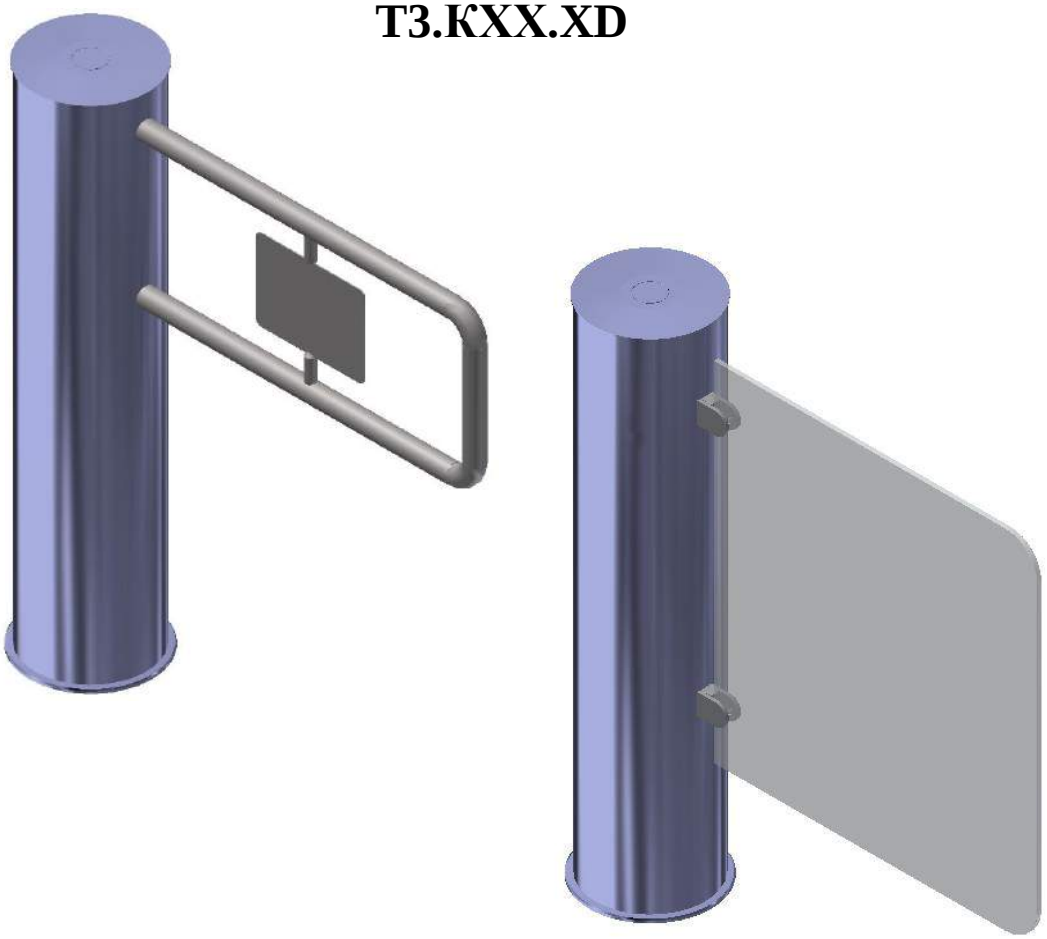
**“TiSO-PRODUCTION” LTD.**

# WAIST-HIGH TURNSTILE OF SWING GATE TYPE

# T3.KXX.XD

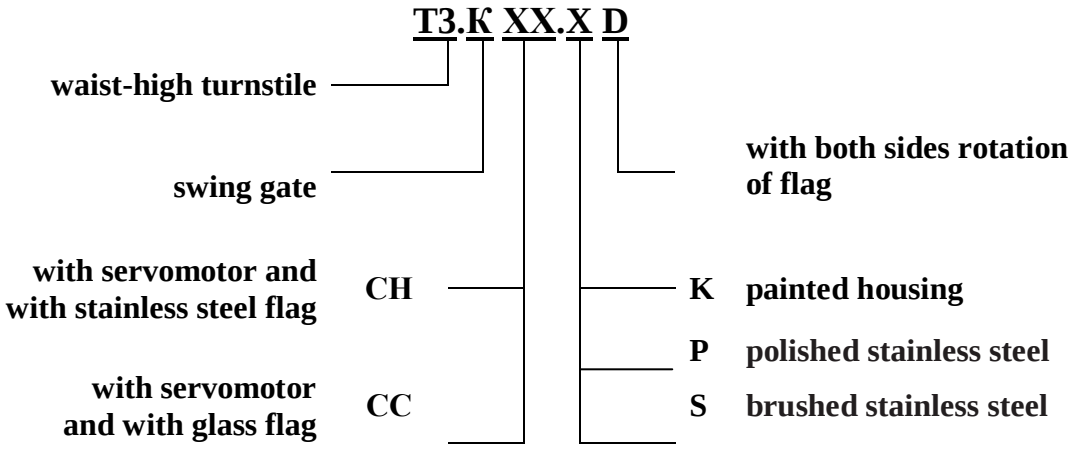


## OPERATION MANUAL
## AUIA. 202 OM

**UKRAINE**
**2015**

CONTENTS

This Operation Manual (hereinafter referred to as the OM) covers the servo-operated waist-high turnstile of swing gate type (hereinafter referred to as the turnstile). The Operation Manual contains information about design, specifications, installation, proper operation and maintenance of the turnstile.
This Operation Manual is prepared in compliance with the specification requirements TU U 31.6-32421280-004:2010.
The turnstile should be serviced only by the qualified staff having the relevant class of permit to work with electrical facilities with voltage up to 1000V, who carefully studied this Operation Manual, obtained safety instructions and trained for operation and maintenance of the turnstile.
Reliability and durability of the turnstile operation is provided with observation of modes and conditions of transportation, storage, installation and operation. So, fulfillment of all requirements specified in this document is mandatory.
In view of regularly performed works on improvement of the product, its design can be modified without degradation of parameters and quality of the product.
Depending on the purpose and design features of the turnstile, the following pattern of product reference designation is accepted:




Example of reference designation of servo-operated waist-high turnstile of swing gate type, polished, with both sides rotation of glass flag when **the turnstile Т3.КСС.РD ТУ У 31.6-32421280-004:2010** is ordered.

## WARNINGS TO THE CUSTOMER

## ON SAFE OPERATION OF THE TURNSTILE

These warnings are designed for ensuring of 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.

### GENERAL WARNINGS

*The Operation Manual is an integral part of the product and it should be handed over to the customer. The OM 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 OM 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 this OM 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 paragraph 1.2 "Specifications";
- Inspection, adjustment and repair should be performed only after the turnstile is deenergized.

After purchasing of 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 (wooden pallet, nails, clips, polyethylene bags, cardboard etc.) as potential sources of hazard must be removed to unacceptable place prior to proper use of the turnstile.

As electric shock protection device the turnstile is related to 01 protection class according to the GOST (State Standard) 12.2.007.0-75 and is not intended for operation in explosive and fire-hazardous areas by the “Rules for design of electrical installations”.

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

# 1 DESCRIPTION AND OPERATION

## 1.1 General Information and Designation

1.1.1 Product name: Waist-high turnstile of swing gate type

Climatic version: NF4

1.1.2 The turnstile is designed for pedestrian movement control at access points of industrial enterprises, banks, stadiums, administrative facilities etc. under actuation of control signals (coming from magnetic card readers, keypad etc.) of access control system or manually (from control panel). Traffic flow capacity of the turnstile without personal identification is at least 20 persons per minute.

1.1.3 Dimensions and weight of the turnstile correspond to the values are specified in Table 1.

Table 1

| Designation of modification | Dimensions, mm | | | Max. weight, kg |
|---|---|---|---|---|
| | H | L | W | |
| T3.KCH.KD | 940 | 830 | 225 | 50 |
| T3.KCC.KD | | | | |
| T3.KCH.PD | | | | |
| T3.KCC.PD | | | | |
| T3.KCH.SD | | | | |
| T3.KCC.SD | | | | |

1.1.4 The parameters defining operation conditions according to GOST 15150-69 and GOST 12997-84 are given in Table 2.

Table 2

| Operation conditions | For climatic version | Parameter value |
|---|---|---|
| Ambient temperature | NF4 | +1 to + 40 °C |
| Relative humidity | | 80 % at + 20 ºC |
| Ambient temperature allowable pressure | | 84 to 106,7 kPa |
| Transportation temperature range | | - 40°C to + 50 °C |
| Storage temperature range | | + 5 to + 40 °C |
| Group of mechanical application | NF4 | L3 |
| Altitude above sea level | | up to 2000 m |
| Environment | | Explosion-proof, does not contain current-conducting dust, aggressive gases and vapours in concentration destroying isolation and metals, disturbing normal operation of the equipment installed in turnstiles |
| Installation site | | In enclosed spaces in the absence of direct impact of precipitations and solar radiation |
| Running position | | Vertical, deviation from vertical position no more than 1º to any side is tolerated |

1.1.5 Reliability indices:
– Mean time to repair (without delivery time of spare parts, tools and accessories) – at most 6 hours;
– Mean time to failure – at least 1 500 000 accesses;
– Mean service life between overhauls – at least 10 years.

### 1.2 Specifications

Principal parameters of the turnstile are specified in Table 3.
Table 3

| Parameter description | Unit measure | Parameter value |
|---|---|---|
| Traffic flow capacity in free access mode is at least | man/min. | 60 |
| Traffic flow capacity in single access mode is at least | man/min. | 20 |
| Max. passage width | mm | 675 |
| Supply voltage: | | |
| – AC power supply (primary) | V<br>Hz | 100 ÷ 240<br>~ 50/60 |
| – DC power supply (secondary) | B | 12 |
| Max. power consumption | V•A | 75 |
| Index of protection according to GOST 14254-96 | – | IP41 |

### 1.3 Configuration and Completeness of Delivery

1.3.1 Turnstile design
1.3.1.1 Design of the waist-high turnstile of swing gate type includes the following principal devices and components:
– housing;
– flag;
– actuator;
– control box.
The turnstile also includes control panel.
Design, overall and installation dimensions of the turnstile are shown in Appendix A.
1.3.1.2 The turnstile modification depends on material of flag:
– stainless steel flag (reference designation T3.KCH.XD);
– glass flag (reference designation T3.KCC.XD).
1.3.1.3 The turnstile modifications are manufactured from:
– carbon steel subject to painting (reference designation T3.KXX.KD)
– polished stainless steel (reference designation T3.KXX.PD);
– brushed stainless steel (reference designation T3.KXX.SD);
–

### 1.3.2 Completeness of Delivery

The turnstile is delivered by one package of 353x1060x976 size.
Completeness of delivery is specified in Table 4.

Table 4

| Product name | Product designation/parameters | Quantity, piece | Notes |
|---|---|---|---|
| Servo-operated waist-high turnstile of swing gate type | T3.K_____.____D | 1 | – |
| Control panel | AUIA.111.22.00.00 | 1 | – |
| Mounting kit | Redibolt 92116A3-N | 4 | Anchor with jacket and |

| | | | |
|---|---|---|---|
| | (16×130 M12) | | screw |
| Data sheet | AUIA.202 DS | 1 | – |
| Packing | – | 1 | – |

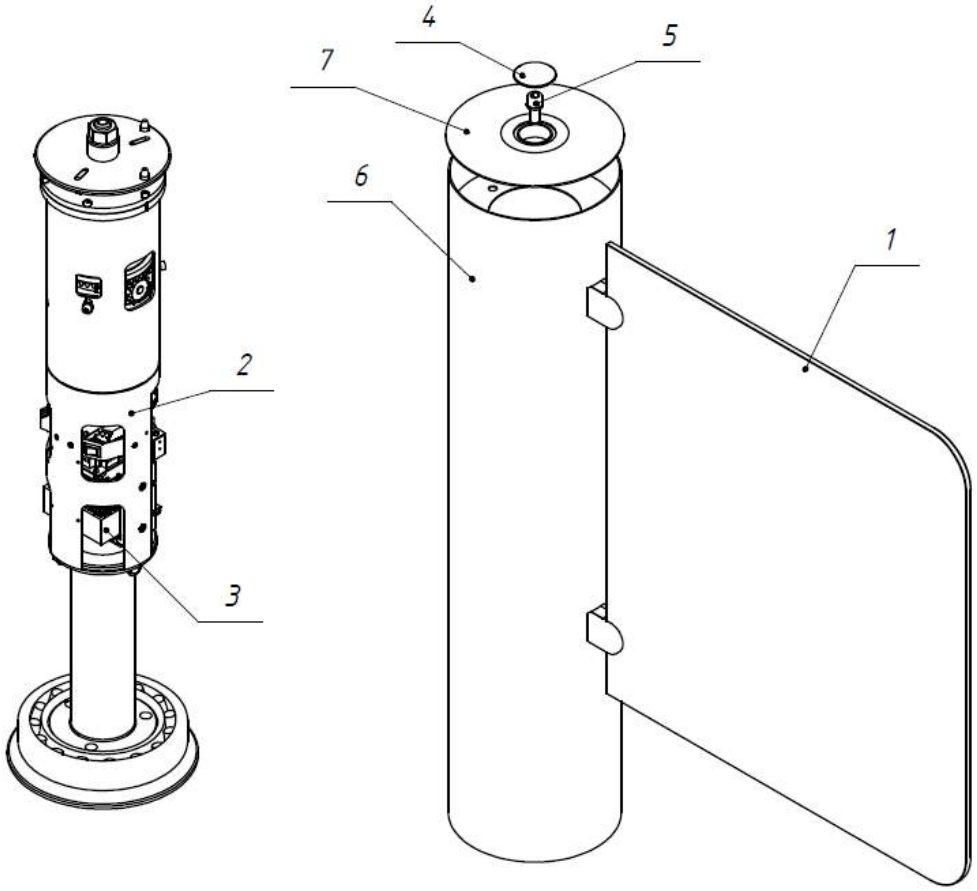
## 1.4 Design and operation

### 1.4.1 Turnstile design

1.4.1.1 The turnstile housing consists of cup 2 with fixed base plate (See Figure 1).
Jacket 6 with flag from glass or tube is mounted on top of cup. Jacket 6 is connected with control box and servomotor 3 by means of screw and washers 5 providing flag rotation to one or other side at the angle of 90°.
1.4.1.2 Cover 7 is fixed on top of the turnstile housing by means of screw and washers 5. A plug 4 is fixed on top of cover by means of glue (included in delivery kit) after installation, connection and assemblage of the turnstile.
1.4.1.3 Control box 3 and servomotor are located at the bottom of the turnstile housing. After each turnstile access the flag is automatically brought to initial position by means of servomotor.
1.4.1.4 Control box 3 is a metal case inserted into cup. Power supply unit and card, on which controllers with electronic components and connectors for external connections are placed, are fixed inside control box housing.
Control box is designed for the turnstile energization and latching control.
1.4.1.5 Control panel is made as small desktop device in plastic case designed for setting and indication of operating modes when the turnstile is operated manually. Control panel and its connection diagram are shown in Appendix B.

### 1.4.2 Principle of operation

1.4.2.1 The turnstile's operating modes:
1) to be opened in the direction "A" or "B";
2) free access in the direction "A" or "B".
Switching of the turnstile operating modes is performed either by control panel or as part of automated access control system (ACS) (by means of cards, badges etc.).
1.4.2.2 In the initial state, when the turnstile is energized, flag is locked from rotation in both directions by drive.
After coming of access permission command in one of directions:
– flag is unlocked;
– servomotor rotates the flag to the angle of 90° in the appropriate direction;
– after access permission command is cancelled, servomotor brings the flag back to initial position and it is locked from rotation in both directions.
More detailed description of the turnstile operating modes is given in the paragraph 1.8
"Description and operation of controller as component of the turnstile".
1.4.2.3 12V DC power voltage is provided by power supply unit.
1.4.1.4 The turnstile's wiring diagram is shown in Appendix C.




Turnstile with flag from glass
(T3.KCC.XD)

1 – glass;
2 – cup;
3 – control box and actuator;
4 – plug;
5 – screws with washers;
6 – jacket;
7 – cover;

Figure 1 – Design of the swing gate type turnstile

### 1.5 Instrumentation, tools and accessories

1.5.1 Dedicated tools are required for installation of the turnstile (multi-purpose measurement instrumentation and installation tools are enough).

### 1.6 Marking

1.6.1 Marking of turnstiles to be delivered within Ukraine is in Ukrainian language and for export delivery in English.
Each turnstile is marked as follows:
- Name of manufacturer and trade mark;
- Each turnstile is equipped with identification plate containing the following data:
- Reference designation of turnstile modification:
- Index of protection;
- Serial number;
- Value of voltage, type of current, frequency and current consumption;

- Weight, kg;
- Marks of conformity to , CE;
- Date of manufacture;
- Inscription: MADE IN UKRAINE;

Marking plate is located on the turnstile housing;

1.6.2 Marking of transportation packing contains as follows:

1) Information inscriptions:

– Turnstile reference designation;

– Dimensions of cargo package in centimeters;

– Gross weight in kg;

– Net weight in kg;

– Volume of package in cubic meters;

2) Handling marks:

"Fragile. Handle with Care";

– "Keep dry";

– "Centre of gravity";

– "Top".

1.6.2 Shipping documentation is packed with bag from polyethylene film. Marking is applied on insert from cardboard or paper.

**1.7 Packing**

1.7.1 The turnstile is delivered ready-to-install.

Types of packing:

– consumer packaging (corrugated cardboard case);

– transportation packaging (cases from wood-fiber board or crates).

The turnstile is fixed from displacement in the middle of transportation package with blocking lumbers. Cushion pads are placed between the turnstile and lumbers.

1.7.2 Shipping documentation, packed in bag from polyethylene film, is enclosed to the turnstile packing.

**1.8 DESCRIPTION AND OPERATION OF CONTROLLER AS COMPONENT OF THE TURNSTILE**

1.8.1 **Purpose of the turnstile controller PCB.201.01.00.00**

Controller is designed for acquisition of commands control from external control devices (control panel, access control system etc.) and generation of control signals for motorized mechanism of swing gate.

1.8.2.1 The controller is assembled on the (85 x 70mm) card, on which electronic components and connectors for external connections are mounted.

13 LEDs are installed on controller card. Their purpose is as follows:

- 8 LEDs indicate condition of inputs “IN1» ÷ «IN8”.
- «POWER» LED indicates availability of supply voltage 5V.
- 4 LEDs indicate condition of outputs for connection of motor.

24 terminals are installed on the card: 2 of them are designed for external connections, the rest are designed for connection to turnstile units or are standby.

1.8.3 Technical features

Technical features of the controller are shown in Table 5.

Table 5

| Parameter description | Parameter value |
|---|---|
| Number of inputs | 2 |
| Number of outputs | 4 |
| Type of input | logical |
| Type of output GRN1, RED1, GRN2, RED2 | open collector |
| Logical «1» voltage | (3,7 ÷ 5) V |

| | |
|---|---|
| Logical «0» voltage | (0 ÷ 1,7) V |
| Peak voltage applied to inputs «IN1»÷« IN8», maximum | 15 V |
| Peak voltage switched by outputs «GRN1», «RED1», «GRN2», «RED2» | 30 V |
| Peak current switched by outputs «GRN1», «RED1», «GRN2», «RED2» | 2 A |
| Peak voltage switched by outputs «-MG1», «-MG2» | 50 V |
| Peak current switched by outputs «-MG1», «-MG2» | 5 A |
| Peak voltage switched by outputs «MOT1», «MOT2» | 27 V |
| Peak current switched by outputs «MOT1», «MOT2» | ≤ 4 A |
| Controller supply voltage | (10 ÷ 27) V |
| Consumption current when outputs «MOT1» and «MOT2» are OFF | ≤0,15 A |
| Climatic modification and placement category of according to the GOST 15150-69 | NF4 |

Appearance of controller is shown in Figure 2.

1.8.4 **Description of operation**

Controller operates according to the program entered into memory of microprocessor. Mechanism of swing gate is controlled depending on commands coming from external devices (control panel, access control system etc.) and position of rotor based on the logic downloaded into program. Control commands are generated to controller via logical inputs «IN1», «IN2» and «IN3», «IN4» by means of closing them on «GND». Inputs «IN1» and «IN3» are designed for opening of the turnstile in the direction "A" and Inputs «IN2» and «IN4» are designed for opening of the turnstile in the direction "B". The difference is that 4 sec. closing delay is counted via inputs «IN3» and «IN4». That is in case of short time short-circuit of «IN3» or «IN4» on «GND», the turnstile will open completely and only after a lapse of time it will start closing. There is no such delay via inputs «IN1» and «IN2», and the turnstile will start closing at once from the moment of disappearance of input signal, even if the turnstile didn't open completely. Normally opened contacts of buttons, relay contacts or outputs of open collector type can be used for generation of control commands.

That is, in order to generate the command "TO BE OPENED IN THE DIRECTION "A" it is necessary to connect the input "IN1» (X1/1) or «IN3» (X1/3) to one of the terminals "GND" (X1/9 ÷ X1/11), X1/11), accordingly for generation of the command "TO BE OPENED IN THE DIRECTION "B" it is necessary to connect the input «IN2» (X1/2) or «IN4» (X1/4) to the terminal "GND". After obtaining opening command the controller deenergizes winding of the solenoid, fixing rotor, connected to the output "-MG2" (X2/7). It results in that rotor will be unlock and can be freely rotated in any direction. After that controller feeds current to motor winding via the outputs "MOT1" and "MOT2" (X2/9 and X2/10). It results in that rotor starts to rotate opening the access. During rotation of rotor controller reads actual angle of rotation from position sensor rigidly connected to rotor of swing gate. Sensor signals come to the inputs "IN5", "IN6", "IN8" (X1/5, X1/6, X1/8). Rotation speed signal from the relevant sensor come to the input «IN7» (X1/7) of controller.

Besides motor current is constantly measured and is limited, if necessary. After rotor reaches the definite angle, controller switches motor to braking mode to prevent impact of rotor about rotation limiter. As soon as rotor rests against limiter, controller feeds little current to motor to hold rotor in open position. Now access opening procedure is finished.

In this state the swing gate will remain until the relevant "TO BE OPENED …" command is active.

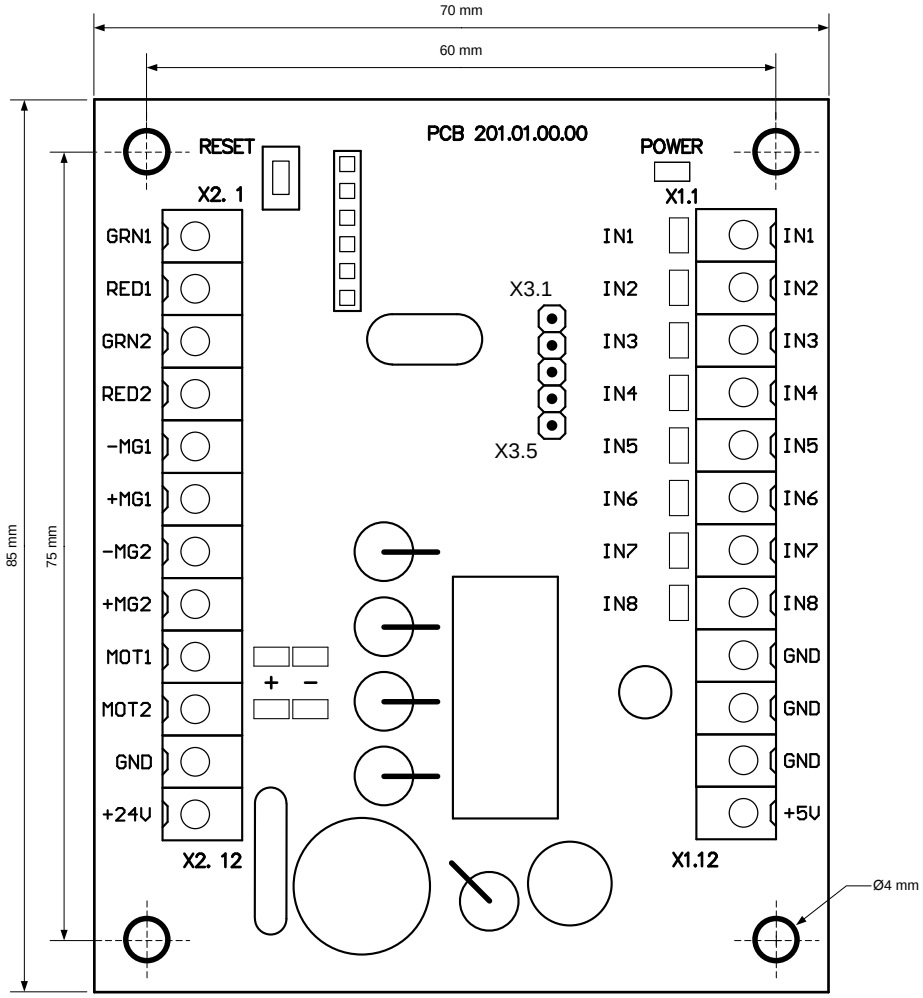



Figure 2 – Design, overall and installation dimensions of the controller PCB.201.01.00.00

The closing procedure begins after connection of the relevant input “IN1” or “IN2” with “GND” is open and upon expiration of 4 sec. after connection of the input “IN3” or “IN4” with “GND” is open. In order to close the turnstile the controller starts motor, having changed current polarity via it, that leads to rotation of rotor in opposite direction. In this case angle of rotor rotation and motor speed are controlled. When rotor approaches to fixation point in closed position, controller reduces revolutions of motor. Then when rotor reached initial position, it feeds current to the solenoid, which fixes rotor, via the input «-MG2» (X2/7). It results in complete stopping and locking of rotor in initial position. Now access closing procedure is completed.
Controller’s contacts designed for connection to peripherals are shown in Table 6.

| Connector/ contact No | Designation | Direction | Description | Signal parameters and description |
|---|---|---|---|---|
| X1/1 | IN1 | ENTRY | Command " TO BE OPENED IN THE DIRECTION A" | 1) logical «0» (0 - 1,7) V;<br>2) logical «1» (3,7 - 5) V;<br>3) active level of signal – logical «0»;<br>4) voltage on open input ≤ 5 V |
| X1/2 | IN2 | ENTRY | Command "TO BE OPENED IN THE DIRECTION B" | |
| X1/3 | IN3 | ENTRY | Command " TO BE OPENED IN THE DIRECTION A" (with 4 sec. closing delay) | |
| X1/4 | IN4 | ENTRY | Command " TO BE OPENED IN THE DIRECTION B" (with 4 sec. closing delay) | |
| X1/5 | IN5 | ENTRY | To be connected to the rotor fixation solenoid actuation sensor | |
| X1/6 | IN6 | ENTRY | To be connected to the rotor position sensor | |
| X1/7 | IN7 | ENTRY | | |
| X1/8 | IN8 | ENTRY | | |
| X1/9 | GND | | «-» power supply (common wire) | |
| X1/10 | GND | | | |
| X1/11 | GND | | | |
| X1/12 | +5 V | EXIT | Not applicable | |
| X2/1 | GRN1 | EXIT | To be connected to green LED display of the direction «A» | |
| X2/2 | RED1 | EXIT | To be connected to red LED display of the direction «A» | |
| X2/3 | GRN2 | EXIT | To be connected to green LED display of the direction «A» | |
| X2/4 | RED2 | EXIT | To be connected to red LED display of the direction «B» | |
| X2/5 | -MG1 | EXIT | Connection of solenoid forcing winding | 1) type of output – open collector;<br>2) peak voltage on privacy key – 50 V;<br>3) peak current of public key – 5 A |
| X2/6 | +MG1 | EXIT | Connection of solenoid forcing winding (cathode of protective diode) | |
| X2/7 | -MG2 | EXIT | Connection of solenoid forcing winding | 1) type of output – open collector;<br>2) peak voltage on privacy key – 50 V;<br>3) peak current of public key – 5 A |
| X2/8 | +MG2 | EXIT | Connection of solenoid holding winding (cathode of protective diode) | |
| X2/9 | MOT1 | EXIT | Connection of motor | 1) voltage |

| | | | | |
|---|---|---|---|---|
| X2/10 | MOT2 | EXIT | | (10 ÷ 27) V;<br>2) current ≤ 4 A |
| X2/11 | GND | | «-» power supply (common wire) | |
| X2/12 | +24 V | ENTRY | «+» power supply (controller energization) | 1) voltage<br>(10 ÷ 27) V;<br>2) current ≤ 4 A |

## 2 INTENDED USE

### 2.1 Operation limitations

2.1.1 The turnstile must be used in the environment specified in p. 1.1.4 of this document subject to the specifications listed in section 1.2.

2.1.2 **IT IS PROHIBITED:**

**1) UNINTENDED USE OF THE TURNSTILE** (See section 1 «DESCRIPTION AND OPERATION»);

**2) TO USE THE TURNSTILE UNEARTHED;**

**3) TO USE HEATING PIPES AND RADIATIONS AS WELL AS PIPES OF CENTRAL WATER SUPPLY FOR EARTHING**;

**4) TO REPAIR AND ADJUST WITHOUT DEENERGIZATION**.

**5) TO RELOCATE THE OBJECTS EXCEEDING THE PASSAGEWAY WIDTH THROUGH THE TURNSTILE ACCESS AREA;**

**6) TO JERK AND IMPACT BARRIER RODS, LED DISPLAY OR OTHER PARTS THE PRODUCT, WHICH MAY CAUSE THEIR MECHANICAL DEFORMATION OR DAMAGE.**

**7) EXERT FORCE ON THE TURNSTILE BARRIER RODS MORE THAN 100 N (10 kg).**

2.1.3 **It is forbidden to use the turnstile:**

- at the presence of mechanical rattle in movable parts of the turnstile;
- when metalwork of the turnstile and its components and accessories are mechanically damaged;

2.1.4 **List of special conditions of operation**

- Minimum time for one turnstile access (in single access mode) equals to 3 sec.
- The force applied by accessor to the center of flag should not exceed 600 H.

**IMPORTANT: MANUFACTURER WARNS OF NECESSITY TO KEEP SEALS OF THE MANUFACTURER ON THE TURNSTILE'S COMPONENT PARTS!**

### 2.2 Layout and installation

2.2.1 The turnstile and components of delivery kit are delivered to the installation site in the factory packing. The turnstile should be unpacked only on installation site.

2.2.2 Preparation of the turnstile for installation (dismounting) and commissioning should be performed according to this OM with mandatory observation of the safety measures specified in p. 2.1 and general electrical safety code.

2.2.3 The turnstile is installed in the following sequence:

- inspect the turnstile for integrity, absence of visual damages and defects;
- verify the turnstile's completeness;
- prepare installation site: surface should be plain, hard and without defects (corrugations, overlaps etc.) and provide vertical position +/- 1°;
- mark the hole drilling places according to Appendix A (depending on the turnstile modification). The turnstile should be installed and fixed only after all electric cables are pulled:
- unscrew the attachment screw 6 (Appendix A), carefully remove jacket with flag from cup;
- the turnstile is fixed with Redibolt (anchor with jacket and screw). Make sure that the installed turnstile is stable;
- earthen the turnstile, connect power cable to the turnstile and control panel according to the wiring diagram (See Appendix C);

- install jacket with flag on cup, tighten the attachment screw with lockwasher, check the turnstile performance. In case of the swing gate movement (rotation) difficulty, loosen the screw slightly more.
Install plug on the upper cover of the turnstile by means of joint glue (enclosed in documentation package) upon completion of adjustment.
During installation of the turnstile it is necessary to take into account that flag should be on the distance not more than (50 ÷ 100 mm) from passageway creator (any surface perpendicular to flag: enclosure module, wall etc.).

### 2.3 Preparation for use

#### 2.3.1 Commissioning instructions

Prior to the turnstile energization:
1) make sure of proper connection and good condition of all connecting cables;
2) clear the area of flag movement from foreign particles.
When mains cable of power supply unit is connected to the network flag is locked from rotation.
The turnstile is put in initial state: access is barred by flag.

#### 2.3.2 Required inspections

2.3.2.1 When the turnstile is commissioned it is necessary to perform inspections specified in Table 7. During inspections the wiring diagram according to the Appendix B and control panel according to Appendix A should be used.
Table 7

| Operation mode | Control panel | | Required inspections |
|---|---|---|---|
| | Toggle-switch position | Button position | |
| 1 Initial state (swing gate is in closed position) | OFF | Released | Make sure that rotor is locked from rotation in any direction |
| 2 Single access in the relevant direction | OFF | Button of the relevant direction is pushed | Make sure that rotor is turned in the desired direction to the angle of about 90°, and after the button is released it should return to the initial state |
| 3 Free access in the relevant direction | Toggle-switch of the relevant access direction is ON | 3 Free access in the relevant direction | Make sure that rotor is turned in the desired direction to the angle of about 90°, and after the toggle-switch button is OFF it should return to the initial state |

2.3.2.2 The turnstile is ready for long-term operation.

### 2.4 Contingency actions

For emergency evacuation of people (in case of fire, acts of God etc.) and providing free access the turnstile must be unlocked from control panel by sending the relevant command.

## 3 MAINTENANCE

### 3.1 General instructions

3.1.1 Commissioning and subsequent maintenance of the turnstile should be performed only by the staff to be in charge of the turnstile.
3.1.2 The turnstile can be serviced only by the staff having the relevant electrical safety qualification level according to the national requirements.

3.1.3 The turnstile can be installed and operated only by the qualified safety instructed staff having the relevant class of permit to work with electrical facilities with voltage up to 1000V, awaring of this OM, design and the turnstile's principle of operation.

**3.2 Safety Measures**

3.2.1 During maintenance of the turnstile the relevant safety measures, specified in p. 2.1, must be observed.

**IT IS FORBIDDEN TO USE DEFECTIVE APPLIANCES, TOOLS, FUSES, INSTRUMENTATION SERVICE LIFE OF WHICH EXPIRED. MEASURING DEVICES, WHICH TERM OF CHECKING HAS ENDED**

3.2.2 When instrumentations are prepared for operation it is necessary to comply with the safety requirements specified in instrumentation instruction manuals

**3.3 Maintenance procedure**

3.3.1 Maintenance of the turnstile includes preventive measures which are taken according to established frequency to maintain the turnstile in operational condition, decreasing of component wearing and prevention of faults and malfunctions.

3.3.2 Daily and periodic maintenance of the turnstile are recommended.

Normally the daily maintenance is carried out before the beginning of work or during operational timeout and includes visual inspection of the turnstile's housing, and, if required, mechanical troubleshooting, elimination of corrosion and pollution from the surface.

**IT IS FORBIDDEN TO USE ABRASIVE AND CHEMICALLY ACTIVE SUBSTANCES DURING CLEANING OF CONTAMINATED EXTERNAL SURFACES OF THE PRODUCT.**

3.3.3 Periodic maintenance is performed at least twice a year and includes as follows:

- visual inspection of the turnstile's housing, control mechanism and other components for absence of corrosion, warps and other mechanical defects and pollutions;
- visual inspection of condition of connection and power cables as well as earthing;
- verification of the turnstile's performance during manual control in the modes specified in Table 7;
- checking of tightness of the turnstile's screw tightening;
- lubrication of rubbing levers, wheel teeth and turnstile actuator pinion with the lubricant OKB-122-7 according to GOST 18179-90, CYATIM 201 or Lithol 24 (monthly).

## 4 ROUTINE MAINTENANCE

**4.1 General instructions**

4.1.1 Possible malfunctions of the turnstile listed in Table 8 are remedied by customer. More complicated malfunctions are remedied by manufacturer's representative.

**ATTENTION: INSPECTION, CLEANING, REPAIR OF THE TURNSTILE'S COMPONENTS MUST BE PERFORMED ONLY AFTER DEENERGIZING OF THE TURNSTILE!**

**4.2 List of possible malfunctions**

List of possible malfunctions and their remedies are specified in Table 8.

Table 8

| Symptom | Possible cause | Remedy |
|---|---|---|
| 1 Turnstile is not locked in initial position and don't respond to commands and in this | Lack of 220V supply voltage | Check availability of 220V on the relevant terminals of turnstile and in case of absence remove the cause |

| | | |
|---|---|---|
| case indication on control panel is absent | Power supply unit is out of order | Contact service center |
| 2 Control panel does not open turnstile in one or both directions or indication on control panel is violated | Break of circuit between control panel and turnstile controller | Find and remove the trouble |
| | Controller is out of order | Contact service center |
| | Control panel is out of order | Contact service center |

**4.3 Postrepair checkout**

After performance of repair operating capacity of the turnstile is checked by means of control panel according to Table 7.

## 5 TRANSPORTATION AND STORAGE

5.1 It is forbidden to subject the turnstile to jerks and impacts during storage. For lifting and handling of the turnstile it is necessary to use transportation trolleys. There should not be aggressive gases and vapours causing corrosion in storage facility. Storage ambient temperature should not be lower +5°C and higher +40°C and relative humidity should not be more than 80% at the temperature 20°C.

5.1 The ready-to-install turnstile is transported in railway or special containers, closed vehicle, waterborne (in ship's hold) according to the transportation regulations related to the relevant mode of transport.

Transportation on open platforms is allowed. In this case the packed turnstile should be covered with canvas. Ambient temperature during transportation should not be lower - 40°C and higher +50°C.

After transportation or storage of the turnstile at negative temperatures or increased humidity the turnstile should be kept indoor with normal climatic conditions without original packing within 12 hours before commissioning:

1) ambient temperature - + 15°C to +35°C;
2) relative humidity - 45% to 80 %;
3) atmospheric pressure - 84,0 to 106,7 kPa (630-800 mm Hg).

## 6 DISPOSAL

The turnstile does not contain hazardous materials and special measures are not required for utilization.

## 7 PACKING CERTIFICATE

Servo-operated rotor turnstile (Name of product) T3.POC. (Trademark) No._____ (Serial number)

is packed by "TiSO-PRODUCTION" LTD. (Name or code of manufacturer)

according to requirements specified by applicable technical documentation.

_____ (Position) _____ (Signature) _____ (Full Name)

_____ (Year, Month, Date)

## 8 ACCEPTANCE CERTIFICATE

Servo-operated rotor turnstile (Name of product) T3.POC. (Trademark) No._____ (Serial number)

is manufactured and accepted according to mandatory requirements of standards, applicable technical documentation and is qualified disposable for service.

Head of Quality Control Department

Place of Seal _____ (Signature) _____ (Full Name)

_____
Year, Month, Date

## 9 MANUFACTURER'S WARRANTY AND CONDITIONS OF WARRANTY MEAINTENANCE

9.1 The manufacturer guarantees good state and declared quality of the turnstile if conditions of transportation, storage, installation and operation are observed by the client.
9.2 The warranty period of the turnstile from the date of sale is:

- ☐ 12 months;
- ☐ 24 months;
- ☐ 36 months,

unless otherwise specified by mutual agreement.

9.3 During warranty period the Manufacturer undertakes to perform repair or replacement within 10 days (at the discretion of the Manufacturer) of the failed turnstile or its parts having proved factory defects (not due to of nonobservance of storage, transportation, installation and operation conditions specified by this OM), preventing further operation of turnstile.

**The manufacturer does not bear responsibility and warranty liabilities for consequences (damage) due to nonobservance of the conditions specified by this OM.**

9.4 Warranty liabilities of the Manufacturer are valid only if sections 7, 8, 9 of this OM and warranty coupon are completed as well as signatures and seals are available.
The turnstile is repaired only by authorized service center of the manufacturer with use of exclusively original spare parts.
Warranty liabilities don't include free-of-charge arrival of technical staff to the Customer for repair.

9.5 **Manufacturer does not bear responsibility and warranty liabilities unintended use of the turnstile.**

9.6 Relationships between the Manufacturer and the Customer under warranty liabilities are regulated by the applicable law of Ukraine, concluded purchase contracts and manufacturer's warranty according to instruction manuals.

Manufacturer:
**“TiSO-PRODUCTION” LTD.**
72 Yamskaya str., 03680 Kiev , Ukraine
Tel.: +38 (044) 461-79-69
Tel../Fax: +38 (044) 586-46-47
E-mail: export@tiso.ua, log1@tiso.ua
www.tiso.ua

Our equipment complies with requirements of the European Standards:
EN 60335-1, EN 61000-6-3, EN 61000-6-1, EN 55014-1, EN 55014-2
and is in conformity with requirements of the following EC Directives:
2006/95/EC; 2004/108/EC

Detachable stub for warranty repair of the servo-operated waist-high turnstile

(reference designation)

(tear-off line)

**WARRANTY COUPON No._____**

**To be completed by Manufacturer**

Waist-high turnstile of swing gate type _____
(reference designation)

Serial number _____

Date of manufacture _____
(Year, Month, Date)

Representative of the manufacturer's Quality Control Department

Place of Seal _____ (Signature) _____ (Full name)

Address for product quality reclamation

72 Yamskaya str., 03680 Kiev , Ukraine
Tel.: +38 (044) 461-79-69
Tel../Fax: +38 (044) 586-46-47

**To be completed by Seller's representative**

Date of sale _____
(Year, Month, Date)

Seller _____

Place of Seal _____ (Signature) _____ (Full name)

**Customer data**

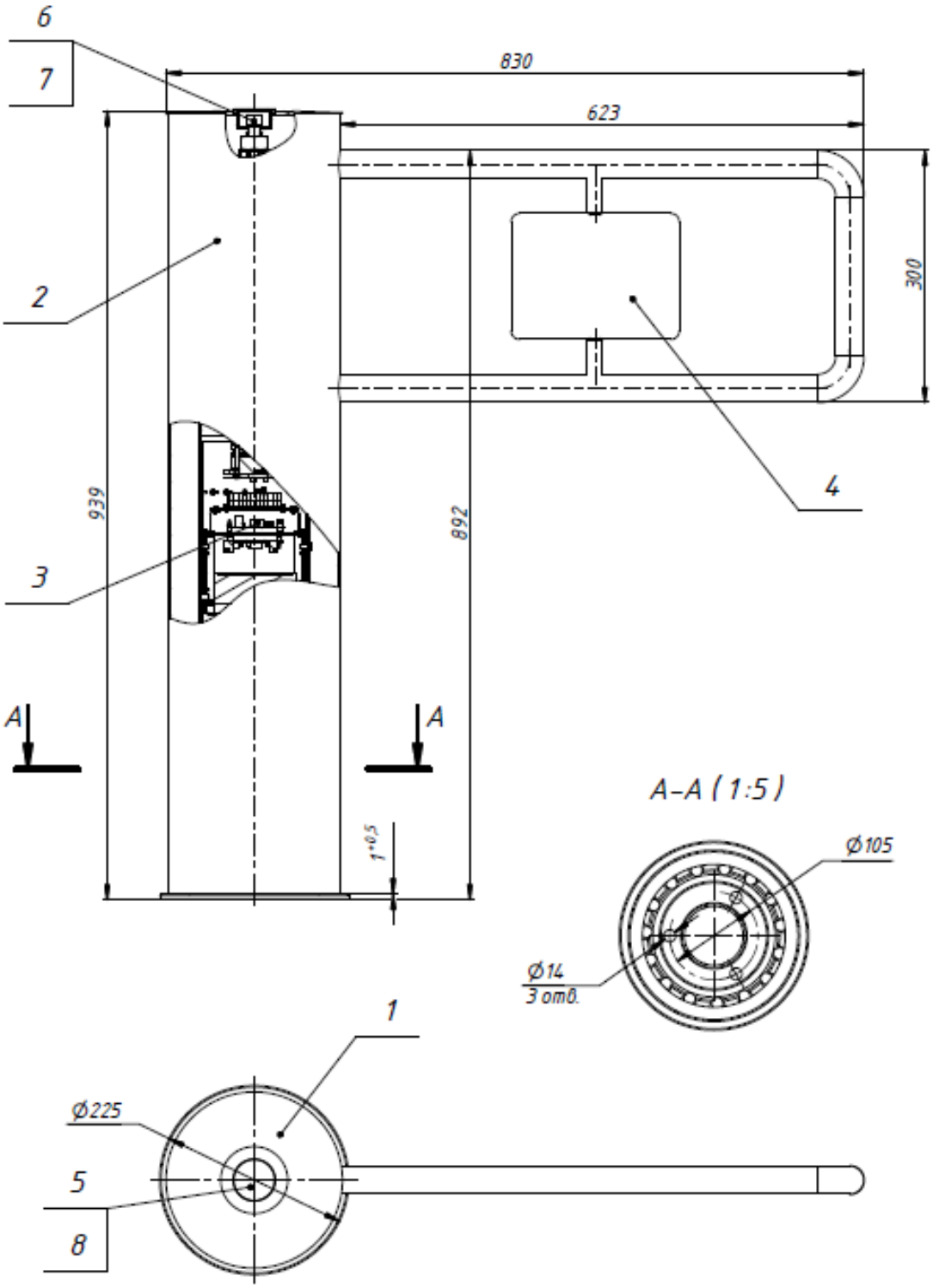
**Data on repair**

Fault/performed works

Service center _____ (Signature) Customer _____ (Signature)

APPROVED BY:
Head of Quality Control Department _____ (Signature) _____ (Year, Month, Date)

Appendix A (mandatory)
Design, overall and installation dimensions of the turnstile T3.KXX.XD

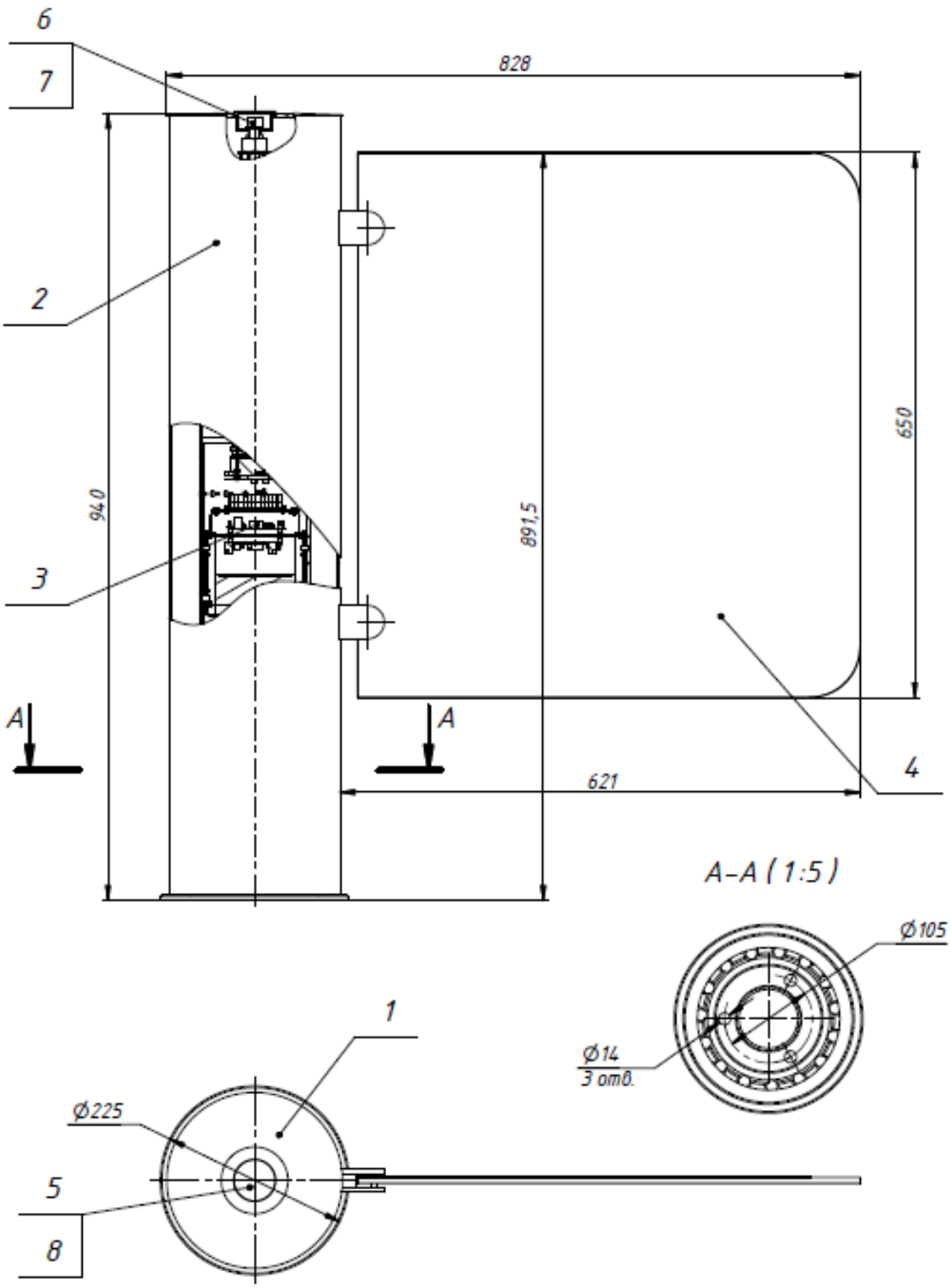



1 – cover;
2 – jacket;
3 – control box;
4 – flag;
5,8 – plug, glue;
6,7 – screw with washers;

Figure A1 – Swing gate T3.KCH.XD

Continued Appendix A (mandatory)

Design, overall and installation dimensions of the turnstile турникета T3.KXX.XD



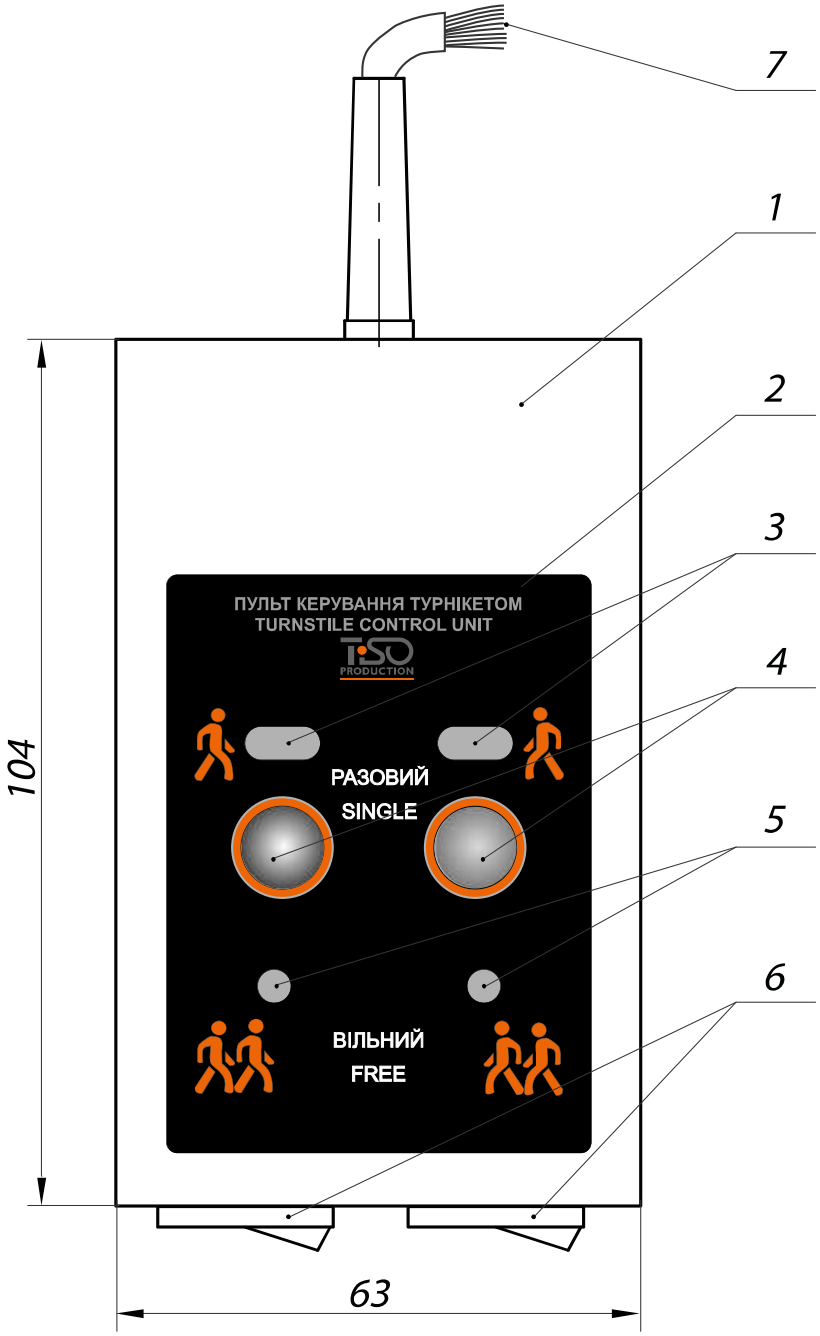

1 – cover;
2 – jacket;
4 – glass;
5,8 – plug, glue;

3 – control box; 6,7 – screw with washers

Figure A2 – Swing gate T3.KCC.XD

Appendix B (mandatory)

Control panel and connection diagram




1 – housing;
2 – front plate;
3, 5 – access direction LED display;
4 – “SINGLE ACCESS” mode control button;
6 – “ FREE ACCESS” mode switch;
7 – controller connection terminals.

Figure B.1 – Control panel AUIA.111.22.00.00 for turnstiles

Control panel and connection diagram


Figure B.2 – Connection diagram of the control panel AUIA.111.22.00.00

Appendix C
Wiring Diagram of the turnstile

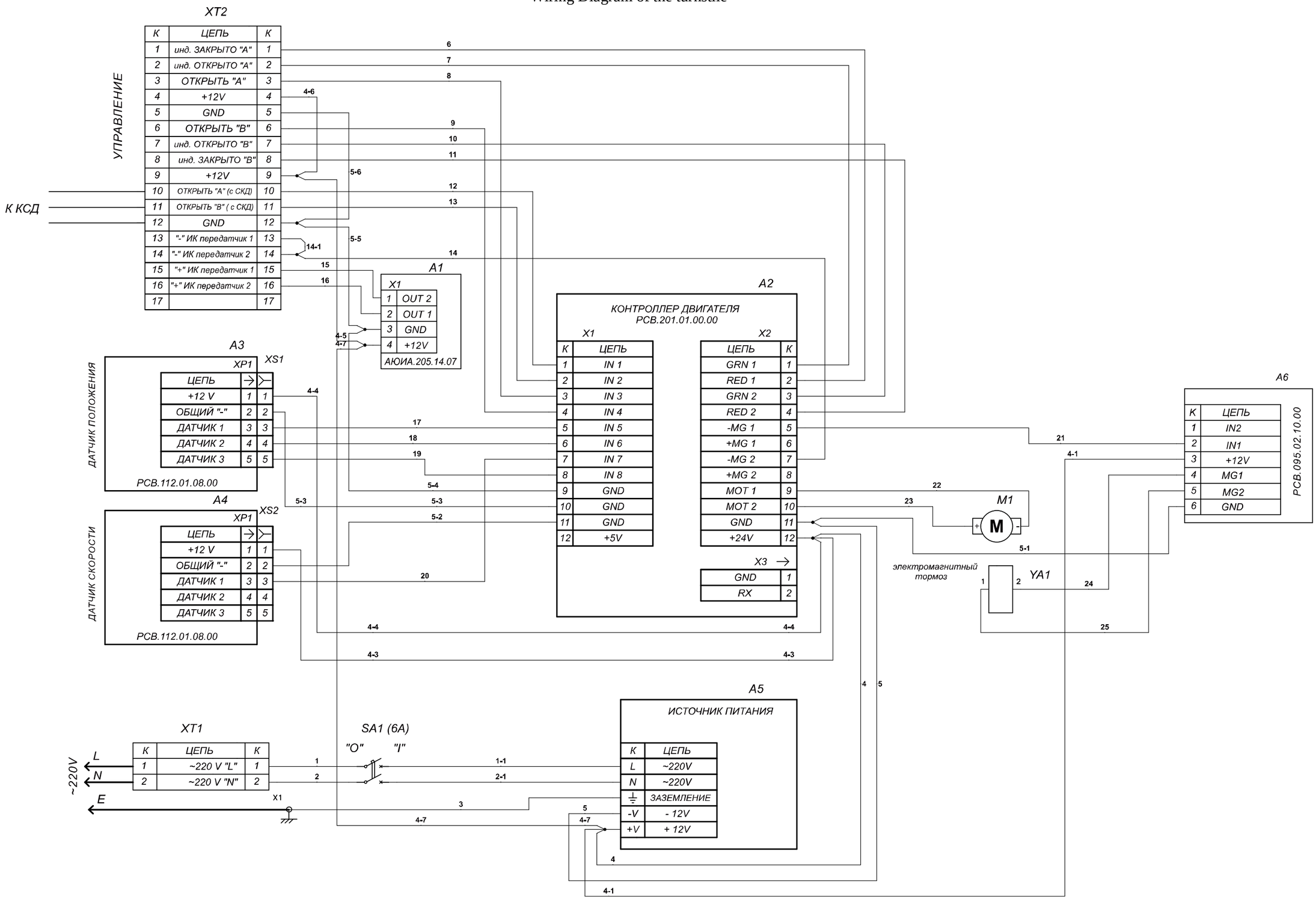



Figure C.1 – Wiring diagram of the turnstile T3.KXX.XD