

Satel®

SILVER

Digital dual technology motion detector

CE



Firmware version 2.00

silver_en 02/20

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IMPORTANT

The device should be installed by qualified personnel.

Prior to installation, please read carefully this manual.

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

SATEL aims to continually improve the quality of its products, which may result in changes in their technical specifications and software. Current information about the changes being introduced is available on our website.

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The following symbols may be used in this manual:



- note,



- caution.

CONTENTS

1.	Features	2
2.	Description.....	2
	Operation modes	2
	Anti-mask feature	2
	Supervision features	2
	LED indicator	3
	Alarm memory	3
3.	Electronics board.....	3
4.	Selecting a mounting location.....	5
5.	Installation	5
6.	Start-up and walk test.....	9
	Separate testing of sensors	10
7.	Specifications	10

The SILVER detector detects movement in the protected area. This manual applies to the detector with electronics version H.

1. Features

- Motion detection with two sensors: passive infrared sensor (PIR) and microwave sensor (MW).
- Adjustable detection sensitivity of both sensors.
- Capability of separate sensor testing.
- Digital motion detection algorithm.
- Digital temperature compensation.
- Selectable operation mode: basic or advanced.
- Microwave based anti-mask feature.
- Built-in end-of-line resistors (2EOL: 2 x 1.1 k Ω).
- Bi-color LED indicator.
- Remote LED enable/disable.
- Alarm memory.
- Supervision of motion detection system and supply voltage.
- Tamper protection against cover removal.
- Adjustable mounting bracket included.

2. Description

Operation modes

Basic – the detector reports alarm when both sensors have detected motion within a time period shorter than 3 second.

Advanced – the detector reports alarm when:

- both sensors have detected motion within a time period shorter than 3 second,
- within a time period shorter than 3 second, the microwave sensor has detected motion, and the PIR sensor has detected some small changes in coverage area, insufficient however to be recognized as motion,
- within 15 minutes, the microwave sensor has detected motion 16 times, though the PIR sensor has not detected any motion.

Anti-mask feature

Detection by the microwave sensor of an object moving at a distance of 10-20 centimeters from the detector is interpreted as an attempt to mask the detector and results in activation of anti-mask output for 2 seconds. Objects permeable to microwaves, but isolating the infrared radiation are not detected by the anti-mask feature.



The anti-mask feature does not meet the EN 50131-2-4 requirements.

Supervision features

In the event of the voltage drop below 9 V ($\pm 5\%$) for more than 2 seconds or the motion detection system failure, the detector will signal a trouble. The trouble is indicated by the activation of alarm output and the steady red light of LED indicator. The trouble signaling will continue as long as the trouble persists.

LED indicator

The LEDs indicate:

- warm-up – flashing alternately red and green for about 30 seconds;
- motion detected by one of the sensors – lights green for 2 seconds;
- alarm – lights red for 2 seconds;
- alarm memory – flashing red;
- trouble – lights red for entire duration of the trouble.

Enabling the LED by using a jumper

If you put a jumper across the LED pins as shown in Fig. 6, the LED will be enabled, i.e. it will indicate the above described events (the LED can't be enabled/disabled remotely). If you put a jumper across the LED pins as shown in Fig. 7, the LED will be disabled, but it can be enabled/disabled remotely.

Remote LED enable/disable

The LED terminal is provided to allow remote LED enable/disable. When the terminal is connected to common ground, the LED is enabled. When the terminal is disconnected from common ground, the LED is disabled.

If the detector is used in the INTEGRA / INTEGRA Plus alarm system, you can connect to the terminal an OC type control panel output programmed e.g. as "Zone test status" or "BI switch".

Alarm memory

If the LED is enabled, the detector can indicate the alarm memory. The MEM terminal is provided to allow the alarm memory enable/disable. The alarm memory is enabled, when the terminal is connected to the common ground. The alarm memory is disabled, when the terminal is disconnected from the common ground.

If the alarm memory is enabled and an alarm occurs, the LED will start flashing red. Indication of the alarm memory will continue until the alarm memory is enabled again (the MEM terminal is connected to the common ground). Disabling the alarm memory will not stop the alarm memory indication.

If the detector is used in the INTEGRA / INTEGRA Plus alarm system, you can connect to the MEM terminal an OC type control panel output programmed e.g. as "Armed status".

3. Electronics board



Do not touch the pyroelectric sensor, so as not to soil it.

① terminal blocks:

- WRN** - anti-mask output (NC relay).
- TMP** - tamper output (NC).
- COM** - common ground.
- 12V** - power input.
- NC** - alarm output (NC relay).
- LED** - enable/disable the LED indicator.
- MEM** - enable/disable the alarm memory.

② pins for configuration of the detector outputs. Available settings are shown in the figures:
2 – built-in resistors are used – connect the detector outputs as shown in Fig. 13 or Fig. 14,

3 – built-in resistors are not used – connect the detector outputs as shown in Fig. 12.

③ microwave sensor.

④ bi-color LED indicator.

⑤ detector configuration pins:

MODE- selecting the detector operation mode:

basic mode – place the jumper as shown in Fig. 4,

advanced mode – place the jumper as shown in Fig. 5.

LED - enable/disable the LED indicator.

⑥ PIR sensor (dual element pyrosensor).

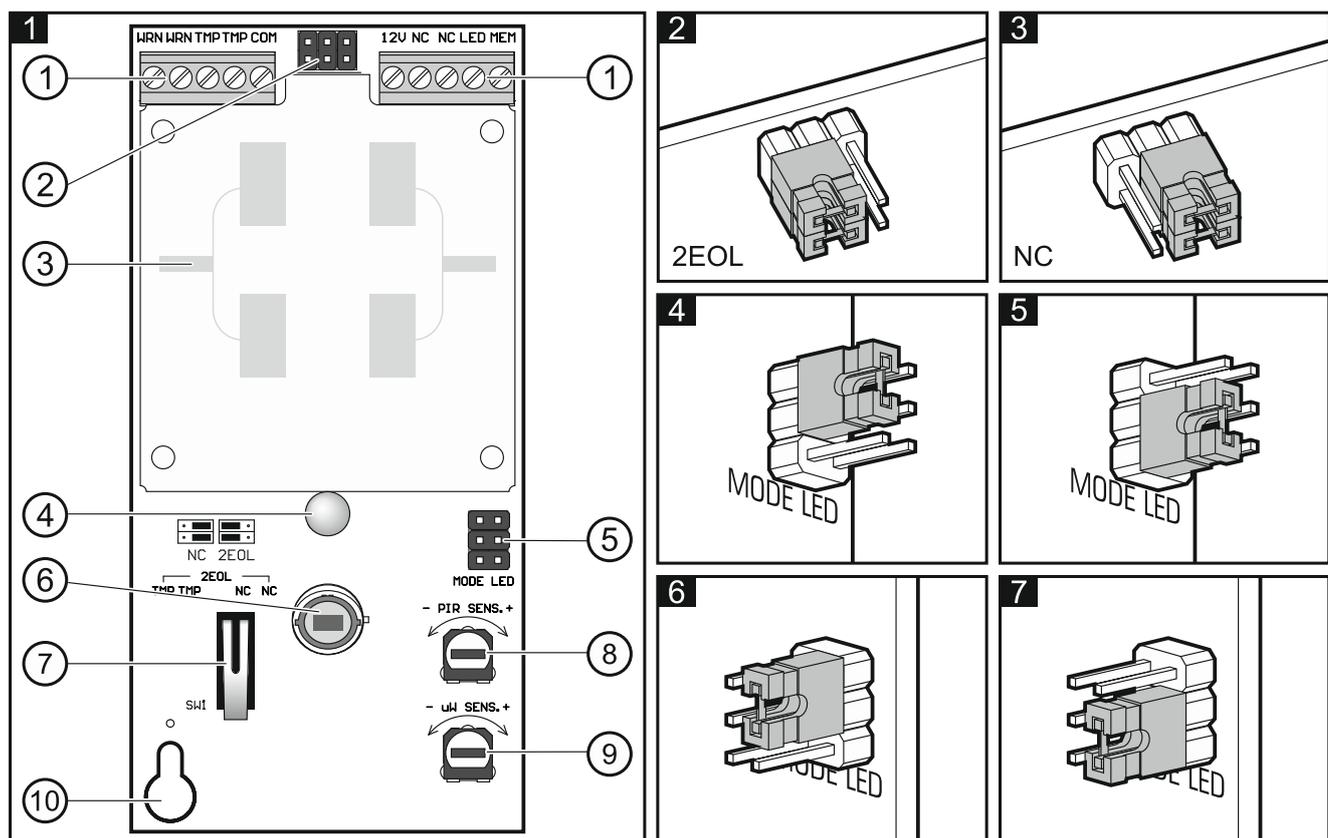
⑦ tamper switch.

⑧ potentiometer for adjustment of PIR sensor sensitivity.

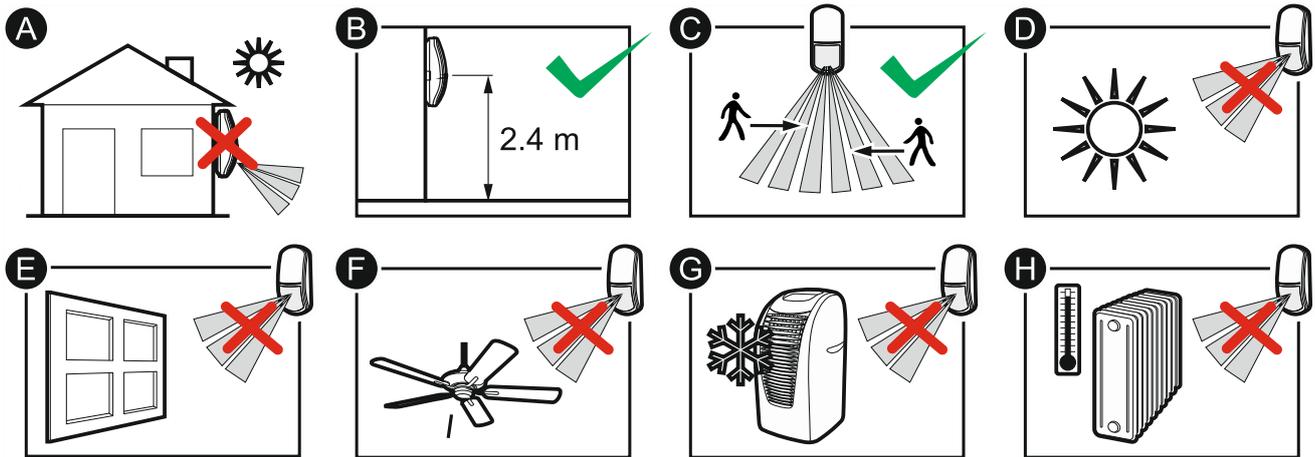
⑨ potentiometer for adjustment of the microwave sensor sensitivity.

i | *Keep in mind that microwaves can penetrate e.g. glass, plaster walls, non-metal doors, etc.*

⑩ fixing screw hole.



4. Selecting a mounting location



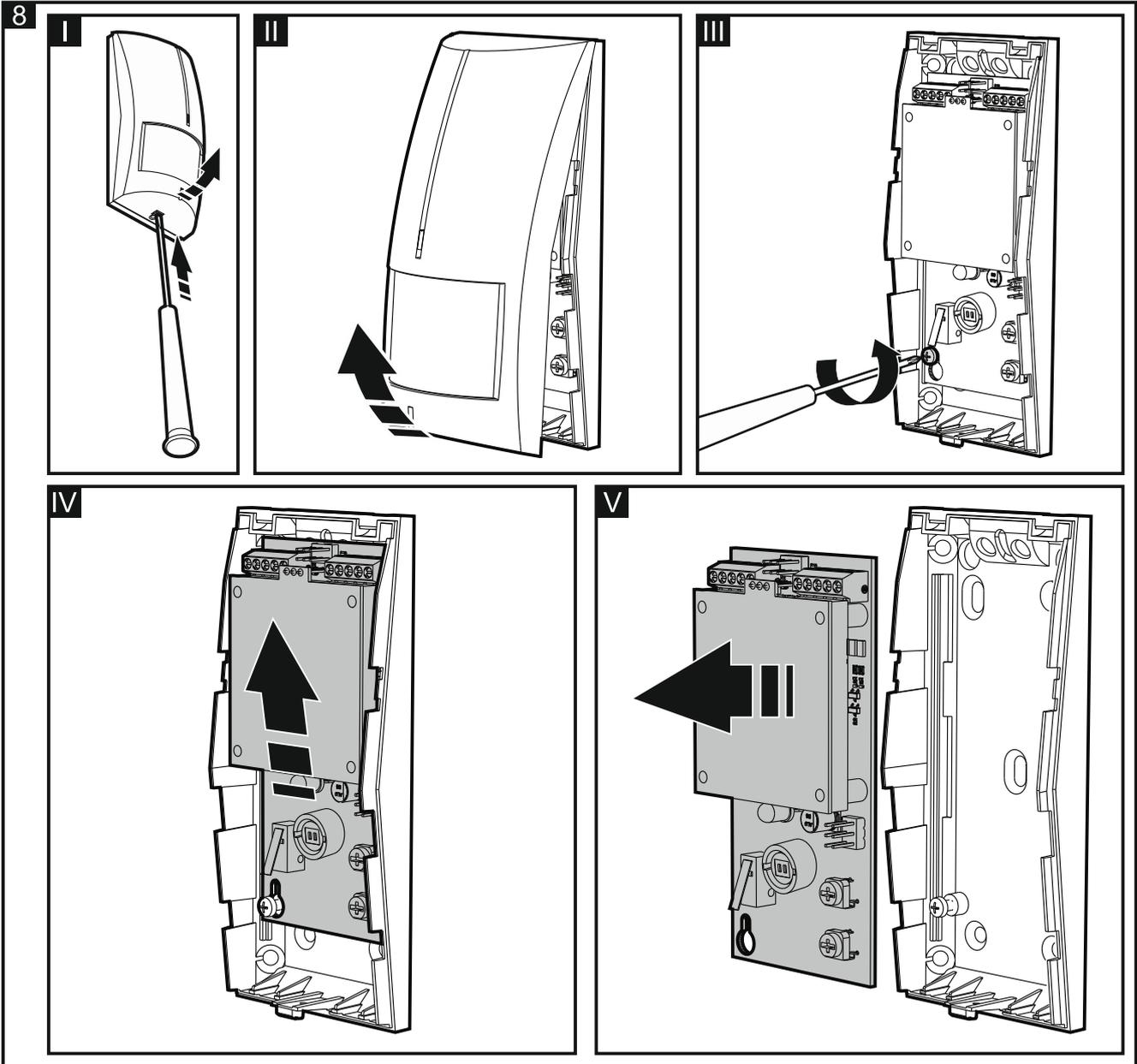
- Do not install the detector outdoors (A).
- Install the detector at the recommended height (B).
- When choosing the installation location, keep in mind that the detector performance will be the best where the expected direction of the intruder movement will be across the coverage pattern (C).
- Do not install the detector in places where it will be exposed to direct sunlight (D) or light reflected from other objects (E).
- Do not point the detector towards fans (F), air conditioners (G) or heat sources (H).

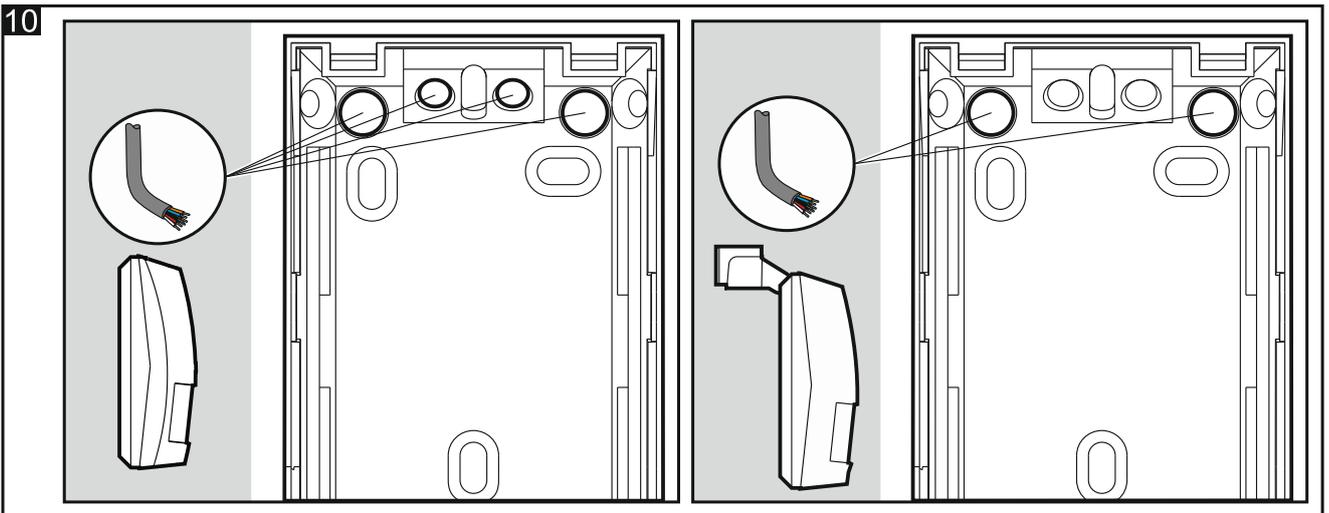
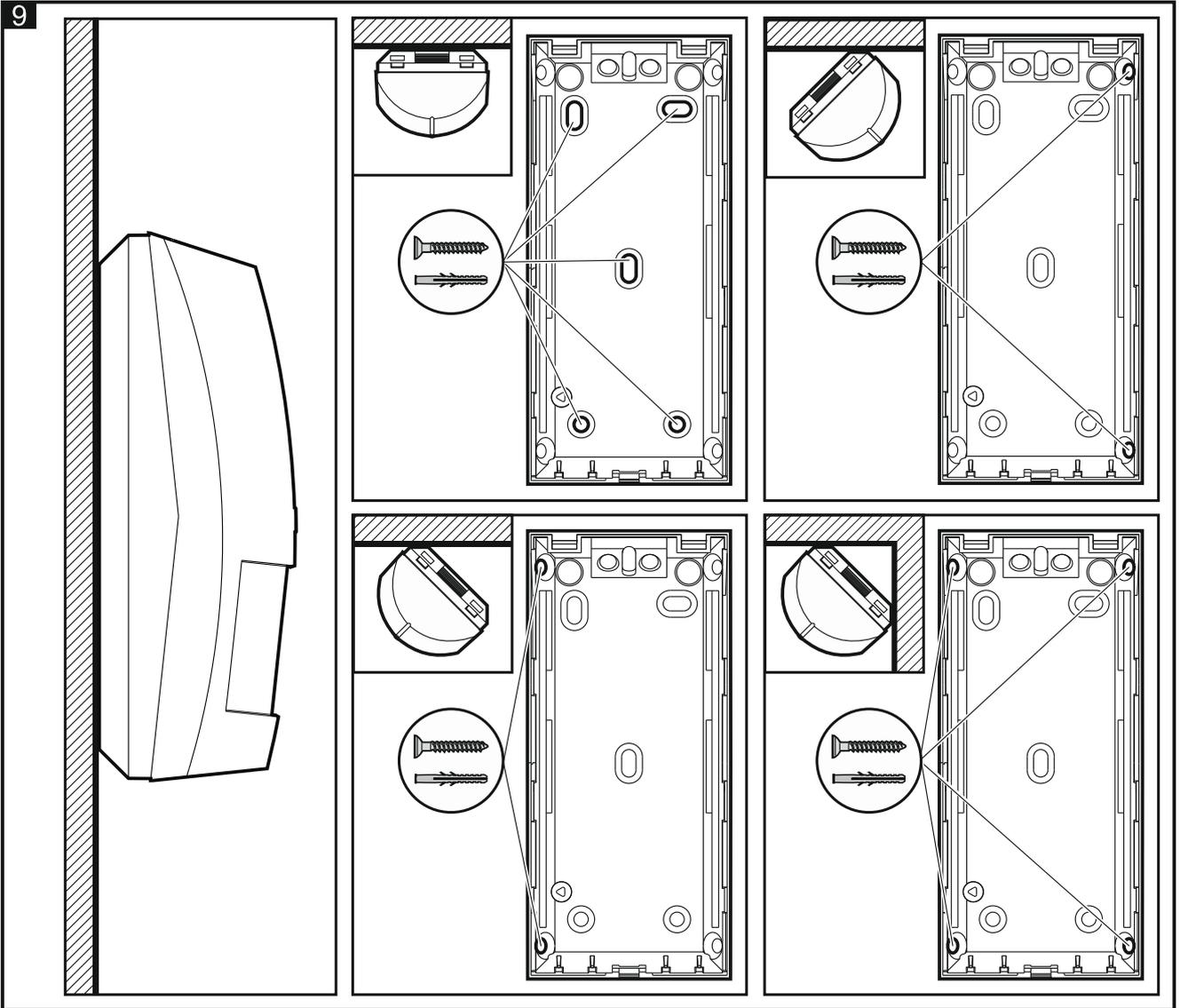
5. Installation

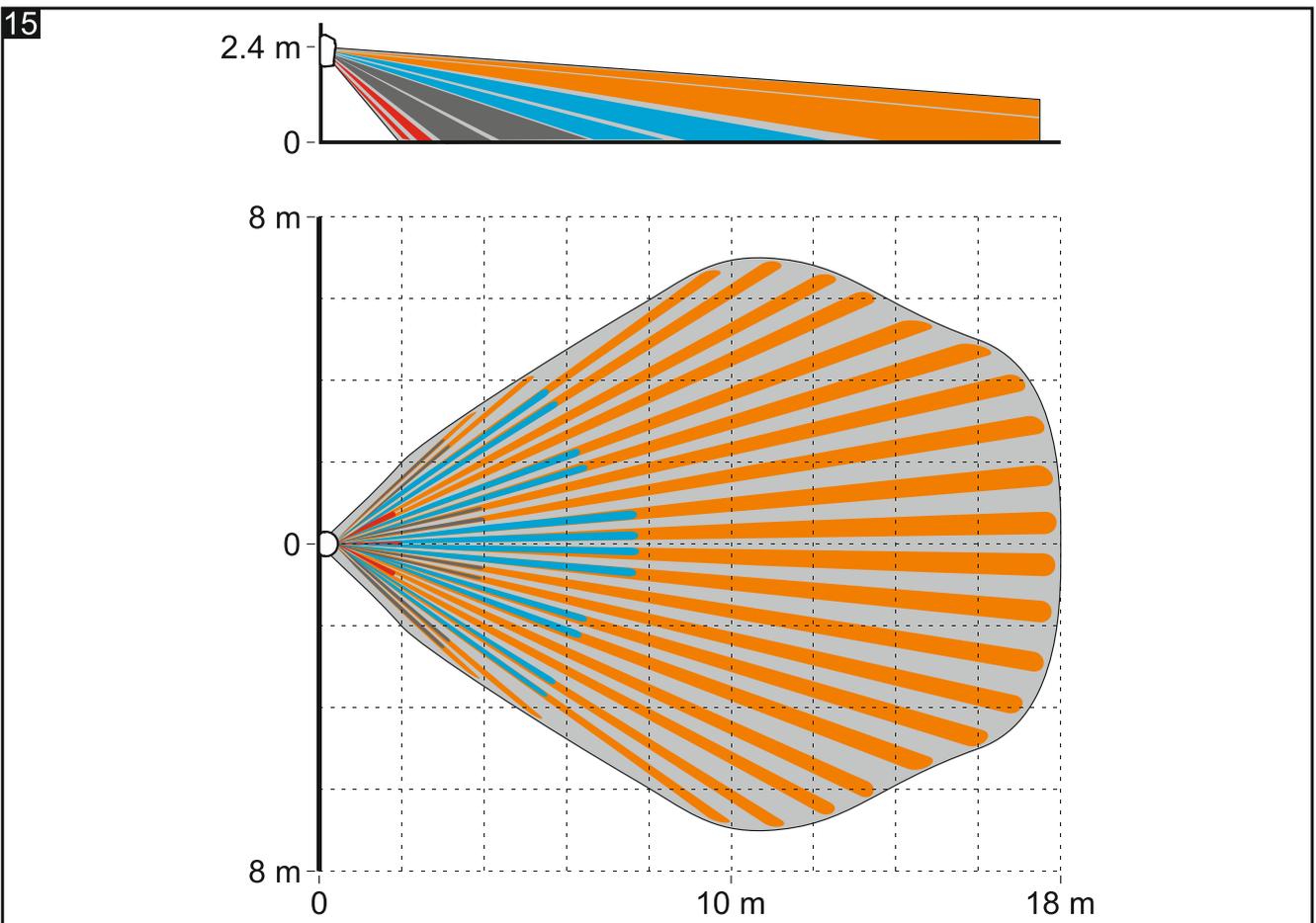
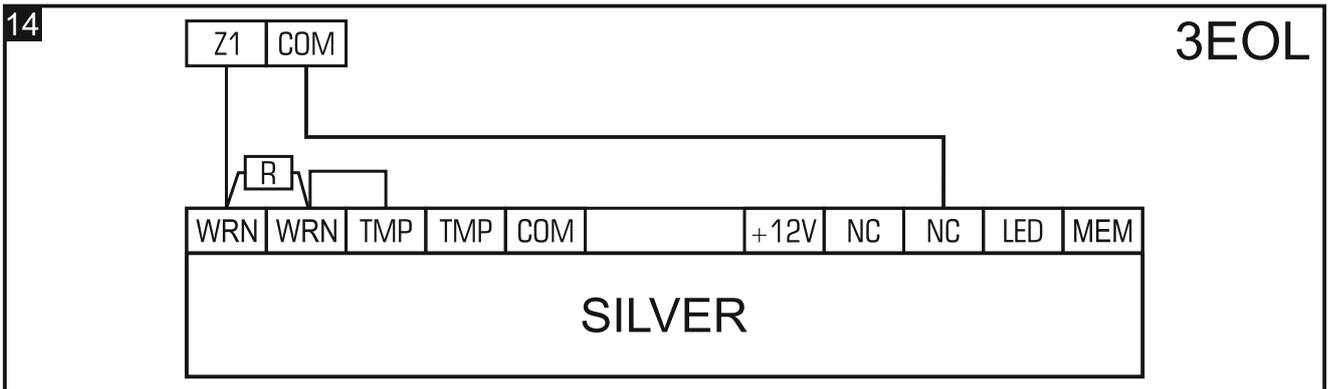
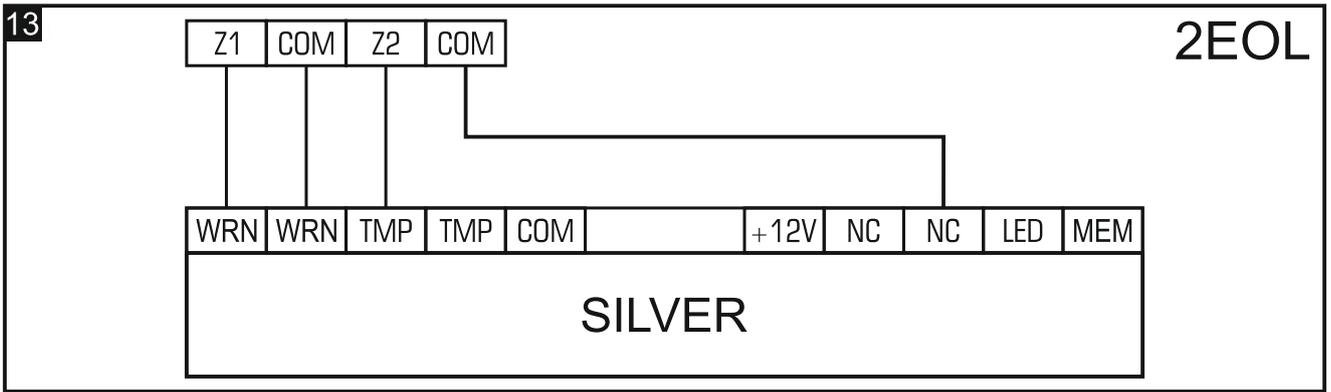


Disconnect power before making any electrical connections.

1. Remove the front cover (Fig. 8).
2. Remove the electronics board.
3. Make the openings for screws (Fig. 9 or Fig. 11) and cable (Fig. 10) in the enclosure base.
4. Pass the cable through the prepared opening (Fig. 10).
5. Secure the enclosure base to the wall (Fig. 9) or a bracket fastened with screws to the wall or ceiling (Fig. 11). The wall plugs (anchors) delivered with the device are intended for concrete, brick, etc. For other types of surface (drywall, styrofoam), use the appropriately selected wall plugs.
6. Fasten the electronics board.
7. Connect the wires to the corresponding terminals.
8. Configure the detector settings.
9. Replace the cover.







6. Start-up and walk test



The LED should be enabled during the walk test (see "LED indicator").

1. Power on the detector. The LEDs will flash alternately red and green for 30 seconds to indicate warm-up of the detector.
2. When the LED stops flashing, check that moving within the detector coverage area will make the LED turn on red. Figure 15 shows the maximum coverage area of a detector installed at a height of 2.4 m.

Separate testing of sensors

To test the microwave sensor, do the following:

1. Before you power on the detector, place the jumper across the MODE pins as shown in Fig. 4.
2. Power on the detector and, during the warm-up period, remove the jumper from the MODE pins. After completion of the warm-up, the LED should flash green every 3 seconds.
3. Check that moving within the coverage area will make the LED turn on green.

To test the PIR sensor, do the following:

1. Before you power on the detector, remove the jumper from the MODE pins.
2. Power on the detector and, during the warm-up period, place the jumper across the MODE pins as shown in Fig. 4. After completion of the warm-up, the LED should flash red every 3 seconds.
3. Check that moving within the coverage area will make the LED turn on red.



The sensor separate testing mode is automatically exited after 20 minutes.

7. Specifications

Supply voltage	12 VDC \pm 15%
Standby current consumption	18 mA
Maximum current consumption	25 mA
EOL resistors	2 x 1.1 k Ω
Outputs	
alarm (NC relay, resistive load).....	40 mA / 24 VDC
anti-mask (NC relay, resistive load)	40 mA / 24 VDC
tamper (NC)	100 mA / 30 VDC
Relay contact resistance	
alarm output.....	34 Ω
anti-mask output	34 Ω
Microwave frequency	10.525 GHz
Detectable speed	0.3...3 m/s
Alarm signaling period.....	2 s
Warm-up period	30 s
Recommended installation height	2.4 m
Coverage area	18 m x 12 m, 88°
Security grade according to EN 50131-2-4	Grade 2
Compliance with standards	EN 50131-1, EN 50131-2-4, EN 50130-4, EN 50130-5
Environmental class according to EN 50130-5	II
Operating temperature range	-30°C...+55°C
Maximum humidity	93 \pm 3%

Dimensions62 x 136 x 49 mm

Weight..... 126 g