

Electromechanical Wicket Gate



WHD-04 Operation manual



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Dear Customer,

Thank you for purchasing a 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 (the Manual) contains the instructions you need for safely transportation, storage, installation, operation and maintenance of the **WHD-04** electromechanical wicket gate.

The product installation should be carried out with strict accordance to the Manual.

Abbreviations adopted in the Manual:

- SPU — switching and power unit;
- CLB— control logic board;
- SPS — standby power supply;
- ACS — access control system.

1. APPLICATION

The **WHD-04** electromechanical wicket gate (the wicket 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.

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

2. OPERATING CONDITIONS

2.1 The wicket gate, in accordance with the resistance to environmental exposure, complies with GOST 15150-69, Category NF4 (operation indoors with climate control). Operation of the wicket gate is allowed at ambient temperatures from +0 °C to +40 °C and relative air humidity of up to 98% at + 25 °C.

2.2 The switching and power unit (the SPU) complies with 15150-69, Category NF4 (operation indoors with climate control). Operation of the SPU is allowed indoors at ambient temperatures from +0 °C to +40 °C and relative air humidity of up to 80% at + 25 °C.

3. TECHNICAL SPECIFICATIONS

Power to the SPU:

- from the AC mains.....220±22 V / 50 Hz
- from an external power supply 11.5 – 20 V DC

Operational voltage to the gate post 12 V DC

Voltage of the built-in SPS..... 12 V DC

Max power consumption 12 W

Number of operating modes 4

Throughput in the single passage mode.....25 persons/min

Average daily throughput in the single passage mode 3,000 passages

Minimal duration of operation /number of passages

when powered by the SPS 2 hrs / 2,000 passages

Mean time to failure..... 3,000,000 passages

Mean time to recover, max 1 hr

Mean lifetime, min 8 years

Overall dimensions (Height x Width x Depth) 1040x785×160 mm

Net weight:

- the SPU	3.2 kg
- the wicket gate	23.8 kg
Overall net weight, max.....	27 kg

4. DELIVERY SET

4.1. Standard delivery set

Gate post with indication module	1
Swing panel with info sign and fittings	1
Screw M8x30 (for swing panel mounting).....	2
Washer 8 (for swing panel mounting).....	2
SPU CU-02.3	1
Power cable (12 m [*]).....	1
Control cable (12 m [*])	1
Remote control panel with 3 m cable	1
Mechanical rotation limiter (M8x12 bolt)	1
Manual	1
Certificate	1
Shipping box.....	1

4.2. Spare parts, tools and accessories:

Screw 4x20 for SPU mounting.....	3
Plastic dowel for SPU mounting.....	3
Cable receptacle DBH 15-F in H9 case (ACS connector)	1
Cable plug DC 2,1/ 5,5/ 9,5 mm (external SPS connector)	1
Hexagon key S6	1
Fuse:	
- VP1-1-250-1A.....	1
- VP1-1-250-2A.....	2

ATTENTION! To prevent accidental power-up of the standby power supply when in transit, the "Bat/2A" fuse is not installed in the SPU.

4.3. Optional tools and accessories

The following optional items can be included in the delivery set on customer request:

- a siren to alert of an unauthorized access attempt;
- a wireless remote control with 2 tags (operational range up to 40 m).

5. DESIGN AND OPERATION

5.1 Main features

5.1.1 The wicket gate meets current requirements to such equipment in compliance with GOST P 51241.

5.1.2 The WHD-04 is a normally open unit, i.e. in the event of a complete power failure it automatically enters the "Anti-panic" mode — free passage in both directions.

5.1.3 The wicket gate can be operated as either a stand-alone device from the remote control panel / wireless remote control or by an access control system via an ACS controller.

* Power and control cables up to 30 m available on request.

5.1.4 Main features of the wicket gate:

- mechanically durable;
- high throughput capacity;
- built-in indication module (Red/Green status lights);
- low power consumption;
- safe operational voltage 12 V DC;
- a hydraulic damper to ensure smooth return of the swing panel into the home position;
- choice between single- and bi-directional operation (one of the passage directions can be blocked by a removable mechanical rotation limiter included in the standard delivery set);
- a built-in SPS to keep the wicket gate operative during a mains failure;
- easy installed and maintained.

5.2 Design

5.2.1 Design of the wicket gate is shown in Figure 1. The numbers of the positions are given according to Figure 1 unless stated otherwise.

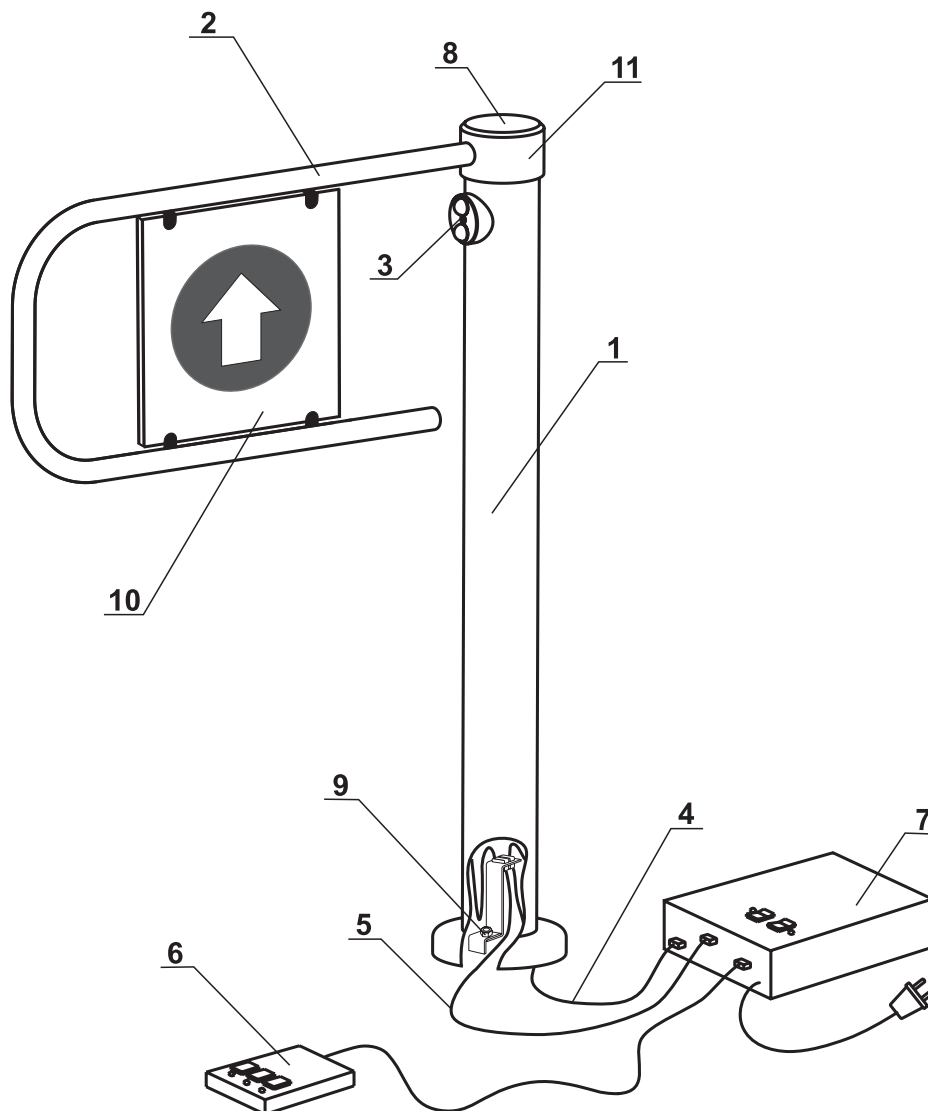


Figure 1. WHD-04 general view

1 — gate post, 2 — swing panel, 3 — indication module, 4 — power cable, 5 — control cable, 6 — remote control panel with cable, 7 — SPU, 8 — cover, 9 — mount bracket with M8 bolt, 10 — double-sided info sign with fasteners; 11 — rotation unit.

5.2.2 Overall and mounting dimensions are given in Figure 2.

5.2.3 The gate post (1) comes as a round tube with a foot to be floor installed by three anchor bolts.

The top part of the gate post contains a rotation unit (11) with a fixed swing panel (2).

Inside the gate post are a reset unit (a spring and a hydraulic damper), an electromagnetic locking device, a control logic board, optical rotation sensors, and an optical sensor of the locking device.

The indication module (3) on the gate post displays the gate.

5.2.4. The control logic board (the CLB) comes as a printed circuit board inside the gate post. The CLB is connected according to the wiring diagram (Fig. 4).

5.2.5 The power cable (4) and the control cable (5) from the SPU to the CLB run through an electric raceway (Fig. 6).

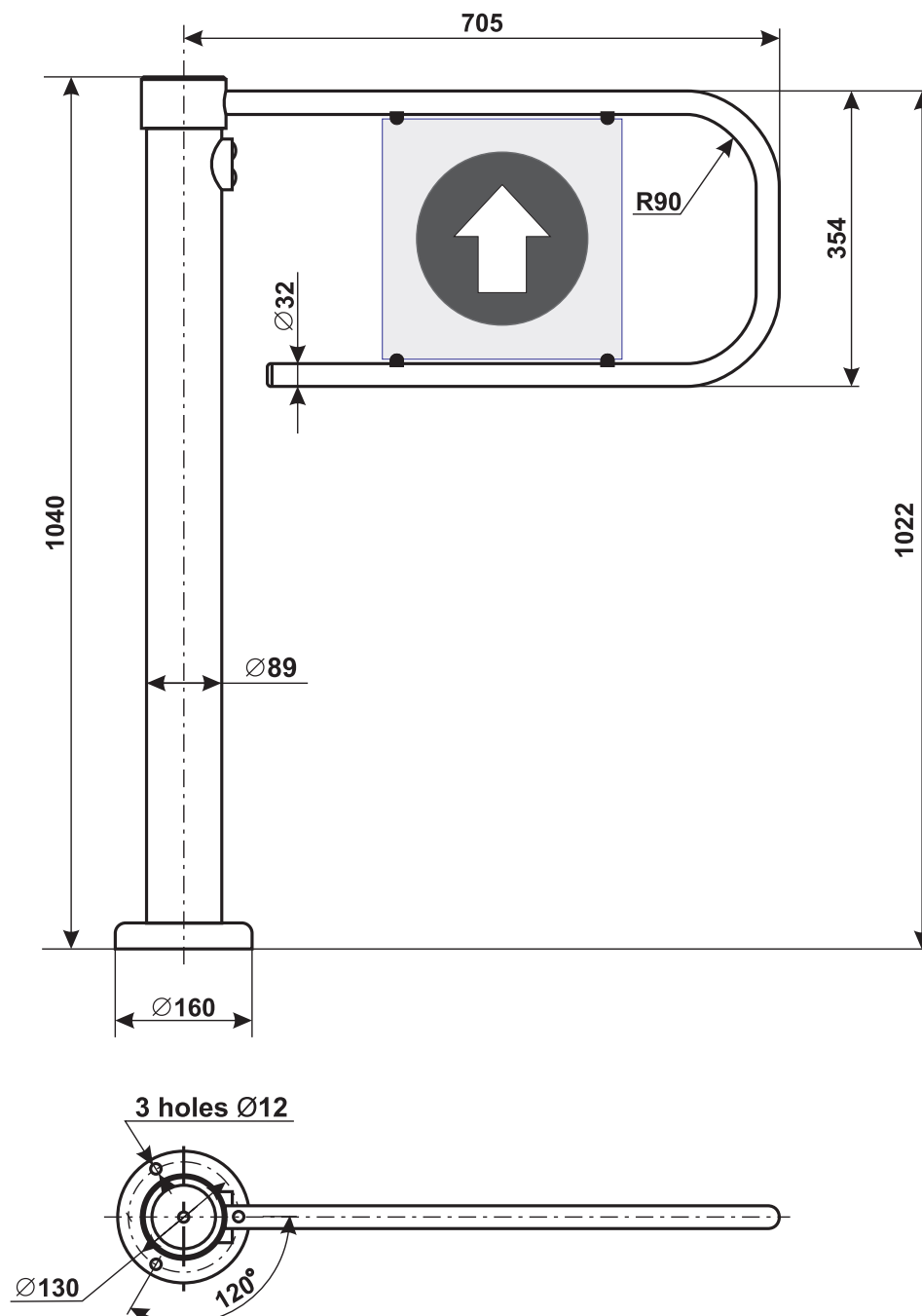


Figure 2. WHD-04 overall dimensions

5.2.6 The SPU (7) is designed as a separate device in a powder coated metal case with pull-resistant fasteners for wall mounting. Alternatively, the SPU can be desk-mounted.

The SPU housing contains a power transformer, an SPU board and a 12V battery of the standby power supply (the SPS).

Located on the SPU front panel (Fig.3) are the following LED indicators:

- **“Power”** — AC mains (green);
- **“12V”** — gate post power supply 12 V DC (green);
- **“Battery”** — the SPU changeover to the SPS (red);
- **“Mode”** — the SPS charge status (green).

Besides the LED indicators, there are the following toggle switches:

- **“Power”** (ON/OFF) — to turn AC power on/off;
- **“Battery”** (Internal/External) — to turn the respective standby DC power supply on/off.

The SPU (Fig. 3) case houses the following:

- three fuseholders (one 1 A and two 2 A);
- AC power cable input **“Power”**;
- remote control panel socket connector **“RC”**;
- ACS socket connector **“ACS”**;
- gate power supply socket connector **“DC=12V”**;
- control cable socket connector **“Control”**;
- external power supply socket connector **“Bat=12V”**;
- wireless remote control socket connector **“Wireless”**.

5.2.7 The remote control panel (6) serves for manual setting of the operating modes of the wicket gate and indication thereof.

It comes as a compact desktop device with a shockproof plastic case and a flexible multicore cable with a header to connect to the SPU. The massive steel base to compensate for the cable weight and small antifriction feet do not let the remote control panel skid.

The front of the remote control panel houses three control buttons. The «STOP» in the middle serves for setting the “Blocked passage» mode, the right and left buttons - for allowing passage in either chosen direction to one person or a group.

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

5.3 Control over the wicket gate

5.3.1 The wicket gate is a normally open unit, i.e. it is always unlocked unless unauthorized entry is attempted.

5.3.2 The wicket gate can be operated from:

- the remote control panel;
- a wireless remote control;
- an access control system via an ACS controller.

The above devices can be connected to the wicket gate either independently or simultaneously.

5.3.3 Operating modes can be set from the remote control panel or by respective ACS commands.

The wicket gate operating modes are shown in Table 1 and described in section 5.5 herein.

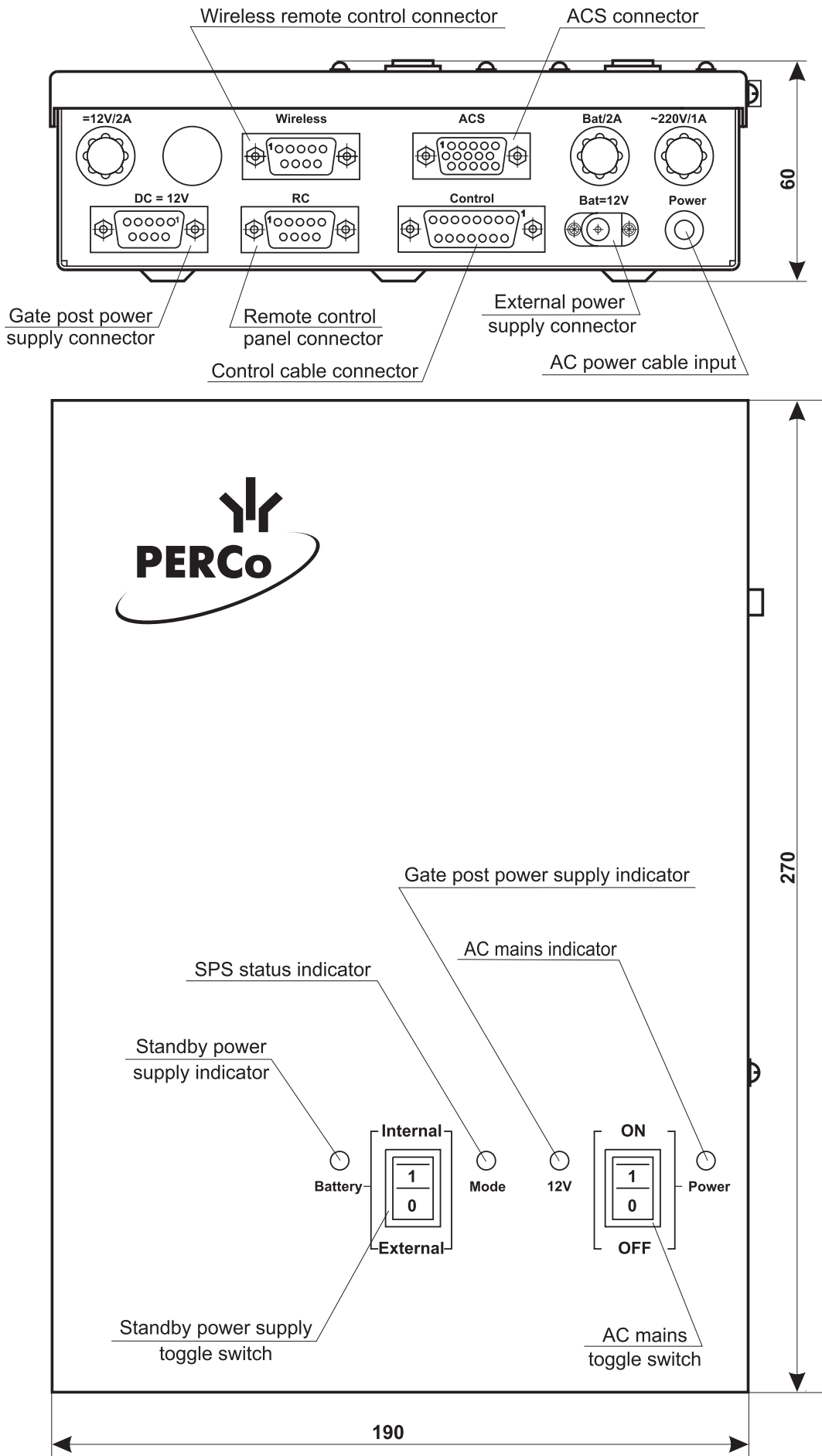


Figure 3. Switching and power unit

5.3.4 The wicket gate is operated by the CLB inside the gate post.

When the power supply of the gate is on, the CLB performs the following test sequence:

- within the first 5 seconds generates a dual-tone audio signal from the remote control panel, runs the self-test program and initial setting of the processor;
- verifies whether the swing panel is in the initial position (the swing panel blocks the passageway).

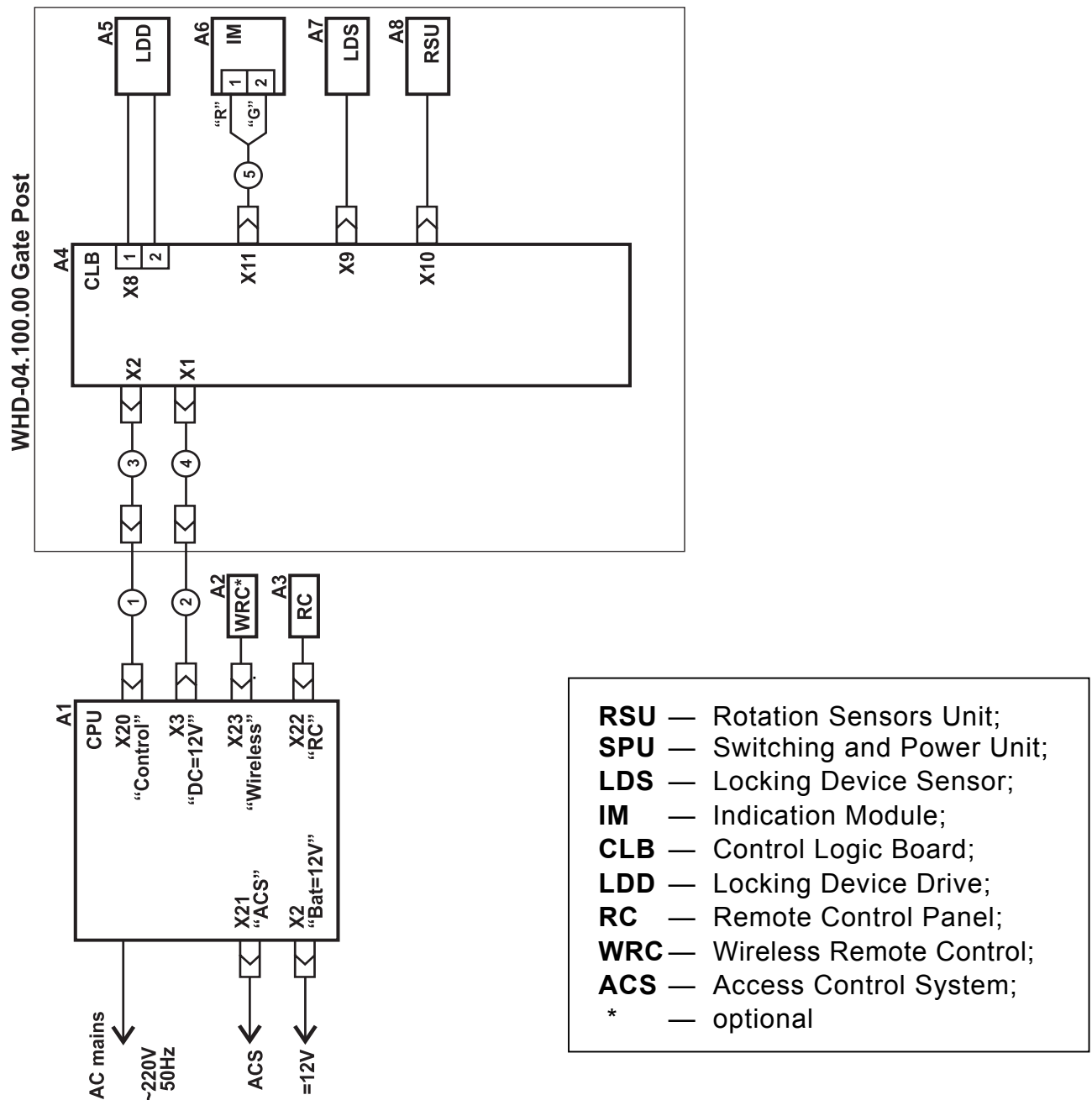
If the testing is successful, the CLB allows to set the operating modes from the remote control panel. Otherwise, it generates an audio alert from the remote control panel and intermittent light indication at 0.5 sec intervals on the remote control panel and the indication module.

When operative, the CLB performs the following:

- operates the electromagnetic locking device and the indication module (3);
- signals the ACS about passages through the wicket gate (i.e. rotation of the swing panel);
- observes the sequence of commands, in such a way that the operator can immediately override from the remote control panel an erroneous permission for passage given by either themselves, or from the ACS;
- follows the AC power status and automatically switches the gate power supply to the built-in SPS in the event of AC power failure (intermittent light indication at 1 sec intervals on the remote control panel and the indication module);
- monitors the SPS voltage and generates an intermittent audio alarm from the remote control panel when the voltage falls 11.3 V;
- if the SPS voltage falls below 10.5 V, the CLB turns off all indication on the wicket gate and the remote control panel and keeps them off until the AC voltage is restored;
- switches the wicket gate power supply back to the AC mains when the AC voltage is restored, reestablishes continuous indication on the remote control panel and the indication module;
- in the "Single passage" operating mode starts countdown of the passage waiting time (the factory-set time interval of 5 sec over which the passage through the wicket gate is allowed) and if the swing panel is not turned within this timeout period (no respective signals from the optical rotation sensors), switches the wicket gate into the "Blocked passage" operating mode;
- generates an audio alarm from the remote control panel and intermittent light indication at 0.5 sec intervals on the remote control panel and the indication module if the wicket gate operation sequence fails;

Note. After malfunction repair, the normal operation of the wicket gate is resumed by setting the "Blocked passage» operating mode from the remote control panel.

- generates an audio alarm from the remote control panel and intermittent light indication at 0.5 sec intervals on the remote control panel and the indication module if the swing panel does not return to the home position within 30 seconds after the beginning of its turn.



LEGEND	DESCRIPTION	QUANTITY	NOTES
A1	Switching and Power Unit TTD-01.700.00	1	
A2	Wireless Remote Control Unit	1	MSRF-4
A3	Remote Control Panel H-05/2.100	1	
A4	Control Logic Board WHD-04.800.00	1	
A5	Tractive Electromagnet	1	
A6	Indication Module WHD-04.850.00	1	
A7	Locking Device Sensor	1	
A8	Rotation Sensors Unit WHD-04.850.00	1	
1	Control Cable TTD-01.920.00	1	
2	Power Cable TTD-01.910.00	1	
3	Extension Control Cable WHD-04.920.00	1	
4	Extension Power Cable WHD-04.910.00	1	
5	Indication Cable WHD-04.930.00	1	

Figure 4. Wiring diagram

5.4 The wicket gate power supply

5.4.1 The wicket gate is powered by an SPU-located power supply unit with the following characteristics:

- input voltage — 220 V / 50 Hz single phase AC mains or 11.5–20.0 V DC from external power supply;
- output voltage — unregulated voltage 10.5-20.0 V DC, max. current 1.5 A.

5.4.2 In the event of the AC power failure *, the CLB automatically switches the gate power supply to the built-in SPS (sect. 5.3.4); the “**POWER**” green light on the SPS front panel goes out and the “**Battery**” red light flashes on. When the AC voltage is restored, the SPS battery is automatically recharged.

5.5 Operation of the wicket gate from the remote control panel

5.5.1 Setting of the gate operating modes is carried according to the Table 1.

5.5.2 Principle of operation in the single passage mode:

a). When the button corresponding to the chosen passage direction is pressed on the remote control panel, the green lights above the side buttons and the red light above the “**STOP**” button on the remote control panel flash on; also the green light on the gate indication module flashes on which signals that the passage through the wicket gate is available.

Meanwhile, the CLB temporarily deactivates the electromagnetic locking device over the time designated for a single passage (the passage waiting time).

b). Once the passage is completed, the mechanical gate closer returns the swing panel to the home position; the green lights on the gate indication module and the remote control panel go out, the red light above the remote control panel “**STOP**” button and on the indication module flash on — the wicket gate is ready for the next command.

5.5.3 In the multiple passage modes the CLB temporarily deactivates the electromagnetic locking device over the time designated for the mode completion. The wicket gate is switched into the “Blocked passage” operating mode by pressing of the “STOP” button on the remote control panel.

5.5.4 In the event of unauthorized entry attempt, as soon as the swing panel is turned about 5°, the angular position sensor signals the CLB to activate the electromagnetic locking device to block any further turn of the swing panel. When the swing panel returns to the home position, the electromagnetic locking device also resumes its initial state.

5.5.5 When all power supplies including the SPS are off, the wicket gate remains unlocked i.e. free passage through the wicket gate is available in both directions (unless either direction is blocked by the mechanical rotation limiter).

5.5.6 The speed of the passage through the wicket gate depends on the value of the force applied to the swing panel to push.

* In the event of the power failure, when the wicket gate is powered from an external power supply, the SPU power supply can be switched to the built-in SPS manually by setting the SPU toggle switch “Power” to the “OFF” position and the “Battery” toggle switch to the “External” position.

TABLE 1

OPERATING MODE		REMOTE CONTROL PANEL ACTIONS	REMOTE CONTROL PANEL INDICATION	INDICATION MODULE STATUS	WICKET GATE STATUS
1	Single passage	Press «→» or «←» buttons	Green lights above the buttons «→» and «←» and red light above the «STOP» button	Green light	Single turn of the swing panel in either direction is available
2	Double passage	Press «→» and «←» buttons simultaneously	Green lights above the buttons «→» and «←» and red light above the «STOP» button	Green light	Double turn of the swing panel irrespective of the direction is available
3	Free passage	Press the «STOP» and «→» or «←» buttons simultaneously OR: all three buttons at once	Green lights above the buttons «→» and «←»	Green light	Multiple turn of the swing panel in either direction is available
4	Blocked passage	Press the «STOP» button	Red light above the «STOP» button	Red light	Turn of the swing panel in either direction is blocked

Commentary:

- the passage through the wicket gate is available only when the green light on the indication module is on;
- if in the “Single passage” mode the passage does not take place within the passage waiting time (5 sec) from the moment permission for passage is given, the CLB switches the wicket gate into the “Blocked passage” mode which is signaled by the red light on the gate indication module.

5.6 Operation of the wicket gate from an ACS

The wicket gate can be connected to and operated as part of an ACS .

5.6.1. An ACS controller should be cabled to the **«ACS»** socket connector of the SPU according to the wiring diagram (Fig. 4).

Assignment of the contacts on the **«ACS»** connector is given in Figure 5.

5.6.2 When the wicket gate operates as part of an ACS, the CLB executes commands by the ACS. In order to maintain the correct operation, the CLB transmits the gate status signals to the ACS via the SPU.

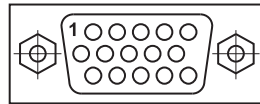
5.6.3 The control element in the ACS can be a normally open relay contact or an NPN-transistor with open-collector output:

a) no command (“1”) — open relay contacts or closed transistor ($U_{max} < 15 \text{ V}$, $I_{max} < 0.1 \text{ mA}$);

b) command (“0”) — low level DC voltage or a negative polarity pulse with duration min. 100 ms (closed relay contacts or open transistor, $U_{max} < 0.8 \text{ V}$, $I_{max} < 15 \text{ mA}$).

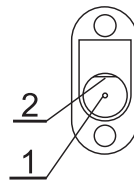
5.6.4 Each passage through the wicket gate is registered by the rotation sensors. When the swing panel turns $35^\circ \div 40^\circ$, the CLB generates signals at the **“PAS R”** or **“PAS L”** outputs and transfers them to the ACS.

Assignment of the ACS connector contacts



RIGHT	1
STOP	2
LEFT	3
GND	5
PAS L	6
PAS R	7
POWER C	8
SHORT ID	10
SEN ALARM	11
INV BAT	12
SHORT I	13
CONTOUR	15

External power supply contacts



+12 V DC	1
-12 V DC	2

Figure 5. The SPU socket connectors

5.6.5 Parameters of the "PAS R" and "PAS L" signals:

- the wicket gate is locked ("0") — an open transistor collector ($U_{max} < 0.8 B$, $I_{max} < 25 \text{ mA}$);
- the wicket gate is unlocked ("1") — high-level DC voltage or a positive polarity pulse with duration min. 100 ms (closed transistor, $U_{max} < 25 \text{ V}$, $I_{max} < 0.1 \text{ mA}$) at the output relevant to the "RIGHT" or "LEFT" command.

The signal is removed once the passage is completed. The swing panel returns to the home position, the wicket gate status is:

- “Blocked passage” in the single passage mode;
- “Passage is allowed” in the multiple passage modes.

5.6.6 In the “Free passage” operating mode set by 3 simultaneous commands (similar to simultaneous pressing of all the three buttons on the remote control panel), the CLB always generates the "PAS R" signal.

5.6.7 In the “Double passage” operating mode, the "PAS R" signal is generated for the first passage, the "PAS L" signal – for the second.

5.6.8 Additionally, the ACS is provided with the following status signals:

- **"Power C"** — switchover to the SPS power supply (high-level signal, open collector);
- **"Short ID"** — the system connector works (low-level signal, a jumper is installed on the "GND" contact);
- **"INV BAT"** — inadmissible SPS discharge (high-level signal, open collector, closed transistor).

5.6.9 The ACS generates the **"Short I"** control signal setting the passage waiting time as infinite. The **"Short I"** signal must be transmitted prior and kept upon the SPU power-up.

To set the passage waiting time from the ACS it is necessary to fix a jumper between contacts 5 and 13 of the ACS cable header. For all operating modes the timeout period is set from the ACS.

6. SAFETY REQUIREMENTS

Safety requirements for this wicket gate comply with the GOST R IEC 730-1. For electrical safety, the wicket gate falls under Class III products.

6.1 Installation safety

- Use only serviceable instruments.
- Make sure you connect the CLB, the ACS controller and the remote control panel according to the wiring diagram in Figure 4 **ONLY** after the SPU is disconnected from the power supply.

6.2 Safety during operation

6.2.1 Observe general safety requirements for use of electrical equipment.

6.2.2 The wicket gate is designed to use 220±22 V AC / 50Hz mains. Use a voltage stabilizer to prevent possible malfunction in the event of a voltage surge.

6.2.3 DON'TS:

- Do not install the SPU on electrically conductive floors and in damp areas, or use it in environments different from those given in GOST 15150, Category NF 4.
- Do not take the cover off the SPU unless it is disconnected from the power supply.
- Do not let bulky objects with overall dimensions exceeding the passageway width be carried through the passageway area. The swing panel should be dismantled when it is necessary to completely clear the passageway.
- Do not let the swing panel, the SPU or the indication module be subjected to jerks and jolts that can cause mechanical deformation.
- Do not use with abrasive or chemically active substances to clean surfaces.

7. ASSEMBLY AND INSTALLATION

7.1 General recommendations

7.1.1 Proper installation is critical to performance and serviceability of the wicket gate. We strongly advise to study this Manual before installation work and follow the instructions to the letter.

7.1.2 We recommend:

- to mount the wicket gate on flat, solid concrete floors (grade 400 or higher), stone or similar foundations at least 150 mm thick.
- to employ reinforcing elements 250x250x400 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.

7.1.3. Use the following tools for the installation work:

- 1,2÷1,5 kW electric perforator;
- Ø5 mm, Ø16 mm and Ø25 mm carbide drill bits;
- №2 cross-tip screwdriver, 150 mm long;
- №5 straight- slot screwdriver, 150 mm long;
- S13; S17 horn wrenches;
- S6 hex-nut wrench;
- plumb-line and level gauge;
- 2 m tape measure;
- trammel.

Note. Use of similar tools is allowed providing it will not reduce quality of the installation work.

7.2 Installation sequence

7.2.1 Position numbers in the installation sequence are given according to Figure 1.

7.2.2 Recommendations how to prepare mounting holes in the foundation (the mounting surface) are given with regard to metal anchor bolts for solid concrete floors or similar foundations. Use relevant mounting hardware for installation on different foundations.

7.2.3 The SPU should be mounted in accordance with the control(4) and power(5) cables length.

7.2.4 The swing panel (2) should be mounted after all the installation work has been completed.

7.2.5 We recommend the following work sequence:

- unpack the box with equipment, check carefully the delivery set (sect. 4);
- verify the wicket gate serial number on inner side of the cover (8) against the serial number in the warranty coupon;
- prepare the installation surfaces as recommended in sect. 7.1;
- prepare mounting holes according to the Figure 6;
- prepare the raceways and drill the anchor holes to mount the wicket gate;

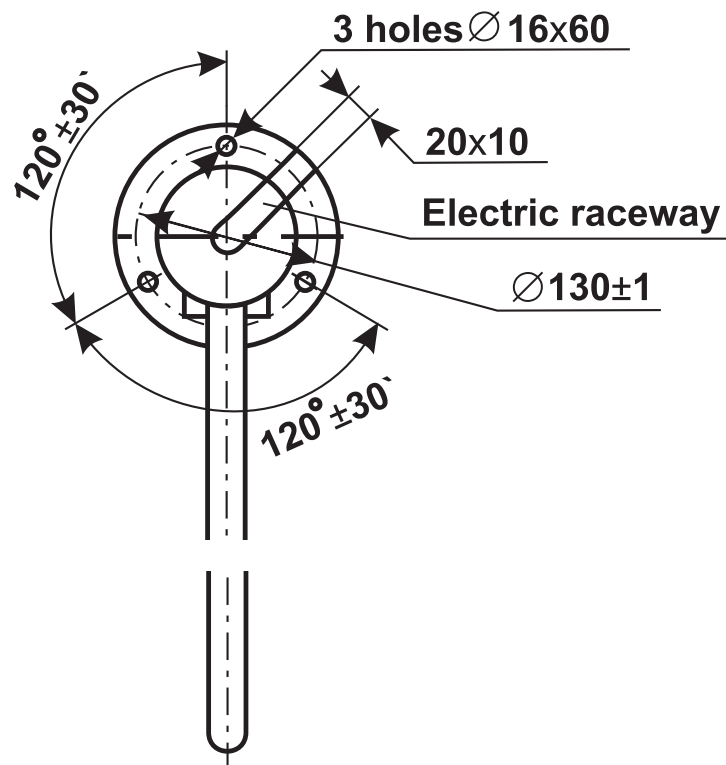


Figure 6. Mounting hole pattern

- designate the location of the SPU (7) and mark the mounting holes according to Figure 7;
- lay the power cable (4), the control cable (5) and the ground bus;
- undo the M8 bolt of the mount bracket (9) at the gate bottom, take out the mount bracket and connect the power cable and the control cable;
- restore the mount bracket (9), connect the ground bus to the M8 bolt;
- mount the gate post (1) upright into service position, anchor it temporarily;
- connect the power cable (4) and the control cable (5) to the SPU (7);
- connect the remote control panel cable (6) to the SPU;
- take off the cover (8);
- turn the rotation unit (11) in either direction at an angle of approx. 90° relatively to the central position;
- mount the swing panel (2) into the respective mounting seat of the rotation unit (11), fix the swing panel by two M8x30 screws with washers 8;
- return the rotation unit (11) into the initial position;
- make sure all the electrical connections are correct and safe, conduct a trial power-up of the SPU and the wicket gate according to sect. 8;
- tighten the anchor bolts fixing the wicket gate to the mounting surface, take on the cover (8).

7.2.6 To install the mechanical rotation limiter:

- take the cover (8) off the rotation unit (11);
- install the limiter (M8x12 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 wicket gate;
- take the cover (8) back on.

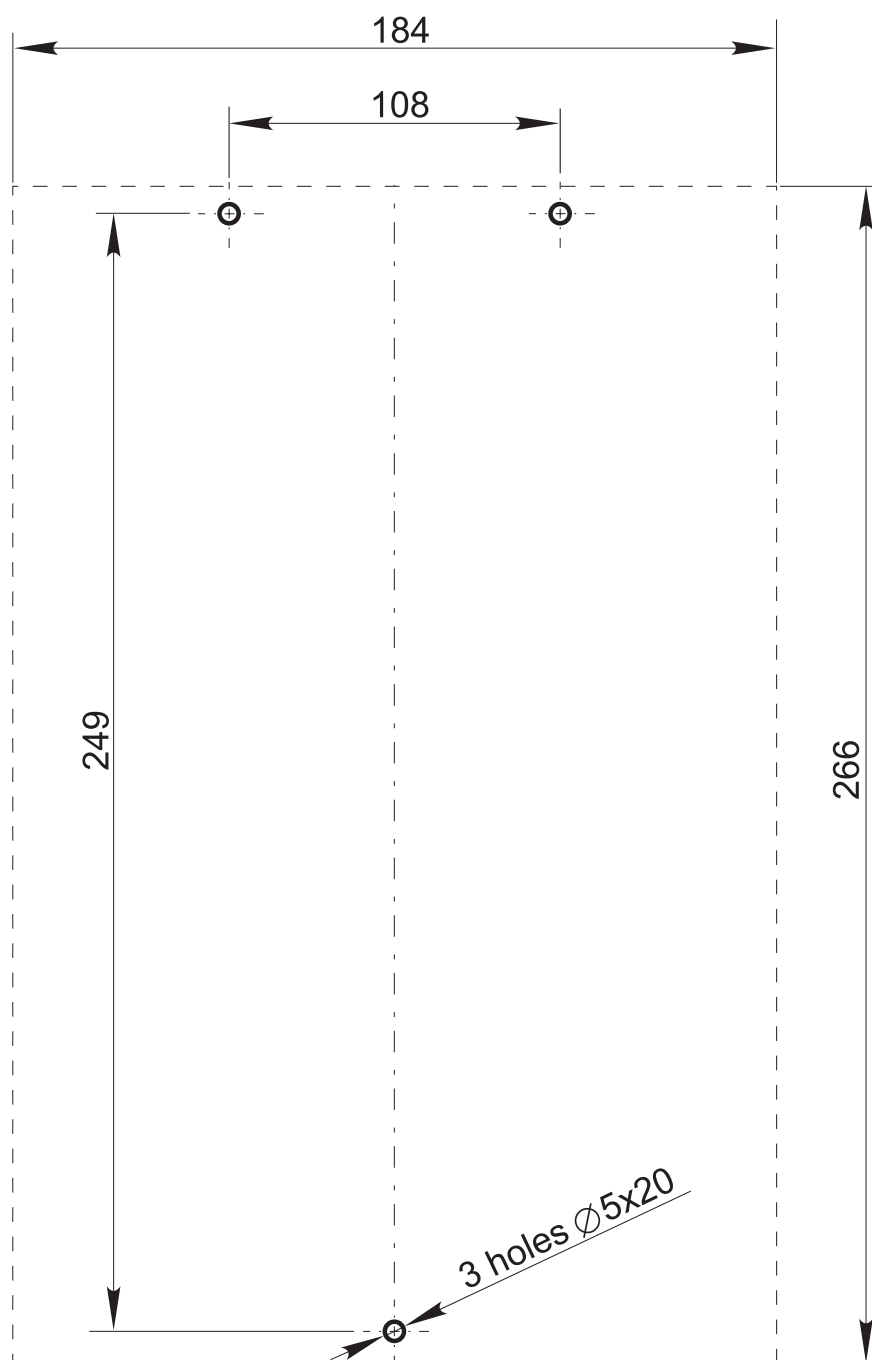


Figure 7. Hole pattern for SPU mounting

8. OPERATING THE WICKET GATE

8.1 General guidelines

ATTENTION!

- 1) Always observe general electric safety requirements when operating the wicket gate.
- 2) Make sure the power cable is intact, all the connections are correct and safe.
- 3) Clear the passageway area of foreign items.
- 4) DO NOT connect the SPU to the mains with characteristics that differ from those given in the Certificate.

8.2 Operation from 220 V / 50 Hz AC mains

8.2.1 Prior to the gate power-up, set the SPU toggle switch **"Power"** to the **"OFF"** position and the **"Battery"** toggle switch to the **"External"** position.

8.2.2 Put the "Bat/2A" fuse included in the set of spare parts into its place.

8.2.3 Plug the SPU power cable into a 220 V / 50 Hz AC outlet.

8.2.4 Switch on the power by setting the **"Power"** toggle switch to the **"ON"** position and the **"Battery"** toggle switch to the **"Internal"** position.

At the same time:

- the **"Power"**, **"12V"** and **"Mode"*** green indicators on the SPU front panel light up;
- over 5 seconds the CLB runs the self-test program and initial setting of the processor: the remote control panel buzzer sounds a dual tone signal, the lights of gate post indication module and above the **"STOP"** button on the remote control panel flash with intervals of 0.5 sec.

After that the wicket gate is ready for operation.

Note. To switch the wicket gate off, set the SPU **"Battery"** toggle switch to the **"External"** position, then the **"Power"** toggle switch to the **"OFF"** position.

8.3 Operation from external DC power supply

Follow the below sequence when the gate SPU is powered from an external DC power supply:

- observing polarity according to Fig.5, solder the plug cable connector included in the set of spare parts (DC-type 2,1/5,5/9,5) to the external power supply cable;
- before power-up of the wicket gate, set the SPU **"Power"** toggle switch to the **"OFF"** position and the **"Battery"** toggle switch to the **"Internal"** position;
- insert the cable connector into the **"Bat=12V"** socket connector on the SPU;
- switch the external power supply on**;
- set the **"Power"** toggle switch to the **"ON"** position — the corresponding light indicators on the SPU will flash on as described in sect. 8.2.4;
- set a desired passage mode according to Table 1.

Note. To switch the wicket gate off, set the SPU **"Power"** toggle switch to the **"OFF"** position.

* The **"Mode"** indicator on the SPU is off if the SPS battery is charged or absent, or the wicket gate is powered by an external power supply.

** The SPU power cable must not be plugged into the AC mains.

8.4 Reset state of the wicket gate after the SPU power-up:

- the swing panel blocks the passageway;
- red light on the gate indication module is on;
- red light above the **"STOP" button** on the remote control panel is on;
- **"Power"**, **"12 V"** and **"Mode"** * green indicators on the на SPU are on.

8.5 Troubleshooting

Possible faults to be corrected by the user themselves are listed in Table 2.

TABLE 2

FAULT	MOST POSSIBLE CAUSE	REMEDY
When powered-up, the wicket gate does not work, lights on the remote control panel and the SPU are off	«220V/1A» fuse is burnt	Replace the fuse
	No supply voltage	Restore the supply voltage
	The power cable is broken	Repair the cable
When powered-up, the wicket gate does not work, the "12 V" indicator on the SPU is off	"12 V/2 A" fuse is burnt due to short circuit in the power cable or the CLB	Remove the short circuit and replace the fuse
When powered-up, the wicket gate does not work; all lights on the wicket gate indication module are off	The control or power cable break	Repair the break
No lights on the SPU when the «Power» toggle switch is in the «OFF» position and the «Battery» toggle switch is in the «Internal» position	«Bat/2A» fuse is burnt	Replace the fuse
	Malfunction or discharge of the SPS battery	Replace the battery

In the unlikely event of other faults consult with the PERCo Technical Support Department or your local dealer.

9. MARKING AND PACKAGING

The standard delivery set is packed into one transportation box that protects the wicket gate against damage during transportation and storage.

The transport box marking contains the serial number of the wicket gate, also entered into the warranty coupon.

Marking on the SPU and the gate post contains the product name, the date of manufacture, the serial number, the technical characteristics, the warranty term.

Marking of components by other manufacturers corresponds with their technical documentation.

Components of the electrical equipment are also packed in polyethylene film or plastic bags.

Bulky optional equipment is packed into separate boxes.

* The **"Mode"** light on the SPU is off if the SPS battery is charged or absent, or the wicket gate is powered by an external power supply.

10. TRANSPORTATION AND STORAGE

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

10.2 During storage and transportation the boxes can be stacked no more than 5 layers high.

10.3 The wicket gate should be stored in dry indoor facilities at ambient temperatures between $-50\text{ }^{\circ}\text{C}$ and $+50\text{ }^{\circ}\text{C}$.

10.4 The wicket gate storage term is 12 months. If the wicket gate is to be stored for a long time, we advise keeping the SPU battery separately, observing requirements to storage of hermetic unserviceable batteries.

10.5 If the SPU with battery is stored at temperatures from $-20\text{ }^{\circ}\text{C}$ to $+30\text{ }^{\circ}\text{C}$, we advise to recharge the battery at least once in 6 months, following the below sequence:

- set the SPU **"Power"** toggle switch to the "OFF" position and the **"Battery"** toggle switch to the **"External"** position;
- install the 2A fuse into the "Bat/2A" slot;
- plug the power cable into $\sim 220\text{ V} / 50\text{ Hz}$ AC mains;
- set the **"Power"** toggle switch to the **"ON"** position and the **"Battery"** toggle switch to the **"Internal"** position; check whether the **"Power"**, **"12V"** and **"Mode"** indicators are on;
- keep the SPU powered for at least one hour from the moment the **"Mode"** indicator is off;
- set the **"Power"** toggle switch to the **"OFF"** position, the **"Battery"** toggle switch — to the **"External"** position, plug the power cable out of $\sim 220\text{ V} / 50\text{ Hz}$ AC mains, take the 2A fuse out of the SPU.

Note. If the "Mode" indicator does not become dim for more than 4 hours, it means that either the battery or the SPU is faulty.