

Installation guidelines

Cube C-01 turnstile



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List of abbreviations used

PS	– Power Supply
SFAS	– Security and Fire Alarm 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 dismountable bent plate made of stainless steel for quick access to the cross-board for connection of cables PS, remote control panel and ACS. At the lower part of the turnstile housing there is a hole for entry of these cables.

Basement cover shall be fixed with double-sided adhesive tape or sealing compound. The cover hides turnstile fixation to the floor (Fig.1).

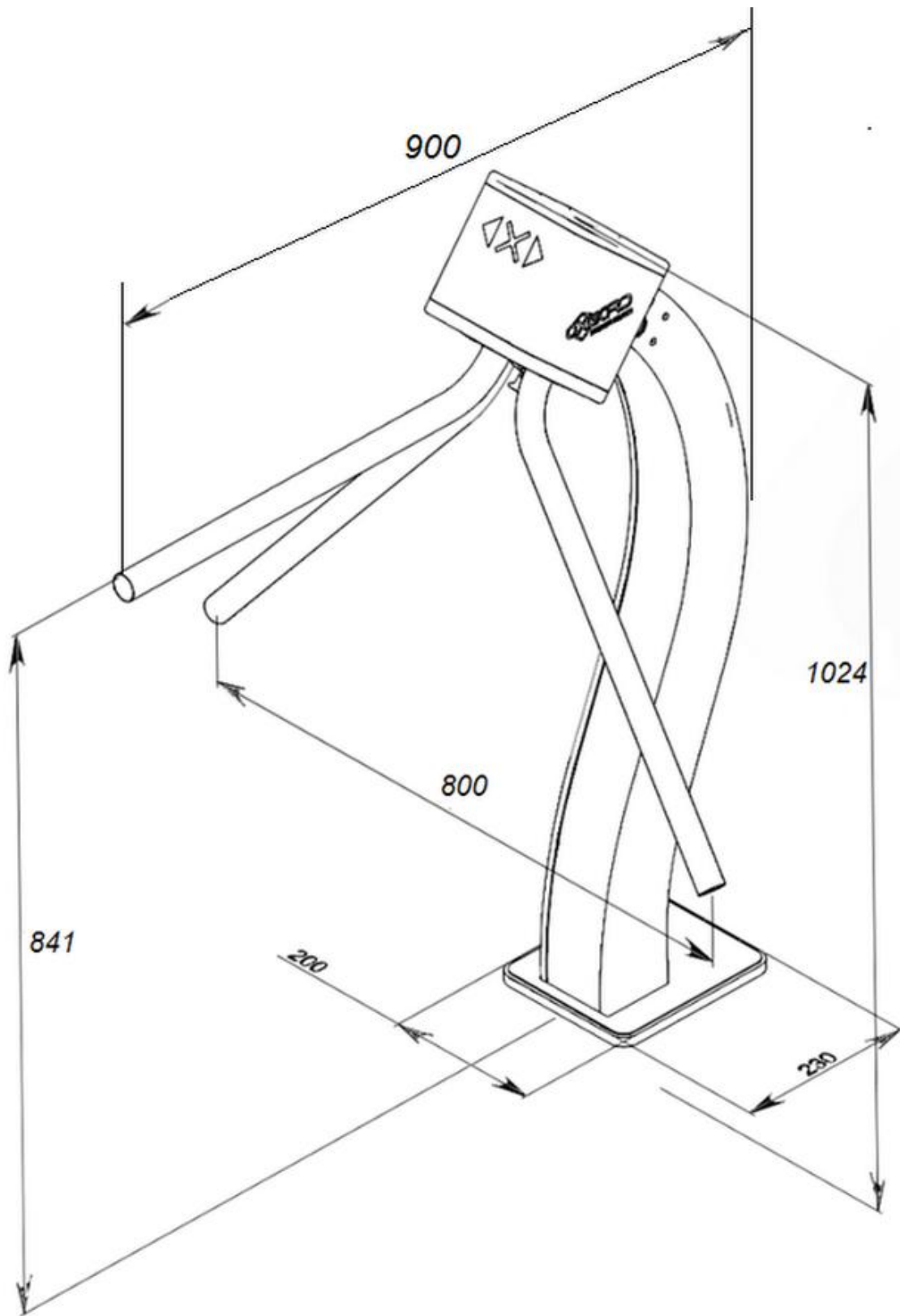
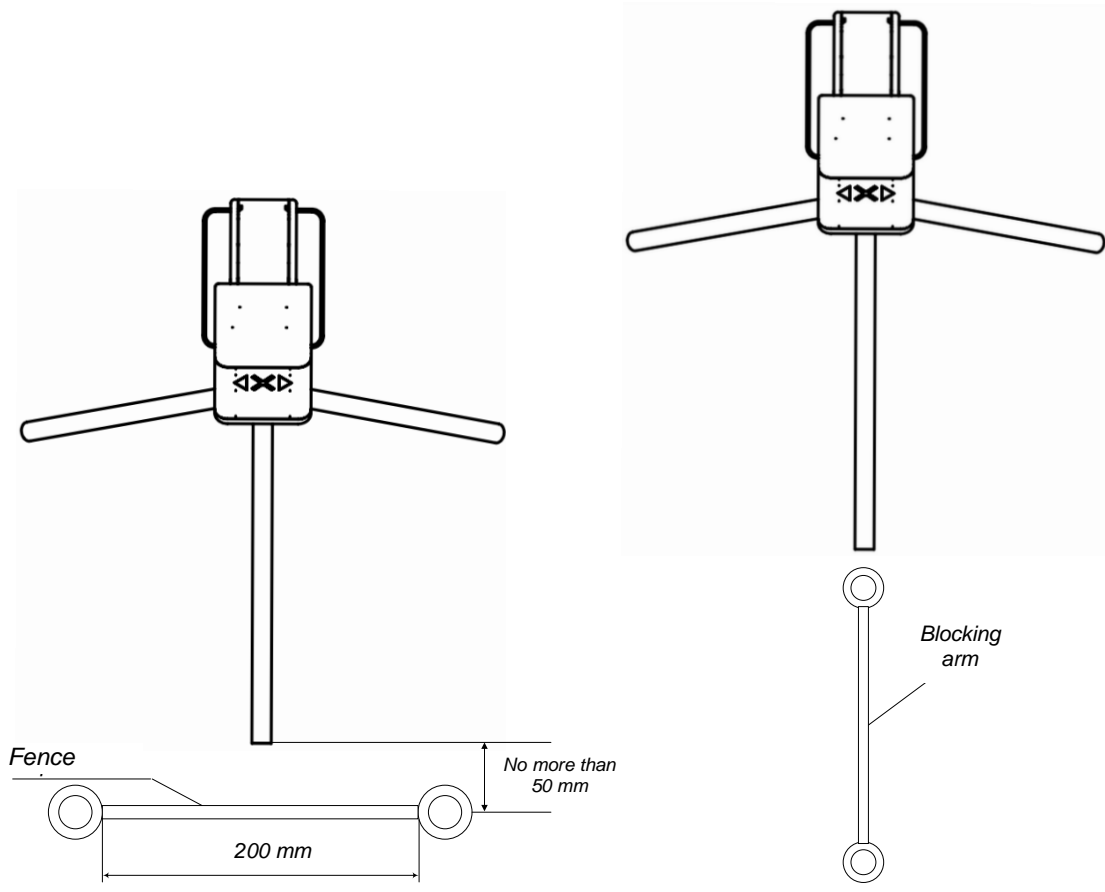


Fig.1. General View and Overall Dimensions of Turnstile

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.2.



Recommended installation diagram Not recommended installation diagram

Fig 2. 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 3.

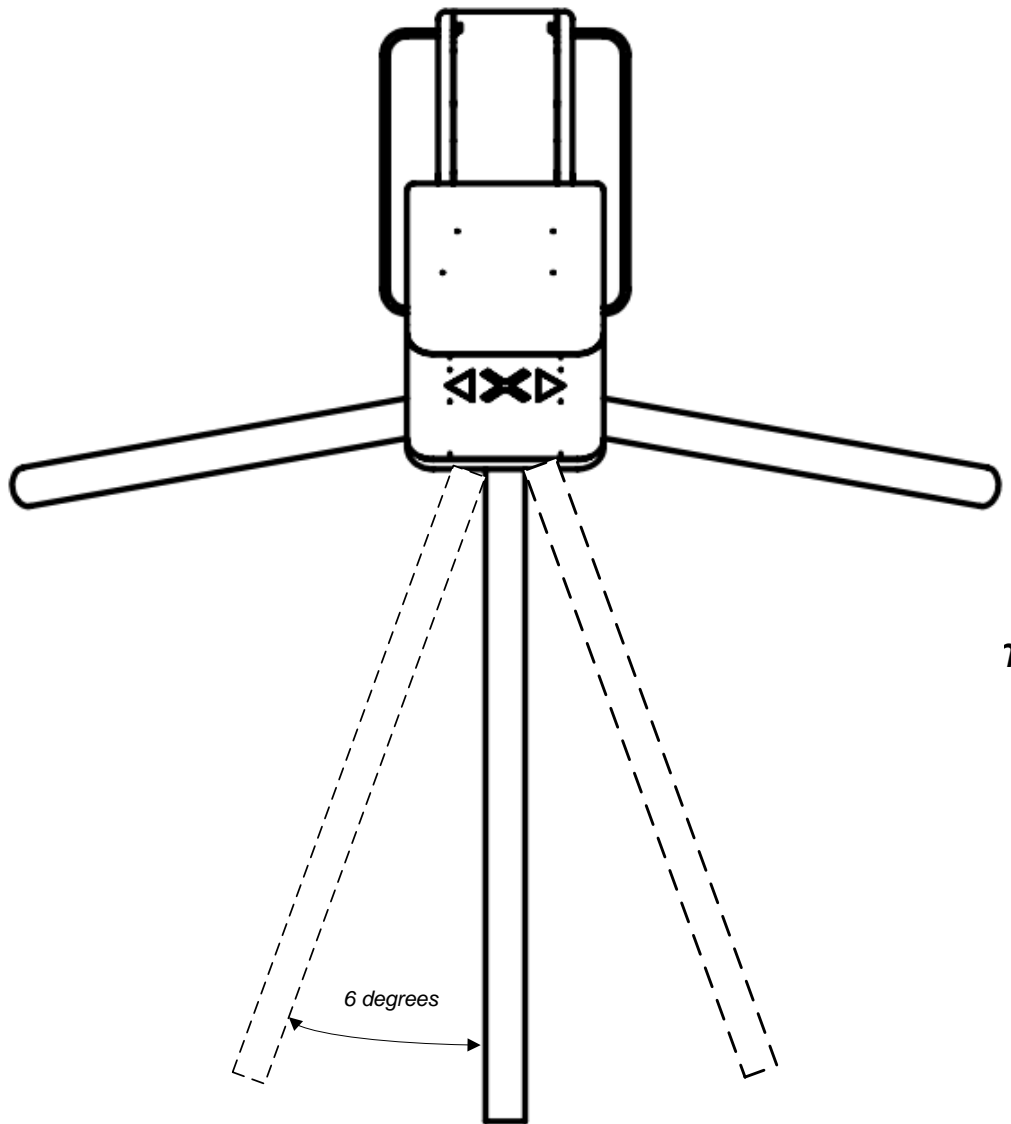


Fig. 3. Possible free movement of the arm, in “STOP” mode

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.4).

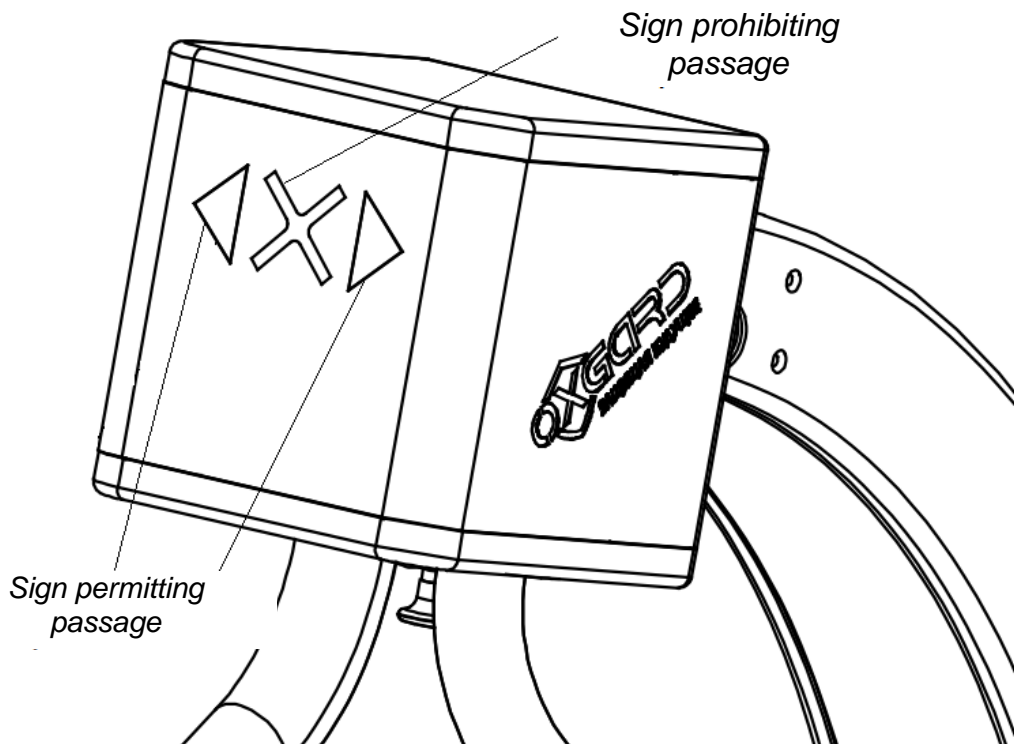


Fig.4.Appearance of indication panel

Control panel

Housing of remote control panel is made of brushed stainless steel. In the front there are control buttons 1 - 4 and LEDs indicating operation modes of the panel (Fig.5). Standard cable length, included in the delivery set, is 5 meters

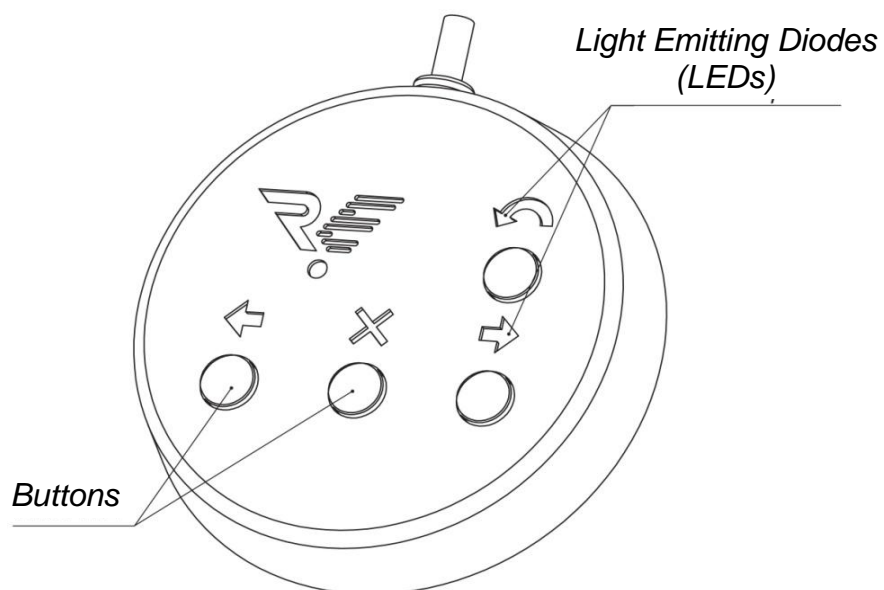


Fig. 4. Appearance of control panel

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.6), 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.13). 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.6) located at the lower turnstile panel. It is required to prepare the trench for cable laying. 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.

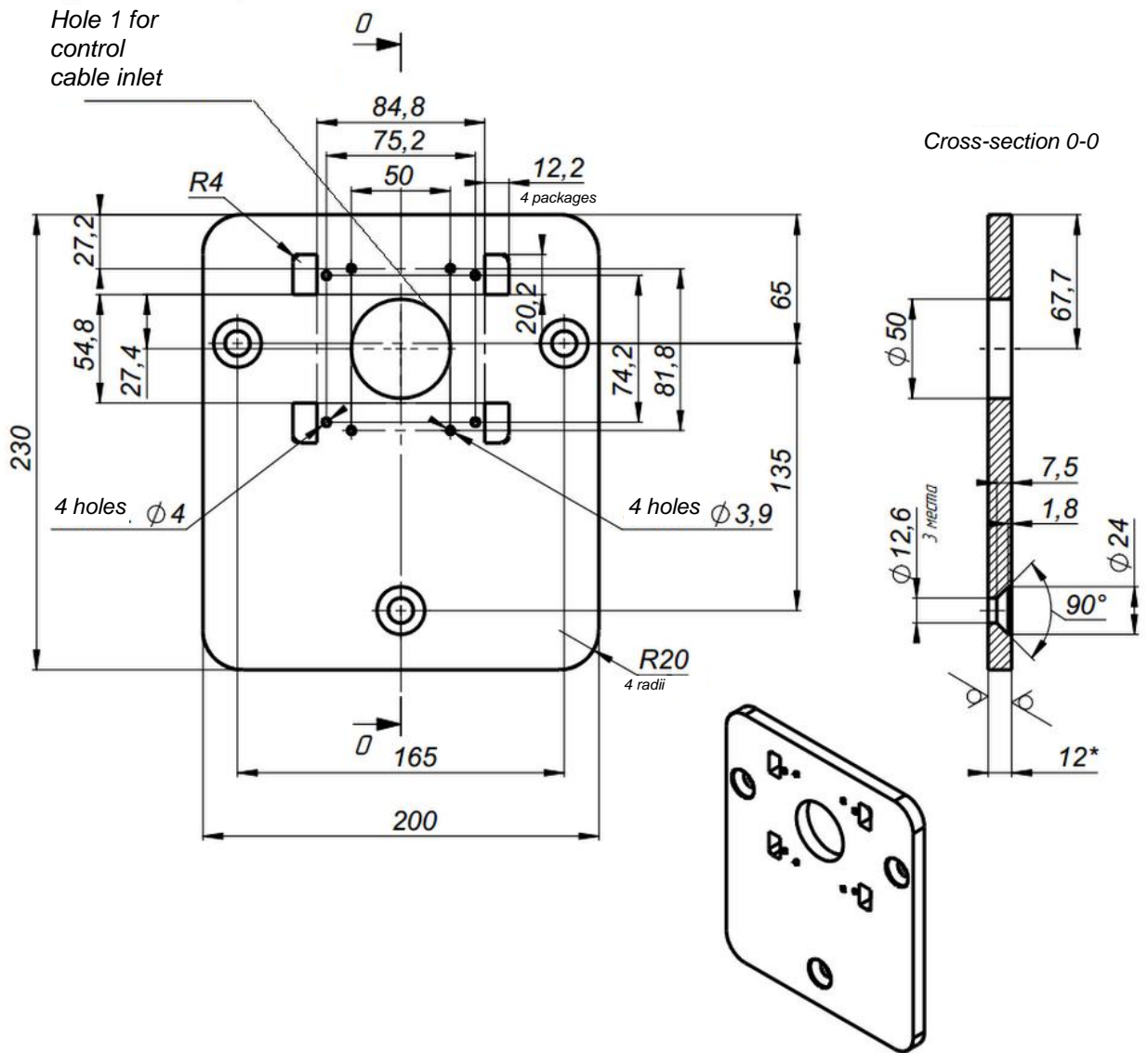


Fig. 6. . Installation dimensions (Provided a drawing of the bottom support of the turnstile)

4.2.7. Mount the turnstile housing to the prepared site (Fig.6). 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.6). Secure cables with cable ties.

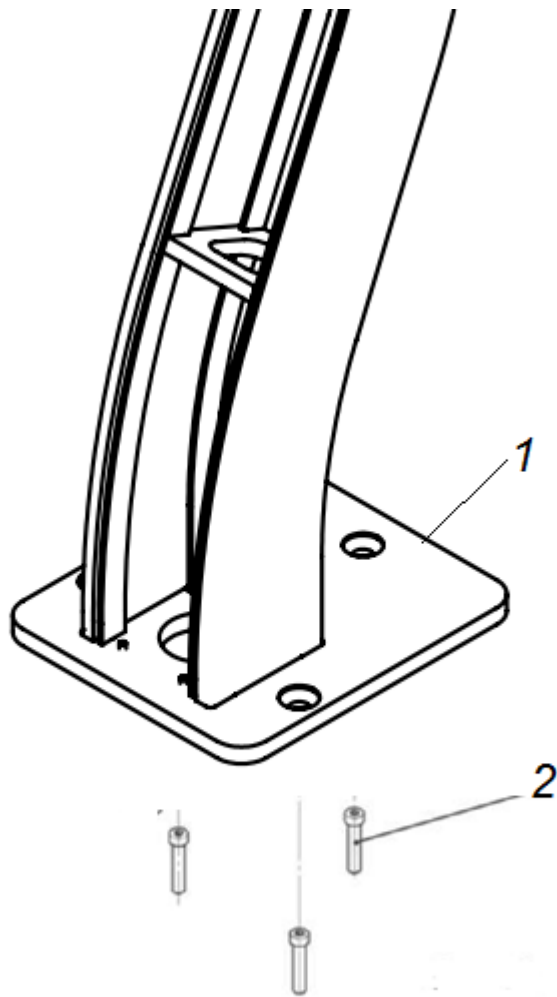


Fig.7. Installation diagram of the turnstile

4.2.8. Match the holes in the turnstile support (1, Fig.7) 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 7), 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:

PS, remote control panel and ACS connection is carried out with a cross-board. For this it is required to unscrew 2 self-drilling screws located on the turnstile rack and remove dismantable bent plate made of stainless steel for quick access to the turnstile cross-board (Fig.8).

Fig.8 shows the cross-board arrangement on the turnstile rack.

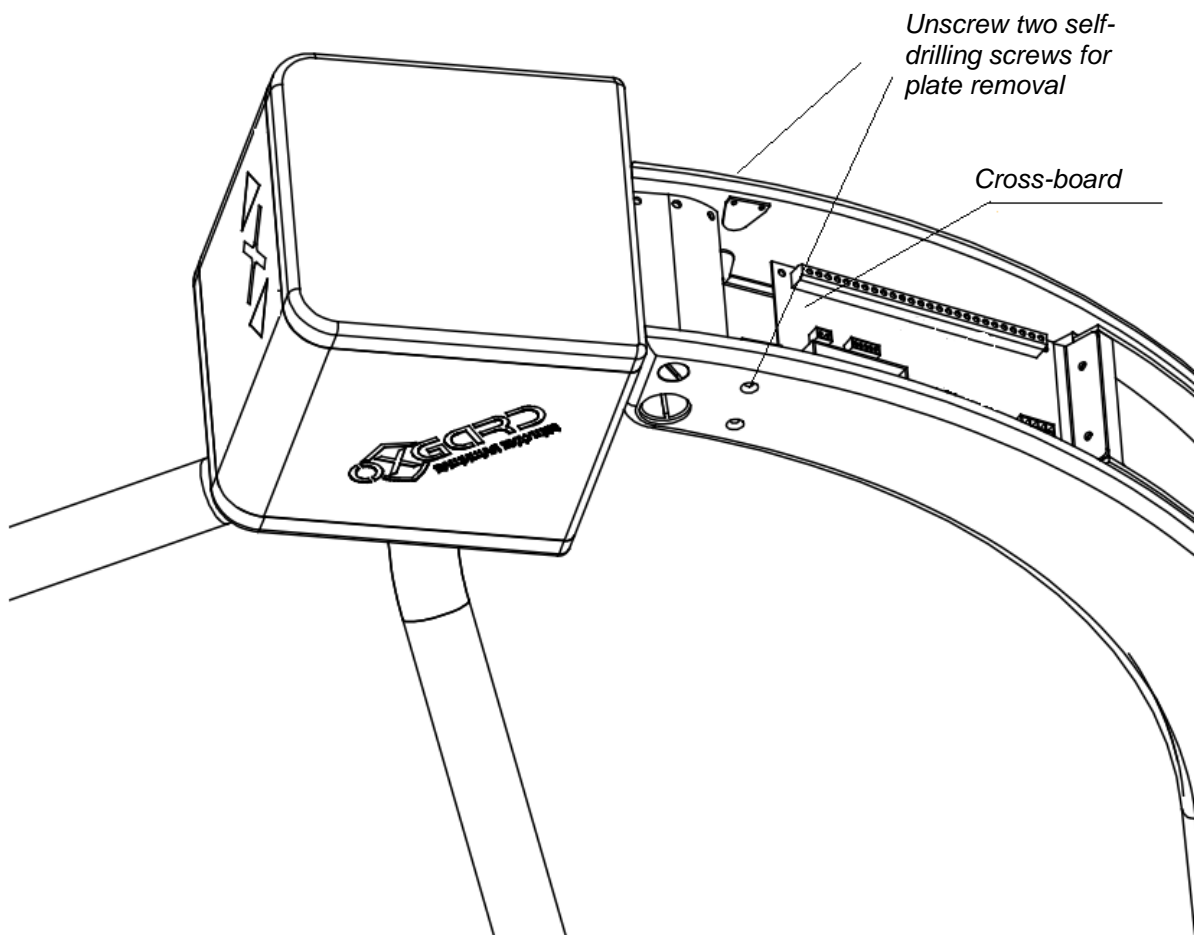


Fig. 8. Cross-board arrangement on turnstile rack

Fig.9 shows external view of the cross-board and arrangement of the connectors for connecting PS, remote control panel, ACS and SFAS.

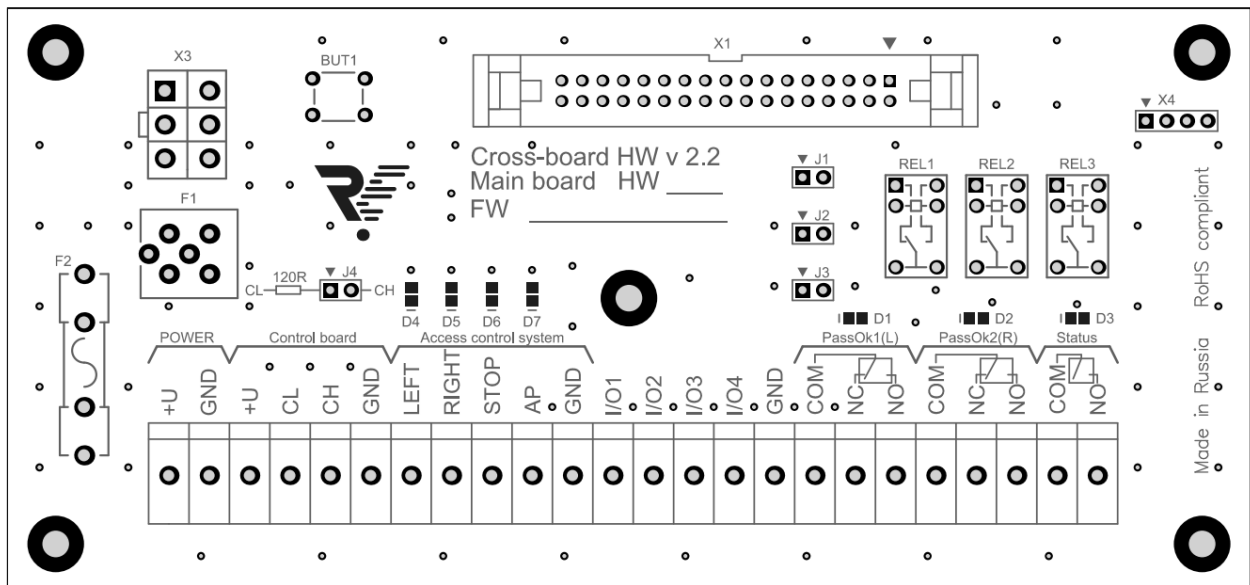


Fig.9. External View of the Cross-board

Table 3. Operation modes of a turnstile

Jumper position	Operating mode of the turnstile
J1 removed	Pulse mode (see i.5.3.)
J1 installed	Potential mode (see i.5.3.)
J2 installed	Turnstile does not react to the control panel instructions, button status translated to the outputs I/O1...I/O4 (see i.5.4)
J2 removed	Turnstile is controlled by the control panel, button status translated to the outputs I/O1...I/O4 (see paragraph 5.4)

-Jumper J3 not used

-Jumper J4 used for arrangement of the normal function of the bus CAN2.0. see Appendix 1.

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 located on the cross-board. The contacts (+) and (-) of PS to be connected to the contacts (12V) and (GND) correspondingly.

Secure connection of the cable. Fit the dismantable bent plate in its place and fix it with self-tapping screw.

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)
AP	"Antipanic" mode – passage is authorized in both directions (highest 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 second later.

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

STOP and AP 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.

To change over to potential operation mode it is required to install jumper J1 (Fig.9). 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” – PassOk1 and PassOk2. NO and COMM is normally opened connection, NC and COMM is normally closed connection. Actuation of one of the contact group testifies of a passage fulfilment to the appropriate side (PassOk1—to the right, PassOk2—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 fulfilment. Light Emitting Diodes (LED) D1 and D2 indicate of the relay condition PassOk1 –to the right and PassOk2 – to the left.

At the cross-board there is a relay output for ACS, working on “dry contact” principle – Status. NO and COMM is normally opened connection, its contacts are closed only when turnstile enters “AP” mode and the diode D3 is now goes on.

The following LEDs are also mounted on the cross-board:

D4 that indicates a signal to the input “LEFT”.

D5 that indicates a signal to the input “RIGHT”.

D6 indicates a signal to the input “STOP”.

D7 indicates a signal to the input “AP”.

A jumper J4 shall be mounted; it is used for connecting a 120 Ohm resistor to a CAN 2.0 busbar to ensure its normal operation.

When two control panels are in use J4 will not to be mounted as 120Ohm resistors are allocated at CL and CH terminals in the control panels themselves.

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 J2 to the cross-board (Fig 9). With J2 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 I/O1...I/O4 (Fig.9), which are the outputs with bare collector. Contact assignment is represented in Table 6, numbering of the control panel buttons is shown on Fig.10. For this group of contacts maximum output current does not exceed 150 mA, permissible voltage is no more than 24 V.

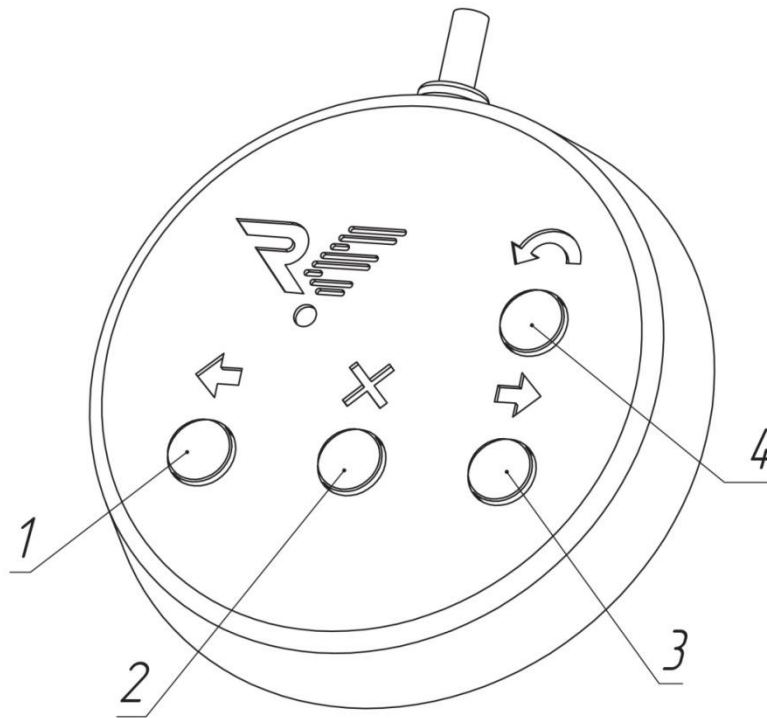


Fig. 10. Numbering of control panel buttons

Table 6. Assignment of I/O contact group

Contact marking	Assignment of contacts
I/O1	Status of “Left” button (1, Fig 10)
I/O2	Status of “Right” button (3, Fig.10)
I/O3	Status of “Stop” button (2, Fig.10)
I/O4	Status of “Antipanic” button (4, Fig.10)

Outputs I/O1...I/O3 display current status of remote control panel buttons, i.e. the transistor opens when the appropriate button is pressed. Output I/O4 changes its status into the opposite each time when “Antipanic” button is pressed.

Outputs I/O1...I/O4 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. 11).

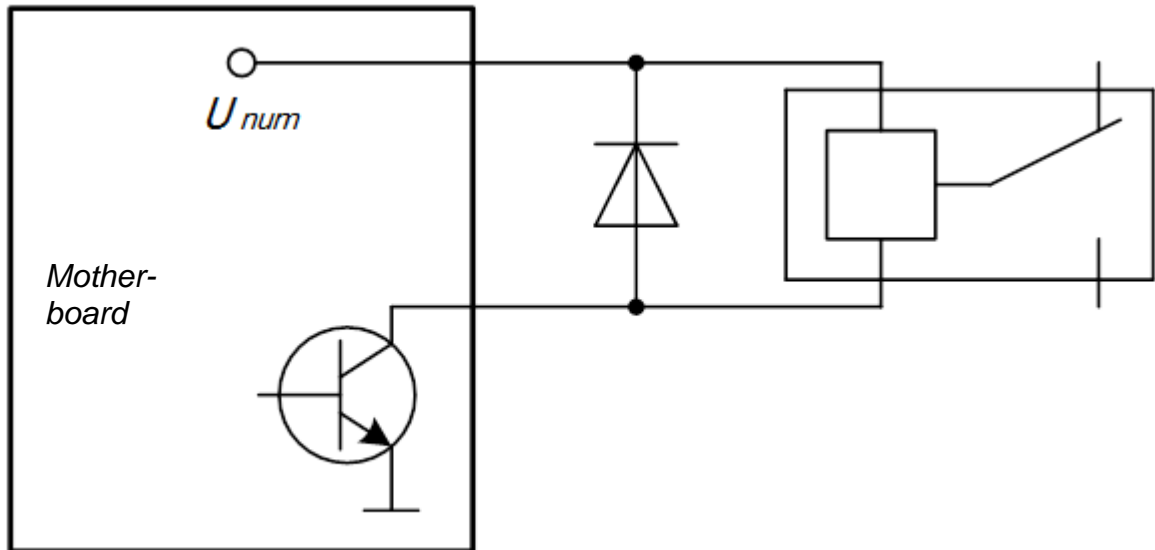


Fig.11. Connection diagram of diode connected in parallel to relay winding

Connecting diagram of remote control panel to ACS controller is shown on Fig.12. 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 Instructions). In this particular case ACS is responsible for these modes.

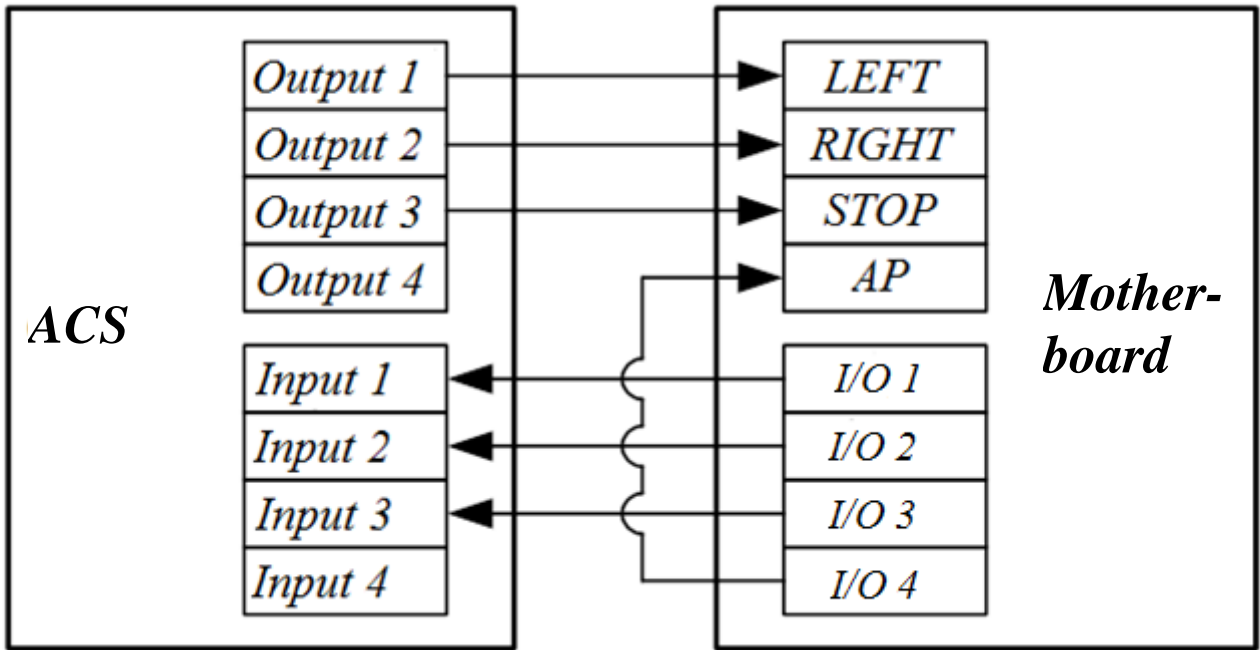


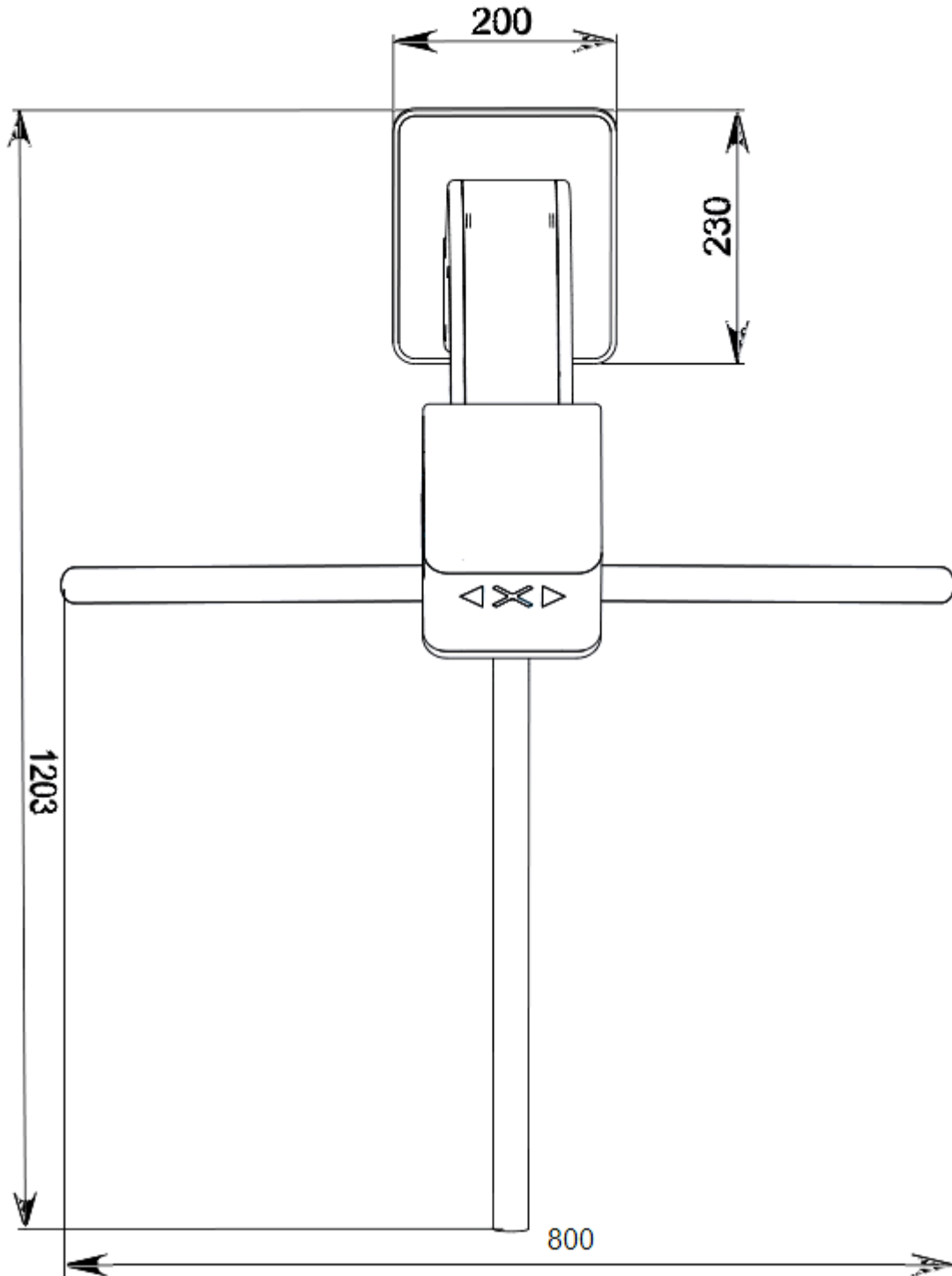
Fig. 12. Connecting diagram of control panel to ACS controller

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. When one control panel is used it is recommended to connect an additional (second) 120 Ohm resistor, located on the cross-board to CL and CH contacts by installing J4 jumper. In case two control panels are connected this is not required, as at the bus ends the required resistors have already been installed. And J4 jumper shall be removed.

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



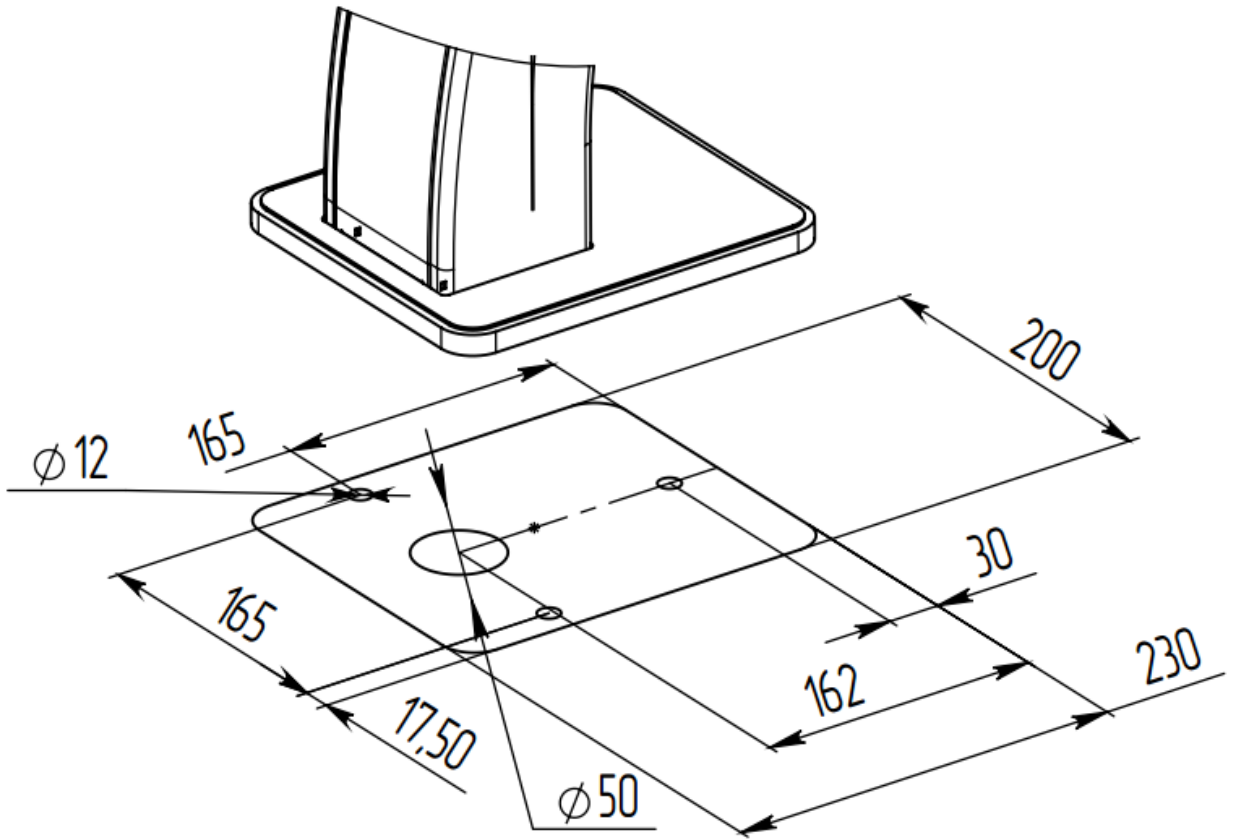


Fig.13. Location of installation holes and turnstile dimensions

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