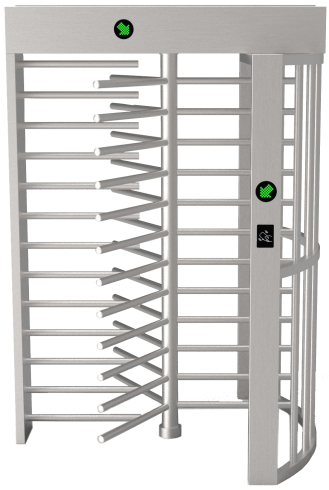
FULL HEIGHT TURNSTILE USER MANUAL

Before operating this unit, please read this instruction completely

MAIRS

FULL HEIGHT TURNSTILE
USER MANUAL



MT402-Y

MT402-2-Y

MT404-X

MT404-2-X

(We have various models of the full high gates. While their working principle, assembly instruction steps, and wiring diagram are the same. If you need drawing of certain model, please contact our sales people.)

Contents

Note: Before operating this unit, please read this instruction completely.

Preface

Thank you for choosing full height turnstile from Mairs. This is a product with high technology, so please read this manual carefully before operation. Please keep this manual for future reference.

Only trained professionals who understand electric and mechanical risk of product are qualified to install and operate gate system so as to avoid unnecessary dangers caused by misoperation.

All rights to improve and perfect our products are reserved. We can't promise this manual is in full accord with the product you receive, but we will check and revise the manual at regular interval. No further notification will be sent in the case of any modifications to the manual.

1. Instruction

Please read this manual carefully, it contains information that will assist you with all aspects of installation and maintenance, including unpacking, so that a long and useful machine life can be achieved.

Electrical Warnings

The electrical power used in this equipment is at a voltage high enough to endanger life. Before carrying out maintenance or repair, you must ensure that the equipment is isolated from the electrical supply and tests made to verify that the isolation is complete.

Good Practices

Equipment being installed must not be left unattended unless all potential mechanical and electrical hazards have been made safe. A competent person must be left in charge when the equipment is to be left while potentially unsafe.

The following points indicate good practice that will contribute to safety and avoid equipment damage.

i Ensure that all electrical power supplies are turned OFF and disconnected before working on any of the equipment.

ii Never leave the equipment in a potentially dangerous state.

iii Use only the correct tools for the task in hand.

2. Brief Description

Full height turnstile is a kind of access control equipment designed for places with high class security requirements. It is easy to combine IC access control, ID access control, code reader, fingerprint, face recognition and other identification devices，It realizes the intelligent and efficient management of passage. The turnstile is the best choice for access control of modern building.

The full-height turnstile is designed for use in external entrances to Administrative Centre, Industrial Complexes and Military Establishments where high quality, combined with high security full height barriers are required.

An all welded steel rotor with straight arms runs in a phosphor bronze bearing at the top end and supported by a ball and cone bearing at the base.

On double units, the rotors can be interlocked where space is of prime importance. All controls are housed within the unit, therefore NO separate switches or control boxes are required.

Power for the unit is 24V DC derived from a automatic switch power supply.

3. Technical parameter

Frame material	304 stainless steel (316, powder coated options)
Working direction	1,Bi-directional 2,Unidirectional
Drive	Manually operation
Power Supply	100V-240V 50/60Hz
Working Voltage	DC24V
Open signal	Passive Relay (Dry Contact)
Communication	RS485
Pass Rate	25p/m
Fire/Emergency	Free to exit
Working Temperature	-30℃ -- 80℃
Environment	Indoor and Outdoor
Relative Humidity	95% Maximum

4. Operating Sequence

The operating procedure is shown below and given the sequence of passage through the turnstile in either direction.

1. The rotor will normally be locked, unless a free entry/exit option has been specified.

2. Operate the Access Control Device if fitted.

3. On the acceptance of a signal from the Access Control Device, the rotor will unlock and be free to rotate.

4. Push the rotor rod to go through the passage.

5. The rotor will automatically lock in its new position.

Important notices

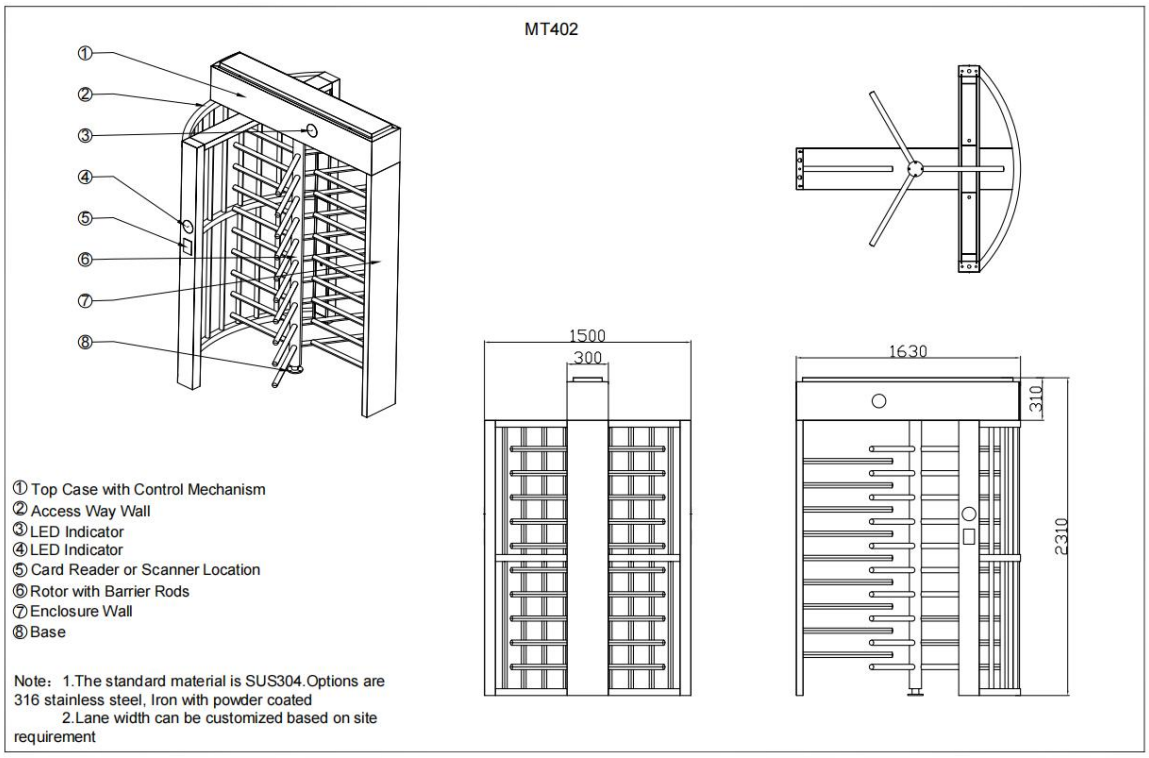
- Only one person at a time should pass through the turnstile.
- Large packages should be carried in front of you.
- Should any item become caught in the rotor, STOP, and DO NOT keep forcing through in the same direction.

5. Products Component

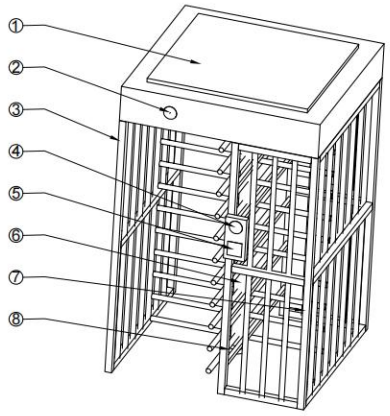
The full-height turnstile design consists of the following major devices and Components.

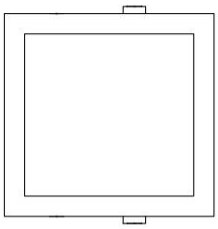
① Top case with Control Mechanism and Electrical Parts
② Left and Right Enclosure Wall
③ Rotor
④ LED indicator
⑤ Card reader or scanner cover

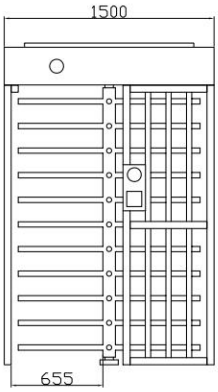
Please refer to the below fig.

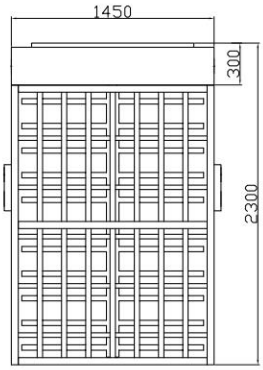


MT404





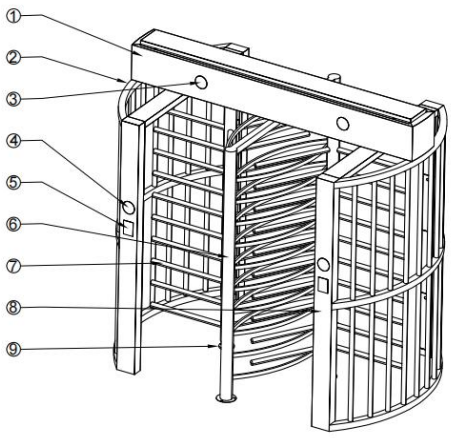


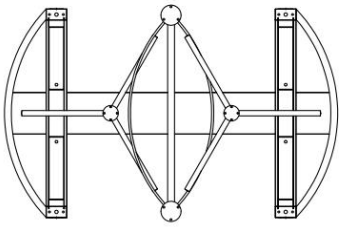


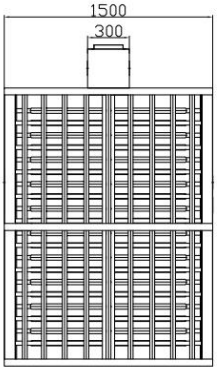
① Top Case with Control Mechanism
② LED Indicator
③ Access Way Wall
④ LED Indicator
⑤ Card Reader or Scanner Location
⑥ Rotor with Barrier Rods
⑦ Enclosure Wall
⑧ Base

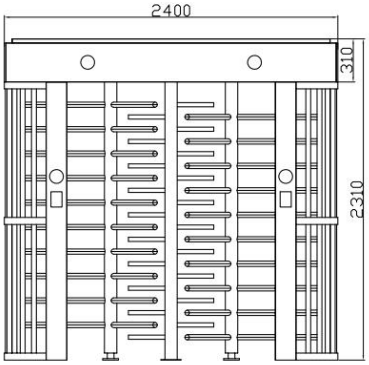
Note：1.The standard material is SUS304.Options are 316 stainless steel, Iron with powder coated
2.Lane width can be customized based on site requirement

MT402-2



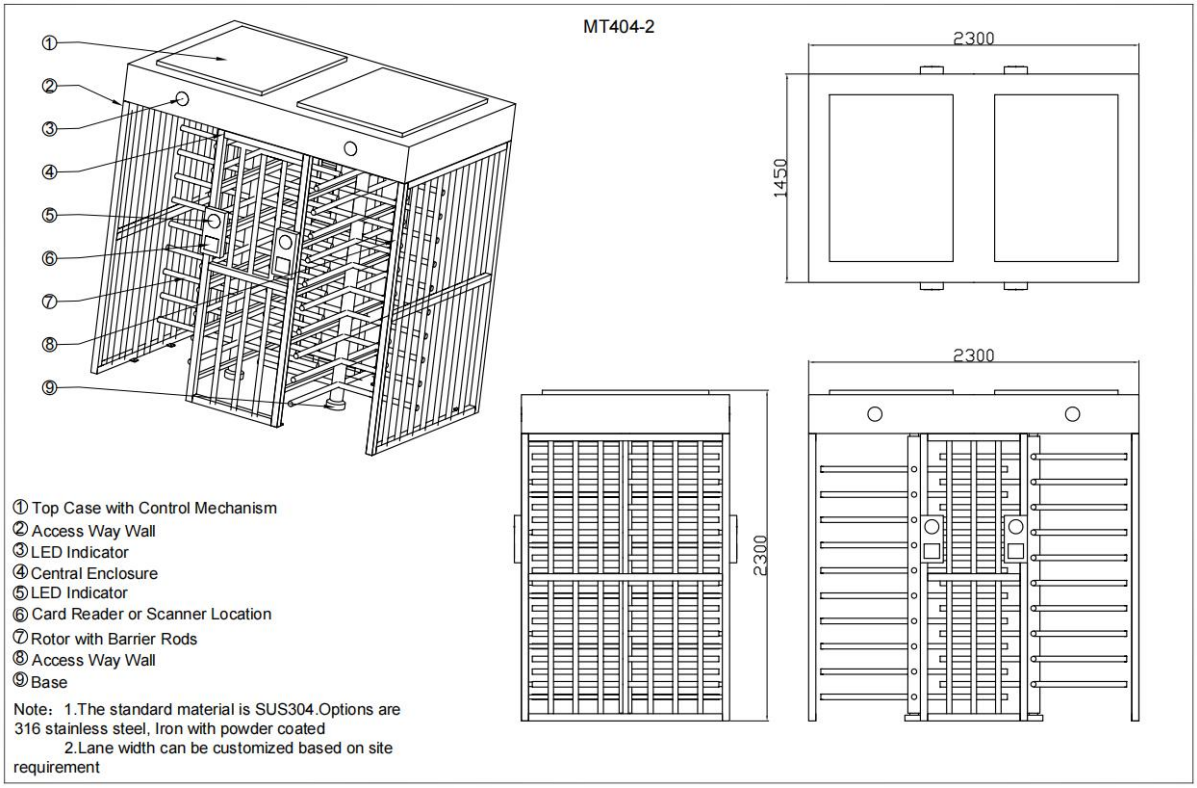






① Top Case with Control Mechanism
② Access Way Wall
③ LED Indicator
④ LED Indicator
⑤ Card Reader or Scanner Location
⑥ Central Enclosure
⑦ Rotor with Barrier Rods
⑧ Enclosure Wall
⑨ Base

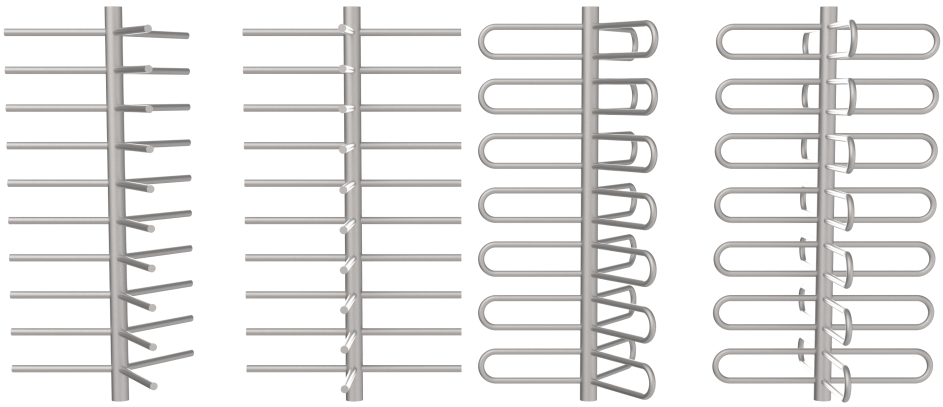
Note：1.The standard material is SUS304.Options are 316 stainless steel, Iron with powder coated
2.Lane width can be customized based on site requirement



Customization

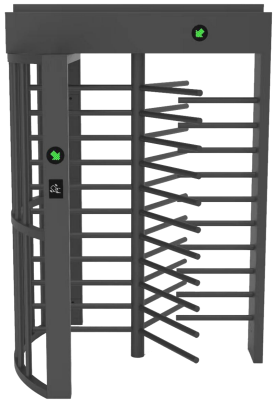
For each model, we have our standard size, material, design. The gate size, material can be customized mainly from below aspect:

1. Straight barrier rod to U-shape barrier rod.
2. X rotor to Y rotor (some model can make to X and Y rotors. Some is suitable for one type rotor) .



3. 304 stainless steel to 316 stainless steel, or iron with powder coated.
4. We can add roof and light on the turnstile gate.
5. We can add mounting base to the turnstile gate.

Stainless steel body



Powder coated body

Full height turnstile with portable base

Full height turnstile with roof

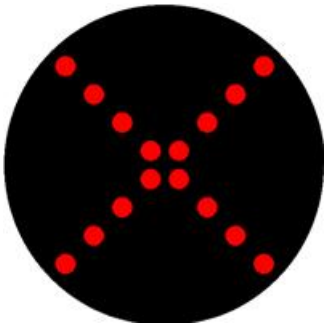
6. System Operation Principle

The electric control system consists of access control system(ACS), control board, power supply, LED direction indicator, Mechanism.

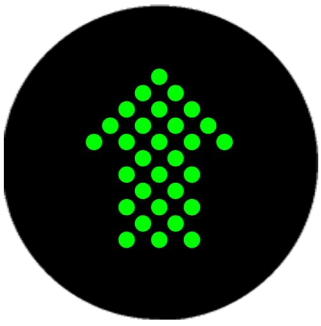
No.	Name	Function
1	Access control system(ACS)	RFID card, fingerprint, face recognition, code reader, access control device send relay signal to the turnstile board door open signal. (mostly provided by the clients)
2	Control board	When receiving the relay signal from the access control device, it control solenoid to open, the direction indicator light turns into green. The rotor will be unlock and can be pushed to 90 degree (X rotor) or 120 degree (Y rotor). The

		solenoid will lock immediately when receiving closing signal from core position sensor.
3	Power Supply	Power input to the whole gate.
4	LED direction indicator	Show the lane status (Standby or Denied in Red Cross, Authorized in Green Arrow).
5	Mechanism	It is the core of the gate.

1) Turn on the power, 2 seconds later; the system enters into work mode; the rotor is in lock.
2) After swipe valid card or scan valid code and press valid fingerprint, or recognized whitelist face, the ACS will send opening signal to control board.
3) When the control board receives open signal, the LED direction indicator turns to green arrow. The solenoid pull off to open. The rod of rotation will be unlock.
4) The personnel can push the rod to 90 or 120 degree to pass through.
5) When the position sensor detect the rotor in place. It will send close signal to control board, the solenoid lock immediately. The rotor will be back to zero position. The LED will turn to Red Cross.



Access Denied/Standy



Access Granted

7. Feature

- The mechanism comes with mechanical anti-passback function.
- Y rotor mechanism: If rotor revolves to the angle 60° and it is blocked from reverse rotation.
- X rotor mechanism: If rotor revolves to the angle 45° and it is blocked from reverse rotation.
- The shock absorber is a hydraulic device. It will reduce the noise in operation. The damper strength can be adjusted.
- Full turnstiles will lock after 5 seconds if there is open signal but no one pass. The time can be adjusted in the control board.

- Automatic opening after emergency fire signal input.
- Normal open can be also controlled via control board or manual.
- Gate will automatically open when power failure.

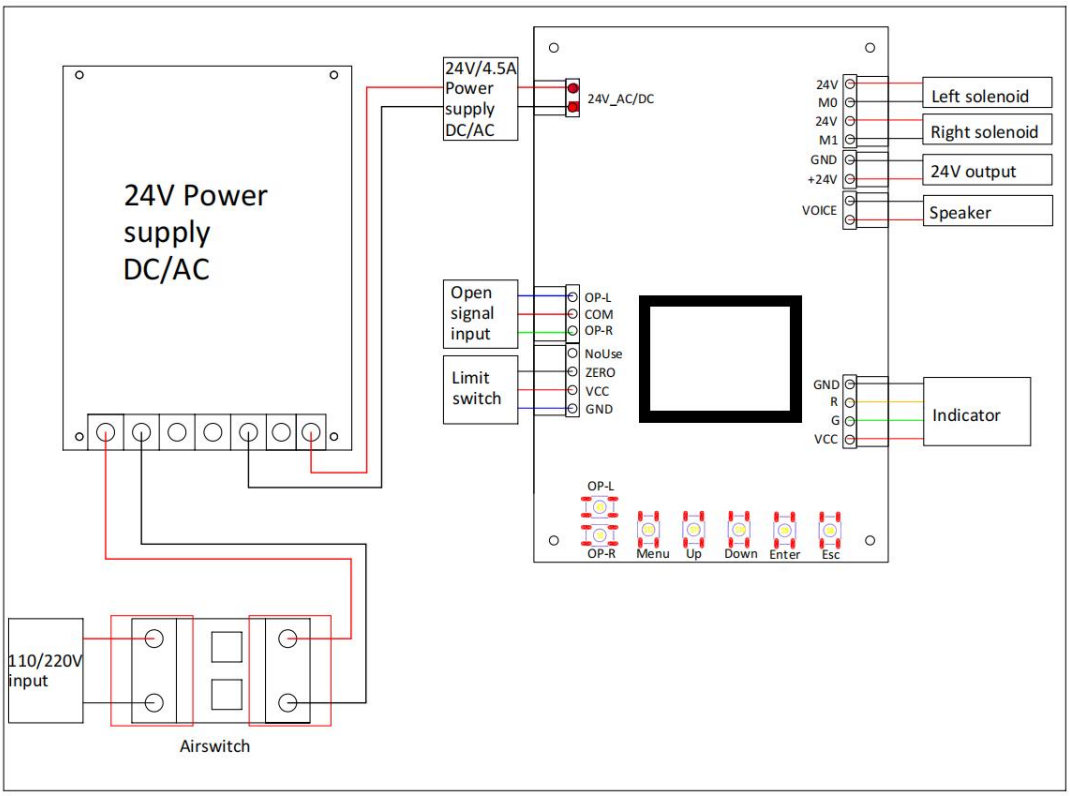
8. Equipment Installation Tools

1	Kit of hexgon spanner	**2**	Kit of Cross screwdriver
3	Impact drill(including D16 and D14 drills)	**4**	Socket wrench
5	M12x100 Expansion screws	**6**	Multimeter
7	Marker	**8**	Side cutter

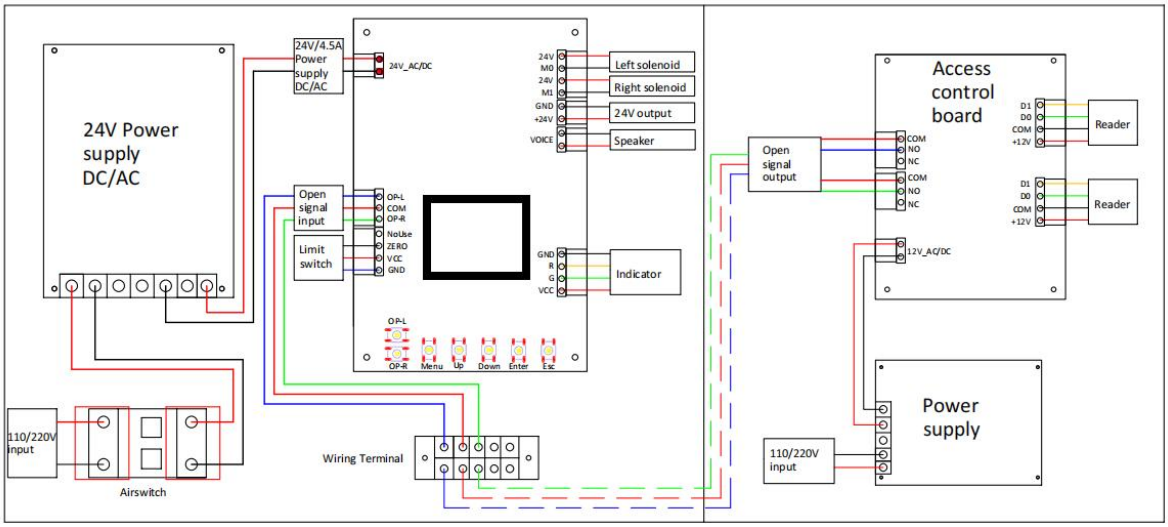
9. Description and Operation of the Controller

9.1. Wiring diagram

Wiring diagram of the turnstile



Wiring diagram to ACS



9.2. PCB Board

(1) PCB Board Parameter Setting Description

After powered on the control board, the LCD screen displays the default state, which displays the times of exit and enter.

There are 5 operation buttons on the control panel: “Menu”, “Up”, “Down”, “Enter” and “Esc”.

“Menu” to enter menu setting;

“Up” to move up the menu items;

“Down” to move down the menu items;

“Enter” to enter the menu item setting or confirm the current modified value;

“Esc” to return to the previous menu or cancel the current operation.

(2) Menu Operation

Press the “Menu” button to enter the password input interface, the default password is: Up, Up, Down, Down, Up, Down. Input this password and press “Enter” to enter the menu. After entering the menu, press “up” and “down” to select a function menu and press “OK” to enter the function or value changing interface, and press the Up and Down keys to select or adjust to the corresponding value.

For example:

To change the working mode of the gate: Enter the menu - Select the “Working Mode” in the menu - Press “Enter” (display the current working mode) - Then press “Enter” to enter the interface for modifying the working mode - Press “Up” or “Down” to select the corresponding working mode - Press “Enter” to modify successfully - Press

“Esc” to exit after the setting is completed (the system will automatically exit after 15 seconds without pressing the cancel key).

(3) Menu Description

1, “Direction Config”

Set which direction is enter and which direction is exit.

2, “Traffic Control”

Set whether to allow access on both sides of the gate (entrance and exit).

3, “Memory Func Config”

Whether it has a memory function when opening or closing the gate. It is generally used when swiping a card to open the gate. If one person has not passed after the swiping card, whether to remember the swiping situation of other people. “Prohibition” means that only after the first person who swipes the card passes through, card-swiping of the second person is valid; “Allow” means how many people swipe the card,how many people are allowed to pass through consecutively.

4, “ Open Time”

How long will the gate open if no one passed through the gate.

5, “ Working Mode”

Set whether the turnstile will drop the bar when the power off, or it will be free to pass through when the power off.

6, “ Counter Type”

Set the count to be based on the opening signal or the in-position signal. Usually, no in-position signal is added without special requirements, and it is subject to the gate-opening signal.

7, “ Counter Reset”

Clear the number of entrance/exit passes and recount.

8, “Machine No.”

The control board No.. Generally do not need to set.

9, “Machine Info.”

Display the basic information of the control board, such as type, model and other information.

10, “System Ini.”

Initialize the parameters of the control board. After the initialization is successful, the parameters of the control board will be restored to the factory settings.

11, “Left Audio”

Set the voice to be prompted at the turnstile when passing from the left.

12, “Right Audio”

Set the voice to be prompted at the turnstile when passing from the right.

13, “L_open Set”

Set the gate to be Normal Open.

14, “Zero Set”

Set the home position of the gate.

15, “Machine Test”

Test open and close repeatedly to check the function of the gate.

10. Installation

10.1. Installation Note

- **Clear Height** A minimum floor to ceiling height of 2600mm must be provided to allow sufficient headroom for erection and subsequent maintenance operations.

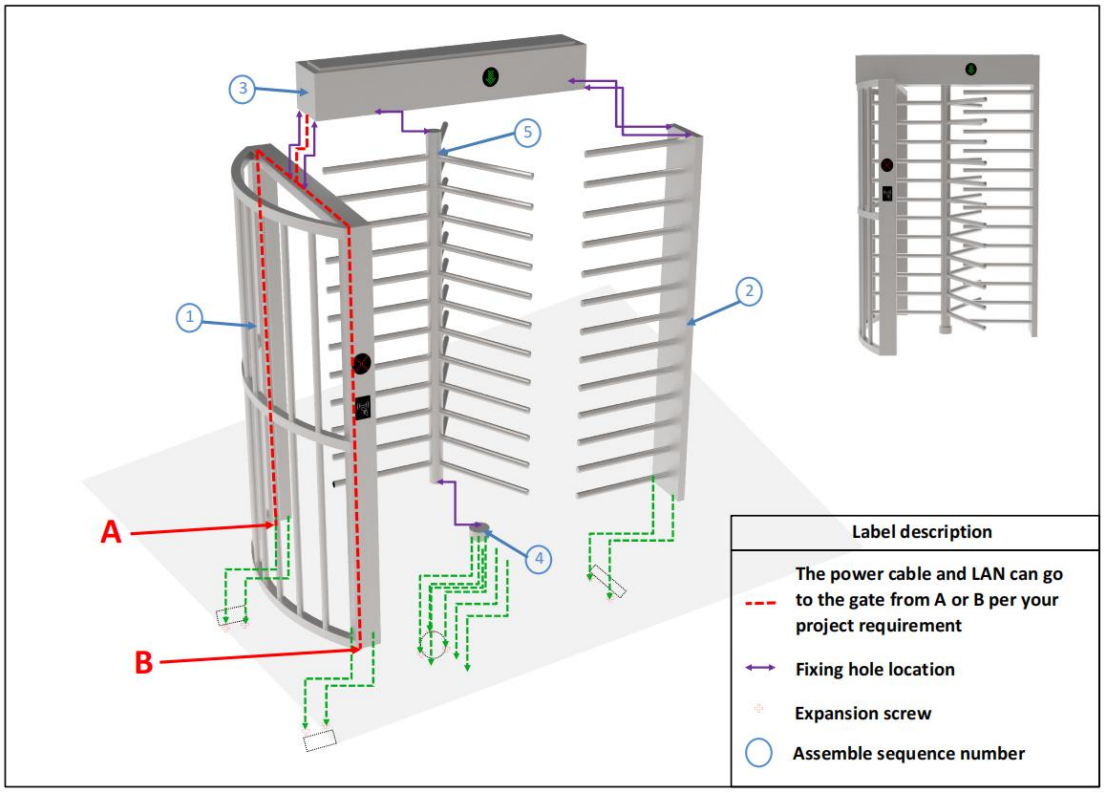
- **Conduit** Conduit carrying cables for Power and Control. Buried under the floor and lead to the gate. Two conduits are required normally, one for the power supply, the other for the Control or data signals.
  Conduit routed under floor must be sited accurately as shown on Site Preparations Diagram. Please note that the standard locations indicated should be utilized where possible. We recommend the use of 20mm diameter PVC.
  A second conduit should be provided, separate from that for the power supply, for any remote control or data cabling requirements. Units controlled from simple remote switches, such as pushbuttons/footswitches etc. should be provided with either a four-core cable if bi-directional control is specified, or twin-core if un-directional. Such cables should be of minimum conductor size 0.5mm sq and laid in the conduit with a 4 meters tail left

- **GND** Protective earth wire must be connected.

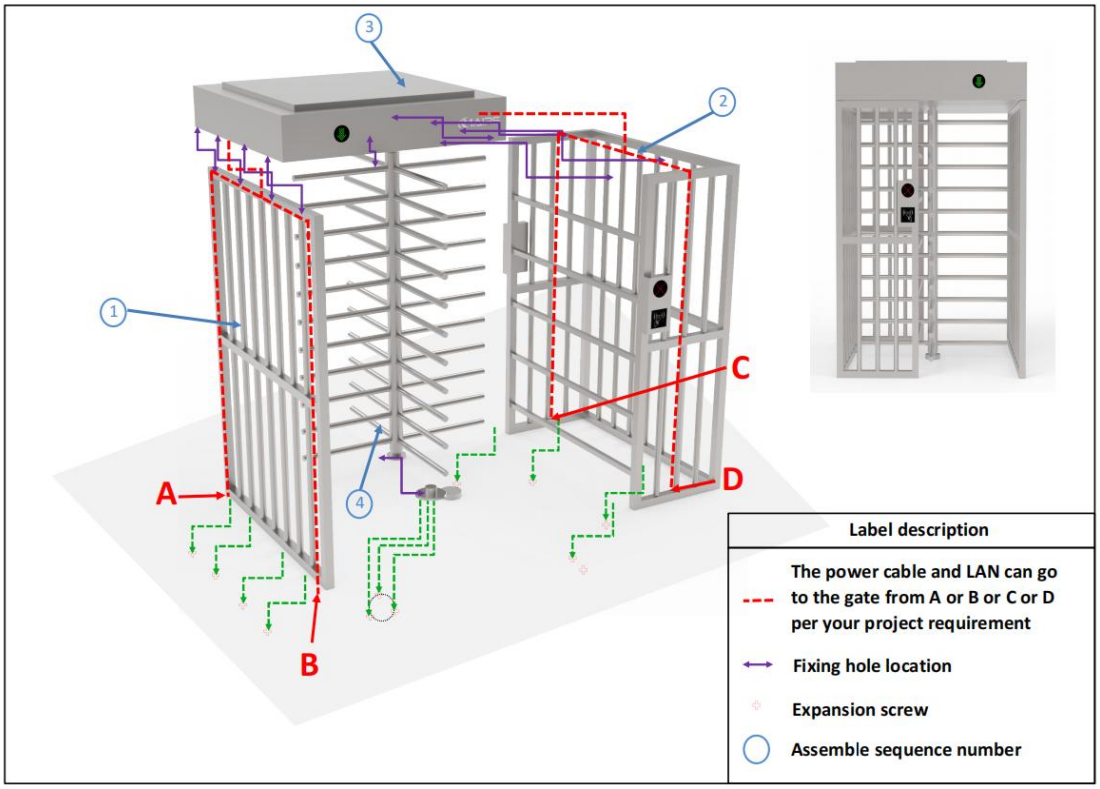
- **Concrete floor** It has to be concrete floor to make the sure the gate is tightly fixed. The brick, or asphalt floor is substandard floor. The grip strength of such floor is not enough to fix the gate tightly. And the floor has to be flat.

10.2. Installation Steps

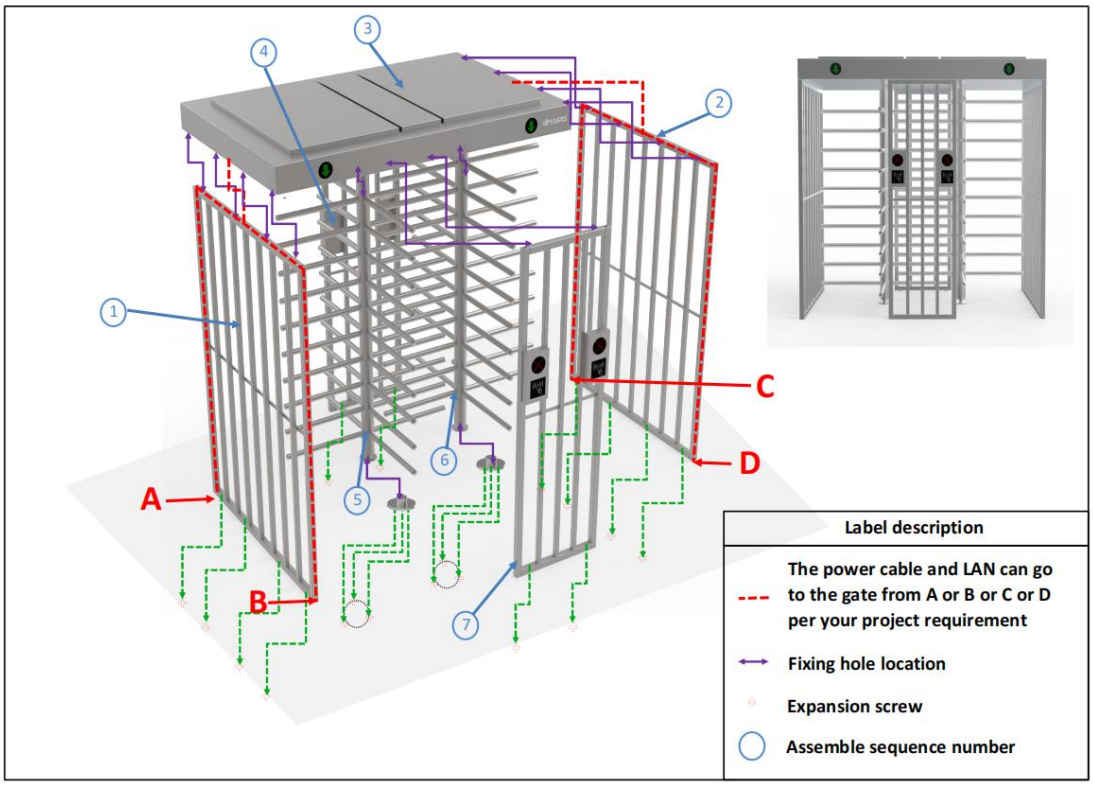
(1) Assemble the gates based on the sequence number in the below drawing.
(2) Mark the fixing position of expansion bolts according to fixing plate on the bottom of each turnstile.
(3) Move the gate out of expansion bolts location. Drill hole by impact drill, fix expansion screws.
(4) Assemble the gates again.
(5) Tighten the expansion screw after the functional test is completed.


3
5
1
2
A
4
B
Label description
The power cable and LAN can go to the gate from A or B per your project requirement
Fixing hole location
Expansion screw
Assemble sequence number

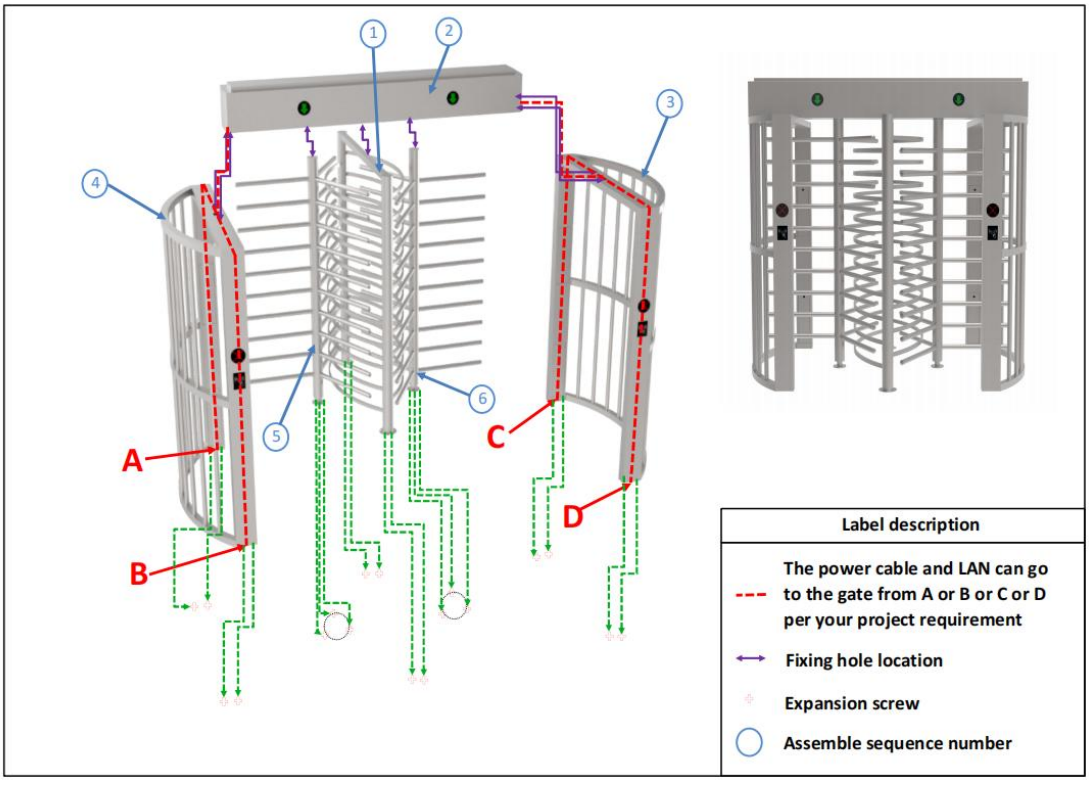
MT402


3
2
1
C
A
4
D
B
Label description
The power cable and LAN can go to the gate from A or B or C or D per your project requirement
Fixing hole location
Expansion screw
Assemble sequence number

MT404



MT404-2



MT402-2

11. Trouble shooting and maintenance

11.1. Trouble shooting

Q1: When access board send open signal,arm move reverse and indicator show reverse?

Problem Analysis: open signal reverse connection

Solution: exchange L-op and R-op terminal of board.

Q2: Indicator is not working?

Problem Analysis: 1. Wires loose; 2. Indicator or board damage.

Solution: 1.Check connect wire of indicator; 2. Replace indicator or board.

Q3: Arm can not push when a valid open signal is sent and indicator show green?

Problem Analysis:1. The driver board is damaged;

2. solenoid is damaged.

Solution:

1. Use a wire to short circuit L-op or R-op with GND (the open signal), and then to see whether there is output open signal or not. If yes, the main board is ok. If not, the main board is damaged, replace the main board.

2. If the main board works fine but the solenoid didn't pull off. The solenoid is not working. Replace the solenoid.

Q4: Several passengers can pass after reading one card one time?

Problem Analysis:

1. The limit switch doesn’t touch the screw cap (on right side) while the turn plate rotating so that the driver board does not receive a closing signal (Or it already touch the screw cap, but there is still no signal received).

2. The control board is provided with a delay function. That is to say, when the driver board receives the closing signal, it still won’t close right now because of the delay time.

3. The middle lock lever of the square electromagnet jammed so that it’s not telescopic and sensitive.

4. The driver board damaged.

Solution:

1. Adjust position of the limit switch and the screw cap(on the right side), the hex screws of limit switch can move around to be looser, so that they can contacted Plum gears in place (Check the line of limit switch or replace the limit switch).

2. The number of delay on the control board can be set to zero.

3. Replace the square electromagnet.

4. Replace the driver board.

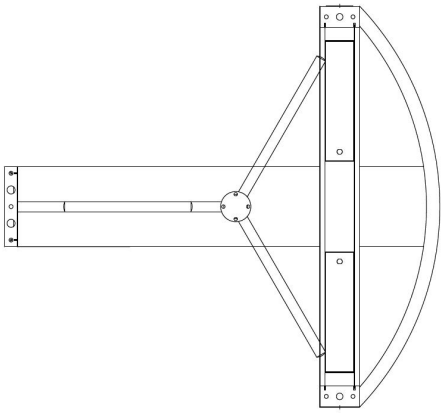
Q5：It is hard to push the shaft rotation?

Problem Analysis: 1. Bottom bearing rust or damage; 2. The shaft is not vertical.

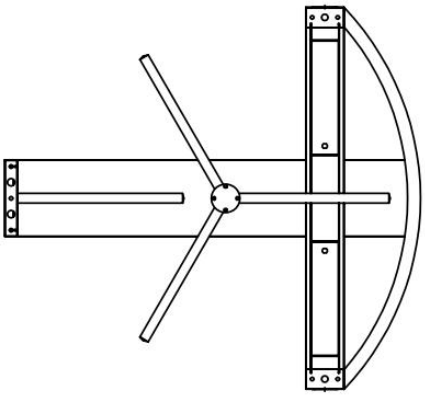
Solution: 1. Replace new bearing; 2.Adjust the shaft to vertical.

Q6: The gate function is ok. But when someone get in, the person is locked in the gate cannot get out.

Problem Analysis: The rotor assembling wrong as the below drawing.



Solution: Re-assemble the rotor as the below drawing.



11.2. Maintenance

Full high turnstiles require regular maintenance by professionals and daily cleaning to ensure long-term stability and extended equipment life.

11.2.1. Maintenance Content:

- Keep the turnstile housing and card reader panels of turnstile gates clean;
- Fasten and lubricate the internal movement structure;
- Check the dust of the driver board and make it cleans;
- Check the connectors and wiring points to ensure the reliability of the connection;
- Check the bearings at the bottom of the shaft.

11.2.2. Maintenance Methods:

- Cleaning: Check the housing and card reader panels of the gate, and remove the dust and other dirt to make them clean; wipe rust inhibitor to keep stainless steel bright.
- Rust removal and Lubrication: Check the movement of remove rust with sand paper and spread with anti-rust oil if corroded.
- Screws fastening: Check the connection of the various moving parts, fasten the screws where they are loose to avoid causing fault for long-running.
- Cleaning the bearings at the bottom of the shaft and add grease.
- Circuit board cleaning: Cut off the power, and wipe dust of the board by using a clean brush.
- Cables Checking: Check the connecting cables and solder reinforcement if they are loose off.

Note: This product is the strong professional technical equipment. In addition to daily maintenance, please do not feel free to disassemble it. If a fault occurs while running, please notify our service departments or the authorized service agencies promptly to have it maintained. Do not disassemble it at random to avoid damaging the internal structure or even damaging your interests because of your improper operation.

Guarantee Instruction

Our company products are guaranteed for two years, from date of sale, providing free maintenance based on not being damaged by any man-made.

● During the warranty period, all faults caused by the product itself can be maintained for free.

● Within the period of free maintenance, faults or damages caused by man-made or natural disasters can be maintained with additional charge.

● Over the period of free maintenance, faults or damages can be maintained with additional charge.

The following conditions are not under warranty:

● Damages caused by abnormal operation, man-made or natural disasters.

● Damages after disassembling any portion of the machine (lines, components etc.) .

● Damages caused by wrong guide of non-professional technicians.

● Damages caused by adding other functions with unauthorized modification or installation with other equipment.

Note: The warranty card and purchase invoice are used as warranty certificates to maintain the machine. Please reserve them carefully.

MAIRS

WWW.MAIRSTURNSTILE.COM

+86 755 28714921

info@mairsturnstile.com