DIGITAL DUAL TECHNOLOGY
MOTION DETECTOR

COBALT
COBALT PLUS
COBALT PRO

cobalt_ewa_en 05/09

The COBALT digital dual technology motion detectors are designed for operation in intruder alarm systems. The detectors combine a microwave (MW) sensor and a passive infrared (PIR) sensor. The COBALT and COBALT Plus detectors use a dual element pyrosensor, and the COBALT Pro detector uses a quad one. Additionally, the MW sensor in the COBALT Plus and COBALT Pro detectors performs the anti-masking function.

The detector monitors the supply voltage. If the voltage drops below 9 V (±5%) for more than 2 seconds, the detector will signal a trouble by activation of the alarm relay and by steady light of the LED indicator. Restoration of a minimum 9 V (±5%) voltage will turn the trouble signaling off.

For 30 seconds after power-up, the detector remains in the starting state, which is signaled by alternate blinking of the LED indicator. Only after this time has elapsed, the detector will be ready to work.

1. Detector operation modes

The detector can operate in two modes: **basic** or **microwave counting**. The operating mode can be set by means of the MODE pins (see: ELECTRONICS BOARD DESCRIPTION).

Basic mode

The detector will only generate an alarm if motion is detected by both sensors. The sensor (PIR or MW) which detects the motion first will start a 10-second time period during which the other sensor must also detect the motion for the alarm to be generated. If the other sensor fails to confirm the alarm state within 10 seconds of the motion being detected by the first sensor, no alarm will be generated by the detector.

Microwave counting mode

The detector will generate an alarm when motion is detected by both sensors and also when the MW sensor is activated 16 times in less than 30 minutes without activation of the PIR sensor.

2. Anti-Masking

The anti-masking function performed by the COBALT Plus and COBALT Pro microwave sensor makes it possible to detect objects reflecting MW radiation and moving around at a small distance (up to 10-20 centimeters) from the detector. Thus any attempts to cover the detector by using such objects can be prevented. The anti-masking function does not protect the detector from being covered by an object letting the microwaves pass through, but stopping the infrared radiation. The results of covering the detector by material letting the microwaves through can be avoided by using the microwave counting mode (the MODE pins open).

3. Description of electronics board

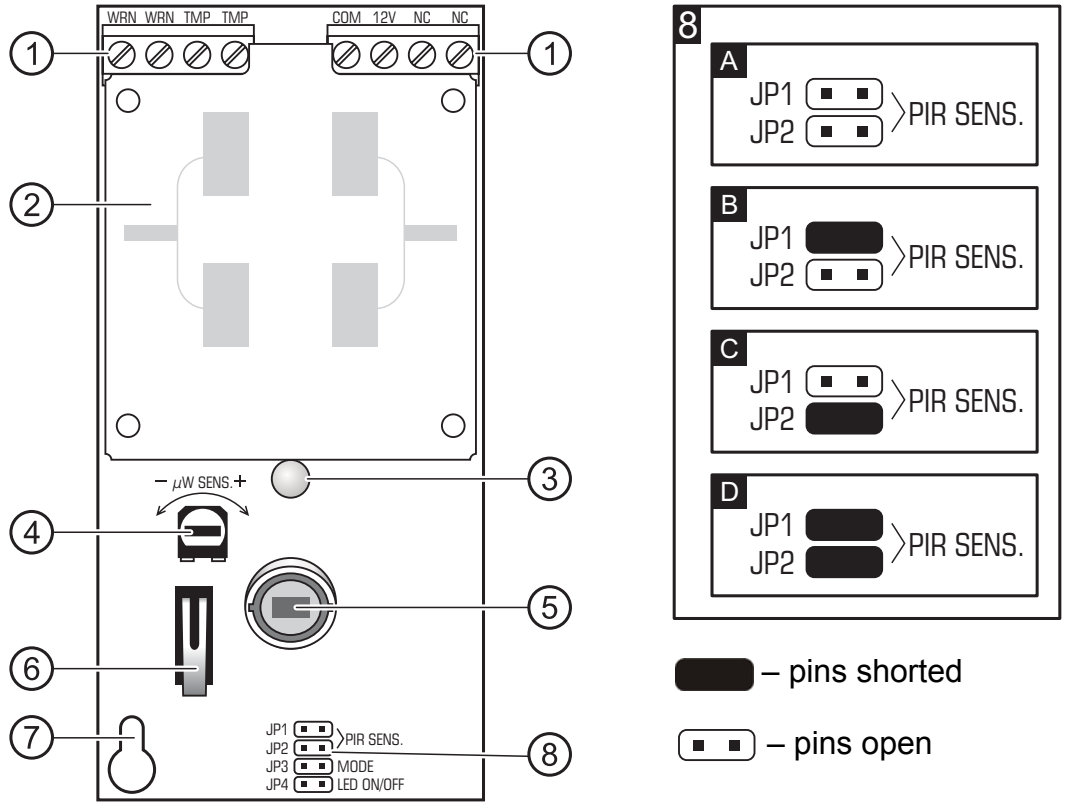

Fig. 1. View of electronics board and setting the PIR sensor sensitivity (A – low sensitivity, B and C – medium sensitivity, D – high sensitivity).

Explanations for Figure 1:

1 - terminals:
- **WRN** - anti-masking relay (NC) [only COBALT Plus and COBALT Pro];
- **TMP** - tamper contact (NC);
- **COM** - common ground;
- **12V** - power supply input;
- **NC** - alarm relay (NC).

2 - microwave sensor.

3 - two-color LED indicating as follows:
- – alarm – LED lights up red for 2 seconds;
- – registering motion by the MW or PIR sensor – LED lights up green for 2 seconds;
- – starting state – LED blinking alternately red and green;
- – low supply voltage – LED lights red.

4 - potentiometer for sensitivity control of the microwave path.

Note: *The sensitivity of microwave path detection should be adjusted to the size of protected premises. Microwaves can pass through e.g. gypsum walls, doors, etc., which may generate false alarms.*

5 - pyroelectric sensor.

6 - tamper contact.

7 - mounting screw hole.

8 - detector configuration pins:

PIR SENS - setting PIR sensor sensitivity (see Fig. 1);

MODE - selecting the detector operation mode:

– pins shorted – basic mode;

– pins open – microwave counting mode.

LED ON/OFF - enabling/disabling the LED signaling. The signaling is enabled when the pins are shorted.

4. Lenses

An extra wide (EWA) lens is installed in the detector. Optionally, lenses with other characteristics (coverage patterns) can be purchased and installed.

Name	Description	Range	Angle of view
EWA	extra wide angle	15 m	141.2°
LR	long range with access zone monitoring	30 m	main beam – 3 m wide (at the end of range)
VB	vertical barrier	22.5 m	2.2 m wide (at the end of range)

Table 1. Available lenses.

Note: *The detector operating range should be selected to match the size of space where the detector will be installed. The size of the space along the main direction of detector positioning is not to be less than 1/3 the nominal range of the detector. Improper selection of the lens may cause excessive sensitivity and trigger false alarms.*

5. Installation

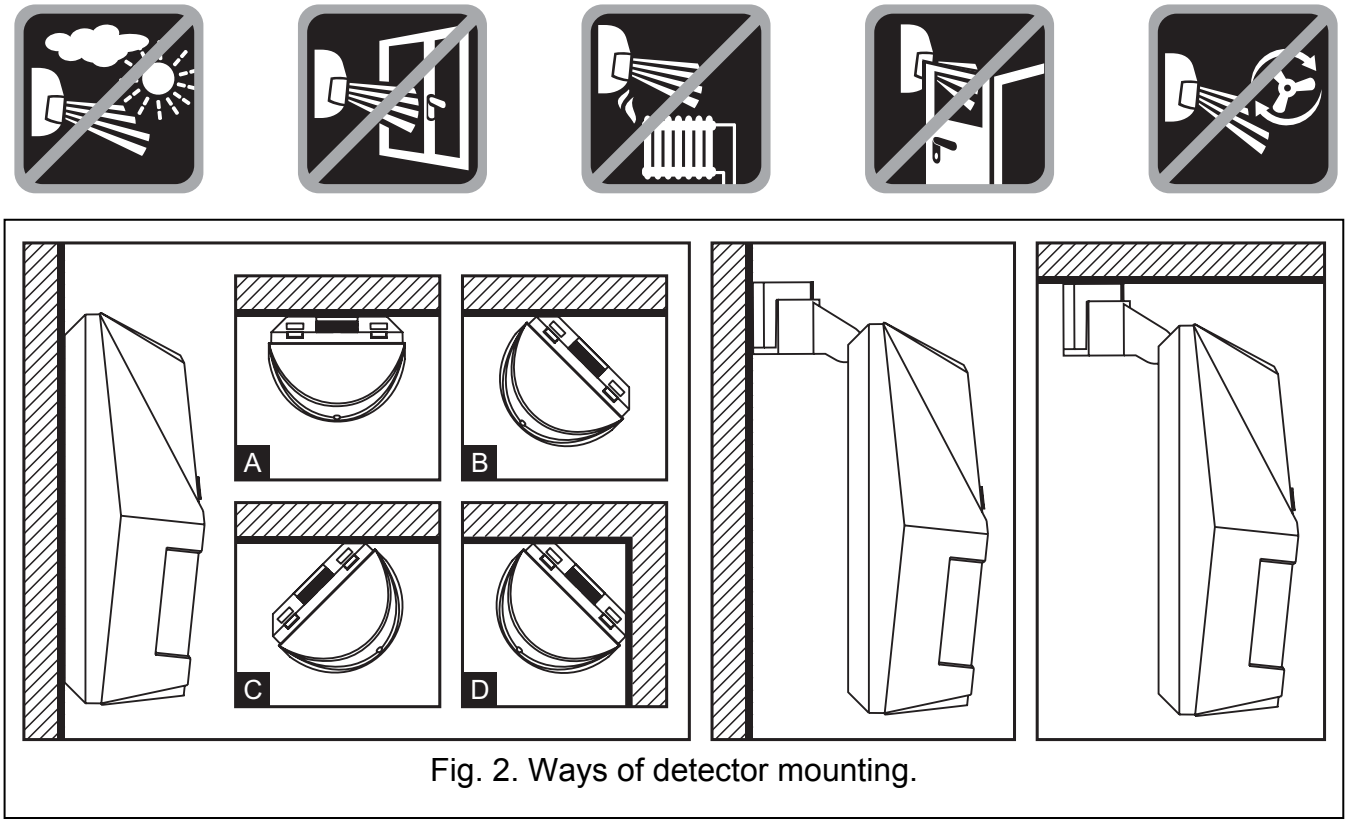

Fig. 2. Ways of detector mounting.

6. Specifications

Supply voltage		12 V DC ±15%
Average current consumption		24 mA ±10%
Microwave frequency		10.525 GHz
Relay contacts rated load (resistive)		40 mA / 16 V DC
Alarm signaling time		2 s
Range of PIR sensor with standard lens		15 m
Range of microwave sensor		from 3 to 20 m
Detectable speed		0.3...3 m/s
Environmental class		II
Operating temperature range		-10...+55 °C
Housing dimensions		63x136x49 mm
Recommended installation height		2.4 m
Weight	COBALT	136 g
	COBALT Plus	144 g
	COBALT Pro	145 g

The latest EC declaration of conformity and certificates are available for downloading on our website **www.satel.pl**

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