

2MWT-5

Access Control Wing Turnstile

User Manual



2MWT-5 Access Control Wing Turnstile

1. Introduction

1.1 Features

1. Zero Self-Test Function:
 - a. Simplifies maintenance and ensures a user-friendly operating experience.
2. Unauthorized Access Alarm:
 - a. Triggers an alert whenever an unauthorized access attempt is detected.
3. Anti-Punching Protection:
 - a. If no valid signal is received, the telescopic barrier automatically locks to prevent forced entry.
4. Infrared and Mechanical Dual Anti-Pinch Protection:
 - a. During barrier reset, if resistance is detected, the motor stops automatically within a set time and activates an alarm. This minimizes impact force, ensuring pedestrian safety.
5. Automatic Reset Function:
 - a. After a valid card is swiped, if the pedestrian does not pass within the preset time, the system automatically cancels the access authorization.
6. Standardized Electrical Interface:
 - a. Supports a variety of external devices, such as card readers, and allows integration with remote computer management systems.
7. Smooth and Quiet Operation:
 - a. The mechanism operates reliably with low noise, ensuring stable performance.

2. Main Technical Parameters

Parameter	Specification
Power Supply	AC 110/220V \pm 10%, 50/60Hz
Motor	24V DC Motor, 100W
Operating Temperature	-15°C to +60°C
Humidity	\leq 90%
Channel Width	560 mm
Throughput Rate	Up to 45 persons/min
Opening Time	1 second

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3. Product Structure and Working Principle

3.1 Mechanical Structure

The mechanical system of the turnstile consists of two main components:

- **Housing:**
 - Serves as the structural framework, supporting the installation of the direction indicators, card readers, infrared sensors, and other electronic devices.
- **Movement Mechanism:**
 - Includes the main motor, rack, drive shaft, and barrier arm components that enable the gate's motion and locking functions.

3.2 Electronic Control System

a) System Components:

The electronic control system is composed of the following:

- Card Reader
- Main Control Board
- Infrared Sensors
- Direction Indicators
- Alarm System
- Limit Switches
- Transformer and related circuitry

b) Main Control Board:

Acts as the core controller of the system. It processes signals received from the card reader and infrared sensors, performs logic operations, and sends control commands to the motor, direction indicators, counter, and alarm system.

c) Infrared Sensors:

Monitor pedestrian position and provide safety protection by detecting movement within the passage.

d) Direction Indicators:

Display the status of the passage, guiding pedestrians to move safely and orderly.

e) Alarm System:

Activates an audible or visual alert when unauthorized access or abnormal operation is detected.

f) Limit Switches:

Monitor the position of the barrier gate and ensure precise mechanical operation.

3.3 System Working Principle

Power-On:

Once power is connected, the system initializes and becomes operational after approximately 3 seconds.

Card Reading:

- When a valid card is presented:
 - A confirmation beep indicates a successful read.
 - The control board processes the card data and sends control signals to the motor and indicators.

Gate Operation:

- The direction indicator changes to a green arrow, allowing passage.
- In normally closed mode, the motor activates to open the barrier arm (the limit switch ensures the correct angle).
- In normally open mode, the gate remains open for pedestrian entry.

Pedestrian Detection:

While a person is passing through, infrared sensors continuously detect their presence and communicate with the control board to prevent premature gate closure.

Invalid Access:

If an invalid card is used or no card is presented:

- **Normally open mode:** The gate closes.
- **Normally closed mode:** The gate remains locked.
- The alarm is triggered until the pedestrian exits the passage.
- Once a valid card is read, the alarm stops, and access is granted.

4. Installation and Commissioning

4.1 Turnstile Installation Preparation

- Prepare Installation Tools:

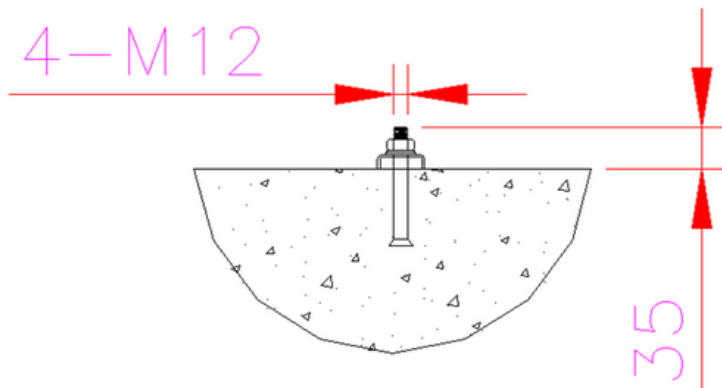
Gather all necessary tools, including a drill, expansion bolts, and a wrench.

- Position the Turnstile:

After the foundation has been properly installed and leveled, carefully position the turnstile in its designated location.

- Drill and Secure Anchors:

Mark the mounting hole positions, drill accordingly, and install M12 anchor bolts or expansion bolts to firmly secure the turnstile in place.



- **Electrical Wiring:**

Route both high-voltage (power) and low-voltage (signal) cables through a ¾" PVC conduit. Embed the conduit in cement up to the appropriate installation point to ensure protection and a clean finish.

- **Position the Chassis:**

Carefully move the turnstile chassis to its designated installation position and align it precisely with the anchor bolts.

- **Secure the Base:**

Open the equipment cabinet door and select one turnstile—preferably the center unit—as the reference point. Align the base mounting holes with the corresponding anchor bolts, and lightly tighten the nuts to hold the chassis in place.

- **Electrical Connections:**

Following the wiring diagram, connect the power supply and control cables. Ensure the turnstile is properly grounded to maintain electrical safety.

- **Final Verification:**

After completing the system status check and functional testing, securely tighten the grounding nut to finalize the installation.

Note:

The PVC conduit should be embedded at a depth of more than 60 mm, with both ends exposed above ground. The exposed height should be at least 50 mm, and the conduit outlet should be angled downward to prevent water ingress.

5. Function Debugging

5.1 Wing Gate Debugging Instructions

- **Preparation Before Commissioning**
 - Verify that the main power connections are correctly wired according to the wiring diagram.
 - Inspect all power and signal wiring throughout the equipment to ensure proper installation and secure connections.
- **Hardware Configuration**

Notes:

- Do not connect or add peripheral devices to the system without authorization.
- If the actual debugging results differ from expected functionality, refer to the Common Faults and Troubleshooting section for guidance.

6. Turnstile Troubleshooting and Routine Maintenance

6.1 Gate Does Not Open After Card Swipe

If the gate does not open, shows no response, or fails to open automatically after a power outage:

- Verify that the door open signal wire is properly connected.
- Check the mainboard indicator light to confirm whether the open signal has been received.

6.2 Direction Indicator Malfunction

The direction indicator displays the current operating status:

- Green arrow (← or →): Passage allowed in that direction.
- Red “X”: No entry allowed.

If the indicator does not respond or displays incorrectly:

- Test the unit using a known working control system.
- Recheck all wiring connections and ensure proper polarity.

6.3 Auto-Open Function Not Working After Power-On

If the gate does not automatically open after power is restored:

- Check the backup battery voltage using a multimeter.
- The voltage should be greater than 10V; if lower, recharge or replace the battery.

6.4 One Gate Opens, the Other Does Not

If one wing operates normally while the other fails to open:

- Inspect the synchronization cable for damage or disconnection.
- Verify that the cable is correctly connected and that the motherboard is receiving the signal.
- If no signal is detected, ensure the connector on the mainboard is not loose or improperly seated.

6.5 Gate Does Not Close Automatically

If the gate opens correctly but fails to close:

- Check the alignment of the infrared (anti-pinch) sensors—misalignment will prevent gate closure.
- Verify that the sensors installed in the fixed chassis are properly aligned.
- Misaligned infrared sensors may trigger an alarm when the system is powered on.

7. Operation Instructions

7.1 Pre-Operation

Before putting the turnstile into use:

- Conduct a full function test and calibration.
- Only operate the unit after successful debugging.

7.2 Safety and Usage Guidelines

- Do not stand inside the passage when the turnstile is powered on.
- Access is only permitted when the direction indicator turns green after a valid card swipe.
- Do not attempt to pass if the indicator remains red.
- Avoid standing or lingering in the middle of the passageway.
- Maintain a safe distance between individuals to prevent crowding.
- Always swipe the card first, then pass through promptly.
- Display clear traffic and safety signage near the turnstile for user guidance.
- When not in use, keep the unit in good condition—avoid hitting, shaking, or applying force.
- When powered off or closed, do not push or pull the gate manually.

8. Control Board Parameter Settings

(Factory adjusted — do not modify unless necessary.)

8.1 LCD Display

After power-up, the LCD screen displays the default system status, including:

- Current operating mode (swing mode or wing mode)
- Number of entries/exits and other configuration data

8.2 Control Panel Buttons

The control board features **five buttons**:

Menu, Up, Down, OK, and Cancel.

8.3 Menu Access and Operation

- Press Menu to open the password input screen.
- Enter the default password sequence:
Up, Up, Down, Down, Up, Down
- Press **OK** to enter the main menu.
- Use **Up/Down** to navigate options, and **OK** to confirm or modify settings.
- Press **Cancel** to exit (if no key is pressed, the system exits automatically after 15 seconds).

8.4 Menu Functions

- Entry and Exit Direction:

Configure the left or right gate as an entrance or exit.

- Access Configuration:

Enable or disable passage for each gate. If disabled, the gate signal is inactive and passage is blocked.

- Working Mode:

Select the gate operation mode — infrared trigger or card swipe to open.

- Memory Function:

When enabled, swiping twice allows access for two individuals.

When disabled (default), each swipe allows passage for one person only.

- Waiting Time:

Adjust the time limit after a valid card swipe, during which the gate remains open before automatically closing.

- Counter Reset:

Clears and resets the entry/exit counter.

- Gate Number Assignment:

Set the unique control board number for identification.

- Turnstile Information:

Displays model, type, and system version details.

- Turnstile Type Selection:

Choose from:

- Wing Gate
- Swing Gate (Single)
- Swing Gate (Double)

- System Initialization:

Resets all parameters to factory default settings.

- Left-Side Voice Setting:

Customize the audio prompt for the left-side passage (e.g., “Welcome”).

- Right-Side Voice Setting:

Customize the audio prompt for right-side passage (e.g., “Safe travels”).

- Voice Test:

Plays the configured voice prompts automatically and exits upon completion.

- Motor Speed:

Adjust the motor’s speed (lower values = slower operation).

- Maximum Motor Run Time:

Sets the maximum continuous run time (default: 10 seconds) to prevent idle operation in case of signal loss.

- Infrared Overlap Time:

Adjusts the detection overlap tolerance between infrared sensors to prevent false alarms.

- Gate Delay Close Time:

Sets the delay time (default: 0 seconds) before the gate closes after passage.

- Power-Off Gate Position:

Configures which direction the gate opens during power loss (not applicable in wing gate mode).

- Illegal Intrusion Response:

Defines gate behavior during unauthorized access—either close automatically or remain idle.

- Motor Brake Setting:

Enables or disables the motor brake function.

- Normally Open Mode Duration:

Sets how long the gate remains open after receiving an open signal. Continuous signals keep the gate open indefinitely.

- Turnstile Test Mode:

Performs repeated gate open/close cycles to test control board stability and durability.

HOW TO: 2MWT-5 Turnstile Installation Video:

https://www.youtube.com/watch?v=qXSWBEP_Q8E