Godrej | SECURITY SOLUTIONS

# CLASSIC MOTORIZED DROPARM TURNSTILE

# Contents

## Introduction

This Operation Manual is combined with Datasheet, which covers the Motorized Drop Arm Turnstile (hereinafter referred to as the Turnstile). The Operation Manual contains information about Design, Specifications, Installation, Operation and Maintenance of the turnstile.

The turnstile should be serviced only by the qualified staff having the relevant class of permit to work with electrical facilities with AC & DC voltage and basic knowledge of mechanical constructions, who has carefully studied the Operation Manual, obtained safety instructions and trained for Operation and Maintenance of the turnstile from Godrej.

Reliability and durability of the turnstile operation is provided with the observation of modes and conditions of transportation, storage, installation and operation. So, fulfillment of all requirements specified in this document is mandatory.

Due to regular upgrading of turnstile, its design can be modified without degradation of parameters and its quality.

## Warnings

These warnings are designed for ensuring safety during operation of the turnstile to prevent violation of safety characteristics by improper installation or operation. These warnings are aimed at drawing attention of the customer to safety problems.

The Operation Manual is an integral part of the product, and it should be handed over to the customers. The operation manual should be kept for later use and consulted for clarifications if required. If the turnstile is resold, handed over to another owner or transported to another place, make sure that the operation manual is enclosed to the turnstile to be used by new owner and/or maintenance staff during installation and/or operation.

Safety measures and requirements specified in this in the operation manual must be observed:

- The turnstile must be connected to ground loop prior to operation.
- The turnstile should be connected to AC network with parameters specified in the operation manual.
- Inspection, adjustment and repair should be performed only after the turnstile is de-energized. (Power Off condition)

After receiving the turnstile, it should be unpacked, and its integrity should be checked. In case of doubt in integrity of the turnstile it should not be used, and the customer should refer to the supplier or to the manufacturer.

Packing accessories (corrugated cardboard case, polyethylene bags, clips etc.) as potential sources of hazard must be removed to unacceptable place prior to proper use of the turnstile

Using of turnstile for unintended purpose, improper installation, nonobservance of conditions of transportation, storage, installation and operation specified by this operation manual, may result in damage to people, animals or property for which the manufacture is not responsible.

# 1. Description And Operation

## 1.1. General Information and Designation

### 1.1.1. Model Details

Model: Classic Motorized drop arm turnstile
Year of manufacture: 2024
Manufacturer: Godrej Security Solutions
Serial Number:

### 1.1.2. Application

Turnstile designed for arrangement of individual access at ski resorts, industrial enterprises, banks, shopping malls, administrative facilities etc. under actuation of control signals (coming from card readers, triggers etc.) of access control system or manually (from manual control panel). Traffic flow capacity of the turnstile without personal identification is at least 20 persons per minute.

### 1.1.3. Dimensions and Weight

| Designation of modification | Dimensions(mm) | | | Max. weight (Kg) |
|---|---|---|---|---|
| | L | W | H | |
| C-Type Motorized Tripod Turnstile | 1100 | 260 | 1020 | 40 |

### 1.1.4. Parameters

| Operation conditions | Parameter value |
|---|---|
| Operating temperature | Up to 50°C |
| Storage temperature | 15°C to 50°C |
| Relative humidity | Up to 99%RH |

## 1.2. Specifications

Principal parameters of the turnstile are shown in Table 3

| Parameter description | Unit measure | Parameter value |
|---|---|---|
| Traffic flow capacity in free access mode | Max/min | Up to 40 persons |
| Traffic flow capacity in single access mode | Max/min | Up to 20 persons |
| Max. passage width | mm | 500mm |
| Supply voltage: | | |
| AC power supply(primary) | V, Hz | 230VAC,50Hz |
| DC power supply(secondary) | V, A | 24VDC, 1A |
| Max. power consumption | W | 24W |

## 1.3.Configuration

### 1.3.1. Configuration

Design of the Motorized drop arm tripod turnstile includes the following principal devices and components:

- Top cover
- Tripod Front assembly/Head assembly
- Hub assembly
- Two LED Lane Indicators
- Control panel & power supply

**Design, overall and installation dimensions of the turnstile are specified in the Appendix A.**

### 1.3.2. Completeness of Delivery

For convenience of delivery, the turnstile is supplied ready-to-install with mounted barrier rods. The turnstile is delivered by one package. Separately packed components are enclosed to the turnstile packing.
Completeness of delivery is specified in Table 4.

| Name of product | Product model /parameters | Quantity piece | Notes |
|---|---|---|---|
| Motorized drop arm tripod Turnstile | - | 1 kit | To be delivered with dismounted hub assembly ready-to-install |
| Components | | | |
| Control panel | - | 1 | - |
| Mounting kit | - | 6 | Anchor with jacket and screw |
| Packing | - | 1 | |

## 1.4.Design and Operation

### 1.4.1. Turnstile Design

- The turnstile housing is a Stainless-steel structure which is mounted by its support on plain surface by means of anchor with jack and screw. Status of turnstile is displayed by LEDs built in the turnstile housing. Constantly lit green LED means initial state of turnstile: the turnstile is locked in both directions.
- At the top of turnstile housing head mechanism is mounted. Hub with barrier rods is installed on shaft. One of the barrier rods is horizontal barring the access.
- The turnstile post, under removable lid, the pre-fixed on which and Control device are installed. Controller controls the turnstile, analyzing in signals from speed and position sensor and further protection. Receiving control commands from peripherals. Controller controls display of LED displays and generate feedback signal for ACS (access control system).
- External head mechanism has following functions: clockwise entry and exit, anticlockwise entry and exit, emergency exit (Arm drop).

### 1.4.2. LEDs

The LED displays with bright light are intended for status indication: a green arrow indicates the turnstile is free for the operation and can be used for the access purpose and, a red cross indicates the turnstile has been occupied and no access can be granted.

### 1.4.3. Principle of Operation

Turnstile operation modes:

a. Unidirectional mode
b. Bidirectional mode
c. Free mode

In the initial state, when arms reset and comes to home position and gets locked, barrier rod is locked from turning and barring access.

When permission command for access in the direction “clockwise” or “anticlockwise” comes to controller, red cross is displayed on LED display, and barrier rod moves 10° in appropriate direction & when barrier rod is manually gently pushed in relevant direction. The barrier rod rotates smoothly, and the barrier rod will come to its home position.

In case of emergency escape of people, the turnstile provides free access in both the directions as the barrier rod drops when the emergency input (External) is given to the controller.

The turnstile 24VDC power voltage is provided by SMPS (switching mode power supply).

## 1.5.Composition and Operation Principle

### 1.5.1. Equipment Composition

The product is mainly composed of framework, core mechanism, main controller, read/write device and display. As to the read/write system, it may be the system as provided by the company, or the one chosen by the users themselves in accordance with their own requirements. The practical installation locations of read/write device and display vary as different types of turnstiles.

### 1.5.2. Operation Principle

When the access card of user is accepted at the Access control system, the main controller signals the motor to drive the rod to rotate to an angle for unlocking. The passenger may pass through successfully along the passage direction. Once the barrier rod rotates for 120°, the transmission system will lock automatically, as to the read/write system such as magnetic card, bar code card and ID card are the same as that given above, except that the determination of legal card and the barrier open signal of turnstile main control board are carried out by the administrative computer.

### 1.5.3. Operation Modes

To facilitate the application of users, the equipment is set up with various operation modes as given below for selection by the users in the practical application:

a. Double way reading card, double way flow limit
b. One way reading card, the other way barring
c. One way reading card, the other way free passing

The above operations modes may be set up with the built-in small keyboard of the system, for detail, refer to Appendix A.

### 1.5.4. System Composition

The product can either be used independently to form a passage or be combined into multiple passages of intelligent management. At the same time, it may be interconnected with management computer and feed back in real time the passing condition of the passage and the turnstile status to the administrator, forming various kinds of management report lists. The administrator may also carry out far end control of the operation for the turnstile through the management computer.

## 1.6. Equipment Installation and Adjustment

### 1.6.1. Equipment Installation

a. Sort out the auxiliaries in accordance with the packing list.
b. Determine the installation location in accordance with the system composition, application, site and the type of turnstile selected.
c. Determine the installation hole location by placing tripod on installation area.
   Precautions:
   The buried PVC tube should be with a depth greater than 60mm, the exposed section should be 50mm higher than the earth and the exit mouth should be bending back to avoid dipping of water into the tube

### 1.6.2. Adjustment

a. Align the hole for screw bolt at the chassis with the ground screw bolt, tighten the nut.
b. As shown in the connecting diagram of the system, connect the power line, control line to the connecting socket of the main controller board of the turnstile.
c. Also connect protection ground wire properly.

## 1.7. Description of Operation

The PCB operates according to the program entered in the microcontroller memory. The turnstile's mechanism and LED display is controlled according to the control commands based on logic entered in the program. The user has to keep in mind the following condition while using the turnstile.

- When a user is moving through the Turnstile barrier, he/she should not stop in between (at least beyond the resting position of barrier rod) the operation, because the barrier rod may give you a gentle push from the back.
- Do not put the weight on the barrier rods as they are of light weight.

- **Do not stand in the turnstile area when the turnstile is powered up, since it might rotate itself while initializing.**

The access modes are the combinations of various or similar modes in different direction.

| Access mode | Direction | Status | Description |
|---|---|---|---|
| Power On | - | - | In this mode, the arms rotate and is scanned at all 3 positions and comes to home position. The led displays green color on both sides. |
| Power Off | - | - | In this mode the turnstile is de-energized, and the arm (horizontal to the surface) drops down and clears the passage area. |
| Trigger-1 | Clockwise direction | Tripod rotates in clockwise direction. Red cross is displayed on LEDs. | After getting trigger 1 input, motor rotated the arm 10°and after a gentle push the barrier rod rotates 120°and comes to home position and gets locked |
| Trigger – 2 | Anti-clockwise direction | Tripod rotates in anticlockwise direction. Red cross is displayed on LEDs. | After getting trigger 1 input, motor rotated the arm 10° and after a gentle push the barrier rod rotates 120°and comes to home position and gets locked |
| Emergency | Both the directions | Tripod rotates in Both the direction. Green arrow blinks on LEDs. | In this mode the turnstile will be energized but the arm (horizontal to the surface) drops down and clears the passage area. |

# 2. Intended Use

## 2.1.Operating limitations

The turnstile must be used to the specifications listed in operation manual.

**Prohibited Usage**:

a. Unintended use of the turnstile.
b. To use the turnstile unearthed.
c. To use heating pipes as well as pipes of central water supply for earthing.
d. To repair and adjust without de-energization.
e. To relocate the objects exceeding the passageway width through the turnstile access area.
f. To jerk and impact barrier rods, led displays or other parts of the product, which may cause their mechanical deformation or damage.
g. To use SMPS of the turnstile for the connection of external devices its strictly for the turnstile use only.

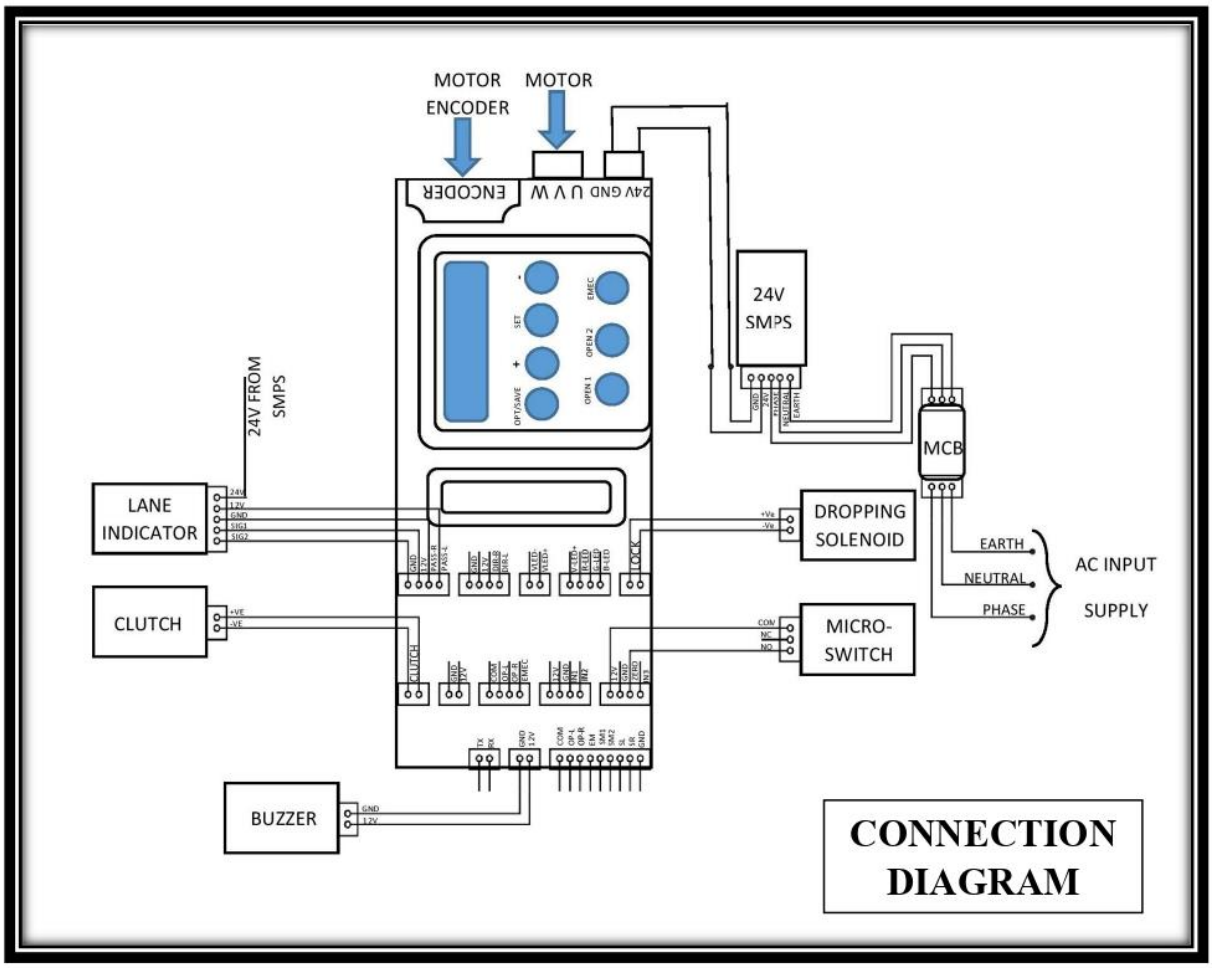
**Forbidden Usage:**

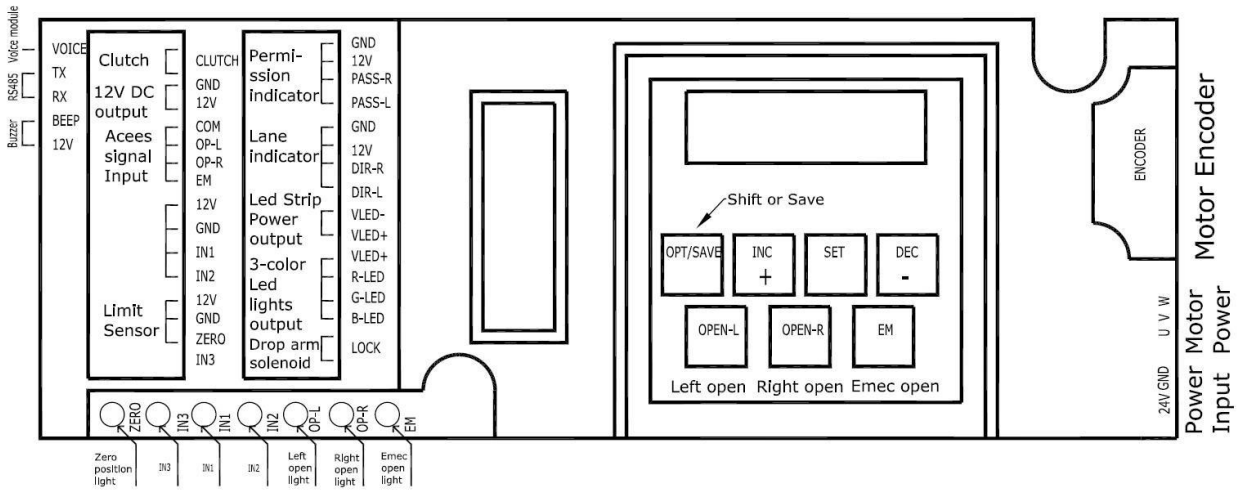
a. At the presence of mechanical rattle in moving parts of the turnstile.
b. when metal work of the turnstile and its components and accessories are mechanically damaged.

### 2.2.Site Preparation

- A prepared site to accept tripod turnstile must comprise a flat and level concrete base of minimum thickness 200mm and of suitable quantity to accept raw bolts or expanding anchor bolts etc. The dimensions are as shown in Appendix A
- The base should be supplied with two under floor conduits of minimum diameter 20mm, rising as indicated on attached drawing.
- One conduct is for the 230V 50Hz supply cable and other is for control cable to switch. Either conduit may be used for either purpose, depending upon the site layout.
- The conduit designated for the mains cable should be run back to the nearest switched, fused, spur point, and that for the control cable should rise as near to the envisaged switch position as it practicable.
- Cables should be laid in the conduits prior to installation of the turnstile and be left with a tail of 1.5 meters each at the turnstile position. The other ends of the cables should obviously not be terminated until after completion of the turnstile installation.
- The mains supply cable must be triple-core and contain a suitable earthing conductor. Power consumption of each tripod turnstile is
- The control cable should be of 2 core Shielded/Unshielded 0.5sq. mm size for either side entry & exit as it is PFC contacts.

## 3. Connection Details






## 3.1. Description and Wiring

### 3.1.1. Power Connector: CON1

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN1.1 | INPUT | 24V /6.5Amp | Connect 24 volt from SMPS |
| 2 | CN1.2 | INPUT | GND | Connect GND from SMPS |

### 3.1.2. Motor

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN2.1 | OUTPUT | U | Connect YELLOW wire of Motor (PHASE A) |
| 2 | CN2.2 | OUTPUT | V | Connect here GREEN wire of Motor (PHASE B) |
| 3 | CN2.3 | OUTPUT | W | Connect here BLUE wire of Motor (PHASE C) |

### 3.1.3. Motor Encoder

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN3 | OUTPUT | - | Connect Rs485 Serial Converter Cable |

### 3.1.4. Lane Indicator

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN4.1 | OUTPUT | GND | GND To Lane Indicator |
| 2 | CN4.2 | OUTPUT | 12 V | 12 V Left Lane Indicator |
| 3 | CN4.3 | OUTPUT | PASS-L | Direction changes over Signal (Arrow/Cross) for left Lane Indicator |
| 4 | CN4.4 | OUTPUT | PARR-R | Direction changes over Signal (Arrow/Cross) for Right Lane Indicator |

### 3.1.5. Dropping Solenoid

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN8.1 | INPUT | +24V | Positive suppl to Dropping Solenoid |
| 2 | CN8.2 | INPUT | GND | GND to Dropping Solenoid |

### 3.1.6. Clutch

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN9.1 | OUTPUT | CLUTCH+ | Connect here clutch (Break) wires |
| 2 | CN9.2 | OUTPUT | CLUTCH- | |

### 3.1.7. Access Signal

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN11.1 | INPUT | COM | Common input from Access |
| 2 | CN11.2 | INPUT | OP-L | Connect Cable from Left ACCESS READER (COM AND NO) |
| 3 | CN11.3 | INPUT | OP-R | Connect Cable from Right ACCESS READER (COM AND NO) |
| 4 | CN11.4 | INPUT | EMR | Connect To EMERGENCY Switch |

### 3.1.8. Microswitch

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN13.1 | OUTPUT | 12 V | COM wire of microswitch |
| 2 | CN13.2 | OUTPUT | GND | No Connection |
| 3 | CN13.3 | INPUT | ZERO | NC wire of microswitch |
| 4 | CN13.4 | INPUT | IN3 | No Connection |

### 3.1.9. Buzzer

| Sr No | Pin Number | Mode | Signal | Remark |
|---|---|---|---|---|
| 1 | CN16.1 | OUTPUT | ALARM | Connect Speaker Module |
| 2 | CN16.2 | OUTPUT | 12V | 12 Volt to Speaker Module |

## 3.2. Debugging Instructions


Shift/Save Inc Set Dec

Standby interface display contents can be set by LP05 menu.

System menu category:

**Regular menu:** LPXX and DPXX (XX is menu number)

**Non-user menu:** NPXX. (XX is menu number)

**For example,** LP05 is standby interface display contents setting

1. RUNX (X is LP02 menu value setting （0-8） ) 
2. U-XX (XX is voltage of the power supply to board) 
3. T-XX (XX is current temperature of the board) 
4. EXXX (XXX is error code) 

# 4. Configuration Menu Details

## 4.1. Regular Menu Entry

a. 1st step: press SET button and display 0000 ： 

b. 2nd step: Set the password by shift/INC/DEC button, Password: 1111 

You don’t need to push INC button by 1111 times to get the value 1111, you can press Shift button (OPT/SAVE) to adjust ten digit or hundred digit or thousand digits.

c. 3rd step: Press SET button and enter menu list ： 

d. 4th step: Select the menu item by INC or DEC button (from POO, press INC button to enter LP menu list to DP menu list, Press DEC to enter DP menu list and then LP menu list)
LP02 menu for example 

e. 5th step: Press SET button to enter to enter menu 

f. 6th step: Set LP02 value to be 1 by INC/DEC/SHIFT button 

g. 7th step: Press set to exit menu item 

h. 8th step: Press Save button to quit and save setting 

**Notes: Need to input password 1111 when first enter the menu, no need input again within 5mins after that.**

## 4.2. Non-User Menu Entry

When equipment standby, long press INC button to enter NP menu, setting procedure same as regular menu 

## 4.3. Controller Reset Procedure

a. 1st step: Long press INC button into NP menu 

b. 2nd step: Enter NP01 to set turnstile type, Enter NP13 to set motor type 

c. 3rd step: Turn to NP02 and Press Enter then display P-H 

d. 4th step: Long press INC button more than 2 sec and controller will display P-F and then REST, that means reset successful  

e. 5th step: Please resume power 

## 4.4. Turnstile Zero position Setting

a. 1st step: Enter regular menu and find DP03 menu 

b. 2nd step: Press SET button 

c. 3rd step: Press OPT/SAVE button to enter Zero position setting

d. 4th step: After the numeric number display, manual the rotation arm in clockwise until the limit sensor led indicator off, then manual rotation arm in counterclockwise to the correct close position (when moving rotating the arm, the numeric will keep changing). After position correctly, press Set button to save the zero position in controller memory.

e. 5th step: manual the rotation arm in counterclockwise until the limit sensor led indicator off, then manual rotation arm in clockwise to the correct close position.

f. 6th step: Press Save button to quit and save setting.

## 4.5.Menu Instruction

| Menu Item | Menu Meanings | Setting Range | Notes | Default Value |
|---|---|---|---|---|
| P00 | Menu Entrance/Exit | -- | Menu entrance and exit item | |
| LP01 | Operation mode | 0-1 | 0 is testing mode; 1 is working mode | 1 |
| LP02 | Turnstiles working mode | 0-8 | 000: Two directions are passing under the control, in and out way is allowed to pass through with the card.<br>001: Enter direction is allowed to pass by card, and out direction is passing freely without the card.<br>002: Enter direction is allowed to pass with card, and out direction is forbidden.<br>003: Enter direction is passing freely without the card, and out direction is allowed to pass by card,<br>004: Both directions are passing freely without the card.<br>005: Enter direction is passing freely without the card, and out direction is forbidden,<br>006: Enter direction is forbidden, and out direction is passing freely without the card,<br>007: Enter direction is forbidden, and out direction is passing freely without the card,<br>008: Both directions are forbidden to pass though. | 0 |
| LP03 | Entry/Exit voice | 0-1 | Change voice prompt direction | 0 |
| LP04 | Access signal modes accepting | 0-3 | 00: Bi-directional with memory.<br>01: Entry with memory.<br>02: Exit with memory.<br>03: bi-directional without memory. | 3 |
| LP05 | Display mode | 0-2 | 0 standby; 1: voltage; 2: Temperature | 0 |
| LP06 | Effective Passing Time | 1-60 | Unit: sec | 6 |

| | | | | |
|---|---|---|---|---|
| LP07 | Signal outputs (3-color lights) | 0-1 | 0: Access trigger signal received feedback<br>1: 3-color led light output<br>2: Passenger passed feedback<br>[VLED+ & G-LED is for OPEN1 direction passed feedback VLED+ & B-LED is for OPEN2 direction passed feedback] | 0 |
| LP08 | 485 addresses | 0-255 | | 0 |
| LP09 | Default | | | |
| LP10 | Alarm lasting time | 0-1 | 0-60s | 2 |
| LP11 | Default | | | |
| DP01 | Max Operation speed | 60-3000 | The maximum rotational speed curve of the motor. Normally not need to adjust | 2000 |
| DP02 | Gate Acceleration Time | 0-255 | The time to arrive the max speed | 250 |
| DP03 | Zero Position Setting | | Zero position setting | |
| DP04 | Speed Loop Gain P | 10-8000 | Speed acceleration and deceleration curve coefficient, shaking when arriving position, Increase the value, 100unit/time. If hard to arrive position, decrease the value,<br>100 unit/time | 1000 |
| DP05 | Speed loop integral constant I | 10-8000 | Corresponding setting speed coefficient | 20 |
| DP06 | Position Loop Gain P | 10-500 | The coefficient from the highest speed position to the lowest set speed position. The larger the coefficient, the faster the speed. The speed of the gate opening and closing of the gate is basically adjusted by this parameter | 260 |
| DP07 | Gate Operating angle | 60-150 | Operating angle of the gate opening and closing. | 88 |
| DP08 | Minimum operating speed of gate | 10-3000 | Minimum operating speed of gate when near to full opened or full closed position | 30 |

| | | | | |
|---|---|---|---|---|
| DP09 | Clutch type | 1 | 1 is with clutch | 1 |
| NP01 | Equipment type | 0-1 | 0: Tripod turnstile<br>1: 120 degrees full height turnstile<br>3: 90 degrees full height turnstile<br>4: Failure secure type 180degrees full height turnstile<br>5: Failure secure type 120 degrees full height turnstile<br>6: Failure secure type 90 degrees full height turnstile | 1 |
| NP02 | Reset | | Controller reset | |
| NP03 | Mechanical anti-pinch sensitivity | 10-255 | The bigger value, the lower sensitivity. | 10 |
| NP04 | Clutch lock angle with Illegal Access | 10-90 | Over this angle, clutch will keep lock until receive legal access signal | 20 |
| NP05 | Emergency | 0-1 | 0: Arm drop (for tripod turnstile)<br>1: Free pass (for full height turnstile) | 0 |
| NP06 | default | 0-60 | Unit: Sec | 0 |
| NP07 | default | 0-1 | | 0 |
| NP08 | Reducer ratio setting | 1-150 | Motor Gearbox reducer ratio setting | According to motor type |
| NP09 | Default | | | |
| NP10 | Maximum Torque setting | 1-10 | Unit: Amp | According to motor type |
| NP11 | Positioning accuracy | 1-10 | Unit: 0.1 degree | 5 |
| NP12 | Zero position drag force | 1-10 | Unit: amp | 3 |
| NP13 | Motor type | 0-10 | 2 : Tripod turnstile/Swing barrier(70D60K)<br>3: Full height turnstile(90D60K)<br>4. Full height turnstile(90D30K) Swing barrier/Flap barrier(70D30K) | |
| NP14 | Maximum battery output current | 1-10 | Unit: amp | 2 |

| | | | | |
|---|---|---|---|---|
| NP15 | Motor Speed of arm lifting when power resume | 300-3000 | Unit: RPM/MIN | 600 |
| NP16 | Pre-Rotating angle when authorized to pass | 3-10 | Unit: degrees | 10 |
| NP 17 | Sensitivity of starting auto-rotation when start to pass | 1-10 | Unit: degrees | 1 |
| NP18 | Default | | | |
| NP19 | Early end angle of Position loop | 1-30 | Unit: degrees | |
| NP20 | The Starting Angle of ignoring all blocked signals | 1-full open angle | Unit: degrees | |
| NP21 | Against maximum operating temperature | 50-80 | Unit: Celsius | |

### 4.6.Abnormal Digit Display

| Display | Description | Notes |
|---|---|---|
| F-01 | FOC Frequency is high | |
| F-02 | Voltage is high | |
| F-04 | Voltage is low | |
| F-08 | Over current | |
| F-16 | Start error | |
| F-32 | Speed return error | |
| F-64 | Hardware error | |
| F-128 | Software error | |
| E-20 | Flap meets obstacle | |
| E-21 | Over time | |
| E-22 | Zero position error | |
| E-23 | Power supply abnormal | |
| E-24 | Protection sensors are blocked | |
| RUNX | Standby display | |
| T-XX | Temperature display | |
| U-XX | Voltage display | |

# 5. Maintenance

## 5.1.General Instructions

- Commissioning and subsequent maintenance of the turnstile should be performed only by the staff to be in charge of the turnstile.
- The turnstile can be serviced only by the staff having the relevant electrical safety qualification level according to the national requirements.
- The turnstile can be installed and operated only by the qualified staff having the relevant class of permit to work with electrical facilities with voltage up to 230V, aware of this manual, design and the turnstile's principal of operation.

## 5.2.At Routine Maintenance and Lubrication Schedule

a. The equipment can only be used after the above test to ensure a normal operation of the equipment.
b. It is forbidden for the passenger to push, lean or pull the barrier rod during the card reading or prior to the indicator changing into a green lamp. Otherwise, the normal operation of equipment may be affected.
c. It is forbidden to sit or press with force on the barrier rod when the equipment is not in use, otherwise, the turnstile may be damaged.

d. It is recommended that the equipment not be used directly in the exposed site, or in humidity or corrosive environment. Otherwise, the application life of equipment may be affected due to rain, humidity or corrosive subject (for application in outdoor, rainproof facilities such as sun shading board should be used).
e. For passing, it is only needed for the passenger to push slightly the barrier rod and the equipment will then drive the barrier rod to move automatically. It is not allowed to push the barrier rod with strong force during the passing.

⚠ Precautions:

1. Please do not use the system when there is lightning, otherwise the turnstile may be damaged.
2. It is required to connect reliably the protection grounding of the system to avoid accident of personnel injury.

## 5.3. Regular Maintenance

a. The equipment is required to clean regularly with soft cloth so as to keep a clean and polish surface. It is forbidden to clean the surface with a hard object, otherwise, the good looking appearance may be affected. It is also forbidden to wash it with water, otherwise, short circuit may occur in the electric control system and the equipment may be damaged.
b. It is required to check regularly the connection of various movement sections of the equipment. Fasten timely the loose fasteners such as nut and screw, otherwise, turnstile failure may be resulted due to long term operation.
c. It is required to check regularly the protection grounding of the system to ensure a reliable connection.

# Appendix A: General Arrangement Drawing & Overall Dimensions