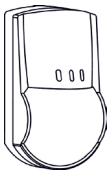
# COMBINED PIR + GLASS BREAK DETECTOR

## «ORLAN-D»



## Installation Guide

### General Information

Combined PIR + glass break detector «Orlan-D» (hereinafter, the Detector) is designed for application as a component of security systems.

The Detector has the following two independent detection channels:

- Glass break channel (hereinafter, GB channel);
- Passive infrared channel (hereinafter, PIR channel).

GB channel is intended for detecting destruction of engineering structures made of plate glasses, double- and triple-pane glasses with an area of not less than 0.1 $m^2$ (with any side length not less than 0.3 m), as well as glass bricks.

PIR channel is assigned for detecting intrusion into protected area of closed premises. PIR channel provides wide angle detection zone. The Detector is resistant to movement of pets with weigh up to 20 kg with temperature contrast $\Delta t = 8$ °C (smooth-coated cats and dogs) and pets with weigh up to 40 kg with temperature contrast $\Delta t = 6$ °C (long-hair cats and dogs).

The Detector generates Tamper message at it's cover opening by an alarm loop (AL) or microswitch contacts opening.

The Detector is resistant to the impacts of ambient light, radio noise, as well as disturbance from small animals: mice, rats, birds in cages if a distance to them is not less than 2.5 m.

The Detector can be installed on the wall or in the corner of the room. Wall or ceiling mounting by means of swivel bracket (supplied) is also possible (Figure 5).

### Features

Sensing element of detection channels:

- PIR channel – dual-element pyrodetector;
- GB channel – microphone.

- Microprocessor-based signal processing.
- Spherical lens ensures high detectability level.
- Self-test mode.
- Alarm at PIR and GB channels memorization (Alarm memory).
- Possibility of PIR and GB channels sensitivity modes choosing.
- Possibility of LED indication disabling.
- Pet movement resistance.
- Protection against ingress of insects to the pyrodetector.
- Possibility of swivel bracket using for the detection zone position alignment.

The Detector specifications are listed in Table 1. PIR detection zone pattern is shown in Figire 1. GB detection zone pattern is shown in Figure 2.

Table 1

| Parameter | Value |
|---|---|
| PIR channel detection zone | 10 x 10 m<br>8 long-range zones, 7 middle-range, 4 short-range, 2 anti-sabotage |
| GB channel maximum detection range, not less than | 6 m |
| Output GB and PIR channels contacts:<br>- voltage, maximum<br>- current, maximum | <br>72 V<br>35 mA |
| Sensitivity:<br>- GB channel (High Sens)<br>- PIR channel | selactable:<br>minimal/+7 dB/+14 dB/+21 dB<br>high/normal |
| Alarm message duration, not less than | 2 sec |
| Minimum area of protected glass | 0.1 $m^2$ |
| Warm-up time after energizing, not more than | 60 sec |
| Operating temperature | minus 20 °C ... +55 °C |
| Relative humidity at +25 °C without moisture condensation | 98 % |
| IP rating | IP30 |
| Dimensions, maximum | 126 x 70 x 55 mm |
| Weight, maximum | 150 g |

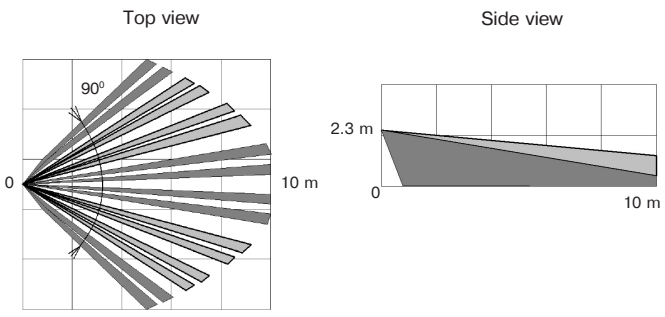



Figure 1 – PIR Channel Detection Zone Pattern

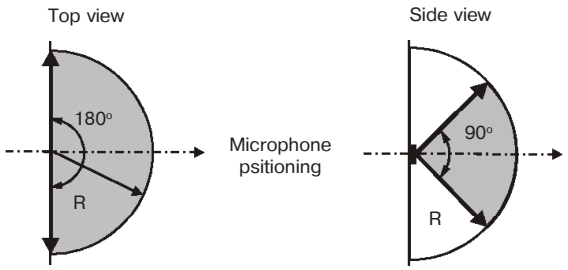



Figure 2 – GB Channel Detection Zone Pattern

### Field of Application

The Detector can be installed in flats, shops, museums, offices and other closed premises.

### Choosing Place of Installation

When choosing the Detector installation place, it is advisable to take note of the fact that the detection zone may be screened by non-transparent objects (curtains, houseplants, cabinets, bookcases, etc.), as well as by glass and mesh partitions. There must be no windows, air conditioners, space heaters or heating radiators in the PIR detection zone.

Recommended installation height is 2.3 m. Distance between the Detector and the farthest point of the monitored glass should not exceed 6 m. The Detector microphone should be oriented strictly towards the protected surface of a glass construction. In case of 1 $m^2$ area monitoring, maximal distance to the Detector should be increased up to 9 m.

The Detector wires should be laid at a distance not less than 1 m from power supply cables.

### Scope of Delivery

Each Detector unit package contains items listed in Table 2.

Table 2

| Name | QNT |
|---|---|
| Combined PIR + glass break detector «Orlan-D» | 1 pc. |
| Accessories set: | |
| Swivel bracket | 1 pc. |
| Screw nut «SORMAT» 5x25 | 2 pcs. |
| Screw 3-3x30.016 | 2 pcs. |
| Testing ball | 1 pc.* |
| Combined PIR + glass break detector «Orlan-D». Installation Guide | 1 copy |
| * Supplied optionally | |

### Installation of the Detector

- Remove the detector cover (6) from the base (1) by pressing the cover lock (8) with a screwdriver through the hole located in the lower part of the detector base.
- When installing the detector without a bracket, it is necessary to remove the printed circuit board (5) by pressing the board fastener (7).
- Drill holes (2) in the base of the detector, which will be used for laying wires and fixing the detector.
- Having chosen the installation location, mark the holes for mounting the detector, taking into account the position of the holes in the detector base (bracket), drill holes in the wall (Figure 4).
- Pass the wires through the holes in the detector base, leaving the necessary length of wire inside the housing to connect to the detector terminals.
- Attach the detector base (bracket) to the selected location.
- When mounted on a bracket, untie the screw from the sphere, align the square ledge of the sphere with the corresponding groove in the top of the detector base, insert the screw into the hole in the top of the base and tighten without tightening;
- Place the base in the desired position and tighten the screw so that the base is firmly fixed to the bracket.
- Install the PCB into the base by inserting the groove on the PCB into the protrusion on the base, then snap the PCB into place with the retainer.

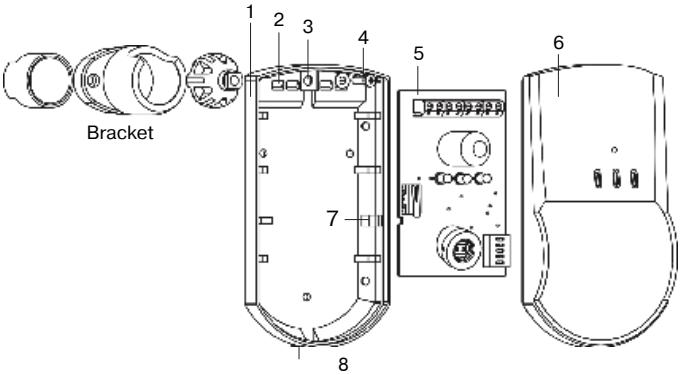
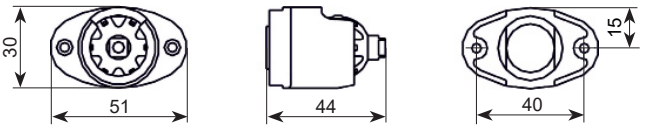



Figure 3 –Detector Base and Swivel Bracket

### Overall and installation dimensions

(mm)

a) bracket



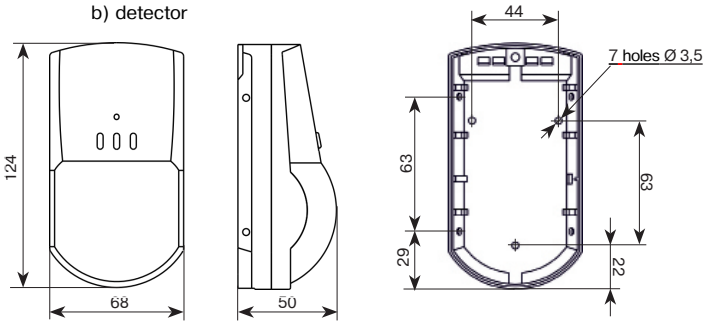



Figure 4 – Overall dimensions

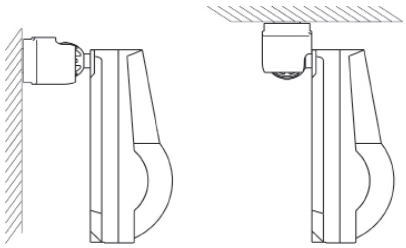


Figure 5 – Bracket installation options

## Detector Connection

Fulfill connection as it shown in Figure 6.

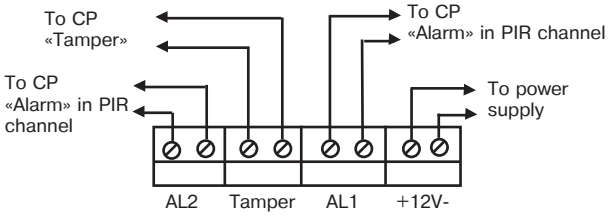



Figure 6 – The Detector Connection Pattern

## Functional Testing

*1) PIR Channel Testing*

To ensure the detection range 10 m long, set DIP-switch «3» in OFF position (in this mode presence of pet weighting up to 10 kg within the detection zone is allowed).

To ensure the detection range 8 m long, set DIP-switch «3» in ON position (in this mode presence of pet weighting up to 20 kg within the detection zone is allowed). This mode provides higher level of the Detector interference protection. It is recommended to set DIP-switch «3» in ON position in small rooms with severe interference conditions.

Close the Detector cover. Get off the detection zone, energize the detector and wait for 1 minute, and afterwards make sure, that LED indicators are switched off.

In case of interferences presence in the room (See Table 5), find out the cause of them and eliminate it. Start moving across the sensing zones at a speed 0.5 – 1 m/sec and define the border of PIR channel detection zone by yellow LED indicator switching on. Upon that, move at a speed 0.3 m/sec and after it move once more at a speed 3 m/sec for checking the Detector sensitivity by red and yellow indicators switching on. Alarm message is generated after 2 – 4 steps inside the detection zone. Message duration is 3 sec.

If it is necessary, change the zone alignment by turning the Detector on the swivel bracket in horizontal plane. After it fulfill the detection zone alignment and sensitivity check once more.

For reliable exception of false alarms caused by pets movement it is recommended to install the Detector to a true vertical.

*2) GB Channel Testing*

Set DIP-switches «1» and «2» at OFF position (minimum sensitivity level).

Suspend a steel ball (21.5 ± 0.5) mm in diameter weighting (40 ± 8) g on a 35 cm long thread near the monitored glass standing clear of it. Deflect a ball at an angle of 30 – 70° (see Table 5) from the glass surface without thread slack and release it. Deliver a test blow to the remote section of the protected glass. Don't occlude the Detector during blow delivering. If the test blow is accompanied by green LED indicator two-shot blinking, the Detector must be considered adjusted. If the test blow is not accompanied by green LED indicator two-shot blinking, the Detector sensitivity should be increased by means of «1» and «2» DIP-switches with further GB testing procedure repetition.

Table 3

| Glass thickness, mm | <3 | 3–4 | 4–5 | 5–6 | 6–7 | >7 |
|---|---|---|---|---|---|---|
| Ball deflection angle for ordinary, armed and ornamental glass, ° | 30 | 35 | 40 | 45x) | 50 | 55 |
| Ball deflection angle for hardened and laminated glass, ° | 45 | 50 | 55 | 60 | 65 | 70 |
| x) – Inclination angle for glass blocks | | | | | | |

Table 4

| Mode | DIP-switch | DIP-switch position | |
|---|---|---|---|
| | | ON | OFF |
| GB channel sensitivity | «1» | +14 dB | min |
| GB channel sensitivity | «2» | +7 dB | min |
| PIR channel sensitivity | «3» | 8 m (20 kg) | 10 m (10 kg) |
| Alarm memory | «4» | Memorizing | No memorizing |
| LED indication | «5» | In operation | Disabled |

Table 5

| Message | Channel | LED Color | | |
|---|---|---|---|---|
| | | Yellow | Red | Green |
| Warm-up time | | * | +/- | * |
| Norm | | – | – | – |
| Interference indication | First frequency of GB channel | – | – | ++ |
| | Second frequency of GB channel | – | – | + |
| | PIR channel | + | – | – |
| Alarm | GB channel | – | * | * |
| | PIR | * | * | – |
| Alarm memory | GB channel | – | -/+ | +/- |
| | PIR channel | +/- | -/+ | – |
| Failure | Power supply | * | - -/++ | * |

Notation:
* LED is ON;
– Indication is OFF;
+ single-shot blinks;
++ double-shot blinks;
+/-,-/+ LED is blinking at 1 Hz frequency;
--/++ LED is blinking at 2 Hz frequency.

## Alarm Message Memorizing

Set DIP-switch «4» in ON position. In this mode in 5 min after alarm message generation, LEDs are blinking alternately in accordance with Table 5. LED indication duration is 15 min.

## LED Indicator Disabling

For the Detector operation masking, possibility of indication disabling is provided by setting DIP-switch «5» to OFF position. In this mode indicator operation is provided during 1 min after Detector energizing, as well as in Alarm memory or Failure modes.

**ATTENTION!** The Detector must be checked at least annually in order to test it's performance.

## Manufacturer's Guarantees

The manufacturer guarantees conformity of the Detector to it's Technical Specifications if provided that the transportation, storage, installation and operation conditions are observed.

The guaranteed shelf life of the Detector is 63 months since the date of manufacture.

The guaranteed useful life is 60 months since the day of putting into operation within the guaranteed shelf life.

The Detectors that are found non-conforming to the Technical Specifications shall be repaired by the manufacturer, provided the installation and operation rules have been complied with.

## Storage and Transportation

The Detectors in their original packaging may be transported by any means of transportation in closed vehicles over any distances in compliance with the existing shipping rules concerning the respective means of transportation.

The storage premises should not contain any current-conducting dust, acid and alkali fumes, or corrosive or destroying insulation gases.

The Detectors in transport packaging should be stored no longer, than 3 months. Otherwise they should be released from transport packaging.

## Acceptance and Packing Certificate

Combined PIR + glass break detector «Orlan-D»,

serial number _____,

has been manufactured in compliance with the active technical documentation and classified as fit for operation and packed by «Development and Production Enterprise RIELTA » LLC.

Person in charge of acceptance and packing

QC representative_____ _____.
day, year, month

Rev.2 of 28.07.2020
№00321
v4

Made in Russia

«Development and Production Enterprise RIELTA» LLC
Petrogradskaya nab., 34, letter B, Saint Petersburg, Russia, 197046
www.rielta.com, rielta@rielta.com
Tel./fax: +7 (812) 233-0302, 703-1360, support@rielta.com
Technical support, tel.: +7 (812) 233-29-53, 703-13-57, support@rielta.com