

Installation
guidelines

Praktika T-04(K) speedgate



Content

1. Basic specifications	5
2. Product design	6
3. Safety requirements.....	10
4. Installation of speedgate.....	11
4.1. Required equipment	11
4.2. Installation of speedgate.....	12
5. Connecting the speedgate.....	15
5.1. Connecting power supply.....	16
5.2. Connecting RC panel	17
5.3. Connecting side units	18
5.4. Connecting access control system (optional).....	20
6.1. Card collector description	26
6.2. Connecting power supply.....	27
6.3. Connecting operating device.....	28
6.4. Connecting of ACS controller.....	29
6.5. Installation of proximity card reader.....	31
Appendix 1. Summary of the data bus CAN2.0	35
Appendix 2. Block diagram of ACS with using the card reader	37
Appendix 3. Location of mounting holes in relation to the overall dimensions of the speedgate.....	40
Appendix 4. Block diagram of minimal connections for synchronized operation of wings with the use of one RC panel.....	42

List of abbreviations

PS	– power supply
FA	– fire alarm
RC	– remote control
ACS	– access control system
OD	– operating device (turnstile)
NC	– normally connected
NO	– normally opened

Speedgate firmware version FW v2.0-2.2

1. Basic specifications

Table 1 Basic specifications

Description	Speedgate	RC panel
Dimension of side unit with open wings (mm) (HxWxL)	1140x1500x200	107x107x25
Dimension of side unit depending on passage lane (mm)		107x107x25
660	1140x1500x500	
900	1140x1500x620	
Weight of side unit depending on passage lane, kg		0,5
660	110,0	
900	113,0	
Temperature range, °C		
operation	+1...+40	+1...+40
- transportation and storage	+1...+40	+1...+40
Atmosphere relative humidity, no more than %	80	80
Throughput, persons per minute	30	
Card collector capacity (pcs.) **	More than 500	
Max. number of connected RC panels, pcs	2	
Lifetime, years	8	8

Table 2 Electrical specifications

Description	Speedgate	Card collector**	RC panel
Supply voltage, V: - nominal - working	12,0 10,8...15,0	12,0 8...18,0	12,0 7,5...15,0
Average current in standby mode * A	0,4	0,2	
Average current operational mode * A	3,0		
Maximal current of 1 side unit*/***, A	5,0		
Maximal current of card collector*, A		1,5	

*- values mentioned at a nominal supply voltage

**-optional

***- to form a passage area required 2 side units, i.e. 2 power supply 12V 5A

The manufacturer reserves the right to change the packaging, specifications and appearance without notice

2. Product design

Speedgate housing

Speedgate housing is made of brushed stainless steel, wings are made of tempered glass. Additionally the card collector can be integrated in the design of the speedgate. Base covers for access to PU, RC and ACS cables holes (Fig. 1) are provided at the bottom of side units.

Speedgate may have only a single passage, however an unlimited number of passages can be arranged with the use of side units and middle units, depending on customer requirements.

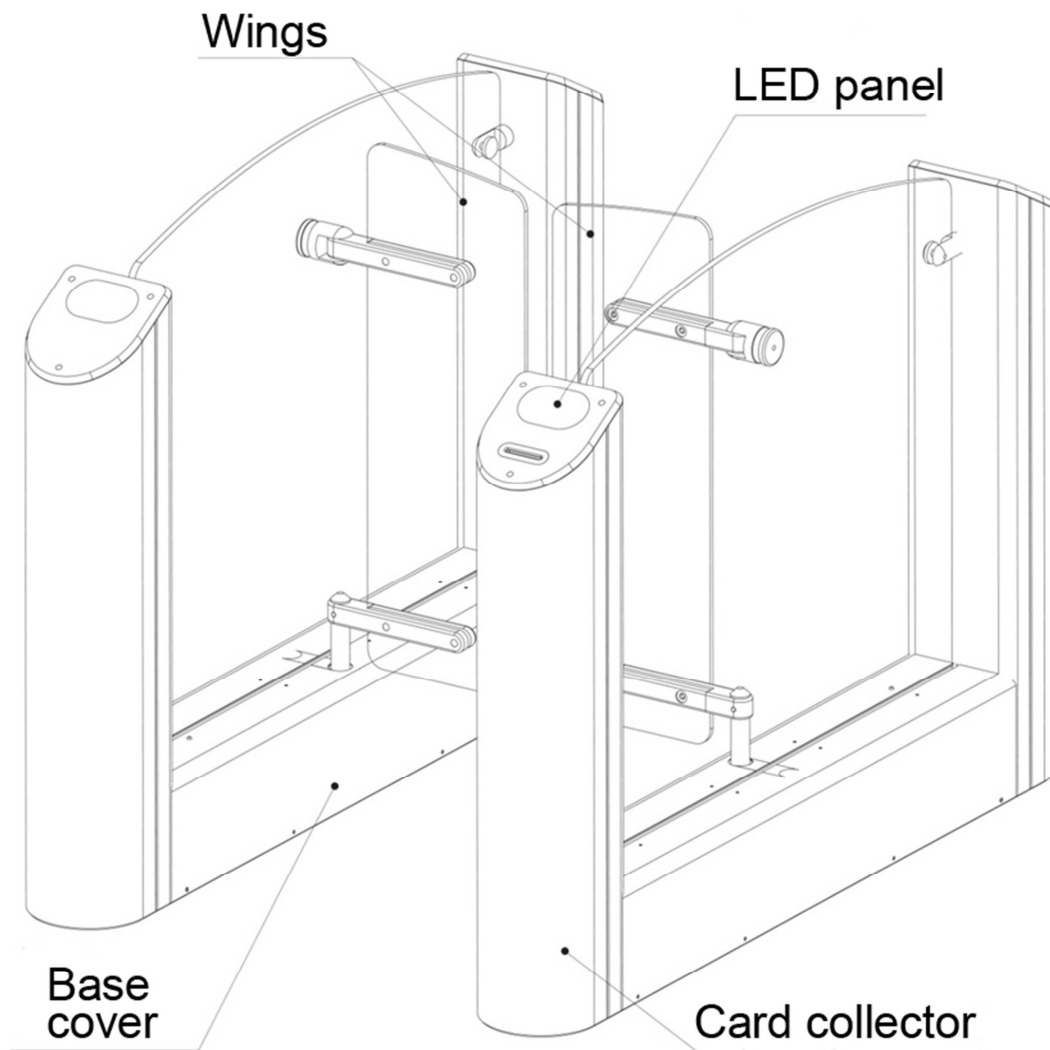


Fig. 1 General view of speedgate

Several speedgates set a required pass zone when mounted in a row. In this case side and middle units should be used (Fig. 2). Any of the units cannot be used stand-alone. If it is used so, it will not be the normal mode and the manufacturer is not responsible for its operation.

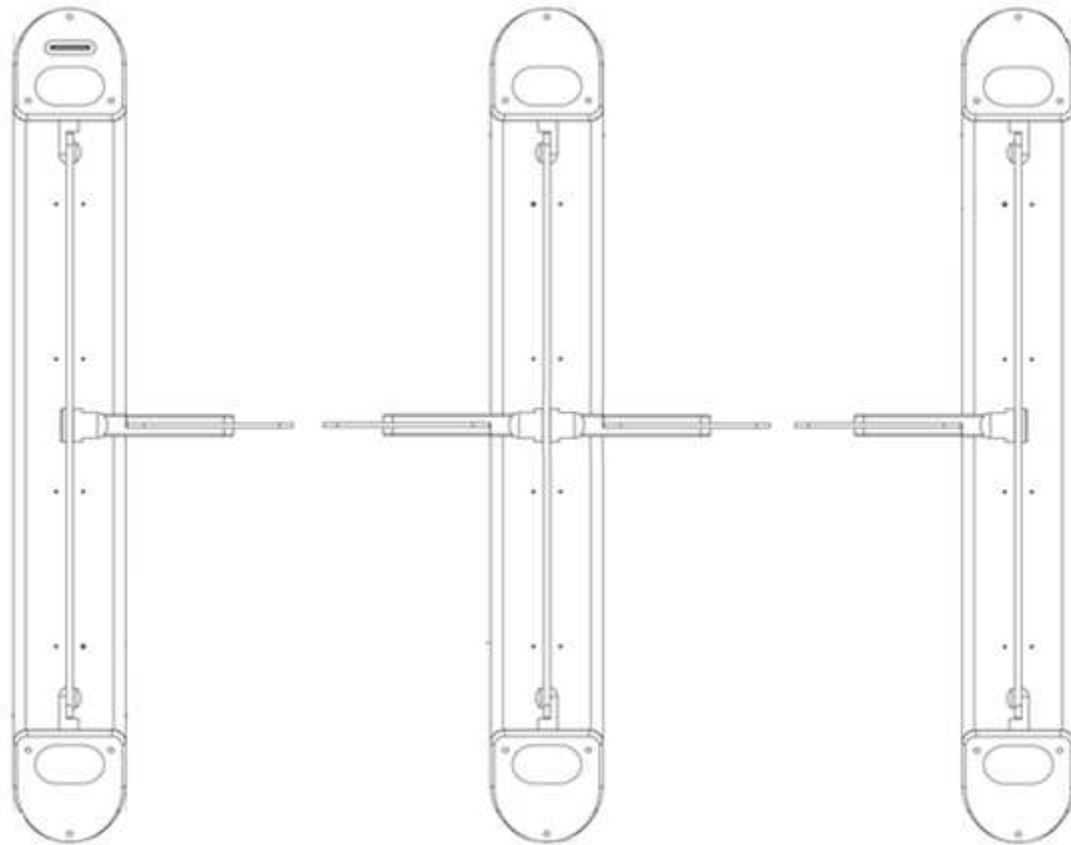


Fig. 2 Entrance example (top view).

LED panel

Display panel of the speedgate is made of artificial stone with an insertion made of acrylic glass. Speedgate operating modes are displayed on the panel in the form of mnemonic signs depicting authorization and non-authorization (Fig. 3).

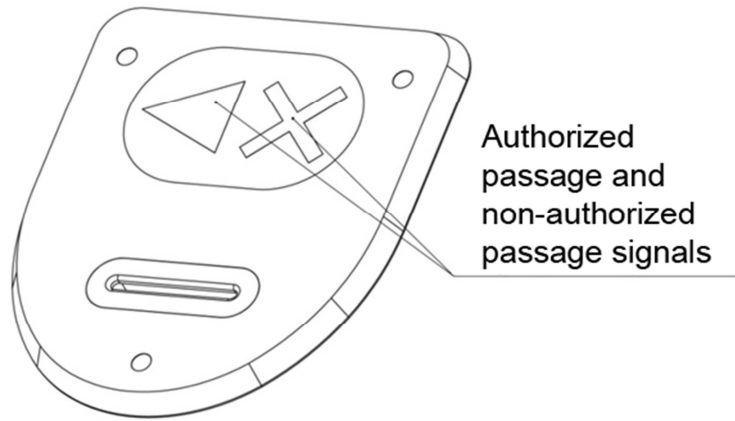


Fig. 3 General view of LED panel display

Remote Control Panel

The housing of RC panel is made of polished stainless steel. On the front side there are control buttons and LED indicators of RC operational modes (Fig. 3). The standard supplied cable is 5 m long.

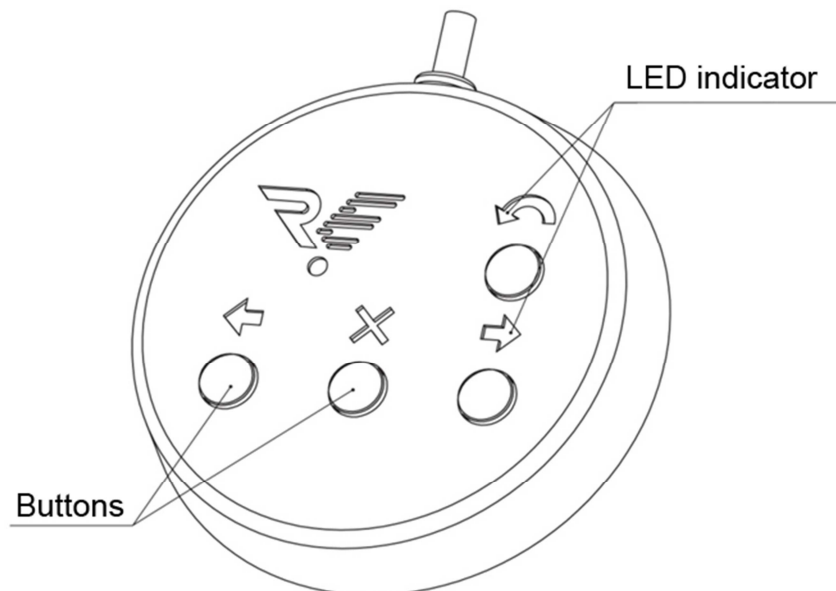


Fig. 4 General view of remote control panel

3. Safety requirements

CAUTION! Failure to comply with the safety requirements specified in this section may result in damage to human life and health, total or partial loss of workability of products and (or) auxiliary equipment.

CAUTION! The producer disclaims any liability for damage to human life and health, total or partial loss of workability of products and (or) auxiliary equipment for non-compliance of the safety requirements specified in this section, as well as terminates the product warranty.

IT IS NOT ALLOWED TO:

- Set the power supply unit inside the speedgate housing as this could lead to electric shock to persons;
- Set the speedgate other than in dry and heated places;
- Impede or accelerate the speedgate wings;
- Apply chemically aggressive cleaning detergents as pastes and liquids.

4. Installation of speedgate

CAUTION: The speedgate 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 speedgate carefully read this section of the Regulations.

4.1. Required equipment

Tools used for card reader mounting:

- Electric perforator;
- 20mm diameter carbide drill for drilling holes in the floor for anchors (recommended anchor - SORMAT PFG LB 12-50);
- wrench for hexagon socket head screws S10;
- slotted screwdriver;
- plumb line or level;
- steel underlayer for turnstile alignment
- round file
- side cutters

4.2. Installation of speedgate

CAUTION! We recommend to mark the mounting holes corresponding to side unit base holes when the wings are already installed.

CAUTION! During installation take into account that glass wings cannot be adjusted. It is recommended to check the correctness of installation before fixing the side units.

CAUTION! During preparation of the installation site take into account that each side unit requires a separate power supply.

CAUTION! During installation of the speedgate prepare conduits for cable routing of CAN-bus to connect side units

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

4.2.2. Prepare conduits or cable channels from the site to the installation site of PU, RC, as well as, if required, to the point of ACS connection and FA.

4.2.3. Follow the layout and drill 12 holes of 20mm diameter for floor anchors. Location of mounting holes related to the outer dimensions of the speedgate and its dimensions are shown in Appendix 4. Depth of the hole should exceed the length of the anchor for more than 5mm. Put anchors in the holes.

4.2.4. Cable routing is carried out through holes of 50 mm diameter (Fig. 5) in the lower plate of side units.

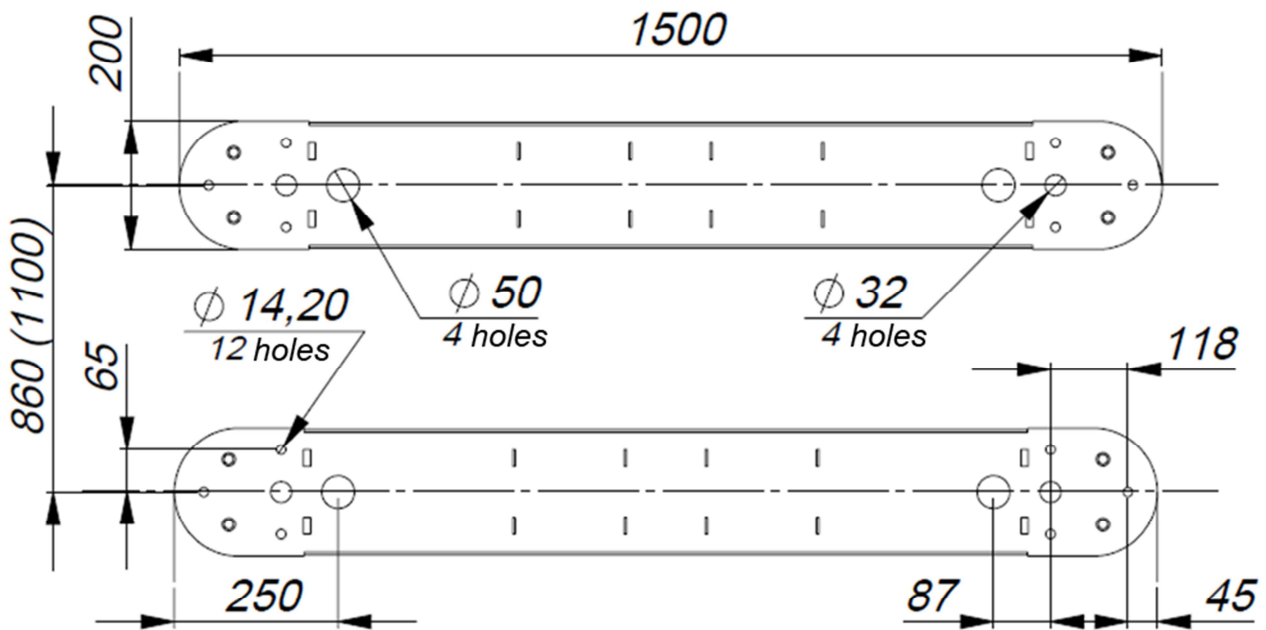


Fig. 5. Linkage dimension with 660 (900) mm passage width

4.2.5. Open the box and unpack:

- side units;
- remote control panel with cable;
- lock keys (8 pcs.).

4.2.6. Route cable of RC panel, cable of PS unit, cable of CAN-Bus, and, if provided, cables of FA and ACS into cable channel or conduit.

4.2.7. Set the side units of speedgate on a prepared site. Unscrew the 4 units of M4 screws and remove the base cover (Fig. 6).

4.2.8. Put housing cables of RC, PS, CAN-bus and, if necessary, cables of FA and ACS inside speedgate housing. Secure cables with cable ties.

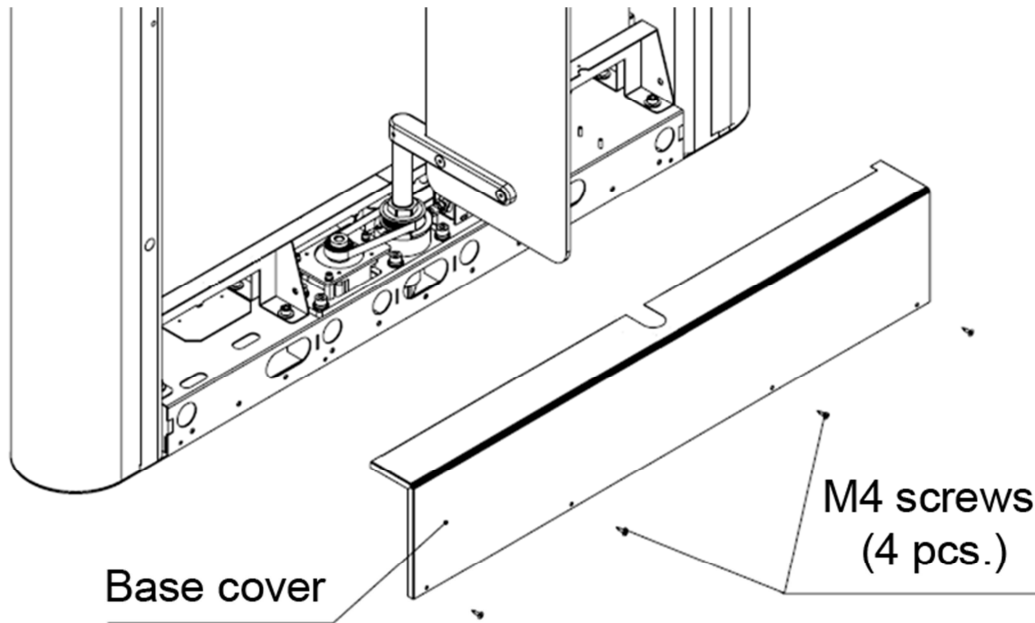


Fig. 6 Installation diagram of side unit

4.2.9. Align together the holes in the lower plate of side unit and anchors in the floor. Check the vertical installation in 2 planes. If necessary, use appropriate steel underlayers for proper installation of the speedgate. Fix the housing of side unit with 12 screws M10, tightening them to the corresponding anchors by using a wrench with internal hexagon S10.

4.2.10. Remove protective film from the housing of the speedgate.

5. Connecting the speedgate

Connection of RC, PS and ACS is performed with the use of motherboard. Figure 7 shows the location of motherboard at the front of the side unit.

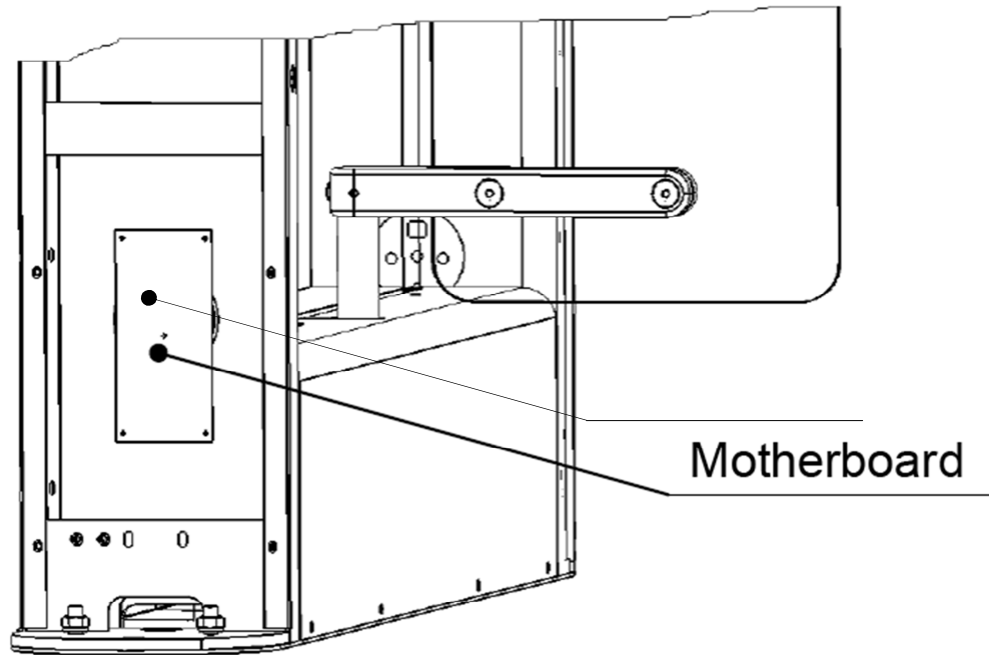


Fig. 7 Location of motherboard on the side unit

Figure 8 depicts the motherboard and connectors for PS, RC, ACS and FA.

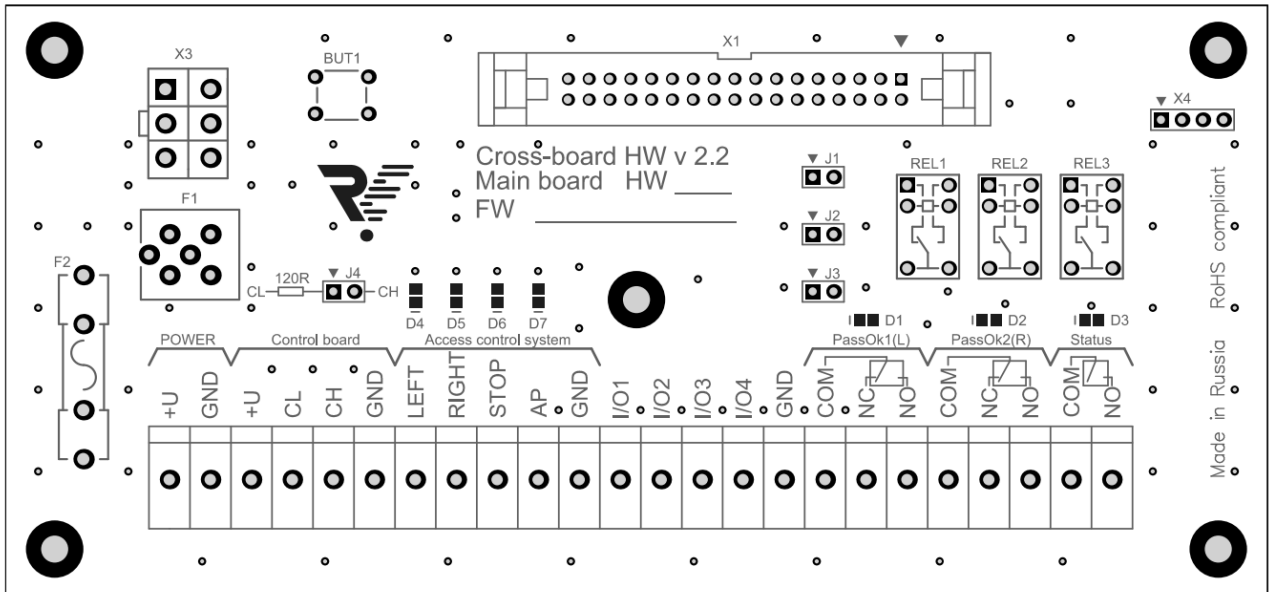


Fig. 8 General view of motherboard

CAUTION (!) Operating mode of speedgate is defined by setting the jumpers on motherboards of both side units of the speedgate.

Table 3 Operating mode of speedgate

The position of jumpers	Operating mode of speedgate
J1 removed	Pulse mode (see article 5.3.)
J1 installed	Potential mode (see article 5.3).
J2 installed	Speedgate does not respond to the remote commands. Status of the buttons is transmitted to the outputs I / O1 ... I / O4 (see article 5.4)
J2 removed	Speedgate is controlled by remote control. Status of the buttons is transmitted to the outputs I / O1 ... I / O4 (see article 5.4)

- Jumper J3 is not used
- Jumper J4 is used to establish the normal operation of CAN2.0 bus. See Appendix 1.

5.1. Connecting power supply

CAUTION! Do not use power supplies with an output current less than 5A. For each side unit must be a separate power supply.

Do not install the power supply at a distance more than 25 meters from the speedgate.

CAUTION! Do not connect the power cable with cross-section less than 1.5 mm². When the length of the power cable is more than 10 m it is recommended to use a cable with 2.5 mm² cross-section.

Each passage (two wings) is powered by two sources of 12V DC voltage. PS unit shall be selected on the basis of these parameters. Also note that an increase in the length of the supplied cable increases the voltage drop.

Install the PS unit in a place with easy access for operator. Connect the power supply to the POWER contact set on the motherboard. Connect (+) and (-) contacts of PS unit to (12V) and (GND) terminals respectively.

Make sure the cables are securely connected.

5.2. Connecting RC panel

RC panel is connected to Control Board contact set on motherboard. When the first side unit is connected second side unit shall be connected in

parallel to it using the routed signal cable of CAN-Bus. Marking of contacts: 12V, CL, CH, GND.

Table 4 Marking of PS contacts

Contacts marking	Wire color
12V	Red
CL	Yellow
CH	Green
GND	Blue

5.3. Connecting side units

Connecting pattern for two side units is shown in Fig. 9. In case you need to increase the number of passes, it shall be cascaded

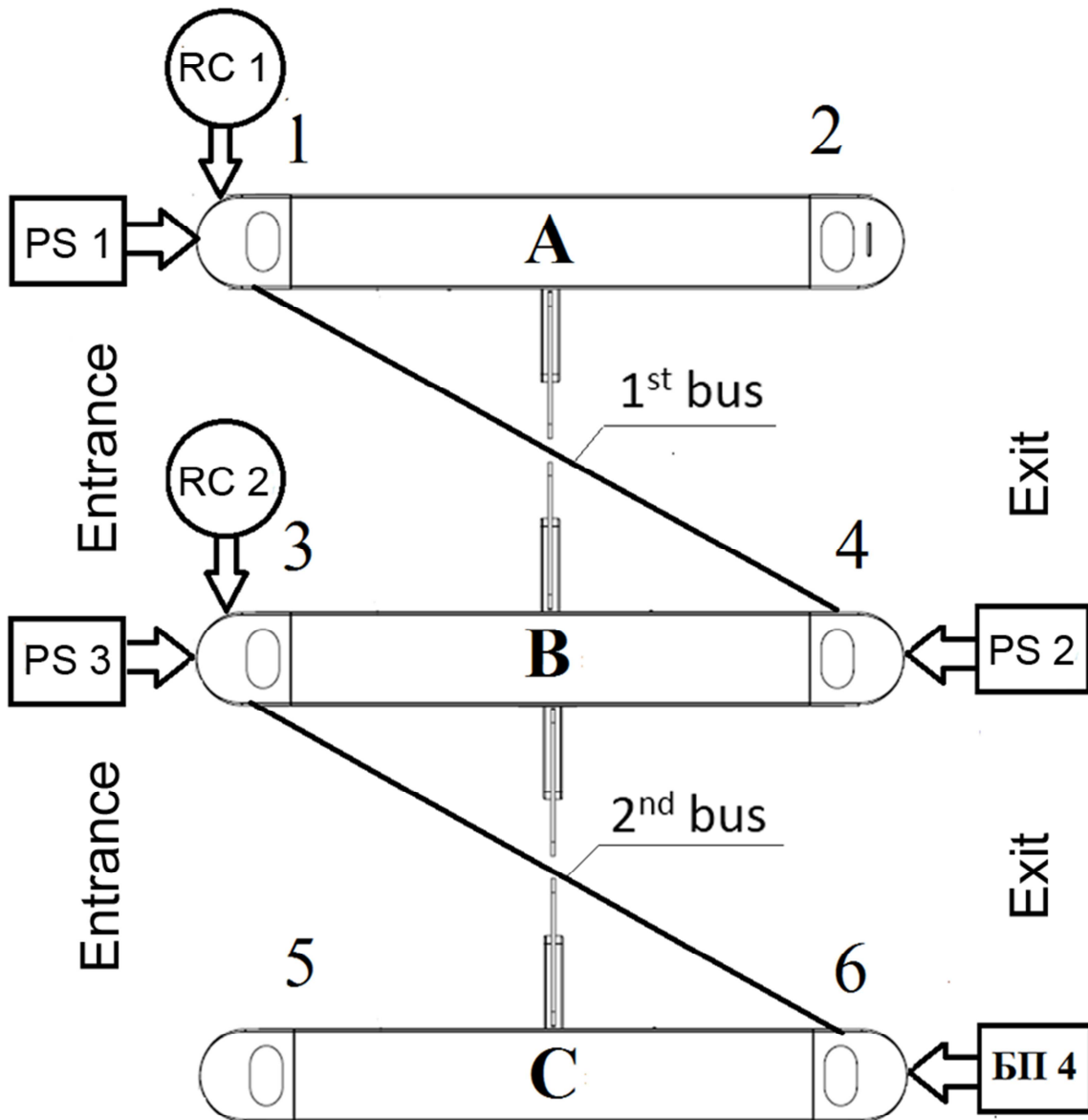


Fig. 9 Connection pattern of side units

For normal operation of the entrance with two passages, perform the following:

combine two side units (A and C) and one middle unit B, with two three-wire buses CAN-2 (first bus CAN2.0 and second bus CAN2.0). See Fig. 9.

Connect «CL» «CH» «GND» contacts of motherboard located in unit "A" housing (marked No. 1) with the same contacts of motherboard located in unit B housing (marked No. 4). See Fig. 9.

«CL» «CH» «GND» contacts of motherboard located in unit "B" (marked No. 3) shall be connected to the same contacts of motherboard located in unit "C" (marked No. 6). See fig. 9.

Control panels RC1 and RC2 are connected to pins «+ U» «CL» «CH» «GND» of corresponded unit.

If RC panels are connected as shown in Fig. 9 jumpers shall be set as follows for the proper operation of the bus CAN2.0 J4:

-J4 on the motherboard 1 is open, J4 on the motherboard 4 is closed

-J4 on the motherboard 3 is open, J4 on the motherboard 6 is closed

Detailed connection pattern of two units of speedgate is shown in Appendix 6.

In order to provide the entrance with two passages you need four power supply units 12V 5 A.

The middle unit is powered either by two power supply units 12V 5A or by single power supply 12V 10A.

A card collector can be integrated in any side or middle units. It is supposed to be installed "the right hand" from the output side.

Card collector can be installed only at the factory!

5.4. Connecting access control system (optional)

ACS controller is connected to AccessControlSystem contact set on motherboard. Marking of contacts: LEFT, RIGHT, STOP, AP, GND. Contact assignment shown in table 5.

Table 5. ACS contacts assignment

Contacts marking	Contacts assignment
LEFT, RIGHT	single pass left / right (lowest priority)
STOP	non-authorized pass (mode "Stop") (medium priority)
AP	opening of wings ("anti-panic") (highest priority)
GND	common contact

Inputs for ACS connecting differ on priorities:

- AP input has the highest priority. As long as this input is closed on GND contact, wings of the speedgate are open and do not respond (!!!) to other signals;
- STOP input has medium priority. When the input is closed on GND contact the speedgate switches to "Stop" and does not respond to other signals, except AP.
- LEFT and RIGHT inputs have the same low priority and include a single passage in one direction or another. If both inputs are closed, passage is allowed in the direction the input which was closed first. If passage was not performed the speedgate will set to "Stop" mode automatically in 5 seconds.

CAUTION (!) In case of closure of one of STOP (or) AP inputs - commands from the remote control panel cannot be accepted, i.e. ACS has a higher priority.

AP and STOP inputs operate only in a potential mode (as potential and constant), i.e. as long as the input is closed on GND contact the speedgate operates in corresponding mode. When contacts are open - speedgate switches to the "Stop" mode irrespective to the mode of operation that was used before ACS operation.

LEFT and RIGHT inputs can operate both in potential and in pulse modes (responding upon GND contact closure). Pulse mode is set on default.

In order to switch to potential mode set J1 jumper (Fig. 8). And J1 shall be set at both motherboards of decided passage. In this case the mode of left / right passage turns on only during the control signal to LEFT / RIGHT inputs. Mode of free passage can be set by control signals to both inputs simultaneously. Priorities of LEFT and RIGHT inputs at the switch to the pulse mode remain unchanged.

Motherboard contains two relay outputs for ACS operating on the principle of "dry contacts» - Pass Ok1 and Pass Ok2. NO and COMM - normally open connection, NC and COMM - normally closed connection.

Activation of one of the contact sets suggests the passage in the corresponding direction (PassOk1 - right or left, PassOk2 - left or right).

Activation of corresponding relay depends on the location of speedgate and determined by an experiment. Related LED indicators turn on, either D1 for right or D2 for left, depending on the direction of passage.

Motherboard contains relay output for ACS operating on the principle of "dry contacts» - Status. NO and COMM - normally open connection, its contacts close when the speedgate switches to "AP" and D3 LED indicator lights up.

Also the motherboard contains following LED indicators:

D4 indicates a signal to the «LEFT» input.

D5 indicates a signal to the «RIGHT» input.

D6 indicates signal to the «STOP» input.

D7 indicates a signal to the «AP» input.

5.5. Connecting RC panel to ACS controller

In some cases RC shall be connected directly to the ACS controller as the passages allowed from the remote (without controller) are regarded by the system as a "forced entry".

To use this connection pattern of speedgate J2 jumpers shall be set on both motherboards of chosen passage (Fig. 8). When J2 jumpers are set the speedgate does not respond to remote control commands but only transmits their status to contacts of I / O1 ... I / O4 terminal boards (Fig. 8) which are open collector outputs. Contacts assignment is shown in Table 5. The numbering of the remote control buttons is shown in Fig. 10. The maximum output current for this set of contacts is 150 mA, maximum voltage rating is 24 W.

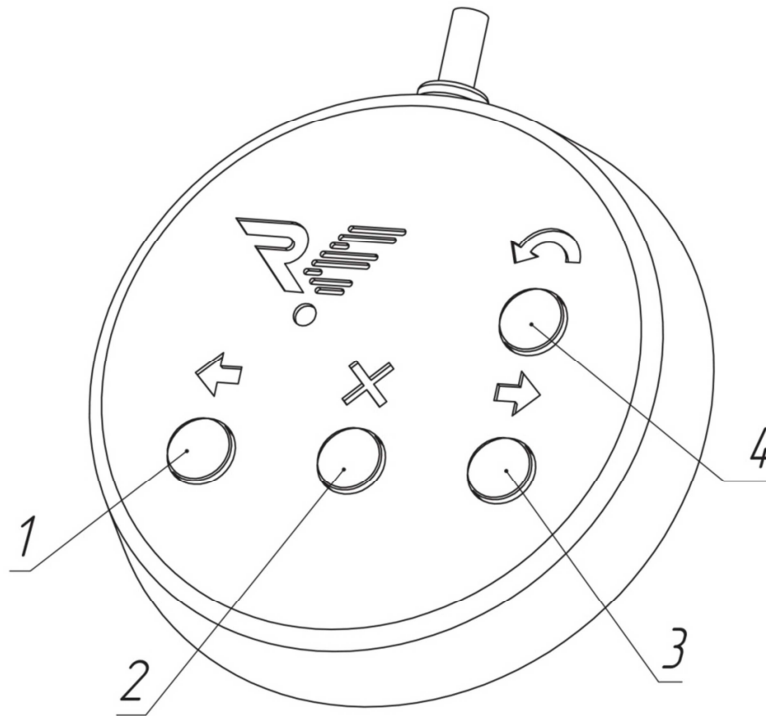


Fig. 10 Numbering of the remote control buttons

Table 6. I/O contact set assignment

Contacts marking	Contacts assignment
I/O1	"Left" button status (1,0)
I/O2	"Right" button status (3,0)
I/O3	"Stop" button status (2, Fig.10)
I/O4	"Antipanic" button status (4,0)

I / O1 ... I / O3 outputs show the current status of the RC panel buttons, i.e. transistor is opened by pressing the corresponding button. The I / O4 output changes its state to the opposite every time the "antipanic" button is pressed.

I / O1 ... I / O4 outputs can be connected either directly to the ACS controller or via relay. When using the relay it is **necessary (!)** to connect diode in parallel with the relay coil (Fig. 11).

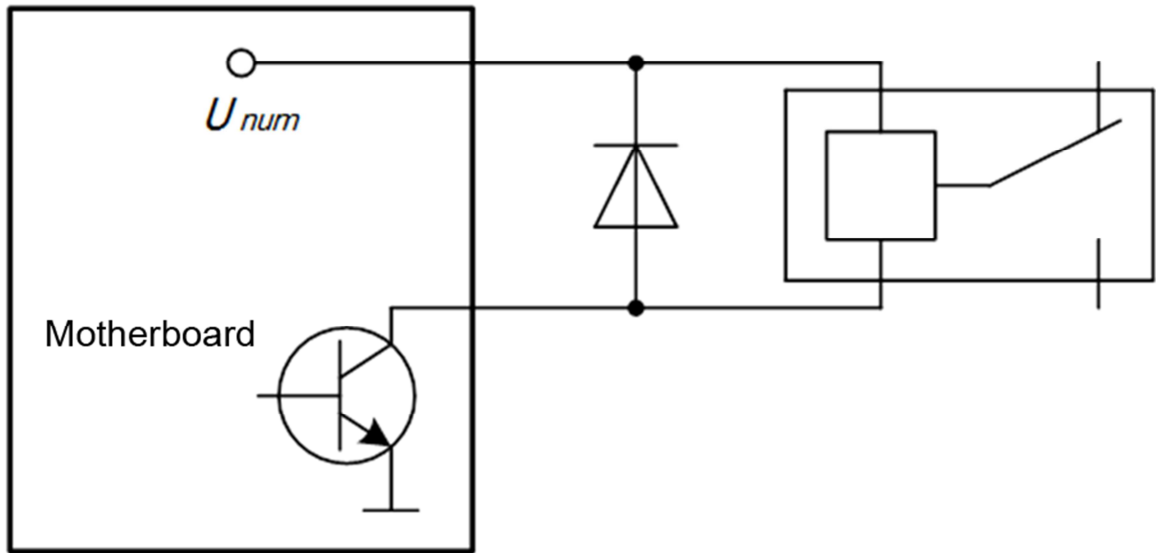


Fig. 11 Connection of diode in parallel with relay coil

Connection of RC panel to ACS controller is shown in Fig. 12. In this case the controller controls the speedgate via "Left", "Right" and "Stop" contacts, and the "antipanic" contact is turned on and off with the RC panel. Please note that when the RC panel is connected via ACS controller it is impossible to use speedgate modes which are set by the combination of the RC panel buttons (except for the free passage in the potential control mode. See article 5.3 of Manual). In this case ACS controls these operation modes.

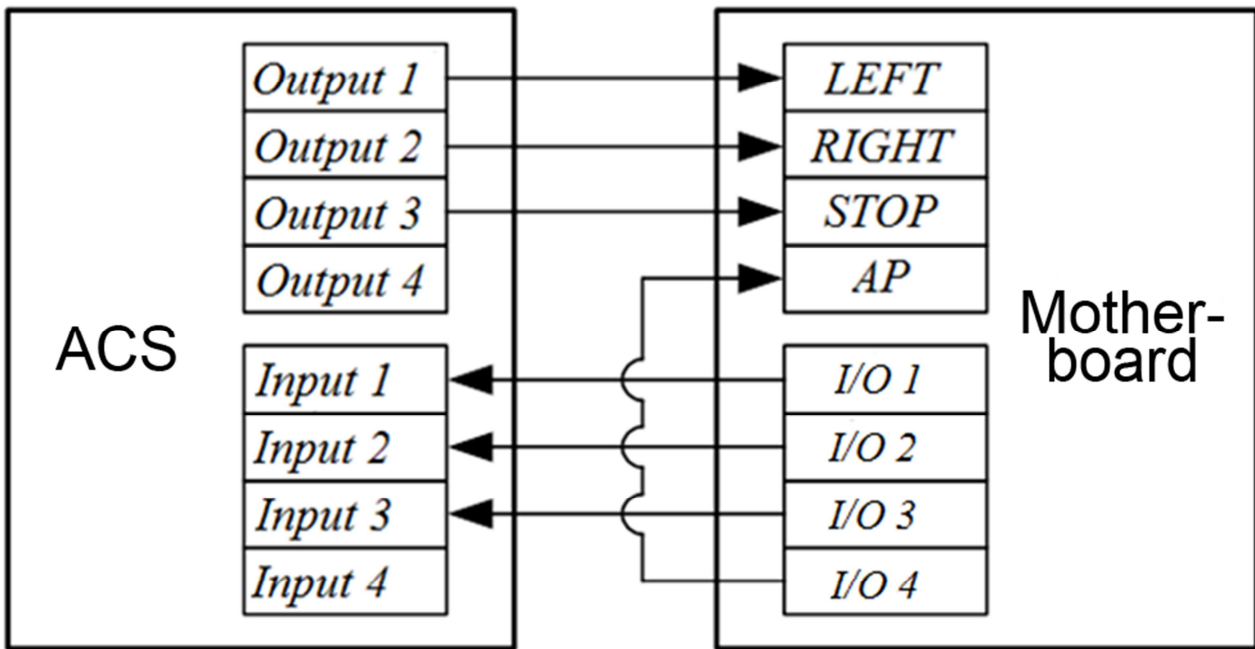


Fig. 12 Connection pattern of RC panel to ACS controller

6. Connecting card collector

6.1. Card collector description

In front of the housing there is a hatch with lock for quick access to collected cards and to the board when PS, OD and ACS cables are connected (fig. 13). The hatch includes a card storage device.

ATTENTION (!) Card reader is not included in the delivery set. Customer can choose reader model suitable for the existing system.

The reader is mounted on a universal adjustable bracket, located under the top cover of the card collector. This solution provides maximum flexibility for installation and connection of the card collector.

Connection of PU, EU and ACS is performed via card collector board. To do this, open the hatch with a key. Figure 13 depicts the location of the board on the card collector stand.

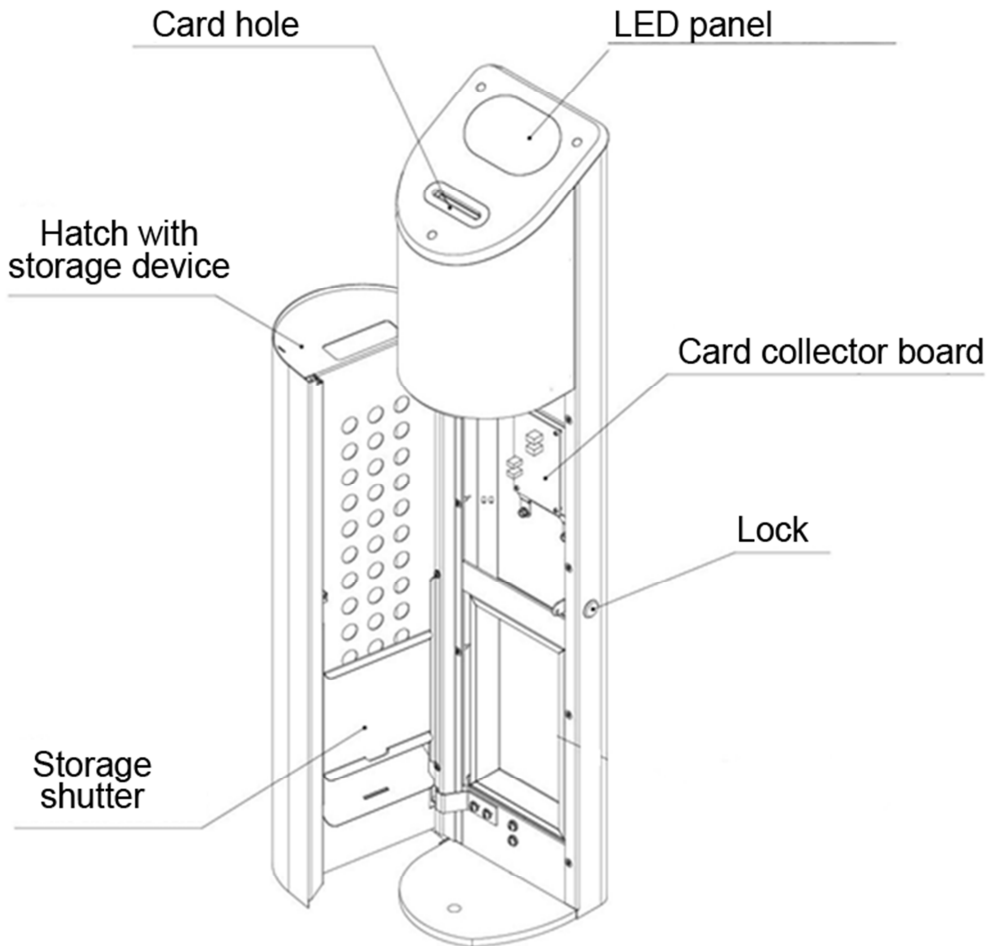


Fig. 13 General view of the card collector

Fig. 14 shows general view of board and connectors for PS, OD and ACS.

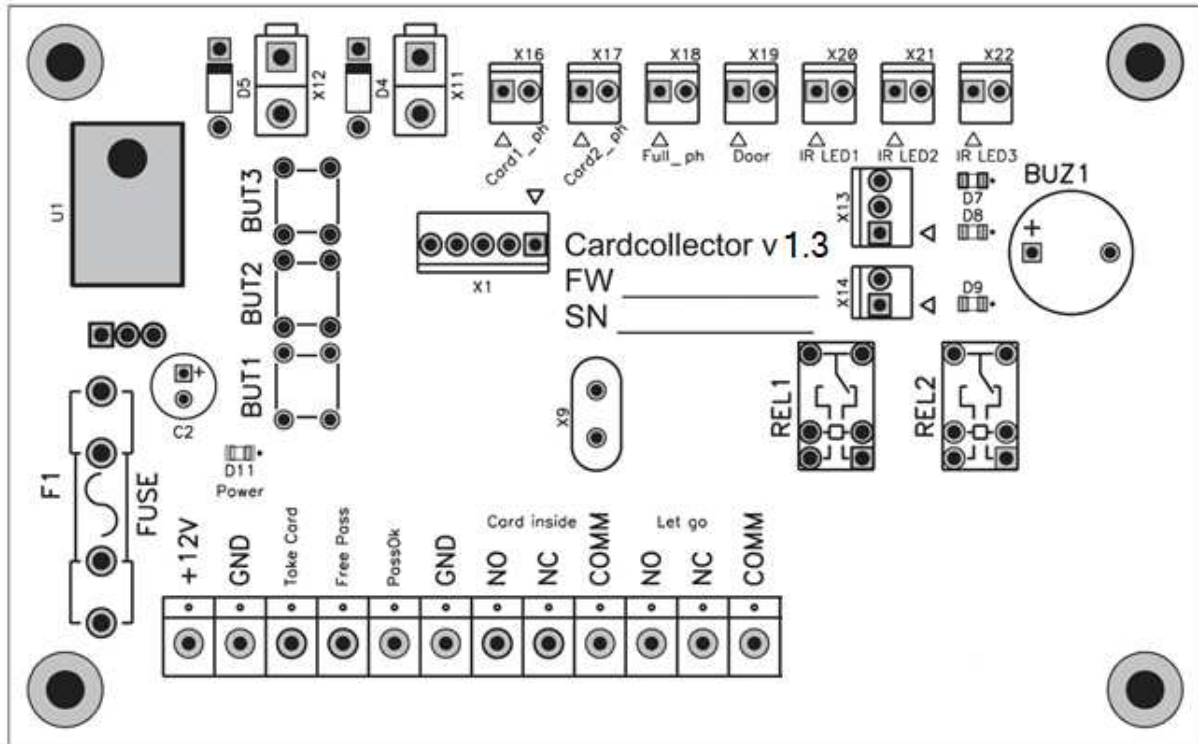


Fig. 14 General view of card collector board

6.2. Connecting power supply

Card collector is powered by a 12 V DC voltage source. Maximum consumption is present in the mode of card collection - 1.5A.

Locate the PS unit to be accessible for operator. Connect PS cable to the card collector board. Connect (+) and (-) contacts of power supply to (+ 12V) and (GND) contacts on the board respectively (Fig. 14). When the card collector board is powered, D11 LED indicator will turn on.

Make sure that cable is connected securely.

6.3. Connecting operating device

Connection of OD to the card collector is performed with the use of two contact sets: "Let Go" and "Pass Ok-GND". Contacts location is shown in Fig. 14

6.3.1. "Let Go" contact set

NC, NO, and COMM contacts. Relay output operating on a "dry contact" principle, which closes / opens, transmitting passage authorizing signal to OD. NC and COMM - normally closed connection, NO and COMM - normally open connection.

6.3.2. "Pass Ok-GND" contact set

Pass Ok and GND contacts. Pulse input that receives a signal from OD, confirming that the passage was performed. The operating principle is based on normally open contacts. Passage is detected by a contact closure for at least 200 ms.

When authorized card is presented the card collector transmits a signal (see. article 6.3.1) and unlocks the OD for 5 seconds. During this time interval other cards are not accepted. When a signal (a closing between Pass Ok and GND), confirming the passage, is received, the card collector switches into standby mode and can collect the next card. For these reasons, the connection of this contact set is essential to the system capacity.

6.4. Connecting ACS controller

ACS controller is connected to one speedgate unit only. The connection between units is provided by CAN-bus.

Block diagrams of ACS controller with the use of card collector are shown in Appendix 3.

Connection of ACS controller to the card collector provided by three contact sets: "Take Card-GND" - the signal authorizing collection of guest card, "Free Pass-GND" – the signal authorizing passage and "Card Inside" – the signal confirming card collection. Contacts location is shown in Fig. 14

6.4.1. "Take Card-GND" contact set (signal for collection of guest card).

Take Card and GND contacts. Pulse input that receives a signal from ACS controller allowing the collection of the card (guest pass). The operating principle is based on normally open contacts. Passage is detected by a contact closure for at least 200 ms.

The signal for collection shall be transmitted no sooner and no later than 2 seconds after putting the card into the card hole of the card collector, otherwise it will be ignored. After receiving the signal within the mentioned time interval card collector opens the shutter and the card is collected. If card collection is confirmed by internal sensors, card collector

generates a signal to the OD via "Let Go" contact set (see. article 6.3.1) and to ACS via "Card Inside" contact set. In such case a green arrow indicator on the LED panel turns on.

6.4.2. "Free Pass-GND" contact set (signal for passage authorization).

Free Pass and GND contacts. Input that receives a signal from the ACS controller and allows the passage without card collection (permanent pass).

In the case of receiving the signal allowing the passage without card collection, the card reader generates a signal to the OD via "Let Go" contact set (see. Article 6.3.1). In this case a green arrow indicator on the LED panel turns on.

Free Pass input of the card collector shall operate in pulse mode (activation upon contact closure). In pulse mode the voltage is applied to Free Pass input for a short moment and it authorizes the passage. Another passage becomes non-authorized when the passage is performed or after 5 seconds.

Pulse mode is set by default, in such case the card collector provides 1 audio signal upon turn-on.

If the card collector provides 2 audio signals, it means that it is set in potential mode.

Potential mode of the speedgate is not provided, the card collector shall be set to pulse mode.

In order to switch into pulse mode:

- Turn off the power
- Wait until LED D11 turns off
- Press and hold BUT1 button on the card collector board
- Turn on the power;
- Press and hold BUT1 button until the card collector provides 1 audio signal, indicating that it is switched to pulse mode of operation;

Set mode is saved when power is turned off.

6.4.3. "Card Inside" contact set (signal for card collection confirmation).

NC, NO, and COMM contacts. Relay output operating on a "dry contact" principle which closes / opens for 1 second transmitting a confirmation signal of card collection to the ACS controller. NC and COMM - normally closed connection, NO and COMM - normally open connection.

6.5. Installation of proximity card reader

MatrixIII proximity card reader is used as an example of installation. Installation of other models of readers may differ.

6.5.1. Undo the M4 screw at the rear of the card collector (Fig. 15)

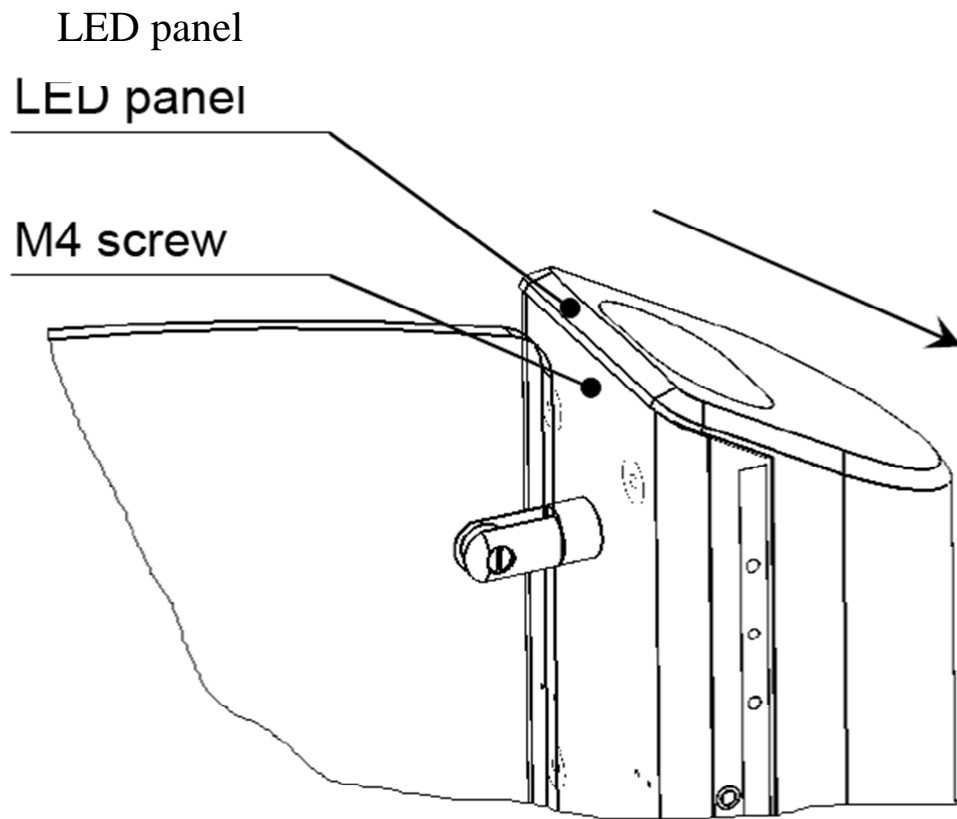


Fig. 15

6.5.2. Slide the LED panel to the stop in the direction indicated in Fig. 15. Carefully lift the panel.

6.5.3. Remove two M4 screws (8, Fig. 16) and remove the universal bracket for readers (2, Fig. 16).

6.5.4. Disassemble the reader, removing the M3 screw (6, Fig. 16), and set its lower part (1, Fig. 16) on the bracket using the two M4 screws with nuts, washers and lockwashers (3, Fig. 16).

6.5.5. Put the cable (4, Fig. 16) in the bracket hole, install the top cover of the reader (5, Fig. 16). Tighten the M3 screw (6, Fig. 16).

6.5.6. Fix the bracket to clips (7, fig. 16) using the M4 screws (8, Fig. 16). It is recommended to install a reader at an angle of 40 ... 50° to guiding bars for cards (Fig. 17). In this case, the guest and permanent card will be read equally well.

6.5.7. Put the cable of reader in the housing of the card collector.

6.5.8. CAREFULLY (!) set the LED panel in its original position. Tighten the M4 screw.

CAUTION! When installing the LED panel in its original position, make sure that wires of optical sensors mounted on the guiding bars for cards will not be damaged by other elements.

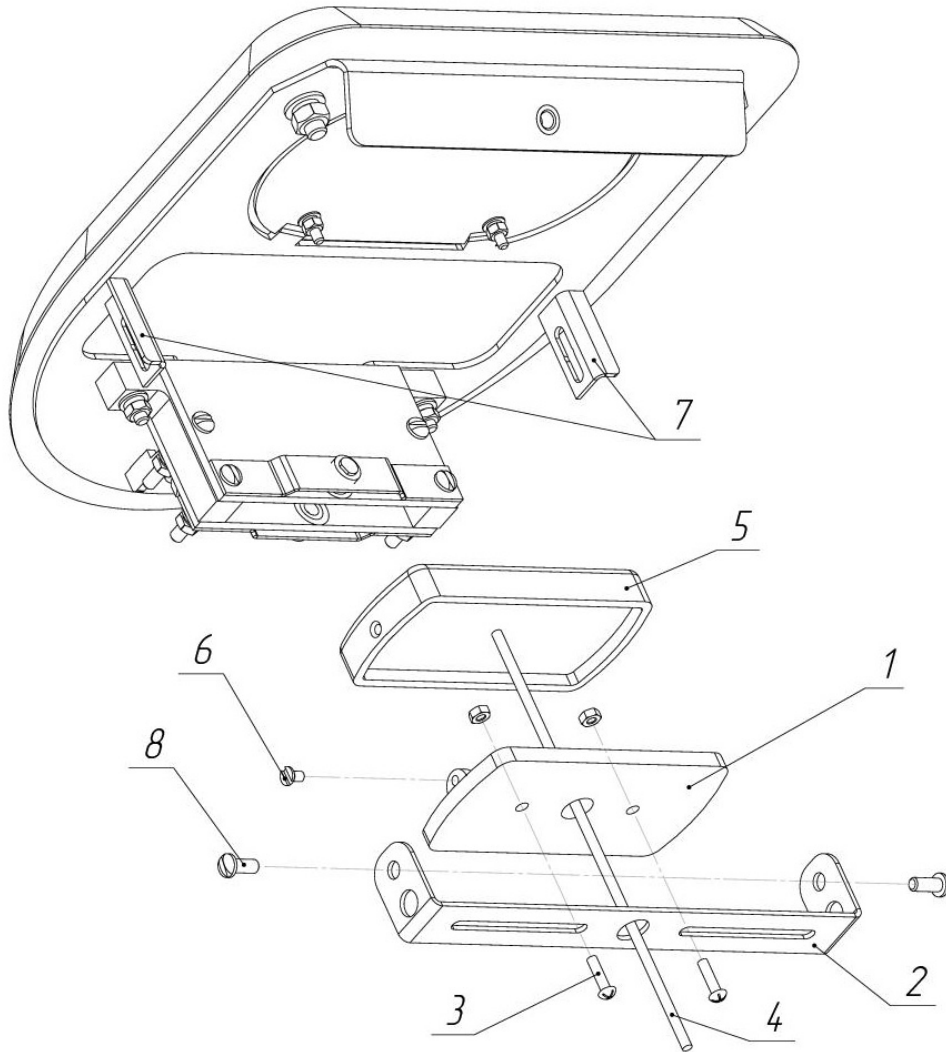


Fig. 16. Installation of proximity card reader

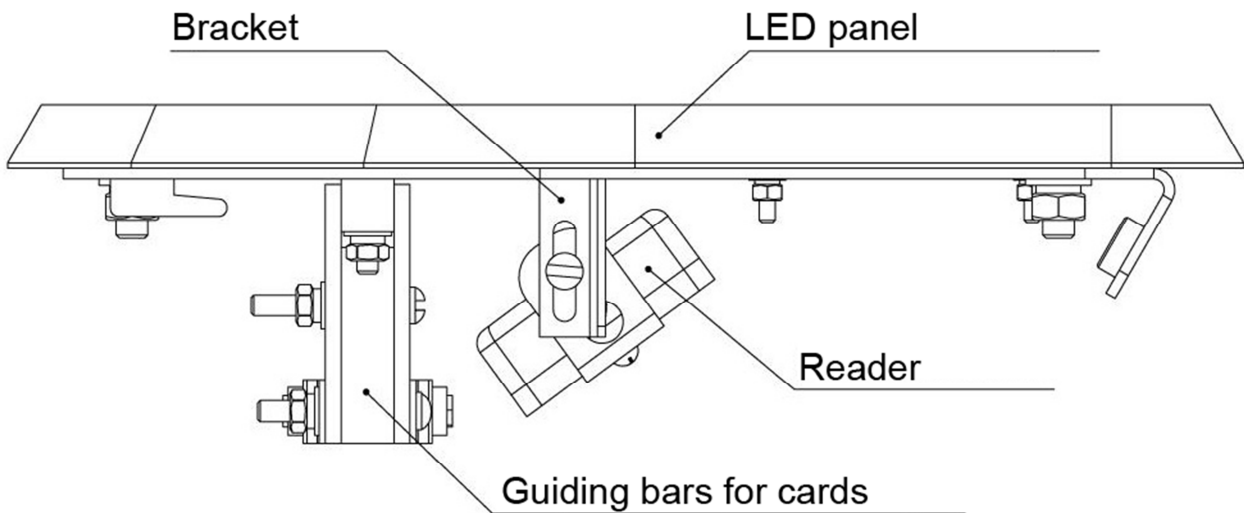


Fig. 17 Recommended option of card reader installation

Appendix 1. Summary of the data bus CAN2.0

The RC panel uses modern CAN2.0 noise-immune bus. According to CAN2.0 standard signal cable length can exceed one kilometer, however correct operation on these distances depends on many factors. Always use Cat5e or Cat6 twisted pair at distances exceeding 25 meters. The total electrical resistance of DC power supply wire shall not exceed 50 ohms. If this requirement cannot be met an additional 12V / 100mA power supply unit (minimum operating voltage of PU - 7.5V). There are 3wires - CL, CH, GND - enough for the correct operation of speedgate. In this case the power supply wire from the PU to the speedgate is not required. See Fig. 18. Two RC panels can be connected to the same speedgate.

An important feature of the CAN2.0 bus is the use of 120 Ohm resistors at the ends of the bus. The standard RC panel is equipped with such resistor on default. If you use one RC panel it is recommended to connect an additional (second) 120 ohm resistor mounted on the motherboard to CL and CH terminals. It is connected with the use of J4 jumper. Installation process is described in article 5.3 (Connecting side units).

It is not required, however, in case of connection of two RC panels, because required 120 ohm resistors are already installed at the ends of the bus (in RC panels).

A special RC panel is required to operate several speedgates simultaneously. Standard RC is not appropriate for this purpose.

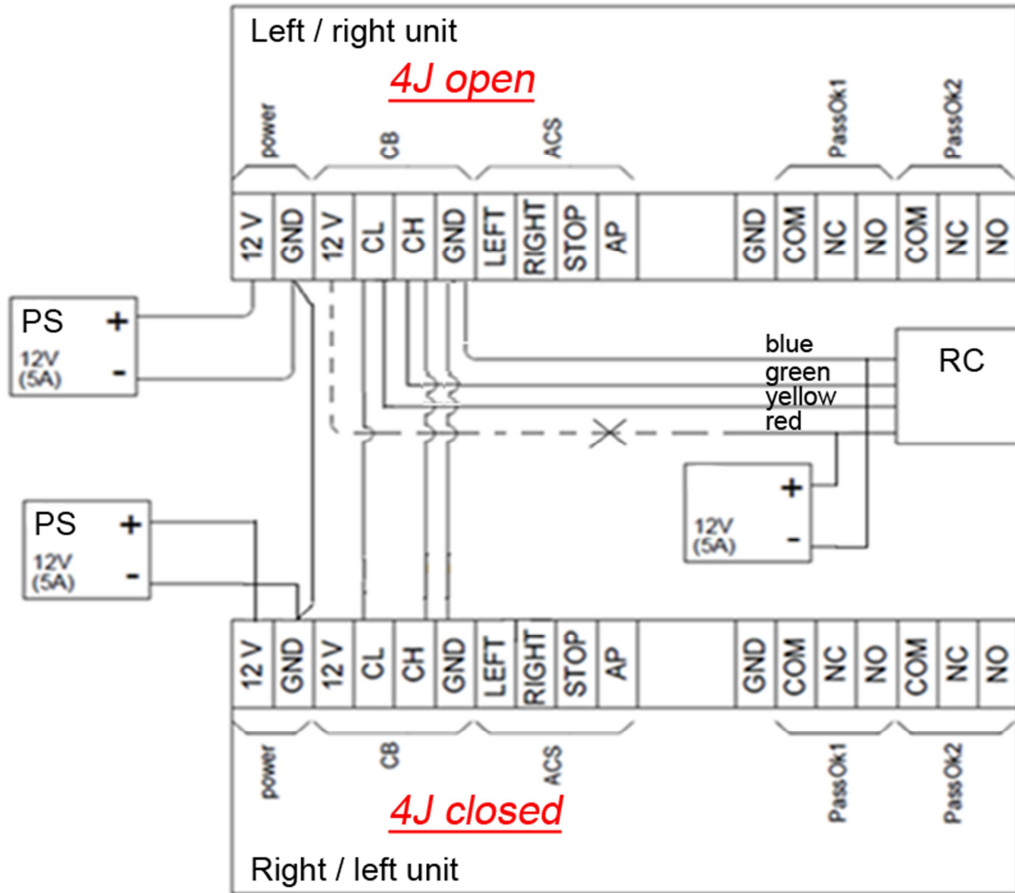


Fig. 18

1. **Appendix 2. Block diagram of ACS using the card collector**

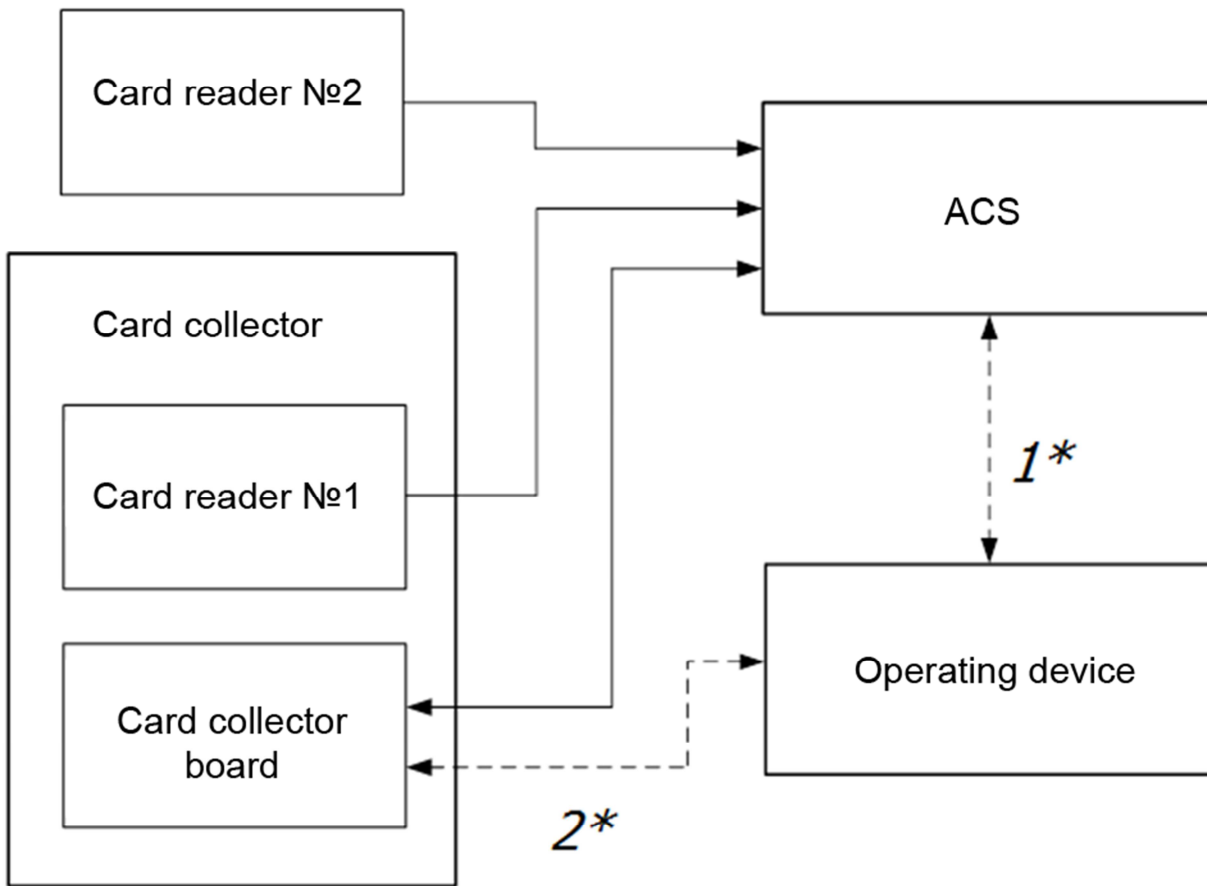


Fig. 19. Block diagram №1

Figure 19 shows the most common connection circuit of card collector. OD can be controlled either by ACS controller or by the card collector directly, that is why connections 1* and 2* are drawn by dotted lines. This scheme features two readers. The second reader shall be installed outside the card collector, which is not always aesthetically and practically acceptable. If installed close to each other, proximity readers can create mutual interference.

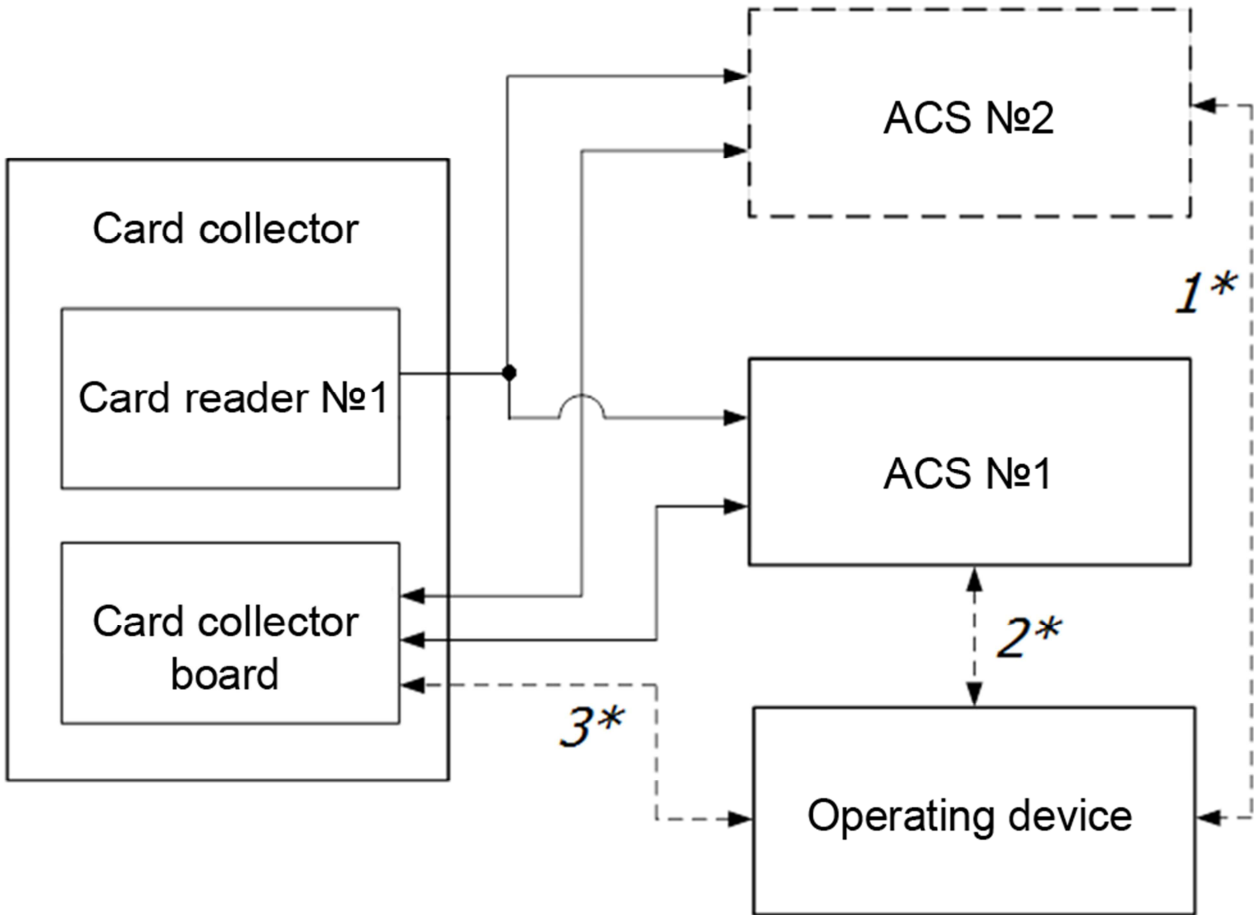


Fig. 20 Block diagram №2

Fig. 20 shows a more advanced but also a more high-cost circuit connection. The advantage of this scheme is that it uses only one reader installed in the card collector. Wiegand interface provides a possibility to connect several identical ACS controllers to one reader in parallel.

ACS controllers are connected to different inputs of the card collector. Memory of one of the controllers contains data on permanent card; memory of the second controller - on guest card. Reader transmits card code to both controllers and the card collector receives a corresponding signal depending on the type of card.

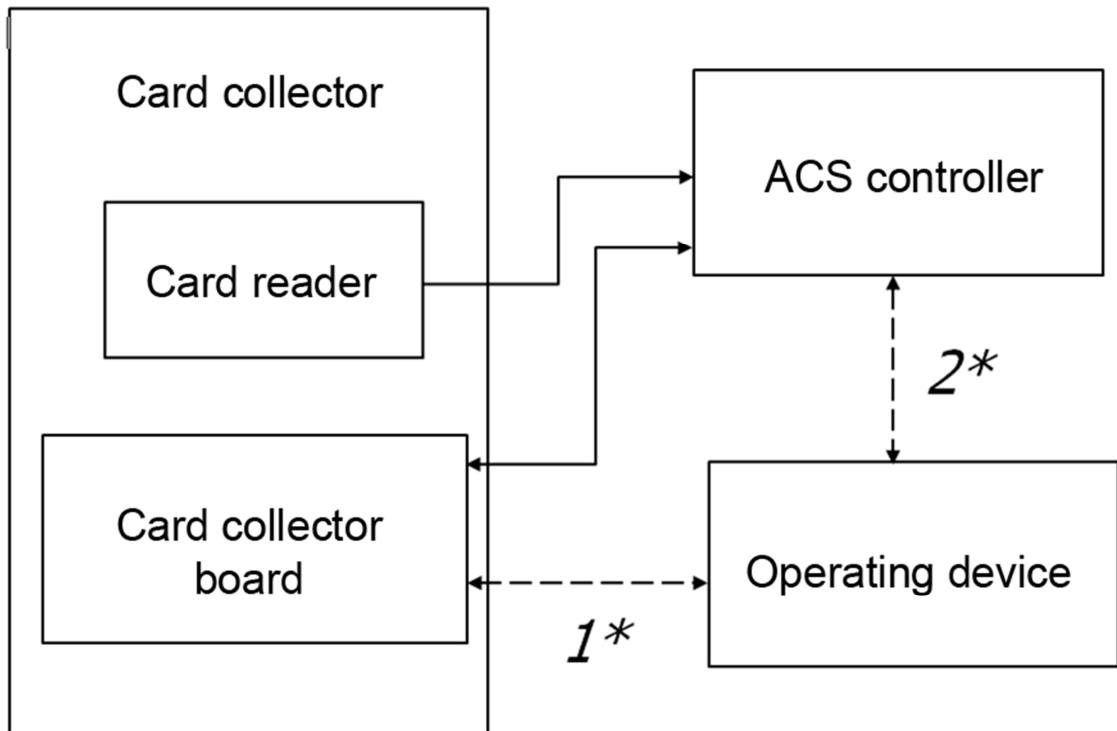


Fig. 21. Block diagram №3

The block diagram #3 (Fig. 21) can be considered to be a logical development of the block diagram #2. It reduces the cost of installed system. For this purpose the controller with two output signals to one input of a reader (i.e., the controller can distinguish the guest cards and permanent cards transmitting a signal to the corresponding output) is used.

Appendix 3. Location of mounting holes in relation to the overall dimensions of the speedgate

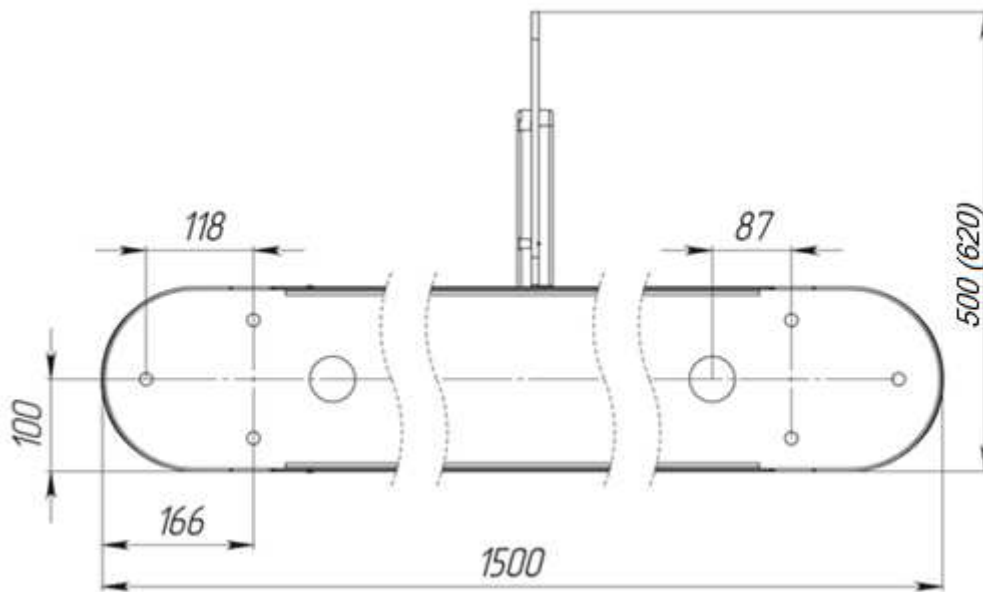


Fig. 22 Location of mounting holes in relation to the overall dimensions of the speedgate

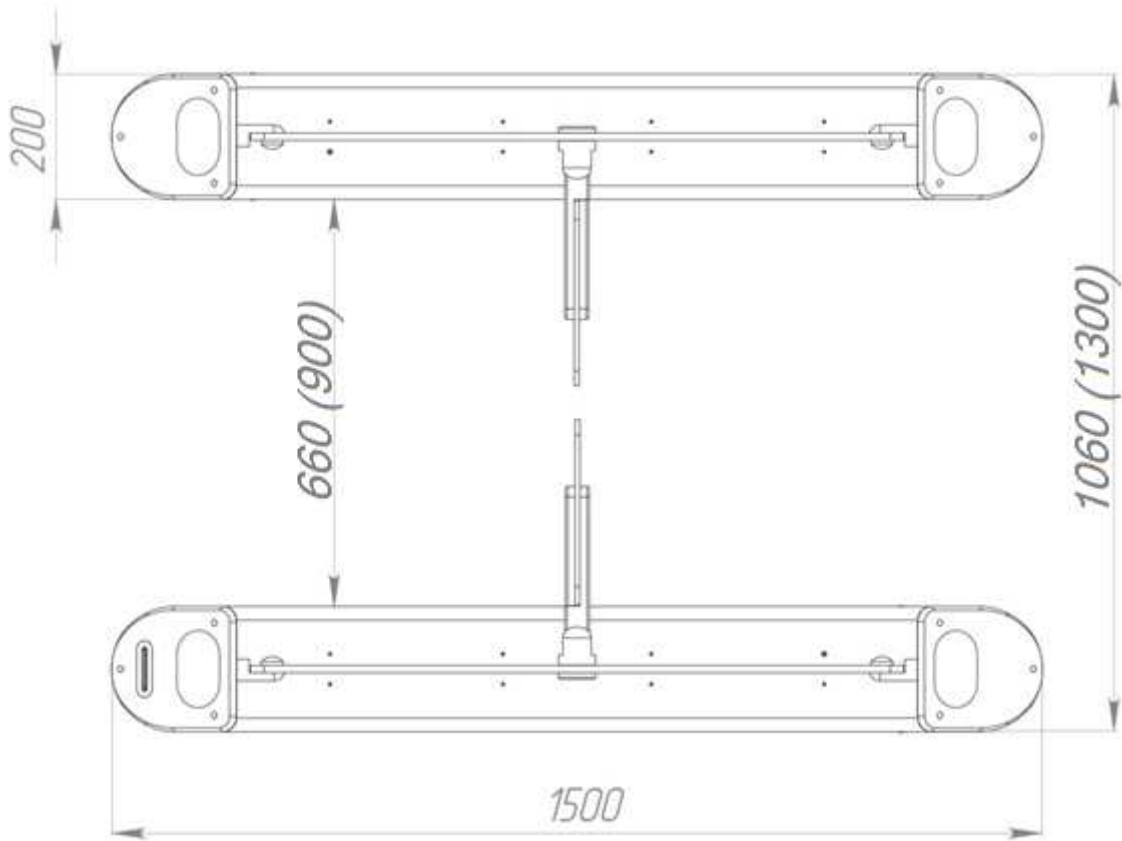


Fig. 23 Dimensions of speedgate depending on passage lane (top view)

Appendix 4. Block diagram of minimal connections for synchronized operation of wings with the use of one RC panel

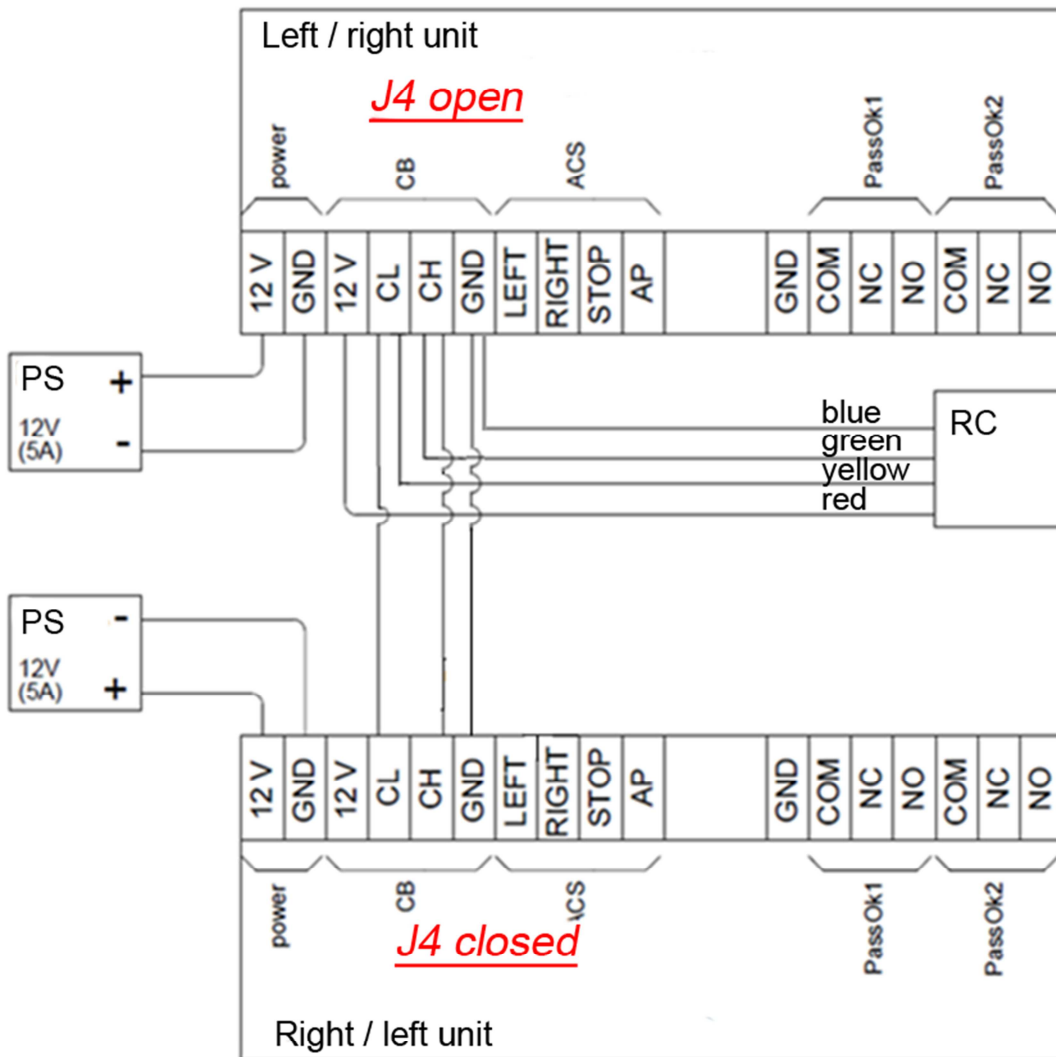


Fig.24 Block diagram of minimal connections for synchronized operation of wings

In order to secure stable operation of the speedgate unit one GND terminal of one unit shall be connected to another GND terminal of another speedgate unit.

It is also necessary to provide cable routing as shown in Fig. 24 preventing their star connection. Connections shown in Fig. 24 depict the normal operation of the CAN-2 bus.



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