Astra-517 (Volumetric Lens)

Optic-Electronic PIR Motion Detector

Operating Manual

The present Operating Manual is intended to provide a guidance on operating principles, correct use, storage and maintenance for the PIR detector “Astra-517” (hereinafter-detector) (Figure1).
The manufacturer reserves the right to make improvements in the design of the detector without prior notice. The alternations shall be included into a new edition of the Operating Manual.

1 Application

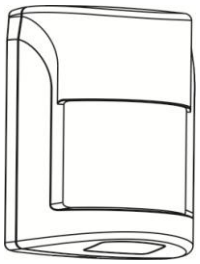


Figure 1

1.1 The detector is purposed to detect intrusion into a protected area indoors and to generate an alarm notification by opening of the signal relay output contacts.
1.2 The detector is powered from any DC power supply with nominal voltage of 12V and maximum pulsation amplitude 0,1V.

2 Principle of Operation

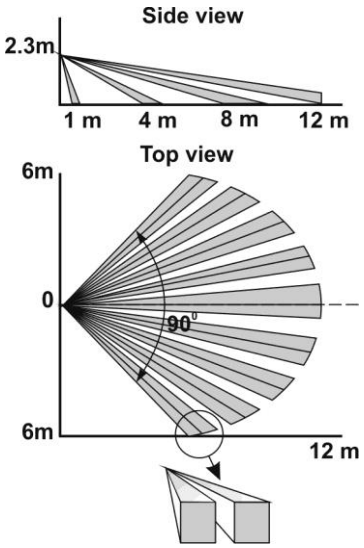


Figure 1

2.1 The operating principle is based on registration of changes occurring in thermal flux, when a person crosses a detection zone, consisting of sensitive zones. Each sensitive zone consists of two elementary sensitive zones (Figure 2).
The sensitive zones of the detector are formed by a Fresnel lens and a bi-areal pyroelectric sensor.
Electric signals from the pyroelectric sensor shall be sent to a microcontroller, which generates alarm notification in accordance with a preset operation algorithm by opening of optoelectronic relay circuit.
2.2 The sizes of detection zone may be varied due to the position of the printed circuit board of the detector. With intrusion detection range of 8 m, density of the sensitive areas will be increased.

3 Specifications

Technical Parameters of PIR-channel

Intrusion detection range, m, min:
- lower PC board position 12
- upper PC board position 8

Sizes of detection zone at viewing angle 90° in horizontal plane, m:
- in lower PC board position..... 12×12
- in upper PC board position ..... 8×8

Detectable motion speed range, m/s ..... from 0.3 to 3.0
Resistance to ambient light, lx, min 6500
Advised mounting height, m .....from 2.2 to 2.4

General technical parameters

Power supply voltage, V .....from 8 to 15
Current consumption in standby mode and in Alarm mode, mA, max 12
Permissible current through relay contacts, A, max.....0,08
Permissible voltage on relay contacts, V, max 100
Resistance of circuit connected to alarm loop in standby mode, Ohm, max 8
Dimensions, mm, max ..... 70×51×41
Weight, kg max 0,05

Operating Conditions

Temperature range, °C .....from - 30 to + 50
Relative air humidity, % .....up to 98 at + 25 °C
without moisture condensation

4 Delivery Set

PIR motion detector Astra-517..... 1 pcs.
Bracket..... 1 pcs.
Screw 2,9x25 (or 2-3x30)..... 2 pcs.
Dowel 5x25 ..... 2 pcs.
User instruction..... 1 pcs.

5 Structure

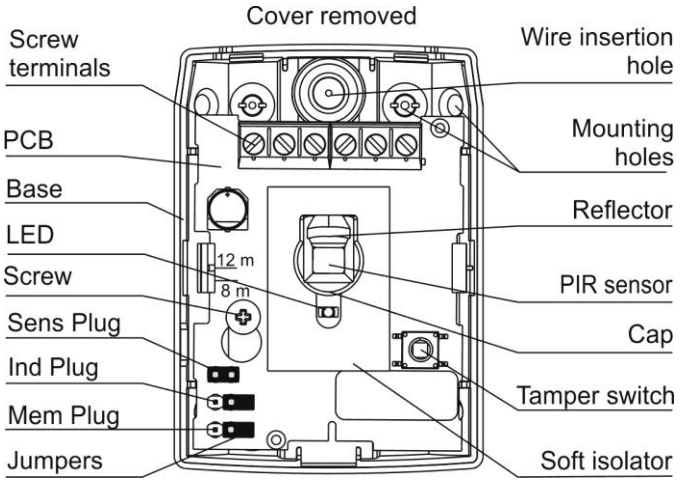


Figure 3

5.1 The detector is a unit consisting of a base and a detachable cover. A printed circuit board with radio elements and a block of screw terminals for external connections is installed inside the unit. (Figure 3).
5.2 The PC board shall be secured in the position to enable the desired detection range (8m, 12m) of the detector with a screw.
5.3 The PC board includes an indicator, which controls operation of the detector.
5.4 The cover on the inside is provided with a lock pin holding down and securing the lens.
5.5 The pyroelectric sensor is equipped with a cap provided with a reflector making a near detection area.

WARNING! **It is prohibited to operate the detector without the cap.**

5.6 The detector can be mounted either directly on the wall or in a room corner, or it can be mounted using brackets (included in the scope of delivery).

6 Information Capacity

Table 1 - Notifications to indicator and relay

Event Type	Indicator	Relay
Switching to standby mode	After power is on, blinks **once per second** within 60s	within **60 s**
Normal	Off	
Alarm	Lights up **1 time for 4 s** when detects a person moving in the detection zone (if indication is permitted)	within **4 s**
Alarm in "Alarm Memory" mode	**Figure 4**	within **4 s**
Failure	On	
Tampering	Off	TMP

" " – relay closed,
" " – relay open,
"TMP " – TMP circuit open

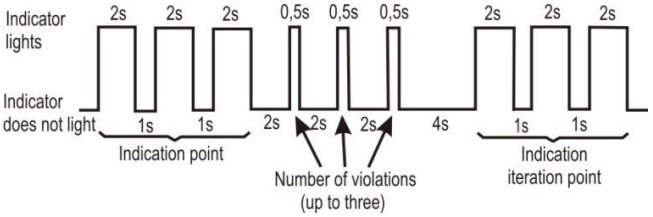


Figure 4

7 Operating Modes

Table 2 - Operating modes and their setting

Operating mode	Plug	Jumper position
High detectability Normal detectability	**Sens**	
Indication ON Indication OFF	**Ind**	
Alarm Memory ON Alarm Memory OFF	**Mem**	

- The **Alarm Memory mode** enables to establish the fact and number of zone violations, and is reflected in corresponding notifications. The mode is activated in 1 minute after jumper sets to **Mem** plug or in 1 min. after detector switches to stand-by mode, the jumper being previously installed on **Mem** plug. The "Alarm" notification is indicated in 1 min. after violation of the protected area. To switch the mode off and reset indication, remove jumper from **Mem** plug or switch power off.

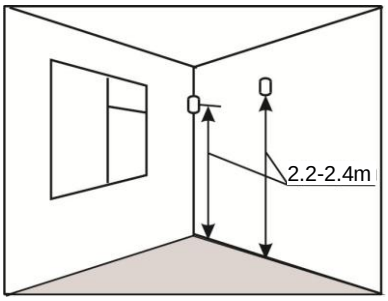
8 Installation and Pre-Starting Procedure

8.1 Works on installation, mounting, maintenance and operation of detector should be performed only by quaified persons.

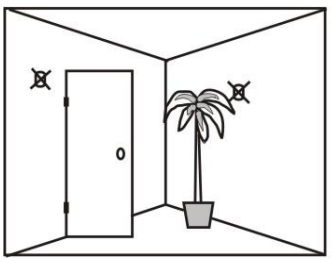
8.2 After being transported in conditions which differ from operating ones, the detector must be left unpacked in operating environment for minimum 4 hours.

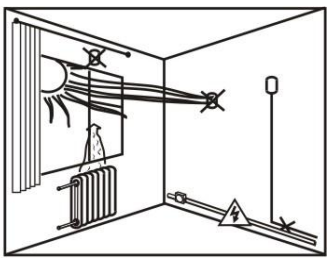
8.3 How to select mounting location

8.3.1 Recommended mounting height



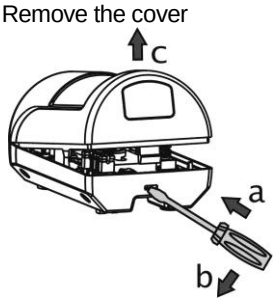
8.3.2 In capital buildings, detector installation on a bearing wall is preferable.
8.3.3 For light metal constructions you should avoid mounting of the detector directly on the wall, and prefer mounting to the load bearing elements of the construction.
8.3.4 Wires of signaling zones and power supply circuits should be located far from power cables.
8.3.5 We recommend close the doors, vents, turn off fans and air conditioners, and other possible sources of strong air flows for the protection period.
8.3.6 We do not recommend mount the detector in the following places



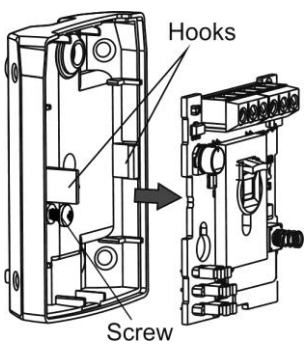


8.4 Installation Procedure

1
Push the lock on the bottom base from the cover slot. Remove the cover



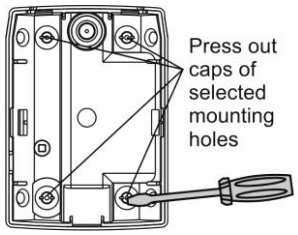
2
Loosen the screw.
Bend the hooks on the bottom. Remove PC board



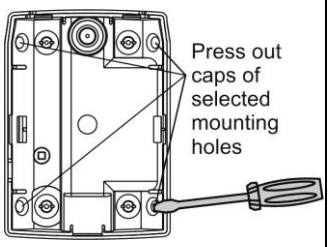
3
Select option **a, b** or **c** for mounting

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3a
WALL MOUNTING

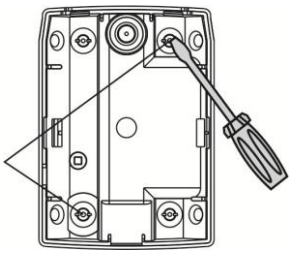


3b
CORNER MOUNTING



3c
MOUNTING USING BRACKET

Press out blanks from bracket mounting slots



4a, 4b
Mark mounting holes on the wall at the desired height using the base.

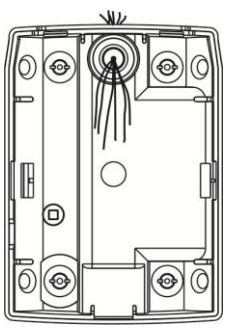
ATTENTION!
Detector base should be positioned strictly as per figure for Step 3

4c
Mark mounting holes on the wall at the required height applying the bracket to mounting surface. Mount the bracket on the wall.



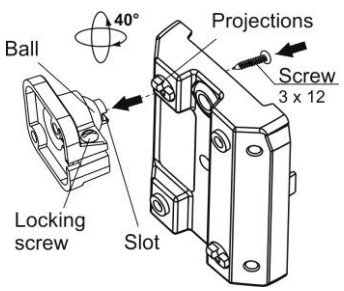
Mounting holes

5a, 5b
Insert power supply and alarm loop wires through the dedicated wire access hole in the detector base.



Fix the base to the wall or in the corner

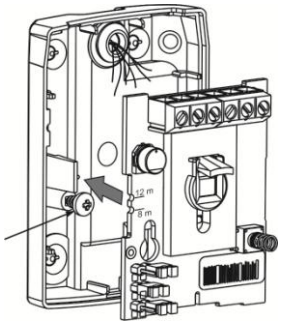
5c
Align base projection of the detector with the bracket slot for the ball and drive a screw from inside of the base into the bracket ball. Position the detector as required and tighten the locking screw. If anti-sabotage zone monitoring is required, set the vertical tilt angle to **20º**.



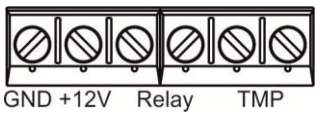
The bracket makes it possible to turn the detector horizontally and vertically by 40º

6
Match nib on the base hook with a slot on the PC board depending on the chosen detection range.

Secure the PC board with a screw.

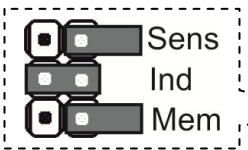


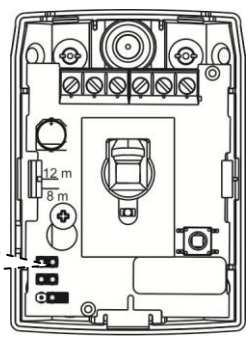
7
Connect wires to the detector terminals



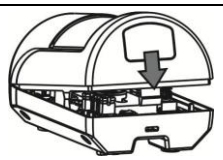
8
Switch the detector ON. The indicator shall blink **once per second** within 60 s – the detector is being switched to the standby mode

9
Remove jumpers from plugs **Mem** and **Sens**.
Install the jumper on plug **Ind**



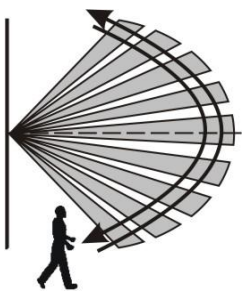


10
Place back the cover of the detector (until clicks)



11
Perform **test-pass** in the secured area at a speed of **0.5** m/s in order to determine detection zones.

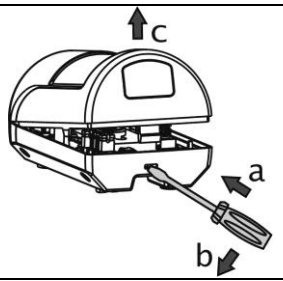
At the moment of detection (the indicator lights up for **4s**) you should stop, spot the place and then return one step back and continue moving.



Repeat the **TEST-pass** moving back.

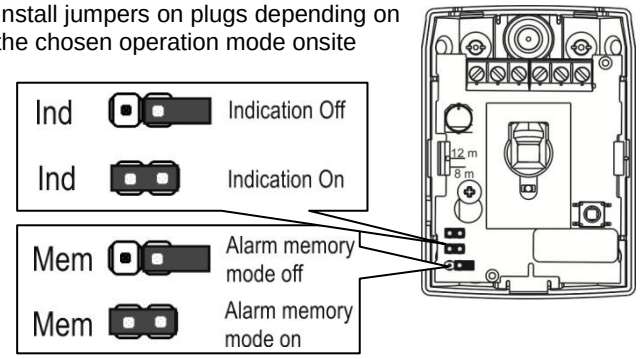
The sensitive zones configured by the lens will be in the middle between the spotted places.

12
Push the lock on the bottom base from the cover slot.
Remove the cover.



13

Install jumpers on plugs depending on the chosen operation mode onsite



14

When testing the alarm system at the initial operation period (1-2 weeks) in case of issuing false «Alarm» notifications depending from the peculiarities of the protected premises, remove jumper from **Sens** plug



15

Place back the cover of the detector (until clicks)

8.5 To ensure reliable operation of the alarm system we recommend to **test** and **maintain** the detector at least once a month.

Tests should be carried out as follows:

- perform test-pass through the detection zone;
- make sure “Alarm” notification appears on the control panel and, if indication is enabled, on the detector indicator (lights up once for 4 s during each movement) .

Maintenance should be carried out as follows:

- make sure the detector body is not broken,
- check reliability of contact connections and security of mounting,
-clean the detector.

9 Labeling

The label on the case of the detector specifies:

- the trademark of the manufacturer;
- abbreviated designation of detector;
- firmware version;
- manufacture date;
- conformance mark (if there is any certificate of conformance);
- barcode, which backups the text information.

10 EC Conformity Declarations

This product is in conformity with the provisions of:
EMC 89/336/EEC
EN 61000-6-3:2005 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
EN 50130-4/1995 + A1:1998 + A2:2003 + Corrig. 2003 Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
EN 60950-1: 2001+A11:2004+Corrig.2004 Safety of information technology equipment

11 Recycling

The detector does not pose any threat to life and health of people, as well as to the environment. After the expiry of its service life period, the detector shall be disposed of without special precautions in respect to the environment.

12 Manufacturer Warranties

12.1 Quality Management System meets provisions of ISO 9001-2011.
12.2 The manufacturer guarantees that detector will comply to technical requirements, provided that the consumers adhere to specified technical conditions of transportation, recommendations on storage and use.
12.3 The storage warranty time is 5 years and 6 months from the date of manufacturing.
12.4 The operation warranty time is 5 years from the date of operation start-up but no longer than 5 years 6 months from the date of manufacturing.
12.5 The manufacturer must repair or replace detector within the warranty period.
12.6 **The warranty does not become effective in the following cases:**
– failure to comply with this Operating Manual;
– mechanic damage of the detector;
– the detector is improperly repaired by anyone other than the manufacturer.
12.7 The warranty applies to the detector only. All other equipment of other manufacturers used with detector is subject to other manufacturer’s warranties.

The manufacturer bears no responsibility for death, injury, damage of property or any other kinds of accidental or premeditated damages, based on user’s statement that device failed to implement its function.

Sales and technical support: **TEKO-TD, LLC**	***Warranty service:*** **JSC Research and Development Center TEKO**
420138, Kazan, Russia	420108, Kazan,
Prospekt Pobedy str. 19	Gafuri Str.71, P.O. box 87
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