

Installation Guidelines

Cube C-03 turnstile



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CONTENTS

List of abbreviations used	4
1. Basic specifications.....	5
2. Product Design	6
3. Safety requirements	11
4. Installation of a turnstile	12
4.1. Required equipment	12
4.2. Installation of a turnstile	13
5. Connecting turnstile:	16
5.1. Power connection	19
5.2. Connecting Control Panel	20
5.3. Connecting Access Monitoring and Control System (AMCS) (optionally)	20
5.4. Connecting control panel to ACS controller	24
Appendix 1. Brief Description of Data Bus CAN2.0.....	28
Appendix 2. Location of installation holes with respect to external dimensions of the turnstile	29
Appendix 3. Diagram of the turnstile and its connection	31

List of abbreviations used

PS	– Power Supply
SFAS	– Security and Fire Alarm
RC	– Remote Control Panel
System ACS	– Access Control System
NC	– normally connected
NO	– normally opened

Firmware version of turnstile FW Cube v 1.2

1. Basic specifications

Table 1. General Specifications

Specification	Turnstile	Panel
Overall dimensions(H x W x D), mm: -in operating condition -with fold down arms	1024x800x900 1024x200x361	107x107x25
Weight, kg	25	0.5
Temperature range, °C: -operation -transportation and storage	+1...+40 +1...+40	+1...+40 +1...+40
Relative humidity, %, no more	80	80
Passage width, mm	500	
Throughput, person/min	30	
Lifetime, years	8	8

Table 1. Electrical characteristics

Specification	Turnstile	Panel
Power supply voltage, V: -rated -working	12.0 10.8...13.2	12.0 7.5...15
Standby average current*, A	0.4	
Average current in a pass mode*, A	0.4	
Maximum absorbed current, A	1.5	

*- values indicated at rated voltage

** *The manufacturer will reserve the right for changing configuration, technical specifications and appearance of the product without notice*

2. Product design

Turnstile housing

Turnstile housing and blocking arms are made of brushed stainless steel. In the middle part of the housing there is a dismantlable bent plate made of stainless steel for quick access to the place for connection of cables. To remove the plate, undo the screw 1 (Fig.1) then move the plate up.

At the lower part of the turnstile housing there is a hole for entry of these cables. To connect the power supply cables, CP and ACS, cross board is used located under the removable lid in barrier arms' unit (Fig. 10).

Basement cover shall be fixed with double-sided adhesive tape or sealing compound. The cover hides turnstile fixation to the floor (Fig.2).

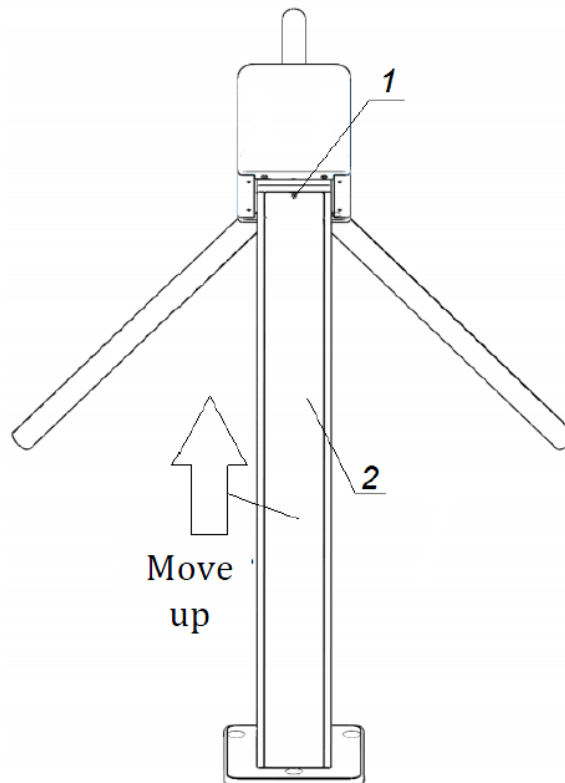


Fig.1 Removing the plate from stainless steel.

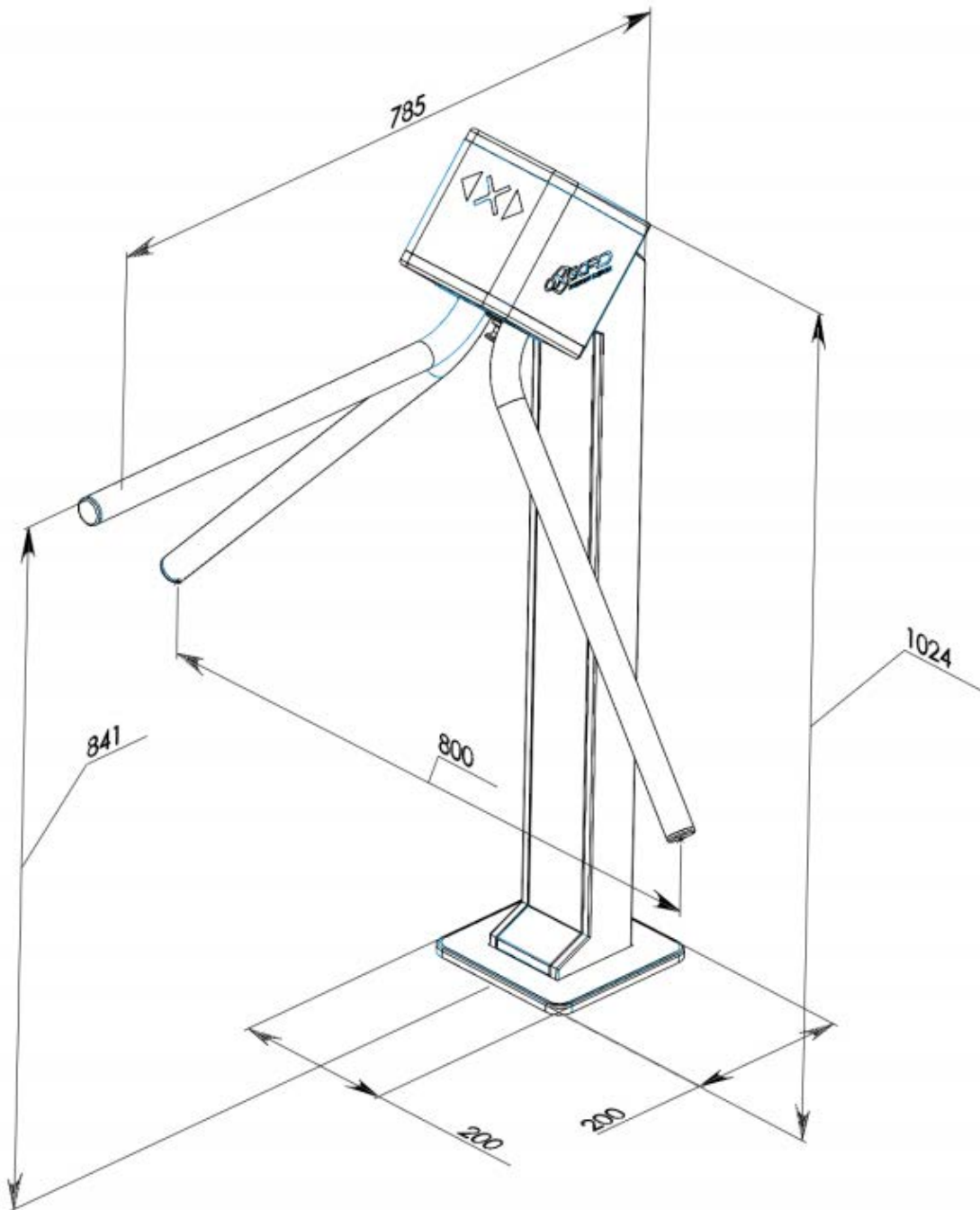
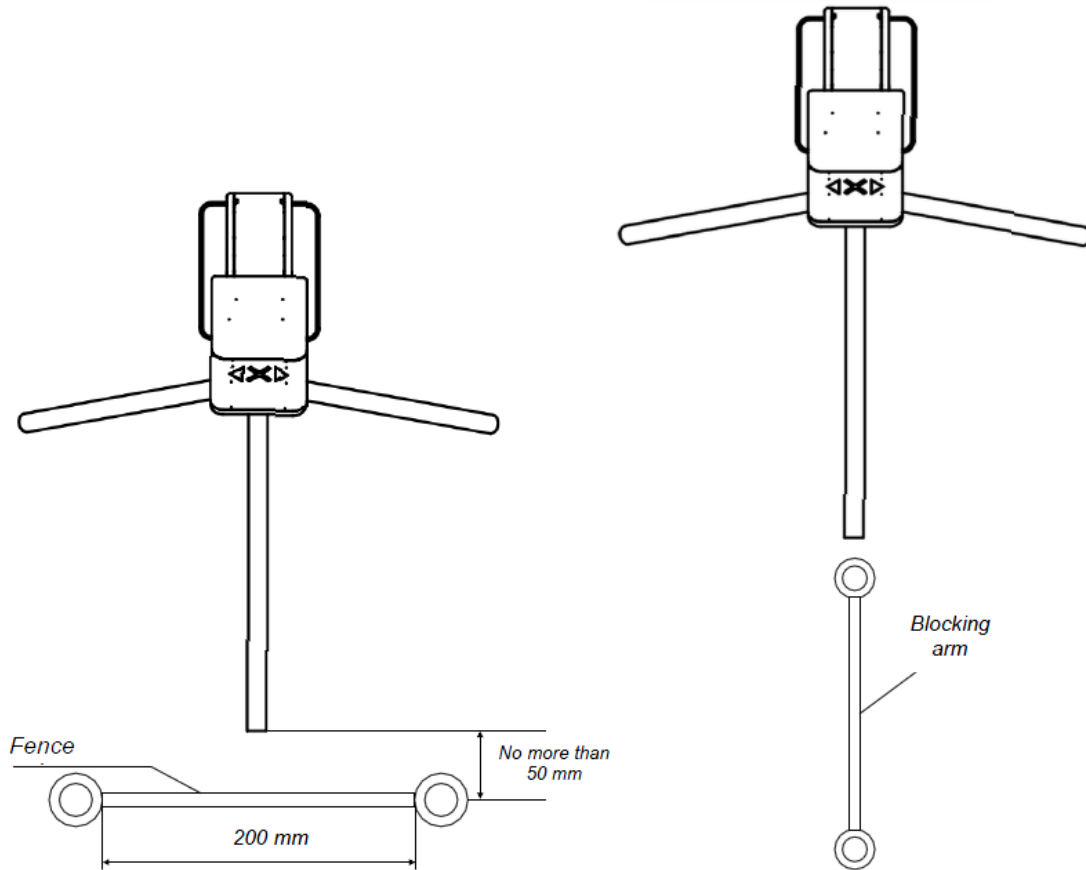


Fig. 2. General View and Overall Dimensions of Turnstile

ATTENTION! To log passages during turnstile operation under ACS control and to avoid unauthorized passages, it is required to arrange passage zones as per Fig.3.



Recommended installation diagram Not recommended installation diagram

Fig 3. Arrangement of turnstile passage zone

When installing the turnstile it is necessary to consider possible free movement of the arm, in the STOP mode it constitutes 6 grades in each direction, Fig 4.

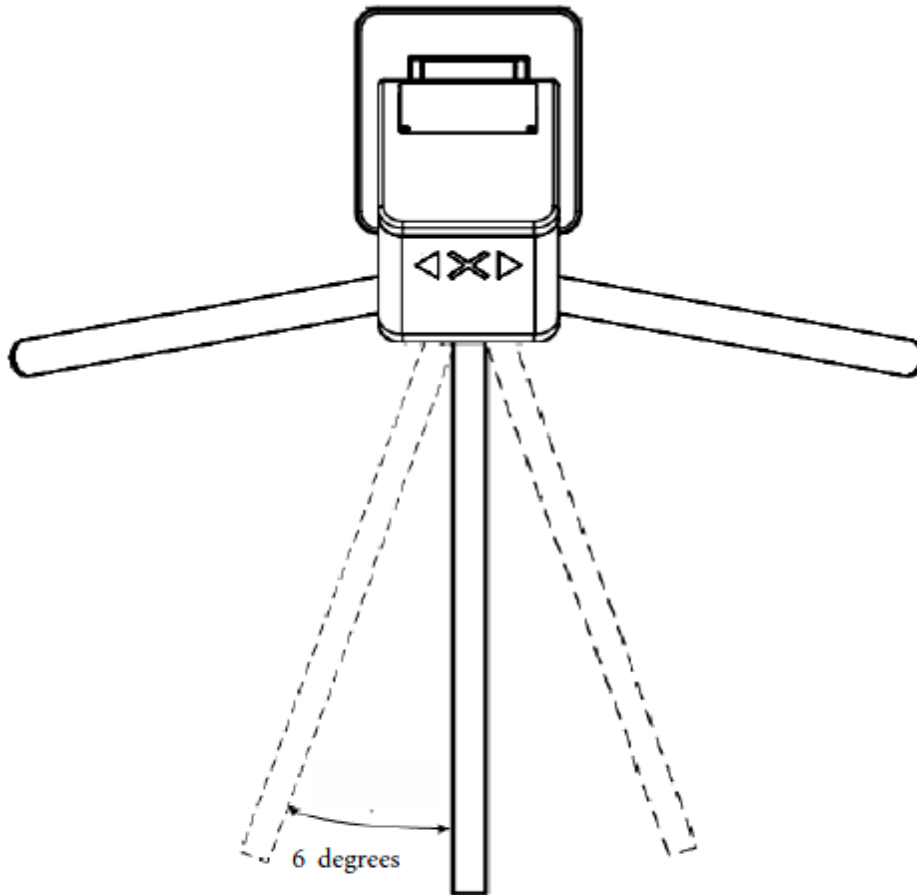


Fig. 4. Possible free movement of the arm, in “STOP” mode

Indication panel

Indication panel of the turnstile is located at the upper part of the turnstile behind the insert made of acryl glass. Operation modes of the turnstile are displayed on the panel in form of mnemonic signs depicting authorization and non-authorization of passage (Fig.5).

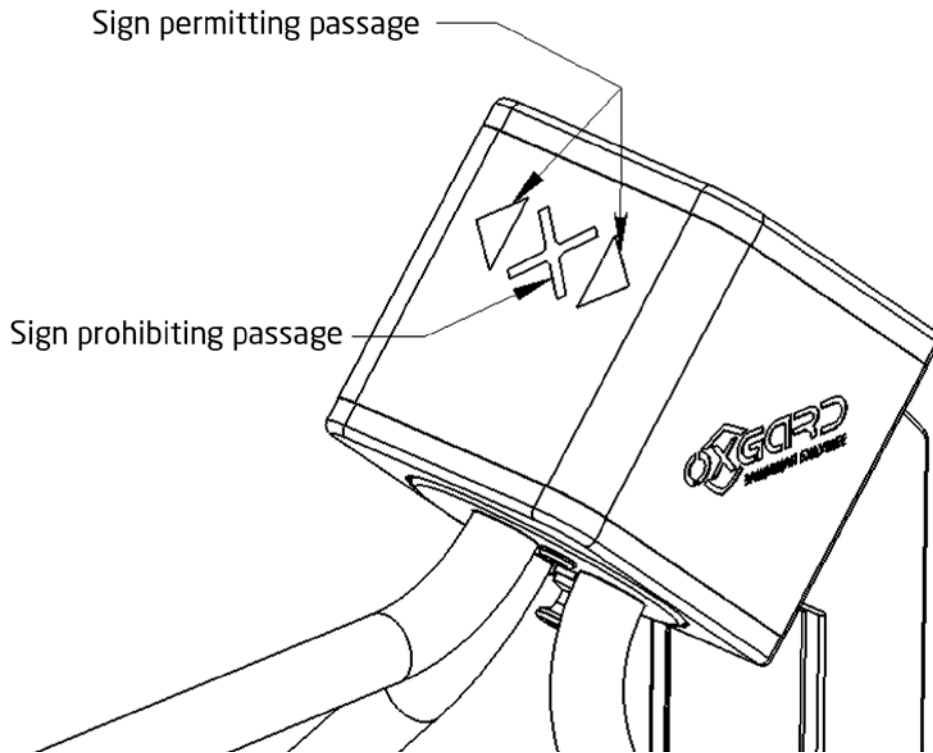


Fig. 5. Appearance of indication panel

Control panel

Housing of remote control panel is made of brushed stainless steel. In the front there are control buttons and LEDs indicating operation modes of the panel (Fig.6). Standard cable length, included in the delivery set, is 5 meters

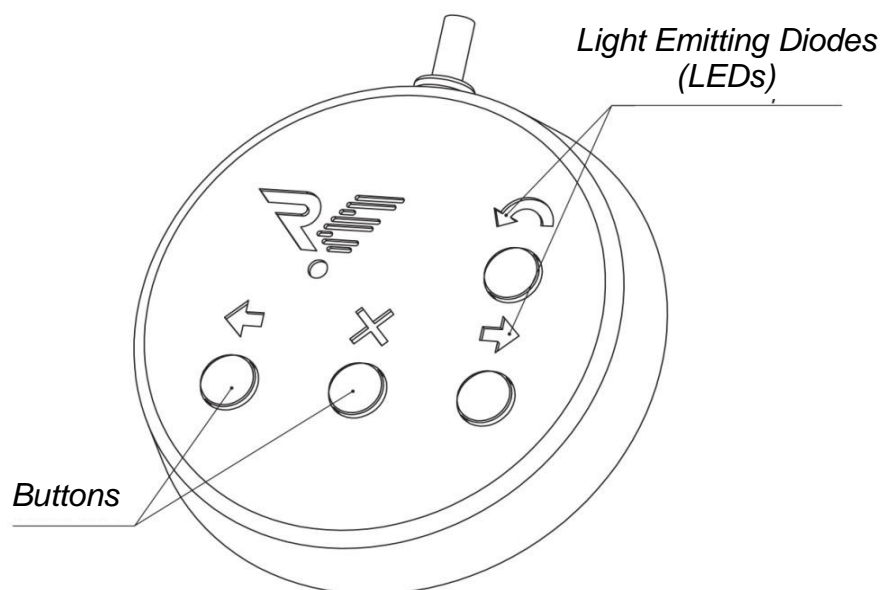


Fig. 6. Appearance of control panel

3. Safety requirements

ATTENTION! A failure to observe safety requirements, indicated in this Section, may cause damage to life and health of people, complete or partial loss of operating capability of the product and (or) auxiliary equipment.

ATTENTION! The manufacturer shall disclaim the liability for causing injury to human life and health complete or partial loss of operating capability of the product and (or) auxiliary equipment in case of a failure to observe safety requirements, indicated in this Section, and will terminate the validity of the product warranty.

IT IS FORBIDDEN:

- to install power supply module inside the body of the turnstile as it may result in an injury of people due to electric shock;
- to install the turnstile outside dry and heated premises;
- to use pastes and liquids chemically aggressive to the materials of the body for cleaning purposes of the product.

4. Installation of a turnstile

ATTENTION! The turnstile should be installed securely to avoid swinging and (or) overthrow during operation. In case of installation on the low strength floors - take action to strengthen the floor at the installation site.

Before checking operability of the turnstile carefully read this section of the Guidelines.

4.1 Equipment required

Equipment used in the process of installation of the turnstile:

- electric drill;
- hard alloy drill 12 mm in diameter for drilling holes for anchors in the floor (recommended anchor is the one equipped with the screw of FH 12/10 SK type);
- S5 internal hex wrench for screws;
- slotted screwdriver;
- plummet or leveling gauge;
- steel liners for turnstile aligning;
- round file;
- side cutters.

4.2 Installation of turnstile

4.2.1 Prepare horizontal surface at the installation site of the turnstile.

4.2.2 Prepare cable conduit coming from the site to the installation area of PS, remote control panel, and as well, if it is required, to the connection point of ACS and SFAS.

4.2.3 According to the setting dimensions (Fig.7), prepare 3 holes 12 mm in diameter in the floor for fixation anchors of the turnstile housing. Location of the installation holes related to external dimensions of the turnstile is presented in the Appendix 3 (Fig.17). Depth of the hole should exceed the length of the anchor for more than 5mm. Insert the anchors in the holes.

4.2.4 Cable routing is exercised through the hole 1 (Fig.7) located at the lower turnstile panel. It is required to prepare the trench for cable laying.

4.2.5 Open the box and unpack:

- turnstile housing;
- remote control panel with cable;
- base cover;

4.2.6 Lay to the wiring duct or trench the connecting cable for remote control panel, cable for PS and, if provided, ACS and SFAS cables.

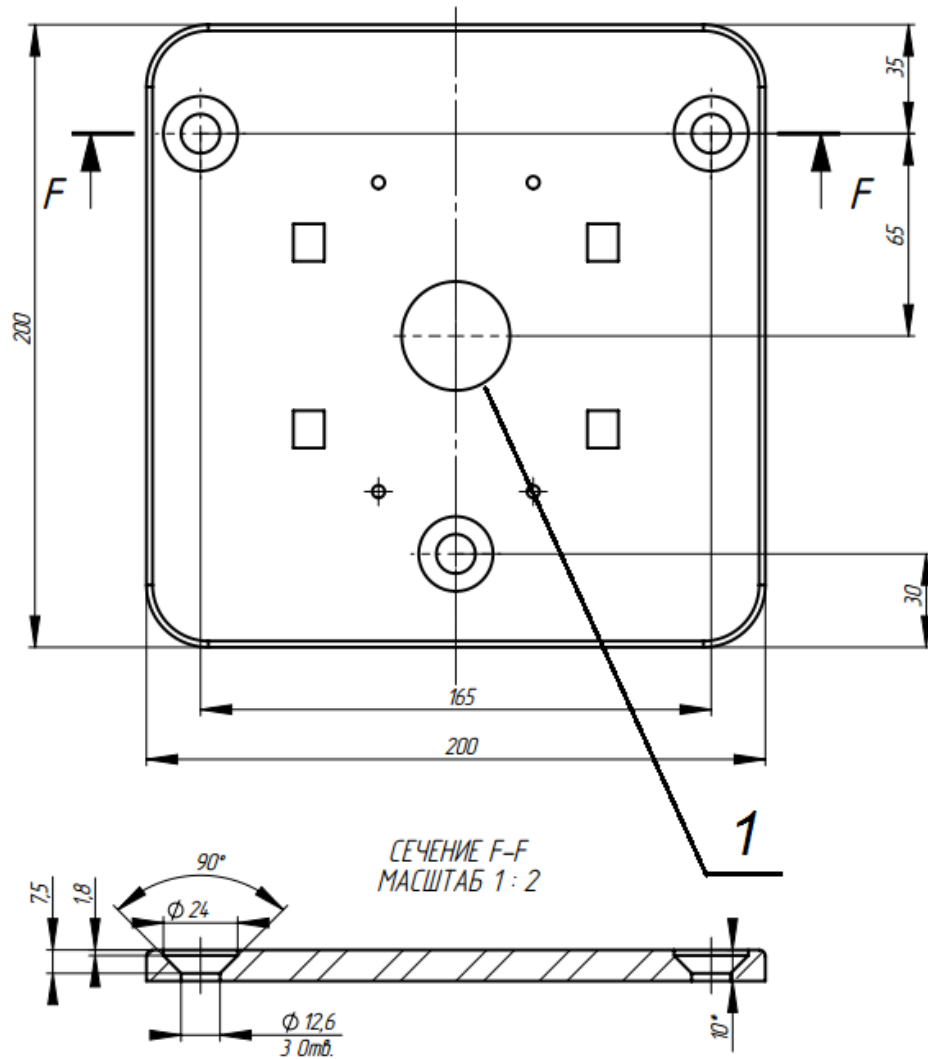


Fig. 7. Installation dimensions (Provided a drawing of the bottom support of the turnstile)

4.2.7 Mount the turnstile housing to the prepared site (Fig.7). Put remote control panel, PS and, if necessary, ACS and SFAS cables to the turnstile housing. Cables feed will be done through the hole 1 located at the bottom plate of the turnstile (Fig.7). Secure cables with cable ties.

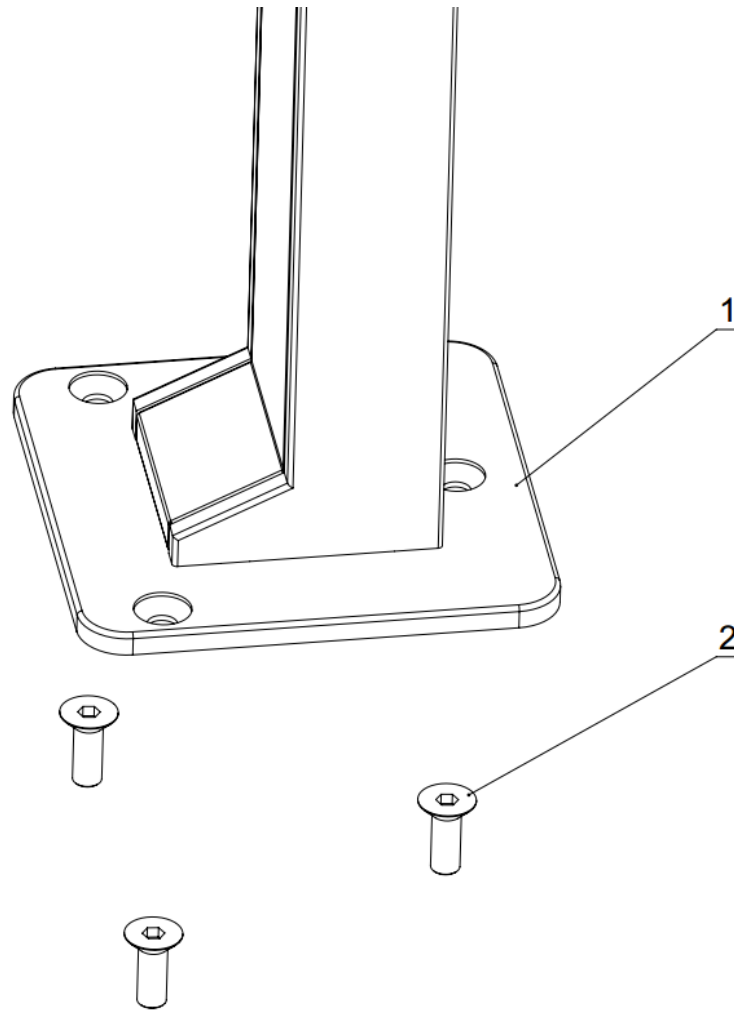


Fig.8. Installation diagram of the turnstile

4.2.8 Match the holes in the turnstile support (1, Fig.8) with the anchors in the floor. Check verticality of the installation in 2 planes, if necessary use steel gaskets of the required thickness for right installation of the turnstile. Fix the rack of the turnstile with three screws M8 (2, Fig 8), having screwed them to the appropriate anchors using internal hex wrench S5. Fix the base cover with double-sided adhesive tape.

4.2.9 Remove protective film from the turnstile housing.

5. Connecting turnstile

Connecting BP, PU, and access control is carried out with the help of a cross-board located in the block in barrier arms' unit, under the removable cover (Fig. 10).

For this it is required to undo 2 screws (1) and 4 screws (2), smoothly move the cover up on a short distance, without breaking the cable, connecting the display panel (Fig. 9). Disconnect the cable from the display board.

Slide the cover to the end and make free the access to a rotary mechanism. Fig. 13 shows the picture after removing of the cover

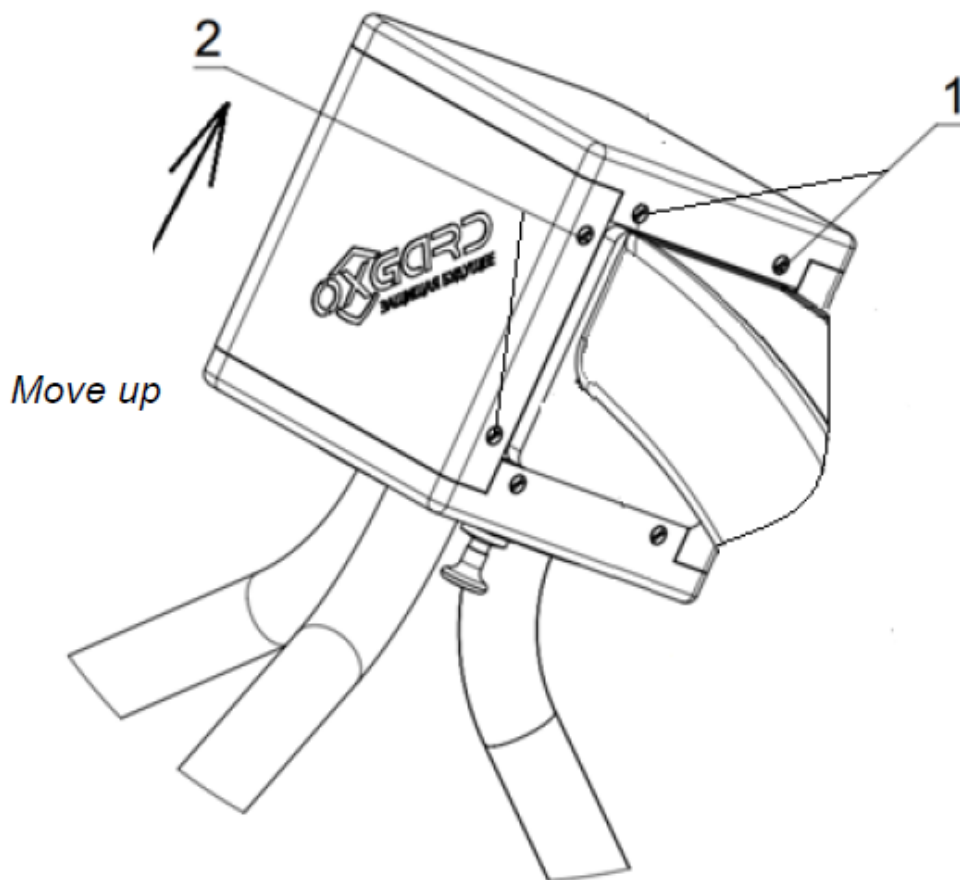


Fig. 9.

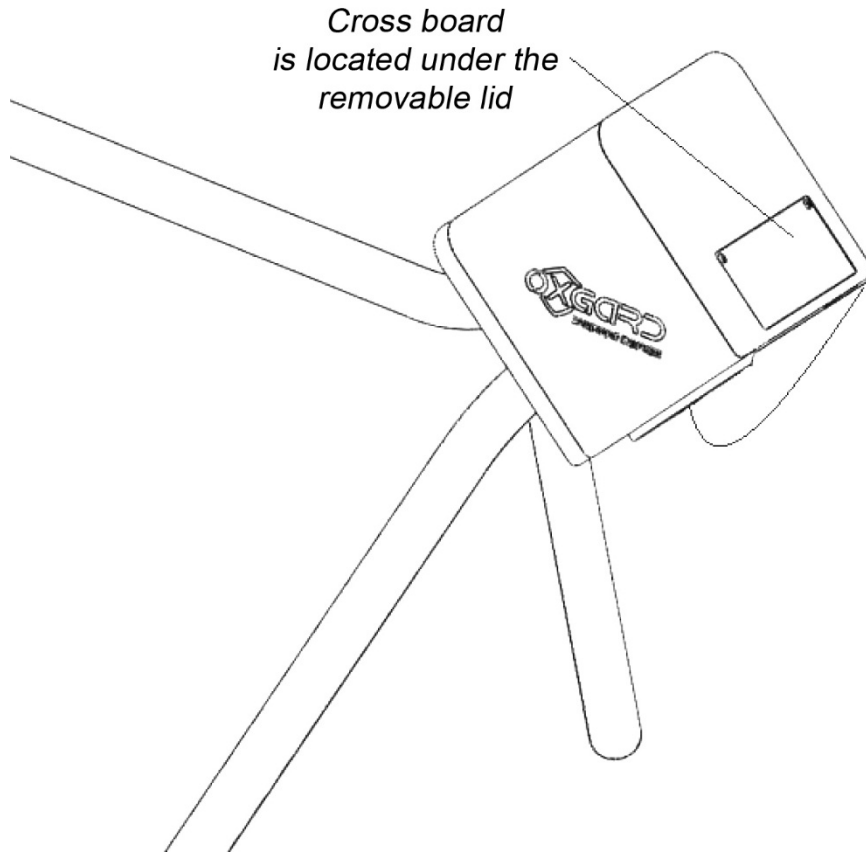


Fig. 10. Cross-board arrangement on turnstile rack

To control connections to the cross board, a lid can be removed. For this, undo 2 M3 screws located on the lid and remove it by pressing your finger into the unit.

Fig.11 shows the cross-board arrangement and connectors for connecting BP, CP, ACS and OPS.

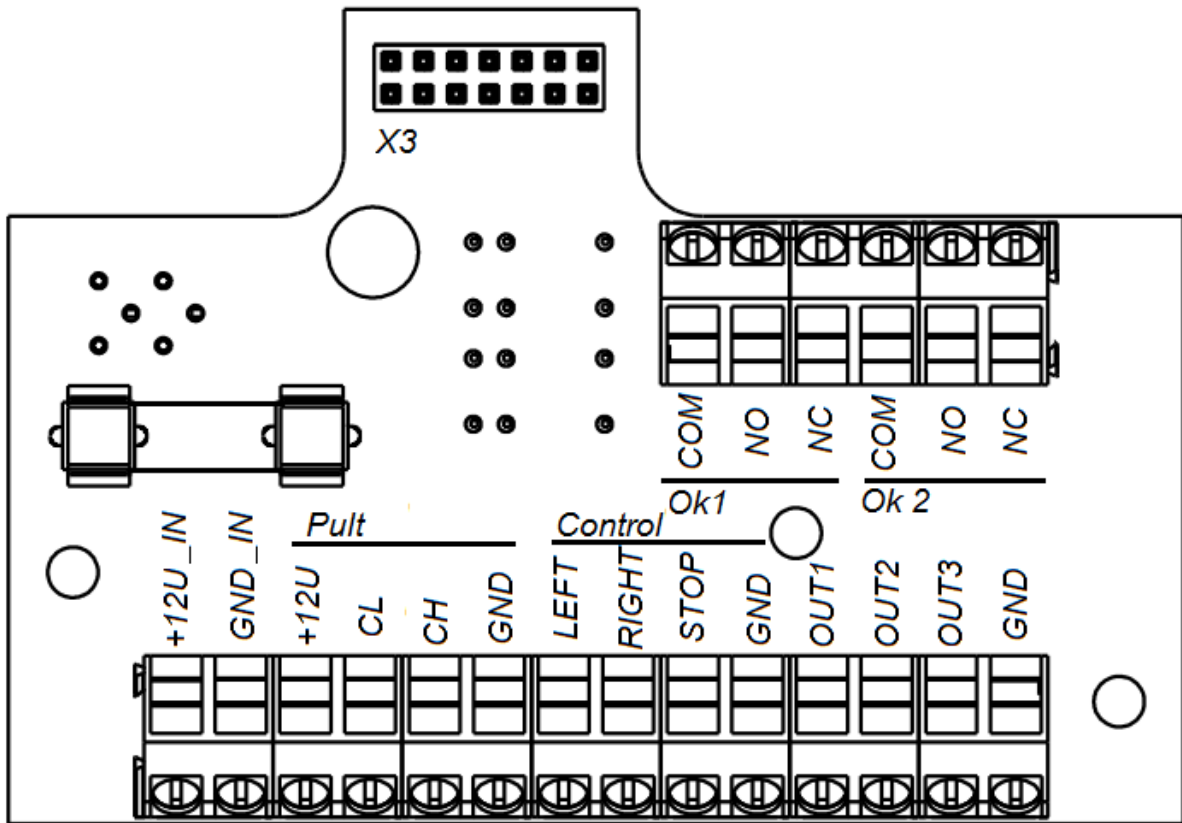


Fig.11. External View of the Cross-board

Table 3. Operation modes of a turnstile

Jumper position		Operating mode of the turnstile
Potential Mode	X1 Position «On»	Potential mode (see i.5.3.)
	X1 Position «OFF»	Pulse mode (see i.5.3.)
Remont Control	X3 Position «On»	Turnstile does not react to the control panel instructions, button status translated to the outputs OUT1...OUT3 (see i.5.4)
	X3 Position «OFF»	Turnstile is controlled by the control panel, button status translated to the outputs OUT1...OUT3 (see paragraph 5.4)

5.1. Power connection

ATTENTION! It is prohibited to use power units with output current less than 1.5A.

It is not recommended to install a power unit at a distance more than 25 m off the turnstile.

ATTENTION! It is prohibited to connect turnstile power with a cable with cross-section less than 1.5 mm². When length of the feeding cable is more than 10 m it is recommended to use cable with dimensions equal to 2.5 mm².

The turnstile is powered by 12V DC voltage. Maximum current draw occurs in “Free passage mode” and constitutes – 1.5A. Power Supply Unit shall be selected on the basis of these ratings. Also take in consideration that with increase of the supplied cable length a voltage drop is increased (operating voltage range is given in Table 2).

Install PS at the place, free for an access of the operator. Connect PS cable to POWER group of the contacts +12U_IN and GND_IN located on the cross-board. The contacts (+) and (-) of PS to be connected to the contacts (12V_IN) and (GND_IN) correspondingly.

Secure connection of the cable.

5.2. Connecting Control Panel

Remote control panel shall be connected to the Control Board group of contacts located on the cross-board. The contacts will have to be marked as follows: 12V, CL, CH, GND.

Remote control panel connection shall be made on the basis of contact marking, provided in Table 4.

Table 4. Contact marking for REMOTE CONTROL PANEL connection

Contact marking	Colour of wire
12V	Red
CL	Yellow
CH	Green
GND	Blue

5.3. Connecting ACS (optionally)

ACS Controller will have to be connected to the group of contacts:

Access Control System located on the cross-board. The contacts will have to be marked as follows: LEFT, RIGHT, STOP, AP, GND. Contact assignment is indicated in Table 5.

Table 5. ACS contact assignment

Marking of contacts	Contact assignment
LEFT, RIGHT	One-pass movement to the left/to the right (lowest priority)
STOP	No Entry (“Stop” mode) (medium priority)
GND	Common contact

Inputs for ACS connection will have to be identified by means of priorities:

- AP input possesses the highest priority. At GND contact of this input the turnstile is in antipanic mode and DOES NOT REACT (!!!) to the other signals; on the indication panel both arrows “to the left” and “to the right” are flashing.
- Input STOP possesses medium priority. At GND contact of this input the turnstile changes over to a “Stop” mode and does not react to the other influences, except for AP;
- LEFT and RIGHT possesses equally low priority and include one pass to one or another side. If both inputs are closed, the pass will be allowed to the side which input closed first. In case the pass fails to be done the turnstile will automatically change over to “Stop” mode 5 seconds later.

ATTENTION (!) In case of one of STOP inputs are closed, the instructions coming from the control panel will not be received as ACS has the higher priority.

STOP inputs are potential ones, i.e. until the input is at GND contact, the turnstile is operating in the corresponding mode, after the contacts are opened the turnstile changes over to “Stop” mode irrespective of what mode has been until ACS activated.

Inputs LEFT and RIGHT are able to operate both in potential and pulse mode (actuation by the fact of GND contact). Pulse mode is installed by default.

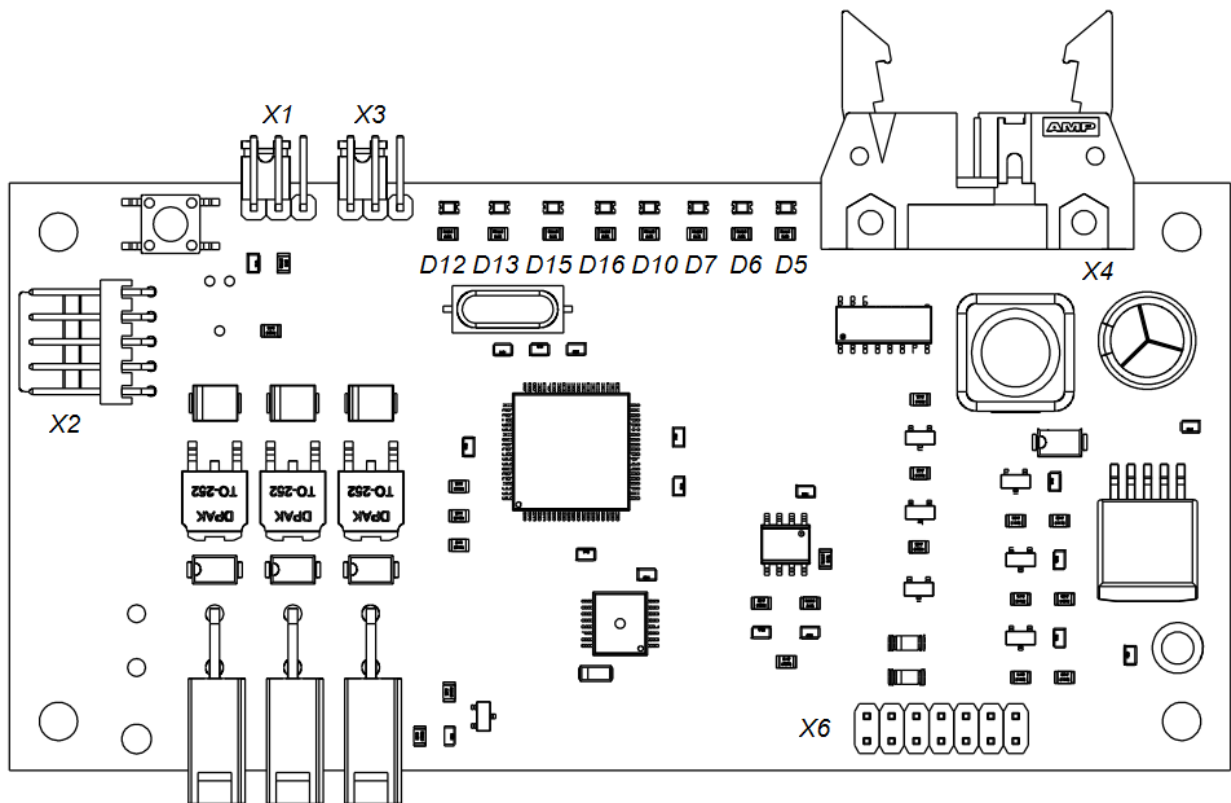


Fig.12. Motherboard of the turnstile

To change over to potential operation mode it is required to install jumper X1 (Potential mode) on the motherboard in the position «ON» (Fig.12). In this case the passage mode to the left/to the right is switched on only for delivery time of the control signal to the inputs LEFT/RIGHT. Free passage mode one can set by control signal supply to both of the inputs simultaneously. The priority of the inputs LEFT and RIGHT while changing over to a pulse mode will remain unchanged. On the cross-board there are two relay outputs for AMCS, operating under the principle of “dry contact” – Ok1 and Ok2. NO and COMM is normally closed connection. Actuation of one of the contact group testifies of a passage fulfilment to the appropriate side (Ok1–to the right, Ok2–to the left). “Dry contact” is closed/opened when the arm turns

through 60 grades and turns back to the initial position after complete passage fulfillment.

To check the operation of the motherboard, there are mounted Light Emitting Diodes (LED). To check their operation, it's necessary to remove the cover (Fig.13). Fig. 12 shows the arrangement of the LED D5 that indicates a signal to the input "LEFT".

D6 that indicates a signal to the input "RIGHT".

D7 indicates a signal to the input "STOP".

D10 indicates a passage fulfillment to the right and relay activation (Ok-1 to the right).

D16 indicates a passage fulfillment to the left and relay activation (Ok-2 to the left).

D15 indicates powering 12V of the motherboard.

D12 EnDec and D13 EncInc indicate the right arrangement of the magnet relative to the barrier arms position magnetic sensor. Located right D12 and D13 are not lightened.

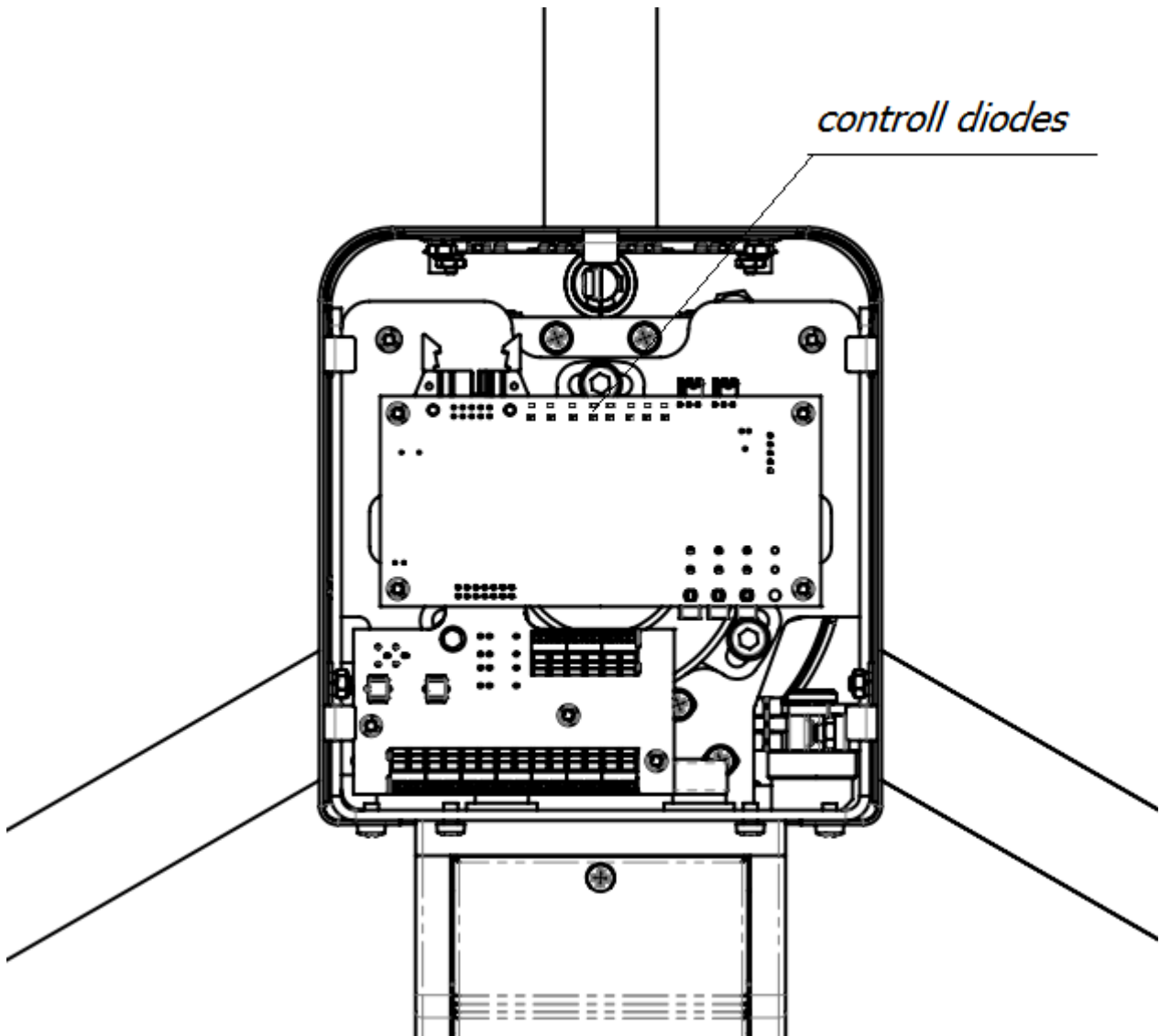


Fig. 13. Arrangement of the controll diodes

5.4. Connecting control panel to ACS controller

In some cases remote control panel must be connected directly to ACS controller, as the passages, permitted by control panel (without controller), are regarded by the system as “forced entry”.

To use this turnstile connection scheme it is required to install a jumper X3 (Remote Control) to the motherboard in position «On» (Fig.12). With X3 jumper installed the turnstile does not react to the signals coming from the control panel but transmits their state to the contacts of the terminals

OUT1... OUT3 of the crossboard (Fig.11), which are the outputs with bare collector. Contact assignment is represented in Table 6, numbering of the control panel buttons is shown on Fig.14. For this group of contacts maximum output current does not exceed 150 mA, permissible voltage is no more than 24 V.

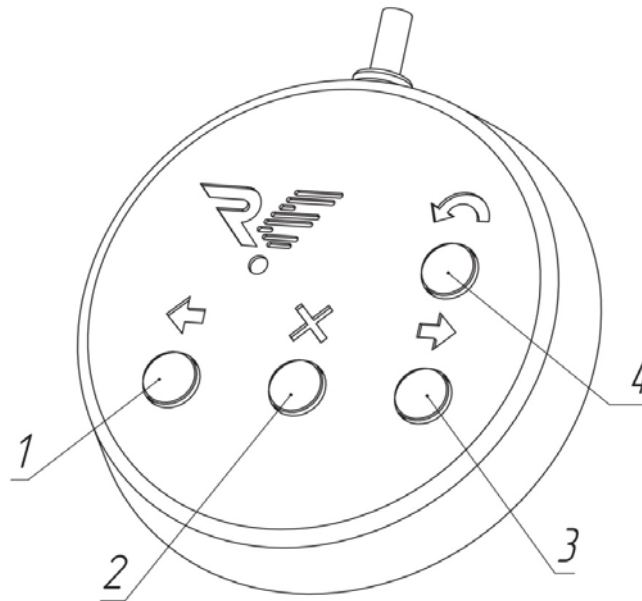


Fig. 14. Numbering of control panel buttons

Table 6. Assignment of I/O contact group

Contact marking	Assignment of contacts
OUT1	Status of “Left” button (1, Fig 14)
OUT2	Status of “Right” button (3, Fig.14)
OUT3	Status of “Stop” button (2, Fig.14)

Outputs OUT1... OUT3 display current status of remote control panel buttons, i.e. the transistor opens when the appropriate button is pressed.

Outputs OUT1... OUT3 one can connect to AMCS controller both directly and via relay. When using relay the diode connection in parallel to the winding is **mandatory (!)** (Fig. 15).

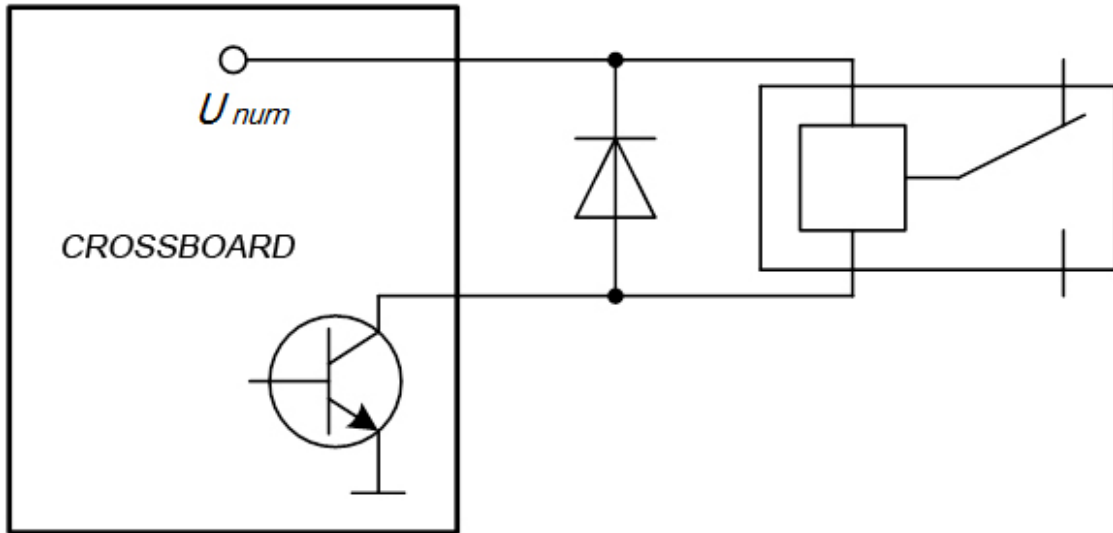


Fig.15. Connection diagram of diode connected in parallel to relay winding

Connecting diagram of remote control panel to ACS controller is shown on Fig.16. In this option the controller controls the turnstile with the contacts “Left”, “Right” and “Stop”, with “Antipanic” contact connection and disconnection via the control panel. An important feature of remote control panel connection via ACS controller is impossibility of using turnstile modes which are set with button combinations pressed on the control panel (except for free passage mode at potential control mode, see Section 5.3 of the Instruction). In this particular case ACS is responsible for these modes.

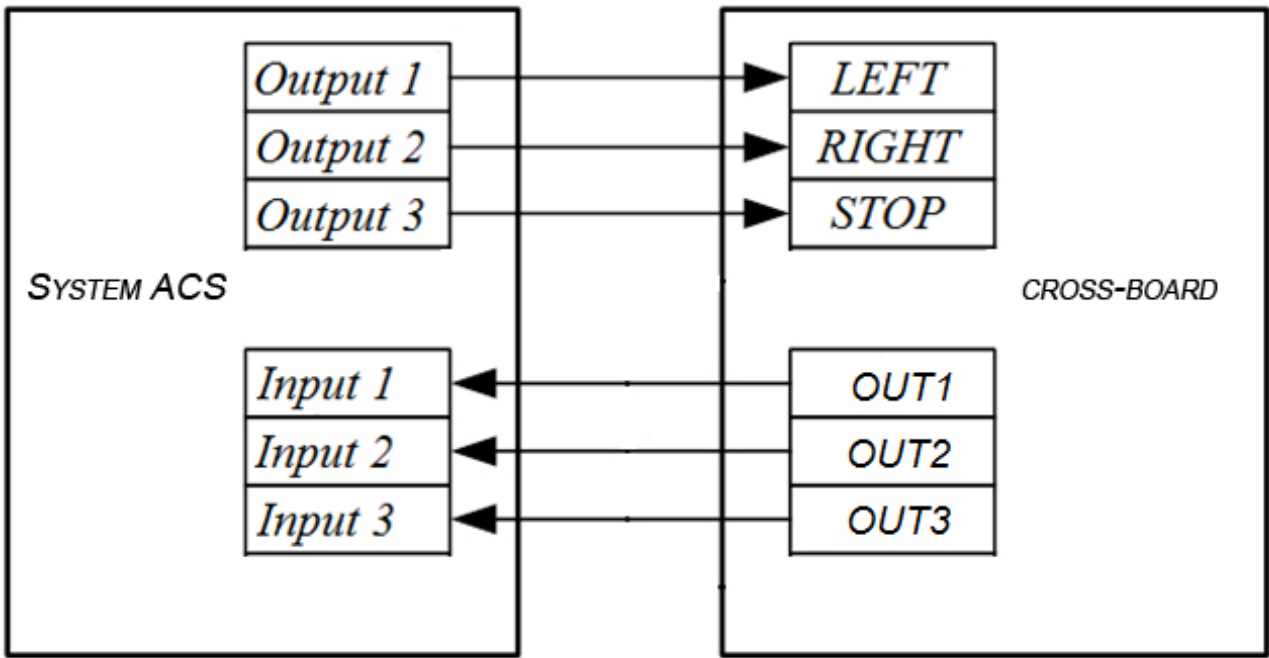


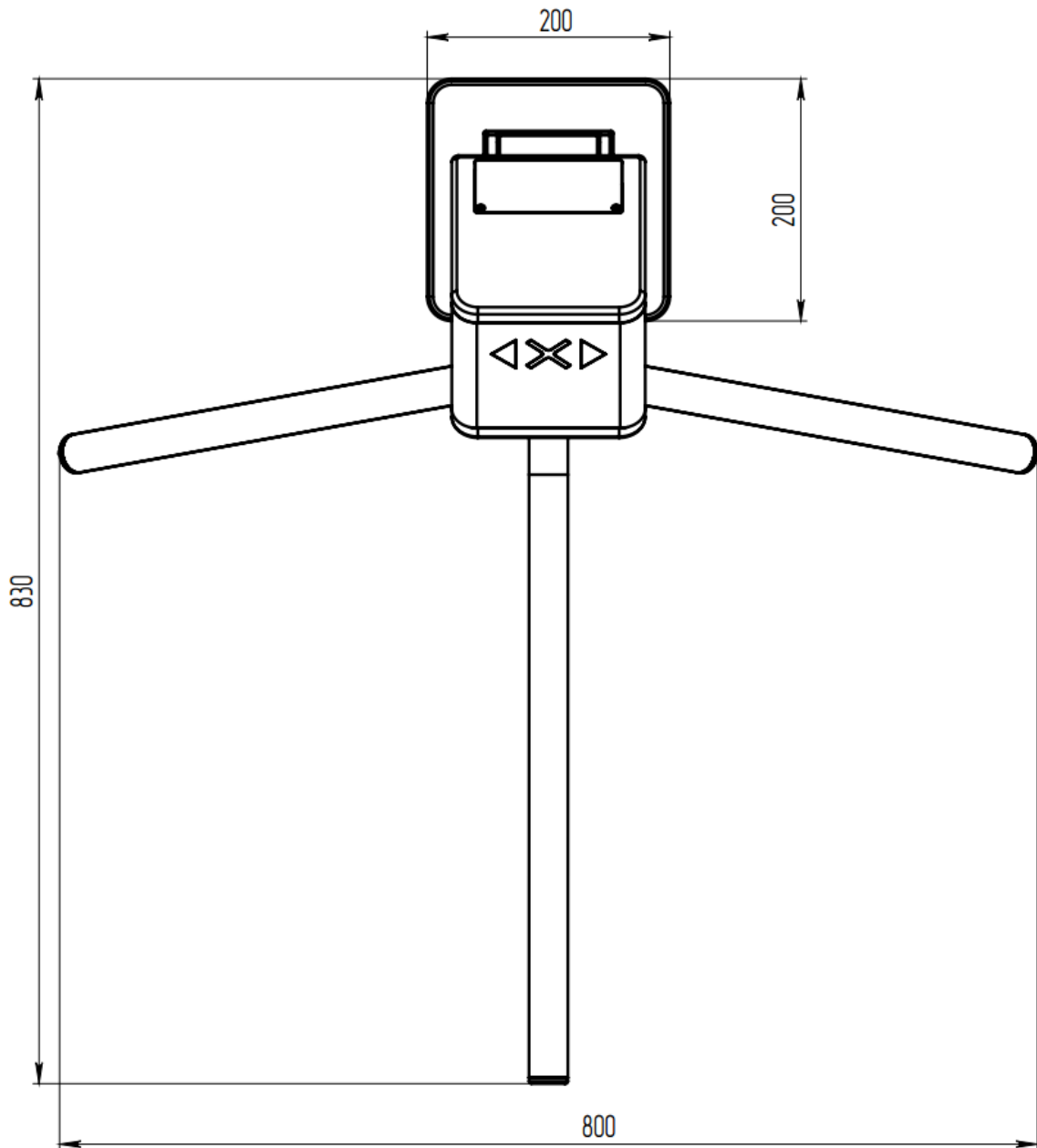
Fig. 16. Connecting diagram of control panel to ACS controller

Appendix 1. Summary of data bus CAN2.0

Remote control panel uses a modern jam-resistant bus of standard CAN2.0. According to the standard CAN2.0 a length of signal cable can reach the values more than one kilometer, however correct operation at such distances depends on many factors. At the distances more than 25 meters – it must be used twisted pair Cat5e or Cat6. Total electrical resistance for power wire of the remote control panel for direct current shall not exceed 50 Ohm. If this requirement is unable to comply with one can install additional PS for 12V/100mA (minimal operating supply voltage of remote control panel – 7.5V). At that for correct operation 3 wires coming from turnstile CL, CH, GND are sufficient. Two control panels may be connected to one turnstile.

An important feature of CAN 2.0 bus is the availability of 120 Ohm resistor at the bus ends. Such resistor has already been installed in the standard remote control panel.

Appendix 2. Location of installation holes related to external dimensions of the turnstile



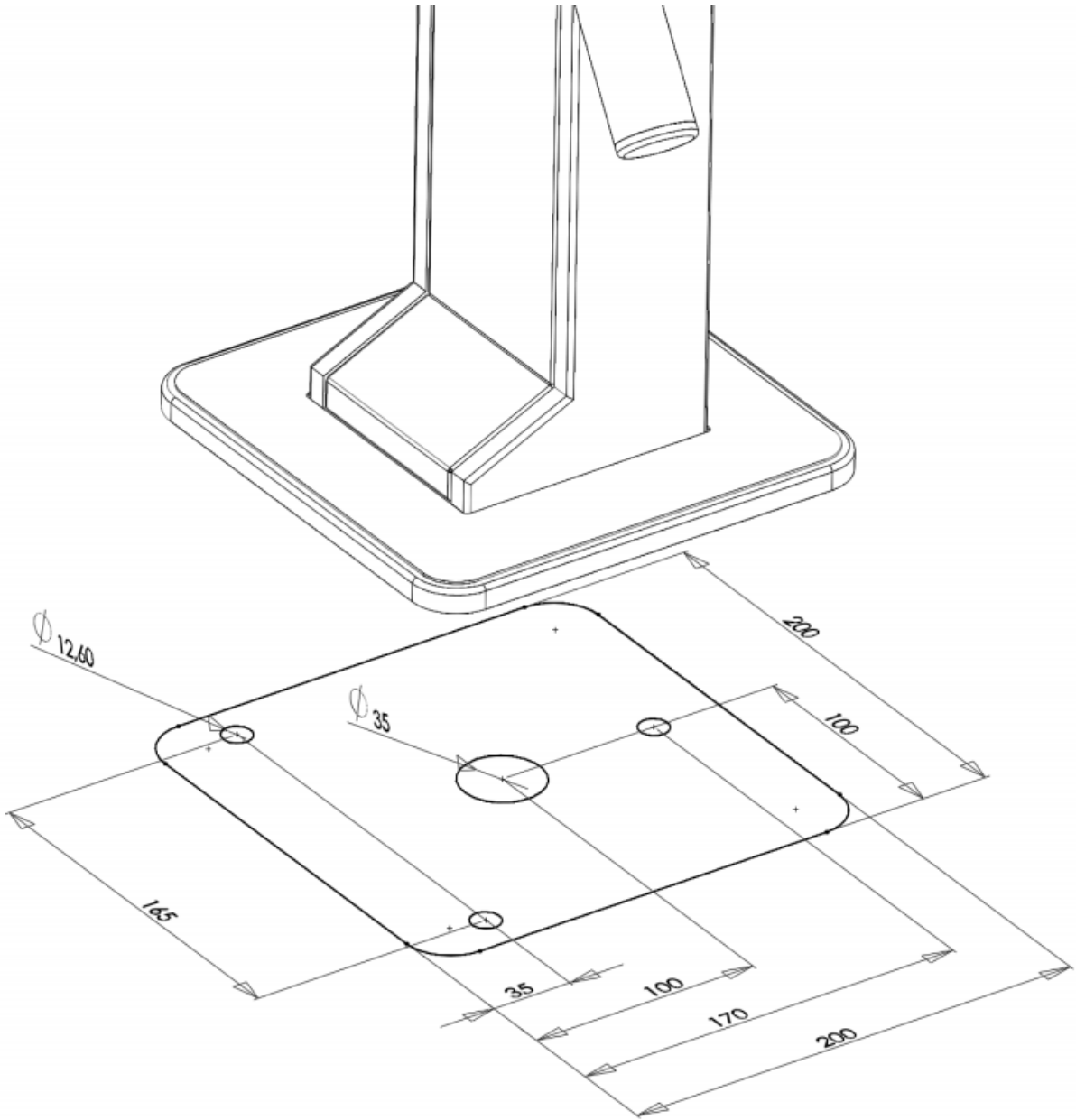


Fig.17. Location of installation holes and turnstile dimensions

PRODUCT IS CERTIFIED

Voltage: 12V DC

Current: 5A

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