User Manual

TS2000 Pro Series Tripod Turnstile

Date: August 2020

Doc Version: 2.1

English

Thank you for choosing our product. Please read the instructions carefully before operation. Follow these instructions to ensure that the product is functioning properly. The images shown in this manual are for illustrative purposes only.

For further details, please visit our Company's website www.zkteco.com.

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

ZKTeco Headquarters

Address   ZKTeco Industrial Park, No. 26, 188 Industrial Road,

                 Tangxia Town, Dongguan, China.

Phone   +86 769 - 82109991

Fax   +86 755 - 89602394

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

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

About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face-reader Door Locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

About the Manual

This manual introduces the operations of **TS2000 Pro Series Tripod Turnstile** product.

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

Document Conventions

Conventions used in this manual are listed below:

GUI Conventions

For Software	
Convention	**Description**
Bold font	Used to identify software interface names e.g. **OK**, **Confirm**, **Cancel**
>	Multi-level menus are separated by these brackets. For example, File > Create > Folder.
For Device	
Convention	**Description**
< >	Button or key names for devices. For example, press <OK>
[ ]	Window names, menu items, data table, and field names are inside square brackets. For example, pop up the [New User] window
/	Multi-level menus are separated by forwarding slashes. For example, [File/Create/Folder].

Symbols

Convention	Description
	This implies about the notice or pays attention to, in the manual
	The general information which helps in performing the operations faster
	The information which is significant
	Care taken to avoid danger or mistakes
	The statement or event that warns of something or that serves as a cautionary example.

Table of Contents

TS2000 Pro: Tripod Turnstile.

TS2011 Pro: Tripod Turnstile with Controller and RFID Reader.

TS2022 Pro: Tripod Turnstile with Controller and Fingerprint Reader with RFID function.

Please read this document carefully before installation and using the device.

1   Technical Specifications

| Input Voltage	AC 100~120V /200~240V, 50Hz /60Hz	Max. Tolerance of Arms	Center: 80 kg End: 40 kg
Rated Power	60 W	Ingress Protection Degree	IP54
Operating Environment	Indoor and Outdoor (shelter)	Arm Length (mm)	500
Operating Temperature	-28ºC ~ 60ºC	Net Weight	42kg
Operating Humidity	5% ~ 85%	Gross Weight	48kg
Flow Rate	Max 30 passages / minute	Dimension(mm) Figure 1	L = 1110, W = 280, H = 990
Input Control Signal	Dry contact	Package Size (mm)	L = 1175, W = 370, H = 1070
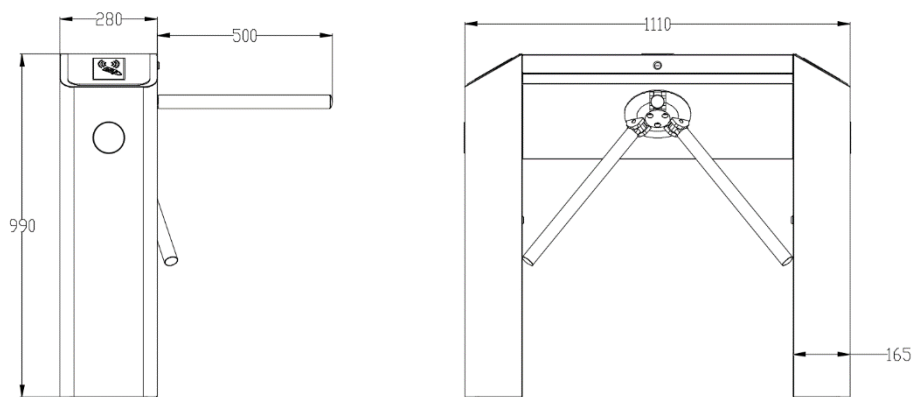
Figure 1

2   Arm Installation and Equipment Testing

2.1 Arm Installation Method

In order to keep the arm won't be damaged during the transportation. The arm wasn't install on device.

Installation procedure

Put arm kit into the hole of cabinet, make sure the screw holes match with mechanism core, then tighten 3 hex screws, as shown in Figure 2-1.
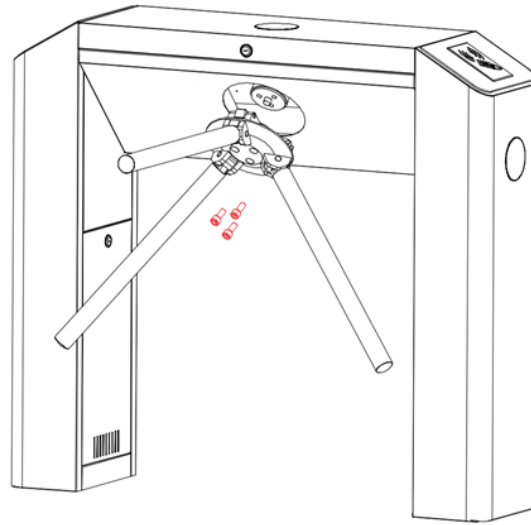

Figure 2-1

2.2 Power-on Test before the Installation of Device

1.   Please make sure that the power requirements are strictly met to avoid permanent damage to the unit. Input voltage: AC 100~120V /200~240V.

Note: The tripod turnstile must be connected to the ground (earth).

2.   Power on and wait 30s for the tripod turnstile to finish the self-check program.
3.   Lift the arms manually, as shown in Figure 2-2.
4.   Check whether the tripod turnstile and the LED indicators work properly.

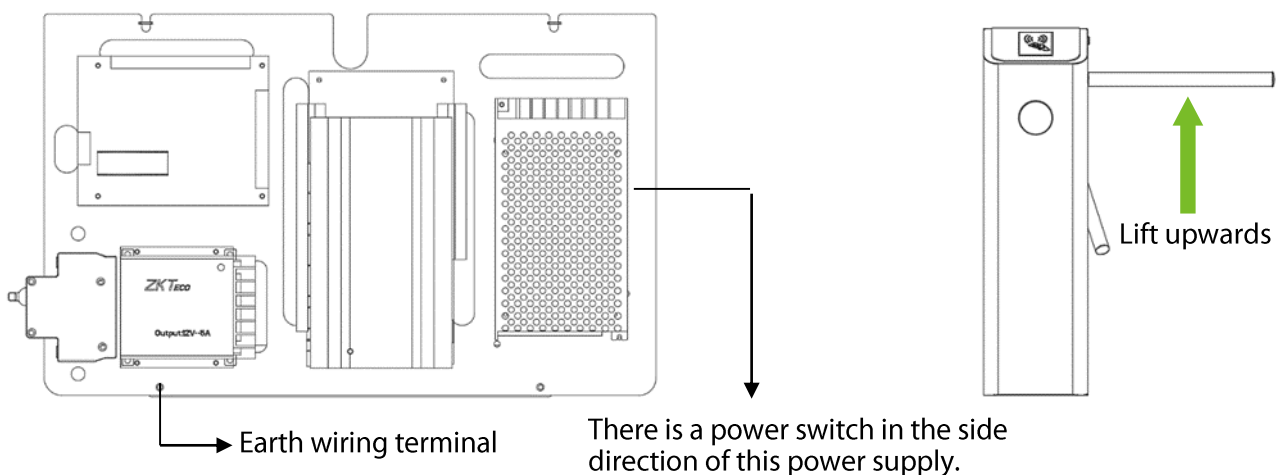If there is any problem, please contact the supplier.

Earth wiring terminal

There is a power switch in the side direction of this power supply.

Lift upwards

Figure 2-2

3 Equipment Installation

3.1 Installation Conditions

The equipment must be installed on concrete ground, ensuring that expansion bolts can be secured firmly.

You are suggested to install an assistant framework or fence to form a passageway, as shown in Figure 3-1.
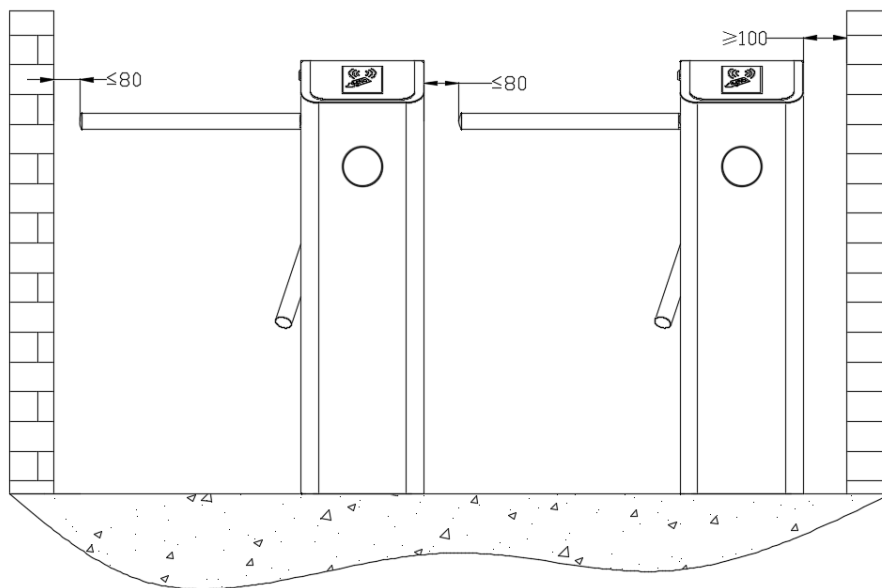

Figure 3-1

Notes:

1. When installing the tripod turnstile against the wall, please reserve at least 100 mm space in order to open the cover for future adjustment and maintenance.

2. The space at the end of the arm shall not be greater than 80 mm (see Figure 3-1).

3. Setting a warning line for card swiping (see Figure 3-2). A warning line is suggested to prompt users to swipe cards in a distance, which would greatly reduce the probability of equipment failure caused by improper operations.
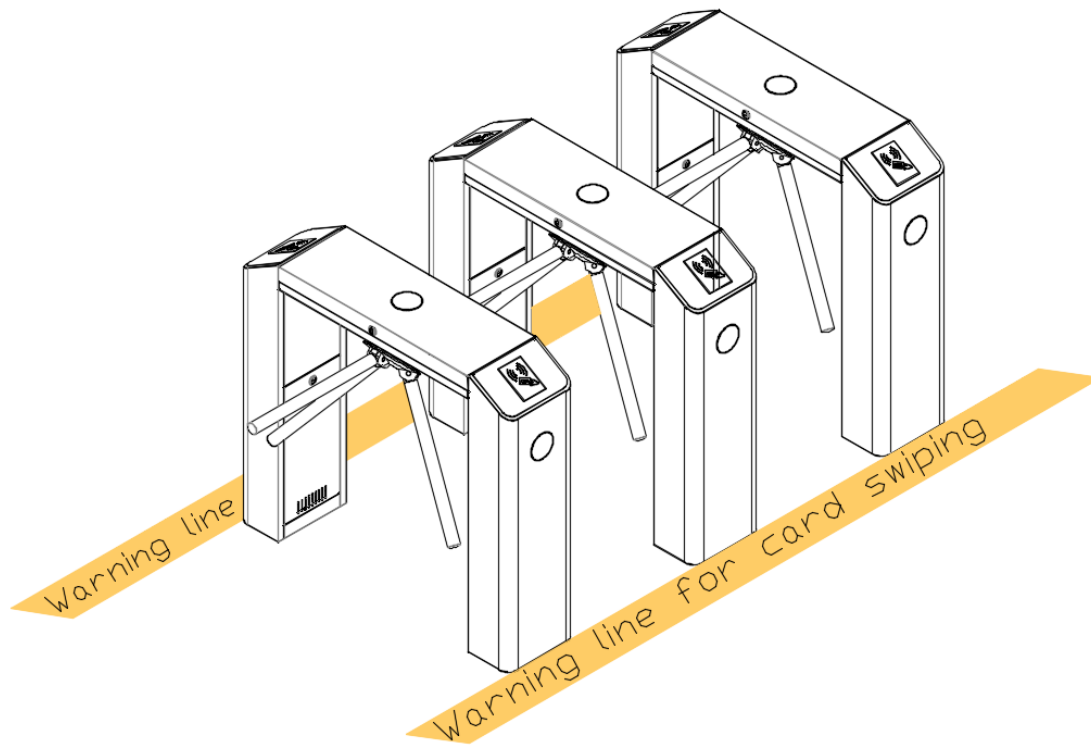
Figure 3-2

3.2 Cabling

There are inlets in the bottom plate for cabling, as shown in Figure 3-3, the unit is millimeter. Power supply and communication wire should go through the inlet. Cable protection covers are suggested to use if it is surface mounted.

Warning: The tripod turnstile must be connected to the ground (earth), there is wiring interface near the power switch.
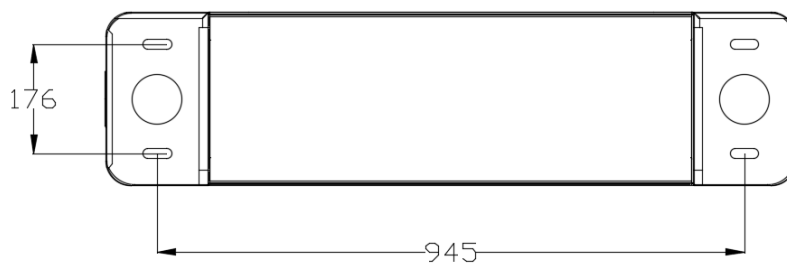

Figure 3-3

3.3 Installation

1. Drill holes.

Drill holes based on the locations of holes as shown in Figure 3-3.

2. Fix the mounting plate to its original position.

Placing the mounting plate properly and apply screw securing glue on the surface and the threads of the expansion bolts, install four expansion bolts to secure the mounting plate, and use a horizontal ruler to test the levelness of the mounting plate. If the mounting plate is not level, adjust it by the gaskets provided. Note that all the four expansion bolts must be installed properly, as shown in Figure 3-4.

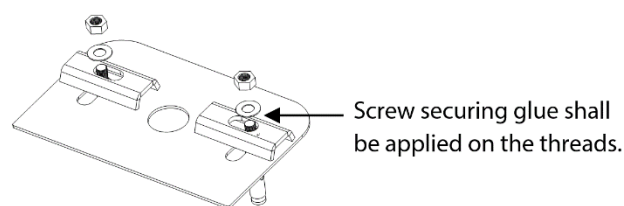Screw securing glue shall be applied on the threads.

Figure 3-4

3. Put the turnstile on the mounting plate and tighten the screws. Apply screw securing glue before using and putting gaskets on the screws to adjust the direction of the turnstile. If the tripod turnstile is not level, you can place gaskets to adjust, as shown in Figure 3-5.

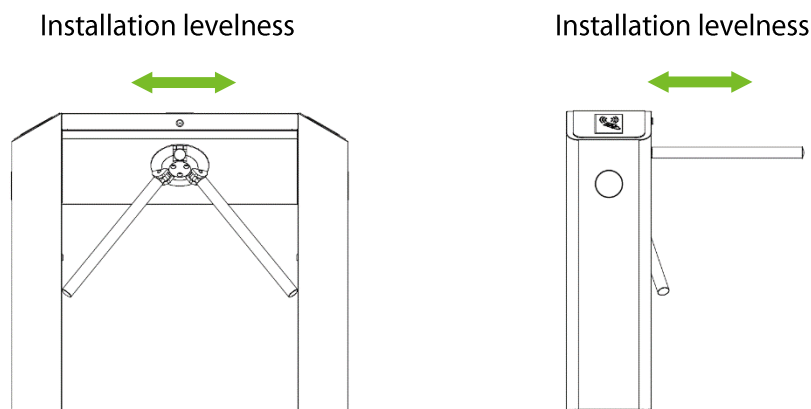Installation levelness　　　　　　　　　　　Installation levelness

Figure 3-5

4 Cable Diagram

4.1 Function Description of the Turnstile Control Board

If you are using standard device that without RFID or Fingerprint reader, you need to connect access control system to the main board, please check the content in this chapter carefully.

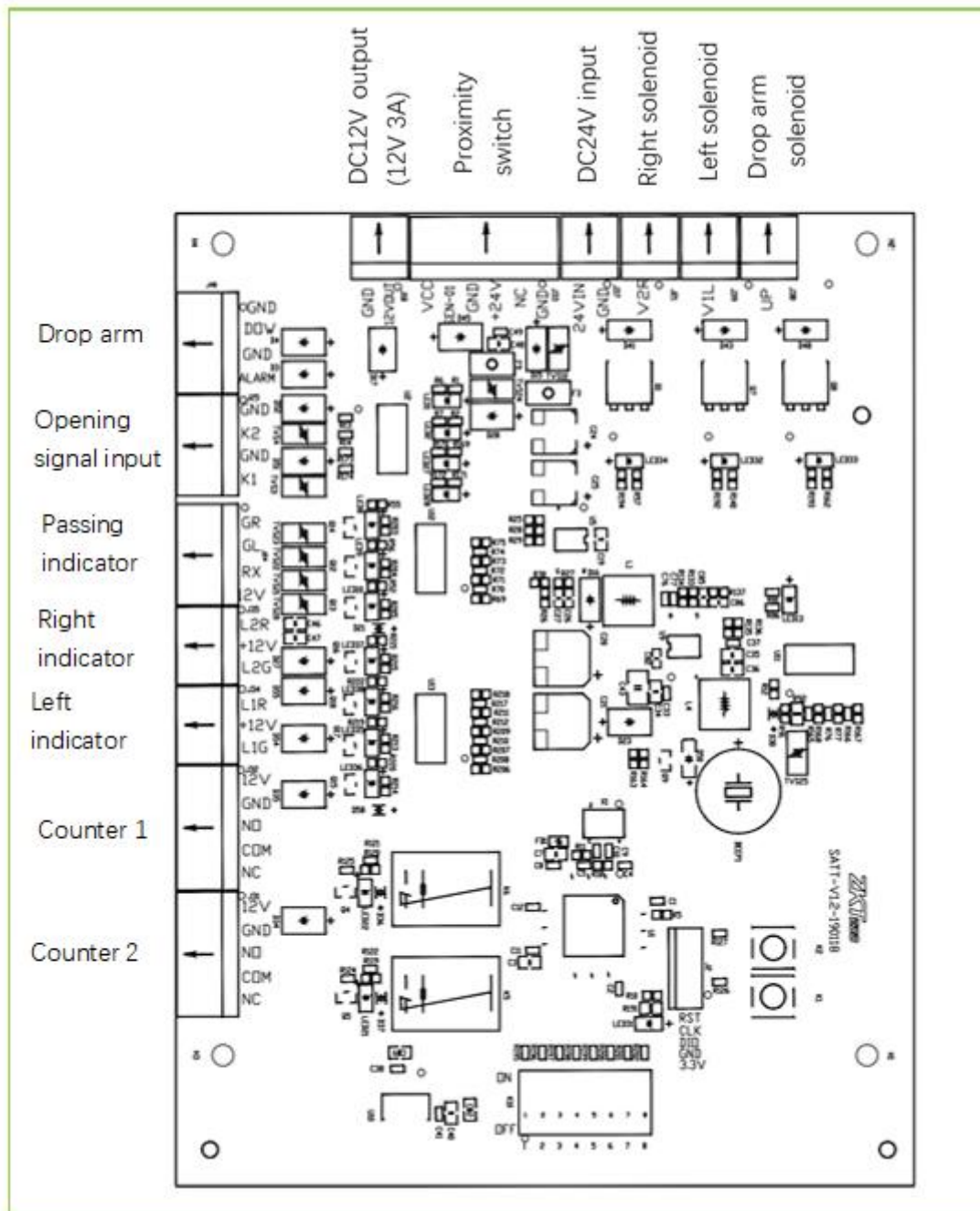Turnstile control board's diagram as shown in Figure4-1.

Figure 4-1

Note: The third party access control system lock relay trigger time should be 1 second or less than 1 second.
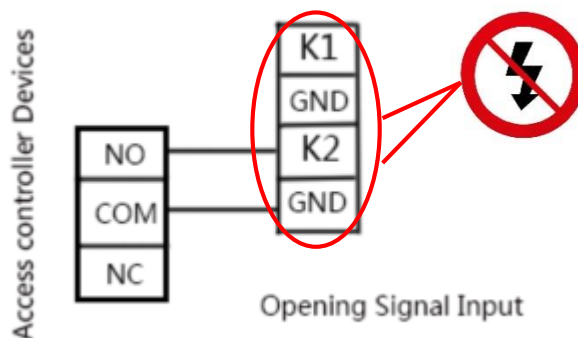
4.2 Connection Diagram of the Access Controller

Figure 4-2

Note: The lock relay duration of access controller device needs to be set to 1s. Forbidden using electrically charged objects to connect to the port of Opening Signal Input, otherwise will damage the control board.

4.3 DIP K1 Switch Configuration
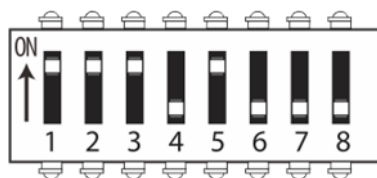
Figure 4-3

Pin	1	2	3	4	5	6	7	8
Function Setting	Opening Duration			Direction Indicator		Continue Passing Function		Alarm
Default	1	1	1	0	1	0	0	0

0=ON   1=OFF

4.3.1 Setting the Turnstile Opening Duration

Opening duration refers to the period of time from opening to closing once the turnstile receives an opening signal. In the DIP switch, number 1, 2, and 3 are used for duration setting. It can be set to different values from 5s to 60s according to the following chart.

Bit Setting	Duration	Bit Setting	Duration
111	5s	011	30s
110	10s	010	40s
101	15s	001	50s
100	20s	000	60s

Note: The turnstile's opening duration is set to 5s by default.

4.3.2 Direction Indicator

It is to indicate whether the passage allows people to pass. The green arrow means passing is allowed while the red "X" means passing is prohibited. The indicator status can be set through number 4 and 5 in the DIP switch. The description of the bit settings are as follows:

11 = Passing is allowed in both directions.

10 = One-way forbidden; right passing is allowed.

01 = One-way forbidden; left passing is allowed.

00 = Both ways forbidden.

4.3.3 Continue Passing Function

With the Continue Passing function, the turnstile could remember at most 20 swipes of one card at one time and allows up to 20 people to pass so they don't have to swipe card each time, this function can be enabled or disabled through number 6 in the DIP switch. The description of the bit settings are as follows:

In the DIP switch, number 6 is used to enabled or disabled the **Continue Passing Function**, number 7 is used to set the initial value of **Continue Passing Function**.

Number 6	Number 7	Function	Opening Duration
0	Disabled	Disabled **Continue Passing Function**	Please refer to section 4.3.1 Setting the Turnstile Opening Duration.
1	1	Enabled **Continue Passing Function**	The initial value is 16s, and the **Opening Duration** = 16 + (N -1) * 6.
	0		The initial value is 8s, and the **Opening Duration** = 8+ (N -1) * 6.

4.3.4 Alarm Function (Optional)

In the DIP K1 switch, number 8 is used to enabled or disabled the **Alarm Function**.

1 = enabled

0 = disabled

Note: Please set to 0 when working normally, that is to say that Alarm Function is disabled.

5 Equipment Precautions and Maintenance

5.1 Precaution

1. It is recommended to purchase optional accessories to use in outdoor environment.
   1) It shall install optional cooling fans for the equipment if the working temperature is often above 50 ºC.
   2) It is equivalent to IP54 waterproof under proper installation. However, it cannot work in the region that may suffer typhoon.
   3) If the temperature is -30ºC, a heating plate is suggested to install. It might need multiple times to power on while getting hot automatically through the self-check program.
   4) The service life of this equipment may be shortened if it works outdoors in coastal areas or a region prone to acid rain.
2. If the power and signal cables are connected properly, this equipment can be immersed in water of 250 mm deep, but it must not be powered on for operating when it is immersed in water.
3. It is highly recommended that a card swiping warning line to set for prompting passers-by to swipe cards properly and a reasonable passage width shall be set to prevent passers-by from squeezing in illegally.
4. It is recommended that a warning sign is placed at a conspicuous position, and prompt: "**Please swipe your card outside the warning line and pass in order. Thank you!**"

The maximum tolerance of the tripod turnstile's arms

Please note that the maximum stress tolerance at the center of the arm is 80kg and at the ends of the arm is 40kg (See Figure 5-1).When the impact force on the tripod turnstile reaches the designed limit, the arms break down first to ensure that the whole equipment is not damaged and the passer-by is not injured.
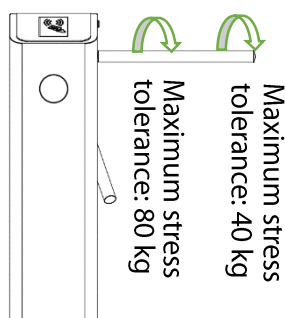

Figure 5-1

In case of emergencies

This equipment is designed to drop down arms automatically if there is power failure thus make the passage being open to the public. And there is interface in the turnstile control board to connect an

emergency switch (J6 Drop Arm) which would make the tripod turnstile keep open in case of emergencies. Note after power restoration, wait for more than 6s and then lift the arms manually.

5.2 Maintenance

Forming maintenance consciousness

The tripod turnstile needs to be maintained regularly and repaired once it is damaged. It is recommended that warning signs being placed at conspicuous positions for prompting passers-by to pass in a proper way and in good order. Reasonable maintenance consciousness helps to guarantee long-term usage of the tripod turnstile.

Regular maintenance

Cleaning and protection liquid dedicated for stainless steel are recommended to wipe the outer shell of the equipment regularly. The tripod turnstile used outdoors or in an environment with lots of dust must be maintained once a year at least, for example, clean up the dust and add appropriate lubricating oil to Disk Wheel. Note regular maintenance should be performed after power off the equipment, as shown in Figure5-2.
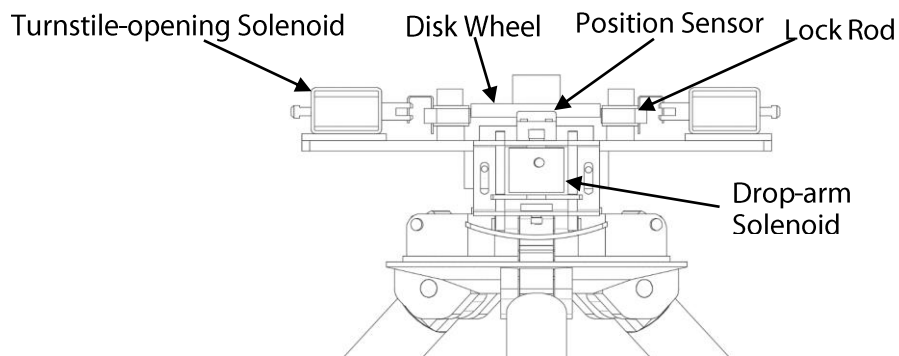

Figure 5-2

6 Troubleshooting

Symptom	Troubleshooting
The indicator is not lighted when the equipment is powered on.	It may be caused by the power supply or circuit. Check whether the connection cable and power cable between are damaged, or the wiring is loose.
The arms of the tripod turnstile cannot be lifted manually after the equipment is powered on.	It may be caused by the problem of relative components or drop-arm solenoid. Check whether the drop-arm solenoid is operating, and check the work status of the solenoid, as shown in Figure 5-2.
The tripod turnstile does not open after authentication.	It may be caused by lack of permission or a circuit problem. 1. Check whether the user has the permission to open the turnstile. 2. Use a multimeter to check whether the NO and COM ports of the access control system has a relay signal output. 3. Short-circuit the ports "K1, GND" and "K2, GND", if the turnstile is successfully opened, it would be the problem of controller. In this case, please refer to Attachment 2 Connection Diagram of Control Board and Access Control Panel to check the cable connection of the controller.
The turnstile allows people continue passing one-way side during the use.	1. Check the Turnstile-opening Solenoid 2. Check the access controller 'Lock driving duration', whether set to 1s. 3. Check whether the Turnstile-opening solenoid is operating and check whether the Turnstile-opening solenoid is stuck, as shown in Figure 5-2.

Attachment 1 Default Factory Settings

No.	Function	Default
1	Lock Driving Duration	5s
2	Door Sensor	None
3	Verification Interval	1s
4	Controller Communication	TCP/IP: 192.168.1.201
5	Turnstile Opening Duration	5s
6	Passing Direction Indicator	Passing is allowed in both directions
7	Continue Passing Function	Disabled
8	Alarm Function	Disabled

Note: The Lock Driving Duration is default 5 seconds, please set to 1 second. Forbidden using an electrically charged objects to connect to any one port of Opening Signal Input, otherwise will damage the control board.

Attachment 2 Connection Diagram of Control Board and Access Control Panel
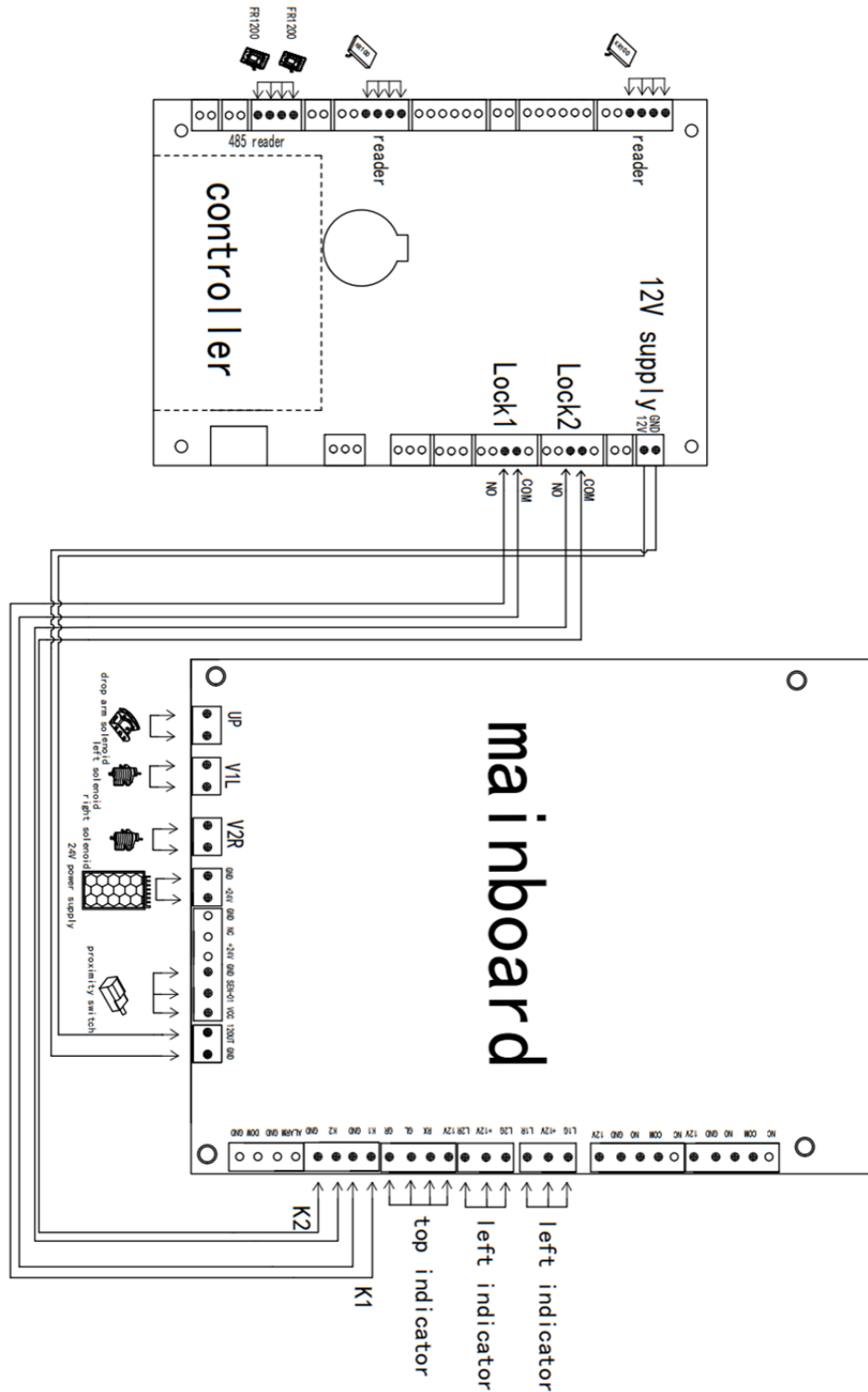
Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ZKTeco Industrial Park, No. 26, 188 Industrial Road,

Tangxia Town, Dongguan, China.

Phone   : +86 769 - 82109991

Fax   : +86 755 - 89602394

www.zkteco.com