



## PASSIVE INFRARED DETECTOR



### «FOTON-10BM»

### Installation Guide

#### 1 Introduction

The detector «Foton-10BM» (hereinafter, the detector) is designed for detecting intrusion into the protected space and generating an alarm message by opening the relay output contacts.

The detector ensures tamper protection. The «Tamper» message is generated by opening microswitch contacts.

The detector is resistant to the exposure of ambient light and radio interference, as well as to influence of small pets: mice, rats, birds, placed in the cages at a distance not less than 2.5 m.

The detector is compact, attractive, simple in installation, and servicing. It is possible to install the detector on the wall or in the corner of the room.

#### 2 Features

- Dual-element pyrodetector.
- Spherical Fresnel lens.
- Vertical curtain detection zone.
- Immunity to insects intrusion to the pyrodetector.
- Microprocessor-based signal processing.
- Selectable modes of testing, sensitivity, alarm memory and led indication.
- Self-test mode.
- The detector is rated for switching to the DC power source with output voltage 9 ... 15 V.
- Possibility to install the detector on the swivel bracket (supplied) for the detection zone repositioning.
- Installation height range – 2 – 5 m.
- Case tamper protection.

#### 3 Specifications

Table 1

Parameter	Value
Detection zone	Up to 10 m
Power supply, V DC	9 – 15 V, current 15 mA
Tamper output contacts	Closed – «Norm» message, current 30 mA, voltage 72 V
Alarm message duration	Not less than 2 sec
Detection zones	6 vertical curtain
Sensitivity	Chosen by switch «1» (position 1/2)
Operating temperature range	minus 30 ... + 55 °C
Relative humidity	98 % under 25 °C without moisture condensation
IP rating	IP41
Dimensions, max	90 x 60 x 50 mm
Weight, max	110 g

Detection zone pattern is shown in Figure 1.

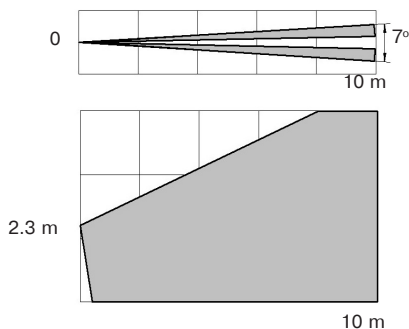


Figure 1 – Detection zone pattern

#### 4 Application

The detector can be installed for protection of window openings and rooms in the flats, shops, offices, museums.

#### 5 Scope of Delivery

Each Detector unit package contains the items listed in Table 2.

Table 2

Name	QNT
Passive infrared detector «Foton-10BM»	1 pc.
Swivel bracket	1 pc.
Screw 3-3x30.016	2 pcs.
Passive infrared detector «Foton-10BM». Installation Guide	1 copy

#### 6 Choosing the Place of Installation

The detector is designed for operation in the closed areas. When choosing the detector installation place, take note of the fact that the detection zone may be limited by non-transparent objects (curtains, houseplants, cabinets, bookcases, etc), as well as glass and mesh partitions. There must be no windows, air conditioners, space heaters or heating radiators in the detector visibility range.

Recommended installation height:

- without swivel bracket – 2 – 3 m;
- by means of swivel bracket – 2 – 5 m (on condition that the detector tilt is adjusted).

Power supply and alarm loop wires should be located far enough from power feed cables.

#### 7 The Detector Installation

- Unfasten the latch through the opening, which is situated downside the detector case by means of screwdriver and put off the detector cover (Figure 2).

- When installing the detector without swivel bracket it is necessary to put off the PCB by means of pushing up it's fixing arm.

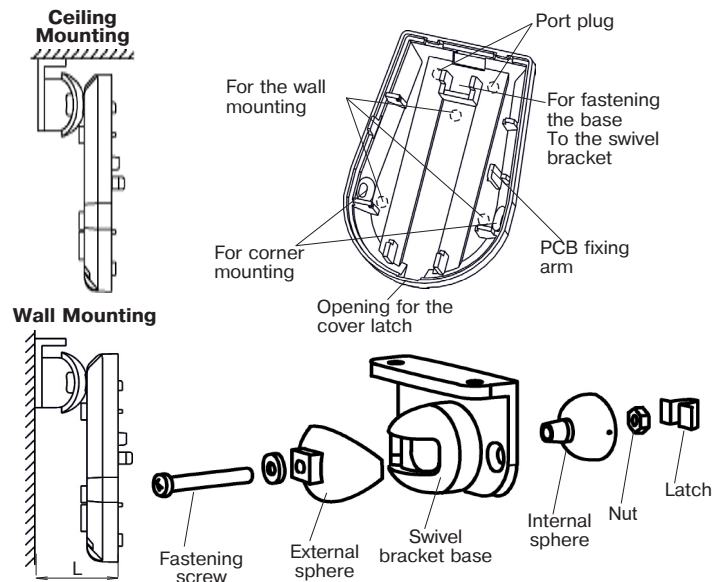


Figure 2 – The Detector Base and the Swivel Bracket

- Drill the holes in the base of the detector for wiring and fastening the detector (Figure 2).

- Choose the place of installation, mark the places for mounting holes with the regard to detector base (or swivel bracket) openings, drill the holes in the wall.

- Pass the wire through the mounting holes in the base, leave several centimeters of installation wire for it's fastening inside the case.

- Fix the base of the detector case on the wall (swivel bracket) at the chosen place.

- Put the PCB on its place.

**Note** – In case of swivel bracket using, unscrew the cap screw M3x20 from the swivel bracket sphere. Holding the assembled swivel bracket, fit the square bulge of the swivel bracket external sphere with the corresponded opening on the detector base. Turn the detector base to the left full point and then to the right. Plug in the screw to the opening in the top of the detector base and fix the connection by the screw. Set the detector base to the operating position and fasten it with the cap screw M3x20.

In case of the detector installation at 2 – 5 m height with keeping 10 m detection zone, it is necessary:

- After the detector fastening to the swivel bracket, turn the detector case vertically in accordance with the chosen installation height. Measure the distance (L) from the wall to the detector base edge with the cover opened (Figure 2, Table 2).

- Fix the preset detector position and fasten it with the cap screw, passing through the detector base to the swivel bracket.

Table 2

Installation height	Detector tilt	Distance to the wall, L, mm
2 – 3 m	0°	35
3 – 4 m	5°	28
4 – 5 m	9°	22

**Notes**

1 The tilt and the distance values listed in Table 2 are reference data. Final distance L value is defined in accordance with the test pass results.

2 The detector base turning horizontally would change the distance (L) from the wall to the inclined detector base. The change depends on the turning angle. Thus, it is necessary to adjust the detector tilt.

**8 Connection**

- The terminals for the detector connection are located at the top of PCB.

- Fulfill connections in accordance with the Figure 3a (for single alarm loop connection) and with Figure 3b (with alarm loop and tamper connection).

- Install the DIP-switches in accordance with application conditions.

- Put the detector cover on it's place.

- Install DIP-Switches «1», «2», «3» in accordance with application conditions.

- Put the detector cover on it's place.

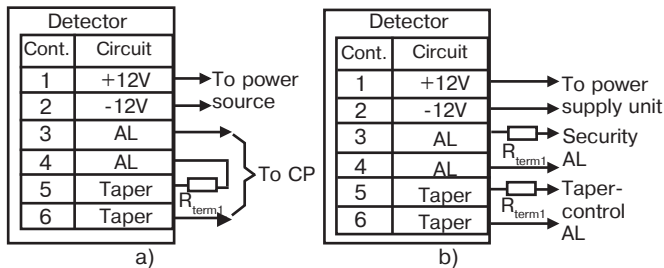


Figure 3

Table 3

Mode	DIP-switch	DIP-switch Position	
		«ON»	«OFF»
Sensitivity	«1» TEST	«SENS» (Sensitivity determination)	«ZONE» (Detection zone determination)
Testing	«2» IND	«IND» (ON)	«OFF» (LED indicator is disabled)
Indication Disabling	«3» MEM	«MEM» (Alarm memory ON)	«OFF» (Alarm memory OFF)

**9 LED Indication**

The Led indicator located at the front of the cover displays the detector mode.

Table 4

Message	Led Indicator Color	LED Indication State
«Warm-up Time»	RED	Blinking with 1 Hz frequency during 60 sec
«Norm»	-	LED Indication is OFF
«Alarm»	RED	LED Indication is on during 3 sec
«Malfunction»	RED GREEN	Alternate switching during 15 min
«Alarm Memory»	GREEN	LED Indication is ON during 15 min

**10 Functional Check**

After energizing of the detector, the self-testing process is realized during one minute. It ensures control of the following parameters: input voltage, ambient temperature, operation capacity of the amplifier channel. During the procedure, the LED indicator is blinking red (irrespective of the DIP-switch «2» position), relay contacts are opened.

**11 Testing Mode**

Upon the expiry of the warm-up time, the detector turns to standby mode and is able to generate alarm message. During the process within 5 minutes it is possible to check the detector parameters. The checking procedure provides two modes.

**1) Detection zone position location**

DIP-switches position: «1» – «OFF», «2» – «ON». The mode is intended for each beam of detection zone positioning in the secured premises. Under the condition of each beam crossing the LED indicator switches for 0.25 sec. Optimized speed of movement at maximal distance – 0.5 m/sec.

**Note** – In this mode the alarm message generated in compliance with the adjusted sensitivity mode is not displayed by LED indication.

In the motion absence in the detection zone the LED indicator must not light. Upon the expiry of 5 minutes check procedure, the detector transfers to normal mode. If DIP-switch is in position «2» – «ON», generation of alarm message is displayed by LED-indicator lighting for the 3 sec period.

**2) Sensitivity mode adjustment**

DIP-switches position: «1» – «ON», «2» – «ON». The mode is intended for detector sensitivity appraisal (the distance, which is possible to pass through the detection zone up to the point, where the movement is detected, and alarm message is generated). The LED indicator blinks for 0.25 period under the condition of detection zone beam crossing, and for 3 sec during alarm message generation.

Stop after each alarm message generation and wait until the LED indicator is disabled for 8 – 10 sec and more, then continue movement through the detection zone.

**Note** – If the detector does not identify movement within the detection zone, it is necessary to change detector position by means of swivel bracket (in case of wall mounting the horizontal turning angle of the detector on swivel bracket – ±45°, vertical – not less than 20°).

**12 LED Indication Disabling**

For the detector operation masking, the LED indication disabling mode is available. DIP-switch «2» – «OFF».

In this mode the LED indicator is lighting for only one minute after detector energizing, as well as in «Alarm Memory» and «Malfunction» modes.

**13 Alarm Memory Mode**

DIP-switch «3» – «ON». The LED indicator is lighting green in 5 min after alarm memory generation. Duration of indication – 15 min.

**14 Self-Test Mode**

The detector provides self-testing of the following parameters: amplifier operability, input voltage, ambient temperature. If the ambient temperature range is close to 36 °C, the sensitivity threshold changes, the level of sensitivity is automatically adjusted, what leads to detectability enhance (temperature compensation).

In case of self-test failure (amplifier malfunction, voltage drop lower than (8.4 ± 0.5) V, ambient temperature out of permissible temperature range), «Malfunction» message is generated by opening the relay output contacts repeated by alternate LED indicator blinking red and green.

«Malfunction» message duration – 15 min. After elimination of malfunction, the detector turns to self-test mode.

**ATTENTION!** The detector must be checked at least once annually for functional testing.

**15 Storage and Transportation**

The detectors in their original packing may be shipped by any transport means in covered vehicles (in railway, cars, trucks, sealed heated compartments of aircraft, ship cargo holds, etc). The storage room should be free from current-conducting dust, acid vapors, alkali and gases that cause corrosion and destroy insulation.

**16 Manufacturer's Guarantees**

The Manufacturer guarantees conformity of the detector to it's Technical Specifications if conditions of transportation, storage, assembling and operation are observed. The guaranteed storage period is 63 months since the date of manufacturing the detector.

The guaranteed period of operation is 60 months since the date of commissioning within the storage period guaranteed.

The detectors that are found to non-conforming to it's Technical Requirements shall be repaired by the Manufacturer, provided the installation and operation rules have been complied with.

**17 Packing Certificate**

Passive infrared detector «Foton-10BM» manufactured in accordance with current technical documentation is classified as fit for operation and is packed by «Development and Production Enterprise RIELTA» LLC.

Packing date \_\_\_\_\_  
month, year

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