VOZROZHDENIE LLC

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APPROVED BY

VZR.247800.001 LU

TURNSTILE
MODELCUBE C-03

VZR.247800.001IM

INSTALLATION MANUAL

36 sheets

2020

CONTENTS

This Installation Manual (IM) applies to Turnstile Oxgard CUBE C-03 and its variants (hereinafter referred to as the product).

Product firmware version:

FW v.d 4

IM defines rules and a procedure for installation and commissioning of the product.

Before installing the product, please read the Operation Manual VZR.247800.001 (OM) as well.

Due to constant work on improving the product, changes to its design may be made which are not represented in this version of product.

The following abbreviations are used in this document:

OM — Operation Manual;

IM — Installation Manual;

PSU - power supply unit;

CP - control panel;

ACS - access control system;

SFAS - security and fire alarm system;

NC - normally closed connection;

NO - normally open connection.

1 GENERAL PROVISIONS

For general safety when assembling and installing the product, take into account all the recommendations and instructions contained herein.

Before starting installation work, completely de-energize the product.

IT IS FORBIDDEN:

TO INSTALL THE POWER SUPPLY MODULE INSIDE THE BODY OF THE TURNSTILE AS IT MAY RESULT IN AN INJURY OF THE HUMAN BEINGS DUE TO AN ELECTRIC SHOCK.

INSTALL THE TURNSTILE OUTSIDE DRY AND HEATED ROOMS.

PREVENT OR ACCELERATE MOVEMENT OF THE TURNSTILE ARMS.

APPLY PASTES AND LIQUIDS CHEMICALLY AGGRESSIVE TO MATERIALS OF THE HOUSING WHEN CLEANING THE PRODUCT.

2 SAFETY PRECAUTIONS

Installation should be carried out with observance of "Regulations for Operation of Consumer Electrical Installations" and "Safety regulations for Operation of Consumer Electrical Installations".

The product should be installed by qualified personnel, trained to work with electrical devices, instructed on safety when working with electrical installations with voltages of up to 1000 V.

 **ATTENTION:** FAILURE TO COMPLY WITH THE SAFETY REQUIREMENTS SPECIFIED IN THIS SECTION CAN RESULT IN DEATH AND DAMAGE TO HEALTH, COMPLETE OR PARTIAL LOSS OF PERFORMANCE OF THE PRODUCT AND/OR AUXILIARY EQUIPMENT.

 **ATTENTION:** MANUFACTURER WAIVES ANY RESPONSIBILITY FOR DEATH AND DAMAGE TO HEALTH, COMPLETE OR PARTIAL LOSS OF PERFORMANCE OF THE PRODUCT AND/OR AUXILIARY EQUIPMENT IF USER FAILS TO COMPLY WITH THE SAFETY REQUIREMENTS SPECIFIED IN THIS SECTION, AND ALSO VOIDS THE PRODUCT WARRANTY.

3 PREPARING THE PRODUCT FOR INSTALLATION

3.1 Procedure for transporting the product to the installation site

The product in the original package can be transported without limiting the range by air, closed motor road and rail transport provided it is protected against direct exposure to precipitation and dust.

In order to avoid condensation of moisture after transportation at negative temperatures, the product should be held in a room with normal climatic conditions for 12 hours.

Loading and unloading operations should be carried out in compliance with safety regulations.

3.2 Rules for unpacking the product

3.2.1 Perform visual inspection of the packaging. There should not be visible damage on the package.

3.2.2 Open the transportation box, unpack and check completeness of the product:

1) turnstile post;
2) CP with cable;
3) base cover.

3.3 Rules for visual inspection of the product

3.3.1 Check completeness of the product.

Completeness should be checked according to the VZR.247800.001Logbook (LB).

3.3.2 Visually inspect the product. There should not be visible damage on the product.

3.3.3 If a damage is found, prepare a Claim Report.

3.3.4 Figure 1 –overall dimensions of the turnstile.

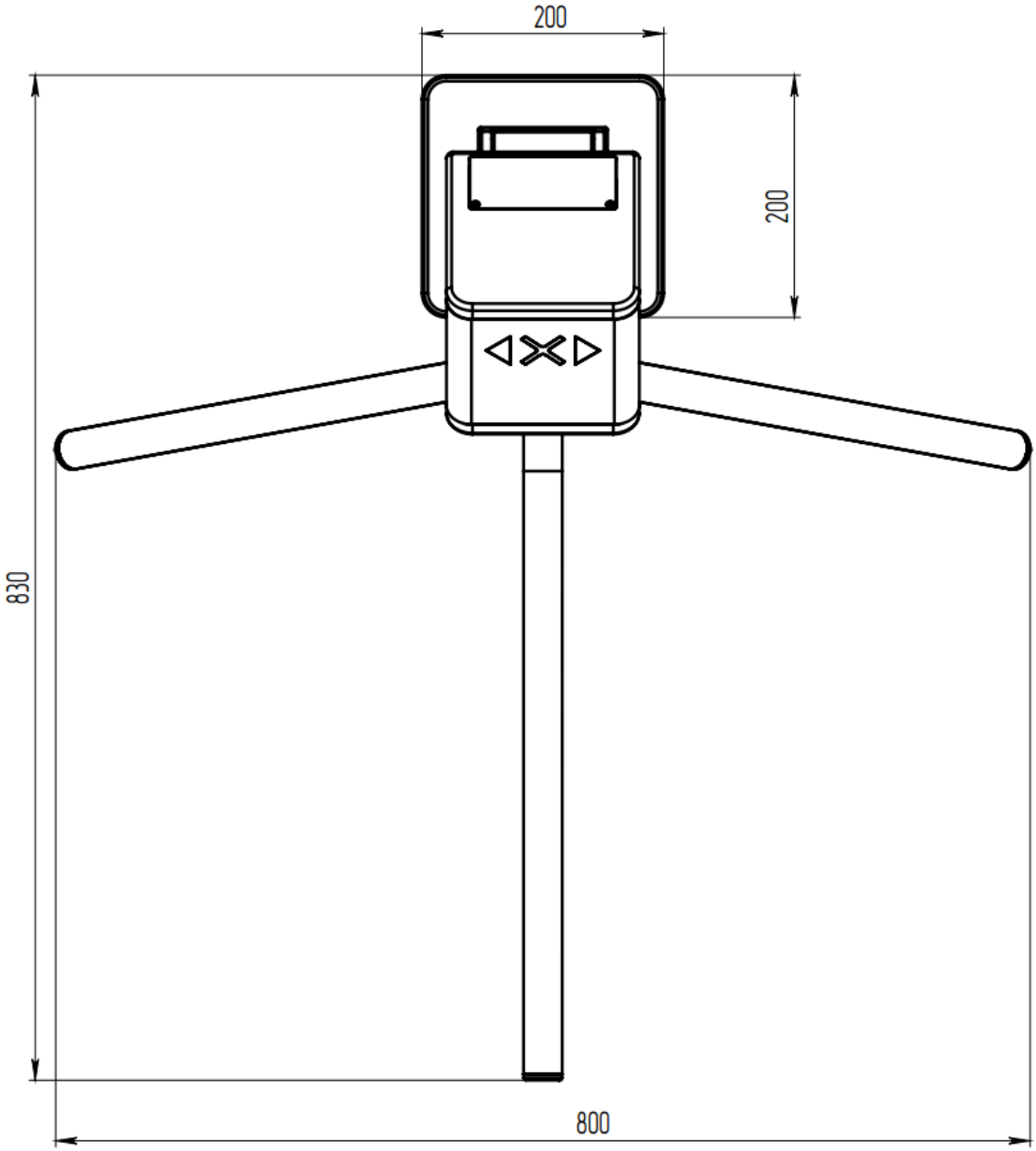


Figure 1 – Overall dimensions of the turnstile

3.4 Product installation site requirements

ATTENTION: TO AVOID WAVING AND/OR OVERTURNING DURING OPERATION, INSTALL THE PRODUCT SECURELY. IN CASE OF PRODUCT INSTALLATION ON LOW STRENGTH FLOOR - TAKE MEASURES FOR FLOORS STRENGTHENING IN THE PLACE OF INSTALLATION.

Figure 2 –when installing the turnstile, it is necessary to consider the possible free travel of the arm (it makes 6 degrees on each side in "STOP" mode).

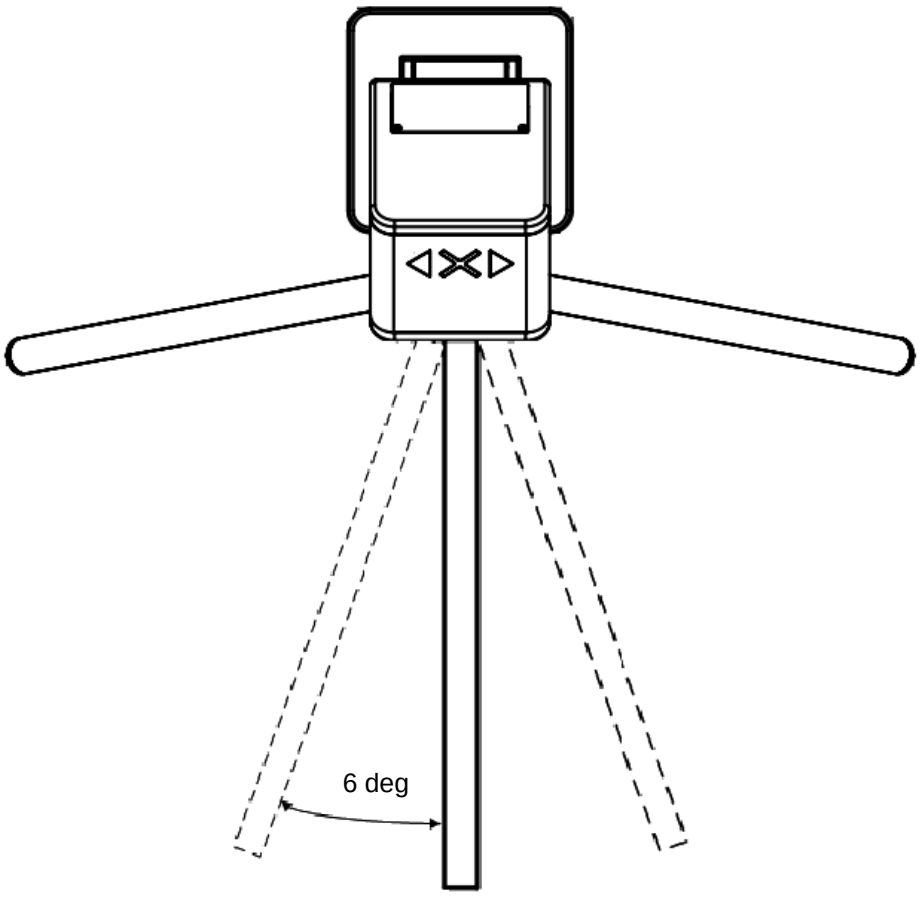


Figure 2 – Possible free travel of the arm in "STOP" mode

3.5 Procedure for checking compliance of the installation place

ATTENTION: THE PASSAGE ZONES SHALL BE ARRANGED TO ALLOW RECORDING OF PASSAGES DURING TURNSTILE OPERATION UNDER ACS CONTROL AND TO AVOID UNAUTHORIZED PASSAGES.

3.5.1 Figure 3 –turnstile passage zone arrangement and guidelines on product orientation.

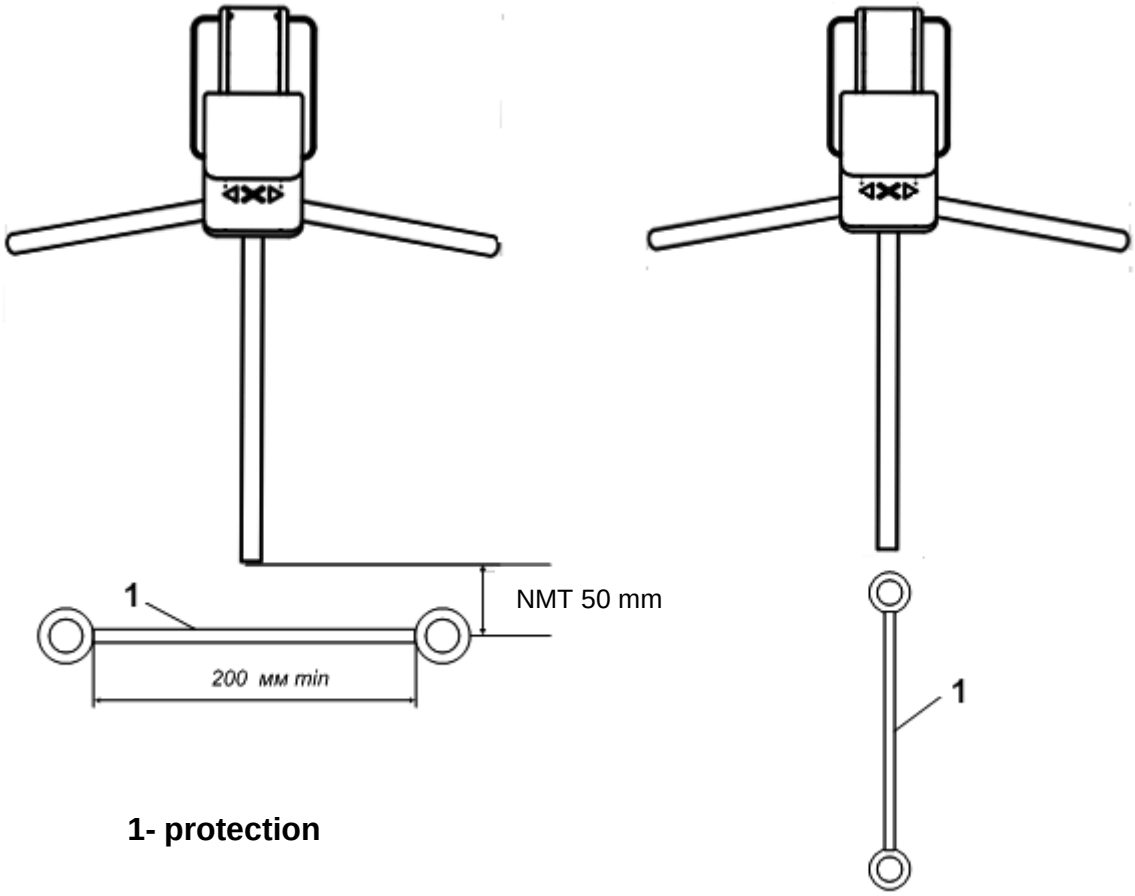


Figure 3 – Turnstile passage zone arrangement

4 INSTALLATION AND DISMANTLING OF THE PRODUCT

4.1 Equipment required

Equipment to be used for the turnstile installation:

1) electric perforating machine

2) 12 mm carbide drill bit for drilling anchor holes in the floor (we recommend to use the anchor with the screw of the FHII 12/15 SK type);

3) S5 key for the screws with an internal hexagon;

4) slot head screwdriver;

5) plumb or level;

6) steel shims for turnstile leveling;

7) round file;

8) side-cutting pliers.

4.2 Installing the product

ATTENTION: CAREFULLY READ THIS SECTION OF THE MANUAL BEFORE INSTALLING THE PRODUCT

4.2.1 Prepare a horizontal area at the product installation site.

4.2.2 Prepare a chase or cable conduit going from the site to the place of installation of the PSU, CP and, where necessary, to the ACS and SFAS connection point.

4.2.3 Turnstile installation site:

Figure 4 – prepare 3 holes (12 mm in diameter) in the floor for the turnstile stand anchors according to the installation dimensions.

Position of mounting holes relative to the external dimensions of the turnstile is shown in Appendix B.

The depth of the hole – 120 mm, should exceed the anchor length by 5 mm. Insert anchors into the holes.

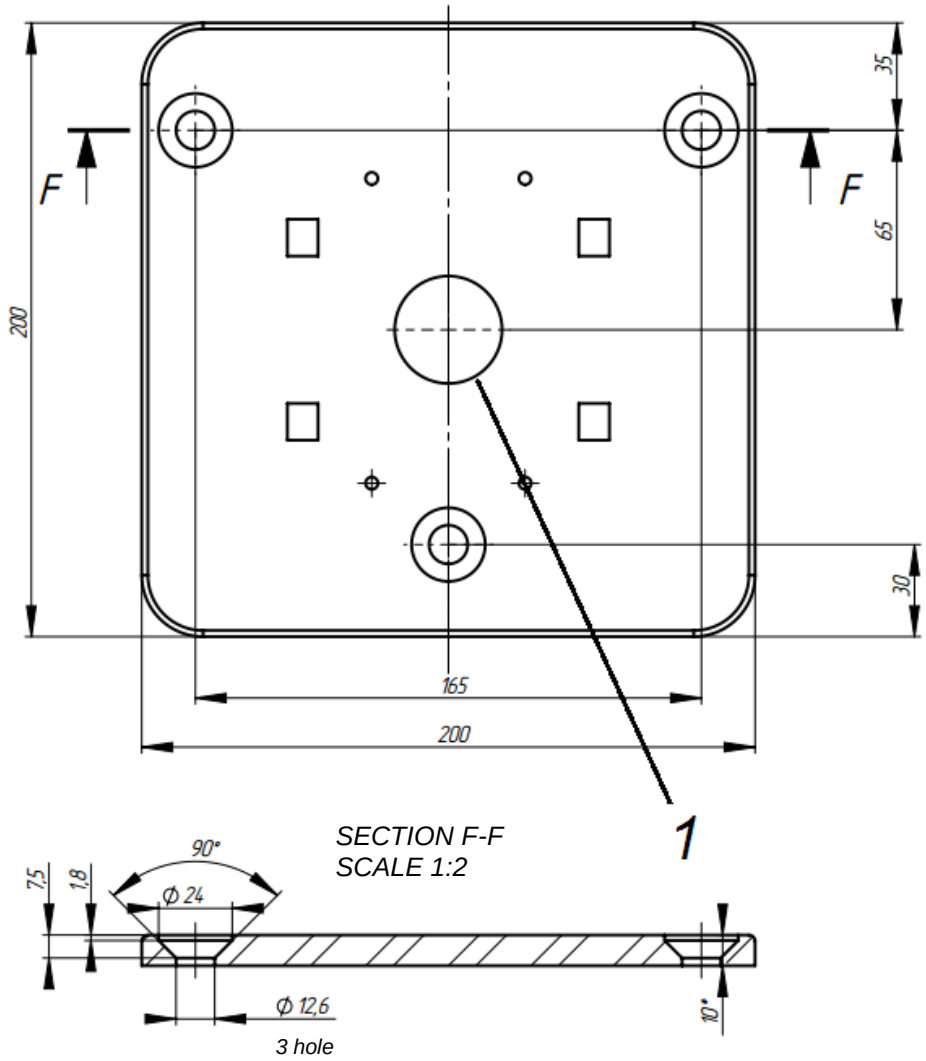


Figure 4 – Installation dimensions of the turnstile site

4.2.4 Figure 4 – cable routing is exercised through hole (1) at the lower turnstile stand plate.

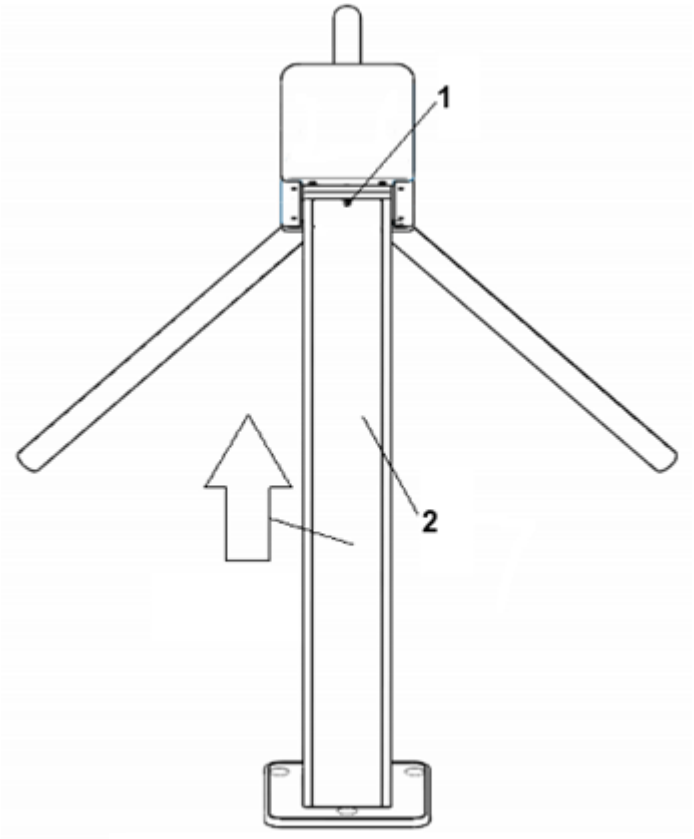
4.2.5 Lay the PU connection cable, PSU cable and, if provided, the ACS and OPS cables in the cable conduit or chase.

4.2.6 Install the turnstile stand onto the prepared site.

4.2.7 Route the cables from the CP, PSU and, if necessary, ACS and SFAS cables into the turnstile body.

Secure the cables with cable ties.

The turnstile stand has a removable stainless steel plate (2) for quick access to the place where control cables are laid down. To remove the plate, undo screw (1) and slide the plate up.



1 - screw; 2 - removable plate

Figure 5 – Dismounting of the removable plate of the turnstile stand

4.2.8 Align the holes in the turnstile stand with the floor anchors (Figure 6 – 1).

Check turnstile verticality in 2 planes, if necessary, use steel shims of required thickness for the turnstile correct installation.

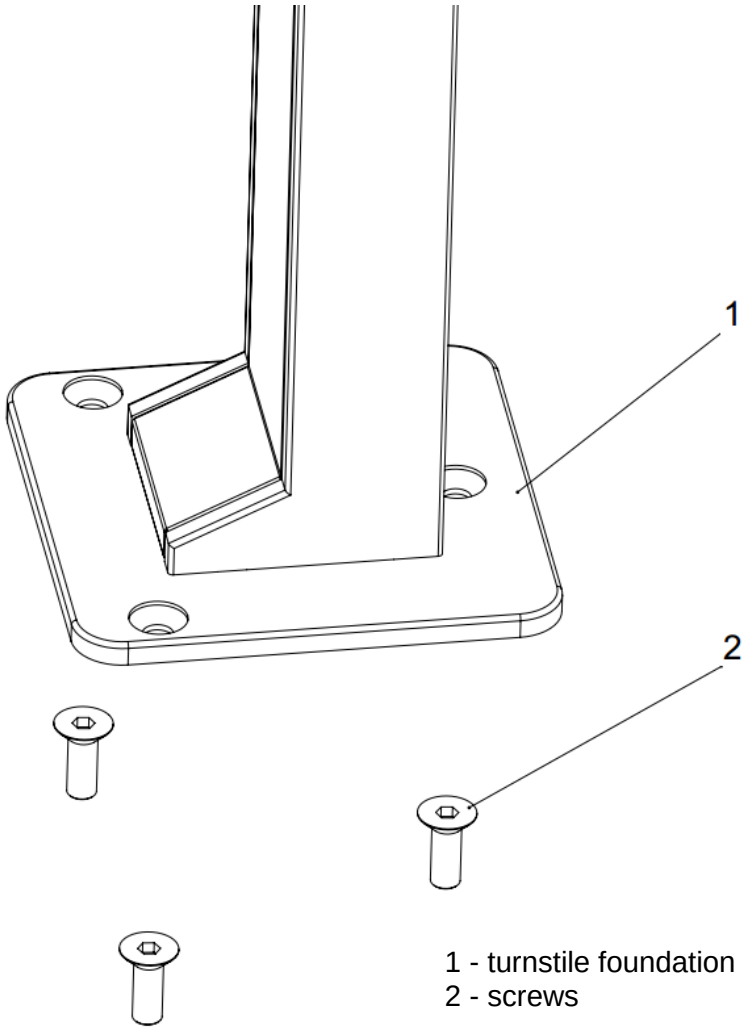


Figure 6 – Preparation to install the turnstile

Fix the turnstile stand with three screws (Figure 6 – 2) by screwing them into the appropriate anchors using S5 key for the screws with an internal hexagon.

Secure the base cover with the double-sided adhesive tape.

4.2.9 Remove the protective film from the turnstile body.

4.3 Dismantling the product

4.3.1 When sending the product for calibration or repair, the product should be dismantled as follows:

1) power off the product;
2) disconnect the product from the power supply source;
3) disconnect the cable part of the product from auxiliary cables;
4) remove the product from the installation site.

4.3.2 Before packing, clean the product from dust and dirt.

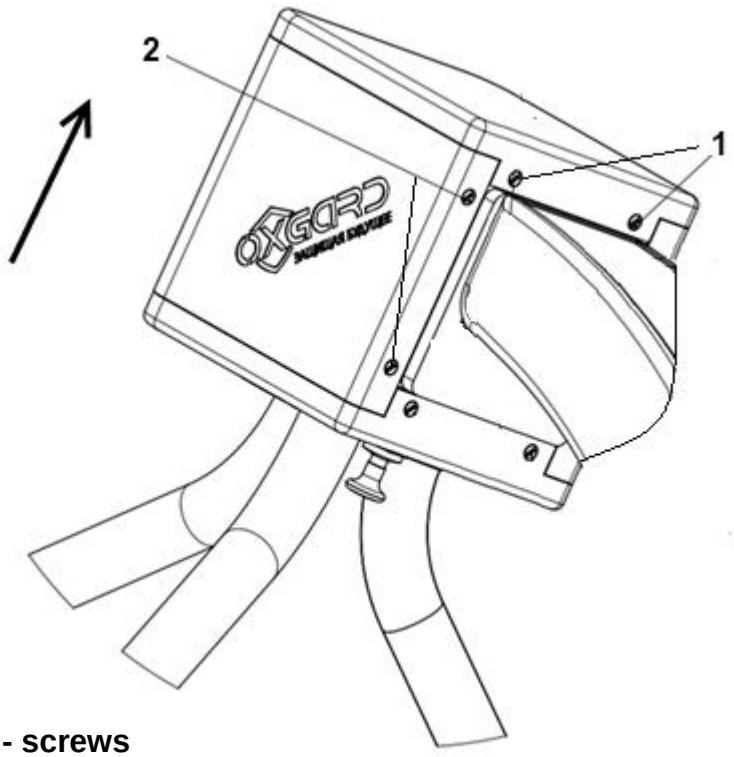
4.3.3 Put the product in a packing box.

5 CONNECTING AND SETTING THE PRODUCT

Connection of the PSU, CP and ACS is carried out using the control board located in the block of barrier arms under the safety cover.

To conveniently connect the turnstile and get access to all necessary contacts, the turnstile should be partially disassembled. This scope of works includes dismantling of the safety cover.

To do this, it is necessary to undo two screws (Figure 7 – 1) and four screws (Figure 7 – 2), smoothly slide the cover up.



1, 2 - screws

Figure 7 – Dismounting of the turnstile safety cover

Slide the cover till the end and free access to the rotation mechanism.

Figure 8 – the appearance of the control board and layout of the connectors for connecting the PSU, CP, ACS and SFAS is shown.

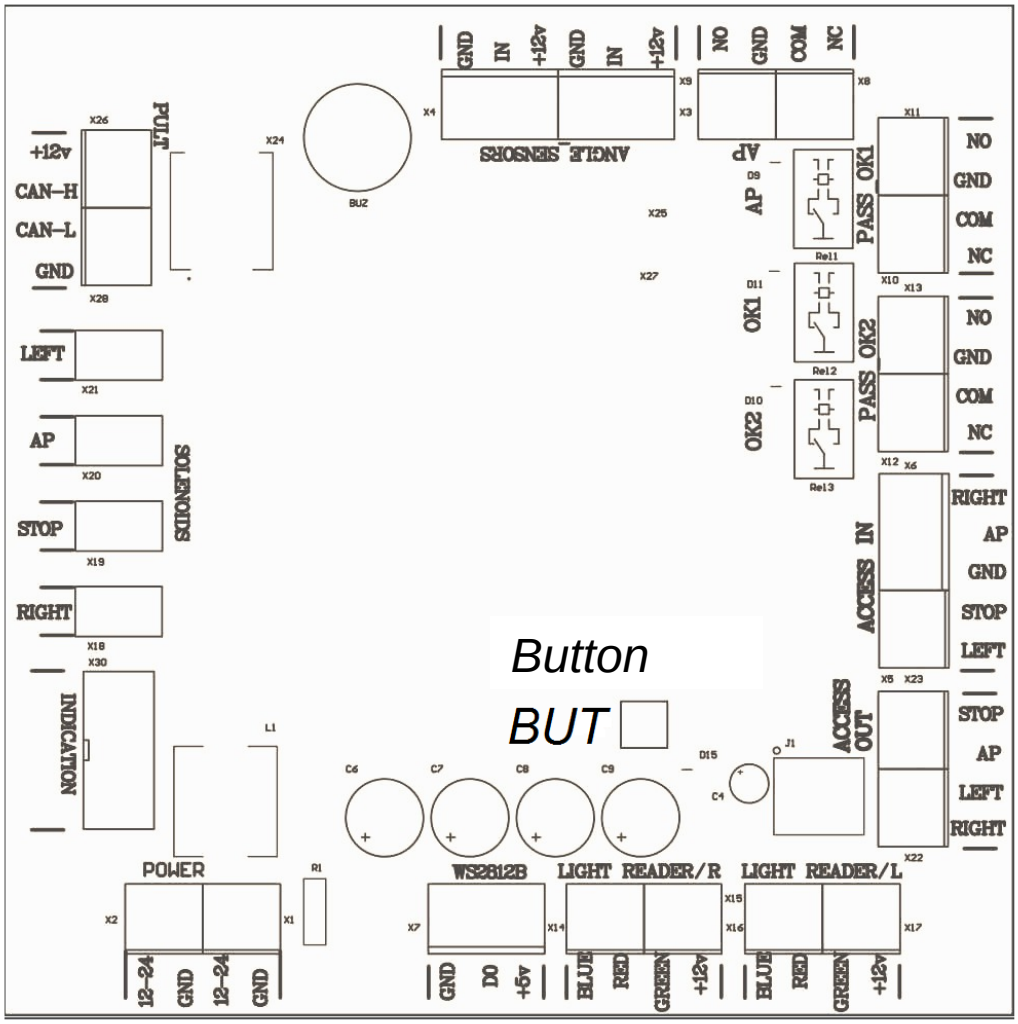


Figure 8 – Appearance of the turnstile control board

Figure 8 – The turnstile operating modes are set using the BUT button.

To select the required turnstile mode, it is necessary:

- press and hold the BUT button until a short beep appears. The turnstile operation mode is selected based on the number of short beeps.

- it is necessary to release the BUT button after the required number of signals, a long beep, which indicates that the desired mode has been written into the controller memory, will sound.

- when the power is off, the selected mode is not reset.

Table 1 shows the turnstile operation modes with different number of signals after pressing the BUT button.

Table 1 – The turnstile operation mode

No. of the turnstile operation mode	Number of short beeps after pressing the BUT button	The turnstile operation mode
0 (simple press)		Reboot (the mode is similar to turning on/off of the turnstile)
1	1	Factory reset: - pulse control mode of the turnstile - the turnstile enters the "STOP" mode after being switched on - the turnstile enters the "ANTIPANIC" mode when controlled using the ACS, after the AP and GND contacts get connected The turnstile is controlled by the control panel, the status of the buttons is transmitted to outputs ACCESS OUT (p. 5.4)
2	2	- switching between the impulse and potential control modes of the turnstile (p. 5.3)
3	3	- the turnstile enters the mode of free passage to the left after being switched on.
4	4	- the turnstile enters the mode of free passage to the right after being switched on.
5	5	- activation of the "ANTIPANIC" input after the AP and GND contacts are closed/opened
6	6	Disabling/enabling of the panel
7	7	Possibility to switch the relay contacts into hold or passage counting mode, in "ANTIPANIC" mode
8	8	- test mode for checking the turnstile performance

5.1 Power connection

IT IS FORBIDDEN:

TO USE THE POWER SUPPLY UNITS WITH AN OUTPUT CURRENT OF LESS THAN 1,5 A.

TO CONNECT THE TURNSTILE USING THE POWER CABLE WITH THE SECTION OF LESS THAN 1.5 MM^2 WHEN THE LENGTH OF THE SUPPLY CABLE IS MORE THAN 10 M – IT IS RECOMMENDED TO USE THE CABLE WITH THE CROSS-SECTION OF 2.5 MM^2.

ATTENTION: IT IS NOT RECOMMENDED TO INSTALL POWER SUPPLY UNIT AT A DISTANCE OF MORE THAN 25 M FROM THE TURNSTILE.

The turnstile is powered by 12 V DC power supply. The maximum consumption is 1.5 A. The PSU should be selected based on these parameters.

It should also be taken into account that voltage drop increases when the supply cable length is increased (operating voltage range is detailed in the Operation Manual VZR.247800.001 (OM)).

Install the PSU in the place providing easy operator access.

Connect the PSU cable to +12U and GND POWER contact group on the control board. Make sure that the cable is securely connected.

The POWER block has additional power supply terminals for connecting an external controller.

5.2 Connecting the control panel

The CP is connected via RJ 11(G)\6P4C telephone socket to X24 socket with the PULT inscription using RJ12\6P4C telephone socket.

RJ12\6P4C

RJ 11(G)\6P4C

Figure 9 – The turnstile CP should be connected based on the contact identifications in accordance with the figure.

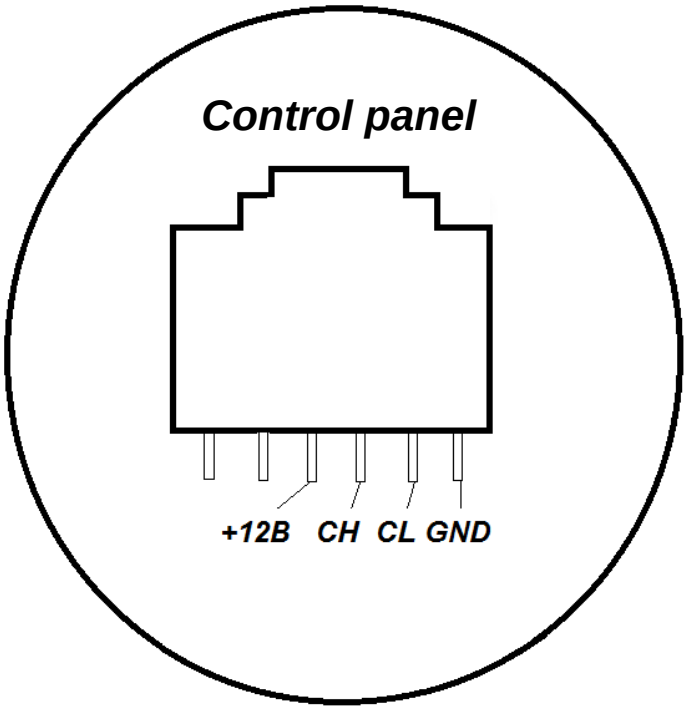


Figure 9 – Arrangement of the control panel cable wires.

5.3 Connecting the access control system (optional)

The ACS controller should be connected to the group of the following contacts:

ACCES_IN and ACCES_OUT.

Identification of contacts: LEFT, RIGHT, STOP, AP, GND. The contact assignment is shown in Table 2.

Table 2 – Assignment of the ACS contacts

Identification of contacts	Assignment of contacts
LEFT, RIGHT	one-time passing left/ right (lower priority)
STOP	passing forbidden ("Stop" mode) (medium priority)
GND	common contact
AP	free passage in both directions ("Antipanic") (highest priority)

Inputs for connecting the ACS differ by priority:

1) AP input has the highest priority. If the AP command was sent to this input (the AP made contact with the GND contact), the turnstile is in free passage mode and **DOES NOT RESPOND(!)** to any commands other than STOP; the green arrows are flashing in both directions on the indication panel. The AP command can be withdrawn either by the STOP command from the ACS (or panel), or by rebooting the turnstile.

2) LEFT and RIGHT have the same low priority and include a one-time one side passing. If both inputs are closed, passing is allowed in the side whose input closed first. If pass is not completed, the turnstile will automatically switch to STOP mode after 5 seconds.

3) Free access in both directions can be enabled only in potential control mode by simultaneous feeding of signals to the LEFT and RIGHT inputs or by sequential feeding of the LEFT and RIGHT signals.

ATTENTION: IF THE AP INPUT IS CLOSED, THE COMMANDS FROM THE PANEL ARE NOT ACCEPTED, SINCE THE ACS HAS A HIGHER PRIORITY (EXCEPT FOR THE STOP COMMAND).

LEFT and RIGHT inputs can operate in both potential and pulse mode (they trigger when closed to GND contact). Pulse mode is set by default.

To switch to the potential mode of operation, it is necessary to use the instructions provided in Table 1. In this case, left/right passing mode is enabled only for the time when control signal is fed to LEFT/RIGHT inputs.

Free passing mode can be set by sending control signals to both inputs simultaneously (only in potential control mode). Priority of LEFT and RIGHT inputs remains unchanged when switching to pulse mode.

Two "dry contact" relay outputs for the ACS are installed on the control board - Pass Ok1 (to the left) and Pass PassOk2 (to the right).

NO and COMM – normally open connection, NC and COMM – normally closed connection.

Triggering of one of the contact groups indicates that a pass has been made in appropriate direction (PassOk1 - to the right, PassOk2 - to the left). The "dry contact" closes/opens when the arm is rotated at an angle of 60 degrees and returns to its original position after complete passage.

The AP "dry contact" relay output for the ACS is also installed on the control board. Its contacts (NC, NO and COM) close or open when somebody is passing either side through the turnstile. When the turnstile enters the "AP" mode (pass counting mode), the D9 diode lights up at each pass.

The NC, NO and COM contacts are permanently closed or open in the hold mode and the D9 diode is constantly on.

Figure 10 – To check the operation of the control board, some LEDs are installed on it.

1) D11 is indicative of a pass to the right and relay activation (PassOk1 - to the right).

2) D10 is indicative of a pass to the left and relay activation (PassOk2 - to the left).

3) D9 is either constantly on and indicative of the "AP" command activation (in its hold mode) or it is a signal of each pass (in the pass counting mode). It can be selected by mode 7 (according to Table 1).

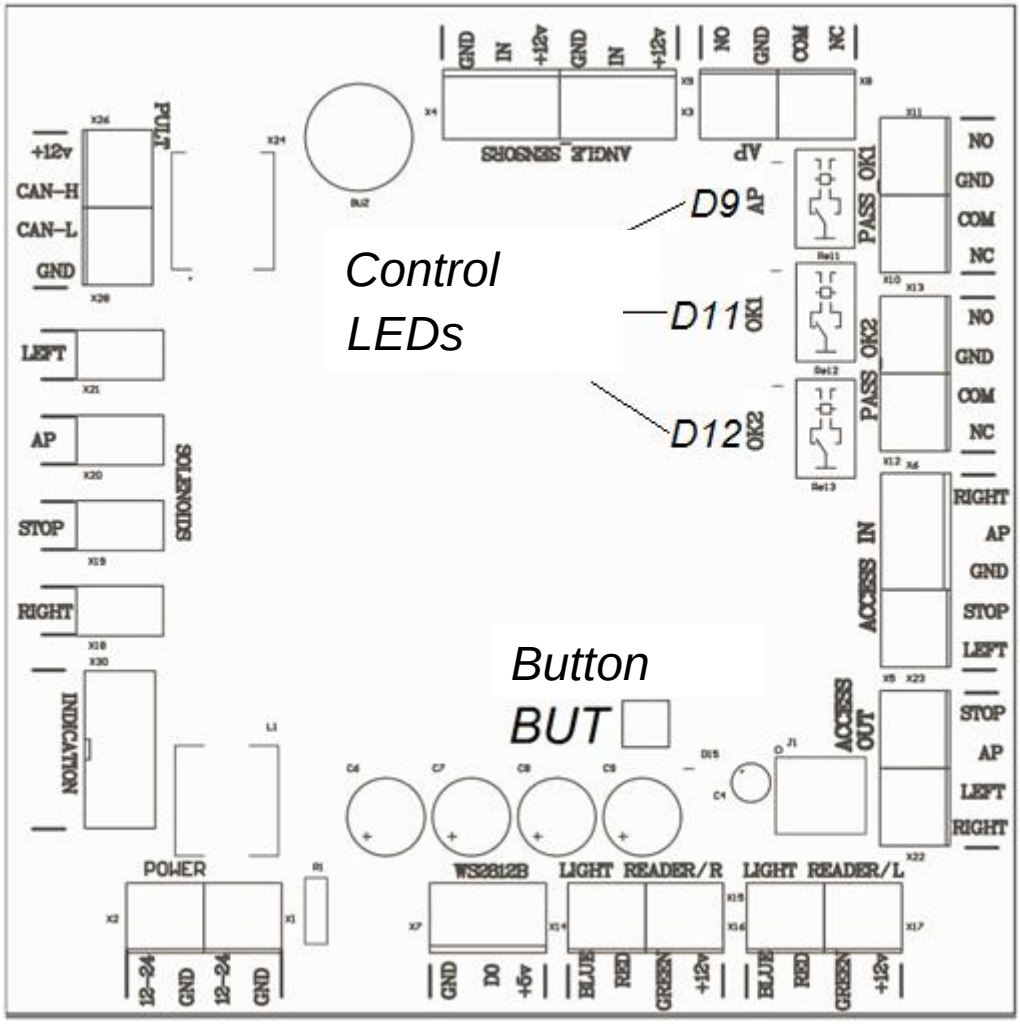


Figure 10 – Location of control LEDs on the motherboard

Figure 11 – To connect the controller, it is necessary to remove the safety cover from the turnstile, fold the board on swinging brackets, make connections with the ACS and fix the wires to the protective cover.

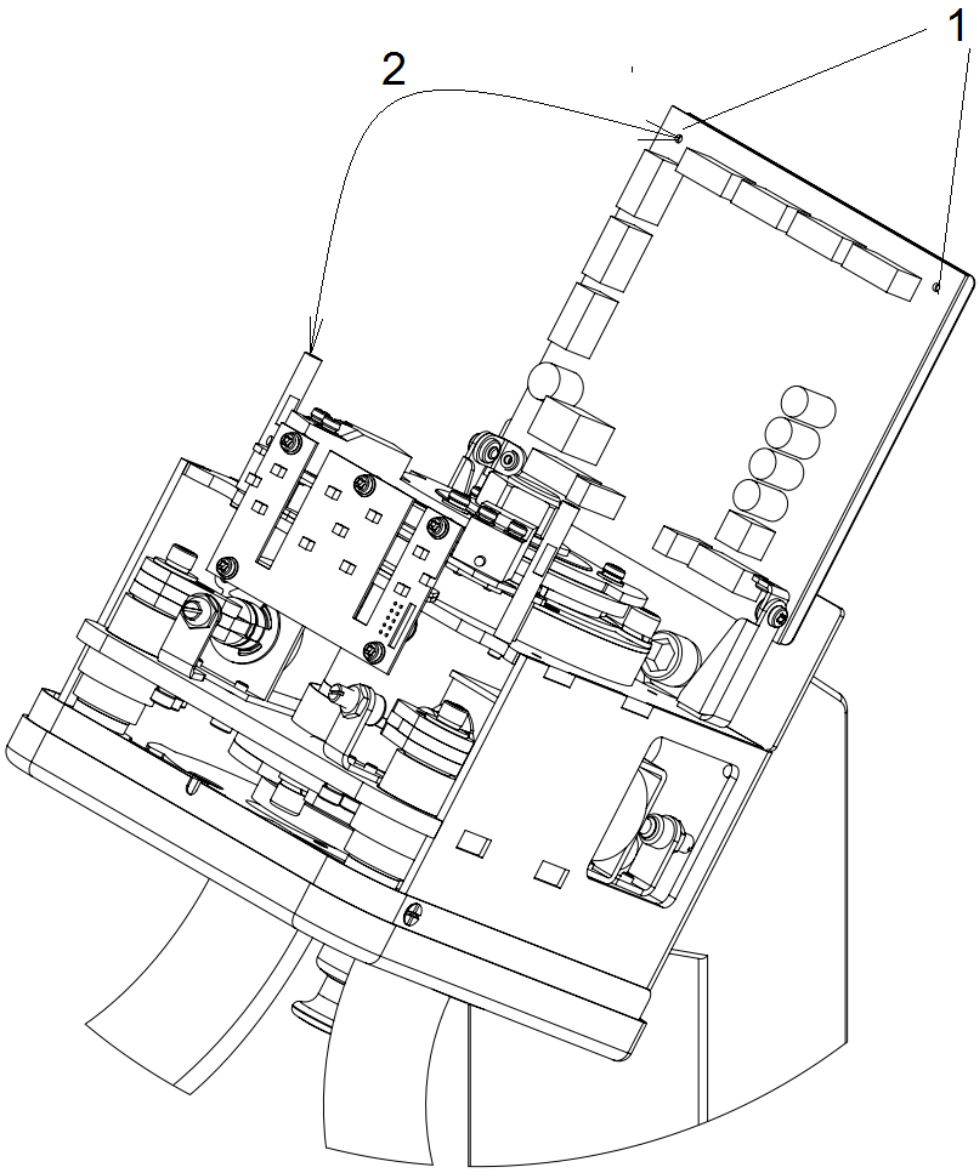


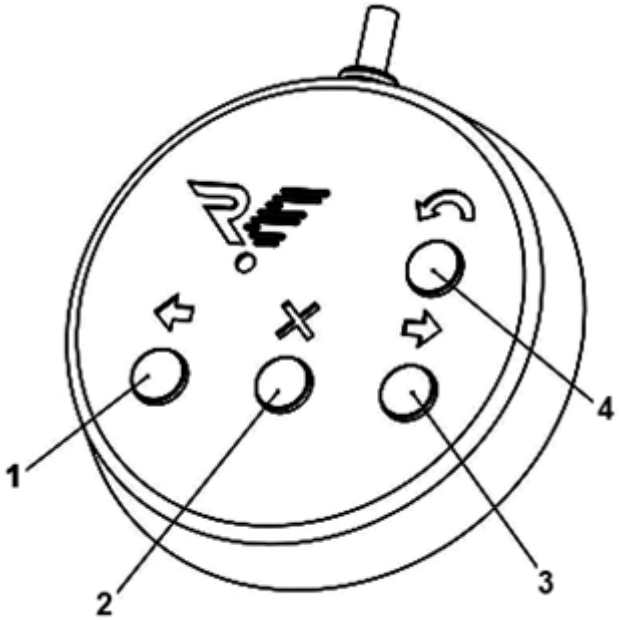
Figure 11 – Connecting the controller

5.4 Connecting the control panel to the ACS controller

In some cases, the turnstile CP should be connected directly to the ACS controller, since the system responds to passing allowed from the control panel (without using the controller) as on "hacking".

To use this diagram for connecting the turnstile, it is necessary to set the control board to mode number 6 using the BUT button (see Table 1). The turnstile does not respond to the control panel commands during this setting process and only transmits their status to the contacts of the ACCES_OUT control board terminal blocks. Figure 10 – (LEFT, RIGHT, STOP, AP) which are outputs with an open collector.

The contact assignment is shown in Table 4, Figure 12 –numbering of the control panel buttons. For this group of contacts, the maximum output current is not more than 150 mA and permissible voltage is not more than 12 V.



1, 2, 3, 4 - control buttons

Figure 12 – Numbering of the CP buttons

	1, 2, 3, 4 - control buttons

Table 3 – Assigning the ACCES OUT contact group

Identification of contacts	Assignment of contacts
LEFT	Status of the "LEFT" button (1)
RIGHT	Status of the "RIGHT" button (3)
STOP	Status of the "STOP" button (2)
AP	Status of the "AP" button (4)

LEFT, RIGHT, STOP and AP outputs reflect current state of the CP buttons – the transistor opens when a corresponding button is pressed.

LEFT, RIGHT, STOP and AP outputs can be connected either directly to the ACS controller or via a relay. Figure 13 – When using the relay, it is **MANDATORY(!)** to connect a diode in parallel to the winding.

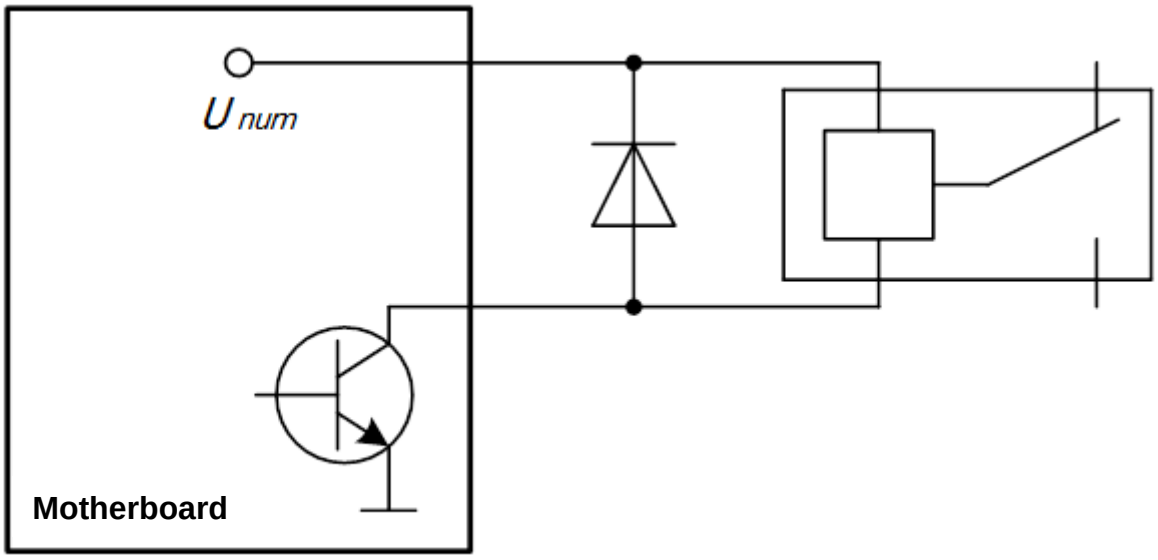


Figure 13 – Diagram for connecting a diode in parallel to the relay winding

	motherboard

Figure 14 – diagram for connecting the CP to the ACS controller.

The controller controls the turnstile in this variant using the "LEFT", "RIGHT", "STOP" and "AP" contacts.

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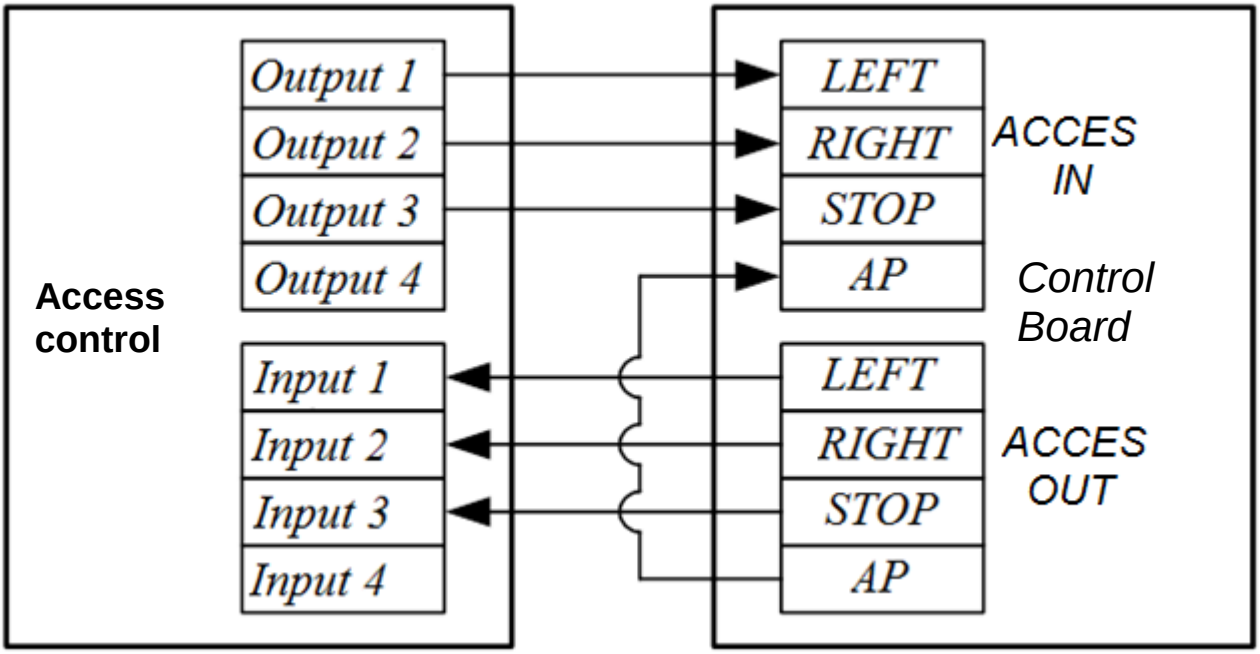

Figure 14 – Diagram for connecting the CP to the ACS controller

6 COMPREHENSIVE INSPECTION

6.1 Visual inspection and verification of the product readiness for use

6.1.1 Check the mounts of the turnstile parts and assemblies

6.1.2 Check that all cables are securely attached.

6.1.3 Turn on the turnstile and perform health check by carrying out several test passes.

6.1.4 If extraneous noise and any violations of operating modes are absent, the turnstile is ready for operation.

7 ACCEPTANCE OF THE INSTALLED PRODUCT

Acceptance of the installed product is carried out as follows:

1) a representative of the organization that performed installation demonstrates reliability of the product installation;

2) notes on the product installation are made in the "Product Service Record" Section VZR.247800.001 of the Logbook (LB);

3) the "Installation Information" Section of the productVZR.247800.001 LB is filled in;

4) the Certificate of acceptance for operation is issued.

APPENDIX A — Brief description of CAN2.0 data bus

A modern noise-resistant CAN2.0 standard bus is used for CP operation. According to CAN2.0 standard, length of the signal transmission cable can reach values of more than a kilometer, but correct operation at such distances depends on many factors.

For distances more than 25 meters, it is mandatory to use a Cat5e or Cat6 twisted pair. Total electrical resistance of CP DC power supply wire of should not exceed 50 Ohms.

If this requirement cannot be met, additional 12V/100mA PSU can be set at the CP place (the minimum operating voltage of PSU is 7.5 V). At the same time, 3 wires from the turnstile (CL, CH, GND) are enough for correct operation.

Two control panels can be connected to one turnstile.

An important feature of the CAN2.0 bus is the presence of 120 Ohm resistors at the ends of the bus. In a standard CP, such a resistor is already installed.

APPENDIX B — Position of mounting holes relative to the external dimensions of the turnstile

Figure 15 – position of mounting holes relative to the external dimensions of the turnstile.

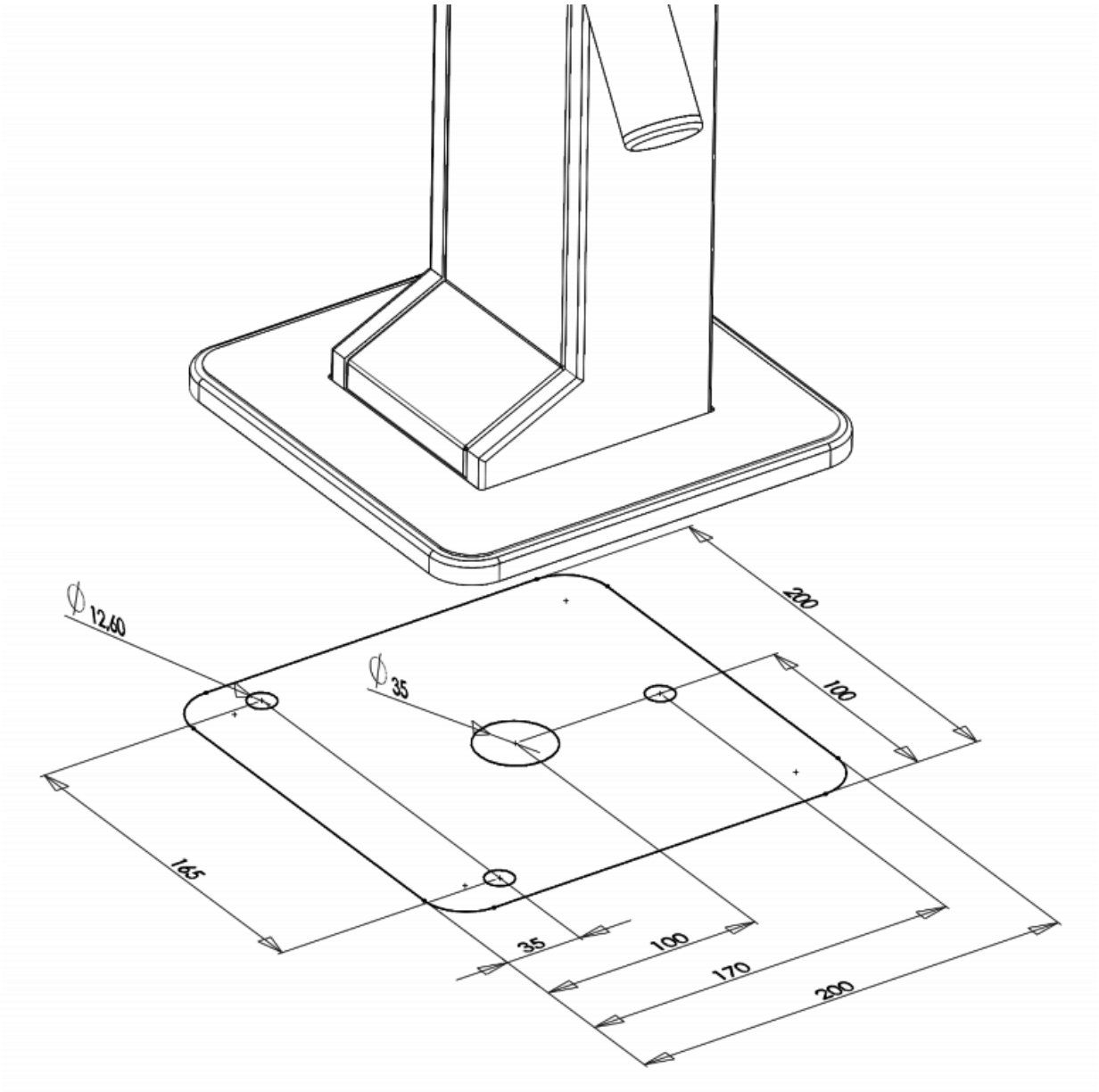

Figure 15 – Position of mounting holes relative to the external dimensions of the turnstile

APPENDIX C — Turnstile connection diagram

Figure 16 –turnstile diagram and diagram of its connections.

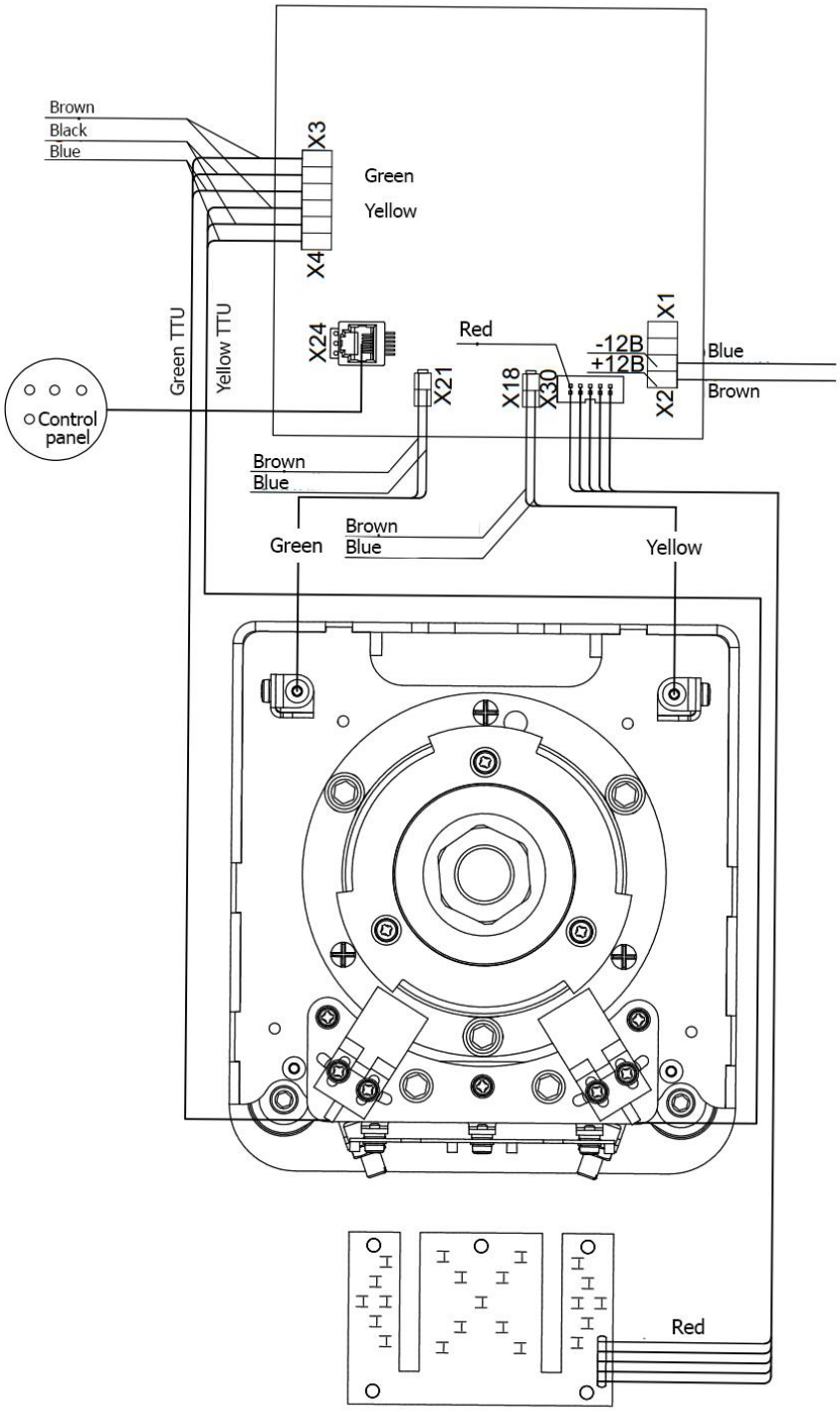

Figure 16 – Turnstile diagram

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