



# Electromechanical Swing Gate **WHD-05**

ASSEMBLY AND OPERATION MANUAL



**CE EAC**



# **Electromechanical Swing Gate**

***WHD-05***

**Assembly and Operation Manual**

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## ***Dear Customer!***

*Thank you for purchasing the PERCo product.*

*Please follow instructions given in this Manual carefully, and this quality product will provide many years of trouble-free use.*

The Assembly and Operation Manual (hereinafter - the Manual) contains the instructions for safe transportation, storage, installation, operation and maintenance of the **WHD-05** electromechanical swing gate (hereinafter – the swing gate). The product installation should be carried out with strict accordance to the Manual.

Abbreviations adopted in the Manual:

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

## **1 APPLICATION**

The **WHD-05** electromechanical swing gate is designed for management of pedestrian flows and presents an ideal solution for indoor applications that require free access in one direction and banned access in the other.

It's elegant contemporary design blends perfectly into interiors of offices, shopping malls and exhibition centres, airports and other passenger terminals, etc.

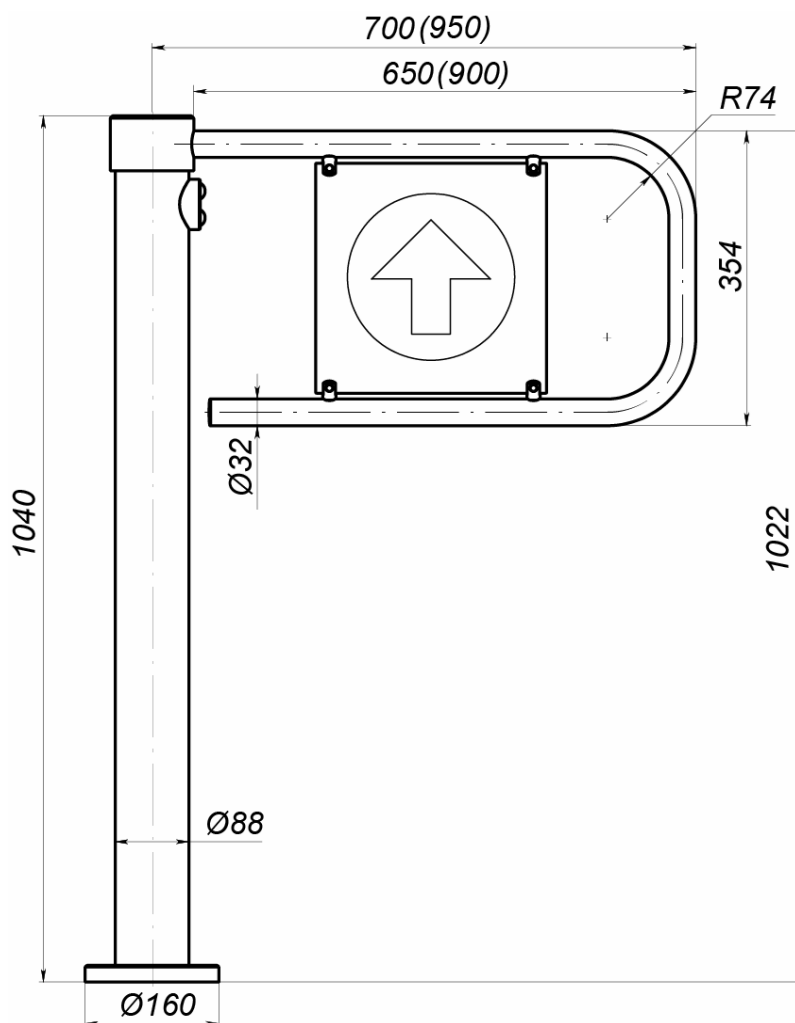
## **2 OPERATING CONDITIONS**

The swing gate, in accordance with the resistance to environmental exposure, 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 +45°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 <b>ASG-650</b> swing panel .....	22 persons/min
with <b>ASG-900</b> swing panel .....	20 persons/min
Average daily throughput in the single passage mode .....	3000 passages
Passageway width:	
with <b>ASG-650</b> swing panel .....	700 mm
with <b>ASG-900</b> swing panel .....	950 mm
RC panel cable length <sup>1</sup> .....	min. 6.6 m
Electric shock protection class .....	III (IEC 61140)
Ingress protection rating .....	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 <b>ASG-650</b> swing panel .....	1040×780×160 mm
with <b>ASG-900</b> swing panel .....	1040×1030×160 mm
Net weight .....	max. 24 kg



**Figure 1. Overall dimensions**

<sup>1</sup> Max. length of RC panel cable – 40 m (supplied on request).

## 4 DELIVERY SET

### 4.1 Standard delivery set

Basic equipment:

Gate post .....	1
Swing panel with info sign and fittings .....	1



**Note:**

**ASG-650** or **ASG-900** swing panel type is selected by the customer.

RC panel with cable .....	1
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Operational documentation:

Certificate .....	1
Assembly and Operation manual .....	1

Spare parts:

Allen key SW6 .....	1
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Installation tools and accessories:

Screw M8×30 (for swing panel mounting) .....	2
Washer 8 (for swing panel mounting) .....	2
Mechanical rotation limiter (screw M8×12) .....	1

Package:

Box 1 (for gate post) .....	1
Box 2 (for swing panel with filler panel) .....	1

### 4.2 Optional equipment supplied on request

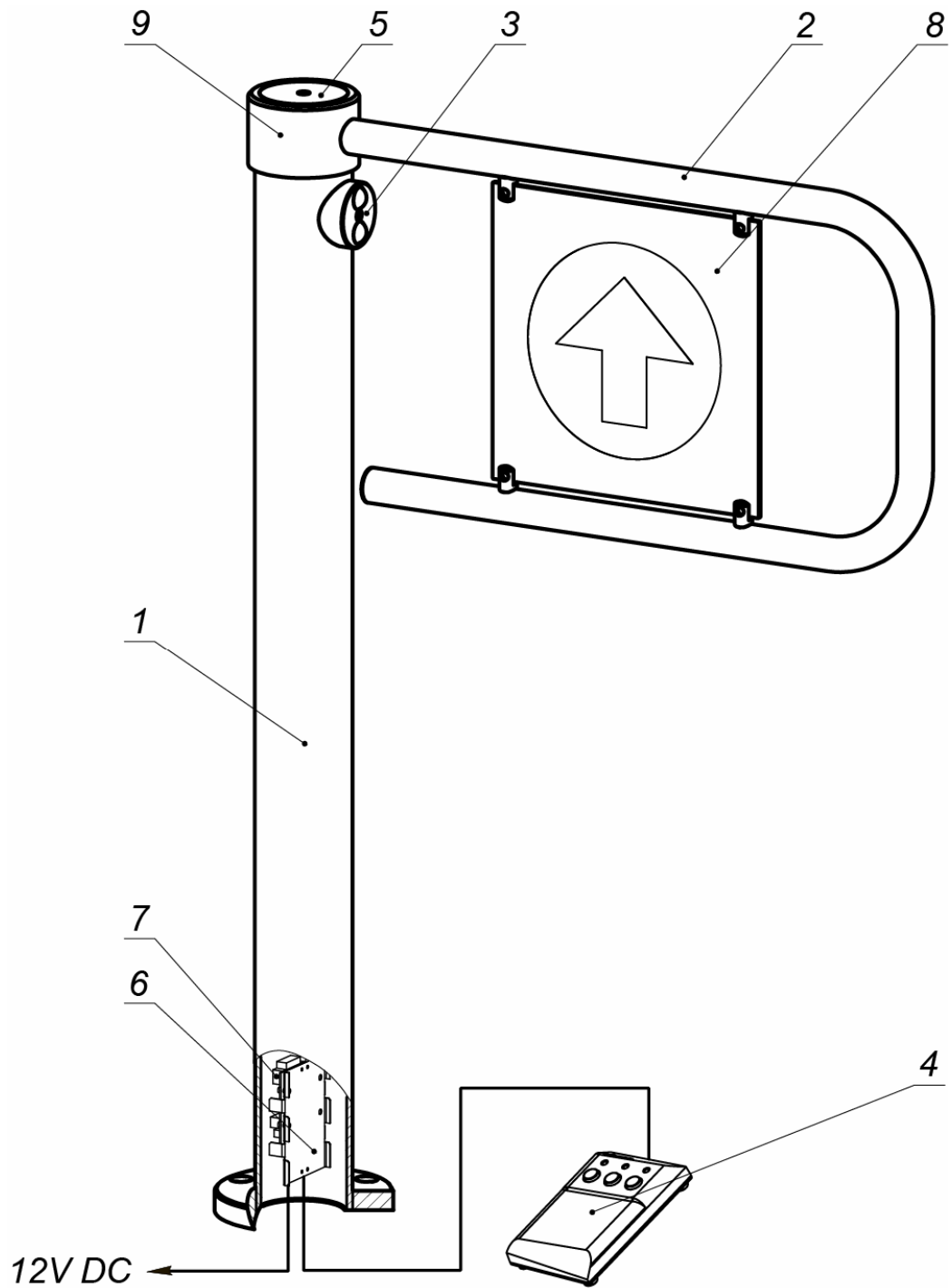


**Attention!**

Power supply unit is not included in the delivery set and available on request.

Power supply unit .....	1
WRC kit <sup>1</sup> .....	1
Passive infrared sensor of intrusion detector .....	1
Siren (for alerts on unauthorized entry attempts) .....	1
Anchor PFG IH 10 16/60.....	3
Hex socket head bolt M10×70 A2 .....	3
Allen key S8 (for bolts M10).....	1

<sup>1</sup> WRC kit consists of a receiver and 2 transmitters (tags) with operation range up to 40m.



**Figure 2. General view:**

1 – gate post, 2 – swing panel, 3 – indication module, 4 – RC panel with cable (ACS controller<sup>1</sup>/ WRC device<sup>1</sup>), 5 – cover, 6 – bracket, 7 – switching module, 8 – filler panel with fasteners, 9 – rotation unit.

## 5 DESIGN AND OPERATION

### 5.1 Main features

- The gate provides increased mechanical resistance and high throughput rate.
- The gate can be supplied with two types of swing panel, providing passageway width of 700 mm (**ASG-650**) or 950 mm (**ASG-900**) respectively.
- The gate is equipped with indication module consisting of red and green indicators that represent blocked and unblocked status relatively.
- Both passage directions are unblocked simultaneously. One of directions can be blocked permanently with the use of removable mechanical rotation limiter, included in the 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 mechanical rotation limiter).
- The hydraulic damper provides smooth return of the swing panel in the initial position.
- The gate is equipped with inputs for connection of intrusion detector, siren and *Fire Alarm* emergency unblocking device.
- The gate can be controlled with RC panel, WRC kit, motion detector or ACS controller.
- The gate can be operated within two modes – pulse and potential.
- The gate has low power consumption.
- The gate is energized with safe 12V DC voltage.
- Switching module board of the gate has galvanic separation 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 are given 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 floor with three anchor bolts. The top part of the post contains a rotation unit (9) with a fixed swing panel (2). Upper end of the post is closed with cover (5). LED indication module (3) is fixed in the upper part of the post.

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 optical rotation sensor.

Electronic elements of the gate are divided into the control module board and the switching module board to make installation more convenient (see Fig. 3), they are produced on separate printed boards and connected with two patch cables: power cable and control cable. Control module board is fixed inside the gate post. Control module board is equipped with processor that controls electromagnetic locking device. Switching module board is fixed on a removable bracket. Switching module board connector blocks for external connections (control devices and additional equipment).

#### 5.2.2 Switching module board

Processor that is installed on the control module board processes received signals (monitors status of *Unlock A*, *Stop*, *Unlock B* and *Fire Alarm* contacts) and traces signals from the optical rotation sensor. On their basis it forms commands for the electromagnet, and also signals for external devices: RC panel indication (*Led A*, *Led Stop* and *Led B*), rotation of the panel (*PASS A* and *PASS B*), alarm output (*Alarm*).

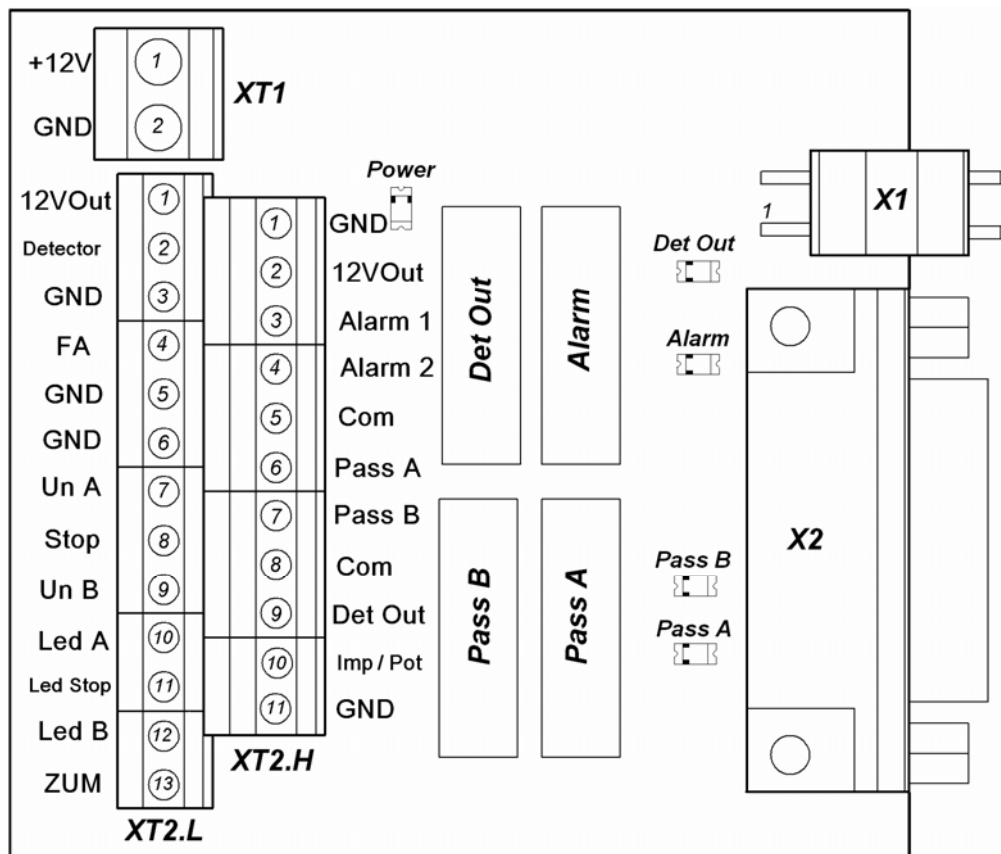


Figure 3. Switching module board

Table 1. Contacts of switching module board

Connector block	No.	Title	Purpose
<b>XT1</b>	1	+12 V	+12V from external power supply unit
	2	GND	Common
<b>XT2L</b>	1	+12VOut	Input intrusion detector
	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
<b>XT2H</b>	1	GND	Common
	2	+12VOut	Siren
	3	Alarm 1	
	4	Alarm 2	-
	5	Com	PASS A relay output
	6	Pass A	
	7	Pass B	PASS B relay output
	8	Com	
	9	Det Out	Output intrusion detector
	10	Imp/Pot	Wire jumper for control mode selection
	11	GND	

The board contains:

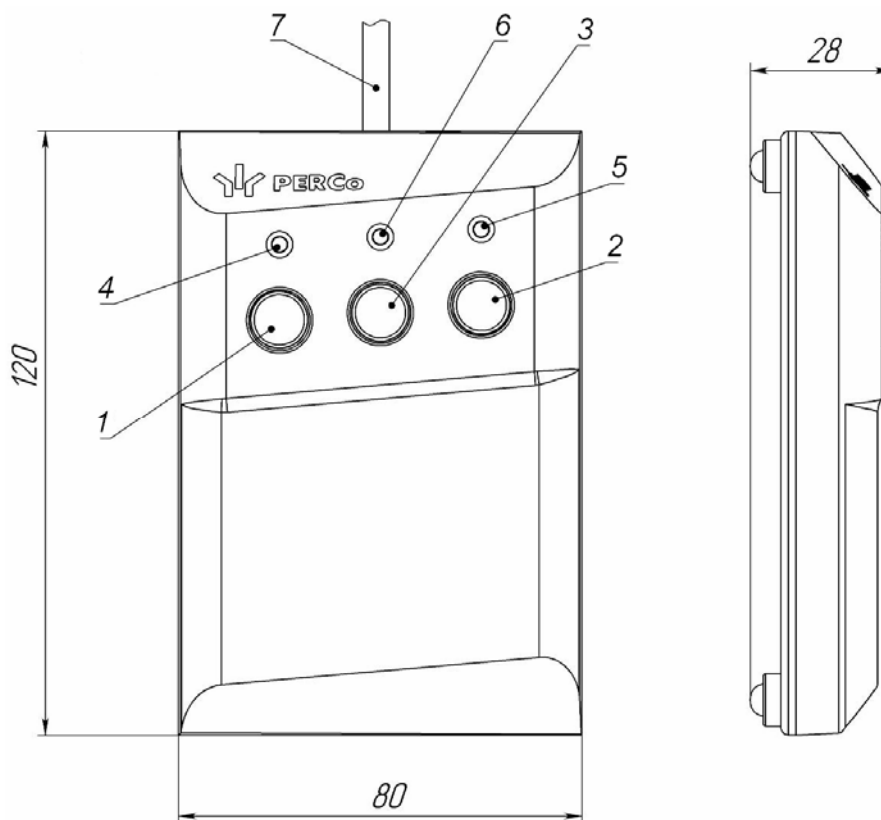
- **X1** – connector for power cable of control module;
- **X2** – connector for control cable of control module;
- **XT1 (+12VDC)** – connector block for external power supply unit;
- **XT2.L (In)** – connector block for RC panel / WRC device / control inputs of ACS controller, and also for connection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

### 5.2.3 RC panel

RC panel (4) is designed for sending of control signals in manual mode. 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. **STOP** button in the middle serves for setting the “Always locked” mode, in such case the swing panel cannot be rotated. **RIGHT** and **LEFT** buttons - for allowing passage in either chosen direction to one person or a group. Upon that the designation of buttons is not related to exact direction of passage, the gate is unblocked with one of two buttons.

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



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

- 1, 2, 3 – **LEFT, RIGHT, STOP** buttons for operating mode setting;  
 4, 5 – «Left», «Right» green indicators ;  
 6 – «Stop» red indicator; 7 – cable

## 5.3 Control devices

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

These devices can be connected to the gate separately or in any combination (parallelly).



### Note:

In case of parallel connection of the abovementioned devices an interference of control signals may occur. In this case the response of the gate would correspond with the response to the generated combination of input signals (see App. 1 and 2).

The connection is performed in accordance with electrical connection layout (see Fig. 10) to contacts of **XT2.L** and **XT2.H** connector blocks on the switching module board. Location of connector blocks on the switching module board is shown on Fig. 3, designation of their contacts is given in Table 1.

### 5.3.1 Parameters of control signals

The gate is controlled with a low-level signal send on contacts of **XT2.L** connector block: *Unlock A*, *Stop*, *Unlock B* and *GND* contacts, in such case normally closed contact or open collector output scheme may be used as control element (see Fig. 5 and Fig. 6).

The swing panel can be unblocked in case of emergency by turn-off of the low-level signal on *Fire Alarm* contact and *GND* contact, in such case normally closed contact or open collector output scheme may be used as control element.



### Note:

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

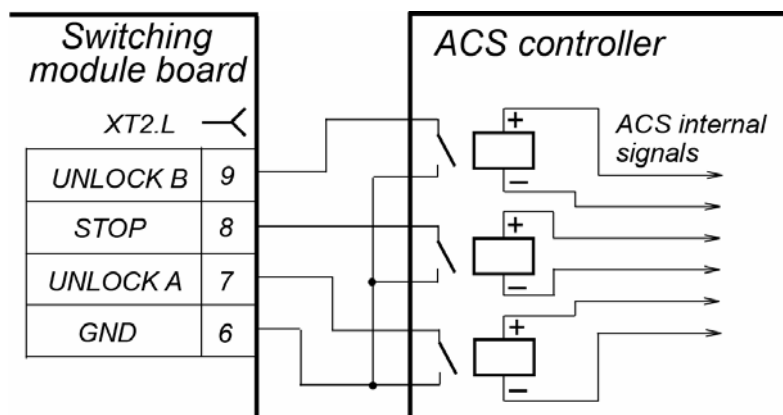


Figure 5. ACS control element – normally open relay contact

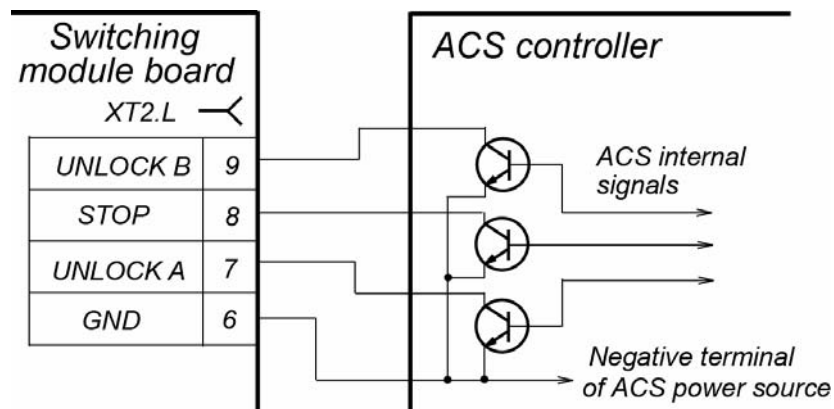


Figure 6. ACS control element - open collector output scheme

Duration of control signal during which the operating mode can be changed shall be min. 100 msec. Control element shall provide the following specifications of signals:

Control element – relay contact:

Minimum switching current ..... max. 2 mA  
Resistance of closed contact  
(including resistance of connecting cable) ..... max. 300 Ohm

Control element – open collector output scheme:

Voltage at the closed contact  
(low-level signal, at the input of the control 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).

Control mode is selected by a position of wire jumper between *Imp/Pot* contact and *GND* contact of **XT2.H** connector block of the switching module board:

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

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

The gate is controlled with the use of control signal (see Section 5.3.1). Algorithm of control signals transmitting is shown in Appendix 1. After the signal for single passage is sent on *Unblock A* input or *Unblock B* input the gate remain unblocked for 5 seconds, irrespective of the duration of control signal (impulse).

**Potential control mode** is used to control the gate with ACS controller, outputs of which support potential control mode (for example, lock controller). Operation modes of the gate are given in Table 5.

The gate is controlled with the use of control signal (see Section 5.3.1). Algorithm of control signals transmitting is shown in Appendix 2. The gate remains unblocked while the control signal is on. If the control signal is present on *Unlock A* and *Unlock B* inputs, the gate remains unblocked.

When the control signal is transmitted to *Stop* input the gate blocks and remains blocked while the signal is active irrespective of signals transmitted to *Unlock A* and *Unlock B* inputs. When the signal is no longer transmitted to *Stop* input, the gate status depends on signals transmitted on *Unlock A* and *Unlock B* inputs.



#### Note:

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

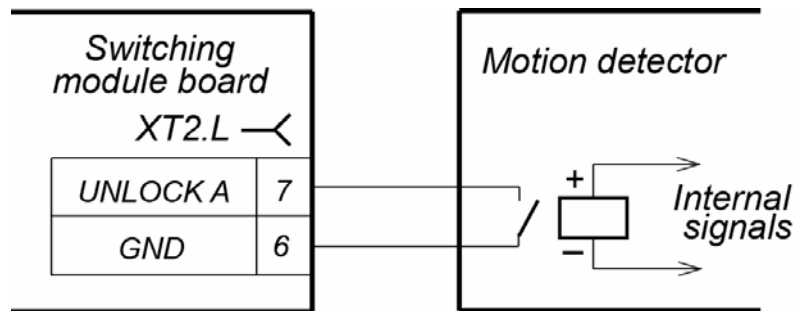
### 5.3.3 Motion detector

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

Connection layout for motion detector is shown on Fig. 7. It is recommended to set **the potential control mode** to operate with motion detector. Low-level signal at *Unlock A* or

*Unlock B* contacts and *GND* contact is used for control. Signal hold-on duration of motion detector shall not exceed 3 seconds after the person has left its operating range.

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



**Figure 7. Control element of motion detector – normally open relay contact**

### 5.3.4 Operating algorithm of the gate in pulse mode

Operating algorithm in case of single passage command in pulse mode is as following:

1. Control device transmits control signal to *Unlock A* input or *Unlock B* input, allowing a single passage.
2. Processor installed on control module board processes the received signal and transmits a command to the electromagnet that unblocks the gate.
3. When the gate is unblocked the red indicator on the indication module turns off and the green indicator turns on. The holding time countdown starts.
4. The microcontroller traces status of rotation optic sensor. When the swing panel is rotated to an angle exceeding  $22.5^\circ$  the optic sensor is activated. The passage through the gate is registered. *PASS A* and *PASS B* relay outputs are activated.
5. When the swing panel returns in the initial position (the rotation optic sensor is normalized), it becomes blocked. The red indicator on the indication module turns on and the green indicator turns off. *PASS A* and *PASS B* relay outputs are normalized (signal duration on outputs is min. 0.25 sec).
6. If the passage was not performed, i.e. the swing panel was not rotated, it becomes blocked at the end of the holding time countdown (5 sec on default) .

## 5.4 Additional equipment

Following equipment can be additionally connected to the gate: *Fire Alarm* device; intrusion detector and siren; external indicators.

### 5.4.1 Fire Alarm input

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

Emergency unblocking is performed when the *Fire Alarm* signal is sent to the gate. The swing panel unblocks for free passage, green indicator on the indication module turns on with 1 Hz frequency, both direction indicators on the RC panel turn on.

The gate is also unblocked automatically in case of power loss – e.g. in case of malfunction of power supply unit.

When *Fire Alarm* signal turns off or when the power is restored the gate sets in “Always locked” mode. Red indication on the indication module and the RC panel turns on. If the swing panel is in initial position the gate is ready for operation.

### 5.4.2 Intrusion detector and siren

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

Signal on current status of intrusion detector is transmitted to *DETECTOR* relay output (*Det Out* and *Common* contacts of **XT2.H** connector block).



#### Note:

2kOhm resistors connected to the power supply bus “+3.3V” are used for generating of a high-level signal at *Detector* input contact.

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

Activation of intrusion detector is ignored if the gate was unblocked by a signal from control device and also during 3 seconds after the swing panel was blocked.

If intrusion detector is activated when the swing panel is blocked (in “*Always blocked*” mode, see Tables 4 and 5), *ALARM* (siren) output is activated. Output is normalized either in 5 seconds or after receiving of any signal from control device.

### 5.4.3 Parameters of relay output signals

Connection to relay output of the gate is performed through related contacts of **XT2.H** connector block of 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).

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

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

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

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

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

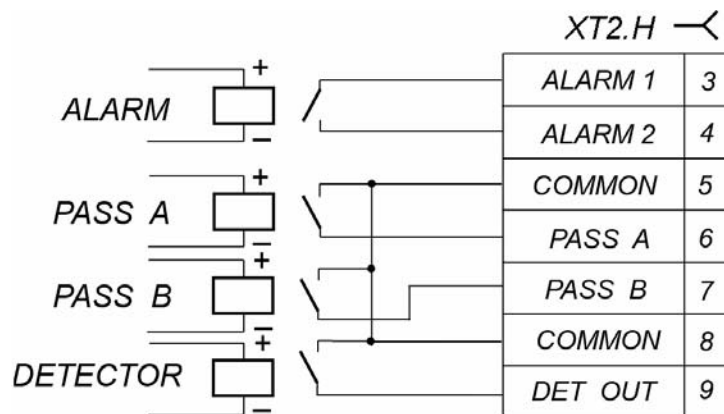


Figure 8. Output stages for PASS A, PASS B, Det Out and Alarm

## 5.5 Operation contingencies during gate operation

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

- Opening shall be considered non-authorized if it is performed without signal for unblocking.
- The situation shall be considered the delay of closing when the swing panel unblocked 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 indicator also turns on with 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 turns off. Indication on the RC panel and on the indication module restores to normal operation mode.



### **Note:**

Should the optical sensor fail, the alarm signal will also turn on.

## 6 MARKING AND PACKAGING

The gate has a marking under the cover of the rotation unit. The marking contains the product name, the trademark, contact details of manufacturer, the manufacture date, the serial number, voltage and power.

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

Overall dimensions (length × width × height):

box 1 (gate post) .....	110×25×25 cm
box 2 (swing panel with info sign) .....	125×40×10 cm

Weight in the standard delivery set (gross):

box 1 .....	max. 32 kg
box 2 .....	max. 6 kg

## 7 SAFETY REQUIREMENTS

### 7.1 Installation safety

Installation should be performed by qualified personnel only, in strict accordance with the Manual and general electrical safety requirements for electrical and installation work.



#### **Attention!**

- All the connections should be performed only after the operating device is disconnected from the power supply.
- Only serviceable tools should be used.
- Be careful when installing the gate post, prevent it from falling.
- Before first activation of the gate check whether the installation and all connections are performed correctly.

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

### 7.2 Operation safety

Observe general safety requirements for use of electrical equipment.



#### **Warning!**

- Do not use the swing gate in environment different from those given in “Operating conditions” section.
- Do not use the swing gate with power supply unit different from those given in “Technical specifications” section.

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

## 8 ASSEMBLY AND INSTALLATION

Observe safety requirements given in Section 7.1 «*Installation safety*».

### 8.1 General recommendations

Proper installation is critical to performance and serviceability of the swing gate. We advise you to study this Manual before installation work and follow the instructions to the latter.

**We recommend:**

- to mount the swing gate on flat, solid concrete floors (grade 400 or higher), stone or similar foundations at least 150 mm thick.
- to employ reinforcing elements 250×250×400 mm for softer grounds.
- to make sure the mounting foundation is horizontal and flat, so that all the mount points lie in the same plane.

### 8.2 Tools and equipment required for installation

Use the following tools for the installation works:

- 1.2÷1.5kW hammer drill;
- Ø16 mm hard-alloy drill bits for anchor bolts sleeves;
- Phillips head screwdriver №2 (150 mm length);
- Straight screwdriver №5 (150 mm length);
- S13, S17 horn wrenches;
- SW6 Allen key;
- plumb-line and level gauge;
- 2 m measuring tape;
- trammel.



**Note:**

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

### 8.3 Appropriate length of cables.

Cables used during installation are given in Table 2.

**Table 2. Types of cables used for assembly**

No	Equipment connected to switching module	Max. length of cable, m	Cable type	Cross-section, mm <sup>2</sup> , min.
1	Power supply unit	10	Twin wire	0.75
		30	Twin wire	1.5
2	- FireAlarm device - Intrusion detector - Siren - ACS output - ACS input	30	Twin wire	0.2
3	RC panel	40	Eight-wire	0.2
4	WRC device	40	Six-wire	0.2

We advise you to follow these recommendations while 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 shall cross power cables at the right angle only.
- Cables shall be lengthened only by soldering.
- Once cables are installed check whether there are no cable breakdowns and short circuits on the lines.

## 8.4 Installation sequence



### **Attention!**

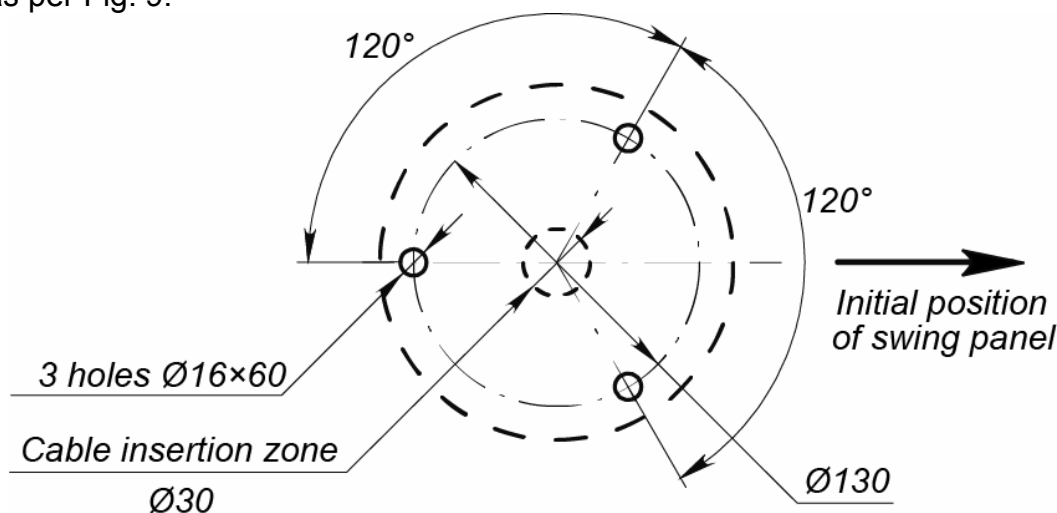
The manufacturer shall not be liable for any damage caused in the result of improper installation and declines any claims arising thereof in case if the installation is not in compliance with the instructions provided in this Manual.

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

Recommendations on floor holes preparation are based on the fact that the gate is equipped with “SORMAT” anchors for solid concrete floors (PFG IH 10 16/60).

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 surface for installation according to Section 8.1.
3. Install power supply unit in accordance with its operation manual.
4. Mark and prepare the mounting holes in the floor for anchors to install the gate post as per Fig. 9.



**Figure 9. Mounting hole pattern**

5. Install anchors in the drilled holes in the floor, so that their shells would not obtrude out of the floor surface.
6. If it is necessary to lay cables under the floor, prepare an electrical conduit in the floor in the zone where cables are inserted into the gate post.
7. Remove bracket (6) with switching module (7) from the gate post through the hole in the basement.
8. Connect cable of RC panel (ACS/ WRC device) and power supply cable to switching module according to the scheme on Fig. 10.
9. Install bracket (6) with switching module (7) back on its place.

10. Lay cables in electrical conduit.

11. Install gate post (1) on anchor shells and fix it with anchor bolts; put it vertically by using a lever.



**Attention!**

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

12. Remove cover (5) from rotation unit (9).

13. Install swing panel (2) into the respective mounting seat of the rotation unit (9) and fix position of swing panel with two M8×30 screws with washers 8.

14. If it is necessary to install mechanical rotation limiter in one of directions use the following order: install the limiter (M8×12 screw) into the opening oriented in the direction to be blocked (a banned passage direction), screw the limiter into the rotation unit up to the stop. Check operation of the swing gate.

15. Put the cover (5) back on its place.

16. Check whether all electrical connections are correct and reliable.

**Table 3. Legend to Fig. 10**

Key	Name	Q-ty
1	Power patch-cable of control module	1
2	Control patch-cable of control module	1
3	Indication cable	1
4	Wire jumper in case of absence of FA (A8) device, installed on default	1
5	Imp/Pot wire jumper for mode selection (pulse / potential, see Section 5.3.2), installed on default	1
6	Wire jumper in case of absence of ID (A9) device, installed on 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 <sup>1</sup>	Power supply	1
A5	RC panel H6/4	1
A6 <sup>1</sup>	ACS controller	1
A7 <sup>1</sup>	WRC device	1
A8 <sup>1</sup>	Emergency unblocking device (Fire Alarm)	1
A9 <sup>1</sup>	Intrusion detector	1
A10 <sup>1</sup>	Siren 12 V DC	1

<sup>1</sup> Not included in standard delivery set.

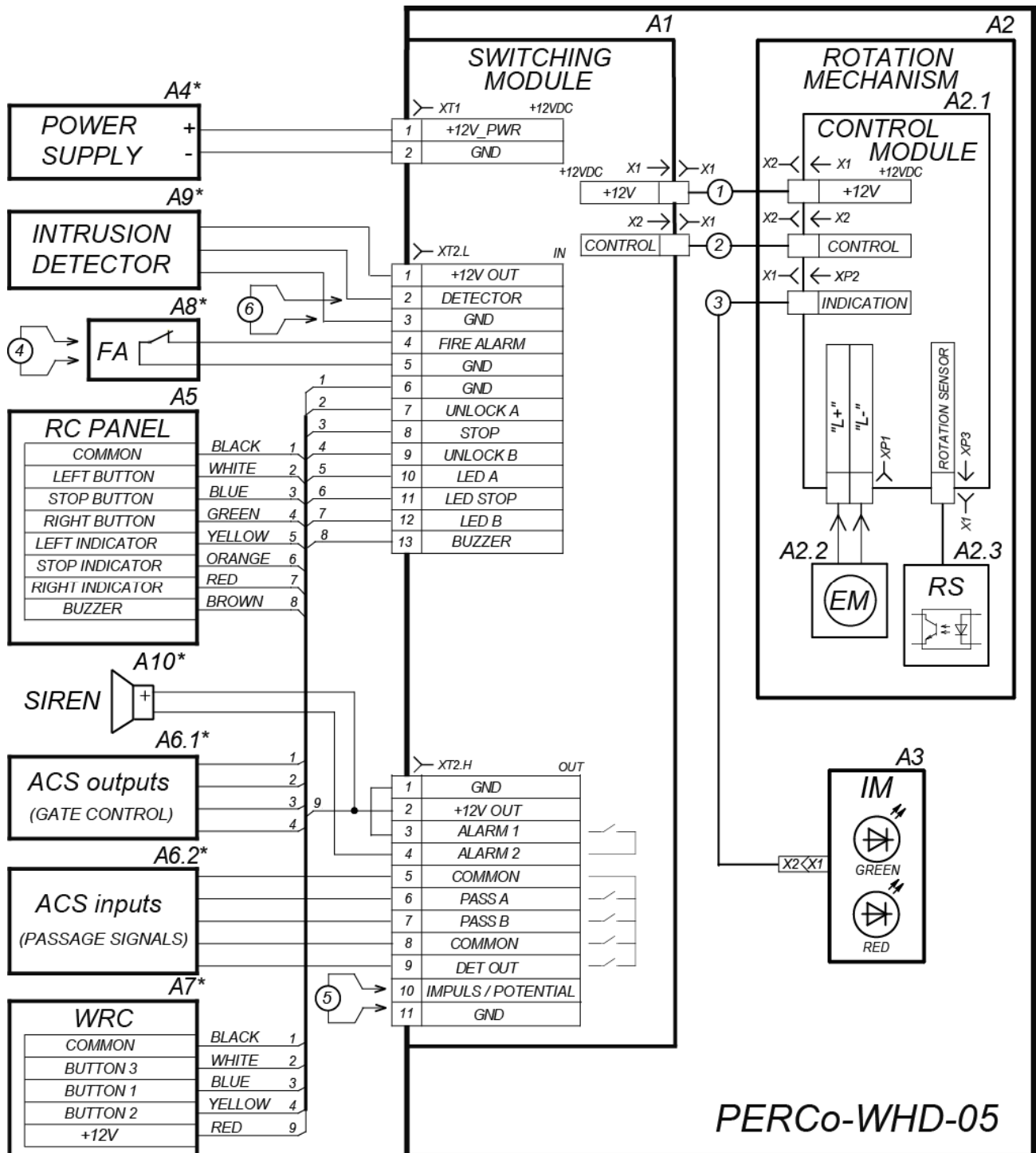


Figure 10. Electrical connection layout for switching module board  
(legend is given in Table 3)

## 9 OPERATION INSTRUCTIONS

Observe safety requirements given in Section 7.2 «Operation safety».



### **Warning!**

- Do not move through the swing gate passage area any objects with dimensions exceeding the width of the passageway.
- Do not hit 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 or corrosion of the surfaces.

### 9.1 Gate power-up

Follow these instructions:

1. Connect power supply network cable of the gate to the network with voltage and frequency corresponding with technical documentation.
2. Make sure that the swing panel is in initial position closing the passage.
3. Turn on the power supply unit. The swing panel becomes blocked. Gate diagnostics is performed within three seconds, the red indicator on the indication module turns on, all indicators on the RC panel turn on. Dual-tone signal is given by the sound indicator of the RC panel.
4. When the diagnostics is over, “*Always locked*” command is sent automatically, red indicators on the indication module and RC panel turn on.
5. In case of malfunction or contingency situation (see Section 5.5) alarm will turn on: sound indication on the RC panel consisting of three signals repeated every 20 seconds; red indicator (1 Hz frequency) on the indication module and RC panel.

The gate is ready for operation.

### 9.2 Control signals in pulse mode

See Table 4 for the operating modes set from RC panel and for the corresponding indication. Designation of buttons and indicators of RC panel is shown on Figure 4.

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

Signal	Actions to do	Indication		Gate status
		RC panel	Indication module	
« <i>Always locked</i> »	Press <b>STOP</b> button	Red indicator « <i>Stop</i> » is on	Red indicator is on	Swing panel is blocked
« <i>Single passage</i> »	Press <b>LEFT/ RIGHT</b> button	Green indicator of selected « <i>Left</i> »/ « <i>Right</i> » direction and red indicator above <b>STOP</b> button are on	Green indicator is on	Swing panel is unblocked for single passage in any direction and then it is blocked again
« <i>Free passage</i> »	Press <b>STOP</b> and <b>LEFT/ RIGHT</b> buttons simultaneously or all three <b>LEFT</b> , <b>STOP</b> and <b>RIGHT</b> buttons	Green indicator of selected « <i>Left</i> »/ « <i>Right</i> » direction or both green indicators « <i>Left</i> » and « <i>Right</i> » are on	Green indicator is on	Swing panel is unblocked for rotation in any direction until the mode is changed

During gate operation:

- When the power supply unit is turned on, the “*Always locked*” signal is sent automatically.
- Upon «*Single passage*» signal the swing panel is blocked after the passage is finished or, if the passage was not performed, the swing panel is blocked in 5 seconds after the signal is sent. The time countdown is resumed each time the signal is repeated, the swing panel remains unblocked.
- After the «*Free passage*» signal only the «*Always locked*» signal can be send.



**Note:**

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

### 9.3 Control signals in potential mode

See Table 5 for the operating modes set from RC panel and for the corresponding indication. When control signal is turned on at one of two passage direction contacts (*Unlock A* or *Unlock B*) the swing panel is unblocked for rotation in any direction. If controls signal is still on by the moment of passage, the swing panel remains unblocked.



**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. Signals in potential control mode (*Imp/Pot* jumper is removed)**

Signal	Control	Indication		Gate status
		RC panel	Indication module	
« <i>Always locked</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 blocked
« <i>Open</i> »	Low level at one or both directions contacts. High level at <i>Stop</i> contact.	Green indicator of selected « <i>Left</i> » / « <i>Right</i> » is on	Green indicator is on	Swing panel is unblocked 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, lights on the RC panel are off	Breakdown or short circuit of power cable. Power supply malfunction.	Replace power cable. Replace power supply unit
When powered-up, the swing gate does not work, indicator on gate post is off	Breakdown of power cable or control cable	Eliminate breakdown

## 10 EMERGENCY PROCEDURES



### **Attention!**

Emergency exit shall be provided for means of staff evacuation in case of emergency.

Passage way of the gate can be used as an additional emergency exit.

The gate can be set in *Fire Alarm* emergency unblocking mode. In this mode the swing panel is unblocked providing free passage in both directions, any other control signals will be ignored.

The gate is a normally open device, therefore the gate opens in case of de-energizing.

## 11 TECHNICAL MAINTENANCE

We recommend using liquid non-abrasive cleansers containing ammonia to clean a swing gate post and a glass panel when dirty.

## 12 TRANSPORTATION AND STORAGE

The swing gate in the original package should be transported only in closed freight containers or other closed type cargo transport units.

During storage and transportation boxes with swing gate posts can 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 vapours and gases that cause corrosion.

After transportation or storage at below-zero temperatures or high air humidity, the swing gate should be kept unpacked for minimum 24 hours under normal climate conditions corresponding to operation conditions.

## APPENDIX 1. Control signal algorithm in pulse control mode

The command is a signal active 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 RC panel:

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

The following commands can be formed by sending a low-level signal to “*Unlock A*”, “*Stop*” and “*Unlock B*” contacts and “*GND*” contact on the **XT1.L** connector block of control module board:

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

**Single passage (open for passage of one person):**

- active front is at the contact “Unlock A” while there is a high level at the contacts “Stop” and “Unlock B”. 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 command “Always locked”, and the status of the passage direction B does not change at that. The command is ignored if at the moment of its receipt the status of the passage direction A is “Always free”.
- active front is at the contact “Unlock B” while there is a high level at the contacts “Stop” and “Unlock A”. 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 command “Always locked”, and the status of the passage direction A does not change. The command is ignored if at the moment of its receipt the status of passage direction B is “Always free”.

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

- active front is at the contact “Unlock A” while there is a low level at the contact “Stop” and a high level at the contact “Unlock B”, or active front is at the contact “Stop” while there is a low level at the contact “Unlock A” and a high level at the contact “Unlock B”. At this command the passage direction A opens until the command “Always locked” is received; the status of the passage direction B does not change at that.
- active front is at the contact “Unlock B” while there is a low level at the contact “Stop” and a high level at the contact “Unlock A”, or active front is at the contact “Stop” while there is a low level at the contact “Unlock B” and a high level at contact “Unlock A”. At this command the passage direction B opens until the command “Always locked” is received; the status of the passage direction A does not change at that.

**APPENDIX B. Control signal algorithm 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 are locked (locked for entry and exit)** - there is a high level at the contacts “Unlock A” and “Unlock B”, or a low level at the contact “Stop”. 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 contact “Unlock A” while a high level is present at the contacts “Stop” and “Unlock B”. At this command the direction A is opened till the low-level signal removal from the contact A or until the command “Both directions locked” 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 contact “Unlock B” while there is a high level at the contacts “Stop” and “Unlock A”. At this command the direction B is opened till the low-level signal removal from the contact B or until the command “Both directions locked” is received. The status of the direction A does not change at that.

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