"TiSO-PRODUCTION" LTD

FULL-HEIGHT TURNSTILES
SERVO DRIVE (TriServo)

single	**“SESAME-L”**	of AUIA.425-10, AUIA.433-10 series
	“SESAME BASIC-L”	of AUIA.427-10, AUIA.434-10 series
double	**“SESAME TWIN-L”**	of AUIA.443-10, AUIA.432-10 series

OPERATION AND INSTALLATION MANUAL

Combined, rev.1.5.5

2023
UKRAINE

CONTENTS

INTRODUCTION

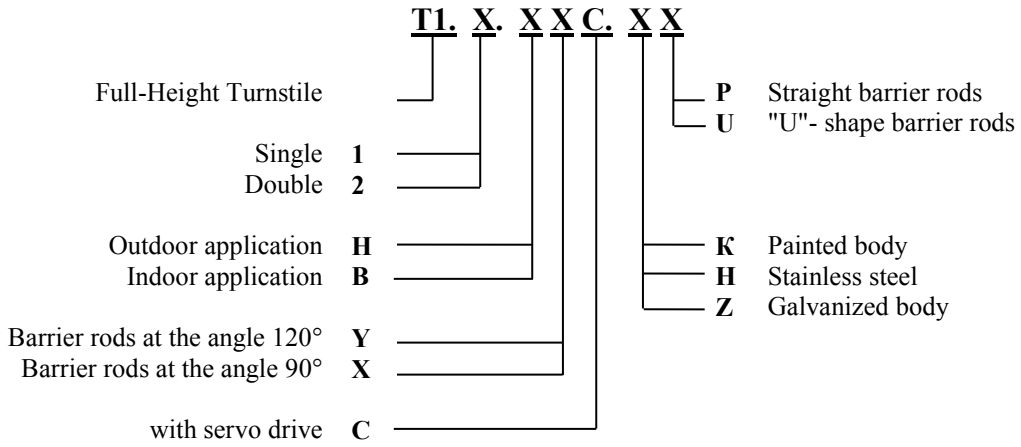
This Operation Manual (hereinafter referred to as OM) covers the with servo drive indoor (or outdoor) single and double full-height turnstiles "SESAME-L", "SESAME BASIC-L" and "SESAME TWIN-L" (hereinafter referred to as the "turnstile"). The Operation Manual contains information about design, specifications, installation for proper operation and maintenance of the turnstile

This Operation Manual is prepared in compliance with the specification requirements TU U 28.9-32421280-004:2018.

The turnstile shall be serviced only by the qualified staff having the relevant class of permit to work with electrical facilities with voltage up to 1000V and scrutinized this Operation Manual, instructed in safety 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.

Depending on the purpose and design features of the turnstile, the following pattern of reference designation is accepted:



Example of reference designation of the with servo drive double full-height turnstile “Sesame Twin-L” with straight barrier rods and stainless steel body when the turnstile *T1.2.HYC.HP* TU U 28.9-32421280-004:2018 is ordered.

Description	*Designation*	*Rotor type*	*Coding*
“SESAME-L”	AUIA.425-10	Y-type rotor (120°)	T1.1.HYC._ _ T1.1.BYC._ _
	AUIA.433-10	X-type rotor (90°)	T1.1.HXC._ _ T1.1.BXC._ _
“SESAME BASIC-L”	AUIA.427-10	Y-type rotor (120°)	T1.1.HYC._ _ T1.1.BYC._ _
	AUIA.434-10	X-type rotor (90°)	T1.1.HXC._ _ T1.1.BXC._ _
“SESAME TWIN-L”	AUIA.443-10	Y-type rotor (120°)	T1.2.HYC._ _ T1.2.BYC._ _
	AUIA.432-10	X-type rotor (90°)	T1.2.HXC._ _ T1.2.BXC._ _

Due to regular improvement of the product its design can be modified without degradation of the product features and quality not covered by this Operation Manual.

CUSTOMER WARNINGS ON SAFE OPERATION OF THE TURNSTILE

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

GENERAL WARNINGS

Safety measures and requirements specified 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 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 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 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 Purpose.

1.1.1. Turnstile purpose:

The turnstile is designed for pedestrian movement control at access points of industrial enterprises, banks, stadiums, administrative facilities etc. due to command signals of access control system (from keypad, proximity card readers) or manually (from manual control panel).

The turnstile traffic flow capacity without personal identification is at least 20 persons per minute.

1.1.2. The turnstile dimensions and weight correspond to the values specified in Table 1.

Table 1 - The turnstile dimensions and weight

AUIA.__	*Model*	*Rotor type*	*Dimensions, mm*			*Max. weight*, kg*
			H	*L*	*B*	
425-10	SESAME-L	Y-type rotor (120°)	2300	1168	1430	168*
433-10	SESAME-L	X-type rotor (90°)	2300	1300	1254	199*
427-10	SESAME BASIC-L	Y-type rotor (120°)	2300	1168	1430	124*
434-10	SESAME BASIC-L	X-type rotor (90°)	2300	1104	1259	128*
443-10	SESAME TWIN-L	Y-type rotor (120°)	2300	1168	2244	236*
432-10	SESAME TWIN-L	X-type rotor (90°)	2300	1341	2060	288*
** Weight will depend on the shape of barrier rods and on the material of manufacture*						

1.1.3. The parameters defining operation conditions according to GOST 15150-69 are specified in Table 2.

Table 2 - The parameters defining operation conditions

	The parameters for climate version	
Operational conditions	**NF4** (for indoor application)	**N1**(for outdoor application)
1	*2*	*3*
Ambient temperature	From - 40 to + 45 °C	from + 1 to + 40 °C
Relative humidity	80 % if plus 25 ºC (non-condensing)	80 % if plus 25 ºC (non-condensing)
Permissible ambient air pressure	from 84 to 106,7 kPa	from 84 to 106,7 kPa
Temperature range during transport	From - 50 to + 50 °C	from - 50 to + 50 °C
Temperature range during storage	From + 5 to + 40 °C	from + 5 to + 40 °C
Mechanical design group	L3	L3
Altitude above sea level	up to 2000 m	up to 2000 m
Environment	Explosion-proof, does not contain conductive dust, corrosive gases and vapors in concentrations that destroy insulation and metals that disrupt the normal operation of the equipment installed in the turnstile	Explosion-proof does not contain conductive dust, corrosive gases, and vapors in concentrations that destroy insulation and metals that disrupt the normal operation of the equipment installed in the turnstile
Place of installation	in closed rooms in the absence of direct impact of atmospheric precipitation and solar radiation	Outdoors and non-heated rooms
Operational position	vertical, not more than 1 ° of deviation from a vertical position in either direction is allowed	vertical, not more than 1 ° of deviation from a vertical position in either direction is allowed

1.1.4. Reliability performances:

Table 3 - Reliability performances

Reliability performances	*Parameter value*
- average recovery time of the operable condition (omitting the spare parts' delivery time)	no more than 6 hours
- mean time between failures	at least 5 000 000 passes
- average life of the turnstile till overhaul –	not less than 10 years.

1.2. Specifications

Table 4 - Specifications

Parameter name	*Parameter value*
Throughput in a single pass mode, not less than	20 person/min.
Access width, no more than - for turnstile with Y-type rotor (120°) Sesame-L AUIA.425-10 Sesame Basic-L AUIA.427-10 Sesame Twin-L AUIA.443-10	 650 mm
- for turnstile with X-type rotor (90°) Sesame-L AUIA.433-10 Sesame Basic-L AUIA.434-10 Sesame Twin-L AUIA.432-10	 535 mm 535 mm 570 mm
Power supply voltage: - AC mains (primary) - DC power supply (secondary)	 100 ÷ 240 V~ 50/60 Hz 12 V
Consumed power, no more than	160 W
Degree of protection according to EN 60529 - for outdoor turnstile - for an internal turnstile	 IP54 IP41
Emergency mode in case of power failure	fail-safe (NO/NO)
Housing designation and modification: - modification - type of assembly	 standard / mirrored fully welded / disassembled

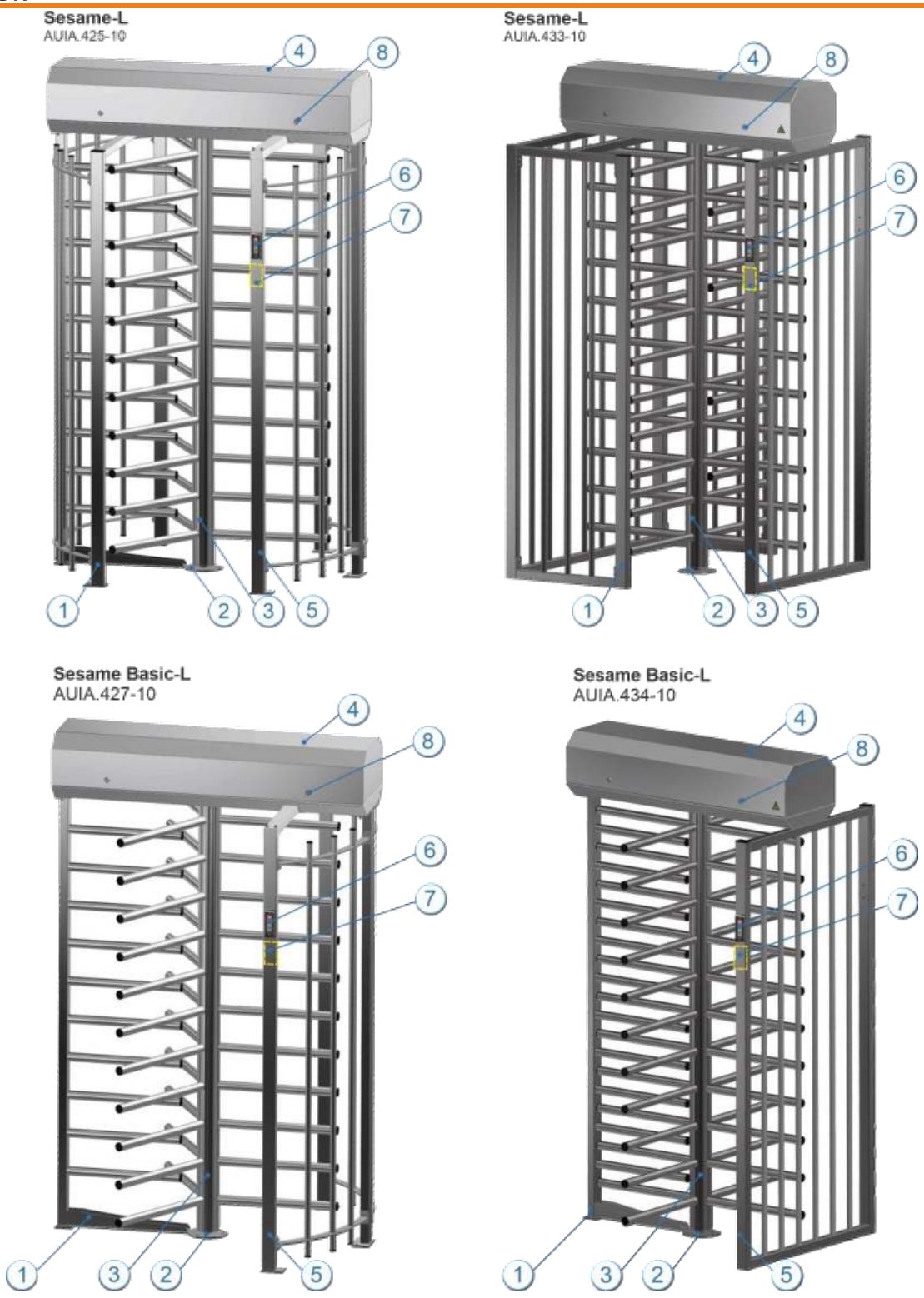
1.3. Product components and scope of delivery

1.3.1. The turnstile modifications

1.3.1.1. The single full-height turnstile design consists of the following major devices and components (See Figure 1):

– prefabricated arched structure including:
1) access way wall;
2) enclosure wall with hackle;
– rotor;
– container with control mechanism;
– LED displays;
– control mechanism and electronic components heating system*;
– electrical equipment;
– control panel.
Optionally the turnstile can be equipped with battery*

** Is not included in the turnstile scope of delivery - to be equipped by the customer on recharge basis, when applicable*



Legend:

1. Enclosure wall[1] with hackle;
2. Base
3. Rotor with barrier rods
4. Container assembly
5. Access way wall
6. LED display
7. Card reader location
8. Container locks

Fig. 1 – Design and general appearance of the "SESAME-L" and "SESAME BASIC-L" single turnstiles

[1] *The turnstiles of "SESAME BASIC-L" series has only hackle without enclosure wall.*

1.3.1.2. The double full-height turnstile design includes the following major devices and components (*See Figure 2*):

– prefabricated arched structure including two access way walls / midwall, frame, canopies*;

– two rotors;

–two containers with control mechanisms;

– LED displays;

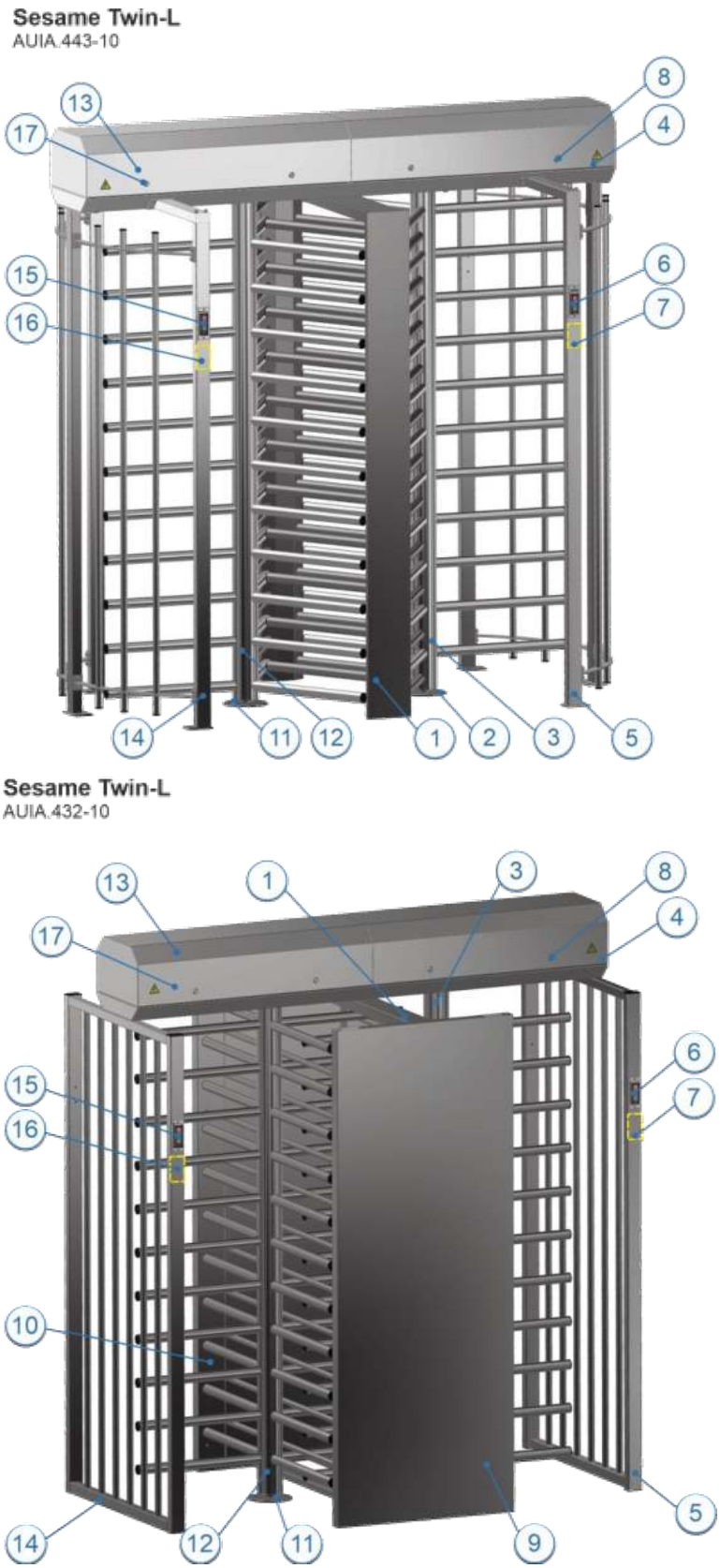
– electrical equipment;

– control mechanism and electronic components heating system*;

– control panel;

Optionally the turnstile can be equipped with battery*.

**Is not included in the turnstile scope of delivery - to be equipped by the customer on recharge basis, when applicable.*



Legend:

1- Enclosure wall assembly (central enclosure);
2,11- Base;
3,12- Rotor with barrier rods;
4,13 - Container assembly;
5,14 - Access way wall;
6,15 - LES display;
7,16 - Card reader location;
8,17 - Container locks;
9,10 - Enclosure panel;

Fig. 2 – Design and general appearance of the "SESAME TWIN-L" double turnstiles

The turnstile modification depends on the shape of barrier rods:

1) The turnstile modification with straight barrier rods (reference designation T1.2.HYC.XP);

2) The turnstile modification with "U"- shape barrier rods (reference designation T1.2.HYC.XU).

The turnstile rotor design depends on barrier rods fixation:

- P0 - all-welded rotor – all rows of barrier rods are welded,
- P1- rotor with one row of removable barrier rods,
- P2- rotor with two rows of removable barrier rods,
- P3- rotor with three rows of removable barrier rods.

1.3.1.3. The turnstile modifications are made from the following materials:

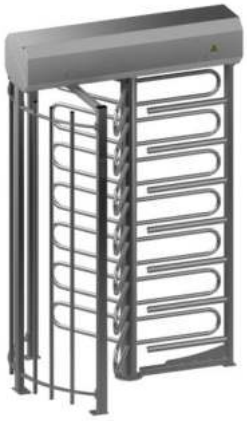
- polished or brushed stainless steel (reference designation T1.2.HYC.HX);
- carbon steel subject to painting (reference designation T1.2.HYC.KX);
- carbon steel subject to galvanization (reference designation T1.2.HYC.ZX).

The turnstile basic modification is with straight barrier rods and painted steel body (reference designation T1.2.BYC.KP).

Polished body
Straight barrier rods

T1.1.BYC.HP

Galvanized body
U-shape barrier rods



T1.1.BYC. ZU

Painted body
U-shape barrier rods

T1.1.BYC.KU

Fig.3 –"SESAME BASIC-L" type turnstile modifications and their coding

1.3.2. Turnstile Scope of Delivery

- Turnstile AUIA.438-10;
- Control panel AUIA.114.02.00.00;
- Anchor Redibolt (16×120 M12) with jacket and screw ;
- Wrench for rotor assembly (P1,P2,P3)[2];
- Battery – 2 pcs (1 pc for rotor mechanism and 1 pc for pedestrian gate mechanism *(*Is not included in the turnstile scope of delivery - to be equipped by the customer on recharge basis, when applicable)*.
- Packing;

The turnstile is supplied **disassembled** (by components) or **assembled** (ready-to-install).

– When the turnstile is ordered disassembled it the components of the turnstile (rotor, container and walls) are packed in film and is delivered one packing place.

– When the turnstile is ordered ready-to-install (assembled) it is delivered on pallet by one packing place;

1.4. Design and operation

1.4.1. Turnstile design

1.4.1.1. *The design* (*See Figure 1-2*) consists of enclosure wall ***1***, passage wall ***5*** and rotor ***3***.

The top connecting bar of design is container ***4***, inside which the turnstile control mechanism and electrical equipment (power supply and control unit, battery*, controller, heating system* (is not included in the scope of delivery) etc.) are located.

The revolving rotor ***3***, divided into three sectors, each of 120º (or four sectors, each of 90º), is located between access way and enclosure walls. The upper part of rotor is linked with shaft of control mechanism through half coupling.

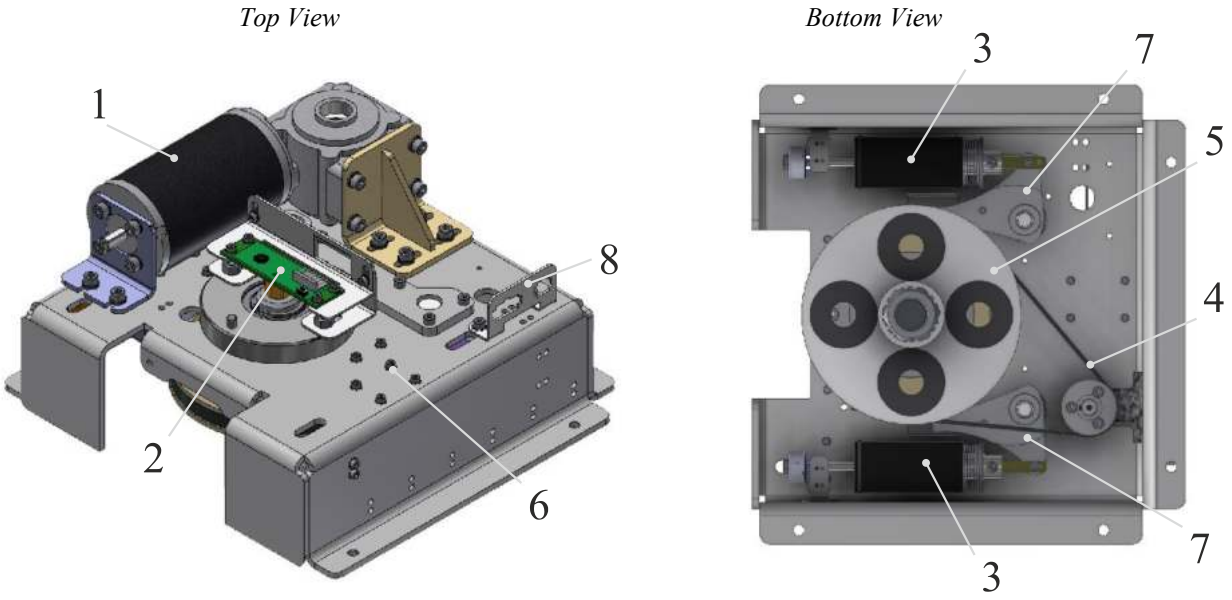
[2] *P1*- rotor with one row of removable barrier rods , P2 - rotor with two rows of removable barrier rods, P3 - rotor with three rows of removable barrier rods

1.4.1.2. The design of the control mechanism

The design of the control mechanism (*See Figure 4*) consists of a body on which the main structural elements are placed. The servo drive provides rotation of the rotor to one or the other side at 120° angle and automatic bringing to the initial position after the rotor access. The pedestrian gate control mechanism design consists of body on which major components are located.

In the housing ***6*** shaft with hub shaft ***5*** and a ratchet wheel are mounted. Rotation of the hub shaft ***5*** with a ratchet wheel implements by using the drive belt ***4***, which is connected to the gear motor ***1***.

Locking shaft rotation is implemented by stop catches *7*, which are mounted on the axes of the housing ***6***, the ratchet engagement is carried out by locking solenoids ***3*** connected to the stop catches *7*. Magnetic sensor ***2*** is used for rotor initial position control and defining of rotational direction.



1 – gear motor;
2 – position (magnetic) sensor;
3 – locking solenoid;
4 – driving belt;
5 – half-coupling;
6 –mechanism housing;
7 – latches;
8 - mechanism connection plugs;

Fig. 4 – Turnstile operating mechanism

1.4.1.3. The turnstile electrical equipment, installed and located inside container, is designed for operation control of actuating mechanisms and LED display of the turnstile both as a part of access control system (ACS) and by means of control panel.

The turnstile electrical equipment includes: heating system* of control mechanism and electronic components located in container (resistors of thermal elements and thermostat board) as well as controller, power supply, battery*, wired and distribution electrical accessories.

1.4.1.4. LED displays are located on the turnstile posts at the entrance and they are designed for visual display of information about definition and execution of instructions coming from control system (ACS, control panel or keypad) to the turnstile actuating mechanisms.

1.4.1.5. Control panel is made as small desktop device in plastic case designed for setting and indication of operation modes when the turnstile is operated manually. Control panel and its connection diagram are shown in Annex B.

1.4.1.6. To ensure operation of the turnstile as a part of access control system (ACS) the following components are used as elements of this system:

– ACS hardware kit;
– ACS software;
– Card*, badge etc. readers;
– Cards, badges etc.;
– Technical means of permit issuance.

The Manufacturer shall deliver the listed above as agreed by the parties under separate contract.

1.4.2. Principle of turnstile operation

1.4.2.1. In the initial state (when solenoids of control mechanism are deenergized) rotor is locked against rotation in both directions.

When access enabling command is issued to controller in one of directions:
– Green arrow is lit on LED display;
– The relevant solenoid is energized;
– The turnstile is unlocked in the relevant direction and the turnstile accessor is able to revolve rotor to 120° for Y-shape turnstile (or to 90° for X-shape turnstile).
As soon as rotor starts revolving the red symbol " ›‹ " is lit on LED display (*See Figure 5*).

Denied access

Authorized access

Fig. 5 - Turnstile status display

1.4.2.2. Rotor is brought to initial (zero) position by closer of control mechanism and after that the turnstile is automatically locked against rotation in both directions.
1.4.2.3. 12V DC power voltage is provided by power supply unit.
1.4.2.4. When mains power supply is off, the turnstile is automatically switched to power supply from 12V, 7-17 A•h battery* (optional), which ensures the turnstile's operation within at least 2-4 hours.
1.4.2.5. In case of turnstile power failure, emergency mode (fail safe NO/NO) will be activated and rotor will be unlocked in both directions automatically.
1.4.2.6. The turnstile wiring diagram is shown in Annex C.

1.5. Instrumentation, tools and accessories

Special-purpose tools are not required for the turnstile installation (multi-purpose measurement instrumentation and installation tools are enough). *(See Figure 6).*

– puncher;
– concrete drills (according to diameter of anchors included in the turnstile scope of delivery);
– extension cord;
– kit of end and pin wrenches;
– kit of hexagons;
– kit of screwdrivers;
– hammer;
– multimeter (tester);
– measuring tape;
– marker;
– pliers, side cutters;
– builder's level.

Fig. 6 - Tools and accessories for layout and installation

1.6. Description and operation of controller as an integral component of the turnstile

1.6.1. Turnstile rotor mechanism controller PCB.201.01.00.00

1.6.1.1 Purpose of the turnstile rotor mechanism controller PCB.201.01.00.00

The controller is designed for acquisition of commands from the turnstile controller PCB.112.21.20.01 and generation of the motorized mechanism motor control signals.

The Controller is assembled on the (85x70)mm card, on which electronic components and connectors for external connections are installed.

On controller card 13 LEDs are installed. 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.

1.6.1.2 Technical features of the turnstile rotor mechanism controller PCB.201.01.00.00

The controller technical features are show in Table 5.

Table 5

Parameter description	*Parameter description*
Number of inputs	2
Number of outputs	4
Type of inputs	logical
Type of outputs «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 «INP1» ÷« INP5»	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 category of location according to GOST15150-69	NF4

1.6.1.3 Description of rotor motorized mechanism controller PCB.201.01.00.00

The controller operates according to the program entered into memory of microprocessor. The turnstile mechanism and LED display are controlled depending on commands coming from the controller PCB.112.21.20.01 rotor of position, rotation speed and based on the logic entered into program. Control commands are generated to controller via serial interface.

Waiting for a permission command, the controller holds the rotor in its original position. After permission command is sent, controller via electromagnet "-MG1" and "-MG2" unlocks the rotor in one direction and with a light push of the rotor with your hand in the direction of passage through the outputs "MOT1" and "MOT2" (X2 / 9 and X2 / 10) supplies current to the motor winding and rotates the rotor in a given direction.

Speed and position of rotor is controlled during rotation. After pedestrian turnstile access rotor continues to turn smoothly forward (turn additionally), gradually slowing down, and when the angle 120° is reached rotor is held in this position by means of servo drive.

The purpose of controller PCB.201.01.00.00 (for rotor motorized mechanism) contacts designed for connection of peripherals is shown in Table 6.

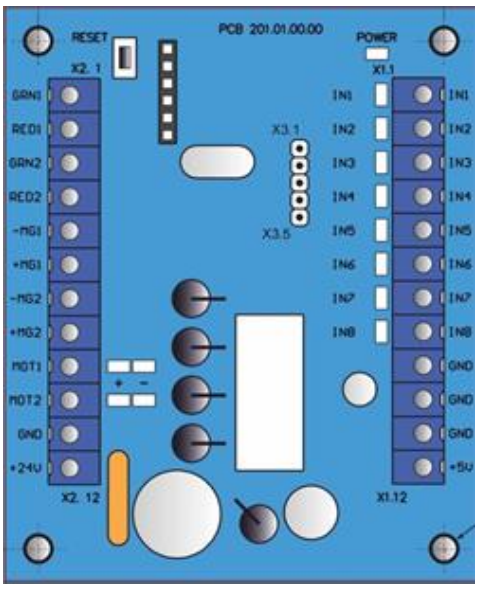


Fig. 7 – Appearance of the controller PCB.201.01.00.00 for the rotor motorized mechanism

Table 6

Connector/ contact No	*Designation*	*Direction*	*Purpose*	*Signal parameters and description*
1	*2*	*3*	*4*	*5*
XT1/1	INP1	ENTRY	Not applicable	1) logical «0» (0 ÷ 1,7) B; 2) logical «1» (3,7 ÷ 5) B; 3) active level of signal - logical «0»; 4) voltage on open input ≤ 5 V
XT1/2	INP2	ENTRY		
XT1/3	INP3	ENTRY		
XT1/4	INP4	ENTRY		
XT1/5	INP5	ENTRY	To be connected to the rotor position sensor and motor speed sensor	
XT1/6	INP6	ENTRY		
XT1/7	INP7	ENTRY		
XT1/8	INP8	ENTRY		
XT1/9	GND		«-» power supply (common wire)	
XT1/10	GND			
XT1/11	GND			
XT1/12	+5V	EXIT	Not applicable	
XT2/1	GRN1	EXIT		
XT2/2	RED1	EXIT		
XT2/3	GRN2	EXIT		
XT2/4	RED2	EXIT		
XT2/5	-MG1	EXIT	Connection of locking solenoid winding	1) Type of output - open collector; 2) Peak voltage on privacy key 50 V; 3) Peak current of public key – 5A
XT2/6	+MG1	EXIT	Connection of locking solenoid winding (cathode of protective diode)	
XT2/7	-MG2	EXIT	Connection of locking solenoid winding	
XT2/8	+MG2	EXIT	Connection of locking solenoid winding (cathode of protective diode)	
XT2/9	MOT1	EXIT	Motor connection	1) voltage (10 ÷ 27) V; 2) current ≤ 4 A
XT2/10	MOT2	EXIT		
XT2/11	GND		«-» power supply (common wire)	
X2/12	+24 B	ENTRY	«+» power supply (controller energization)	1) voltage (10 ÷ 14) V; 2) current ≤ 4 A
X3	X3	ENTRY / EXIT	PCB.112.21.20.01 link communication port	1) logical «0» (0 ÷1) V; 2) logical «1» (3,5 ÷ 5)V

1.6.2. Turnstile controller PCB.112.21.20.01

1.6.2.1. Purpose of controller PCB.112.21.20.01

The controller PCB.112.21.20.01 is designed for control of the full-height turnstile operation both under control of authorized access system (hereinafter referred to as AAS) and independently. It provides the required logic of the turnstile operation in various operating modes as well as compliance of control commands from peripherals and generation of report signals.

It provides the required logic of the turnstile operation in various operating modes as well as compliance of control commands from peripherals and generation of report signals.

The controller is assembled on the 104x68 mm board *(See Figure 8)*. Field-effect transistors are used to control solenoids and LED displays.

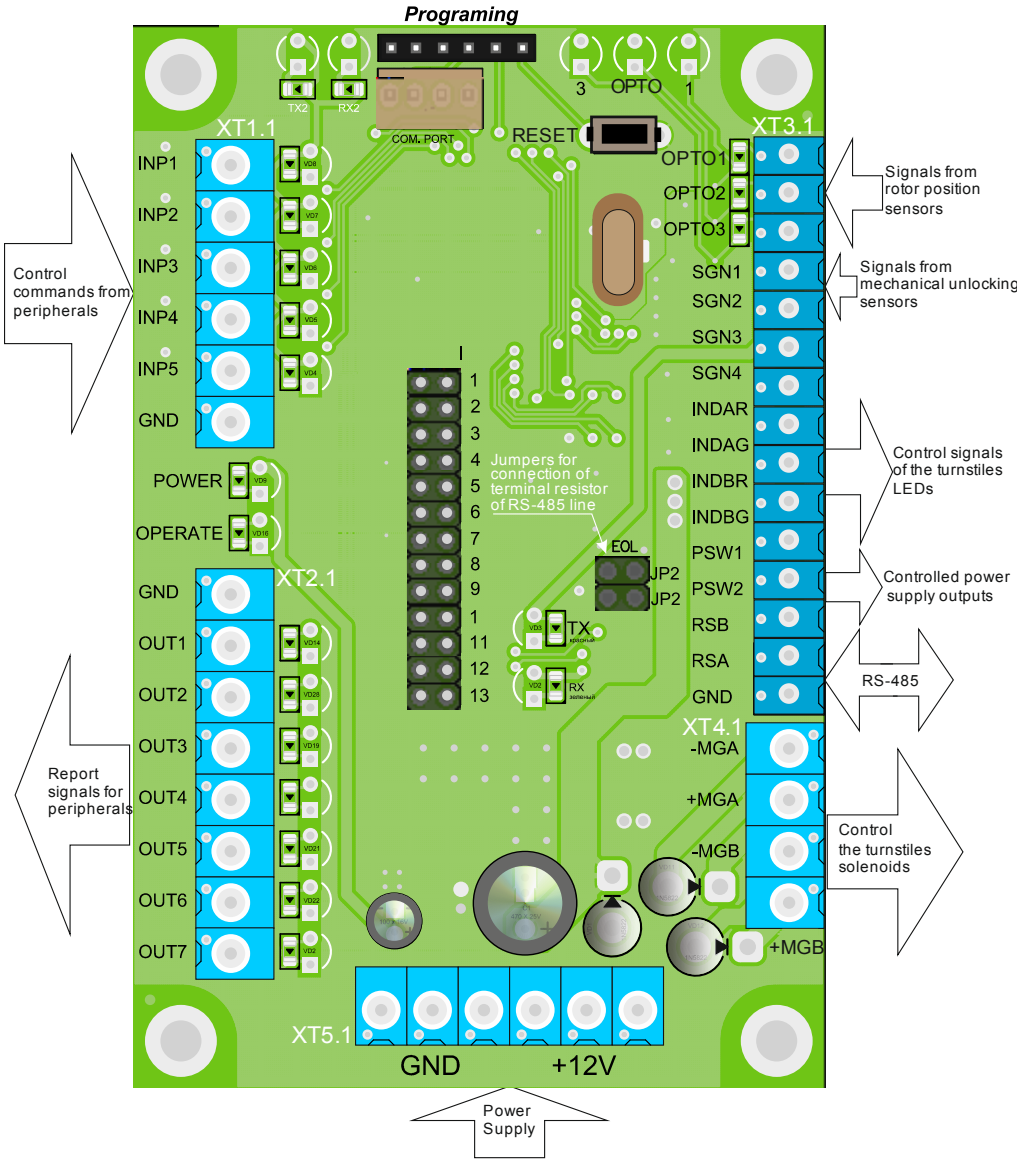


Fig.8 - Appearance of controller PCB.112.21.20.01

19 light emitting diodes are installed on the controller board. Their purpose is as follows:

- 5 light emitting diodes display state of the external connection inputs “INP1” ÷ “INP5”;
- The light emitting diode “POWER” displays existence of 5V power supply voltage;
- The light emitting diode “OPERATE” displays operating capacity of microprocessor;
- 7 light emitting diodes display state of the external connection outputs “OUT1” ÷ “OUT7”;
- 3 light emitting diodes “SENSOR” display the state of rotor position sensor;
- The light emitting diodes “RX” and “TX” display transceiving on serial port.

On the board there are 13 jumpers, 40 terminal clamps for connection of wires, 14 of them for external connections, another- for connection to the turnstile units or can be standby.

Application of jumpers on the controller board PCB.112.21.20.01:

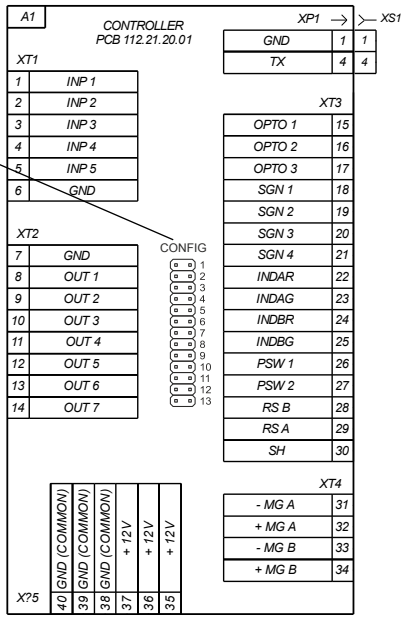
Table 7 - Application of jumpers

№	Description	State	State value
1	Turnstile type		
		[1]	Full height /Rotary
2	Mechanism type	[2]	195
3	Lock mode in A direction		Normally Open Fail safe (NO[3])
			Normally Closed Fail secure (NC[4])
4	Lock mode in B direction		Normally Open Fail safe (NO)
			Normally Closed Fail secure (NC)
5	Change of direction Entrance/Exit (A/B)		Standard
			Mirrored
6	Active state of output signals OUT 1-7		Normal Open (NO)
			Normal Close (NC)
7	Active state of output signals Panic (INP 1)		Normal Open (NO)
			Normal Close (NC)
8	Reserved		
9	Reserved		
10	Reserved		
11	Reserved		
12	Reserved		
13	Reserved		

must be installed for this type of turnstile

must be based on ordered options

selected by installer (customer) depending on ACS requirements or installation conditions



[1] - jumper is installed;

[2] - jumper is removed;

NO [3] - (normally open)- normally open position of contacts;

NC [4] - (normally closed)- normally closed position of contacts;

1.6.2.2. The controller PCB.112.21.20.01 technical features

Table 8 - The controller technical features

Parameter description	*Parameter value*
1	*2*
Number of inputs for reception of control commands	5
Number of signal outputs	7
Input type	logical
Output type	open collector
Logical «1» voltage	(3 ÷ 5) V
Logical «0» voltage	(0 ÷ 2,2) V
Peak voltage, applied to inputs «INP1» ÷« INP5»	15 V
Peak voltage switched by signal output transistors	50 V
Peak current switched through signal outputs	0,1 A
Power supply voltage of controller	(9 ÷ 15) V
Peak consumption current	0,15 A
Number of signal transceiving serial ports (RS-485)	1
Climatic modification and category of location according to GOST 15150-69	NF4

1.6.2.3. Description of operation

The controller operates according to the program entered into memory of microprocessor. The turnstile mechanism and LED display are controlled depending on control commands and the status of rotor position sensors based on the logic entered into program. Control commands can be transmitted via RS-485 (from control panel) or logical inputs by means of closing and opening “INP1” ÷ “INP5” on “GND”.

The controller (and therefore the turnstile) can be in

- **“INITIAL STATE”** (closed for access) or in one of the following access modes:
- **“SINGLE ACCESS IN ONE DIRECTION”**
- **“FREE ACCESS IN ONE DIRECTION”**
- **“LOCKING OF ACCESS.”**
- **“PANIC”**

The rest operating modes are combinations of various or identical basic modes in different directions:

- Single access in one direction without airlock and any of basic modes in opposite direction;
- Free access in one direction and any of basic modes in opposite direction;
- Locking access in one directions and any of basic modes in opposite direction;

« INITIAL STATE »

The controller is in this mode, if there are no commands “TO BE OPENED A/B" and the turnstile rotor is set to the point 0º, 120º, 240º. In this mode solenoids are deenergized locking rotor. Red inhibit LED display is lit in both directions.

«SINGLE ACCESS IN ONE DIRECTION »

In this mode the controller sends control command to the motorized mechanism controller that results in rotor unlocking in one direction with the possibility of its revolving to 120° (or 90° for X-type rotor). It enables access of one pedestrian through the turnstile.

The controller goes to “SINGLE ACCESS IN ONE DIRECTION”, if in the INITIAL STATE it receives “TO BE OPENED A/B" command (i.e. active level of signal is sent to the input “INP4” or “INP5”). In this case the turnstile is open within action period of signal. The command may also come via RS-485.

In this case, if command is received through the input “INP4” or “INP5”, the controller waits for start of rotor rotation during active status of signal on the relevant input “INP4” or “INP5” and if the controller received a command via the input “INP2” or “INP3”, or the command “TO BE OPENED A/B” via RS-485, then START of rotor rotation is expected before ending of delay “WAITING FOR START OF ACCESS”

The sequence of actions of controller after reception of the command “**TO BE OPENED A/B**” is as follows:

- Delay of WAITING FOR START OF ACCESS is initiated.
- The controller transmits a control command to the controller for motorized mechanism and thereby unlocks the rotor in the corresponding direction.
- LED display corresponding to authorized access is switched from red to green

If during delay of “WAITING FOR START OF ACCESS” rotor rotation has started, then further behavior of controller depends on the angle of rotor rotation (or 120º for Y-rotor):

- 6º of *rotor rotation* – LED display is switched from red to green indicating occupation of access. The output signal “START OF ACCESS A/B” (“OUT1” or “OUT2”) assumes active status. Delay of “WAITING FOR START OF ACCESS” is cancelled;
- 58º of rotor rotation – the signal “START OF ACCESS A/B” (“OUT1” or “OUT2”) is cancelled and the signal "POINT OF NO RETURN" ("OUT5") appears.
- 60º of rotor rotation – when this point is entered rotor can’t be returned to the point 0º (in opposite direction);
- 64º of rotor rotation – the signal “DETECTION OF ACCESS A/B” (“OUT3” or “OUT4”) is generated;
- 70º of rotor rotation – the relevant solenoid is deenergized preparing rotor for locking in the point 120º (0º for next access);
- 120º of rotor rotation – the signals "POINT OF NO RETURN" ("OUT5") and the relevant signal “DETECTION OF ACCESS A/B” (“OUT3” or “OUT4”) are cancelled and after that availability of the command “TO BE OPENED A/B” (“OUT3” or “OUT4”) corresponding to the current direction of access is verified and if command by that moment is active then controller goes to the “SINGLE ACCESS IN ONE DIRECTION” mode.

If during delay of “WAITING FOR START OF ACCESS” rotor rotation has started, then further behavior of controller depends on the angle of rotor rotation(or 90º for X-rotor):

- 5º of *rotor rotation* – The output signal "ACCESS IS OCCUPIED"A / B” (“OUT5”) takes an active state. The output signal “START OF A / B PASS” (“OUT1” or “OUT2”) takes an active state. The indication switches from green to red, indicating that the passage is occupied;
- 40º of *rotor rotation* – The output signal “START OF ACCESS A/B” (“OUT1” or “OUT2”) is removed. Delay of “WAITING FOR START OF ACCESS” is cancelled;
- 48º of *rotor rotation*–the signal “DETECTION OF ACCESS A/B” (“OUT3” or “OUT4”) is generated;
- 90º of *rotor rotation* –The signals "ACCESS IS OCCUPIED"A/B” («OUT5»)and “DETECTION OF ACCESS A/B” (“OUT3” or “OUT4”) are cancelled, and after that availability of the command “TO BE OPENED A/B” (“OUT4” or “OUT5”) corresponding to the current direction of access is verified and if command by that moment is active then controller goes to the “FREE ACCESS” mode, and if not, then returns to its initial position.

«FREE ACCESS IN ONE DIRECTION»

In this mode rotor can rotate freely in the free access direction. In opposite direction rotor can rotate only up to the nearest locking point, i.e. to 60º (or 45º for X-rotor). In the “FREE ACCESS” mode LED display of the relevant direction is blinking green.

The controller goes to this mode after reception of the "FREE ACCESS: command in the relevant direction via RS-485 from control panel.

Quitting from this mode into “INITIAL STATE” is performed after cancellation of the command “TO BE OPENED A/B” or reception of the command “CANCELLATION OF FREE ACCESS” via RS-485. But it occurs not immediately and only when rotor reaches one of the start points 0º, 120º or 240º(for X-rotor 0º, 90º, 180º или 270º), , i.e. if free access is cancelled during started access then it will be finished as free access.

«LOCKING OF ACCESS»

The locking function can be activated by control panel only. After activation of “LOCKING OF ACCESS A or B” the turnstile rotor is blocked in the relevant direction and access authorization commands will be ignored in the locked direction; The locked direction is indicated by blinking red color.

«PANIC»

The turnstile goes to the "PANIC" state:

- after keeping active state on input (“INP5” "PANIC") more than 1,5 sec;
- after sending "PANIC" command by control panel (command is sent after "PANIC" button is hold more than 7 sec.).

After activation of "PANIC" function the turnstile rotor will be released in both directions. The output “OUT7” "PANIC" will go to active state during the function action.

The "PANIC" function is canceled:

After the signal is cancelled on input “INP1” "PANIC";

After command “CANCELATION of PANIC” is sent from control panel (repeated pushing of "PANIC" button);

«AUTHORIZATION OF SINGLE ACCESS IN BOTH DIRECTIONS»

Since the turnstile, having one rotor, is unable to rotate in both directions at a time, so controller can only unlock rotor in both directions and when access is started in one of directions the opposite direction will be closed.

The controller goes to this mode if it simultaneously receives the commands “TO BE OPENED A” and “TO BE OPENED B” in the “INITIAL STATE”. The second signal can also come when the first signal is already active but rotor has not started to rotate.

In this case:

- Controller unlocks rotor in both directions via solenoids.
- Both LED displays are switched from red to green.
- Two delays of “WAITING FOR START OF ACCESS A” are actuated for each access particularly, which are counted from the moment of coming of commands.
- Controller is waiting for starting of access.
- After rotor is turned to 6º in any side, the solenoid of opposite direction will be OFF, LED display will be switched to red and delay of “WAITING FOR START OF ACCESS” of opposite direction will be cancelled.
- Then controller is operating as it is described in the paragraph “SINGLE ACCESS IN ONE DIRECTION”.
- If during active status of the signals “INP4” and “INP5” or “WAITING FOR START OF ACCESS” rotor is not turned to any side to the angle > 6º, then controller goes to the “INITIAL STATE”.

The purpose of the controller’s contacts designed for connection of peripherals is specified in Table 9.

Table 9

Connector/ contact No	Designation	Direction	Purpose	Signal parameters and description
1	*2*	*3*	*4*	*5*
XT1/1	INP1 («PANIC»)	ENTRY	"SWITCHING TO PANIC STATE" command	1) logic «0» (0 ÷ 2,2)V 2) Logic «1» (3÷5) V 3) Active level of signal (Factory setting) - Logic «0» 4) Voltage on open input < 5 V
XT1/2	INP2 («TO BE OPENED A»)	ENTRY	"TO BE OPENED FOR SINGLE ACCESS" in pulse mode command. When this command is issued the turnstile is opened for 5 sec.	
XT1/3	INP3 («TO BE OPENED B»)	ENTRY		
XT1/4	INP4 («TO BE OPENED A»)	ENTRY	"TO BE OPENED FOR SINGLE/FREE ACCESS" command. Access remains open during holding	
XT1/5	INP5 («TO BE OPENED B»)	ENTRY		
XT1/6	GND (common)			
XT2/1	GND (common)			
XT2/2	OUT1 («START OF ACCESS A»)	EXIT	Signal is generated by controller when “TO BE OPENED” command is received and rotor rotation in the same direction is detected	1) type of output – open collector; 2) peak voltage on privacy key 55V; 3) peak current of public key 100mA; 4) resistance of public key (5÷7) Ohm; 5) active level of signal (Factory setting) – logical «0
XT2/3	OUT2 («START OF ACCESS B»)	EXIT		
XT2/4	OUT3 («DETECTION OF ACCESS A »)	EXIT	Signal is generated by controller when rotor is rotating from 64º	
XT2/5	OUT4 («DETECTION OF ACCESS B»)	EXIT		
XT2/6	OUT5 («POINT OF NO RETURN»)	EXIT	Signal is generated by controller when rotor reaches the angle 58	
XT2/7	OUT6 ("ERROR")	EXIT	Signal is generated by controller when violation of operation logic is detected	
XT2/8	OUT7 ("ACCESS IS OCUPIED")	EXIT	Signal is generated by controller starting from the angle 2º to 118 º	
XT3/1	OPTO1	ENTRY	It is used for acquisition of data about the turnstile rotor position	1) Logical «0» (0 ÷ 2,2) V 2) Logical «1» (3 ÷5) V 3) Active level of signal (Factory setting) Logical «0» 4) Voltage on open input < 5 V
XT3/2	OPTO2	ENTRY		
XT3/3	OPTO3	ENTRY		
XT3/4	SGN1	ENTRY	Not applicable	
XT3/5	SGN2	ENTRY		
XT3/6	SGN3	ENTRY		
XT3/7	SGN4	ENTRY		

Continued Table 9

1	2	3	4	5
XT3/8	INDAR	EXIT	It is used for control of the turnstile LED displays	1) Type of output - open collector 2) Peak voltage on privacy key 30 V 3) Peak current of public key 2A 4) Resistance of public key 0,1 Ohm
XT3/9	INDAG	EXIT		
XT3/10	INDBR	EXIT		
XT3/11	INDBG	EXIT		
XT3/12	PSW1	EXIT	It is used for energization of peripherals	1) Type of output - open emitter. 2) Voltage on output in ON state 12 V. 3) Peak current consumed from output 1 A. 4) Resistance of public key 0.25 Ohm
XT3/13	PSW2	EXIT		
XT3/14	RSB		It is used for data transmission via serial port	Interface RS-485
XT3/15	RSA			Interface RS-485
XT3/16	SH		RS-485 SCREEN	
XT4/1	- MGA	EXIT	Not applicable	1) Type of output - open collector. 2) Peak voltage on public key 50 V 3) Peak current of public key 9A 4) Resistance of public key 0,11 Ohm
XT4/2	- MGB	EXIT		
XT4/3	+ MGA		Not applicable	
XT4/4	+ MGB			
XT5/1	+ 12 V		«+» power supply (controller energization)	1) power supply voltage 12V; 2) consumption current < 150 mA
XT5/2	+ 12 V			
XT5/3	+ 12 V			
XT5/4	GND (common)		«-» power supply (common wire)	
XT5/5	GND (common)			
XT5/6	GND (common)			
XP1	XP1	ENTRY / EXIT	PCB.201 controller link communication port	1) logical «0» (0 ÷ 1) V; 2) logical «1» (3,5 ÷ 5) V

2 INTENDED USE

2.1 Operational limitations

2.1.1 The product should be operated under the conditions specified in 1.1.4 of this document, while keeping the specifications given in section 1.2.

FOLLOWING IS PROHIBITED:
1) TO USE THE TURNSTILE NOT FOR APPOINTMENT (see section 1 "DESCRIPTION AND WORK");
2) OPERATE A TURNICETE WITHOUT EARTHING;
3) USE GROUNDING PIPES AND BATTERIES OF HEATING SYSTEMS, CENTRAL WATER SUPPLY PIPE;
4) PRODUCE ADJUSTMENT AND REPAIR WORKS WITHOUT DISCONNECTION OF POWER SUPPLY;
5) MOVE THROUGH THE TURNKEY PASSAGE ZONE AREAS OUTS EXCEEDING THE PASS WIDTH;
6) MANUFACTURING IMPACT ON PREVENTING GATES, LIGHT TABLET OF INDICATION OR OTHER PARTS OF THE PRODUCT,
7) TO APPLY THE EFFORT TO THE PASSES WHEN ACCESS DENIED MORE THAN 1000 N (100 KG)

2.1.2 Do not operate the turnstile with:

– the presence of mechanical gritting in the moving parts of the turnstile;
– mechanical damage of the metal structure of the turnstile, its devices and components;
– mechanical damage of electrical cables;

2.1.3 List of specific operating conditions

- The average time of a person's passage through the turnstile (in the mode of a single pass) is 3 seconds.
- The turnstile's mechanism allows emergency access by means of function "PANIC".
- To increase the capacity of the turnstile in the event of abnormal situations, a door, gate or wicket gate can be installed aside to the turnstile.

2.2 Layout and installation

2.2.1 The turnstile and other products of the delivery set must be delivered to the installation site in the manufacturer's packaging. Unpack the turnstile only at the installation site.

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

WARNING:
The turnstile damage occurred during transportation is not covered by the manufacturer's warranty obligations.

2.2.3 Safety cautions:

- Only persons who have passed the Safety Instruction and who have studied this manual and who have an appropriate group of permits for work with electrical installations with voltages up to 1000 V, familiar with the RE, the structure and the principle of operation of the turnstile, should be allowed to install.
- when installing the turnstile, use only a serviceable tool;
- connect all cables only when the power sources are disconnected from the mains and switched off;
- cabling should be carried out in accordance with the Rules for the operation of electrical installations;
- installation of the turnstile should be carried out by a team of installers, consisting of not less than 2 people.

2.2.4 The tool and accessories used (*see figure 6*):

2.2.5 Procedure for the installation.

Install the product in the following order:

1) The package integrity to be checked prior to unpacking. If package is damaged, then damages to be fixed (picture to be taken, damage report to be made).

2) The turnstile to be unpacked and inspected for defects and damages as well as completeness to be checked according to the turnstile data sheet;

WARNING:
When the turnstile damages are detected or in case of shortage of delivery, installation work to be stopped and the turnstile supplier to be referred to.

3) Make sure that the turnstile installation area is ready as follows:

- The installation site surface should be plain, hard and without defects (corrugations, overlaps etc.);and provide vertical position plus or minus 1°;
- Thickness of concrete blinding coat under site to be at least **150 mm**.
- Concrete blinding coat along the perimeter should overhang the project turnstile for **100 mm.**

WARNING:
The turnstile shall be fixed by means of Redibolt (with jacket and screw) included in the scope of delivery.

4) The turnstile fixation holes to be marked on the area surface according to the drawing (See Annex A). The turnstile components, placed upright on the installation site, marking can be used as a template.

The sequence of assembly of the major components of the full-height turnstile "SESAME-L" when the turnstile is delivered by components (*See Figure 9-11*):

1) Assembly of access way wall *5*:

- Structural component of access way wall to be joined and installed in the design position to mark holes;
- The holes to be drilled according to the surface marking in compliance with diameter of the inclosed anchors for attachment of the "SESAME-L" turnstile access way wall;
- Cables to be pulled through the available service opening of access way wall;
- The turnstile access way wall to be attached with anchors;

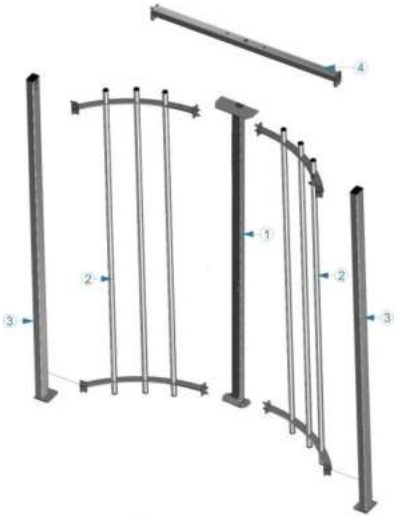
2) Assembly of enclosure wall *1* with hackle:

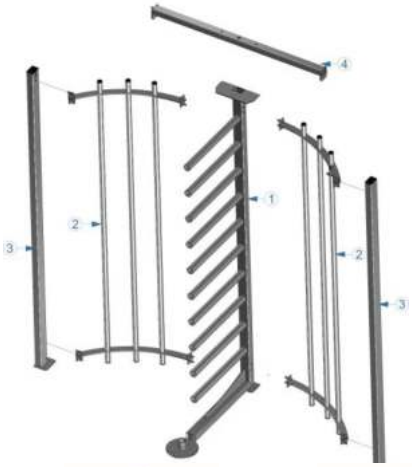
- Structural component of enclosure wall to be joined and installed in the design position to mark holes;
- The holes to be drilled according to the surface marking in compliance with diameter of the inclosed anchors for attachment of the "SESAME-L" turnstile enclosure wall;
- The turnstile enclosure wall to be attached with anchors ***18***;

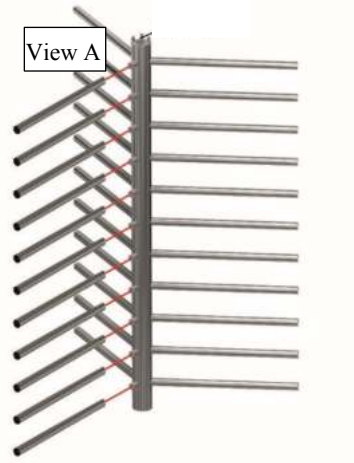
3) Assembly of the turnstile rotor *3*:

- A row of the rotor barrier rods (when rotor is delivered in disassembled state) using long Allen wrench and to be fixed with screws;
- The turnstile rotor to be installed by aligning enclosure walls ***1*** on the axis ***2***;

For proper installation rotor to be revolved so that a row of barrier rods bars the turnstile access i.e. to be in compliance with the "CLOSED" turnstile mode.







View A

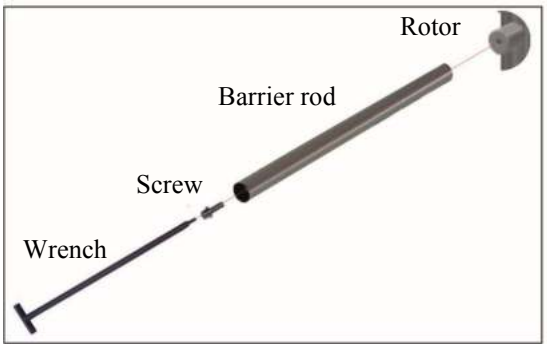


Fig.9 – Assembly of the turnstile major components and installation of barrier rods

For the turnstile "SESAME TWIN-L" the assembly of structural components and their installation for the second access way to be repeated in the same way.

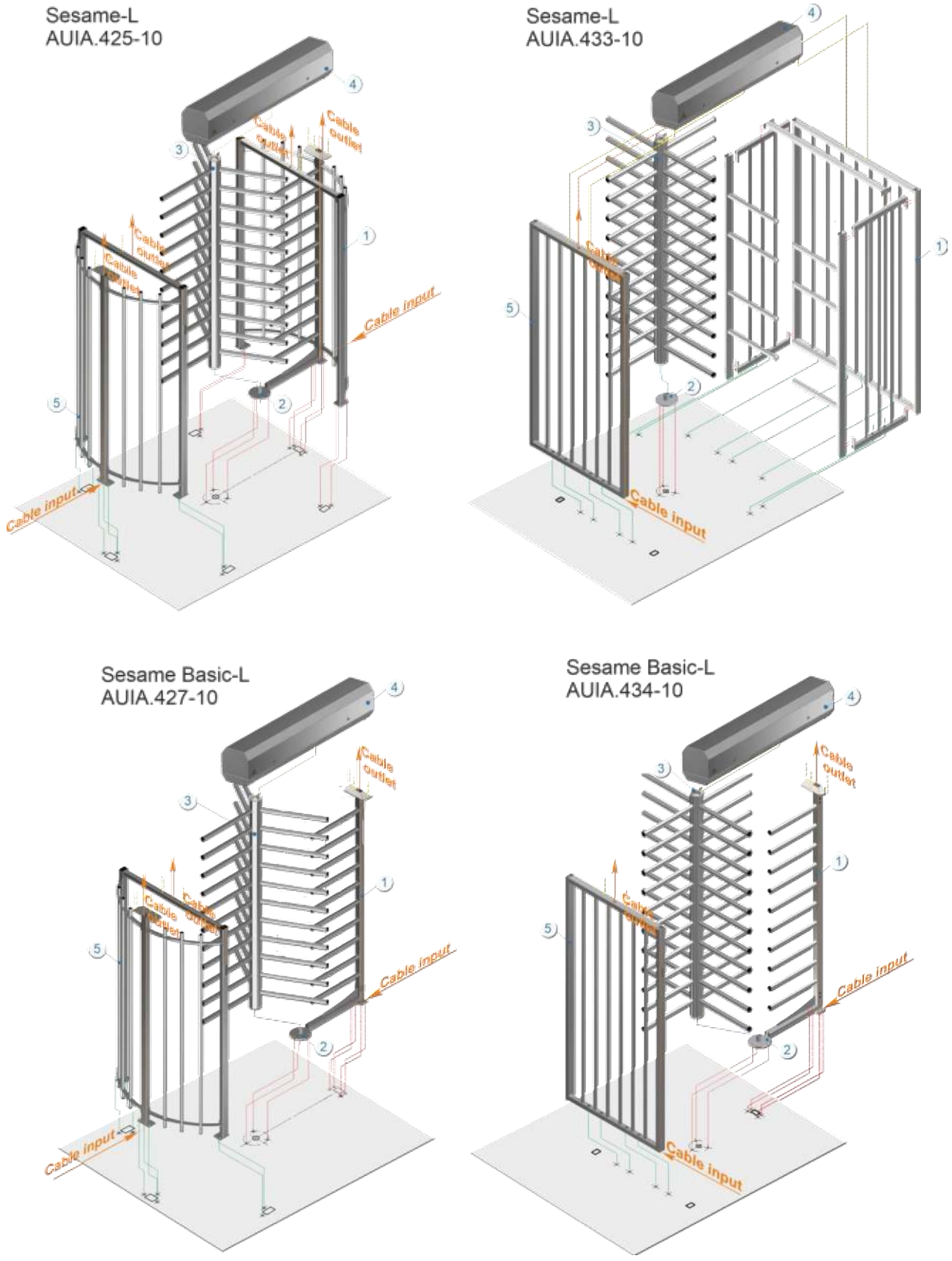


Fig. 10 - General view of installation of the turnstile "SESAME-L" and "SESAME BASIC-L" in the design position

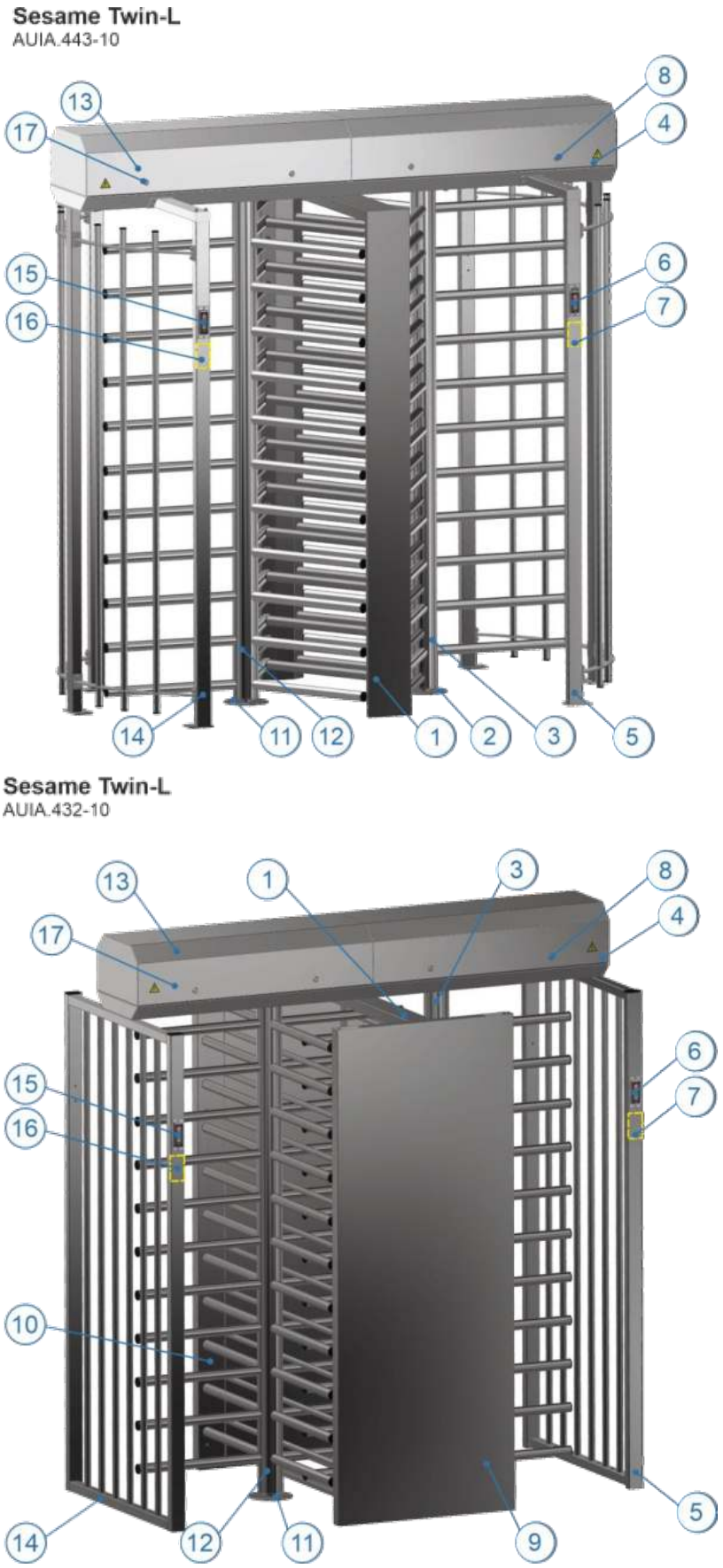


Fig. 11 - General view of installation of the turnstile "SESAME TWIN-L" in the design position

4) Installation of the turnstile container:

- Container is installed at the top of access way wall, enclosure wall and rotor. Control mechanism and rotor to be joined by means of half-coupling, then card reader, LED display and connection cables are pulled;
- Container to be fixed to the turnstile enclosure wall and access way wall by means of screws when lid is open *(See Figure 12)*;

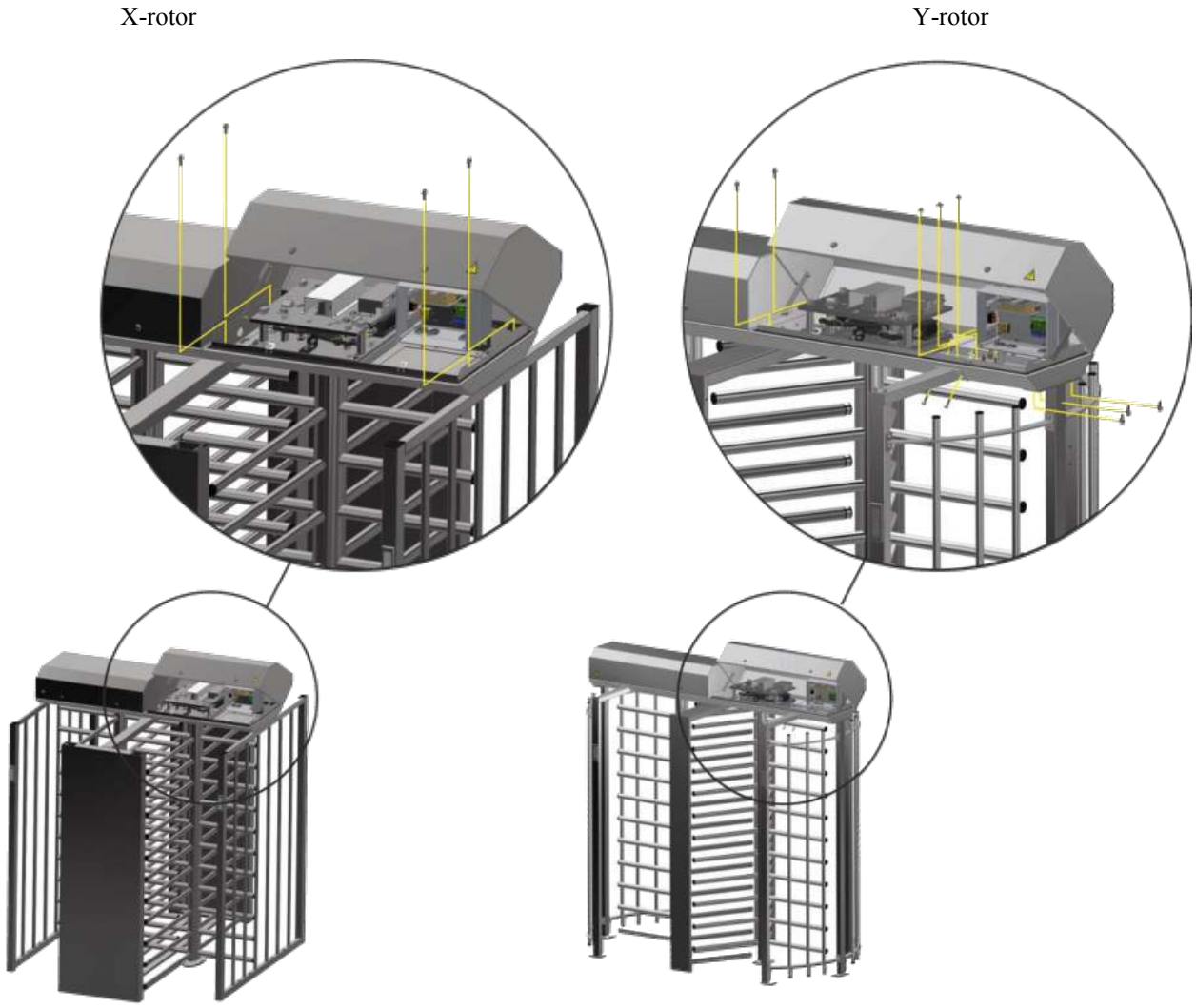


Fig.12- Container fixation

For secure fixation the turnstile base to be tightly retained against the foundation with the entire plane.
The structure to be checked for vertical and horizontal position.

WARNING:
The turnstile to be installed and fixed only after all turnstile electric connection cables are pulled. The turnstile to be fixed on installation site by means of Redibolt (anchor with jacket and screw). Make sure that the installed turnstile is stable and then both locks of mechanical release to be unlocked by keys and rotor revolving to be checked manually: rotor should revolve smoothly on either side.

5) Installation of additional components

Installation of additional components of the "SESAME TWIN-L" full-height turnstile structure is possible *(See Figure 13)* ***(The are not included in the turnstile scope of delivery - to be equipped by the customer on recharge basis, when applicable).***

a) Lid
b) Fixed frame
c) Canopies
d) Mobile platform

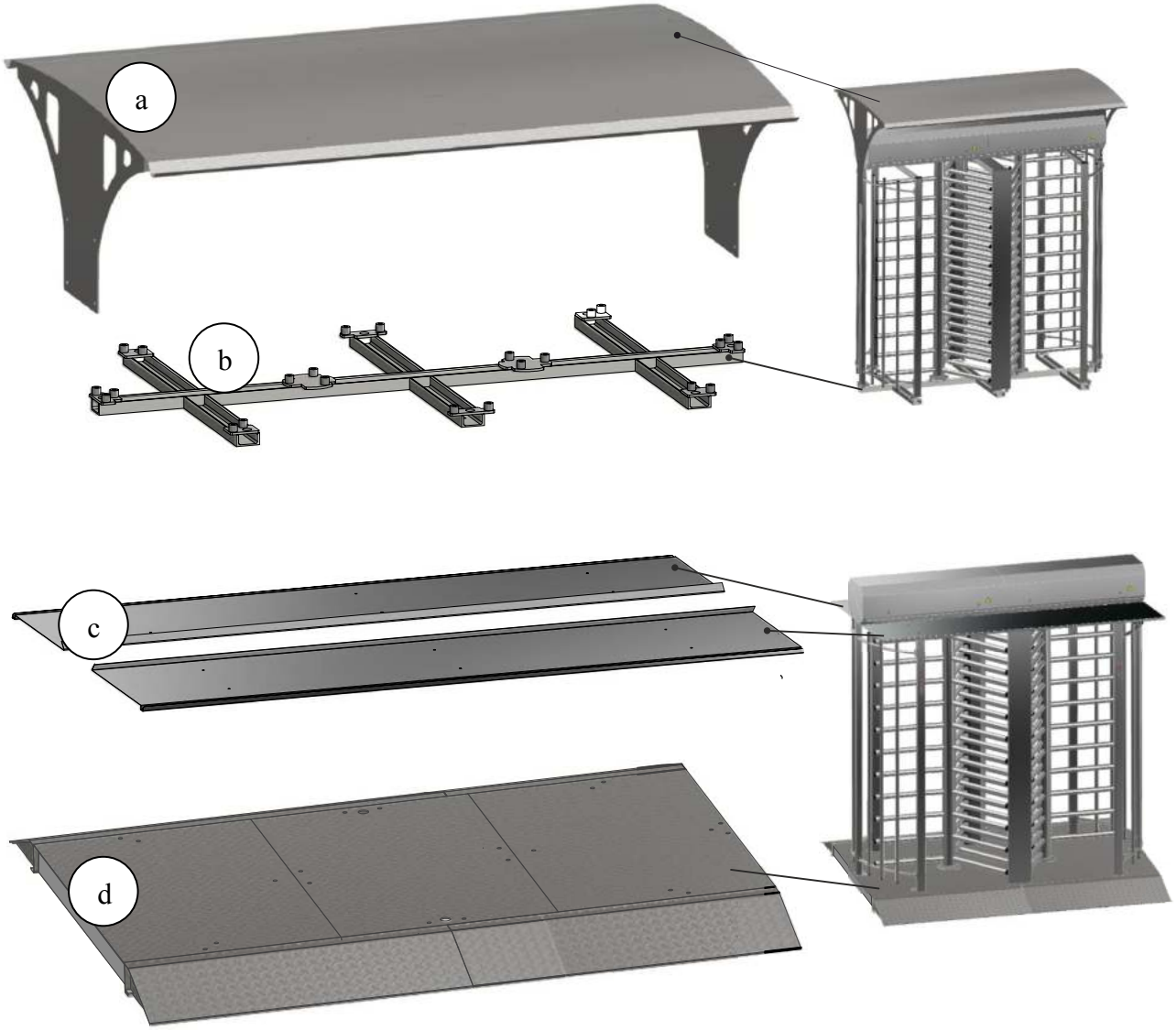


Fig.13 – Using of additional components of the "SESAME TWIN-L" full-height turnstile structure

6) Installation of proximity card reader upon the availability of Access Control System (ACS)

- Holes *(*3) to be made in the access way wall butt (See Figure 14) next to LED display according to the card reader size chosen by the customer. Cable to be pulled to container, card reader *(2)* to be fixed on the rack and connected;
- LED display bracket *(1)* to be mounted (*g.11,b*) in the access way wall, cable to be pulled to container, plate to be installed on LED display and fastened with screws;

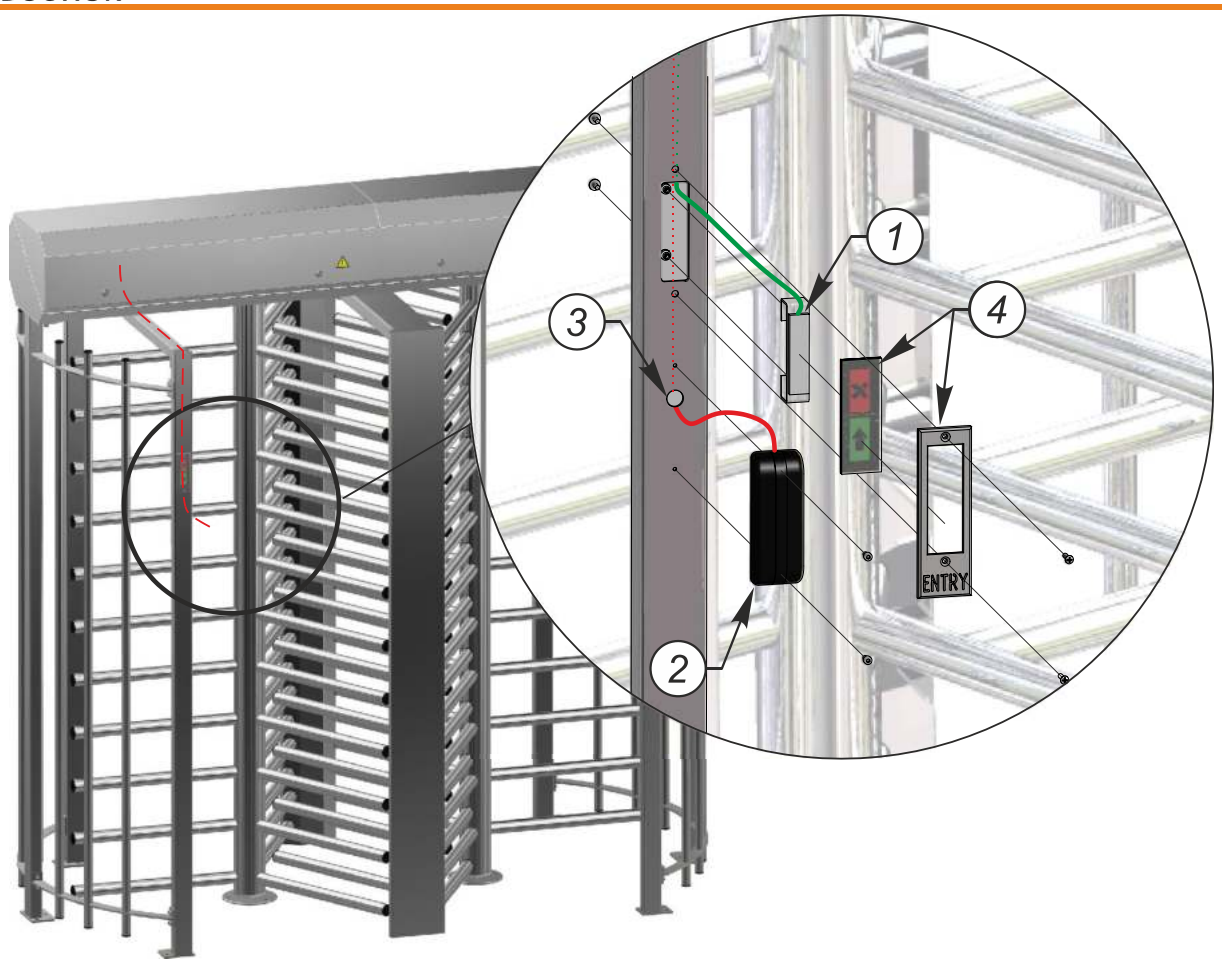


Fig. 14 - Installation of proximity card reader and LED display

WARNING:
Upon the availability of access control system (ACS) proximity card reader and LED display cables to be pulled prior to installation of container!

Turnstile connection (*See Figure 15*):

Make sure that the installed turnstile is stable and then both locks of mechanical release to be unlocked by keys and rotor revolving to be checked manually: **rotor should revolve smoothly on either side**.

Fixation of structure, final installation of minor components and electrical wiring to be performed according to the wiring diagram (See Annex C);

a) ~230 V power supply cable to be connected:

- Phase L to be connected to the circuit breaker ;
- Neutral (N) to be connected to terminal ~230V;
- Earth (PE) to be connected to earthing terminal (PE);

b) Control panel cable to be connected to terminals:

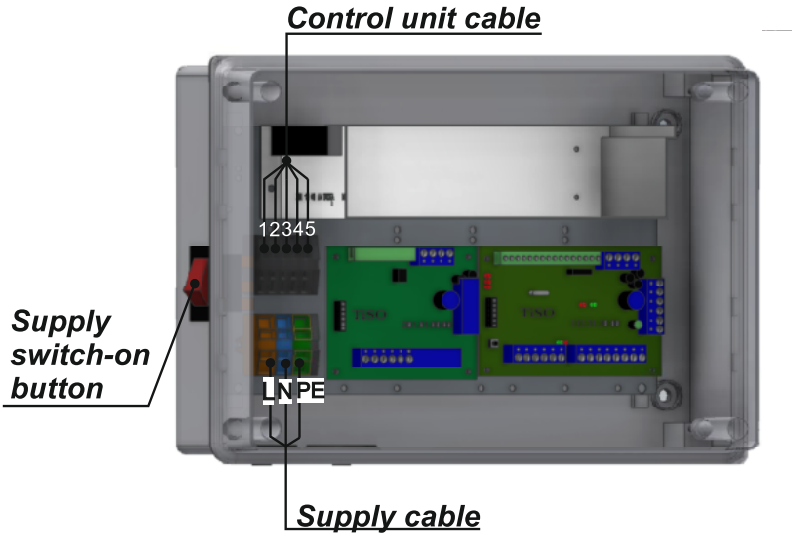


Fig.15 – Electronic control unit - turnstile connection

- **P** (Power) - control panel power supply +12V;
- **G** (GND) - common wire of control panel;
- **A** (RSA) – RSA wire of control panel link
- **B** (RSB) - RSB wire of control panel link;

c) The turnstile performance to be checked. 230 V supply voltage to be provided.

To start the product, it is necessary to apply AC mains voltage to the input of the uninterruptible power supply.

The turnstile performance verification from control panel (it is necessary to perform at least 3 consecutive accesses

WARNING:
The turnstile performance verification from control panel (it is necessary to perform at least 3 consecutive accesses *(See Figure 16)* in either direction.

2.3 Preparation for use

2.3.1 Commissioning guide lines

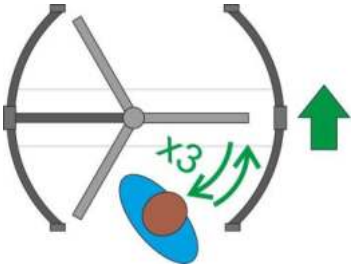


Fig.16 - Turnstile performance verification

Prior to the turnstile energization:

1) Make sure of proper connection and good condition of all connecting cables;

2) Clear the turnstile barrier rod turning area from foreign particles;

3) Verify by keys that locks of the turnstile mechanical release are closed (turnstile is mechanically locked.

When mains cable of power supply unit is connected to network of the turnstile control mechanism solenoids are energized; rotor is locked from rotation in both directions barring access.

The turnstile is set in the initial state: red cross is displayed for entry and exit (« × » is lit).

2.3.2. Required inspections

2.3.2.1 Then the turnstile is commissioned it is necessary to perform the inspections specified in Table 10. The wiring diagram according to Annex C and the control panel according to Annex B to be used during inspection.

Table 10

Operation Mode	*Mode Setting*	*LED display*	*Functional check*
			Rotor
1	*2*	*3*	*4*
1. Turnstile is closed in both directions (initial state)	–	Red LED is lit	Make sure that rotor can't be turned in neither direction
2. Single access in one direction	SINGLE button to be pushed for access in chosen direction ("A" or "B")	Green arrow of authorized single access is lit in chosen direction and red LED in opposite direction is lit	Make sure that rotor starts turning to 120º when it is gently pushed in authorized access direction and stops after it is turned to 120º. Rotor should not start turning independently
3. Single access in both directions	Both SINGLE buttons to be pushed for access in both directions ("A" and "B")	Green arrows of authorized single access in both directions are lit	Make sure that rotor starts turning when it is gently pushed in authorized access direction and stops after it is turned to 120º. Rotor should not start turning independently. To be rechecked for opposite direction
4. Free access in one direction	FREE button to be pushed for access in chosen direction ("A" or "B")	Green arrow of authorized free access is blinking in chosen direction and red LED is lit in opposite direction	Make sure that rotor turns to 120º in free access direction at every push and stops. Rotor should not start turning independently

Continued Table 10

1	2	3	4
5. Free access in both directions	Both FREE buttons to be pushed for access in both directions ("A" and "B")	Green arrows of authorized free access are lit in both directions	Make sure that rotor turns to 120º at every push in any direction and stops. Rotor should not start turning independently
6. Single access in one direction and free access in opposite direction	"SINGLE" button to be pushed for access in chosen direction («A» or «B») and FREE button to be pushed for access in opposite direction	Green arrow of authorized single access is lit in chosen direction and green arrow of authorized free access is blinking in opposite direction	Make sure that rotor can be turned to 120º in single access direction only once and it can be turned repeatedly in free access direction. Rotor should not start turning independently
7. Single access in one direction and locked access in opposite direction	SINGLE button to be pushed for access in chosen direction ("A" or "B") and LOCK button to be pushed to lock access in opposite direction	Green arrow of authorized single access is lit in chosen direction and red LED is lit in locked access direction	Make sure that rotor can be turned to 120º in single access direction only once and it can't be switched neither to "SINGLE" access mode nor "FREE" access mode in locked access direction
8. Free access in one direction and locked access in opposite direction	FREE button to be pushed for access in chosen direction ("A" or "B") and LOCK button to be pushed to lock access in opposite direction	Green arrow of authorized free access is lit in chosen direction and red LED is lit in locked access direction	Make sure that rotor can be turned to 120º repeatedly in free access direction and it can't be switched neither to "SINGLE" access mode nor "FREE" access mode in locked access direction
9. Locked access in one direction	LOCK button to be pushed to lock access in chosen direction ("A" or "B")*	Red LED of locked access in one chosen direction is blinking	Make sure that in locked direction rotor can't be switched neither to "SINGLE" access mode nor "FREE" access mode
10. Locked access in both directions	Both LOCK buttons to be pushed to lock access in both directions ("A" and "B")**	Red LED of locked access in both directions is blinking	Make sure that rotor can't be switched neither to "SINGLE" access mode nor "FREE" access mode in any direction
11. Activation of "panic" mode	PANIC button to be pushed and hold within at least 7 sec.	Green arrows of authorized free access in both directions are blinking	Turnstile rotor will be released in both directions

2.3.2.2 The turnstile is ready for long-term operation.

2.4. Emergency actions

For emergency human escape (in case of fire, acts of God etc.) and assurance of free access the turnstile to be released by issuing the relevant command from control panel (PANIC button to be held for more than 7 sec. or by sending signal to the relevant input (in1) of the turnstile controller. In case of the turnstile power supply failure the turnstile rotor is released in two directions automatically. After alarm or panic mode are deactivated from control panel, rotor is set to its initial position automatically. When power supply is ON and panic is deactivated, locking of barrier rods to checked manually.

In case of turnstile power failure, emergency mode (fail safe) will be activated and rotor will be unlocked in both directions automatically

3. MAINTENANCE

3.1 General guidelines

3.1.1 The turnstile commissioning and subsequent maintenance to be performed only by the staff to be in charge of the turnstile.

3.1.2 The turnstile to be serviced only by the staff having the relevant electrical safety qualification level according to the national requirements.

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

3.2 Safety Measures

3.2.1 During maintenance of the turnstile the relevant safety measures according to p. 2.1 to be observed.

IT IS FORBIDDEN:
TO USE DEFECTIVE APPLIANCES, TOOLS, FUSES, INSTRUMENTATION THE SERVICE LIFE OF WHICH EXPIRED

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

3.3 Maintenance procedure

3.3.1 The turnstile maintenance includes preventive measures which are taken according to the 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 operation or during operational timeout and includes visual inspection of the turnstile's housing and, if required, troubleshooting of mechanical damages, surface corrosion and contamination.

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

The means recommended for cleaning stainless steel products are given in *Table 11*.

3.3.3 Visual inspection of the turnstile body, control mechanism and other components for absence of corrosion, warps and other mechanical defects and pollutions;

- visual inspection of connecting, network and earthing cables condition;- verification of the turnstile performance during manual control in the modes specified in Table 10 or as part of ACS when pendants, identification cards are used;- verification of reliability of the turnstile screw joints and earthing connections - to be tightened, if applicable;- lubrication of all rubbing stop levers, wheel and pinion teeth of the turnstile control mechanism at least monthly with lubricant OKB-122-7 according to GOST 18179-72 or LITOL 24, Ciatim or engine oil.

Table 11- Periodic maintenance by technical staff

Component	*Period*	*Action*
Fixation screws	6 months	Checking/Tightening
Mechanical screws	6 months	Checking/Tightening
Actuator	12 months	Control
Controller	12 months	Checking + Cleaning
Sensors (position / speed / IR)	6 months	Checking + Cleaning
Cable joints and sockets	12 months	Control
Locking device	6 months	Checking + Cleaning

WARNING:
The turnstile not to be washed with water under pressure.
There are no user-serviceable parts inside the turnstile. Do not attempt to perform repair such as lubrication, component replacement and adjustment inside the device. All such work to be performed only by qualified technical personnel!

3.4 Cleaning the turnstile

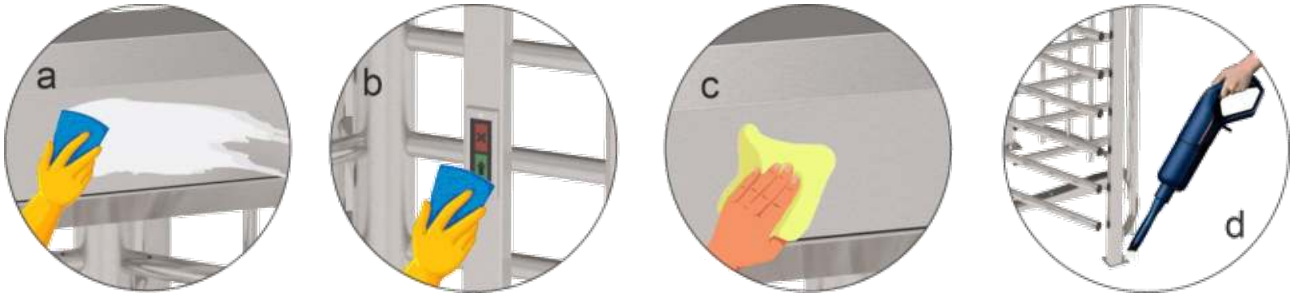
IT IS FORBIDDEN:

- **Do not wash the turnstile in direct sunlight.**
- **Do not wash the turnstile with water under pressure.**
- **Do not use hot water, detergents, highly alkaline or caustic cleaning ingredients or solvents, specifically those containing hydroxide. Avoid exposure to soaps and chemicals above pH 13. Damage caused by improper washing is not covered by the warranty..**
- **Avoid using tight-napped or rough cloths. A high-quality microfiber cleaning cloth is recommended**
- **Before washing the turnstile, make sure that the voltage is turned off.**
- **Do not allow water, cleaning agents or a damp cloth to pass onto the electrical control mechanism and parts of the turnstile.**
- **Polishes, abrasive cleaners, alcohol-based gel products (such as hand sanitizer) and harsh cloths can damage the finish on metal surfaces.**

1) MINIMUM WEEKLY CLEANING OF THE TURNSTILE

It is recommended that a minimum weekly cleaning of the turnstile be performed to assure proper operation and optimal function.

a. Clean exterior finish with a damp cotton cloth. Do not spray directly on the turnstile
b. Clean the card reader surface and the illumination of the turnstile passage
c. Dry the surface of the turnstile with a dry, cotton cloth.
d. Clean the floor around the turnstile with a vacuum to remove any debris and dust



2) REMOVING SURFACE CONTAMINATION ON THE STAINLESS STEEL TURNSTILE

The means recommended for cleaning stainless steel products are given in *Table 12*

Table 11

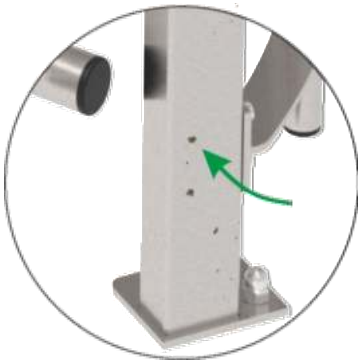
Name of means	*Manufacturer Company*	*Manufacturer country*
Spray for cleaning stainless steel products Stainless steel cleaner Polich	3M	Group of European companies
Cleaning fluid WellDone	Well Done	Hungary
Emulsion SANO MULTI METAL	SANO	China
Foam Dr.BECKMANN	Dr.Beckmann	Germany
Emulsion Reinex Edelstahlreiniger	Reinex	Germany
Spray for cleaning Stainless steel cleaner	Onish	United Kingdom

CAUTION:

During operation of the turnstile, you may notice contamination on the surface of the stainless-steel body panels. These spots may appear as orange or brown rust. However, it is important to note that the turnstile is not rusting.

These spots are surface contamination caused by iron-containing environmental debris.

If you want to remove this surface contamination we recommend spot-cleaning the panels with Isopropyl Alcohol (IPA) wipes.



If ineffective, perform the following procedure:

1. Remove loose dust and debris from the vehicle surface using water, and a mild detergent if necessary;
2. Dry the turnstile with a clean microfiber towel;
3. While wearing gloves, apply a mild, citric acid cleaner with a sponge or microfiber cloth to evenly saturate the entire area of the stainless-steel panel. The citric acid binds to and dissolves the iron oxide in the contamination, which can then be removed from the stainless-steel panel.
4. Apply enough cleaner to cover the surface completely while minimizing dripping or pooling
5. Let rest for approximately 3 minutes, then:
   - **for a polished stainless steel turnstile remove** the cleaner using a blue Scotch-Brite and remove the surface contamination. **Clean in the direction of the grinding lines!**
   - for a polished stainless steel turnstile **remove** the cleaner using only with **a non-abrasive cloth** and remove the surface contamination**!**
6. Remove any residual cleaning solution with water and dry the panel with a microfiber cloth.

WARNING
Follow the citric acid cleaner manufacturer's instructions for proper use.

3) REMOVING SURFACE CONTAMINATION ON THE PAINTED TURNSTILE

To clean the painted turnstile, you need to use a clean and soft cloth or napkin so that they do not scratch the surface, otherwise the paint will lose its original appearance.

WARNING
Do not use cleaning materials with abrasive surfaces.
It is necessary to avoid strong mechanical impact on the painted surface, as this can lead to the appearance of scratches or chips, which, in turn, can cause metal corrosion

You need to wash the turnstile with a slightly damp, but not wet, cloth.
Excess water on the cloth must be squeezed out immediately
To clean everything, it is necessary to carry it along the part from top to bottom.
At the same time, painted parts should not be rubbed in one place for a long time so that the paint does not wear off It is better to wash painted surfaces several times, but without excessive effort, than to try to wipe everything at once.
And after cleaning, be sure to wipe with a dry and clean cloth or paper towels to remove the remaining moisture and detergent.

CAUTION:
If there are visible signs of damage to the coating, such as cracks, chips or peeling paint, these defects should be corrected immediately by cleaning the damaged area, applying a primer and repainting.

4. CURRENT REPAIR

4.1 General instructions

Minor malfunctions of the turnstile listed din *Table 13* are remedied by the customer. More complicated malfunctions are remedied by the manufacturer's representative.

ATTENTION:
INSPECTION, CLEANING, REPAIR ELEMENTS OF THE TOURNACE TO BE CARRIED OUT ONLY AFTER DISCONNECTING THE EQUIPMENT FROM ELECTRICAL NETWORK!

4.2 List of possible malfunctions

The list of possible malfunctions and ways of their elimination is given in *Table 13*

Table 13

Malfunction	*Cause of malfunction*	*Action*
1	*2*	*3*
The turnstile does not work when power on.	No AC power supplied to unit. Loose power cable Faulty power supply unit	Check the power supply switch Restore AC power. Connect power cable. Replace power supply unit
Rotor(arms) is free rotated when power is ON	Damaged wires No DC power +12V Faulty power supply unit Faulty The PCB.201.01.00.00	Check wires Check power supply unit Replace power supply unit Replace PCB.201.01.00.00
Rotor(arms) is not rotated	Faulty locking mechanism No communication between controllers (boards) The position sensor is set wrong The position sensor is faulty	Check connections and movement of latches Check the connectors and wires between controllers (boards) Adjust or replace the position sensor
Rotor(arms) is not locked	Faulty locking mechanism	Check and clean fault latches Adjust or replace the position sensor Check and clean the locking solenoids
Turnstile is not unlocked	Have no a communication between controllers The turnstile is not receiving an activation signal from the Access Control System.	Check the connectors and wires between controllers (boards) Check and clean fault latches Adjust or replace the position sensor Check and clean the locking solenoid Check that the access control system is properly connected to the Entry Accept terminal(s) on the controller board. Check that the access control system is providing a proper activation signal to PCB 112
The Control panel beeps "Communication"	The Control panel have no communication with the controller	Check the wires Check the control panel Check the controller Change the controller/ control panel
The Indication does not work	Have no a communication with the controller Damaged the wires The LED indicator is faulty	Check the wires Check the LED indicator Replace the faulty LED indicator
Rotor(arms) stays in half opened position.	The position sensor is set wrong The position sensor is faulty Jamming in the mechanism	Adjust the position sensor Replace the faulty position sensor Check the mechanism parts
The arms rotates slowly	Jamming in the mechanism The sensor of position/speed is set wrong	Check for rubbing and damages at the mechanism Check the rotor parts Adjust or replace the position sensor Check the wires
Rotor do not return to center (standby) position following a passage	Jamming in the mechanism The position sensor is set wrong The PCB.201.01.00.00 is faulty	Check for mechanical jamming and damages at the mechanism Check the mechanism parts Adjust or replace the position sensor Check the connectors and wires

Continued Table 13

1	2	3
Rotor gets stuck intermittently during rotation	Jamming in the mechanism The position sensor is set wrong The PCB.201.01.00.00 is faulty	Check for mechanical jamming and damages at the mechanism Check the mechanism parts Adjust or replace the position sensor Check the wires Check or replace PCB.201.01.00.00
Turnstile unlocks but motor does not work	The position sensor is set wrong The PCB.201.01.00.00 is faulty	Adjust or replace the position sensor Check and adjust the driving belt tension Check or replace PCB.201.01.00.00 Check or replace gear motor
Rotor keeps moving without stop at center (standby) position	The position sensor is set wrong Damaged wires between sensor and controller The position sensor is faulty	Adjust or replace the position sensor Check the connectors and wires

4.3 Procedure of the turnstile rotor zero position setting

"Sesame L" rotor initialization procedure

Initial setting of the rotor zero position at the first activation of the turnstile:

1) Turnstile to be deenergized;

2) Motor to be disconnected from PCB 201terminal: MOT1;

3) Rotor to be set in the required zero position (Fig.17-18);

4) The turnstile to be energized;

5) Zero position setting button on magnetic sensor board to be pushed and hold for at least 1 second, then to be released (make sure that the button pressure force does not bend the board);

6) After the button on the magnetic sensor board is released the zero position LED to be lit;

7) Presence of signals of rotation angle changing, speed and zero position on controller PCB 201 – terminals IN5, IN6, IN7, IN8 to be checked. During rotor opening and closing:

- IN5, IN6 – should exchange winks
- IN7 – is lit brightly if the rotor is not rotated or is rotated slowly. Brightness is decreased if rotor is rotated rapidly.
- IN8 – to be lit in just set zero position;

8) Turnstile to be deenergized;

9) Motor to be connected to PCB 201, terminals MOT1;

10) The turnstile to be energized;

11) Turnstile operation to be checked;

12) New zero position setting is completed;

Fig. 17 –Turnstile X-rotor in zero position

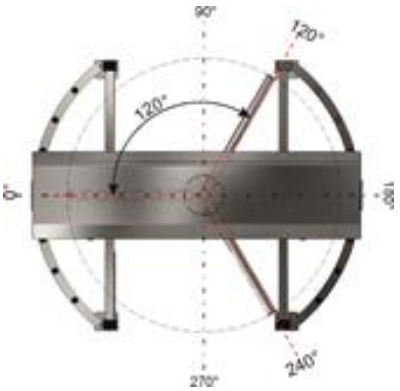
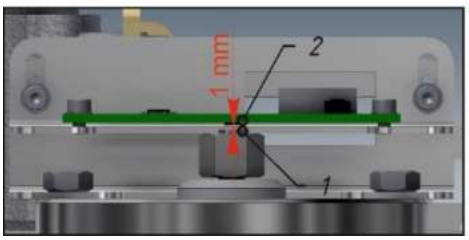
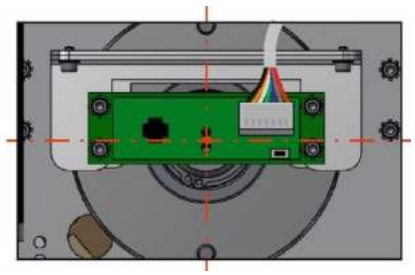


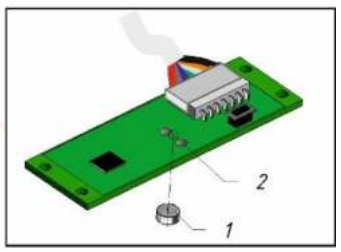
Fig. 18 –Turnstile Y-rotor in zero position



Gap between magnetic axis1 and magnetic sensor 2



Top view of the installed magnetic sensor



Layout of board over magnetic axis

Fig. 20 – Location of board PCB 730.01 over magnetic axis

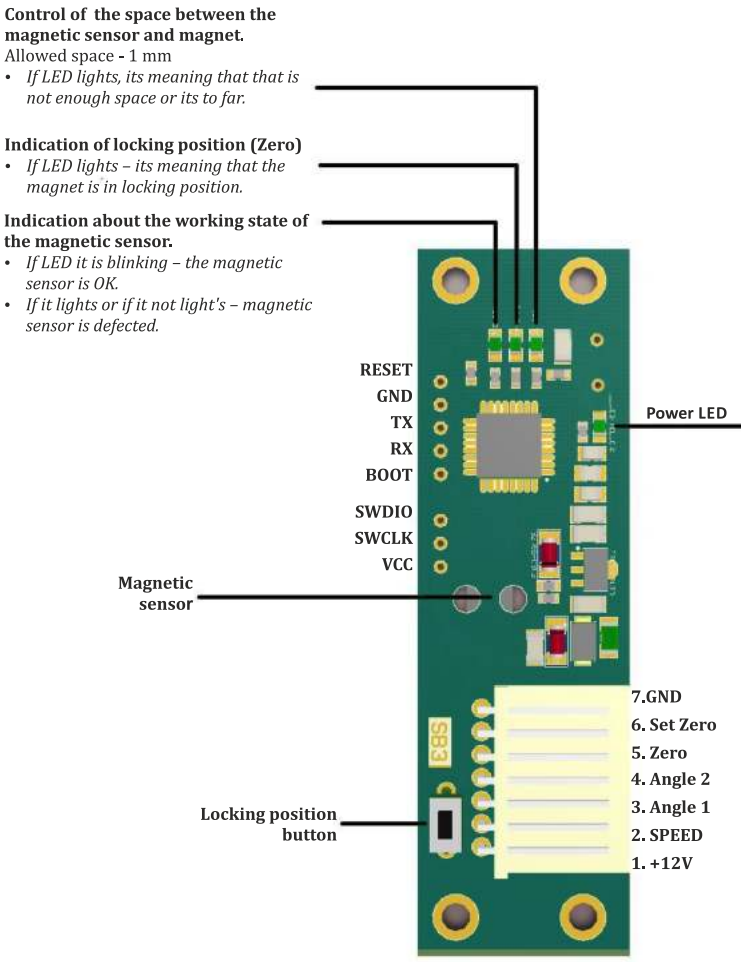


Fig. 19 – Magnetic sensor board PCB 730.01

4.4 Checking the product after repair

The turnstile is checked for operability with the help of the remote control after the repair according to *Table 10*

5. STORAGE AND TRANSPORTATION

5.1 Do not subject the product to sudden shocks or impacts during storage. You need to use transport trolleys to lift or move the product. There should be no corrosive gases and vapors that cause corrosion of the metal in storage rooms. Also, turnstiles should be stored on wooden or painted steel pallets or rubber mats and placed separately from other steel materials to avoid corrosion of stainless steel surfaces by dust, oil and rust

The temperature of the air during storage should not exceed the limits below plus 5 and above plus 40 °C and relative air humidity not more than 80% at a temperature of 20 °C. The room should be well ventilated.

5.2 Transportation of the turnstile in assembled form in accordance with the rules of transportation operating on each mode of transport is carried out:

- in railway or special containers;
- in covered cars;
- by water transport (in ship holds).

It is allowed to transport on open platforms. In this case, the container with the product must be covered with tarpaulin.

The ambient temperature during transportation should not exceed the limits below + 50 C and above + 50 °C.

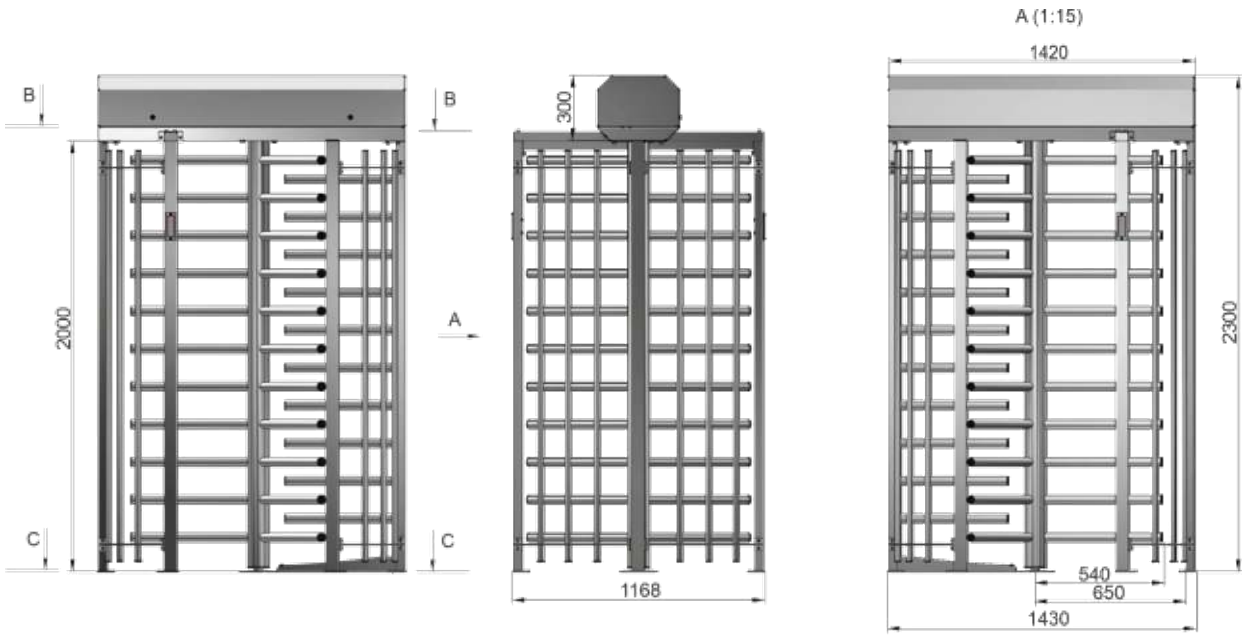
After transportation or storage of the turnstile at negative temperatures or high humidity of the air, the turnstile should be kept before startup without the original packaging for 12 hours in an enclosed space with normal climatic conditions:

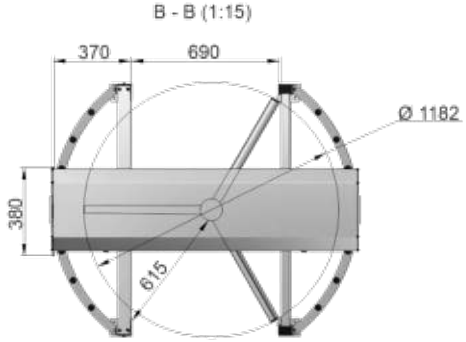
1) ambient temperature - from plus 15 to plus 35 ° C;
2) relative humidity - from 45 to 80%;
3) atmospheric pressure - from 84.0 to 106.7 kPa (630-800 mm Hg).

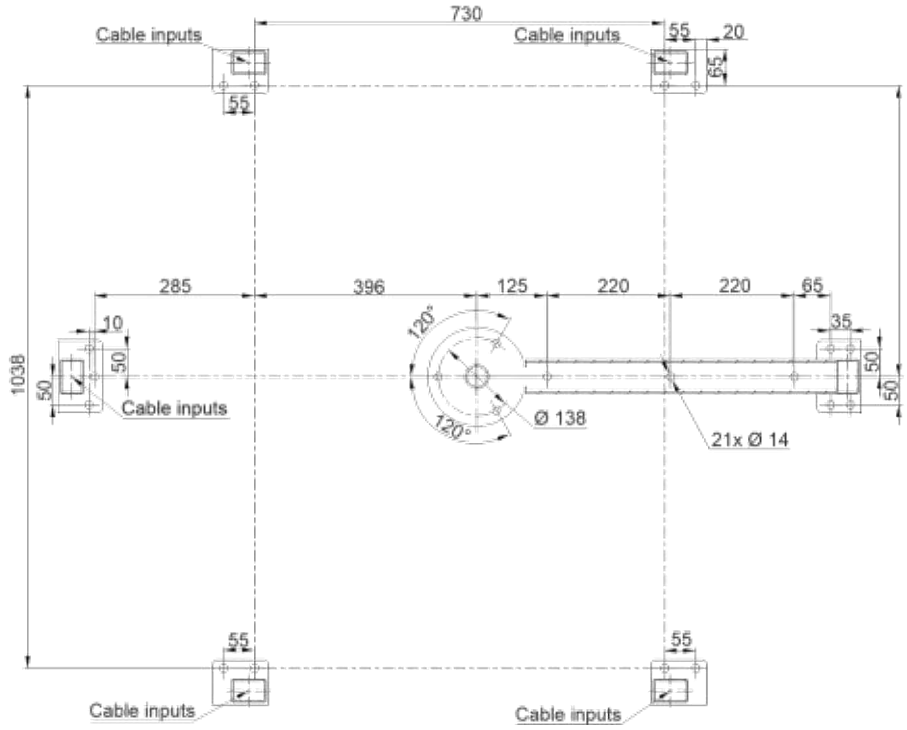
6. DISPOSAL CONSIDERATIONS

The turnstile does not contain in its structure materials that are hazardous to the environment and human health, and does not require special measures for its disposal.

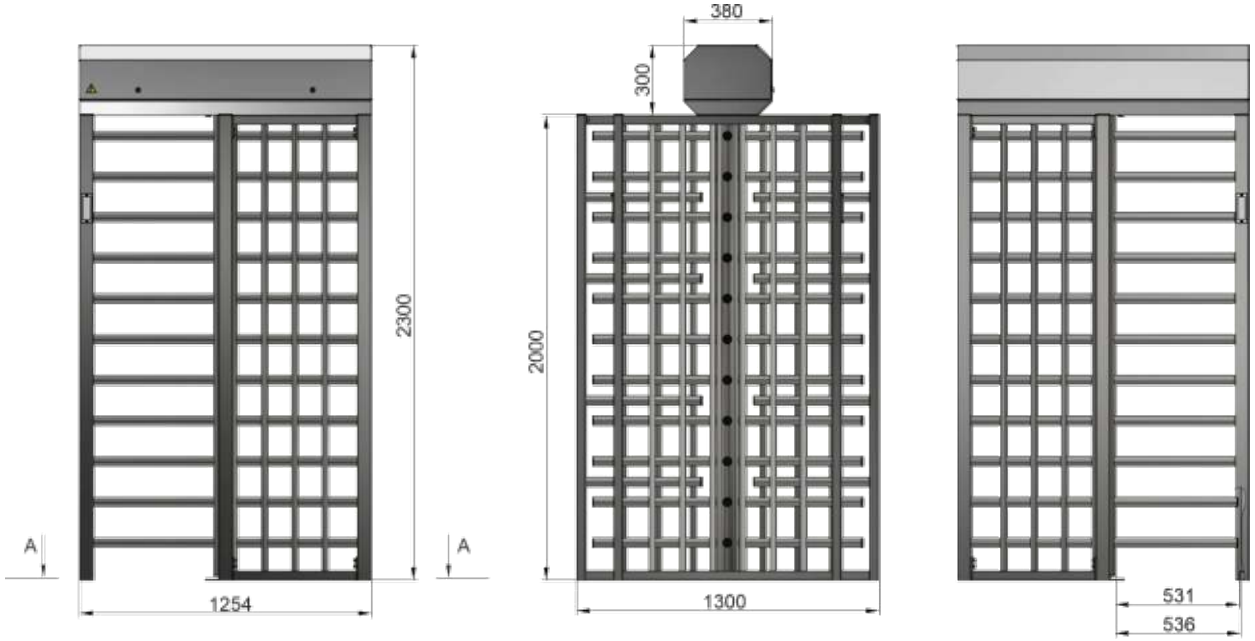
Annex A.1
(mandatory)
Overall and installation dimensions of the Single Full-Height Turnstile «Sesame-L» (Y–rotor) AUIA.425-10

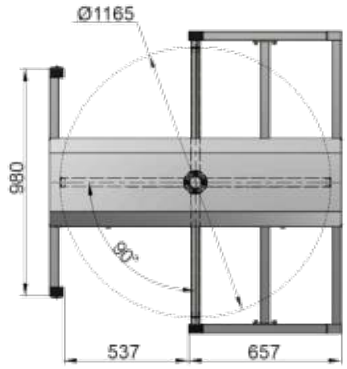




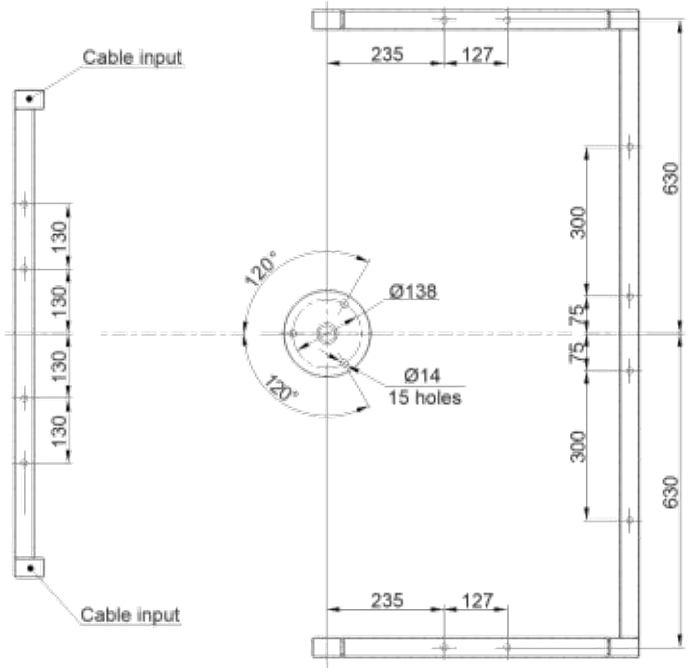


Annex A.2
Overall and installation dimensions of the Full-Height Turnstile
"Sesame-L" (X–rotor) AUIA.433-10

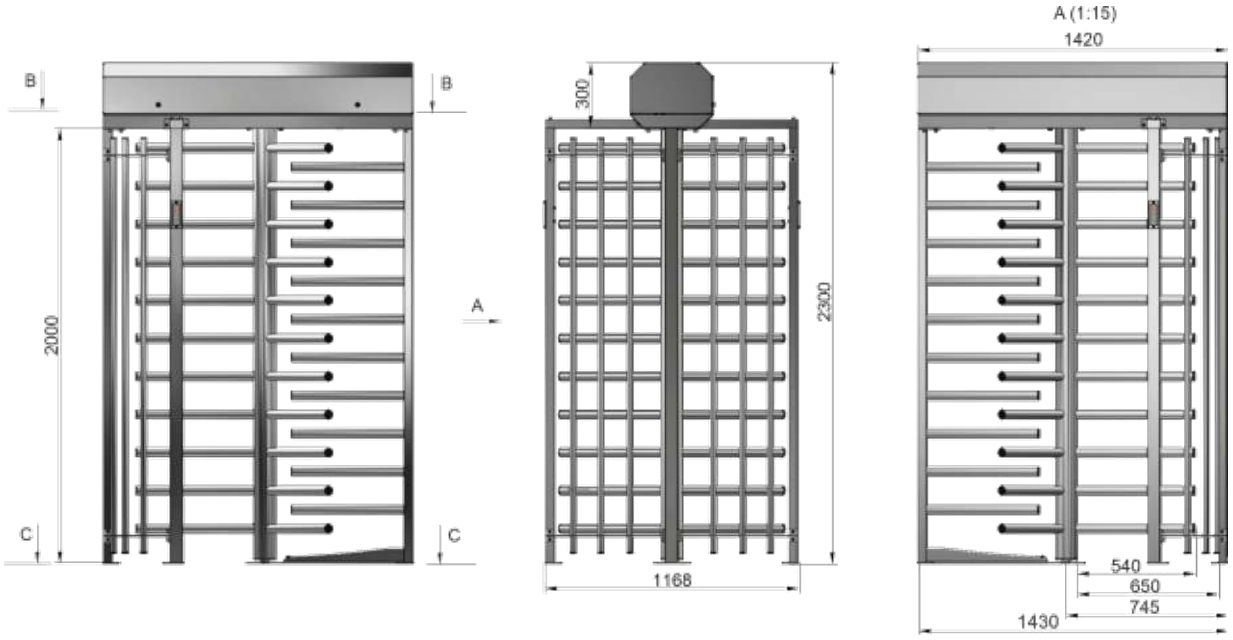


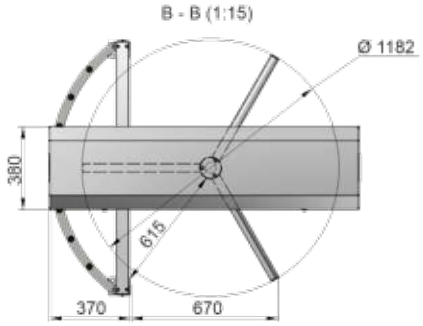


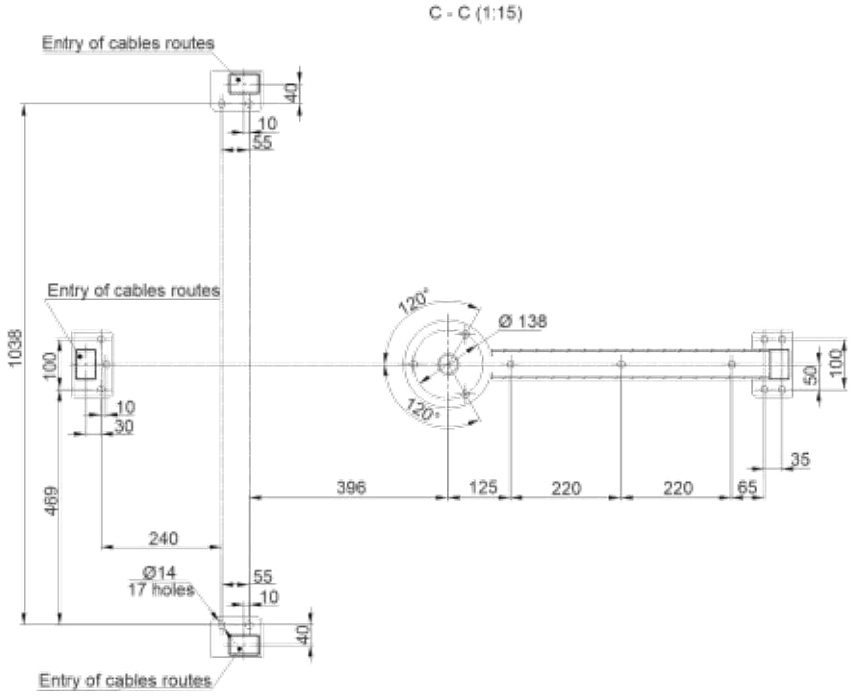
A - A



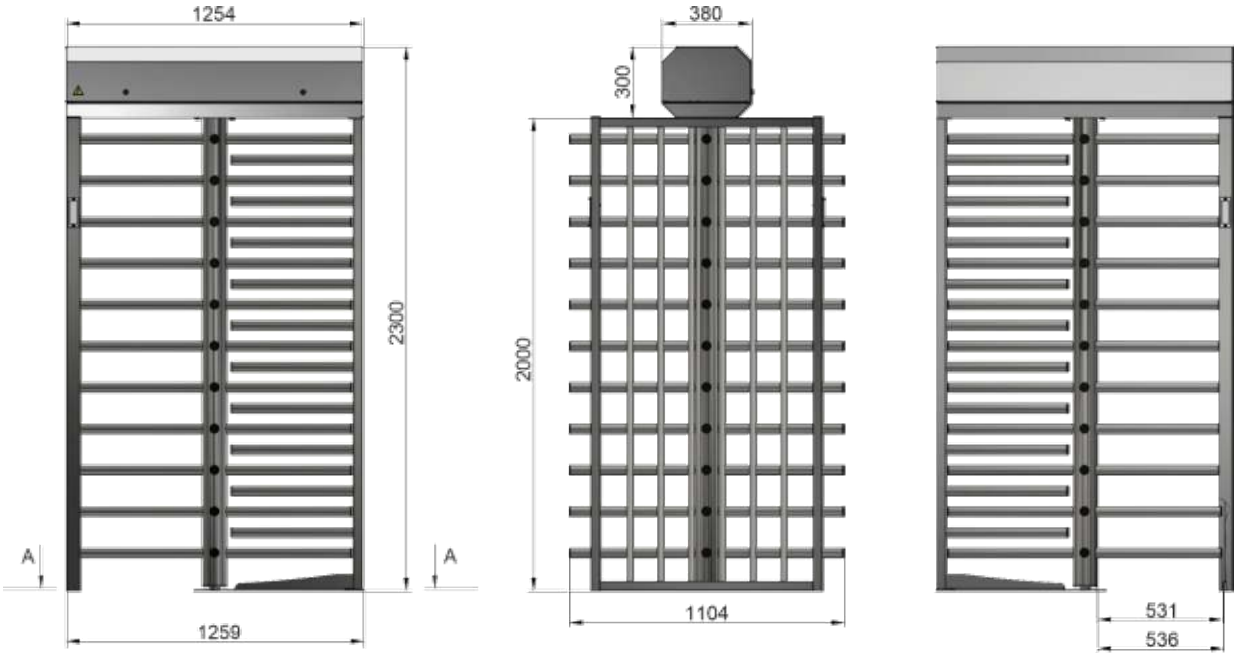
Annex A.3
Overall and installation dimensions of the Full-Height Turnstile
"Sesame Basic-L" (Y –rotor) AUIA.427-10

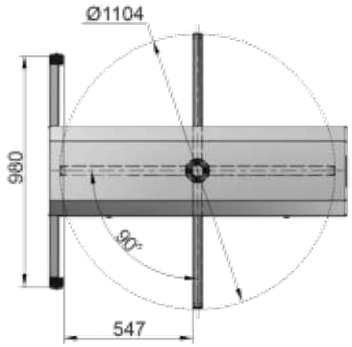




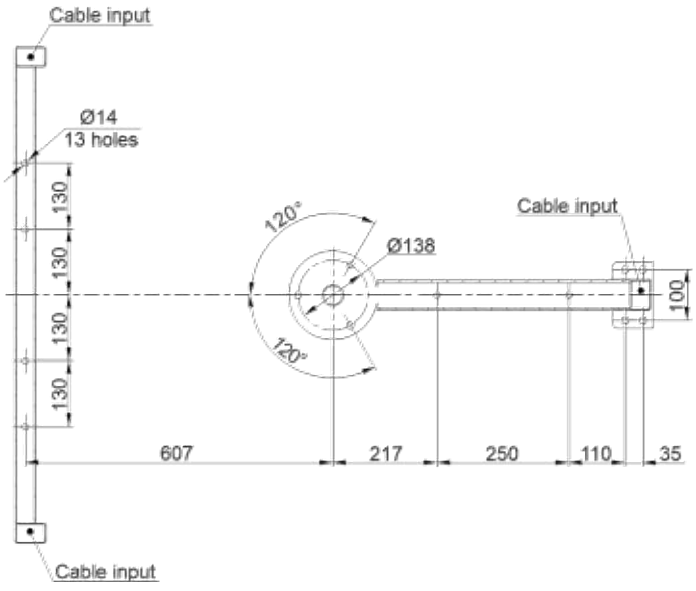


Annex A.4
Overall and installation dimensions of the Full-Height Turnstile
"Sesame Basic-L" (X –rotor) AUIA.434-10



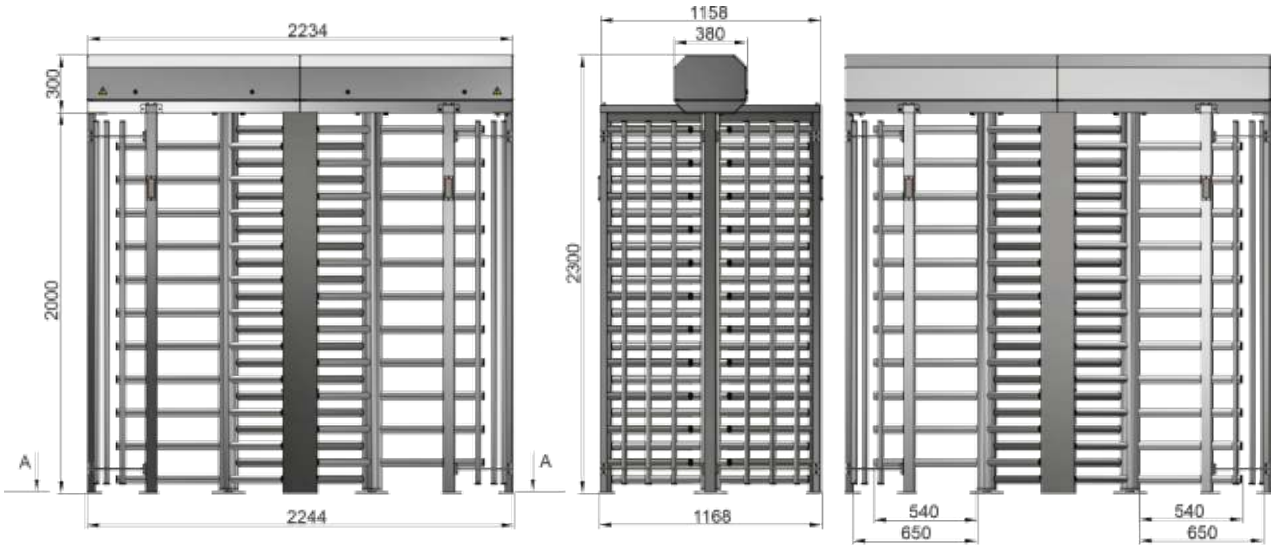


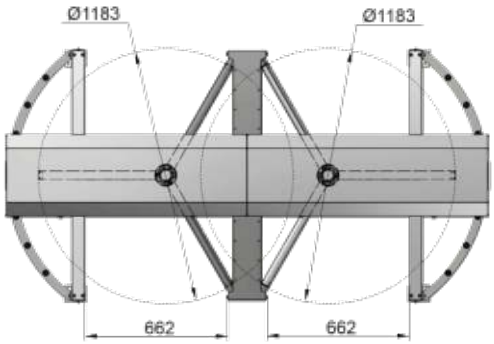
A - A



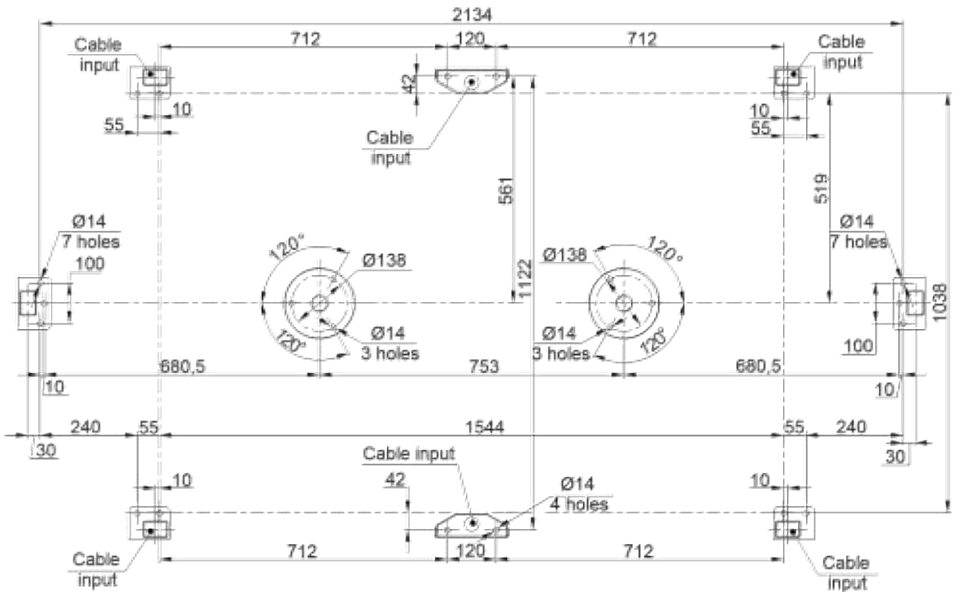
Annex A.5

Overall and installation dimensions of the Full-Height Turnstile "SESAME TWIN-L" (Y –rotor) AUIA.443-10



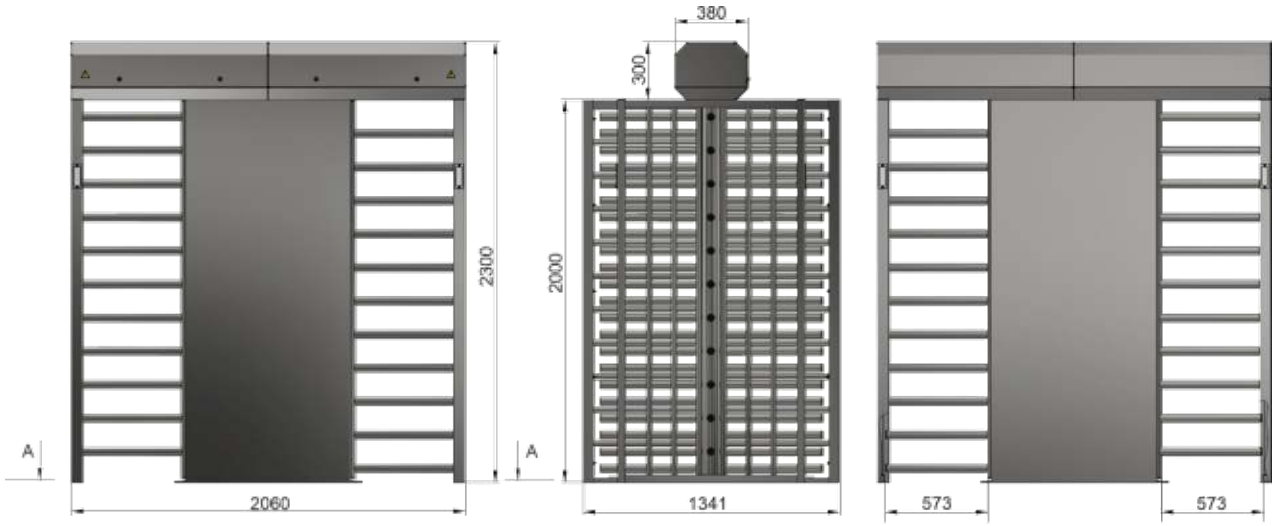


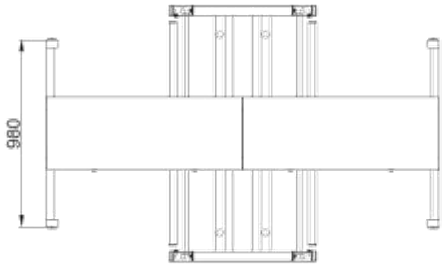
A - A

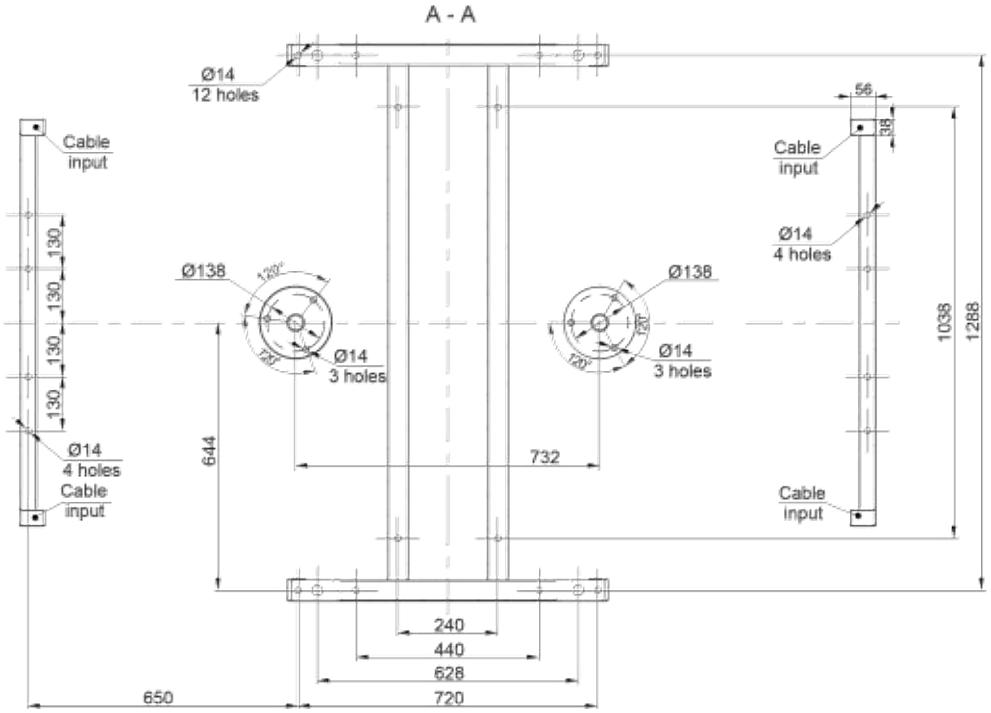


Annex A.6

Overall and installation dimensions of the Full-Height Turnstile "SESAME TWIN-L" (X –rotor) AUIA.432-10



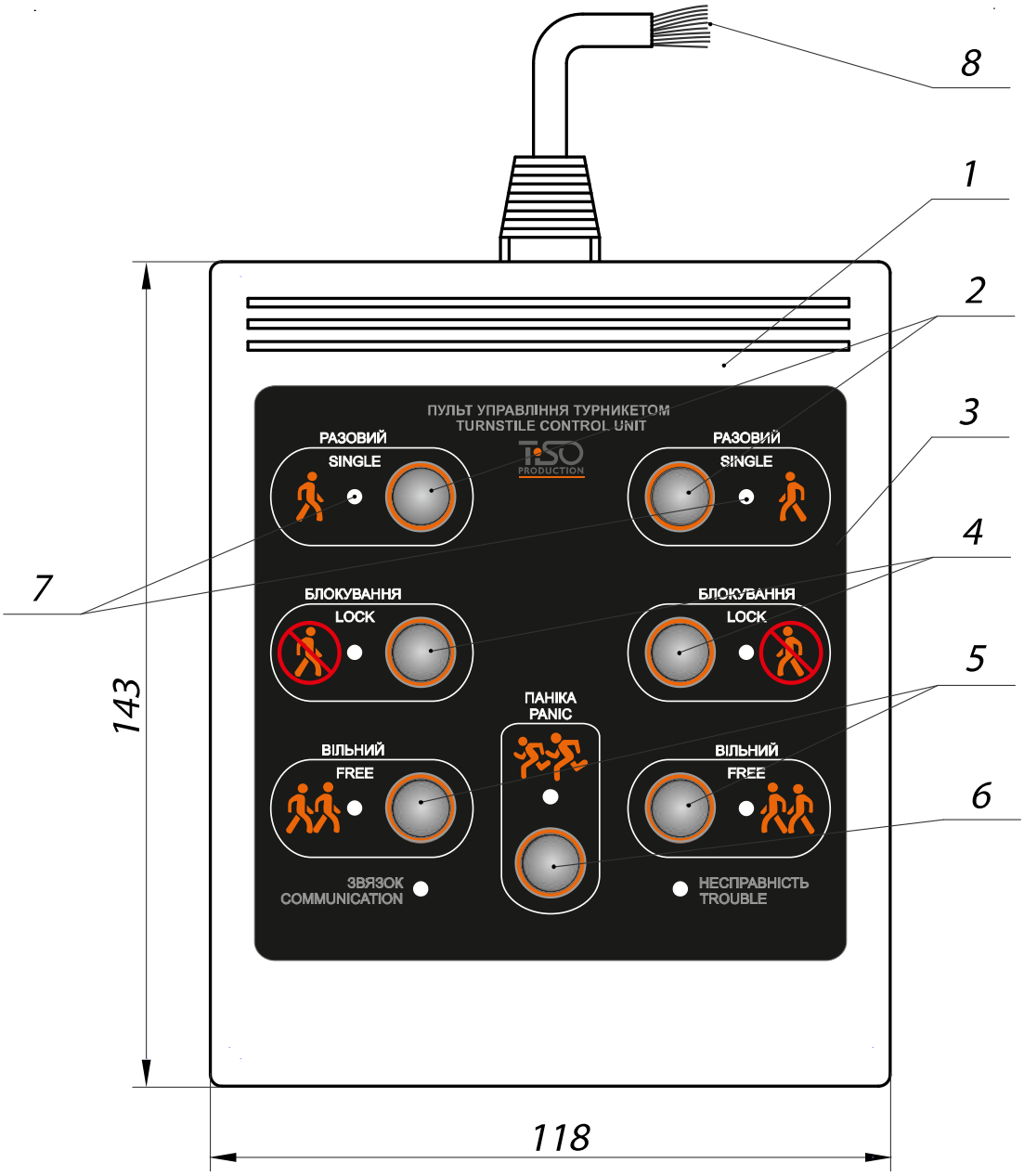




Annex B

(mandatory)

Control panel and connection diagram



1 – control panel body;
2 – "SINGLE ACCESS" mode control button
3 – front plate;
4 – "LOCK" mode control button;
5 – "FREE ACCESS" mode control button control button
6 – "PANIC" mode control button
7 – access direction LED display;
8 – controller connection terminals

Fig.B.1–Control panel AUIA.114.02.00.00

Annex C
(mandatory)
Wiring Diagram of the turnstile

Electrical Control Panel Wiring Sesame - L	Date 29.03.2019	Rev - 1.1

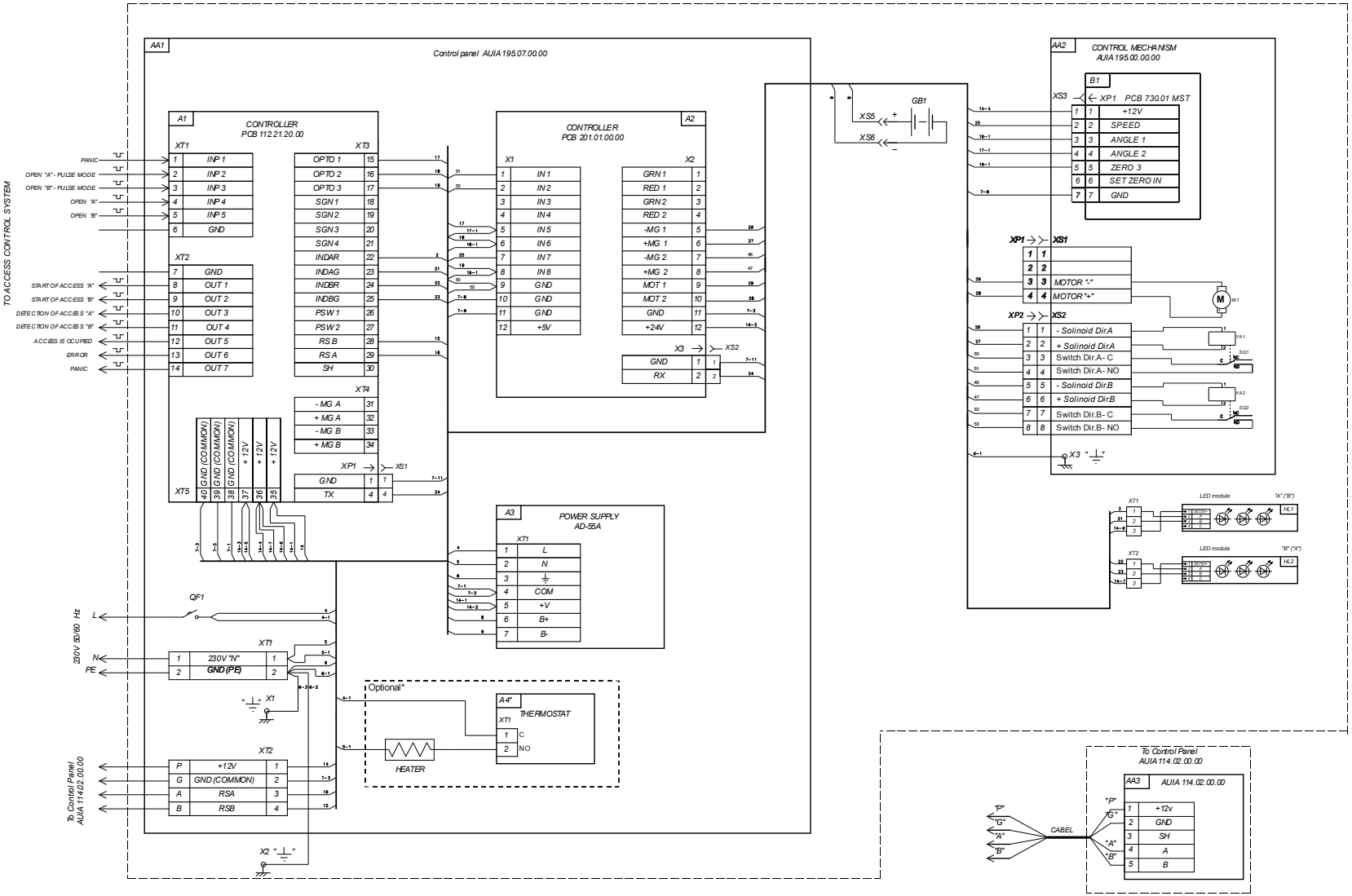
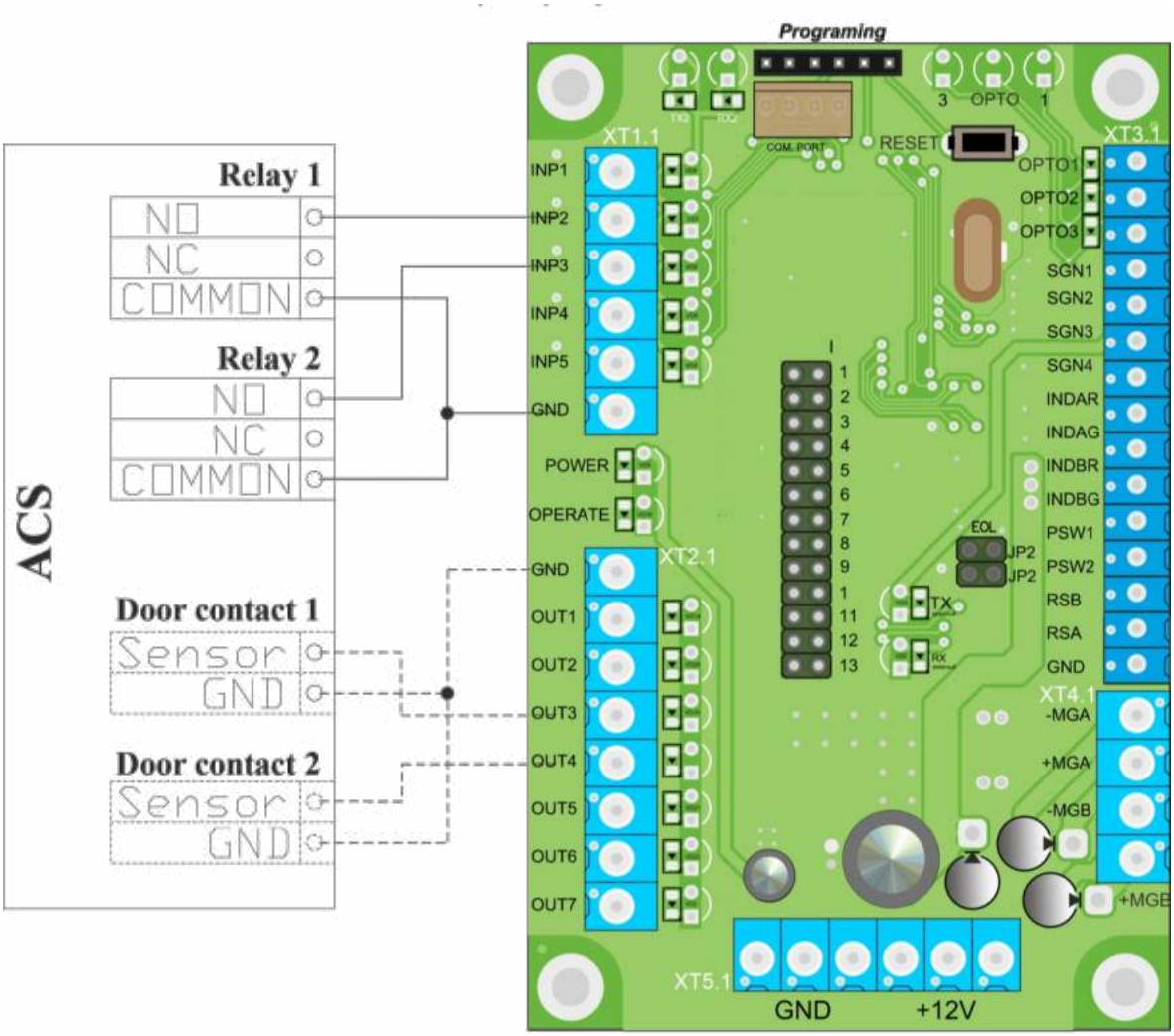


Fig. C.1 – Wiring Diagram of the Turnstile with servo drive

Annex D.1
(mandatory)
Wiring diagram of the turnstile connection to access control system (ACS) in pulse mode

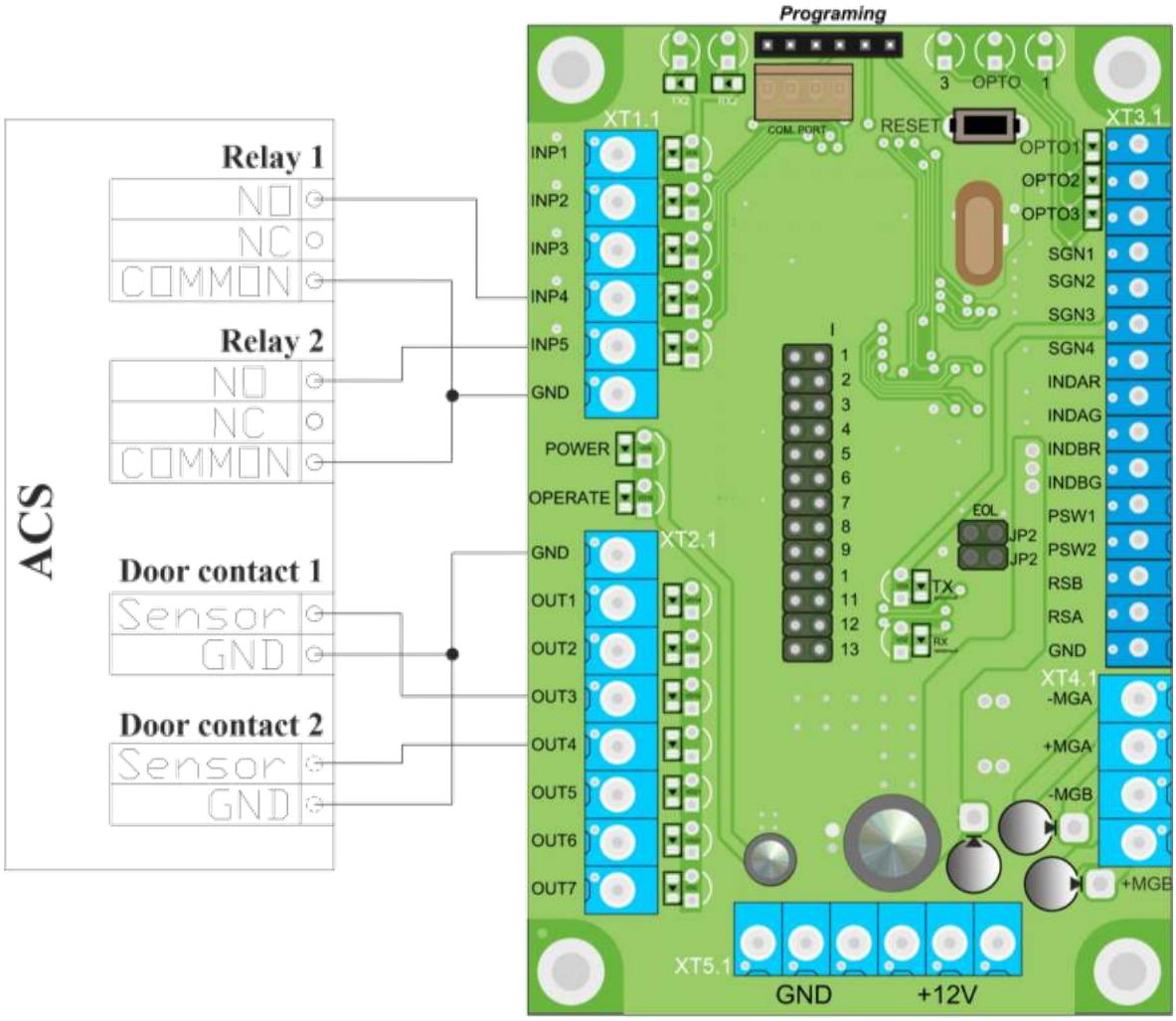


inp1 - "PANIC"
inp2 - "TO BE OPENED A" in pulse mode.
When command is issued entry is activated for 5 sec.
inp3 - "TO BE OPENED B" in pulse mode. When command is issued entry is activated for 5 sec.
GND- "-" of power supply (common wire)

out3 - "DETECTION OF ACCESS A"
out4 - "DETECTION OF ACCESS B"
} ***Signal is generated by controller when rotor is rotating from 64° to 120° in the relevant direction***

Figure D.1 – Wiring diagram of the turnstile connection to ACS

Annex D.2
(mandatory)
Wiring diagram of the turnstile connection to access control system (ACS) in hold mode

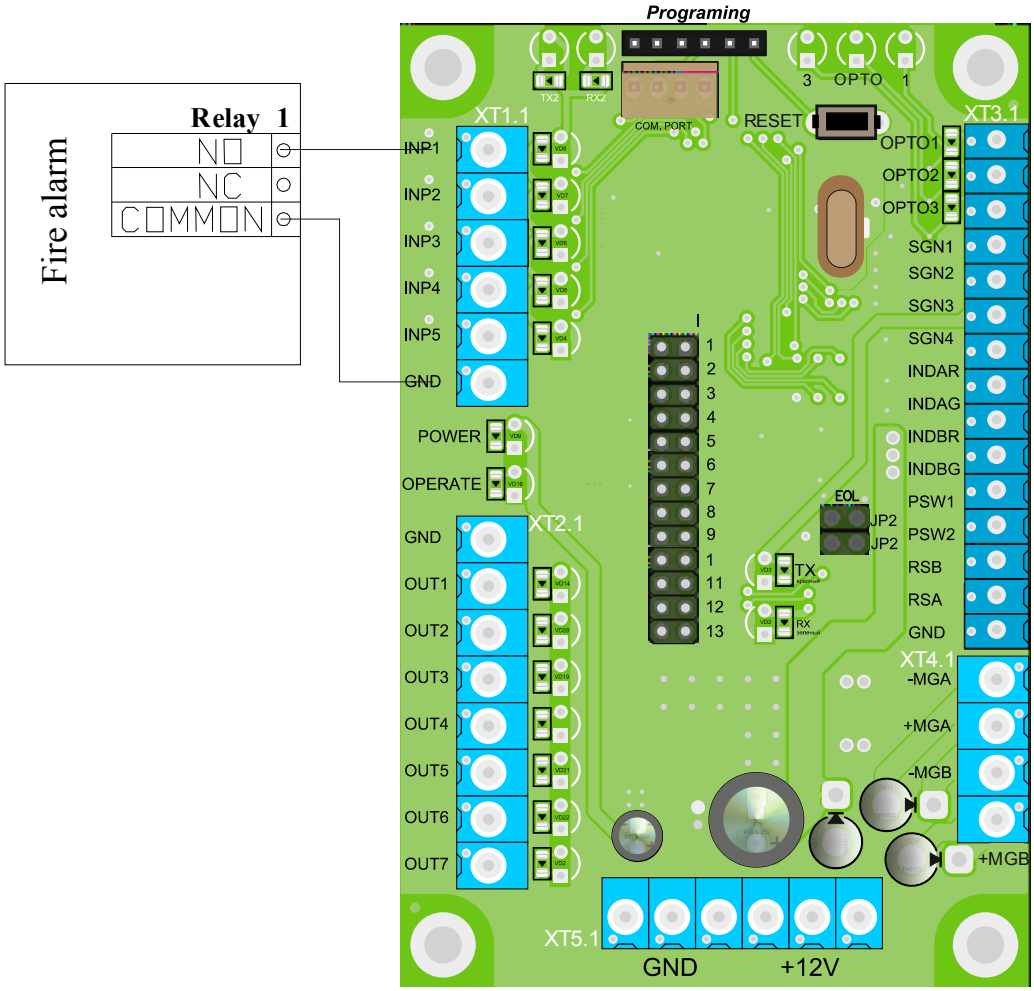


inp1 - "PANIC"
inp4 - "TO BE OPENED A". Entry is activated for the time of keeping in active state (hold mode)
inp5 - " TO BE OPENED B". Entry is activated for the time of keeping in active state (hold mode)
GND- "-" of power supply (common wire)

out3 - "DETECTION OF ACCESS A"
out4 - "DETECTION OF ACCESS B"
} ***Signal is generated by controller when rotor is rotating from 64° to 120° in the relevant direction***

Figure D.2 – Wiring diagram of the turnstile connection to ACS

Annex D.3
(mandatory)
Diagram of the turnstile connection to fire alarm (FA)



inp1 - "PANIC"
inp2 - "TO BE OPENED A" in pulse mode.
When command is issued entry is activated for 5 sec.
inp3 - "TO BE OPENED B" in pulse mode. When command is issued entry is activated for 5 sec.
inp4 - "TO BE OPENED A". Entry is activated for the time of keeping in active state
inp5 - " TO BE OPENED B". Entry is activated for the time of keeping in active state
GND- "-" of power supply (common wire)

out3 - "DETECTION OF ACCESS A"
out4 - "DETECTION OF ACCESS B"
Signal is generated by controller when rotor is rotating from 64° to 120° in the relevant direction

Figure D.3 – Wiring diagram of the turnstile connection to fire alarm system (FAS)

Annex D.4
(mandatory)
Wiring diagram of the turnstile connection to fire alarm system (FAS)

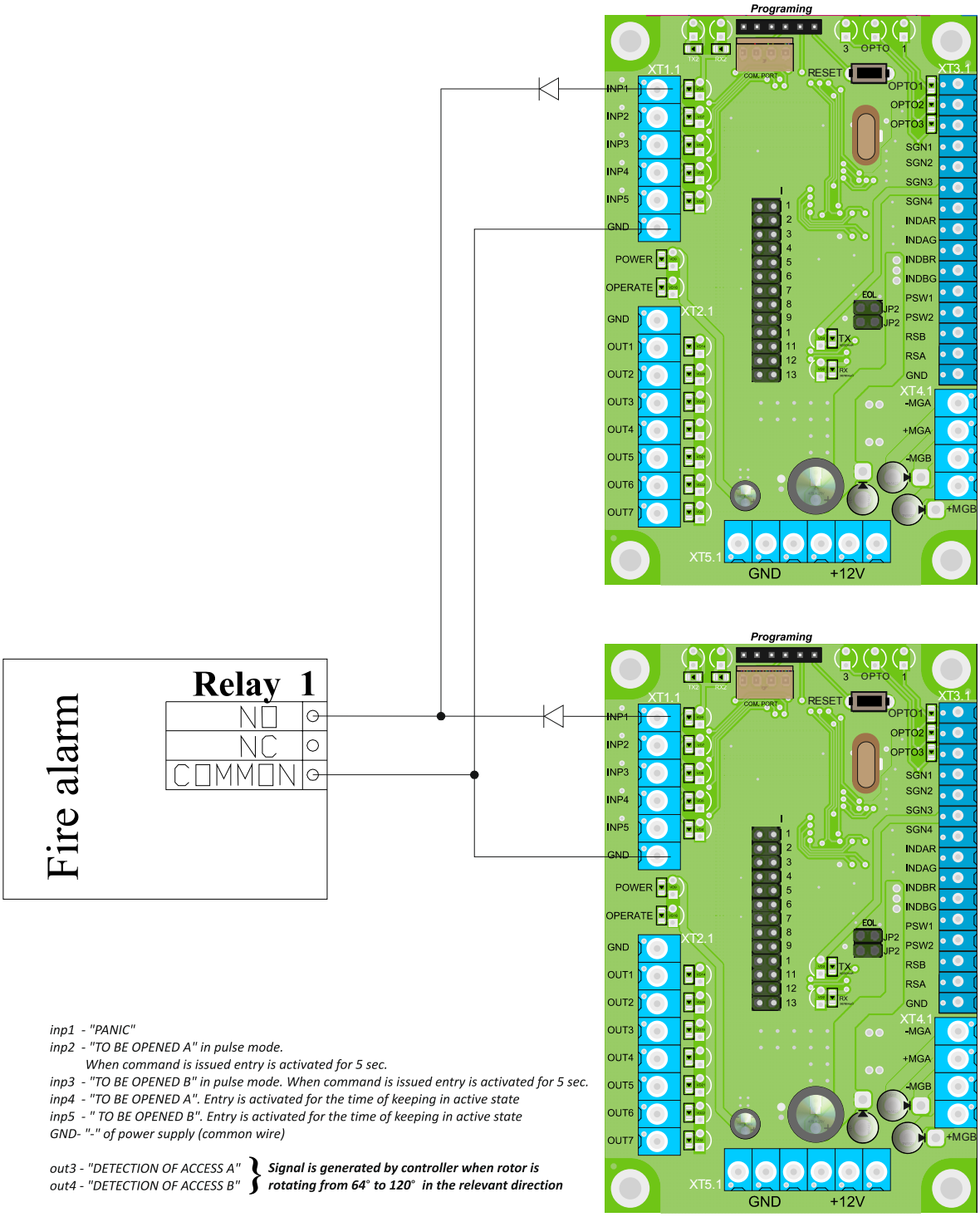


Figure D.4 – Wiring diagram of the turnstile connection to fire alarm system (FAS)

Annex D.5
(mandatory)
Wiring diagram of the turnstile connection to control panel

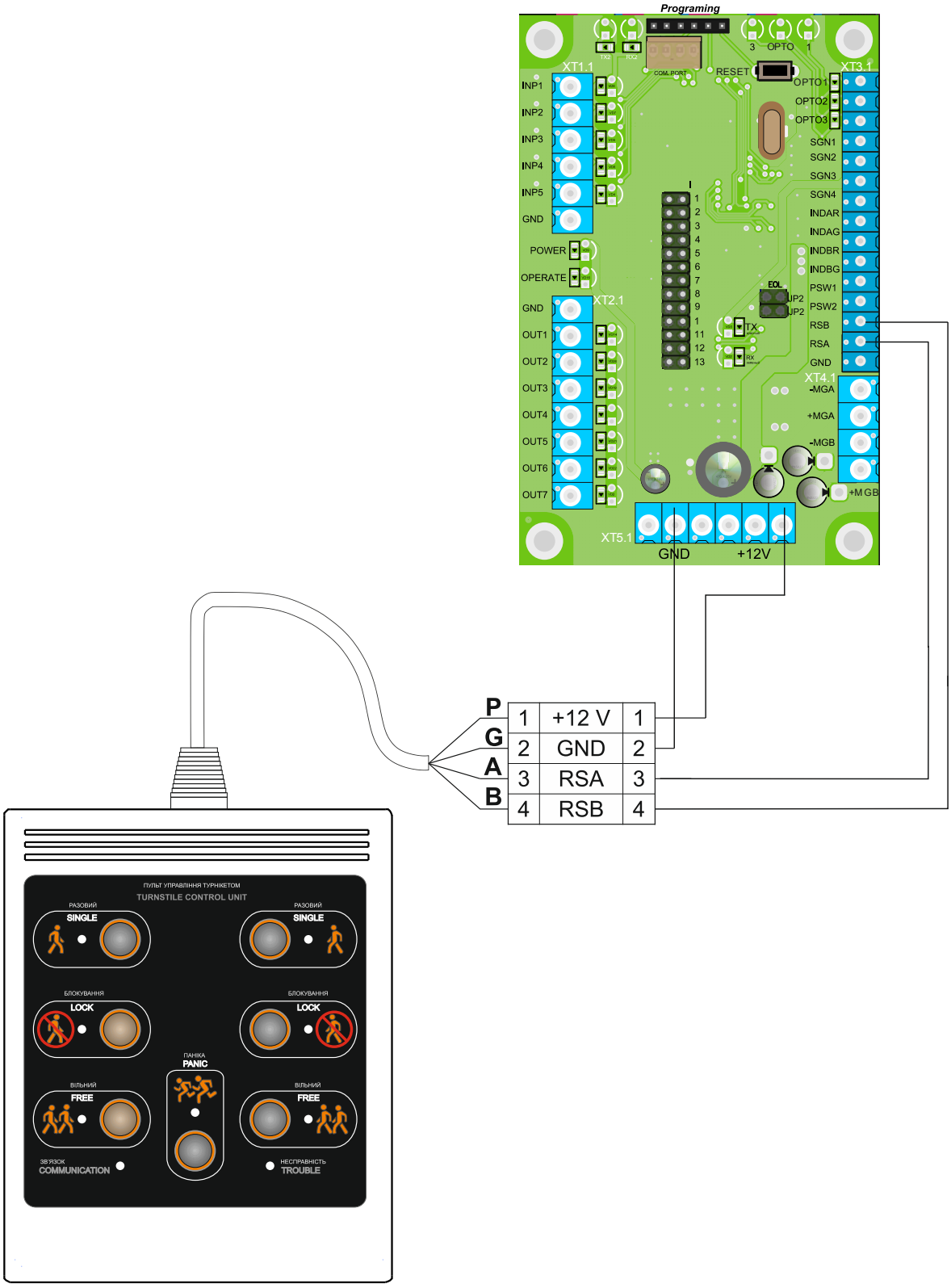


Figure D.5 – Wiring diagram of the turnstile connection to control panel

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Our equipment meets the requirements of European standards:
EN ISO 12100:2010, EN ISO 14118:2018, EN 60204-1:2018,
EN ISO 13857:2019, EN 61000-6-1:2007,
EN 61000-6-3:2007/A1:2011/AC:2012
and meets the requirements of the following EU Directives: 2014/30/EU;
2014/35/EU, 2006/42/ EC

The manufacturer's quality management system is certified according to the international standard ISO 9001:2015 - Certificate № UA 18 / 819942484.

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