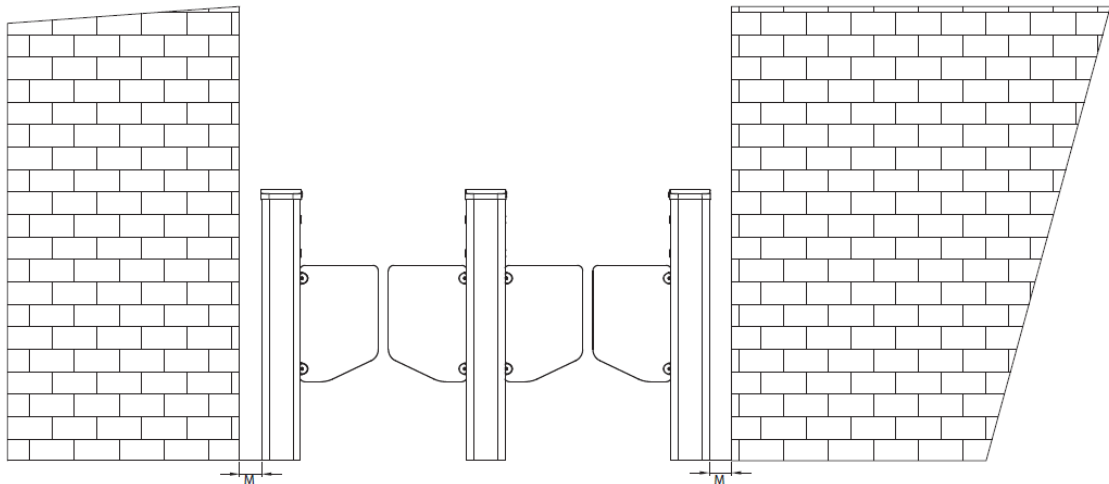
Prerequisites

Before installing the Turnstile next to buildings, leave some space between the Turnstile and the buildings.



- Do not place the Turnstile in the wrong direction.
- When you install turnstiles next to buildings, make sure that their distance (M) is no less than 60 mm and not more than 100 mm (depending on the circumstance). This distance is sufficient for the Turnstile cover to be opened during maintenance, and prevents people from passing through the gap between the turnstiles and buildings.

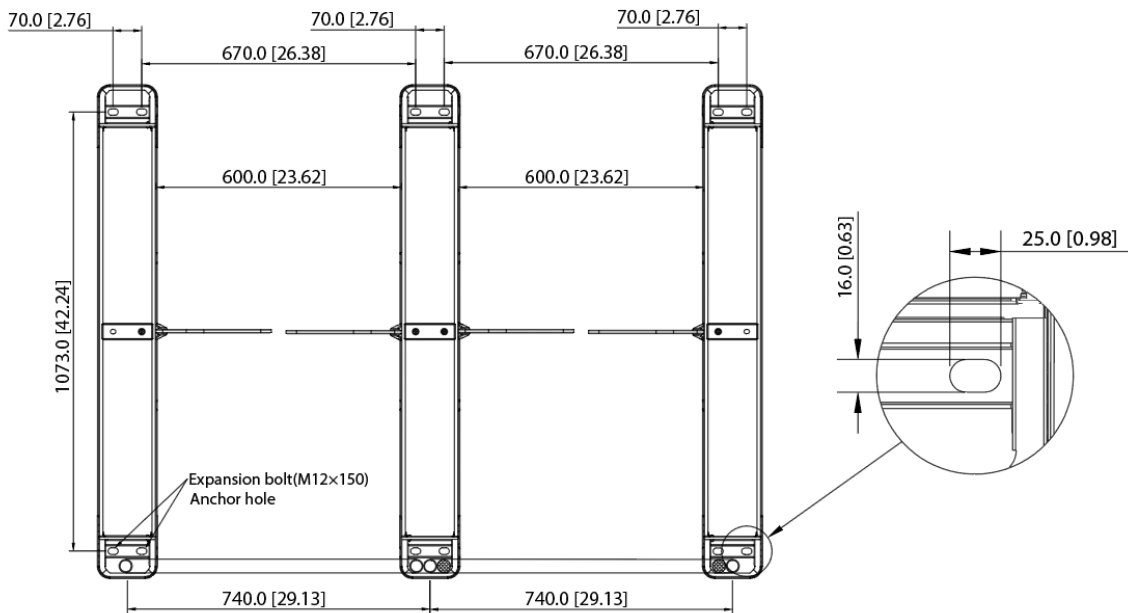
Figure 2-5 Spacing requirements



Procedure

- Step 1 Use a pencil to mark each anchor hole location.
4 holes for each turnstile.

Figure 2-6 Drill holes (mm [inch])



Step 2 Use a concrete drill bit to drill the anchor holes at the center of each marked location, and then insert the expansion bolts into each drilled hole.

Table 2-3 Requirements for the holes

Parameters	Size
Expansion bolt	M12×120 mm
Hole depth	95 mm
Hole diameter	16 mm

Step 3 Use the air pump to remove the remaining dust in the holes.

Step 4 Hammer the expansion bolt into the hole to make sure it is in place.

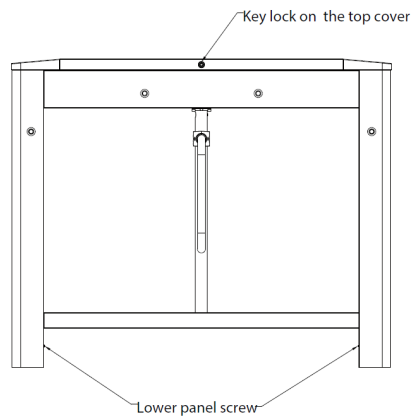
2.3.2 Adjusting the Turnstile

Procedure

Step 1 Maneuver each turnstile over the anchor locations.

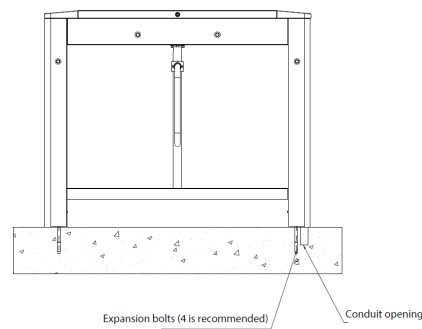
Step 2 Open the turnstile with the key, and then remove the upper cover and the lower panel.

Figure 2-7 Turnstile panels



Step 3 Pass the wires through the conduit openings, wire the turnstile, and keep all the wires organized to avoid the wires breaking.

Figure 2-8 Wiring



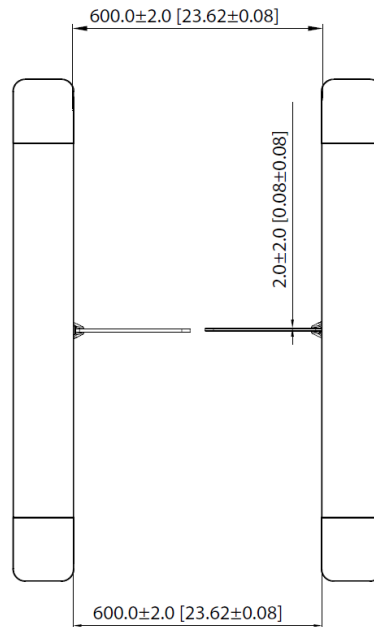
Step 4 Select 3 points horizontally or vertically on the turnstile, and measure them with a level meter to determine the slope of the ground.

Step 5 Repeat **Step 1** to **Step 4** to install other turnstiles.



- Arrows on the top cover of turnstiles must point in the same direction.
- Make sure that the turnstiles are parallel to each other, and the height difference is within an appropriate range.

Figure 2-9 Difference and parallel tolerance (mm [inch])

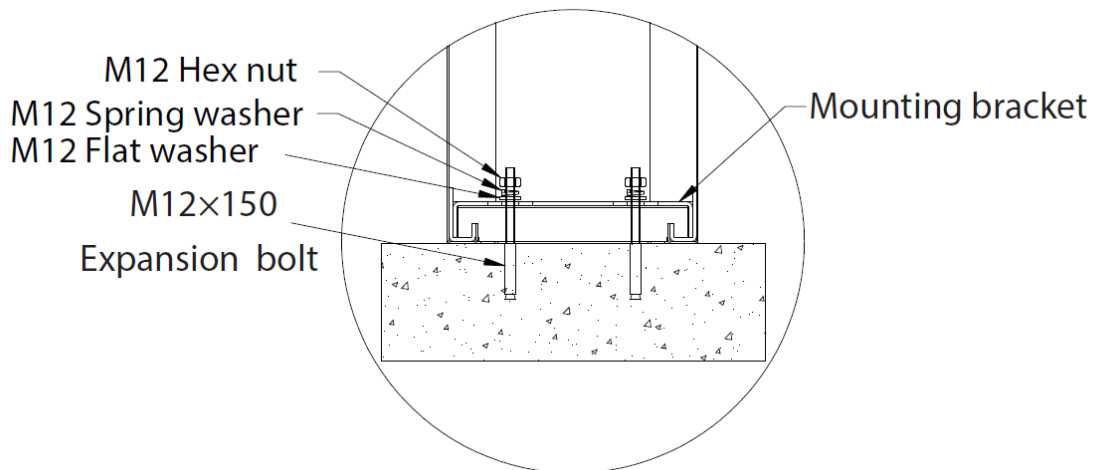


2.3.3 Securing the Turnstile

Procedure

- Step 1 Put the flat washer, spring washer, and nut into the bolts.

Figure 2-10 Fix turnstiles



- Step 2 Tighten all the nuts with a wrench.

- Step 3 Apply silicone sealant to seal the gaps between the Turnstile and the ground to avoid water leakage.

3 Wiring

3.1 Components Overview

Figure 3-1 Components

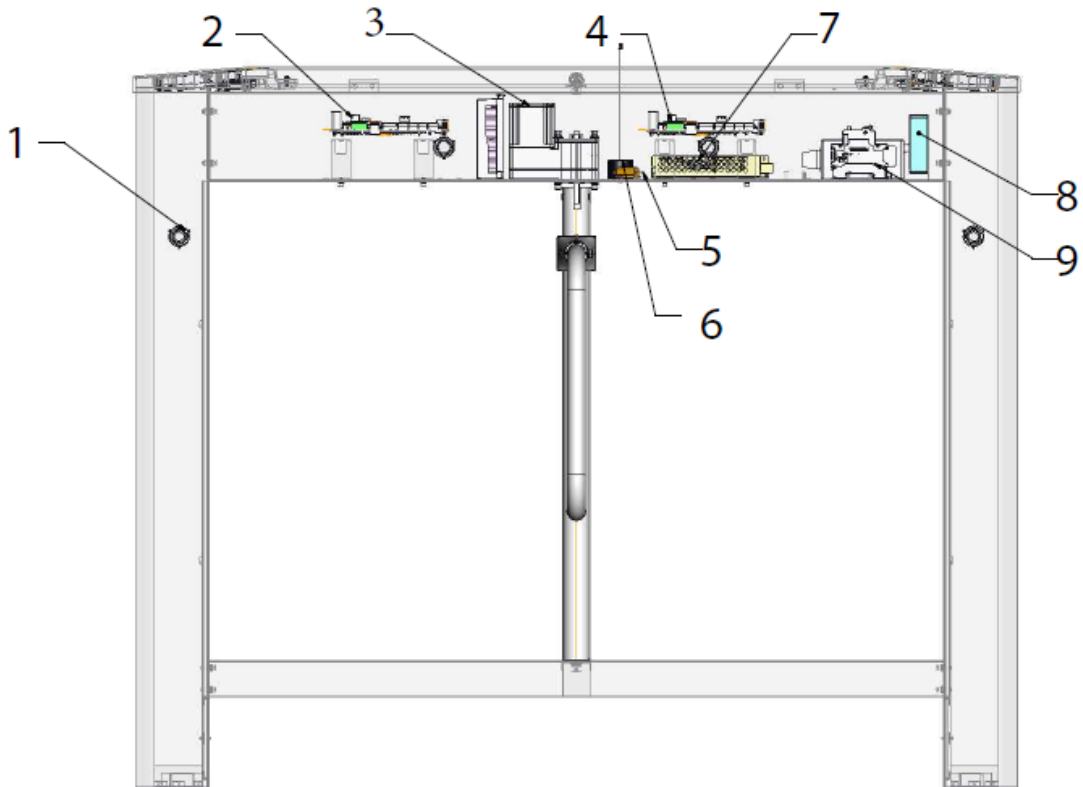


Table 3-1 Components description

No.	Name	Description
1	Infrared sensor	Detects the presence and absence of pedestrians.
2	Sub control board	Sends signals to the sub turnstile through the interconnecting cable.
3	Motor	Controls the opening and closing of barrier arms.
4	Main control board	Receives signals from the sensor, detects passage, connects alarm outputs, and controls the motor.
5	Discharge resistor	Discharges the capacitors to reduce the voltage quickly after power is disconnected.
6	Speaker	Outputs voice messages.
7	Power module	Supplies power (24 V).
8	Fan	Ensures there is airflow in the turnstiles to prevent condensation.
9	Air Circuit Breaker	When a power leakage or power outage occurs, the main power supply will be cut off automatically.

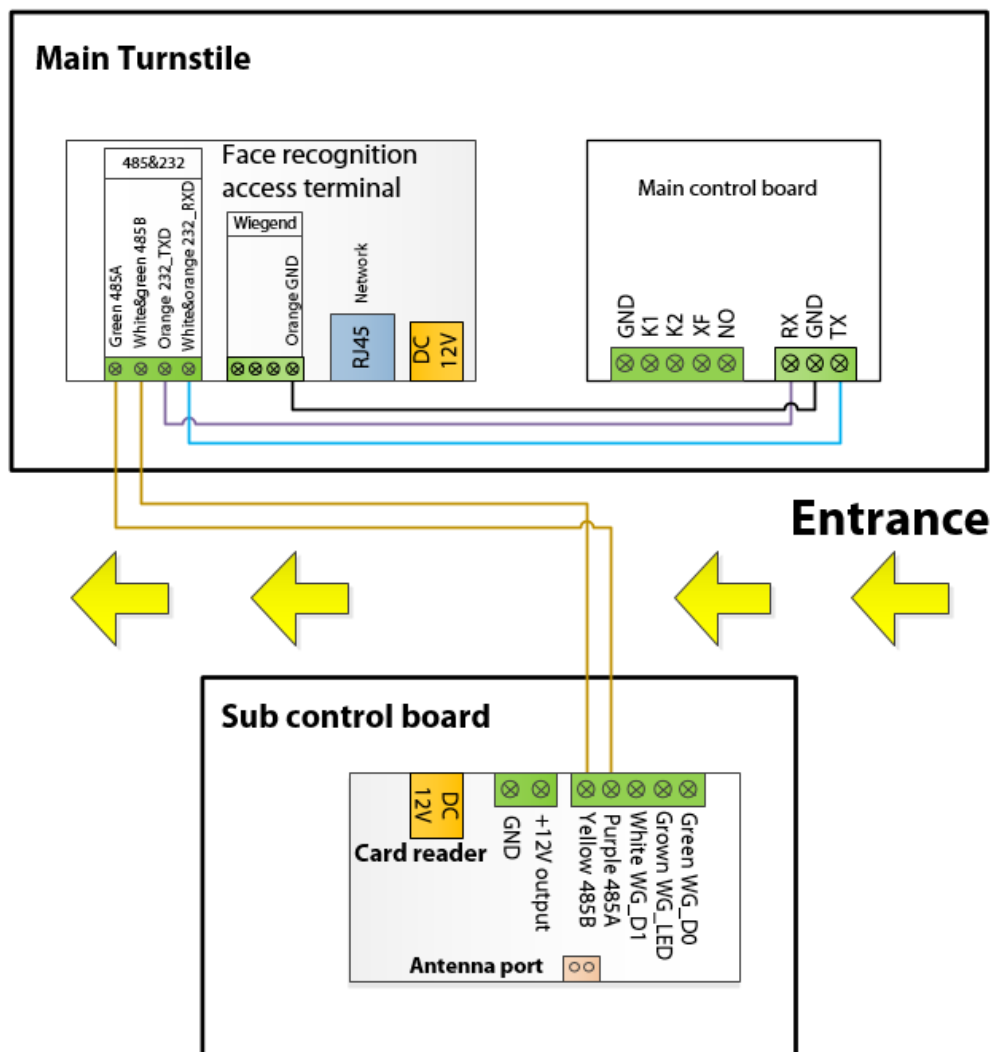
3.2 Wiring of the Turnstile

The face recognition access terminal embedded in the main turnstile works as an access controller.



- The card reader module needs to be purchased separately.
- Set the DIP switch of the face recognition access terminal to 00000000.
- Configure the password of the turnstile through ConfigTool.

Figure 3-2 Wiring



3.3 Wiring of the Face Recognition Terminal (ASI7 Serial-Model A) (One-way Face)

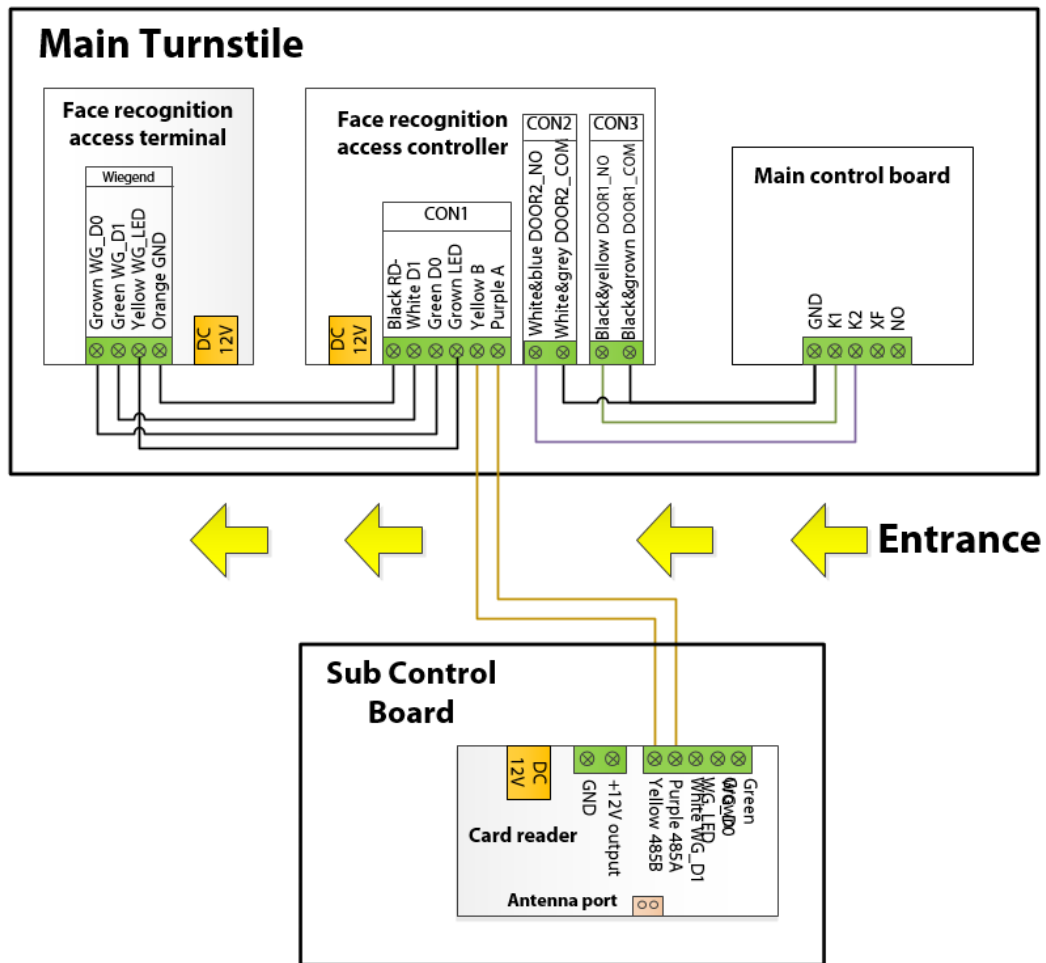
The face recognition access terminal can function as a card reader when it is connected to a face recognition terminal.



- The face recognition access terminal module needs to be purchased separately.

- Set the position 5 and position 8 of the DIP switch to ON.

Figure 3-3 Wiring

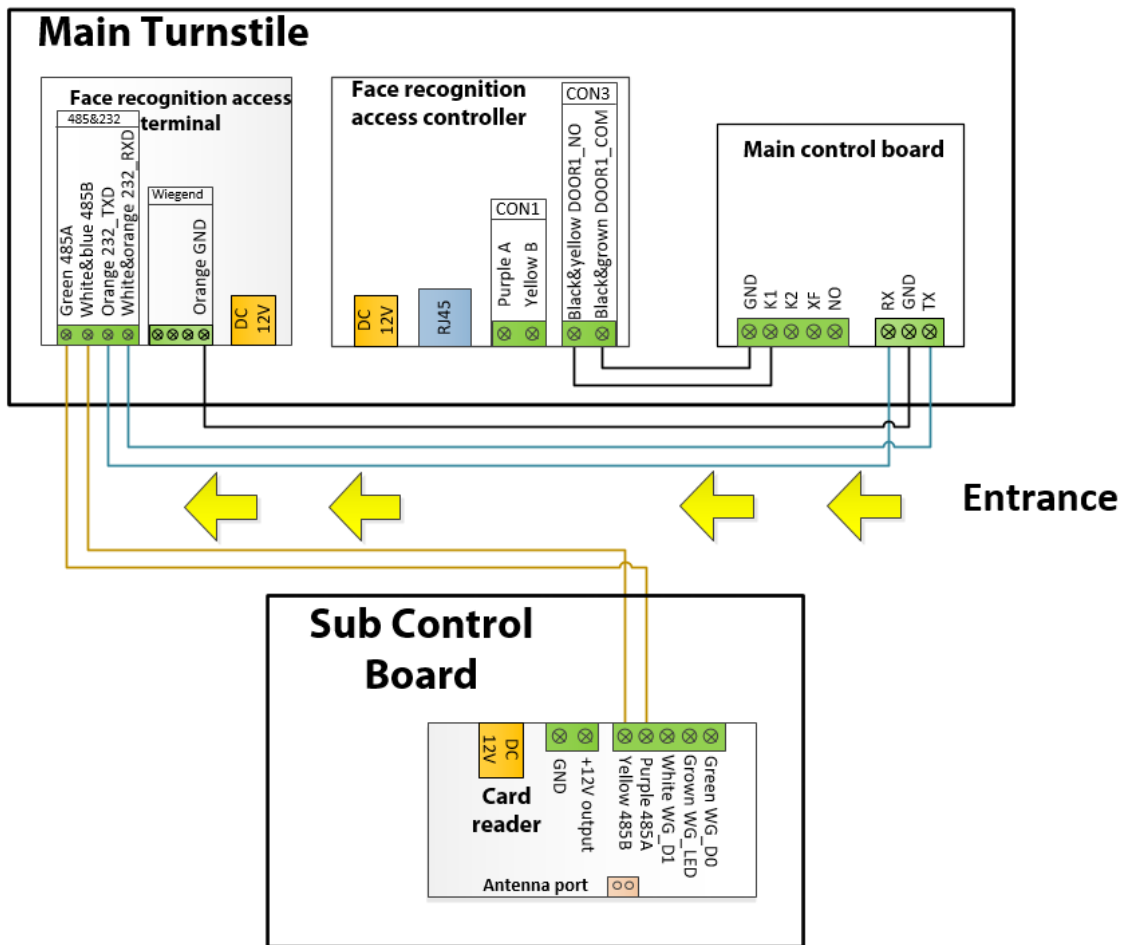


3.4 Wiring of the Face Recognition Access Controller (ASI7K/8/9) (One-way Face)



The face recognition access terminal needs to be purchased separately.

Figure 3-4 Wiring



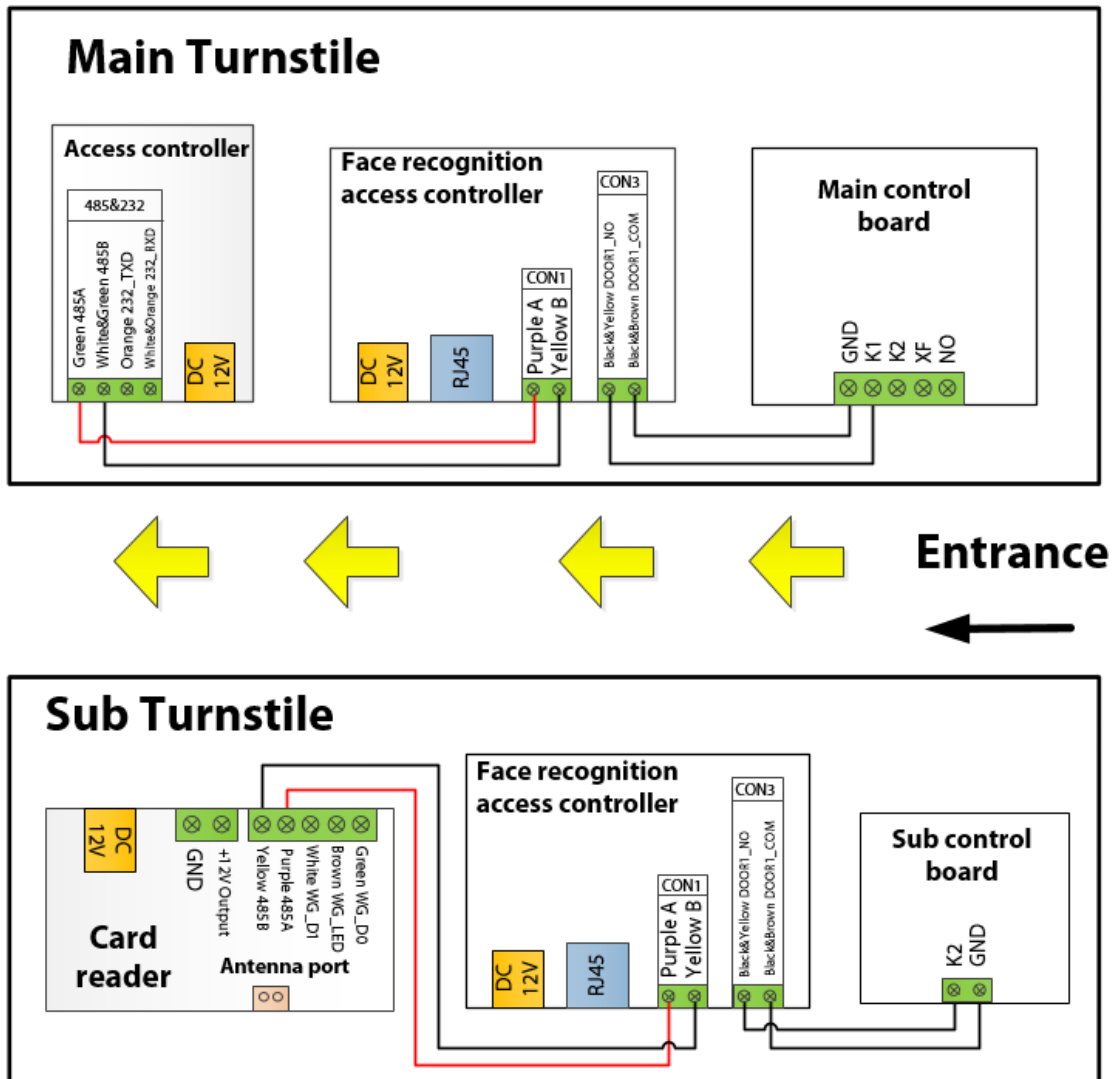
3.5 Wiring of the Face Recognition Module (Two-way Face)

The Turnstile can work with the face recognition module (including the face recognition access controller and face recognition terminal).



- Set the position 5 and position 8 of the face recognition access terminal to ON.
- The face recognition access terminal module needs to be purchased separately.

Figure 3-5 Wiring



4 Configuring and Debugging

4.1 Menu Functions

Figure 4-1 Menu

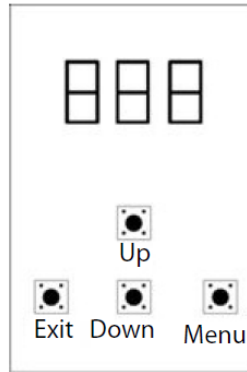


Table 4-1 Menu description

Menu	Description
Menu/confirm	Enter the menu or save changes.
Up	Navigate the menu items.
Down	
Esc	Go back to the last page or cancel operations.

Table 4-2 Menu functions

Digit bit	Name	Parameter	Description
F01	Passage modes	<ul style="list-style-type: none"> Controlled passage/controlled passage. Controlled passage/free passage. Controlled passage/no passage. Free passage/controlled passage. Free passage/free passage. Free passage/no passage. No passage/controlled passage. No passage/free passage. No passage/no passage. 	<ul style="list-style-type: none"> Controlled passage: Enter or exit after the identity is successfully verified. Free passage: All people are allowed to pass without their identity being verified. No passage (direction closed): Nobody is allowed passage, even if their identity is successfully verified.

Digit bit	Name	Parameter	Description
F02	Passage duration	<ul style="list-style-type: none"> ● 02: 5 s (default) ● 03: 10 s ● 04: 15 s ● 05: 20 s ● 06: 30 s ● 07: 45 s ● 08: 60 s 	After successful identification, the turnstile stays open for a defined time for people to pass through. If people remain in the lane after the defined time, an alarm will be triggered.
F03	Close delay	<ul style="list-style-type: none"> ● 01: 0 s (default) ● 02: 2 s ● 03: 4 s ● 04: 5 s ● 05: 8 s ● 06: 15 s ● 07: 30 s ● 08: 60 s 	The delay time for closing the barrier starts when people leave the Infrared detection area.
F04	Security level	<ul style="list-style-type: none"> ● 01: level one: When people enter in the wrong direction or tailgate, there will be light prompts but no sound alarms, and the turnstile will not close. ● 02: level two (default): When people enter in the wrong direction or tailgate, both light and sound alarms will be triggered. The turnstile will not close. ● 03: level three: When people enter in the wrong direction or tailgate, both light and sound alarms will be triggered. The turnstile will close. 	—
F05	Second unlock	<ul style="list-style-type: none"> ● 01: Turn off ● 02: Turn on (default) 	When people enter the passage without swiping their card, an intrusion alarm will be triggered. They can swipe their card then to open the Turnstile without leaving the lane.
F06	Memory mode	<ul style="list-style-type: none"> ● 01: Turn off ● 02: Turn on (default) 	Continuously verifies the identity of people when a lot of people have to pass through the passage.

Digit bit	Name	Parameter	Description
F07	Opening speed and closing speed	-00 Opening speed <ul style="list-style-type: none"> ● 01: One level ● 02: Two level ● 03: Three level ● 04: Four level (default) ● 05: Five level ● 06: Six level ● 07: Seven level ● 08: Eight level -01 Closing speed <ul style="list-style-type: none"> ● 01: One level ● 02: Two level ● 03: Three level (default) ● 04: Four level ● 05: Five level ● 06: Six level ● 07: Seven level ● 08: Eight level 	The unlock and lock speed of the turnstile.
F08	Volume	<ul style="list-style-type: none"> ● 01: Silent ● 02: One level ● 03: Two level ● 04: Three level (default) ● 05: Four level ● 06: Five level ● 07: Six level ● 08: Seven level 	You can adjust the volume and select voice prompts for people entering and exiting the area.
F10	Start mode	<ul style="list-style-type: none"> ● 01: Normal startup ● 02: Home position startup ● 03: Aging mode 	The home position is the starting or initial position from which the barrier arms rotate to allow passage. Home position startup: <ol style="list-style-type: none"> 1. Click to confirm, and the barrier arms are released. 2. Manually align the barrier arms. 3. Confirm again, and then the arms will automatically move to the alignment position.
F11	Restore to factory default	<ul style="list-style-type: none"> ● 01: Turn off (default) ● 02: Turn on 	—

Digit bit	Name	Parameter	Description
F12	Passage length	<ul style="list-style-type: none"> ● 01: 600 mm (default) ● 02: 700 mm ● 03: 800 mm ● 04: 900 mm ● 05: 1000 mm ● 06: 1100 mm ● 07: 1200 mm 	—
F13	Version	Press the Up button to display year, month, and date	—
F14	Voice prompt	<p>01 Entrance prompt voice</p> <ul style="list-style-type: none"> ● 00: None ● 01: Welcome ● 02: Welcome home ● 03: Have a good trip ● 04: Welcome again ● 05: Thank you for coming ● 06: Access granted ● 07: Safe journey ● 08: Verified successfully ● 09: You are welcome ● 10: Wish you good health ● 11: Wish you well ● 12: Wish you a speedy recovery ● 13: Wish you success. ● 14: Custom 1 ● 15: Custom 2 ● 16: Custom 3 (default) <p>02 The Exit voice prompts are the same as the entrance voice prompts</p>	—
F15	Language	<ul style="list-style-type: none"> ● Simplified Chinese ● English (United States) 	—
F16	Anti-hit level	<ul style="list-style-type: none"> ● 00: Low (default) ● 01: Medium ● 02: High 	—
F17	Infrared light error	For example, H01 means infrared 1 is abnormal.	—
F18	Barrier arm opening angle	<ul style="list-style-type: none"> ● 03: 3° ● 04: 4° ● 05: 5° ● 06: 6° 	The angle between the turnstile and the barrier arm when the arm opens.
F19	Material of barrier arms	<ul style="list-style-type: none"> ● Acrylic (default) ● Stainless steel 	—

Digit bit	Name	Parameter	Description
F20	Mechanical Anti-squeeze	<ul style="list-style-type: none"> ● 01: low (default) ● 02: Medium ● 03: High 	—
F22	IR detection delay time	<ul style="list-style-type: none"> ● 01: 0 s (default) ● 02: 3 s ● 03: 5 s 	—
F23	Voice switch	<ul style="list-style-type: none"> ● 01: lock (default) ● 02: unlock 	—

4.2 Power-On Self-test

Prerequisites

Before you do the power-on self-test, check the following items:

- Check whether all components of the Turnstile are normal. The Turnstile was tested before it left the factory, but slight changes might occur during transportation and installation.
- Check whether the Turnstile is wired securely.
- Check whether the interconnecting cable is correctly and firmly connected.

Procedure

Step 1 Power on the Turnstile, block the infrared sensor and the Turnstile will prompt abnormal infrared light message.

Step 2 Power off the Turnstile and then restart it.



The Turnstile will perform the power-on self-test automatically. The barrier arm will adjust its position during the power-on self-test. If there is no voice prompt after the power-on self-test completes, it means the power-on self-test was successful.

Step 3 Set the passage mode to free entrance and free exit. When people enter the passage lane, the swing barrier will open and then close.

Check whether the swing barriers are in the right position.

Step 4 Assign access permissions on the management platform, and then set the passage mode to the desired mode.

Appendix 1 FAQ

1. After the turnstile is powered on, the power indicator is still off.
 - Check whether the power works normally.
 - Check whether the DIP switch is set to the right position.
2. The power-on self-test failed, and the system prompts IR error.
 - Check whether the IR sensors were being blocked during the power-on self-test.
 - Check whether the turnstiles are powered on.
 - Open the side door of the turnstiles, and then check whether the indicator light of the IR adapter is red. If the indicator light is red, it means the IR sensors are being blocked or are not aligned.
 - The IR sensors are broken. Contact technical support to replace them.
3. After the power-on self-test failed, the system prompted communication error.

Check whether communication cables of the turnstiles are correctly connected.
4. After the power-on self-test failed, the system prompted mechanism error.

Check whether the barriers were being blocked during the power-on self-test. If not, contact technical support.
5. The turnstile is disconnected from the power source, and the barriers cannot be unlocked.
 - Check whether the storage battery is correctly connected.
 - Check whether the voltage of the storage battery is normal. The normal battery voltage is 12 V.
6. The Turnstile closed after identity verification.
 - Check whether the card is valid.
 - Check whether the information collection board and the access controller are connected correctly.
7. When the power-on self-test fails or an alarm is triggered, the buzzer sounds but there is no voice prompt.

Check whether the audio module is connected properly.
8. The Turnstile remains open beyond the defined period after a person passes through their Turnstile.

Adjust the lock delay duration.
9. Tailgating alarm is triggered when a person passes the turnstile with the luggage.

There are gaps between the person and the luggage. It is a normal phenomenon.
10. The passage indicator or the lane indicator is turned off.

Check whether the lane indicator or the passage indicator is correctly connected to the power source.

Appendix 2 Maintenance

Maintain the turnstile regularly; otherwise its lifespan or performance will be influenced.



WARNING

- Do not spray water onto the Turnstile. You can wipe the turnstile only with water and other neutral liquids.
- Do not clean the exterior of the Turnstile with hard objects.
- Do not wipe and spray the turnstile with chlorine-containing disinfectant.

Turnstile Exterior

- Maintenance cycle: We recommend you maintain the Turnstile once a month; if the turnstile is installed near the seaside or chemical companies, maintenance once a week is recommended.
- Cut off the power supply of the Turnstile before you clean the Turnstile. Do not wet the parts of Turnstile during cleaning.
- To avoid damages to the brushed metal surface, the cleaning agent must not contain granular abrasives.

Maintenance steps:

1. Clean the surface of the turnstile with the non-woven cloth moistened with water or other neutral liquids.
2. After cleaning, use stainless steel maintenance agent to wipe and maintain the whole Turnstile.

Rust removal steps:

1. Wipe clean the surface of the Turnstile with a scouring pad.
2. After spraying the rust remover onto the surface, leave it for 5 minutes.
3. Use a scouring pad to wipe the rust spots along the brushing direction.
4. After rust removal, use stainless steel maintenance agent to wipe and maintain the entire Turnstile.

Turnstile Interior



To avoid short circuit, do not clean the internal power supply and the circuit board with water.

Maintenance cycle: Once every three months is recommended.

Maintenance steps:

1. Cut off the power, open the cover of the Turnstile, and remove the internal dust.
2. When the turnstile is installed outdoor with a face identification device, please check whether it is getting unglued. If it comes unglued, please clean the glue and refill the glue on a sunny day. If the card swiping area also becomes unglued, fix it with the same method.
3. Apply anti-rust lubricating grease on the surface of moving parts such as bearings and retaining ring (moving parts vary with different models).
4. Check whether the circuits, cables, and connector become exposed or loose. Wrap up, straighten or tighten them. If the wires are aging, replace them.
5. Check whether the swing door and the screws of the rotating shaft are loose. If they become loose, please tighten them.
6. Check whether the motor, bearings, fasteners, and drive shaft are all tightened securely. If they get loose, please tighten them.

Appendix 3 Cybersecurity Recommendations

Mandatory actions to be taken for basic equipment network security:

1. Use Strong Passwords

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters.
- Include at least two types of characters; character types include upper and lower case letters, numbers and symbols.
- Do not contain the account name or the account name in reverse order.
- Do not use continuous characters, such as 123, abc, etc.
- Do not use overlapped characters, such as 111, aaa, etc.

2. Update Firmware and Client Software in Time

- According to the standard procedure in Tech-industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the equipment is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
- We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your equipment network security:

1. Physical Protection

We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and turnstile, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (such as USB flash disk, serial port), etc.

2. Change Passwords Regularly

We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. Set and Update Passwords Reset Information Timely

The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. Enable Account Lock

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. Change Default HTTP and Other Service Ports

We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

6. Enable HTTPS

We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. MAC Address Binding

We recommend you to bind the IP and MAC address of the gateway to the equipment, thus reducing the risk of ARP spoofing.

8. Assign Accounts and Privileges Reasonably

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

9. **Disable Unnecessary Services and Choose Secure Modes**

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

10. **Audio and Video Encrypted Transmission**

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

11. **Secure Auditing**

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check equipment log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

12. **Network Log**

Due to the limited storage capacity of the equipment, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

13. **Construct a Safe Network Environment**

In order to better ensure the safety of equipment and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.