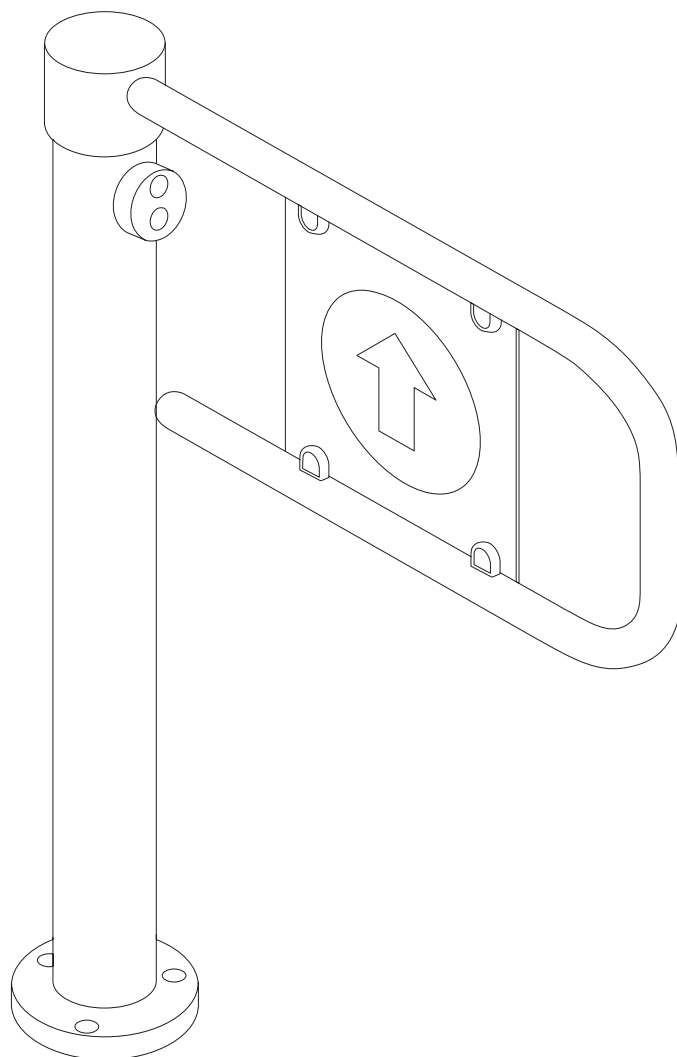


PERCo[®]

ASSEMBLY AND OPERATION MANUAL



WHD-05

EAC
CE

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 **WHD-05** Electromechanical swing gate (hereinafter referred to as the Manual) contains the instructions for its safe transportation, storage, installation, operation, and maintenance. The product installation shall be carried out 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 **WHD-05** Electromechanical swing gate, hereinafter referred to as the *swing gate*, is a blocking device designed for management of pedestrian flows and passage restriction.

Its elegant contemporary design blends perfectly into the interiors of offices, shopping malls and exhibition halls, airports, railway terminals, etc.

The swing gate meets contemporary requirements for this type of equipment in accordance with GOST R (Russian State Standard) 51241-2008.

2 OPERATING CONDITIONS

In terms of its 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 ambient temperatures from +1°C to +50°C and relative air humidity of up to 98% at +25°C.

3 TECHNICAL SPECIFICATIONS

DC operating voltage	12±1.2 V
Consumption current	max. 1.2 A
Power consumption	max. 14 W
Guaranteed throughput rate in the single passage mode:	
with ASG-650 swing panel	22 persons/min
with ASG-900 swing panel	20 persons/min
Average daily load in the single passage mode	3000 passages
Passageway width:	
with ASG-650 swing panel	700 mm
with ASG-900 swing panel	950 mm
RC-panel cable length ¹	min. 6.6 m
Electric shock protection class	III (IEC 61140)
IP Code.....	IP41 (EN 60529)
Mean time to failure	min. 1 500 000 passages
Mean lifetime	min. 8 years
Overall dimensions of the gate (height × length × width):	
with ASG-650 swing panel	1040×780×147 mm
with ASG-900 swing panel	1040×1030×147 mm
Net weight	
Gate post.....	max. 21 kg
ASG-650 swing panel.....	max. 4 kg
ASG-900 swing panel.....	max. 4 kg

¹ Max. length of the RC-panel cable – 40 m (to be supplied upon request).

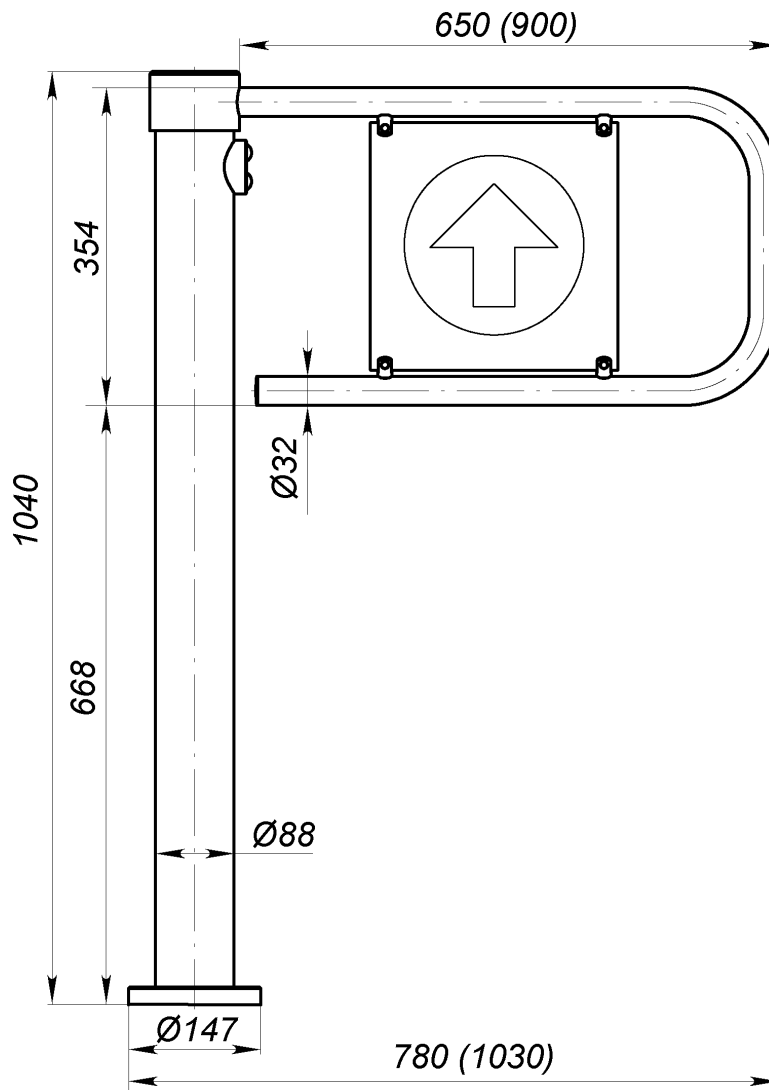


Figure 1. Overall dimensions

4 DELIVERY SET

4.1 Standard delivery set

Basic equipment:

Gate post	1
Swing panel with filler panel and set of clips	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 **WHD-05** swing gate: **ASG-650** for a passageway width of 700 mm and **ASG-900** for a passageway width of 950 mm.

RC panel with cable	1
---------------------------	---

Spare parts and tools:

S6 Allen key	1
--------------------	---

Installation tools and accessories:

M8×30 screw as per GOST 11738 (for swing panel mounting)	2
Washer 8 as per GOST 6402 (for swing panel mounting)	2
Mechanical rotation limiter (M8×12 screw)	1

Operational documentation:

Certificate	1
Assembly and Operation Manual	1

4.2 Additional equipment and installation accessories (to be supplied upon request)

WRC kit ¹	1
Intrusion detector	1
Siren	1
Anchor with M10 bolt and washer	3

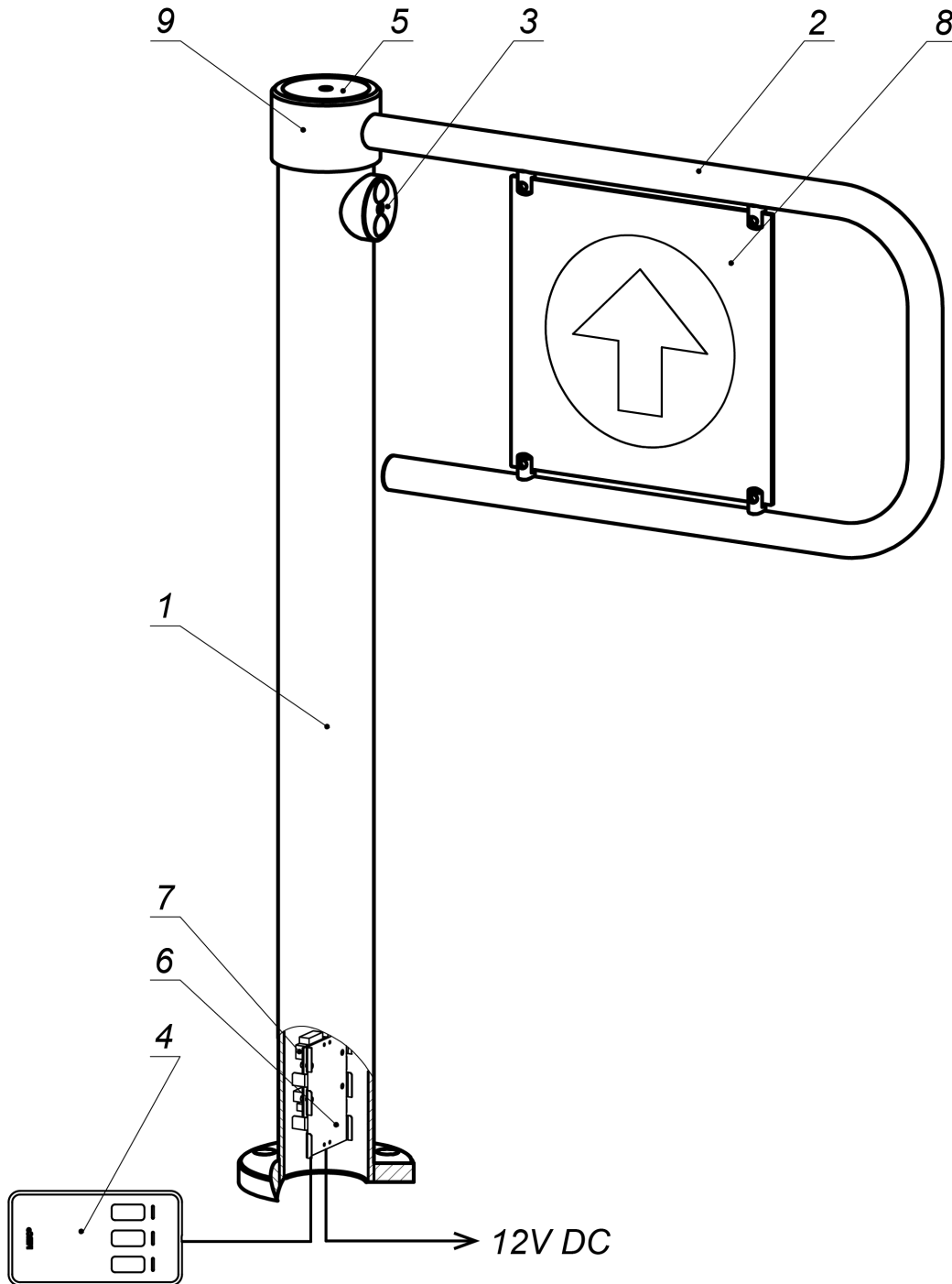


Figure 2. General view:

- 1 – gate post, 2 – swing panel, 3 – indication module,
 4 – RC panel with cable (ACS controller¹/ WRC device¹), 5 – top cover, 6 – bracket,
 7 – switching module, 8 – filler panel with clips, 9 – rotary group

5 DESCRIPTION

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

5.1 Main features

- The gate boasts increased mechanical resistance and a high throughput rate.
- The gate can be supplied with a short or long swing panel, allowing for a passageway width of 700 mm (**ASG-650**) or 950 mm (**ASG-900**) respectively.
- The gate is equipped with an indication module consisting of red and green LED indicators that represent the locked and unlocked status of the swing panel respectively when switched on.
- Both passage directions are unblocked simultaneously. One of the passage directions can be blocked permanently with the use of a removable mechanical rotation limiter of the swing panel, included in the standard delivery set.
- The gate is a normally-open device – in case of power failure, the swing panel is opened freely in both directions (except for the direction blocked with the mechanical rotation limiter).
- The hydraulic damper ensures smooth return of the swing panel to the initial position.
- The gate is equipped with inputs for connection of an intrusion detector, siren, and *Fire Alarm* emergency unlocking device (e.g., fire and security alarm).
- The gate can be controlled with an RC panel, WRC kit, motion detector or ACS controller.
- The gate has two control modes – pulse and potential.
- The gate has low power consumption.
- The gate is energized with safe 12V DC operating voltage.
- The gate's switching module board is outfitted with galvanic decoupling of outputs.

5.2 Design

Overall dimensions of the gate are given in Figure 1. Design of the swing gate is shown in Figure 2. Numbers of items herein are specified in accordance with Figure 2.

5.2.1 Gate post

The gate post (1) is a round tube with a base to be fixed to the mounting surface with three anchor bolts. The top part of the post contains a rotary group (9) with a rigidly fixed swing panel (2). The upper end of the post is closed with a top cover (5). A LED indication module (3) is fixed in the upper part of the post to show the status of the swing gate.

Inside the gate post are a reset unit (a spring and a hydraulic damper), an electromagnetic locking device, a control module board, a switching module board (7), and an optical rotation sensor for the swing panel.

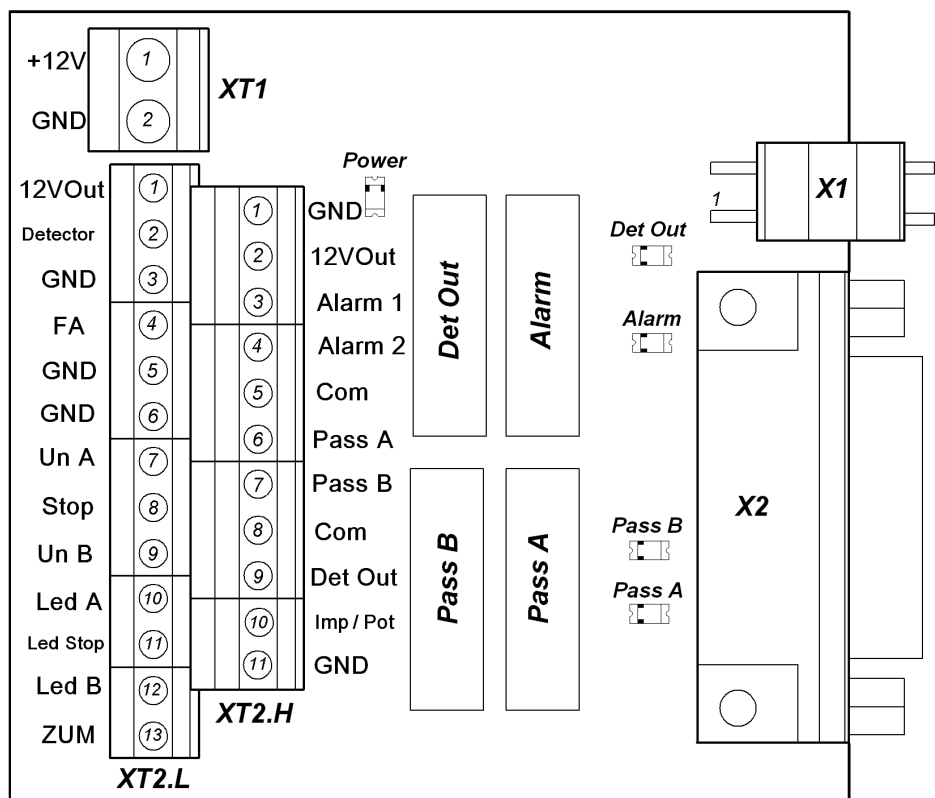


Figure 3. Switching module board

Electronic elements of the gate are divided into the control module and the switching module to make installation more convenient (see Fig. 3); they are produced on separate printed circuit boards and connected with two patch cables: a power cable and control cable. The control module board is rigidly fixed inside the gate post. The control module board is equipped with a microcontroller that controls the swing gate's electromagnetic locking device. The switching module board is fixed on a removable bracket. The switching module board contains terminal blocks for external connections (to control devices and additional equipment).

5.2.2 Switching module board

The microcontroller that is installed on the control module board processes received commands (monitors the status of the *Unlock A*, *Stop*, *Unlock B*, and *Fire Alarm* contacts) and traces signals from the optical rotation sensor for the swing panel and from the intrusion detector (the *Detector* contact). Relying on these signals, it forms commands for the electromagnet as well as signals for external devices: RC panel indication (*Led A*, *Led Stop*, and *Led B*), rotation of the swing panel (*PASS A* and *PASS B*), and alarm output (*Alarm*). It also relays a signal indicating the current status of the intrusion detector (*Det Out*).

The switching module board contains:

- **X1** – connector for a power patch cable of the control module;
- **X2** – connector for a control patch cable of the control module;
- **XT1 (+12VDC)** – terminal block for connection of an external power supply unit;
- **XT2.L (In)** – terminal block for connection of the RC panel / WRC device / control inputs of the ACS controller / intrusion detector, and also for connection of the *Fire Alarm* emergency unlocking device;
- **XT2.H (Out)** – terminal block for connection of a siren and outputs that inform the ACS controller about the status of the swing gate and intrusion detector, and also for installation of a jumper for control mode selection (pulse / potential);
- **Power** – LED indicator of available external power supply on the switching module board;
- **Det Out, Alarm, Pass A, Pass B** – control LED indicators that indicate the status of relay outputs and turn on when the contacts of respective relays are closed.

Table 1. Contacts of the switching module board and their purpose

Terminal block	No.	Name	Purpose
XT1	1	+12 V	+12V from external power supply unit
	2	GND	Common
XT2L	1	+12VOut	Intrusion detector input
	2	Detector	
	3	GND	
	4	FA	Fire Alarm input
	5	GND	
	6	GND	Common
	7	Unlock A	Gate control inputs
	8	Stop	
	9	Unlock B	
	10	Led A	Outputs of RC panel indication
	11	Led Stop	
	12	Led B	
	13	ZUM	Output for audio signal of RC panel
XT2H	1	GND	Common
	2	+12VOut	Siren
	3	Alarm 1	PASS A relay output
	4	Alarm 2	
	5	Com	
	6	Pass A	PASS B relay output
	7	Pass B	
	8	Com	
	9	Det Out	Intrusion detector status output
	10	Imp/Pot	Jumper wire for control mode selection
	11	GND	

5.2.3 RC panel

The RC panel (4) is designed for sending gate control commands in manual mode. The RC panel comes as a compact desktop device with a shockproof plastic case and a flexible multicore cable.

The front of the RC panel houses three control buttons that generate gate control commands. The **STOP** button in the middle serves for setting the *Passage denial* mode so that the swing panel cannot be rotated. The **RIGHT** and **LEFT** buttons allow passage in either chosen direction for one or more persons. It should be noted that the designation of buttons is not limited to the exact passage direction as the gate is unlocked with one of two buttons.

LED indicators are located above the buttons. The RC panel features a built-in piezoelectric buzzer for audio signal generation.

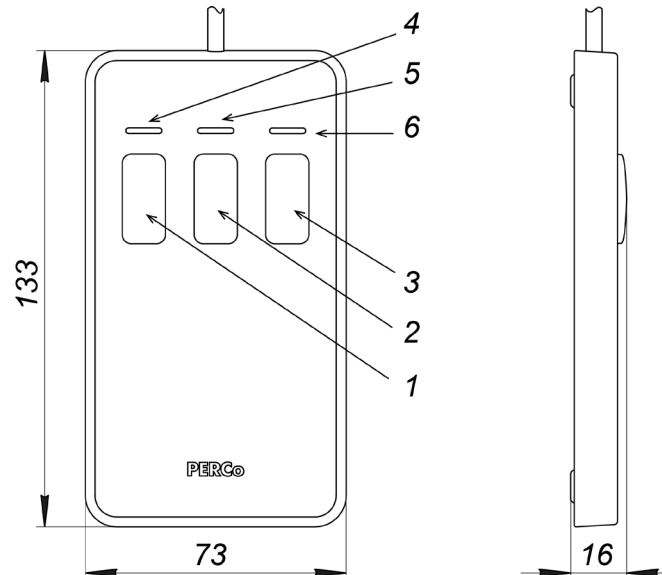


Figure 4. General view and overall dimensions of the RC panel

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

5.3 Control devices

The gate can be controlled with the following devices: its RC panel, WRC device, ACS controller, or motion detector.

These devices can be connected to the gate separately or in any combination with each other (in parallel).



Note:

In case of parallel connection of the abovementioned devices, their control signals may overlap. In this case, the response of the gate will correspond to the response to the generated combination of input signals (see App. 1 and 2).

The connection shall be performed in accordance with an electrical connection layout (see Fig. 10) to contacts of the **XT2.L** and **XT2.H** terminal blocks on the switching module board. The location of terminal blocks on the switching module board is shown in Fig. 3, and functions of their contacts are specified in Table 1.

5.3.1 Parameters of control signals

The gate is controlled with a low-level signal sent to contacts of the **XT2.L** terminal block – *Unlock A*, *Stop*, and *Unlock B* – in relation to the *GND* contact; in such case, a normally open relay contact or open collector output circuit may be used as the control element (see Fig. 5 and Fig. 6).

The swing panel can be unlocked in case of emergency by removal of the low-level signal in relation to the *GND* contact from the *Fire Alarm* contact; in such case, a normally closed relay contact or open collector output circuit may be used as the control element.



Note:

To create a high-level signal on all input contacts (*Unlock A*, *Stop*, *Unlock B*, *Fire Alarm*), 2 kOhm resistors connected to a + 3.3 V voltage plane are used.

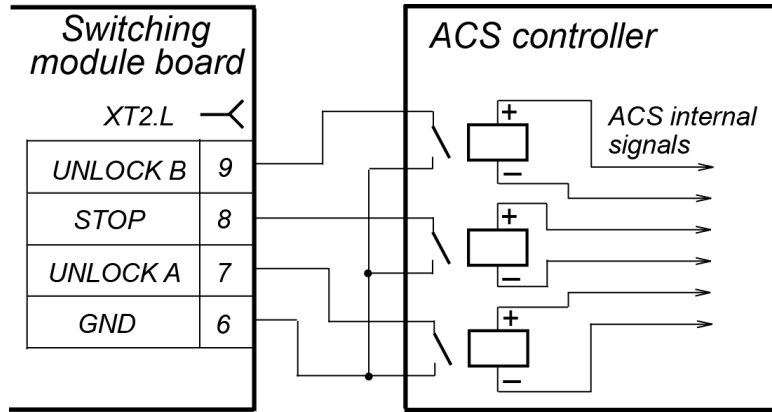


Figure 5. ACS control element – normally open relay contact

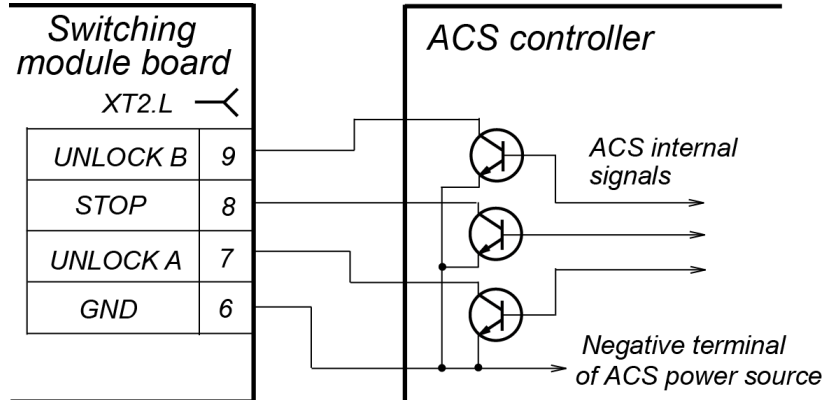


Figure 6. ACS control element – open collector output circuit

The control signal duration during which the operation mode can be changed shall be min. 100 msec. The control element shall provide for the following specifications of signals:

Control element – relay contact:

Minimum commutation current max. 2 mA

Closed contact resistance

(including resistance of the connecting cable) max. 300 Ohm

Control element – open collector output circuit:

Voltage at the closed contact (low-level signal, at the input of the switching module board) max. 0.8 V

5.3.2 Gate control modes

Standard control inputs — *Unlock A*, *Stop*, and *Unlock B* — and a special control input, *Fire Alarm*, support two control modes, pulse and potential (see Tables 4 and 5).

The control mode is selected by positioning a jumper wire between the *Imp/Pot* contact and *GND* contact of the **XT2.H** terminal block of the switching module board:

- the jumper is installed – pulse control mode (jumper is installed by default),
- the jumper is removed – potential control mode.

The pulse control mode is used to control the swing gate with its RC panel, WRC device, and ACS controller, outputs of which support the pulse control mode. Operation modes of the swing gate are given for this control mode in Table 4.

The gate is controlled with the use of a control signal (see Section 5.3.1). The transmission algorithm for control signals in this mode is shown in Appendix 1. After the command for single passage is sent to the *Unlock A* input or *Unlock B* input, the swing panel unlocks for 5 seconds, irrespective of the control signal (pulse) duration.

The potential control mode is used to control the swing gate with its ACS controller, outputs of which support the potential control mode (for example, a lock controller). Operation modes of the gate are listed in Table 5 for this control mode.

The gate is controlled with the use of a control signal (see Section 5.3.1). The transmission algorithm for control signals in this mode is shown in Appendix 2. The swing panel remains unlocked while the control signal is on. If the control signal is present on the *Unlock A* and *Unlock B* inputs, the gate remains open.

When the control signal is transmitted to the *Stop* input, the swing panel locks and remains locked while the signal is active irrespective of signals transmitted to the *Unlock A* and *Unlock B* inputs. After removal of the signal from the *Stop* input, the gate status depends on signals transmitted to the *Unlock A* and *Unlock B* inputs.



Note:

The event of passage through the gate can be registered according to the status of contacts of the *PASS A* or *PASS B* relay outputs. In order to organize single passages in potential control mode, it is recommended to turn off the control signal at the *Unlock A* or *Unlock B* input when the signal starts to be transmitted to the *PASS A* or *PASS B* output.

5.3.3 Control via motion detector

The swing panel of the gate can be unlocked automatically with the use of a motion detector for one of two directions. It is recommended to set the control zone of the motion detector directly in front of the swing panel.

The motion detector's connection layout is shown in Fig. 7. It is recommended to set **the potential control mode** to apply the motion detector. A low-level signal at the *Unlock A* or *Unlock B* contacts in relation to the *GND* contact is used for control. The signal duration when it is held with the motion detector should be set at a maximum of 3 seconds after the person has left its operating range.

Passage through the gate in the direction A (B) is detected according to the status of the *PASS A(B)* and *Common* output contacts.

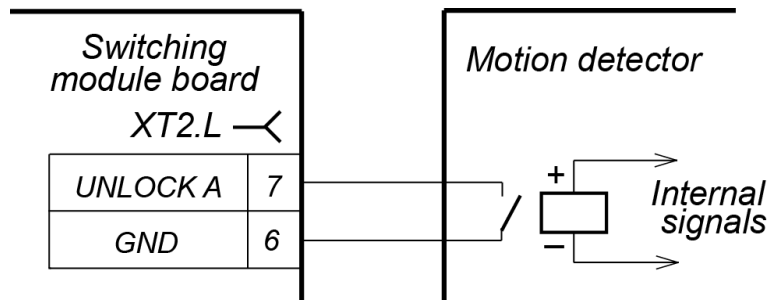


Figure 7. Motion detector's control element – normally open relay contact

5.3.4 Operating algorithm of swing gate in pulse mode

The operating algorithm in case of a single passage command in **pulse** mode is as follows:

1. The control device transmits a control signal to the *Unlock A* input or *Unlock B* input, allowing a single passage.
2. The microcontroller installed on the control module board processes the received signal and transmits a command to the electromagnet that unlocks the swing panel.
3. When the swing panel is unlocked, the red indicator on the indication module turns off, and the green indicator turns on. The holding time countdown starts for the unlocked state.
4. The microcontroller traces the status of the optical rotation sensor of the swing panel. When the swing panel is rotated at an angle exceeding 22.5° as compared to its initial (closed) position, the optical sensor is activated. The passage through the gate is registered. The *PASS A* or *PASS B* relay output is activated, depending on which input of the switching module has received the control signal.
5. When the swing panel returns to the initial position (the optical rotation sensor is normalized), it becomes locked. The red indicator on the indication module turns on, and the green indicator turns off. The *PASS A* or *PASS B* relay output is normalized (the signal duration at outputs totals min. 0.25 sec).
6. If the passage has not been performed, i.e., the swing panel has not been rotated, the panel locks at the end of the holding time countdown for the unlocked state (by default, in 5 sec).

5.4 Additional equipment

The following equipment can be additionally connected to the swing gate: a *Fire Alarm* device; an intrusion detector and siren; remote indicators.

5.4.1 Fire Alarm input

The *Fire Alarm* emergency unlocking device is connected, according to the electrical connection layout (see Fig. 10), to the *Fire Alarm* and *GND* contacts of the **XT2.L** terminal block on the switching module board. If the *Fire Alarm* input is not used, it is necessary to install a jumper between the *Fire Alarm* and *GND* contacts. The jumper is installed by default.

Emergency unlocking is performed when the *Fire Alarm* signal is sent to the gate. In this case, the swing panel unlocks for free passage; the green indicator on the indication module is blinking with a 1 Hz frequency, and both direction indicators on the RC panel are blinking.

The gate unlocks automatically in case of power loss – e.g., in case of malfunction of its power supply unit.

After the *Fire Alarm* signal has been removed or after the power supply has been restored, the gate switches to the passage denial mode. Red indication on the indication module and the RC panel turns on. If the swing panel is in its initial position, the gate is ready to continue its operation.

5.4.2 Intrusion detector and siren

The intrusion detector is installed with regard to the passage zone location at a particular checkpoint and the climatic category of the intrusion detector. The intrusion detector is connected to contacts of the **XT2.L** terminal block, and the siren is connected to the **XT2.H** terminal block of the switching module board according to the electrical connection layout (see Fig. 10). If the intrusion detector input is not used, a jumper shall be installed between the *Detector* and *GND* contacts. The jumper is installed by default.

A signal indicating the current status of the intrusion detector is transmitted to the *DETECTOR* relay output (*Det Out* and *Common* contacts of the **XT2.H** terminal block).



Note:

A 2kOhm resistor connected to a +3.3V voltage plane is used to generate a high-level signal at the *Detector* input contact.

The intrusion detector shall have normally closed contacts. If the intrusion detector is not connected, a jumper shall be installed between the *Detector* and *GND* contacts of the **XT2.H** terminal block. The jumper is installed by default.

Activation of the intrusion detector is ignored if the gate has been unlocked by a command from its control device and also during 3 seconds after the swing panel has been locked.

If the intrusion detector is activated when the swing panel is locked (in *Passage denial* mode, see Tables 4 and 5), the *ALARM* (siren) output is activated. The output is normalized either in 5 seconds or after receiving of any command from the control device.

5.4.3 Parameters of relay output signals

Connection to relay outputs of the swing gate is performed through relevant contacts of the **XT2.H** terminal block of the switching module board: *PASS A* (*PASS A* and *Common* contacts); *PASS B* (*PASS B* and *Common* contacts); *DETECTOR* (*Det Out* and *Common* contacts); *ALARM* (*Alarm 1* and *Alarm 2* contacts).

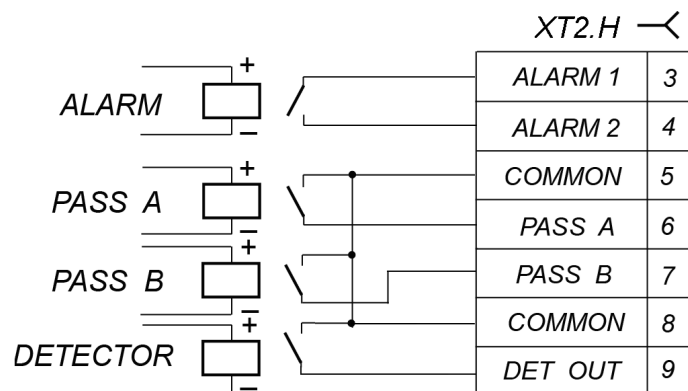


Figure 8. Output stages for PASS A, PASS B, Det Out, and Alarm

Activation/deactivation of the *PASS A*, *PASS B*, *DETECTOR*, and *ALARM* relays can be detected by activation/deactivation of red indicators near the said relays (see Fig. 3).

When the power is off, relays have normally-opened contacts. The *Common* contact (common for these relays) is not connected to the negative terminal of the gate's power supply unit.

When the power is on and the status is normalized, *PASS A*, *PASS B*, and *DETECTOR* relay contacts are closed (the relay coil is energized), and *ALARM* relay contacts are open (the relay coil is de-energized). A jumper shall be installed between the *Detector* and *GND* contacts of the **XT2.L** terminal block, or the intrusion detector shall be connected.

Output stages for *PASS A*, *PASS B*, *DETECTOR*, and *ALARM* are relay contacts (see Fig. 8) with the following signal parameters:

Max. commutation DC voltage	42 V
Max. commutation current	0.25 A
Closed contact resistance	max. 0.15 Ohm

5.5 Operation contingencies and response to those

The swing gate provides an alarm signal function that indicates violation of the normal operation mode due to non-authorized opening of the gate or delay in its closing. Gate opening is tracked with an activated optical sensor. The sensor is activated when the swing panel is rotated at an angle exceeding 22.5° in relation to its initial (closed) position.

- Opening shall be considered non-authorized if it is performed without submission of an unlocking command for the swing panel.
- The situation shall be considered a delay in closing when the swing panel unlocked for a single passage remains open for more than 30 seconds.

In both cases, the alarm signalization consisting of three audio signals repeated every 20 seconds turns on the RC panel. Red light indication also turns on with a 1 Hz frequency on the RC panel and on the indication module.

When the swing panel is returned to the initial position, the optical sensor is normalized, and the signalization is deactivated. Indication on the RC panel and indication module returns to its normal operation mode.



Note:

Should optical rotation sensors of the swing panel fail, the alarm signal will also turn on.

6 MARKING AND PACKAGING

The gate has a marking label under the top cover of its rotary group. The marking contains the product name, its serial number, and manufacture date.

The gate in the standard delivery set (see Section 4.1) is packed in two transportation boxes.

Overall dimensions (length × width × height):

box 1 (gate post)	110×25×25 cm
box 2 (swing panel with filler panel)	126×39×7 cm

Weight in the standard delivery set (gross):

box 1 (gate post)	max. 29 kg
box 2 (swing panel with filler panel)	max. 6 kg

7 SAFETY REQUIREMENTS

7.1 Installation safety

The product shall be installed by qualified personnel who have studied this *Manual* in full 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.
- Be particularly focused and careful when installing the gate post until it is properly fixed, and prevent it from falling down.
- Before the first activation of the gate, check whether its installation and all connections have been performed correctly.

The external power supply unit shall be installed in accordance with safety requirements specified in its operation manual.

7.2 Operation safety

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



Warning!

- Do not use the swing gate in environment different from that specified in the *Operating Conditions* section.
- Do not connect the swing gate to a power supply unit with a voltage different from that stipulated in the *Technical Specifications* section.

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

8 ASSEMBLY AND INSTALLATION

When installing the electrical device, please observe safety requirements given in Section 7.1. *Installation Safety*.

8.1 General recommendations

Proper installation is crucial to the performance and service life of the swing gate. Installation shall be carried out by at least two persons properly qualified as an installer and electrician. We advise you to study this Manual 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 flat, solid concrete floors (grade 400 or higher), stone or similar foundations at least 150 mm thick.
- employ embedded reinforcing elements with the minimum dimensions of 250×250×400 mm when installing the gate post on a less firm foundation.
- make sure the mounting surface is horizontal and flat so that all the mount points of the gate's base lie in the same horizontal plane (to be controlled with the use of a level).

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. 2 (150 mm length);
- straight-slot screwdriver No. 5 (150 mm length);
- S13, S17 horn-type or socket wrenches;
- S6 Allen key;
- plumb-line and level;
- 2 m 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 lengths of cables

Cables used during installation are listed in Table 2.

We advise you to follow these recommendations while laying and connecting cables:

- Installation of communication lines shall comply with *EIA/TIA RS-422A/485* standards.
- Avoid laying cables closer than 50 cm from a source of electromagnetic interference.
- Cables may cross power cables at the right angle only.
- Cables may be lengthened only by soldering.
- Once cables are installed, check whether there are no cable breakdowns and short circuits on the lines.

Table 2. Types of cables used for assembly

No.	Equipment connected to switching module	Max. length of cable, m	Cable type	Cross-section, mm ² , min.	Cable example
1	Power supply unit	10	Twin wire	0.75	AWG 18; 2×0.75 flat two-color PVC cord
		30	Twin wire	1.5	AWG 16; 2×1.5 flat two-color PVC cord
2	- FireAlarm device - intrusion detector - siren - ACS outputs and inputs	30	Twin wire	0.2	RAMCRO SS22AF-T 2×0.22 CQR-2
3	RC panel	40	Eight-wire	0.2	CQR CABS8 8×0.22c
4	WRC device	40	Six-wire	0.2	CQR CABS6 6×0.22c

8.4 Installation procedure



Attention!

The manufacturer shall not be liable for any damage resulting from improper installation and declines any claims arising thereof in case if the installation is not in compliance with the instructions provided in this Manual.

Item numbers in the installation procedure are given according to Fig. 2. Cables to be used for installation and their maximum length are listed in Table 2 .

Follow this sequence during gate installation:

1. Unpack the box with equipment, check carefully the delivery set according to Section 4.1, and also check whether the serial number on the marking (see Section 6) complies with the certificate of the gate.
2. Prepare the mounting surface according to Section 8.1.
3. Install the device's power supply unit at a required place in accordance with its operation manual.
4. Mark and prepare the mounting holes for anchor bolts on the mounting surface as per Fig. 9.

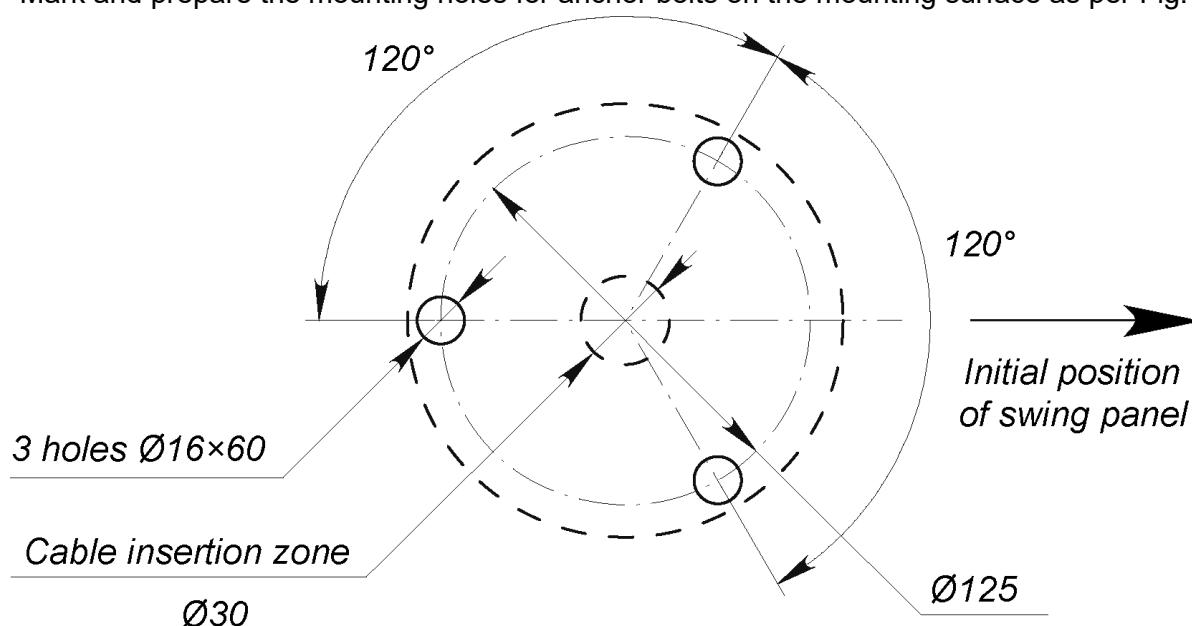


Figure 9. Mounting hole pattern¹

¹ The hole sizes are specified in the pattern for anchors of the PFG IR 10-15 (SORMAT) type; if other anchor types are used, holes must be drilled with the diameter and depth suitable for those.

5. Install anchor sleeves in the drilled holes in the floor so that they would not protrude from the floor surface.
6. If it is necessary to lay cables under the floor, prepare a cable duct in the floor so that cables can be inserted into a hole in the base of the gate post.
7. Remove a bracket (6) with a switching module (7) from the gate post through a hole in the base.
8. Connect RC panel (ACS / WRC device) and power supply cables to the switching module according to the layout in Fig. 10.

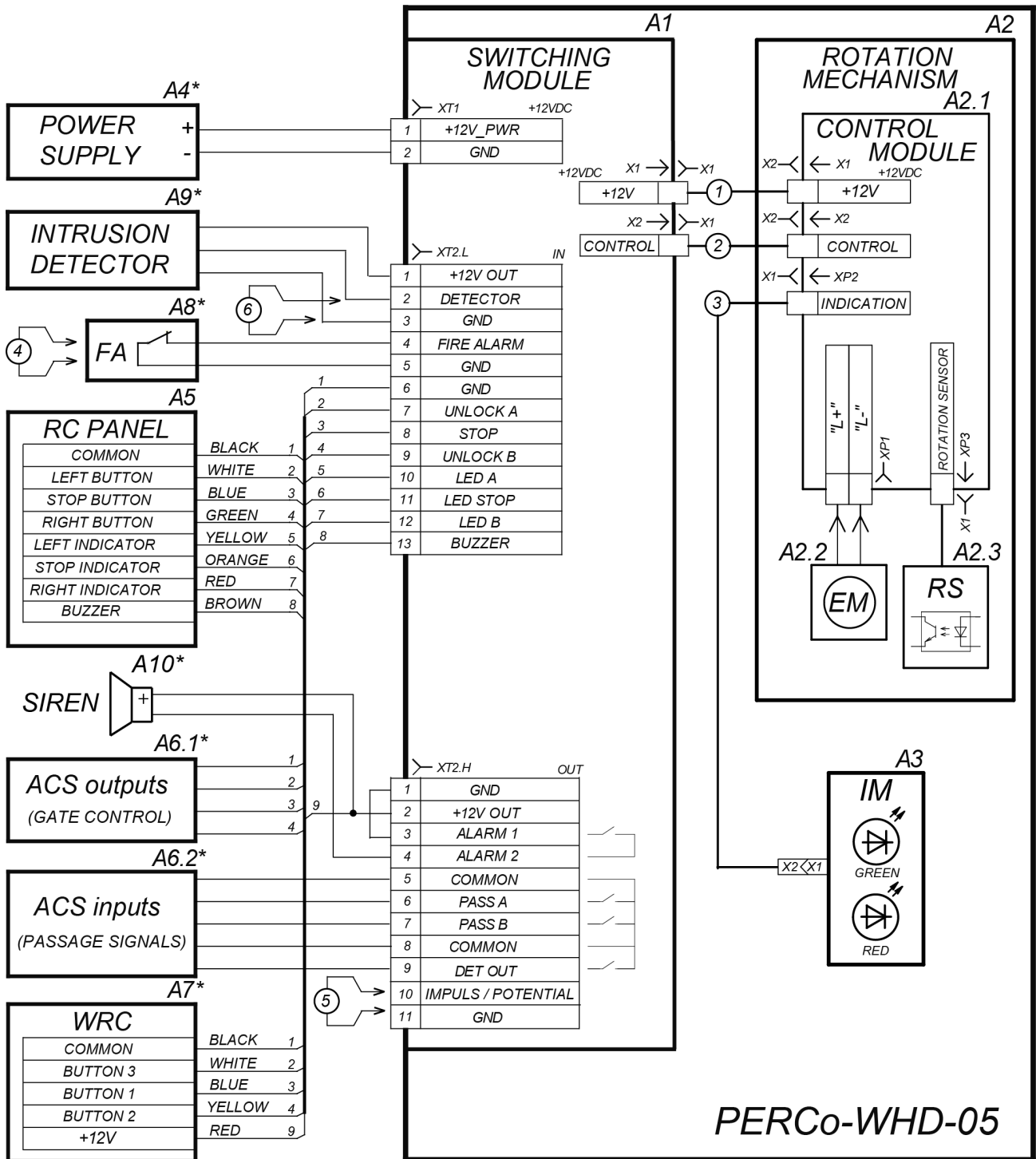


Figure 10. Electrical connection layout for the switching module board (see the legend in Table 3)

Table 3. Legend to Fig. 10

Key	Name	Q-ty, pcs
1	Power patch-cable of control module	1
2	Control patch-cable of control module	1
3	Indication cable	1
4	Jumper wire in absence of FA (A8) device, installed by default	1
5	Imp/Pot jumper wire for mode selection (pulse / potential, see Section 5.3.2), installed by default	1
6	Jumper wire in absence of intrusion detector (A9) device, installed by default	1
A1	Switching module	1
A2	Rotation mechanism	1
A2.1	Control module	1
A2.2	Electromagnet	1
A2.3	Rotation sensor	1
A3	Indication module	1
A4*	Power supply unit	1
A5	RC panel H6/4	1
A6*	ACS controller	1
A7*	WRC device	1
A8*	Emergency unlocking device (Fire Alarm)	1
A9*	Intrusion detector	1
A10*	12 V DC siren	1

* - Not included in the standard delivery set

9. Install the bracket (6) with the switching module (7) back in its place.
10. Lay all cables in the cable duct.
11. Install the gate post (1) on anchor sleeves and fix it with anchor bolts; during installation, ensure its vertical position by using a level.



Attention!

Install the swing panel (2) only after all other installation and assembly works are finished.

12. Remove the top cover (5) of the post from the rotary group (9).
13. Install the swing panel (2) into the respective mounting seat of the rotary group (9) and fix its position with two M8×30 screws with washers 8.
14. If it is necessary to install a mechanical rotation limiter for the swing panel in one of the directions, follow this procedure: install the limiter (M8×12 screw) into an empty opening oriented in the direction to be blocked (a banned passage direction), and screw the limiter into the rotary group's housing up to the stop. Check operation of the swing gate.
15. Put the top cover (5) back in its place.
16. Check whether all electrical connections are correct and reliable.

9 OPERATION

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



Warning!

- Do not move any objects with dimensions exceeding the passageway width through the passage zone.
- Do not hit or jerk any elements of the swing gate so as to prevent their mechanical deformation.
- 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

Follow these instructions when switching the swing gate on:

1. Connect the mains cable of the swing gate's power supply unit to the mains with a voltage and frequency as specified in its operational documentation.
2. Make sure that the swing panel is in the initial position so that it blocks the passage.
3. Turn on the power supply unit. The swing panel becomes locked. Gate diagnostics is performed within three seconds; the red indicator on the indication module turns on; all indicators on the RC panel turn on. A dual-tone signal is given by the sound indicator of the RC panel.
4. When the diagnostics is over, the *Passage denial* command is sent automatically, and red indicators on the indication module and RC panel turn on.
5. In case of any malfunction or contingency situation (see Section 5.5), a relevant alarm will be triggered: sound indication on the RC panel consisting of three audio signals repeated every 20 seconds; red indicators (1 Hz frequency) on the indication module and RC panel.
6. If the intrusion detector and siren are connected to the swing gate, please check their operation. For this purpose:
 - wait until a test indicator inside the intrusion detector goes out; it will occur 10-50 seconds after the power supply unit is switched on;
 - bring your hand to the intrusion detector; when the intrusion detector is triggered, the siren will emit a continuous audio signal;
 - the signal will be deactivated in 5 sec or upon pressing any button on the RC panel.

The gate is ready for operation.

9.2 Control commands in pulse mode

Operation modes are set via the RC panel and indicated in accordance with Table 4. Designation of buttons and light indicators of the RC panel is shown in Figure 4.

Table 4. Commands in pulse control mode (*Imp/Pot* jumper is installed)

Command	Operator's actions via RC panel	Indication		Gate status
		RC panel	Indication module	
<i>Passage denial</i>	Press STOP button	Red indicator <i>Stop</i> is on	Red indicator is on	Swing panel is locked
<i>Single passage</i>	Press LEFT/ RIGHT button	Green indicator of selected <i>Left / Right</i> direction and red indicator above <i>STOP</i> button are on	Green indicator is on	Swing panel is unlocked for single passage in any direction, and then it becomes locked again
<i>Free passage</i>	Press STOP and LEFT / RIGHT buttons simultaneously or all three buttons – LEFT , STOP , and RIGHT – at once	Green indicator of selected <i>Left / Right</i> direction or both green indicators, <i>Left</i> and <i>Right</i> , are on	Green indicator is on	Swing panel is unlocked for rotation in any direction until the mode is changed

During gate operation:

- After the power supply unit is turned on, the *Passage denial* command is sent automatically.
- Upon the *Single passage* command, the swing panel is locked after the passage is finished or, if the passage has not been performed, the swing panel is locked in 5 seconds after the command is sent. The time countdown resumes each time the command is repeated, and the swing panel remains unlocked in this case.
- After the *Free passage* command, only the *Passage denial* command can be sent.



Note:

The pressing of a button on the RC panel corresponds to sending of a low-level signal to the relevant *Unlock A*, *Stop*, and *Unlock B* contacts of the **XT2.L** terminal block of the switching module board in relation to the *GND contact*.

9.3 Control commands in potential mode

Operation modes of the swing gate are set via the RC panel and indicated in accordance with Table 5. When a control signal arrives at one of two passage direction contacts (*Unlock A* or *Unlock B*), the swing panel is unlocked for rotation in any direction. If the control signal is still on the contact by the time of passage, the swing panel remains unlocked.



Note:

For ACS 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.

Table 5. Commands in potential control mode (*Imp/Pot* jumper is removed)

Command	Control signal	Indication		Gate status
		RC panel	Indication module	
<i>Passage denial</i>	High level at <i>Unlock A</i> and <i>Unlock B</i> contacts (or low level at <i>Stop</i> contact)	Red indicator <i>Stop</i> is on	Red indicator is on	Swing panel is locked
<i>Open</i>	Low level at one or both direction contacts. High level at <i>Stop</i> contact.	Green indicator of selected <i>Left / Right</i> direction is on	Green indicator is on	Swing panel is unlocked for passage in both directions

9.4 Troubleshooting

Possible faults to be corrected by the user themselves are listed in Table 6.

Table 6. Troubleshooting guide

Fault	Most plausible cause	Remedy
When powered-up, the swing gate does not work, light indicators on the RC panel are off	Breakdown or short circuit of the power cable. Power supply malfunction.	Replace the power cable. Replace the power supply unit
When powered-up, the swing gate does not work, indication on the gate post is off	Breakdown of the power cable or control cable	Eliminate the breakdown

Other possible faults are eliminated by the manufacturer.

10 EMERGENCY RESPONSE



Attention!

In case of fire, natural disasters, and any other emergency situations, it is necessary to provide an emergency exit to evacuate people from the facility urgently. For example, an Anti-Panic rotary railing section can be used as an emergency exit.

The passage zone of the swing gate can be used as an additional emergency exit if the swing panel is unlocked.

The gate can be switched to the *Fire Alarm* emergency unlocking mode. In this mode, the swing panel is unlocked, granting free passage in both directions, and any other control commands are ignored.

The gate is a normally open device; therefore, the swing panel opens if the gate is de-energized.

11 TECHNICAL MAINTENANCE

The swing gate is maintained only by its manufacturer.

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

12 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, airplanes, etc.).

During storage and transportation, boxes may be stacked no more than 5 layers high.

The swing gate should be stored in dry indoor facilities at ambient temperatures between -50°C and +50°C. The environment should be free of acid and alkali vapors and corrosive gases.

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

APPENDIX 1. Control commands 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:

For the RC panel:

- active front – pressing of the relevant button on the RC panel.
- 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 **XT1.L** terminal block of the control module board 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 (open for passage of one person):

- 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*.
- 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 the passage direction B is *Free passage*.

Free passage (open for free passage in two directions):

- 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.
- 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.
- active front is at the *Unlock A* contact while there is a low level at the *Unlock B* and *Stop* contacts, or active front is at the *Unlock B* contact while there is a low level at the *Unlock A* and *Stop* contacts, or active front is at the *Stop* contact while there is a low level at the *Unlock A* and *Unlock B* contacts. At this command, both directions open until the *Passage denial* command is received.

APPENDIX 2. Control commands 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.

Passage denial (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.

Open (open for passage in two directions)

- 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 A contact or until the *Passage denial* command. The status of the direction B does not change at that.
- 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 B contact or until the *Passage denial* command is received. The status of the direction A does not change at that.
- there is a low level at the *Unlock A* and *Unlock B* contacts with a high level at the *Stop* contact. At this command, both directions open until removal of the low-level signal from either of A (B) contacts or until the *Passage denial* command.

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