

GENERAL DESCRIPTION

The Wireless beam detector is intended for a continuous round-o-clock work in fire protection systems in buildings, constructions, premises and equipment as part of the "SAGITTARIUS" Wireless Intelligent Fire & Security System. This detector works on a IR radiation power attenuation control principle when passing through a controlled air medium (light extinction control principle). As soon as the transmission density's threshold value is reached, which corresponds to the detector sensitivity, a "Fire" message signal is generated.

To provide reliability and noise immunity, the detector is fitted with the following systems: operation control, optical system contamination level's control, supply voltage monitoring, autonomous power supply back up, wireless communication quality assessment.

For operational comfort the detector is provided for the following:

- remote programming of threshold and operating mode;
- visual functional control by the means of a bi-colour LED;
- in-built, visible-band, laser module which is intended for optical system adjustment (the visible laser pointer beam is almost coaxial with the IR smoke detection beam).

Fire and fault messages are transmitted via a wireless channel to the control panel which is part of the "SAGITTARIUS" Wireless Intelligent Fire & Security System.

The detector is powered by four CR123A batteries which work alternately.

Power supply can be provided, optionally, by an external 9-27 V power supply voltage.

The detector is fitted with an external antenna port for operation under bad radio signal's transmission conditions.

APPLICATIONS

The detector is intended for use in large-sized/high-ceilinged premises with adjustable and non-adjustable climatic conditions.

DETECTOR DESIGN

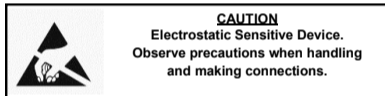
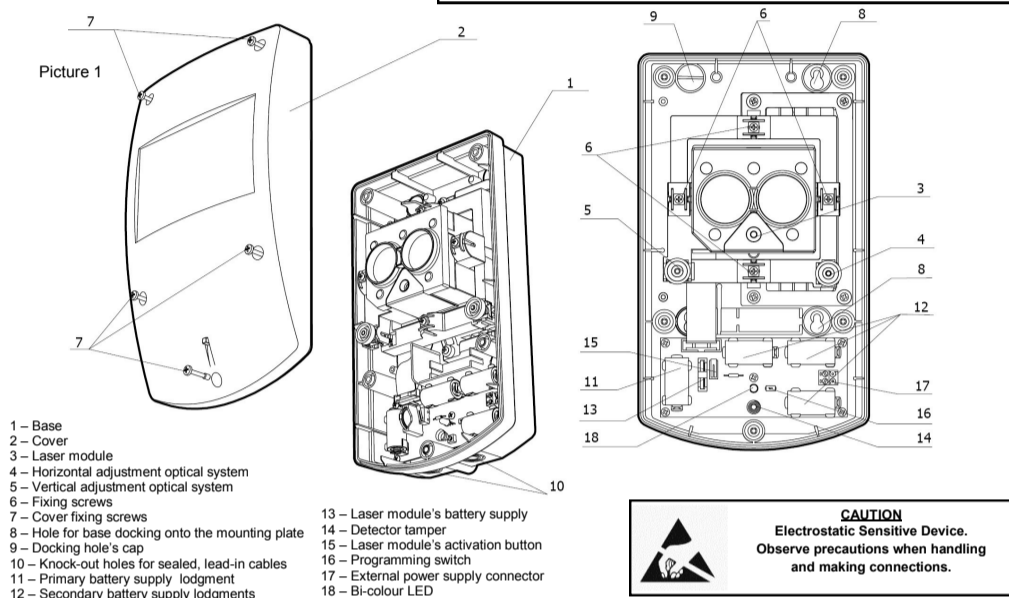
The detector consists of two primary units:

- the transmitter / receiver module (TRM) which generates a directional IR beam and receives its scattered reflected beam from the reflector module;

- the reflector module which reverses, by reflection, the direction of the IR beam.

SAFETY PRECAUTIONS

1. Safety instructions should be followed.
2. A visible-band laser module (Picture 1, number 3) is used for the detector's optical system adjustment; its average radiation power is less than 1 mW, nevertheless it must be avoided the exposure of the eyes to the laser beam.
3. Polarity must be observed while installing the batteries.
4. If the detector is power supplied by an external source do not install batteries and vice versa.



CHOOSING THE PLACE FOR DETECTOR'S INSTALLATION

The installation place of the transmitter/receiver and the reflector modules shall conform to applicable national and international standards and codes of practice, project documentation and to the following requirements:

- the transmitter/receiver and reflector modules shall be placed on major building structures not subject to displacement, vibrations or deformation.

The detection zone must remain free of objects at any time.

- The transmitter/receiver and reflector modules shall be placed on the same horizontal level.

- The adjustment range of the detection beam is +/- 6° on the vertical plane and +/- 10° on the horizontal plane. If the adjustment range must be extended, a mounting kit shall be used (not supplied with the product).

- The detector's design allows an exposure of background light from artificial and/or environmental light up to 12000 lx. To provide greater noise immunity, the TRM shall be mounted so that the angle between its optical axis and incident beams from the external source is greater than 10°.

- Reflectors shall be mounted on a surface perpendicular to the direction of the TRM's beam; a maximum inaccuracy of 15° is allowed, but not more. If the mounting surface of the reflectors does not meet these requirements, the TRM shall be mounted on mounting kit.

- With an operational range from 10 to 40 m one element of the reflector module shall be used.

- With an operational range from 40 to 80 m a single reflector module shall be used.

- With an operational range of more than 80 m two reflector modules shall be used.

DETECTOR INSTALLATION

1. The TRM, a reflector element or a reflector module shall be mounted in conformity to the project's layout. These are the options for TRM's and reflector module's installation:

- installation on a mounting plate (delivered with the product), previously fixed onto the wall;

- installation on a mounting kit, previously fixed onto the wall/ceiling.

The layouts for TRM's, reflector's and mounting plate's fixing are shown in Picture 2. Mounting kit's fixing layout is given its documentation.

2. Install the TRM following the instructions below:

- remove the docking hole's caps (Picture 1, number 9);

- dock the device's base (Picture 1, number 1) onto its mounting plate;

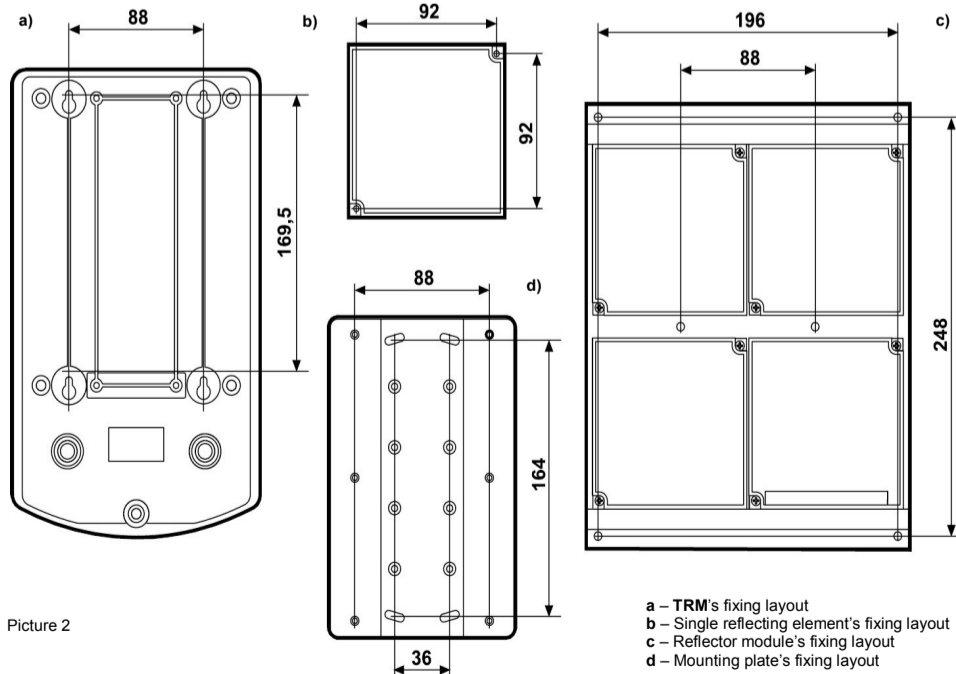
- re-insert the docking hole's caps to re-provide sealing to the device;

- if the detector is externally powered, connect the sealed, lead-in power supply cables to the device's connector (Picture 1, number 17);

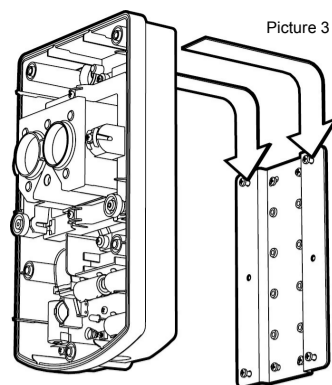
- if using an external antenna, follow the instructions in its manual.

3. Install the required reflector element or the required reflector module.

4. TRM's installation on its mounting plate is shown in Picture 3.



a - TRM's fixing layout
b - Single reflecting element's fixing layout
c - Reflector module's fixing layout
d - Mounting plate's fixing layout



Picture 3 **ADJUSTMENT, CHECKING AND CONNECTION QUALITY ASSESSMENT**

The device's adjustment procedure is based on the alignment of the laser beam's spot with the reflectors elements or module (see Picture 4):

1. Supply power to the TRM; for this do the following:
 - for autonomous power supply install the primary battery (Picture 1, number 11) and the secondary batteries (Picture 1, number 12) or
 - for external power supply just activate it (be sure it is connected).
 - insert the laser module's battery (Picture 1, number 13).
2. Check the indication of the TRM's "transient mode" through the LED (Picture 1, number 18); indication is 10 green blinks.
3. Activate the laser module: after having powered the detector, switch over the programming switch to "1", press for a few seconds the laser activation button (Picture 1, number 15) and the detector's tamper (Picture 1, number 14); release successively the laser button but keep the tamper pressed; after a few seconds release the tamper too: the laser module will be activated after a few seconds: laser beam's spot will blink for 0.3 second, with pauses between blinks reducing from 2 to 0.6 seconds.

4. Point the laser's beam spot to the reflectors by using the adjustment wheels (Picture 1, number 4 and 5). The detector's IR beam diameter is nearly 3 meters at 100 meters distance: this is why it is not necessary to point exactly the laser's beam spot to the central position of the reflectors. If the laser's beam spot falls into the reflector's area is enough (Picture 4).

5. After adjustment is completed tight the fixing screws (Picture 1, number 6).

6. Switch off the laser module: press the detector's tamper until the LED glows green, then release it.

7. Check there is no continuous red LED glow or that there aren't 0.3 second red blinks every 30 seconds; if these LED signals are present, repeat the adjustment process, if not write the adjustment settings into the detector's memory: press and hold the tamper: contemporarily there will be a green LED glow for 2 seconds, followed by a red LED glow: when the red LED glows, release the tamper.

8. For connection quality assessment do the following:

- press the tamper: there will be a green LED glow for 10 seconds; when the glow ceases release the tamper.

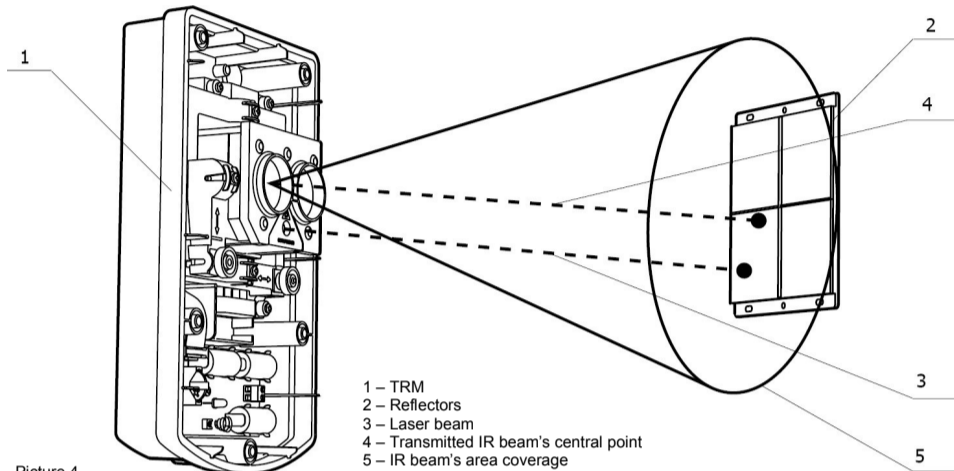
- Switch over the programming switch (Picture 1, number 16) to position "ON".

- Connection quality between the detector and the control panel will be indicated by the LED indicator as per Table 1.

- If connection quality is lower than "good" either choose another place for the detector or use an external antenna for it.

9. To end quality assessment mode switch over the programming switch to "1".

In order to activate detector's "operating mode", press the laser activation button for some seconds, then close the TRM with its cover: after 10 seconds the detector is operative. It is recommended not to interfere with the detector's IR beam while closing the cover.



Picture 4

DETECTOR TEST

1. Reset the system from the control panel. Check control panel's standby mode and detector's standby mode: for the detector, no red and / or green LED blinks should be present.

2. To test detector's "Fault" message's generation capability, fully cover reflector's surface for more than 4 seconds. Check that the control panel and the detector have entered into "Fault" mode: for the detector there should be 0.5 second sequential red and green LED blinks.

3. Reset the system from the control panel again. Check control panel's standby mode and detector's standby mode as per point 1.

4. To test detector's "Fire" message's generation capability, partially cover 80-90% of the reflector's surface. For this purpose use the calibrated scales on a single reflector and on a reflector module.

5. The upper scale is used if one reflector module is used; the lower scale is used if two reflector modules are used.

6. Make sure that the control panel and the detector have entered into "Fire" mode: for the detector there should be 0.5 second / 0.5 second continuous red LED glow.

Note: apart from reflectors, any other object that gets into the detector's transmitted IR path can influence the reflected signal: this can cause problems when the detector is in standby mode, even if the reflectors are totally covered by the transmitted IR path.

7. Reset the system from the control panel. Check control panel's standby mode and detector's standby mode: for the detector, no red and / or green LED blinks should be present.

DETECTOR'S POWER SUPPLY CHECK

A battery replacement message, if this event occurs, is automatically transmitted to the control panel.

To check whether battery replacement is required, monitor TRM's visual indication. See Table 2 for the corresponding visual indication pattern.

It is recommended to replace ALL four batteries altogether, after the discharge of any battery.

TECHNICAL SPECIFICATIONS	
Detection range	from 10m to 100m
Adjustment range vertical	+6 deg
Adjustment range horizontal	+10 deg
Primary battery type	CR 123A - 1 pcs
Secondary battery type	CR 123A - 3 pcs
External power supply (optional)	9 - 27 Vdc
Current consumption in standby	< 100 uA
Operating temperature	-30 + 50 °C
Operating frequency (standard)	868 MHz
Operating frequency (optional)	434 MHz
Operating frequency channels	7
Modulation type	FSK
Radiated power	5dBm (3mW) typical
Communication range	200m in open space
Weight and Dimensions	900gr 270x160x105 mm
IP Rating	IP65

Connection quality assessment	Indication mode
"FAIL"	R R
"POOR"	R
"GOOD"	G
"EXCELLENT"	G G

(R = one red blink G = one green blink)

Battery assessment	Indication mode
Normal	off
Replace primary bat.	R: on: 0.1 sec / off: 10 sec
Replace secondary bat.	G: on: 0.1 sec / off: 10 sec

R - short red blinks G - short green blinks



ATTENTION!
IT IS NOT ALLOWED TO USE SIMULTANEOUSLY EXTERNAL POWER SUPPLY TOGETHER WITH THE INSTALLED BATTERIES SUPPLY DURING DETECTOR'S WORK!!!

WARNINGS AND LIMITATIONS

Our sensors use high quality electronic components and plastic materials that are highly resistant to environmental deterioration. However, after 10 years of continuous operation, it is advisable to replace the sensors in order to minimize the risk of reduced performance caused by external factors. Ensure that these sensors are only used with compatible control panels. Detection systems must be checked, serviced and maintained on a regular basis to confirm correct operation.

Smoke sensors may respond differently to various kinds of smoke particles, thus application advice should be sought for special risks. Sensors cannot respond correctly if barriers exist between them and the fire location and may be affected by special environmental conditions. Refer to and follow national codes of practice and other internationally recognized fire engineering standards. Appropriate risk assessment should be carried out initially to determine correct design criteria and updated periodically.

WARRANTY

All devices are supplied with the benefit of a limited 3 Year Warranty relating to faulty materials or manufacturing defects effective from the production date indicated on each product. This warranty is invalidated by mechanical or electrical damage caused in the field by incorrect handling or usage. Product must be returned via your authorized supplier for repair or replacement together with full information on any problem identified.

Full details on our Warranty & Products Returns Policy can be obtained upon request.