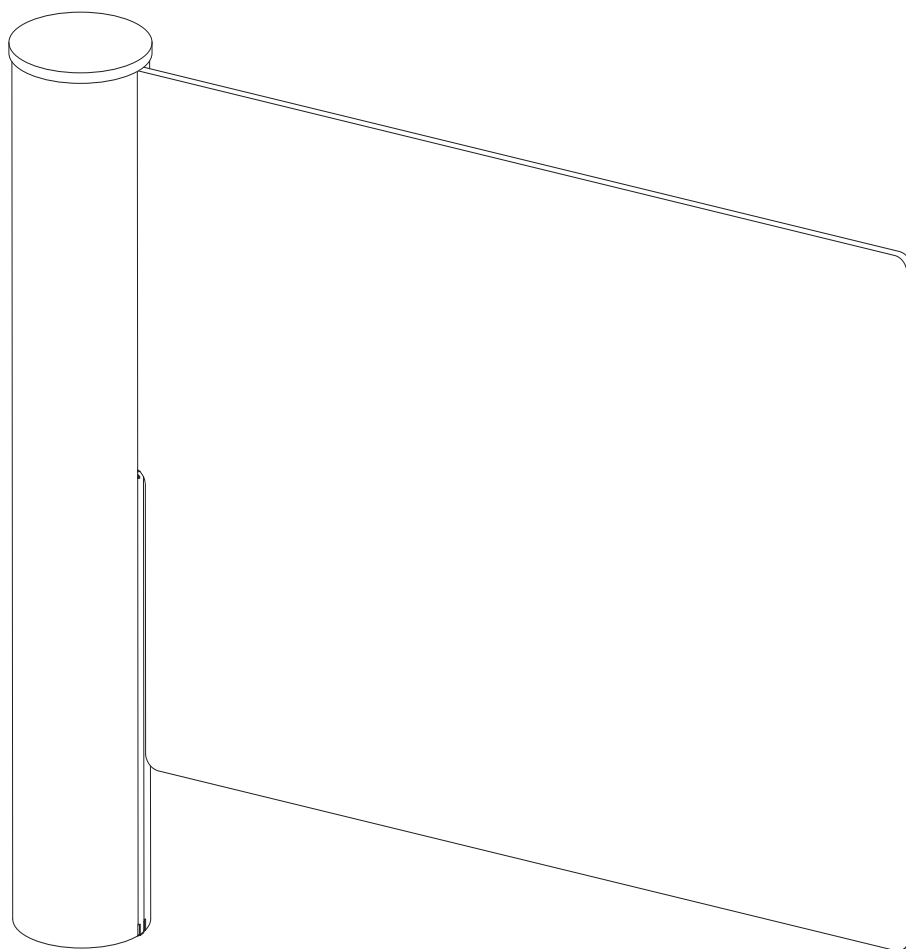


PERCo[®]

ASSEMBLY AND OPERATION MANUAL



WMD-06

EAC
CE

Motorized electromechanical swing gate

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Dear Customer!

Thank you for choosing the swing gate made by PERCo.

You have purchased a high-quality product, which will serve you for many years to come, if you carefully follow installation and operation rules.

The Assembly and Operation Manual for the WMD-06 Motorized electromechanical swing gate (hereinafter referred to as *the Manual*) contains the instructions needed for the most effective operation of the swing gate, as well as sections on its packaging and installation.

The product shall be installed and maintained by qualified installers in strict accordance with the Manual.

Abbreviations adopted in the Manual:

- ACS – access control system;
- RC panel – wired remote control panel;
- WRC – wireless remote control.

1 APPLICATION

The **WMD-06 Motorized electromechanical swing gate** (hereinafter, the *swing gate*) is designed for managing pedestrian flows at checkpoints of banks, administrative buildings, retail outlets, railway terminals, airports, etc. Being an up-market model, it is recommended for use at facilities with the highest requirements for design and comfort. It can be installed together with other turnstiles and railings produced by **PERCo** or as a separate device.

The number of swing gates necessary to secure fast and convenient passage should be calculated based on the product's throughput rate (see Section 3). For example, it is recommended to install one swing gate per 500 people passing through the gate in a single day, or assuming that the peak load totals 12 persons/minute.

2 OPERATING CONDITIONS

In terms of resistance to environmental exposure, the swing gate complies with GOST 15150-69, category U4 (operation in premises with climate control).

Operation of the swing gate is allowed at an ambient air temperature from +1°C to +50°C and relative air humidity of up to 70% at +27°C.

3 TECHNICAL SPECIFICATIONS

Operating voltage	24±2.4 V DC
Consumption current.....	max. 4.4 A
Power consumption	max. 105 W
Throughput rate in the single passage mode	12 persons/min
Number of passage modes	3
Passageway width with AGG-650 swing panel	700 mm
Passageway width with AGG-900 swing panel	950 mm
RC-panel cable length ¹	min. 6.6 m
IP Code.....	IP41 (EN 60529)
Electric shock protection class	III (IEC 61140)
Mean time to failure	min. 500 000 passages
Mean lifetime	min. 8 years
Overall dimensions (length × width × height) with AGG-650 swing panel	795×147×1012 mm
Overall dimensions (length × width × height) with AGG-900 swing panel	1045×147×1012 mm
Net weight of the swing gate post without a swing panel	23 kg
Net weight with AGG-650 swing panel	max. 37 kg
Net weight with AGG-900 swing panel	max. 41 kg

¹ Maximum length of the RC-panel cable is 30 m (to be supplied upon request).

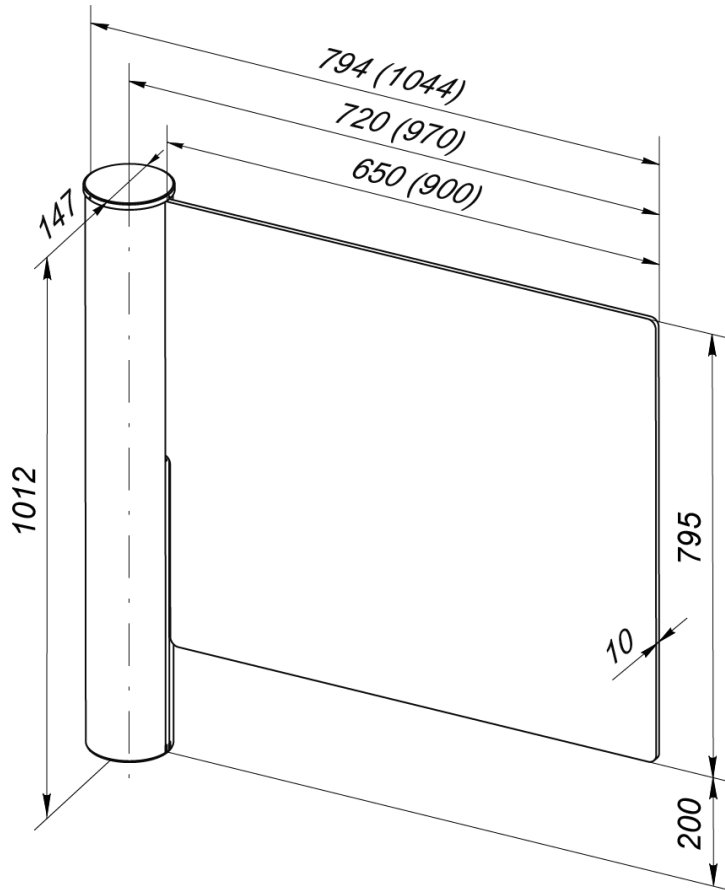


Figure 1. Overall dimensions of the swing gate

4 DELIVERY SET

4.1 Standard delivery set

Basic equipment:

Gate post:

fixed base	1
housing	1
top cover	1

Glass swing panel	1
-------------------------	---



Note:

The swing panel is a separate item in the price list and is to be purchased separately. The swing panel type is selected by the customer when ordering the gate. Two types of swing panels are available for the **WMD-06S** swing gate: **AGG-650** for a passageway width of 700 mm and **AGG-900** for a passageway width of 950 mm.

RC panel with cable	1
SW1.5 Allen key	1
M3×10 set screw for top cover mounting	3

Gate installation kit:

M10 anchor stud with nut and washer, kit.....	3
---	---

Panel installation kit:

M10×35 bolt	4
M10 nut	4
Spring washer	4
Enlarged flat washer	8
Plastic bushing	4

Operational documentation:

Certificate	1
Assembly and Operation Manual	1
Marking template for gate post installation.....	1

4.2 Additional equipment (to be supplied upon request)

WRC kit ¹	1
SG1 Yellow Circle safety sticker.....	1
SG2 Matt Ring safety sticker.....	1

5 DESCRIPTION

5.1 Main features

- The swing gate can operate both as a stand-alone unit, via its RC panel or WRC, and as a part of the ACS.
- Two control modes are available: pulse control mode and potential control mode.
- The swing gate can be supplied with two types of the swing panel with different lengths: 650 mm or 900 mm. Overall dimensions of the gate are shown in Fig. 1.
- External components of the swing gate (except for the swing panel) are made of polished stainless steel. The swing panel is made of 10 mm thick tempered glass.
- The swing gate is a normally open unit, i.e., in case of power failure, its swing panel can easily rotate $\pm 90^\circ$.
- The swing gate's operating voltage is safe for human use and amounts to max. 28 V.
- The swing gate has low power consumption – max. 105 W.

5.2 Design

Overall view of the swing gate is shown in Fig. 2. Herein, the numbers of the part and component items in brackets are given according to Fig. 2 unless stated otherwise.

The gate consists of a fixed base (1) and rotary support (7) that holds a glass swing panel (4), housing (2), and top cover (3). Metal (5) and plastic rings (12) provide support to a housing (2) and ensure its rotation around the fixed base (1). A decorative strip (15) is fixed with a screw (16).

The gate post is installed on anchor studs (9) and fixed with nuts (10) and washers (11).

The gate post contains units ensuring its operation: a rotary motor drive with a rotation angle sensor, electromagnetic stopper unit, bearing units, drive control board (6).

An RC panel is included into the delivery set (17).

The gate is operated with +24 V DC voltages via a cable (13).

A control board is installed inside the gate post. The control board's overall view is shown in Fig. 3. The control board contains:

- **XT1** and **XT2** – terminal blocks are designed for power supply, input-output of control signals and indication. Marking and description of **XT1** and **XT2** terminal block contacts of the control board are given in Table 1.
- **Size** – connector is designed for selection of the swing panel type installed on the gate. If the **AGG-900** panel is used, the jumper shall be removed (moved off the contact); if the **AGG-650** panel is used, the jumper shall be installed on the connector. The jumper is removed by default.
- **Imp / Pot** – connector is designed for selecting the gate control mode. If the jumper is installed, the gate operates in the pulse mode; if the jumper is removed, the gate operates in the potential mode. The jumper is installed by default.
- **FireAlarmDir** – connector is designed for selecting the gate opening direction when the *Fire Alarm* emergency unlocking signal is applied. If the jumper is installed, the swing panel opens in the direction A (see Figure 5); if the jumper is removed, the swing panel opens in the direction B. The jumper is installed by default.
- **LED** – connector is designed for turn-off of LED indicators located on the control board. If the jumper is installed, indication is on. If the jumper is removed, indication is off. The jumper is installed by default.

¹ The WRC kit consists of a receiver connected to the control board and a transmitter designed as a radio fob.

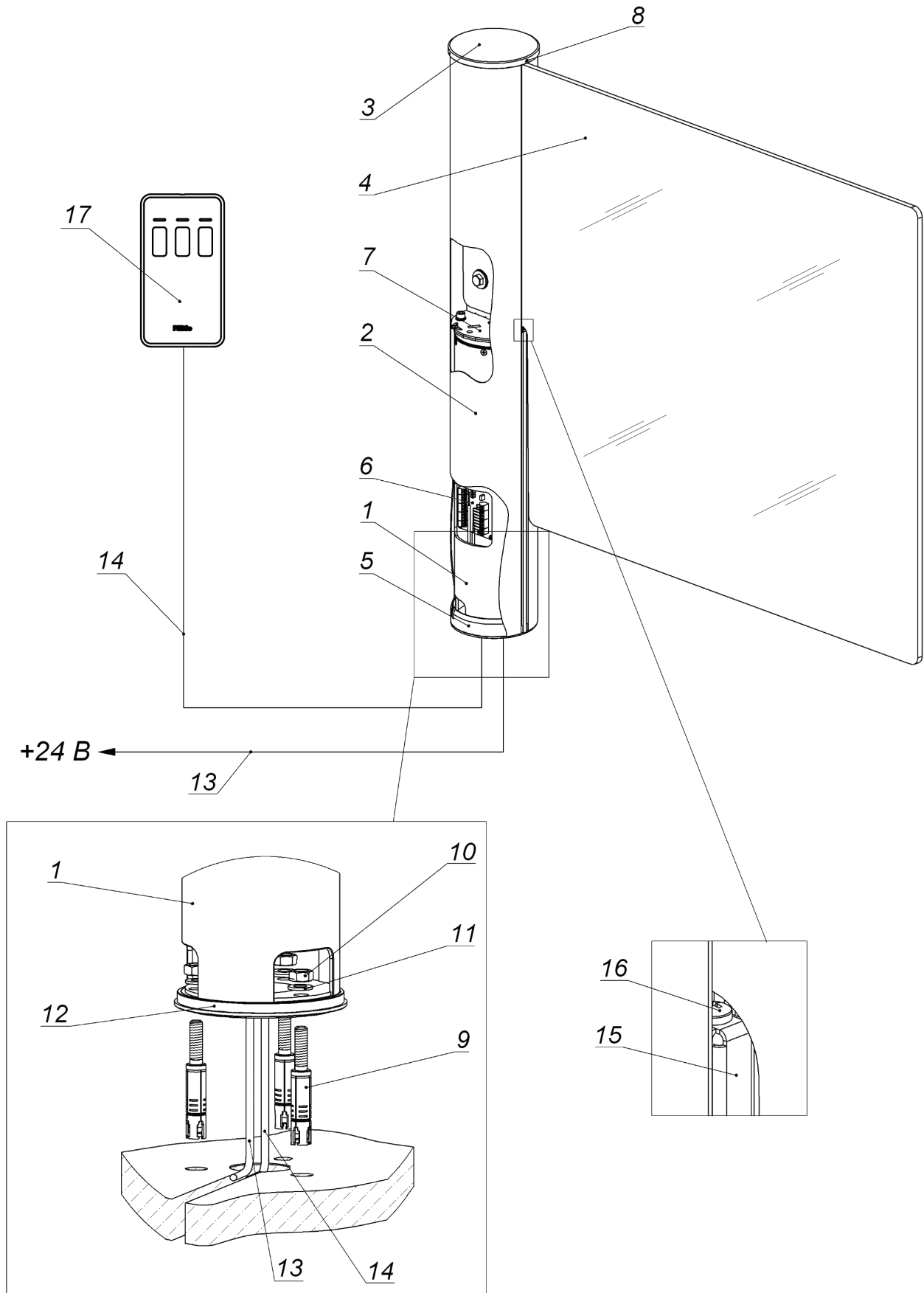


Figure 2. Overall view of the swing gate

- 1 – fixed base; 2 – housing; 3 – top cover; 4 – glass swing panel; 5 – metal ring;
- 6 – control board; 7 – rotary support; 8 – M3 screw (3 pcs); 9 – anchor; 10 – M10 nut;
- 11 – washer; 12 – plastic ring; 13 – power cable;
- 14 – control cable (from RC panel / WRC device / ACS controller);
- 15 – decorative strip; 16 – M4 screw; 17 – RC panel

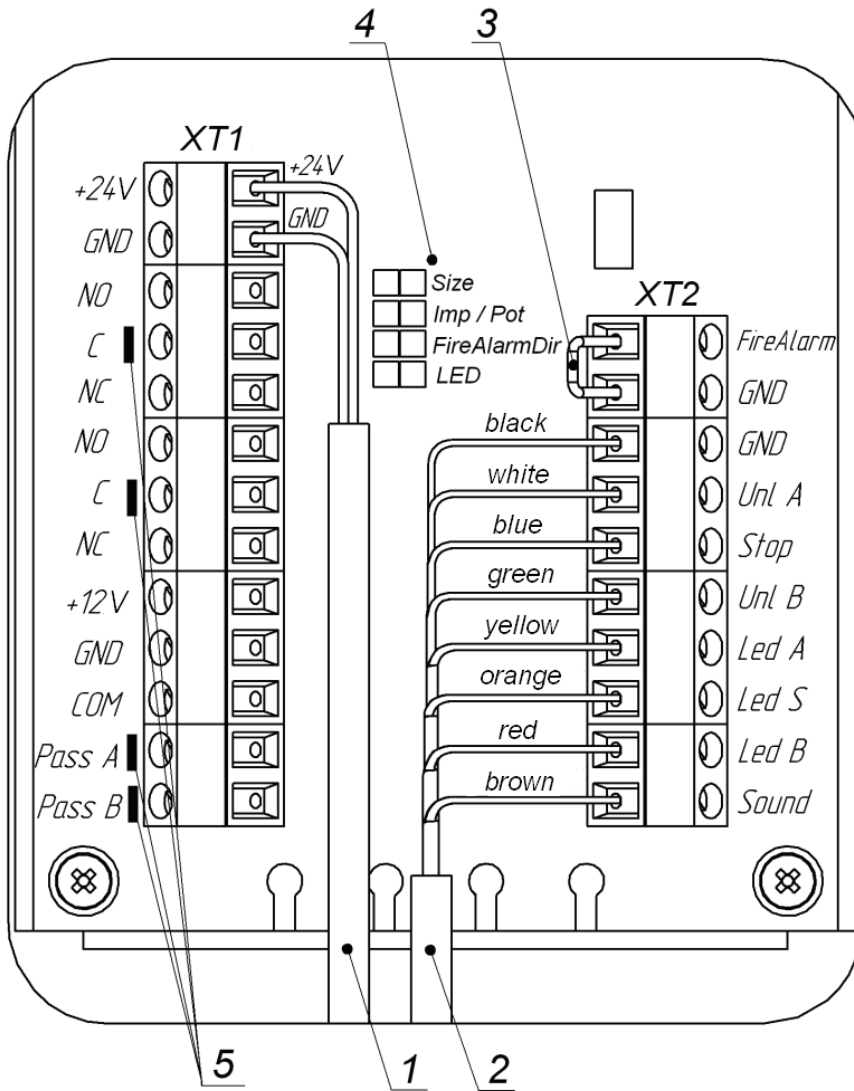


Figure 3. Overall view of the control board

- XT1, XT2** – terminal blocks; 1 – power cable +24 V;
- 2 – control cable (from RC panel / WRC unit / ACS controller);
- 3 – jumper wire (installed by default);
- 4 – connectors (all jumpers are installed by default); 5 – LED indicators.

Table 1. Contacts of the control board of the swing gate

Terminal block	No.	Item	Designation
XT1	1	+24 V	External power supply connection
	2	GND	
	3	NO	Light A relay contacts – remote indicator connection for direction A
	4	C	
	5	NC	
	6	NO	Light B relay contacts – remote indicator connection for direction B
	7	C	
	8	NC	
	9	+12 V	WRC power supply's positive terminal
	10	GND	Power supply's negative terminal
	11	Common	Common contact for PASS A, PASS B signals
	12	Pass A	PASS A relay contact (passage in direction A)
	13	Pass B	PASS B relay contact (passage in direction B)

Terminal block	No.	Item	Designation
XT2	1	<i>Fire Alarm</i>	Emergency unlocking device input
	2	<i>GND</i>	
	3	<i>GND</i>	Power supply's negative terminal
	4	<i>Unlock A</i>	Inputs for gate control
	5	<i>Stop</i>	
	6	<i>Unlock B</i>	
	7	<i>Led A</i>	Indication outputs of RC panel
	8	<i>Stop</i>	
	9	<i>Led B</i>	
	10	<i>Sound</i>	Sound signal output of RC panel

5.3 RC panel

The RC panel (17) is a small desktop device made of shockproof ABS plastic that serves for manual setting of operation modes and indication thereof. The RC panel is connected to the control board (6) with a flexible multicore cable (14), included into its delivery set. The RC panel's overall view is shown in Fig. 4.

The RC front panel features three control buttons to set operation modes of the swing gate. The middle **STOP** button is used to lock the swing panel in the closed position. The **LEFT** and **RIGHT** buttons open the swing panel in the respective direction for one passage. It is possible to set the free passage mode as well. There are light indicators above the buttons. The RC housing contains a built-in buzzer for sound indication.

The standard orientation of the RC panel in relation to the swing panel's opening direction is shown in Figure 5. The orientation of the RC panel buttons can be changed if necessary; in such case, the RC panel connection shown in Fig. 11 needs to be changed by connecting wires of the RC-panel cable to contacts of the **XT2** terminal block in accordance with Table 2.

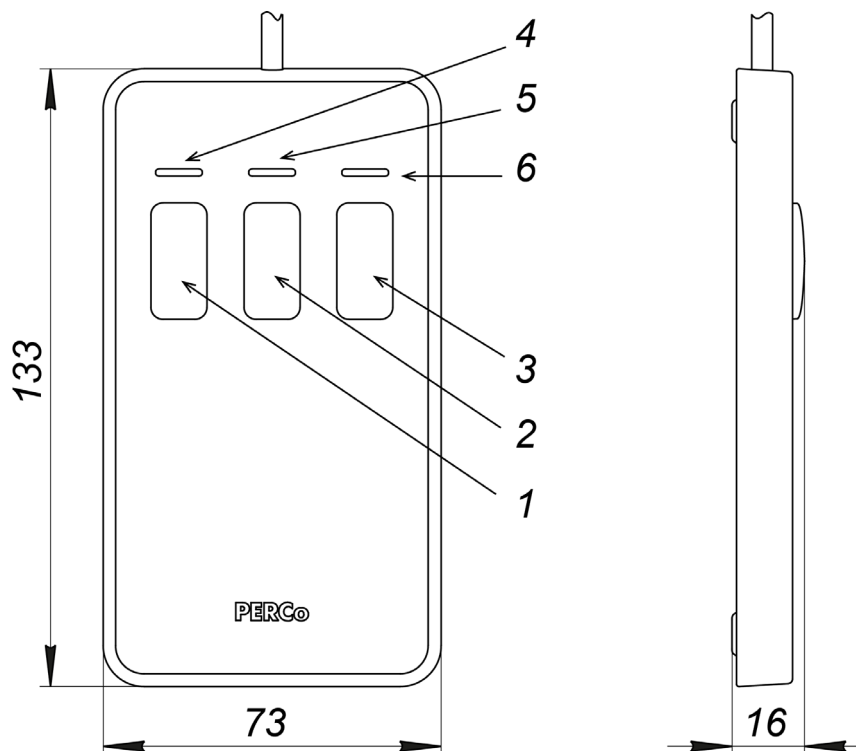


Figure 4. Overall view and dimensions of the RC panel

1, 2, 3 – **LEFT, STOP, RIGHT** buttons for setting of operation modes;
4, 6 – *Left and Right* green light indicators; 5 – *Stop* red light indicator

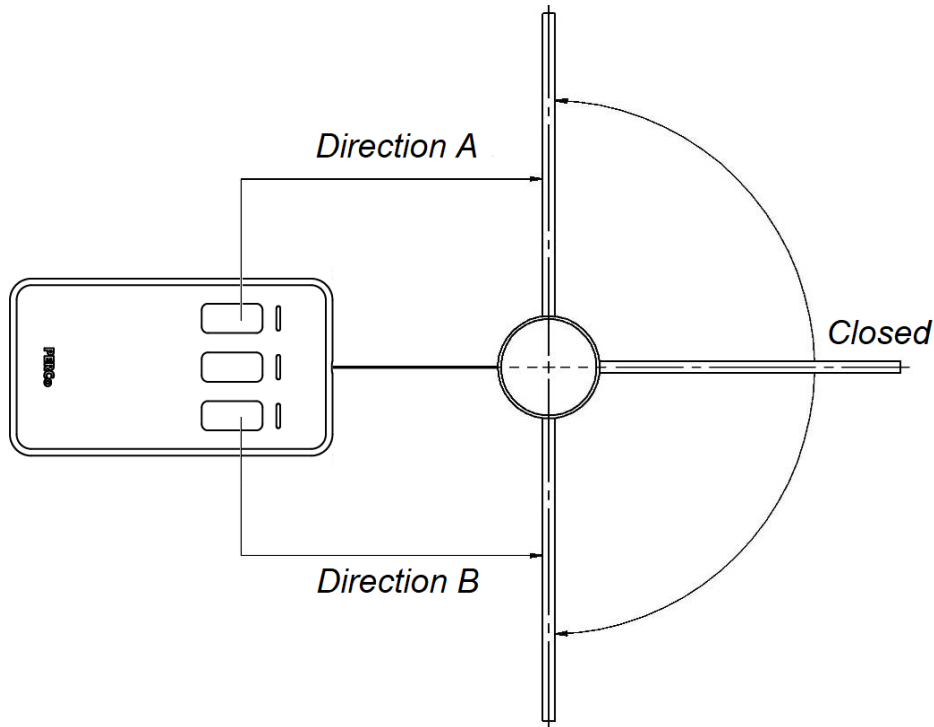


Figure 5. Standard orientation of the RC panel relative to the swing panel's opening direction

Table 2. Connection of wires of the RC panel cable to the XT2 terminal block in standard and reversed orientation of the RC panel

Number	Name	Orientation	
		Standard	Reversed
1	<i>Fire Alarm</i>	-	-
2	<i>GND</i>	-	-
3	<i>GND</i>	black	black
4	<i>Unlock A</i>	white	green
5	<i>Stop</i>	blue	blue
6	<i>Unlock B</i>	green	white
7	<i>Led A</i>	yellow	red
8	<i>Stop</i>	orange	orange
9	<i>Led B</i>	red	yellow
10	<i>Sound</i>	brown	brown

5.4 Input and output signal parameters

The microcontroller installed on the control board tracks the status of the *Unlock A*, *Stop*, *Unlock B*, and *Fire Alarm* control inputs of the swing gate and also tracks output signals from the rotation angle sensor of the swing panel.

Relying on received data, the microcontroller generates commands for the gate control mechanism as well as signals for connected remote indication devices, indication on the RC panel (*Led A*, *Led Stop*, and *Led B*), signals on the performed rotation of the swing panel in the relevant direction on the *Pass A* and *Pass B* outputs.

5.4.1 Inputs for control devices connection

The swing gate can be operated with its RC panel, WRC device or ACS controller.

A device that sends the *Fire Alarm* command is used for emergency unblocking of the passage zone.



Note:

Control devices (RC panel, WRC device, ACS controller) can be connected to the swing gate separately or in parallel, in any combination with each other.

In case of combined connection, signals sent by control devices may overlap. In this case, the reaction of the gate will correspond to the reaction towards the generated combination of input signals.

Control devices are connected to the *Unlock A*, *Stop*, and *Unlock B* control inputs. The gate is operated by sending a low-level signal to the *Unlock A*, *Stop*, *Unlock B* contacts of the **XT2** terminal block in relation to the *GND* contact. Control signal transmission algorithms are given in Appendices 1 and 2.

In this case, a normally open relay contact or open collector output circuit can be used as a control element (see Figure 6 and Figure 7).

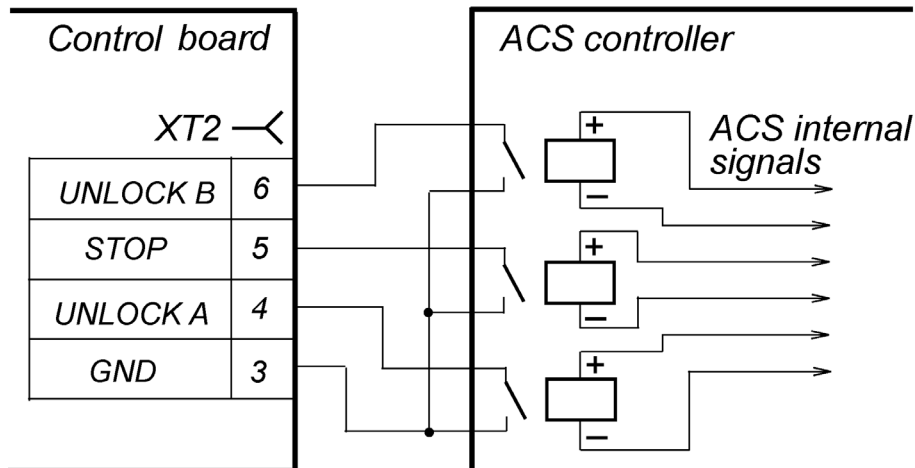


Figure 6 ACS control element – normally open relay contact

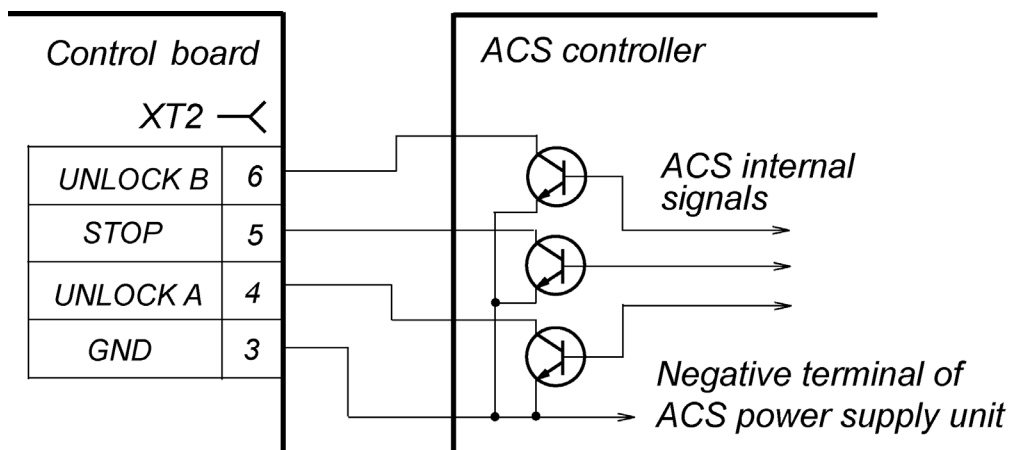


Figure 7. ACS control element – open collector output circuit

The device that sends the *Fire Alarm* emergency unlocking command is connected to the *Fire Alarm* control input. Emergency unlocking is performed by turn-off of the low-level signal at the *Fire Alarm* contact of the **XT2** terminal block in relation to the *GND* contact. In this case, a normally closed relay contact or open collector output circuit can be used as a control element.

If the *Fire Alarm* input is not used, it is necessary to install a jumper between the *Fire Alarm* and *GND* contacts of the **XT2** terminal block. The jumper is installed by default.

The gate can operate in two control modes: pulse and potential. The control mode is selected by installing or removing the jumper on the *Imp / Pot* connector. If the jumper is installed, the gate operates in the pulse control mode; if the jumper is removed, the gate operates in the potential control mode. The jumper is installed by default. Control signal transmission algorithms for each control mode are given in the Appendix.

Devices are connected to control inputs in accordance with the electrical connection layout shown in Fig. 11.



Note:

To generate a high-level signal on all input contacts (*Unlock A*, *Stop*, *Unlock B*, *Fire Alarm*), 1 kOhm resistors connected to a +3.3 V voltage plane are used.

The control element shall meet the following signal requirements:

control element – relay contact:

minimum commutation current..... max. 4 mA

closed contact resistance

(including connection cable resistance) max. 200 Ohm

control element – open collector output circuit:

voltage at the closed contact

(low-level signal, at the control board input) max. 0.8 V

5.4.2 PASS outputs

The *PASS A* (*Pass A* and *Common* contacts of the **XT1** terminal block) and *PASS B* (*Pass B* and *Common* contacts of the **XT1** terminal block) outputs are basically a relay.

The relays have normally open contacts. The *Common* contact of the relays is not connected to the negative terminal of the gate’s power supply unit. In the normalized state, the relay coil is not energized.

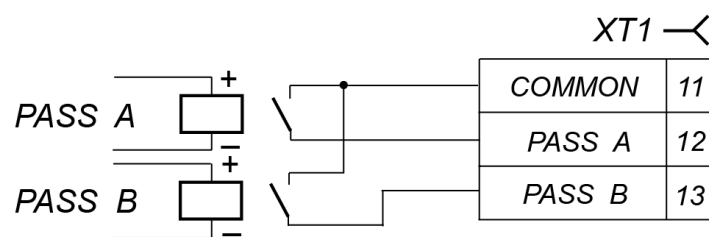


Figure 8. Output stages for PASS A, PASS B

The outputs are activated when the swing gate turns in the corresponding direction (A/B) and are normalized when it returns to the initial *Closed* position. When activated, the relay coil is energized, and relay contacts are closed. If the relay coil is energized, this is indicated by lighting up of a red LED indicator installed on the control board near the related relay.

Output stages for *PASS A* and *PASS B* are relay contacts with the following signal specifications:

maximum commutation voltage.....42 V DC

maximum commutation current 0.25 A

closed contact resistance..... max. 0.15 Ohm

5.4.3 Outputs for remote indication connection

The *Light A* and *Light B* outputs are used for remote indication connection and are basically relay changeover contacts (see Fig. 9). Each output has a full contact set on the **XT1** terminal block: normally open (NO), normally closed (NC), and common (C). Connection is performed in accordance with the electrical connection layout given in Fig. 11.

The *Light A* (*Light B*) relay is activated (meaning that its coil is energized) when the passage is open in the direction A (B), and it is normalized when the passage is closed in the related direction.

The *Light A* (*Light B*) relays’ activation/normalization can be determined by activation/deactivation of light indicators that are installed near the outputs of the said relays on the control board.

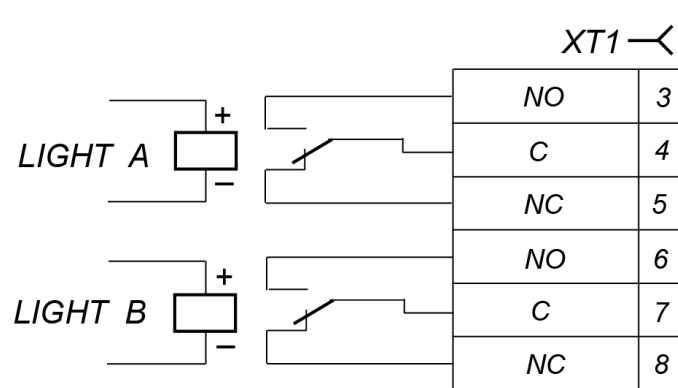


Figure 9. Output stages for Light A and Light B

Output stages for *Light A (Light B)* are relay changeover contacts with the following signal specifications:

maximum commutation DC voltage	30 V
maximum commutation AC voltage	42 V
maximum commutation AC / DC current	3 A
closed contact resistance	max. 0.15 Ohm

5.5 Operation contingencies

In a case of any impediment to the free rotation of the swing gate, the gate switches to the overload mode automatically. The mode is used to avoid damage to electromechanical elements due to overheating.

If any obstacle impedes rotation of the swing panel in the required direction, three attempts of rotation in the same direction are made at a 3 sec interval. If the obstacle remains, the swing gate switches to the overload mode. In overload mode, the swing panel can smoothly rotate $\pm 90^\circ$, which helps easily remove the obstacle from the passage zone. In this case, all three light indicators on the RC panel are blinking, and a sound indication consisting of three short audio signals is emitted each 20 sec.

The overload mode is switched off by rotating the swing panel to the *Closed* position manually or by turning the swing gate's power supply off and then on again (in this case, the gate will return into its initial position automatically).

6 MARKING AND PACKAGING

The swing gate has a marking label located inside the rotary post under the top cover. The label contains the name of the product, its serial number, and manufacture date. To access the marking, remove the post cover by unscrewing three set screws in the post's upper part using the SW1.5 Allen key.

In the delivery set as per Section 4, the swing gate is packed in two boxes that protect it from being damaged during transportation and storage. Box 1 contains its gate post and RC panel, and box 2 contains a swing panel. The boxes have the marking of the packed product and additional marking in accordance with design documents and the delivery set.

Dimensions, (L×W×H):

box 1 for the swing gate's post.....	121×37×22 cm
box 2 for AGG-650 swing panel	85×86×8 cm
box 2 for AGG-900 swing panel	110×86×8 cm

Gross weight:

box 1 for the swing gate's post.....	max. 36 kg
box 2 for AGG-650 swing panel	max. 28 kg
box 2 for AGG-900 swing panel	max. 35 kg

7 SAFETY REQUIREMENTS

7.1 Installation safety

The swing gate shall be installed by qualified personnel who have fully studied this Manual and have been instructed in safety, in compliance with general rules of electrical and installation works.



Attention!

- All the installation works may be performed only after the power supply unit has been switched off and unplugged.
- Only serviceable tools may be used during installation.
- Cables must be laid in accordance with electrical safety requirements.
- Before the first activation of the gate, check whether the installation and all connections have been performed correctly.

The installation of the power supply unit shall be performed in accordance with safety requirements given in its operation manual.

7.2 Operation safety

Observe general safety requirements for the use of electrical equipment when operating the swing gate.



Warning!

- Do not use the swing gate in environment different from that specified in Section 2.
- Do not use the swing gate if the power supply voltage differs from that specified in Section 3.

The power supply unit shall be operated in accordance with safety requirements given in its operation manual.

8 ASSEMBLY AND INSTALLATION

Observe safety requirements listed in Section 7.1 during installation of the swing gate.

8.1 General recommendations

Proper installation is crucial to the performance and service life of the swing gate. We advise you to study this section carefully before installation works and follow the instructions specified herein.

For preparation of the mounting surface, we recommend that you:

- mount the swing gate on steady and smooth concrete foundations (grade 400 or higher, B22.5 strength class), stone or similar foundations with a thickness of at least 150 mm.
- make sure the mounting surface is horizontal and even so that all the mount points of the swing gate lie in the same horizontal plane (to be controlled with the use of a level);
- employ embedded reinforcing elements with the minimum dimensions of 450×450×200 mm, when installing the gate on a less steady foundation.

8.2 Tools and equipment required for installation

Use the following tools for the installation works:

- 1.2÷1.5kW electric hammer drill;
- hard-alloy drill bit to create holes for anchor sleeves;
- Phillips-head screwdriver No.1;
- SW1.5 Allen key;
- S17 horn-type wrench;
- hobby knife;
- level;
- 2m measuring tape.



Note:

The use of different tools is acceptable on condition that they do not reduce the quality of installation works.

8.3 Appropriate cable lengths

Maximum acceptable length of the RC panel / ACS controller cablemax. 30 m

Maximum acceptable length of the power supply cable depends on its cross-section and shall be as follows:

- for 1.5 mm² cross-section (AWG 15)max. 10 m
- for 2.5 mm² cross-section (AWG 13)max. 20 m

8.4 Installation procedure



Attention!

The manufacturer shall not be liable for any damage caused to the swing gate and other equipment as a result of improper installation or any other damage due to this reason and declines any claims arising thereof in case if the installation is not in compliance with the instructions provided in this Manual.

The item numbers in the installation procedure are given according to Fig. 2 unless stated otherwise. The electrical connection layout is given in Fig. 11. Terminal blocks and jumpers' positioning on the control board is shown in Fig. 3. Cables used for installation and their maximum lengths are specified in Section 8.3. Recommendations on mounting surface preparation are listed in Section 8.1. Follow this sequence during gate installation:

1. Unpack the box with equipment, check carefully the delivery set according to Section 4.1.



Attention!

Do not hold the gate by its cover (3) while moving it.

2. Mark and prepare mounting holes in the floor as per Fig. 10 for anchor sleeves (9) to install the gate post. If necessary, use the supplied marking template.
3. Install the power supply unit at a place specified in its operation manual.

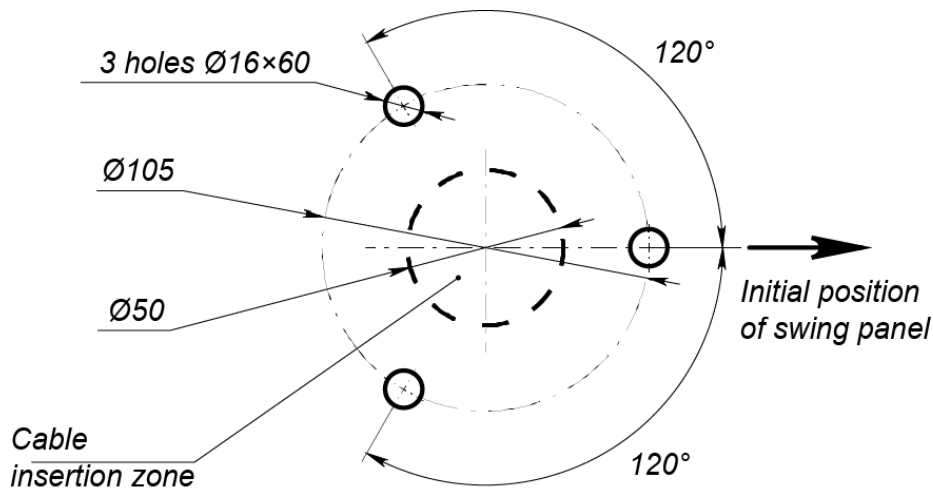


Figure 10. Mounting hole pattern for installation of the swing gate¹

4. If it is necessary to lay power (13) and control cables (14) underneath the floor surface, prepare a cable duct in the floor leading towards the zone where cables are inserted into the gate post. The cable laying zone positioning is given in Fig. 10.
5. Install anchors in the drilled holes in the floor so that their sleeves would not protrude from the floor surface.
6. Guide the power and control cables through the cable duct towards the cable insertion zone. Pull cables inside the fixed base (1) to the length appropriate for following installation on the control board (6).



Attention!

Install and fix the gate post only after all cables have been laid inside the cable duct and the gate post. Be particularly careful until the post is fixed and be sure to prevent it from falling down.

7. Install the gate post on anchor studs (9). Put it vertically by using a level. Mounting gaskets may be used. Vertical deviation may not exceed 0.5° in two planes.
8. Remove the metal ring (5). Put a washer (11) on each anchor stud and fix the gate post with three M10 nuts (10).
9. Connect the power cable and control cable to the **XT1** and **XT2** terminal blocks of the control board (6). Position the cables as shown in Fig. 3.
10. If needed, connect the *Fire Alarm* emergency unlocking device. If the device is not connected, a jumper wire shall be installed on the *Fire Alarm* and *GND* contacts of the **XT2** terminal block.
11. If necessary, connect remote indicators to the **XT1.2** and **XT1.3** terminal blocks.
12. If necessary, change the position of jumpers on the control board.

¹ The hole sizes are specified in the pattern for anchors of the *PFG SB 10-20* (SORMAT) type; if other anchor types are used, holes must be drilled with the diameter and depth suitable for those.

- Mount the glass swing panel according to Fig. 12. To do this, fix the panel (6) on the rotary support (7) using elements (1) – (5).



Attention!

Be careful while mounting the glass panel, prevent it from falling and being hit by metal elements of the post. Due to the significant weight of the panel, it is recommended to put a support under it during its disassembly.

- Install the metal ring (5) in its place. Put the gate housing (2) on the post carefully, moving it from the top downwards along the post axis until it stops.
- Place the cover (3) on top of the housing, positioning it so that one of the cover holes intended for a set screw is directly above the swing panel. Secure the cover with three M3 set screws (8) using the SW1.5 Allen key and tightening them to the stop.

When the installation is finished, turn the gate on and test its operation in accordance with Section 9.1.

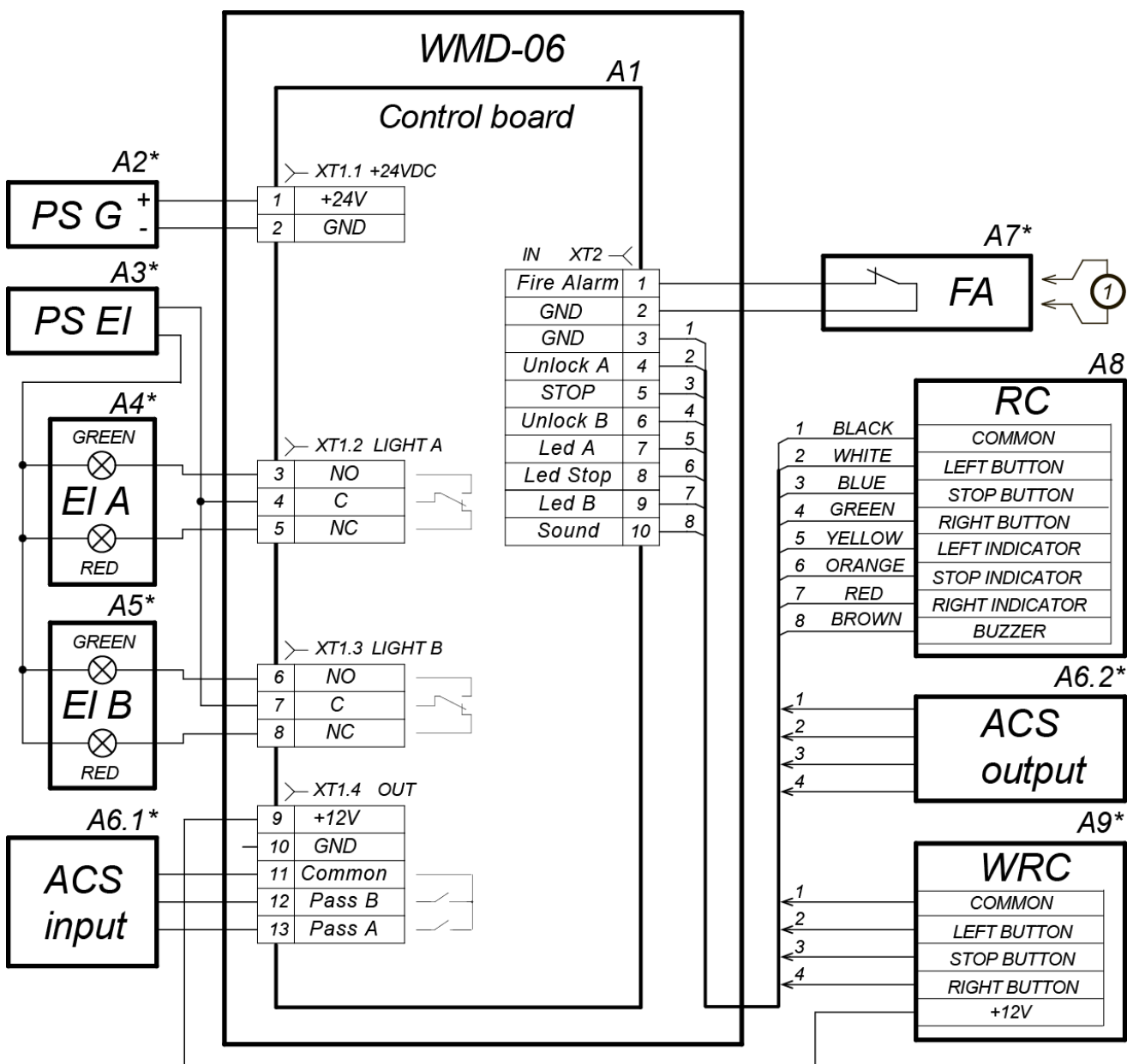
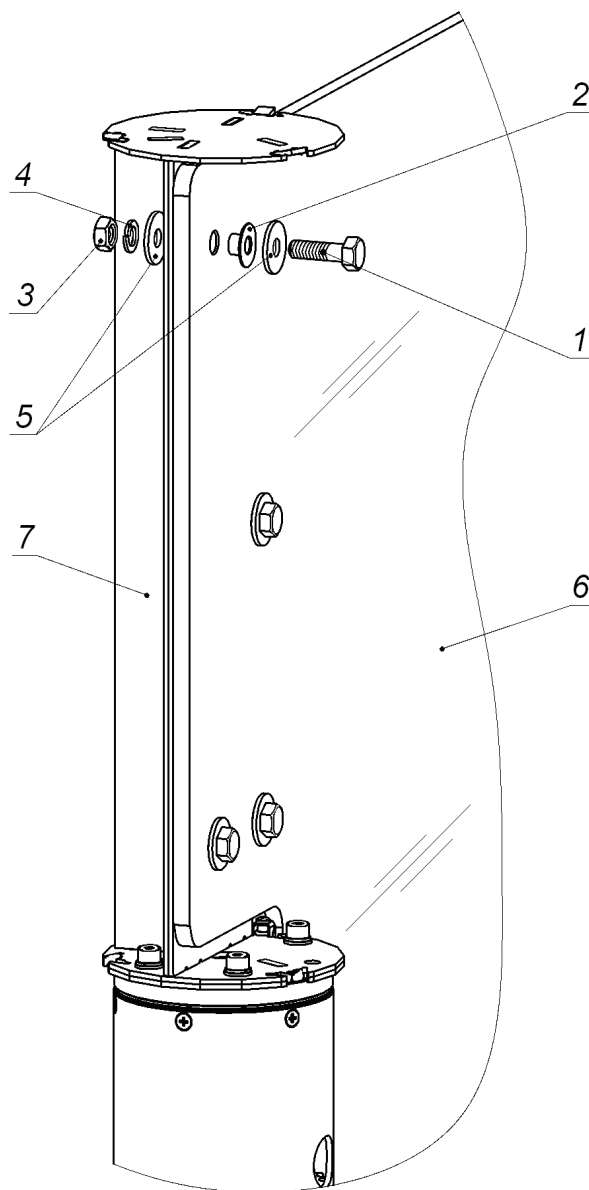


Figure 11. Electrical connection layout

Table 3. List of elements on the electrical connection layout

Item	Designation	Number, pcs
A1	Control board	1
A2*	Power supply unit of the swing gate (+24V DC; 4A)	1
A3*	Power supply unit of remote indicators	1
A4*, A5*	Remote indicators	2
A6.1*	ACS controller inputs	1
A6.2*	ACS controller outputs	1
A7*	Device sending the <i>Fire Alarm (FA)</i> emergency unlocking command	1
A8	H6/4 RC panel	1
A9*	WRC device	1
1	Jumper wire. Installed when the <i>Fire Alarm</i> device (A7) is not connected. Installed by default	1

**Figure 12. Swing panel mounting**

1 – M10 bolt; 2 – plastic bushing; 3 – M10 nut; 4 – spring washer; 5 – enlarged washer;
6 – glass swing panel; 7 – rotary support

* Not included in the standard delivery set.

9 OPERATION

Observe safety requirements given in Section 7.2 when operating the swing gate.



Warning!

- Do not move any objects with dimensions exceeding the passageway width through the swing gate's passage zone.
- Do not jerk or hit elements of the swing gate so as to prevent their mechanical damage.
- Do not dismantle or adjust mechanisms ensuring operation of the swing gate.
- Do not use substances for cleaning of the swing gate that may cause mechanical damage of its surfaces or corrosion of its parts.

9.1 Power-up



Attention!

Make sure that there are no obstacles or bystanders in the rotation and passage zone of the gate before starting the power-up.

To switch the gate on, perform the following actions in order:

1. Connect the mains cable of the power supply unit to an electric socket with the voltage and frequency set in the certificate of the power supply unit.
2. Turn the power supply unit on.
3. The swing gate will detect the *Closed* position in automatic mode (see Figure 5).
4. In the pulse control mode, the swing gate will switch to the *Passage denial* mode; in the potential mode, the swing gate will switch to the *Both directions closed* mode. The red indicator located above the **STOP** button on the RC panel will turn on.

The swing gate is ready for operation.

9.2 Pulse control mode

The pulse control mode is used to operate the swing gate with the RC panel, WRC device, and ACS controllers whose outputs support this mode.

The passage modes are set by applying a low-level signal or by closing the *Unlock A*, *Stop*, *Unlock B* contacts with the *GND* contact of the **XT2** terminal block. In this case, the control signal shall last for at least 100 ms. The transmission algorithm of control signals is given in Appendix 1. Indication of the RC panel and the swing panel position for available operation modes are given in Table 4.

Table 4. Operation modes in pulse control mode (Imp/Pot jumper is installed)

Operation mode	Operator's actions on RC panel	RC panel indication	Swing panel position
<i>Passage denial</i>	Press the STOP button.	Red indicator above the STOP button is on	Panel is in the <i>Closed</i> position and locked
<i>Single passage in chosen direction</i>	Press the LEFT or RIGHT button corresponding to the chosen passage direction.	Green indicator above the button responsible for the chosen passage direction and red indicator above the STOP button are on	Panel opens in the chosen direction for passage of one person
<i>Free passage</i>	Press the STOP button and the button corresponding to the chosen passage direction simultaneously	Green indicator above one of the passage direction buttons is on	Panel opens in one of the directions and remains in this position until the mode is changed.

The gate remains open for 4 sec. in the *Single passage in chosen direction* mode. Timing starts after the swing panel rotates 85°. After this time expires, the swing panel moves to the *Closed* position and locks; the swing gate switches to the *Passage denial* mode.

**Note:**

When operating as part of the **PERCo-S-20** system, the swing panel stays open in the *Single passage in chosen direction* mode for the time determined by the **Unlocked state holding time** parameter.

The *Single passage in chosen direction* mode can be changed to the *Free passage* mode in the same direction or to the *Passage denial* mode; the *Free passage* mode can be changed to the *Passage denial* mode only.

9.3 Potential control mode

The potential control mode is used to operate the swing gate with ACS controllers whose outputs support this mode.

Operation modes are set by holding a low-level signal at the *Unlock A*, *Stop*, and *Unlock B* contacts in relation to the *GND* contact of the **XT2** terminal block. The transmission algorithm of control signals is given in Appendix 2. Indication of the RC panel and the swing panel position for available operation modes are given in Table 5.

Table 5. Operation modes in potential control mode (Imp/Pot jumper is removed)

Operation mode	Signal to be sent	Operator's actions on RC panel	RC panel indication	Swing panel position
<i>Both directions closed</i>	Low-level – on the <i>Stop</i> contact, high-level – on the <i>Unlock A</i> and <i>Unlock B</i> contacts.	Press and hold the STOP button	Red light indicator above the STOP button is on	Panel switches to the <i>Closed</i> position
<i>Direction open</i>	Low-level – on the <i>Unlock A</i> or <i>Unlock B</i> contact (corresponding to the chosen passage direction), high-level – on remaining contacts, i.e., <i>Stop</i> and <i>Unlock B</i> (<i>Stop</i> and <i>Unlock A</i>).	Press and hold the LEFT or RIGHT button corresponding to the chosen passage direction	Green indicator above the button responsible for the chosen passage direction is on	Panel opens in the chosen direction and remains so until the low-level signal on the corresponding contact is turned off

The passage waiting time for the *Direction open* mode is determined by the duration of the control signal being held on the contact related to the opening direction of the swing panel.

9.4 Emergency response

In case of fire, disasters, and any other emergency situations, it is necessary to provide an emergency exit to evacuate people from the facility urgently. For example, **BH-02** anti-panic rotary railing sections can be used as such an emergency exit.

The passage zone of the swing gate can be used as an additional emergency exit. The gate structure provides for fast organization of an unobstructed exit without use of any special keys or tools. For this purpose, apply the *Fire Alarm* control signal to the control board. The swing panel, which blocks the passage zone, will open automatically making the passage free regardless of the set operation mode. Other control commands will be ignored. The opening direction is determined by the **FireAlarmDir** jumper on the control board. When the signal is turned off, the swing panel moves to the *Closed* position and locks.

The device sending the *Fire Alarm* emergency unlocking command is not included into the standard delivery set.

Besides, the swing gate is basically a normally open device, meaning that in case of power failure, the swing panel can easily rotate $\pm 90^\circ$, clearing the passage zone.

9.5 Troubleshooting

Possible faults to be corrected by the user themselves are listed in Table 6. In an unlikely event of other faults, please consult the **PERCo** Technical Support Department.

Table 6. Troubleshooting

Fault	Possible cause	Remedy
When the gate is powered-up, RC panel indication does not work	No operating voltage is applied to the control board	De-energize the power supply unit. Remove the top cover and housing of the gate. Check if the power cable is intact and reliably connected to the XT1 terminal block of the control board.
The gate cannot operate in one of the directions; RC panel indication is on	The control signal of the chosen direction is not applied to the control board	De-energize the power supply unit. Remove the cover and housing of the gate. Check if the RC panel / WRC device / ACS controller cable is intact and reliably connected to the XT2 terminal block of the control board.

10 TRANSPORTATION AND STORAGE

The swing gate in the manufacturer's original packaging is allowed to be transported only in closed transport (railway cars, containers, closed motor cars, holds, etc.).

During storage and transportation, boxes with swing gate posts may be stacked no more than 2 layers high. Boxes with glass swing panels may not be stacked.

The swing gate should be stored in dry indoor facilities at ambient temperatures from -40°C to $+50^{\circ}\text{C}$ and relative air humidity of up to 98% at $+25^{\circ}\text{C}$. When being stored, the product needs to be protected against atmospheric precipitation.

After transportation or storage at below-zero temperatures or high air humidity, the swing gates should be kept in their packaging before the start of installation works for minimum 24 hours under normal climate conditions corresponding to operation conditions.

11 MAINTENANCE

Technical maintenance of the swing gate shall be performed only by the manufacturer.

We recommend using liquid non-abrasive cleaners containing ammonia to clean the swing gate's post and glass panel when dirty.

APPENDIX 1. Algorithm for transmission of control signals in pulse control mode

The command is an active signal front (signal transfer from the high level to the low level) at any of the contacts at presence of the corresponding signal levels at the other contacts.



Note:

RC panel:

- active front – pressing of the relevant button,
- low level – holding of the relevant button,
- high level – the relevant button has not been pressed.

The following commands can be formed by sending a low-level signal to the *Unlock A*, *Stop*, and *Unlock B* contacts of the **XT2** terminal block relative to the *GND* contact:

Passage denial (locked for entry and exit) – active front is at the *Stop* contact while there is a high level at the *Unlock A* and *Unlock B* contacts. Both passage directions are locked at this command.

Single passage in the direction A (open for passage of one person in the direction A) – active front is at the *Unlock A* contact while there is a high level at the *Stop* and *Unlock B* contacts. At this command, the passage direction A opens either for 5 sec. or until the passage has been made in this direction or until the *Passage denial* command, and the status of the passage direction B does not change at that. The command is ignored if, at the time of its receipt, the status of the passage direction A is *Free passage*.

Single passage in the direction B (open for passage of one person in the direction B) – active front is at the *Unlock B* contact while there is a high level at the *Stop* and *Unlock A* contacts. At this command, the passage direction B opens either for 5 sec. or until the passage has been effected in this direction or until the *Passage denial* command, and the status of the passage direction A does not change. The command is ignored if, at the time of its receipt, the status of passage direction B is *Free passage*.

Free passage in the direction A (open for free passage in the direction A) – active front is at the *Unlock A* contact while there is a low level at the *Stop* contact and a high level at the *Unlock B* contact, or active front is at the *Stop* contact while there is a low level at the *Unlock A* contact and a high level at the *Unlock B* contact. At this command, the passage direction A opens until the *Passage denial* command is received; the status of the passage direction B does not change at that.

Free passage in the direction B (open for free passage in the direction B) – active front is at the *Unlock B* contact while there is a low level at the *Stop* contact and a high level at the *Unlock A* contact, or active front is at the *Stop* contact while there is a low level at the *Unlock B* contact and a high level at the *Unlock A* contact. At this command, the passage direction B opens until the *Passage denial* command is received; the status of the passage direction A does not change at that.

APPENDIX 2. Algorithm for transmission of control signals in potential control mode



Note:

For ACS controller outputs:

- high level – either contacts of the output relay are broken or the output transistor is closed,
- low level – either contacts of the output relay are closed or the output transistor is open.

Both directions closed (locked for entry and exit) – there is a high level at the *Unlock A* and *Unlock B* contacts, or a low level at the *Stop* contact. The both passage directions are locked at this command.

The direction A is open (open for passage in the direction A) – there is a low level at the *Unlock A* contact while a high level is present at the *Stop* and *Unlock B* contacts. At this command, the direction A is opened until the low-level signal removal from the *Unlock A* contact or until the *Both directions closed* command is received. The status of the direction B does not change at that.

The direction B is open (open for passage in the direction B) – there is a low level at the *Unlock B* contact while there is a high level at the *Stop* and *Unlock A* contacts. At this command, the direction B is opened until the low-level signal removal from the *Unlock B* contact or until the *Both directions closed* command is received. The status of the direction A does not change at that.

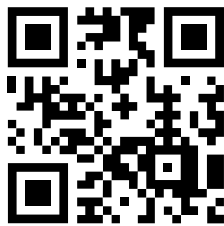
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