

2MWT-5

Access Control Wing Turnstile

Operation Manual



2MWT-5 Access Control Wing Turnstile

1. Product Overview

The Speed Turnstile is designed to be robust, reliable, and aesthetically pleasing. Its rounded structure houses a durable blocking mechanism that requires minimal maintenance.

The unit includes a standard electrical interface, allowing easy integration with various systems such as:

- Access control systems
- Time and attendance systems
- ESD systems
- Fare collection systems
- Biometric identification systems

The speed turnstile is ideal for managing pedestrian flow at entry points of industrial facilities, banks, administrative buildings, retail centers, railway stations, and airports. It also provides free passage during emergency situations. For optimal operation, it is recommended to install one turnstile per 500 users working on the same shift, with a maximum throughput of 30 persons per minute.

Each unit is developed and manufactured under the CE quality management system and undergoes strict inspection and testing prior to shipment. The turnstile utilizes advanced technology to ensure safe and reliable performance. To guarantee proper and safe operation, please read this manual carefully before using the equipment. Improper use or installation may void your warranty rights.

This manual provides a detailed description of the turnstile's structure, operation, and components.

2. Warranty

The manufacturer warrants that the speed turnstile meets all applicable safety and electromagnetic compatibility standards, provided that all storage, installation, and operation instructions are followed.

- Controller Warranty: 1 year (free service)
- Mechanical Components Warranty: 2 years from the date of sale

We will, at our discretion, repair or replace any defective product returned to our facility. Please contact our service department before sending any product for repair or replacement.

3. Safety Precautions & Requirements

3.1 General Safety Notes

The Swing Turnstile has been designed, built, and tested using the latest technology to ensure reliable and safe operation. Although the equipment leaves the factory fully functional and inspected, correct installation and operation are essential to maintain safety and performance.

Please read this manual carefully before installation and operation. Failure to follow these instructions may result in improper use, which can lead to damage, injury, or voiding of the manufacturer's warranty. The manufacturer assumes no liability for damage or injury caused by incorrect use or use for purposes other than those intended.

⚠ Electrical Safety Notice:

The electrical components of this equipment operate at a voltage that can endanger life. Before performing any maintenance or repair, ensure the equipment is completely disconnected from the power supply, and verify the isolation with appropriate testing.

Careful attention to this manual during assembly, installation, and operation will extend the product's service life and ensure optimal performance.

3.2 Specific Safety Notes

- Disconnect all external opening or closing devices (e.g., access control systems, control desks) before performing maintenance work.
- Do not install the speed turnstile without securely mounting it to a stable foundation.
- A main power switch or residual current device (RCD) must be installed for electrical safety.
- Before commissioning, ensure all electrical and functional tests have been successfully completed.
- All electrical wiring must strictly comply with the provided wiring diagrams.
- Only certified and trained electrical technicians are permitted to perform wiring, connections, or cover removal involving main plugs, receivers, or electrical components.
- During maintenance, check all fixing bolts and tighten them if necessary.
- Do not touch current-carrying components (e.g., power supplies, solenoids, resistors, stator housings, lamps) while the unit is operating or immediately after use—these parts may reach high temperatures and cause burns.
- Do not sit on, lean against, or apply excessive force to the barrier arms; this may cause mechanical damage to the turnstile.
- Ensure the equipment interface is used correctly and within its electrical specifications to avoid damage to the turnstile or connected devices.
- This equipment is not explosion-proof. It must not be used in environments containing flammable gases or explosive materials.
 - Optional explosion-proof models are available for such applications if required.

3.3 Installation Safety Requirements

Installation must be performed only by qualified personnel who have thoroughly reviewed and understood this manual.

Warning:

- Ensure all power is disconnected from the AC mains before connecting any cables.
- Use only appropriate and serviceable tools during installation.
- Follow standard electrical safety procedures when routing or connecting cables.
- Before powering on the turnstile for the first time, verify that all installation steps and electrical connections have been completed in accordance with this manual.

3.4 Operation Safety Requirements

When operating the turnstile, always observe general electrical safety standards and proper usage practices.

Do Not Operate the Turnstile Under the Following Conditions:

- If the installation or operating environment **does not comply with the safety requirements** outlined in Chapter 3 of this manual.
- If the **supply voltage** does not meet the specifications provided in Chapter 4

4. Product Description

4.1 Standard Features & Functional Specifications

- **Obstacle Safety Detection with Audible Alarm:**

Detects obstructions during operation and triggers an audible alert to ensure user safety and simplify maintenance.

- **Configurable Operating Modes:**

The operating status and parameters can be easily configured using the built-in keypad on the main control board.

- **Flexible Access Direction:**

Supports multiple operating modes — can be programmed for bi-directional access, entry-only, or exit-only using sensors.

- **Anti-Tailgating & Intrusion Prevention:**

Equipped with bi-directional intrusion and tailgating detection functions to deny unauthorized access attempts.

- **Locking Mechanism:**

The turnstile remains locked in the closed position to prevent forced entry until a valid open signal is received.

- **Automatic Reclosing Feature:**

If no passage is detected within the preset time limit, the gate automatically recloses.

- Default: 10 seconds
- Adjustable range: 1–60 seconds

- **Automatic Opening During Power Failure:**

The barrier arms automatically open during a power outage through mechanical release, without requiring backup batteries.

- Can be configured as fail-safe (opens on power loss) or fail-secure (remains closed).
- Arms automatically return to the closed position once power is restored.

- **Emergency Escape Function (Optional):**

In the event of a power failure, the gates automatically open to meet fire safety requirements.

The gates can also be opened by pressing an emergency button, which can be operated remotely regardless of power status.

- **Fire Alarm Input Interface:**

Includes a standard fire alarm input supporting N.C. (normally closed) contact configuration.

- **Third-Party Integration Compatibility:**

The turnstile can easily integrate with third-party systems such as biometric readers, access control, ESD, time attendance, or consumption systems.

- **Multi-Reader Support:**

Capable of connecting with multiple reader types simultaneously. Supports fast and accurate identification using:

- Magnetic cards
- Bar code cards
- ID/IC cards
- Fingerprint readers
- Facial recognition devices

4.2 Operation Model

- **Directional Control Modes:**

Each passage direction can be configured as controlled mode or free mode.

- In controlled mode, access is managed through a switch button or an access control system.
- In free mode, passage is unrestricted.
- Either one or both directions can be independently set according to the site's access requirements.

- **LED Indicator Function:**

Each side of the turnstile is equipped with **LED traffic lights** to display access status:

- **Green light:** Access permitted (passage allowed)
- **Red light:** No entry (access denied)
- The LED indicators can be configured to display access permissions for left, right, or bi-directional movement.

- **Working Modes:**

Supports both normally open (NO) and normally closed (NC) operation settings.

- **ADA Compliance:**

Standard passage width is 600 mm, meeting ADA accessibility requirements. Custom widths are also available upon request.

- **Remote Management Capability:**

The turnstile can be monitored and controlled remotely via a central management computer, enabling centralized operation and system integration.

4.3 Customized Features & Functions

The turnstile can be tailored with the following optional features to meet specific site requirements:

- Alternative Materials, Finishes, and Custom Designs
- Usage Counter Function – tracks the number of passages.
- Remote-Controlled Button – enables manual override or remote operation.
- Access Control & Biometric System Integration – supports connection with various systems.
- Advanced Identification Options:
 - Face Recognition
 - Fingerprint Recognition
 - ESD (Electrostatic Discharge) System Integration

4.4 Framework Specifications

- **Framework Material:**
 - Standard: 304# Stainless Steel
 - Optional: 201# or 316# Stainless Steel
- **Material Thickness:**
 - Default: 1.5 mm
 - Optional: 2.0 mm
- **Finish Options:**
 - a. Stainless Steel Surface: brushed or polished (default)
 - b. Optional Coatings: any color stoving varnish or anti-fingerprint surface
- **Dimensions (L × W × H):**
 - Default: 1200 mm × 300 mm × 1000 mm
- **Swing Arm Material:**
 - Standard: 10 mm acrylic
 - Optional: tempered glass or steel
- **Arm Extension Length:**
 - Default: 285 mm
- **Inductive Card Reader:**
 - Supplied with standard mounting brackets
 - Can also be customized to fit specific requirements

- **Reader Facilities Mounting**

The reader devices can be installed in multiple ways depending on site requirements:

- **Surface Mounting:** Directly on the turnstile surface.
- **Flush Mounting:** Integrated into the turnstile housing for a seamless appearance.
- **Rack Mounting:** Installed on a separate rack or panel.

The system provides an output interface to interlock the reader devices with the turnstile, ensuring proper coordination between access control and gate operation.

4.5 Electric Specifications

- **Machine Center:** German technological mechanism or optional anti-collision mechanism
- **Input Power:** AC 220V $\pm 10\%$, 50Hz $\pm 10\%$
- **Driver Motor:** 24V DC brush motor
- **Main Board Voltage:** 12V DC
- **Pass Rate:** Up to 35 persons per minute
- **Passage Width:** Standard 600 mm
- **Arm Transmission Angle:** 180°
- **Turnstile Direction:** Unidirectional or bi-directional
- **MTBF (Mean Time Between Failures):** Minimum 10 million cycles
- **Barrier Open/Close Speed:** 1 second (adjustable)
- **Time to Operational State After Power-On:** 3 seconds
- **Automatic Reset Time After Failure:** 10 seconds

Input & Communication Interfaces

- **Input Port:** Supports relay dry contact signal; +12V level signal with pulse width >100 ms; DC 12V pulse signal
- **Communication Port:** RS485 standard; maximum communication range ≤ 1200 m

Operating Conditions

- **Operating Temperature:** -30°C to +60°C
- **Relative Humidity:** <90% (non-condensing)
- **Working Environment:** Indoor or outdoor (sheltered)

5. Equipment Definition

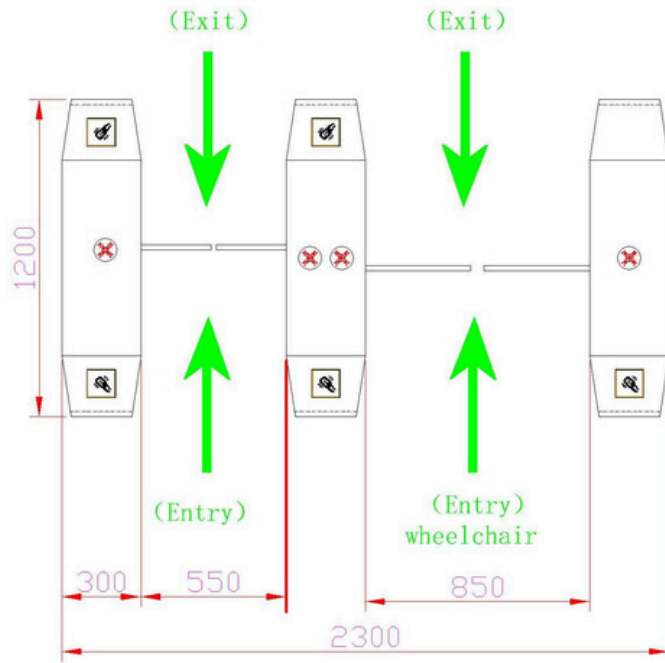
5.1 Term Definition of Entry & Exit

- **Entry:**

The passage direction from outside the controlled area into the area monitored by the turnstile, as illustrated in Figure 1.

- **Exit:**

The passage direction from inside the controlled area to the area outside the turnstile's control, as illustrated in Figure 1.



Dimensions are in mm.

Figure 1.

5.2 Equipment Operation Mode

The turnstile supports bi-directional access control, and each direction can operate in one of the following three modes:

- **Free Passage:**

All individuals are allowed to pass without any restrictions.

- **Controlled Access:**

Each individual must authenticate using a card reader or other access device before being authorized to pass.

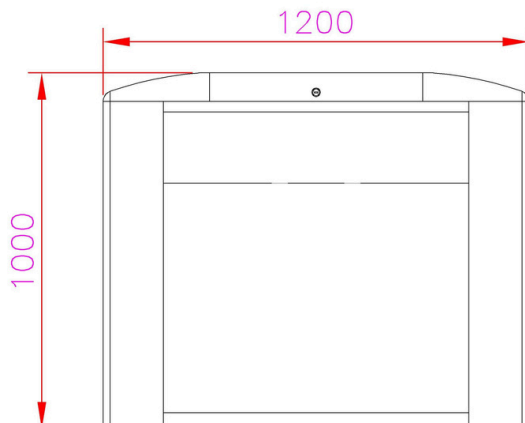
- **Lane Closed:**

No individuals are allowed to pass, and all access cards or credentials are ignored.

5.3 Equipment Outline Dimensions

The Speed Turnstile is available in a complete set of types and specifications, as illustrated in Figure 2.

- Variations in type and specification may occur depending on the reader devices installed and their respective configurations.



Dimensions are in mm.

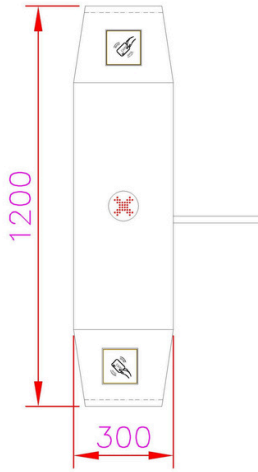


Figure 2.

6. Equipment Assembly and Installation Instructions

6.1 Installation Details

⚠ Caution:

- Always follow the safety requirements outlined in Section 3 during installation.

Proper installation is critical to ensure the turnstile functions correctly and achieves its maximum service life. Please read and follow these installation instructions carefully before beginning assembly.

⚠ Caution:

The manufacturer is not liable for any damage resulting from improper installation. Any claims arising from installations that do not comply with the instructions in this manual will be declined.

6.2 Installation Procedure

• Prepare Tools and Accessories:

Gather all necessary installation tools and sort out all auxiliary components according to the packing list.

• Determine Installation Location:

Select the installation site based on the system layout, operating mode, and application requirements. Complete any necessary system planning before proceeding.

• Prepare Foundation and Mounting Holes:

- Refer to Figure 3 for installation requirements.
- Mark the locations for the mounting holes.
- Install 4 × M12 ground screws or 4 × M12 expansion bolts at the designated locations, as shown in Figure 4.

• Install Power Cables:

- Route the strong and weak power cables separately through 3/4" PVC conduits.
- Bury the conduits and secure them in concrete at the appropriate positions.

• Position Cabinets:

Move each turnstile cabinet to its designated installation location and align it with the previously installed ground screws.

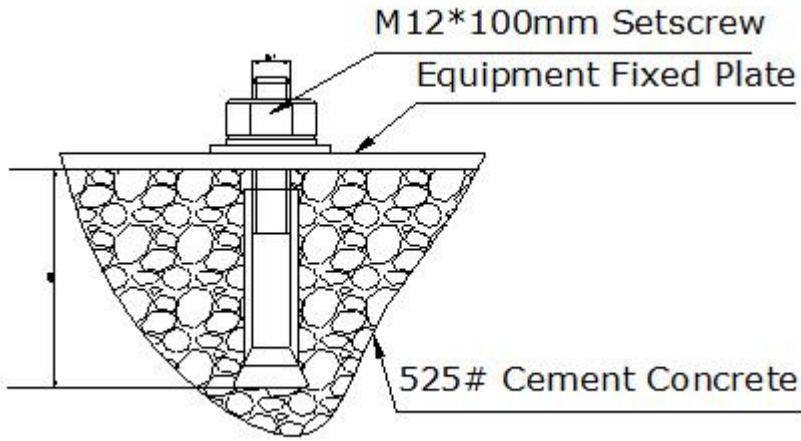


Figure 4. Ground Foot/Foundation Installation Diagram

Size and wiring diagram

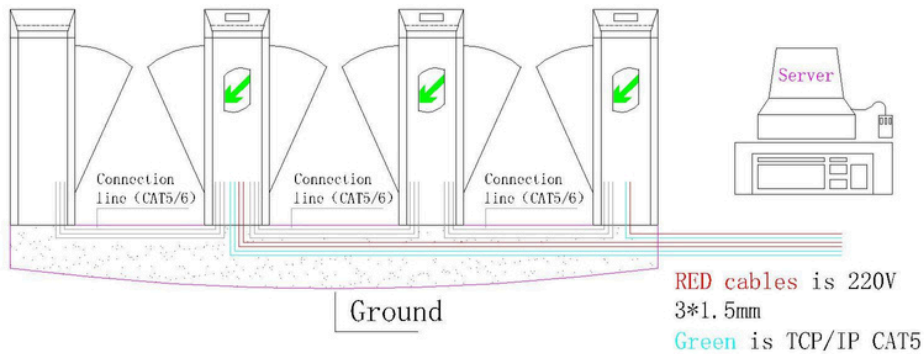


Figure 5. Layout of Multilane Conduits for Cable Routing

Note: For the AC 220V power supply, use RVV 3×1.0 mm² power supply cable.

- **Verify System Composition and Operation Mode:**

Check the system layout and operating mode. Proceed with installation only after confirming that everything is correct.

- **Install Reference Cabinet:**

- Open the cabinet door and select a reference unit (preferably the middle unit in a multi-lane installation).
- Align the screw bolt holes on the chassis with the respective ground screws and tighten the nuts securely.

- **Install Adjacent Cabinets:**

- Open the door of the adjacent cabinet.
- Align the chassis screw bolt holes with the respective ground screws and line up properly with the reference unit.
- Tighten the nuts preliminarily to allow minor adjustments.
- Repeat the process for any additional units.

- **Connect Power and Control Lines:**
 - Refer to the system connection diagram (Figure 6).
 - Connect the power and control lines to the corresponding sockets on the main controller board.
 - Ensure the protection ground wire is connected correctly.
- **Final Check and Secure Fastening:**
 - After a certified status and function check, tighten all ground screw nuts fully to secure the cabinets.

6.3 Opening Signal and Communication Port Wiring Diagram

1. Input Port Specifications:

- Relay dry contact signal
- +12V level signal or DC 12V pulse signal with pulse width >100 ms
- Drive current > 10 mA

2. Row Connector Wiring:

Refer to the wiring diagram (Figure 6) to connect the barrier opening signals to the communication port. There are three types of communication port wiring methods:

A. Relay Dry Contact Signal

- Use 'VDD' as the common port.
- Short 'OPE-L' or 'OPE-R' to open the Entry (Leftward) or Exit (Rightward) direction, respectively.

B. +12V Level Signal or DC12V Pulse Signal

- Use 'GND' as the common port.
- Short 'OPE-L' or 'OPE-R' with the high/low pulse loop to trigger the open signal.

Note: Use high-frequency pulses for 'OPE-L' or 'OPE-R'.

C. Communication Cable Connection

- Connect directly in a one-to-one correspondence at both ends (refer to Figure 7 or Appendix B).
- Passage direction is determined by configuring the master or slave unit.

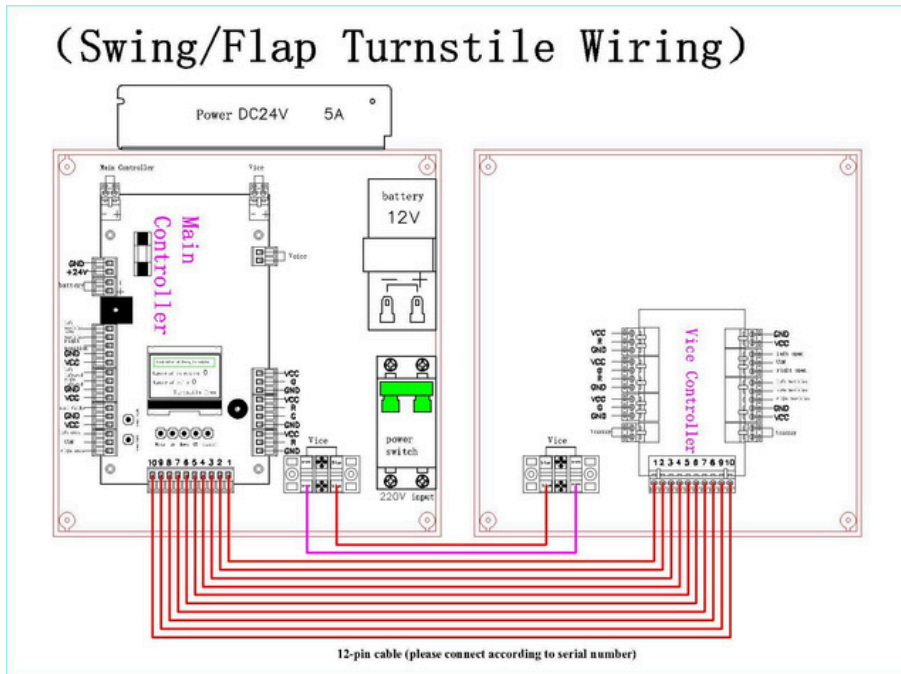


Figure 6. Opening Signal Wiring Methods

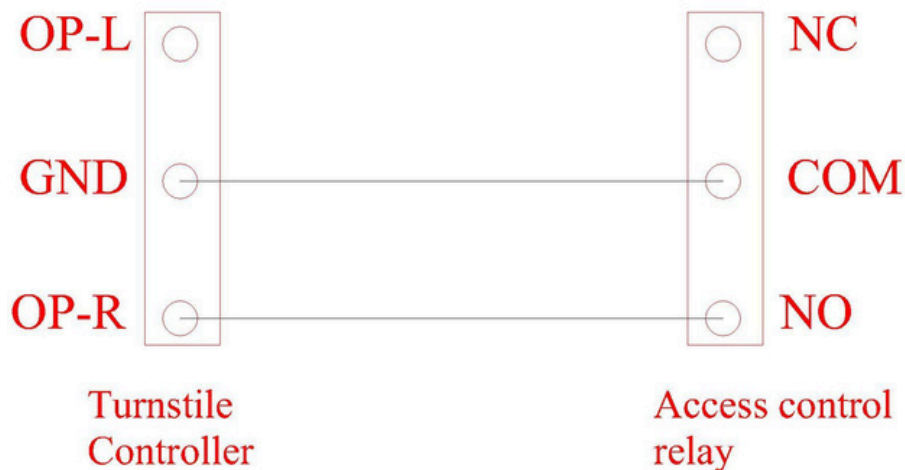


Figure 7. Wiring Connections Between Devices

3. Final Connection Check:

- Verify that all connection cables match the wiring diagram.
- Ensure that all plugs are properly seated and connected.
- Confirm that all devices are reliably grounded.

Once all checks are complete and correct, the devices can be tested after powering on.

Precautions

1. PVC Tube Installation:

- The buried PVC tubes must have a depth of at least 60 mm.
- The portion above ground should extend at least 50 mm.
- The exit of the PVC tubes should be bent downward to prevent water ingress.

2. Power and Grounding:

- All installation and operation steps must be performed with the power turned off.
- Ensure that the system's protection ground wire is connected correctly, securely, and firmly.

3. Outdoor Installation Requirements:

- If the equipment is installed outdoors, prepare a concrete platform with a height of 100–200 mm to protect against humidity.
- Install a rainproof and sun-shading cover above the equipment.
- Do not install the turnstile directly in an exposed environment.

7. Debugging and Commissioning

After completing the mechanical and electrical installation, the turnstile is ready for service.

7.1 Checking Wiring Connections

- Carefully verify that all wiring matches the wiring diagram.
- Ensure that all connectors are secure and not loose.
- Confirm that the equipment is properly grounded.

⚠ Debugging cannot proceed unless grounding is reliable.

Once all checks are complete, the devices can be powered on and tested.

7.2 Function Debugging

1. External Entry and Exit Opening Signals

- Test the turnstile response to external opening commands for entry and exit.

2. Unauthorized Access Handling

- If a person attempts to pass without a valid access signal, the system triggers an acoustic warning.
- (Optional: Extended voice prompt module is available.)

3. Authorized Access Handling

- When a person presents a valid access signal:
 - The directional indicator turns green.
 - The barrier opens to allow passage.
 - A delay timer (configured via menu P03) starts to allow passage.
 - After the person passes, the barrier automatically closes, and the green arrow turns red.
 - If the person does not pass within the timeout, the barrier closes automatically, and the green arrow changes to a red prohibition mark.

4. Close Passage Detection

- If two persons attempt to pass very closely together, the system treats them as one person for counting purposes.

5. Barrier Speed Adjustment

- The opening and closing speed of the barrier is adjustable.
- Refer to the Parameters Setting section of the Main Controller Board for details.

7.3 Equipment Operation After Power On

- Normally Closed (NC) Model:
 - Barrier arm rises automatically after power-on.
 - In the event of a power failure, the arm drops automatically.
- Normally Open (NO) Model:
 - Barrier opens automatically after power-on and remains normally open.

Precautions

- Lightning Protection:

Do not operate the turnstile during lightning or electrical storms, as this may damage the equipment.

- Grounding Requirement:

Ensure the system's protective grounding is connected reliably to prevent accidents or electrical hazards.

8. Parameter Setting of Main Controller Board

8.1 General Description

The main controller board features three digital displays and three independent operation buttons, which can be used for debugging, parameter configuration, and status monitoring.

Button Functions:

- ▲ (Up / Add Button):
 - Increases numerical values or moves upward in the menu.
 - Long press allows rapid increment.
 - Pressing the button does not commit data automatically; values must be confirmed as per menu instructions.

- **◀◀ (Shift / Exit Button):**
 - Moves through menus or shifts data.
 - **Long press (≥1.2 seconds)** returns to the previous menu or exits the current setting.
- **■ (Set / Hold Button):**
 - **Short press** confirms the current selection or data entry.

Forward Direction:

Forward is defined as the same direction as physically passing through the turnstile.

8.2 Parameter Setting of Entry and Exit Menu

Note:

- In the system menu or menu setting interface, if no key operation occurs within 15 seconds, the system will automatically exit to the standby interface.

Menu Setting Instructions

- When powered on, the LCD screen displays the default status, which includes:
 - Current working mode (Swing Gate, Open Gate, Wing Gate)
 - Number of entries and exits
- The control panel has five operation buttons:
 - **Menu** – Access system menu
 - **Up** – Navigate or increase values
 - **Down** – Navigate or decrease values
 - **OK** – Confirm selection or entry
 - **Cancel** – Exit current menu

Accessing the Menu

1. Press the **Menu** button.
2. Enter the password sequence: **Up, Up, Down, Down, Up, Down**.
3. Press **OK** to enter the **menu**.

Navigating and Setting Parameters

1. Use **Up** and **Down** buttons to select a function menu.
2. Press **OK** to enter the function or numeric adjustment interface.
3. Use **Up** or **Down** to select or adjust the corresponding value.
4. Press **OK** to confirm changes.
5. Press **Cancel** to exit the menu manually (otherwise the system will automatically exit after 15 seconds).

Example – Changing Turnstile Work Mode:

1. Enter the menu and select “**Turnstile Work Mode**”.
2. Press **OK** to display the current operation mode.
3. Press **OK** again to enter the modification interface.
4. Use **Up** or **Down** to select the desired mode.
5. Press **OK** to save the changes.
6. Press **Cancel** or wait 15 seconds to exit the menu.

System Menu Description

1. **Entrance/Exit Direction Configuration:**
 - Set the **left direction** for entrance or exit.
 - Set the **right direction** for entrance or exit.
2. **Entrance and Access Configuration:**
 - Enable or disable access for both directions.
 - When disabled, the gate LED signal is inactive.
3. **Gate Work Mode:**
 - Select the method to open the gate:
 - **Infrared (IR) sensor**
 - **Card reader**
4. **Entrance/Exit Memory Function Configuration:**
 - Determines how the system handles unpassed access after card verification (commonly used for credit card access):
 - **Prohibited:** The first card is accepted; the second person must swipe a card to trigger access.
 - **Allowed:** Multiple individuals can pass consecutively according to the number of valid cards.
5. **Entrance Opening Time:**
 - Sets the duration before the gate automatically closes if no one passes through.
6. **Counter Reset:**
 - Clears the entry/exit count for a fresh start.
7. **Equipment Number:**
 - Assigns a device number to the control panel for identification.
8. **Device Information:**
 - Displays basic information such as type, model, and other system details.
9. **Gate Type:**
 - Select the type of gate installed:
 - **Wing Gate**
 - **Swing Gate (Pendulum)**
 - **Open Swing Gate**
 - Choose the appropriate type to ensure proper operation.
10. **System Initialization:**
 - Resets all control board parameters to factory defaults.
11. **Left Pass Voice:**
 - Sets the voice prompt played when passing from the left side (e.g., "Welcome").
12. **Right Pass Voice:**
 - Sets the voice prompt played when passing from the right side (e.g., "All the way safe").
13. **Test Voice:**
 - Automatically plays the internal control panel voice for testing.
 - After playing, the system automatically exits the menu.
14. **Motor Speed:**
 - Sets the running speed of the main motor.
 - A lower value results in a slower motor speed.
15. **Maximum Motor Running Time:**
 - Sets the maximum operating time for the motor.
 - This prevents the motor from running idle if external detection fails or no signal is received.
 - Default value: 10 seconds