Carbon monoxide detector

DG-1 CO

Firmware version 3.02

LPG detector (propane-butane)

DG-1 LPG

Firmware version 3.00

Natural gas detector (methane)

DG-1 ME

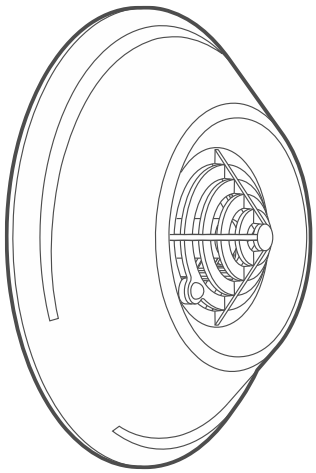
Firmware version 3.00

Soporific gases detector (e.g. chloroform vapors)

DG-1 TCM

Firmware version 3.00

EN



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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.

The rating plate of the device is located on the enclosure base.

Direct current (DC).

The device meets the requirements of the applicable EU directives.

The device is designed for indoor installation.

The device must not be disposed of with other municipal waste. It should be disposed of in accordance with the existing rules for environment protection (the device was placed on the market after 13 August 2005).

The device meets the technical regulations of the Eurasian Customs Union.

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.
Please visit us at:
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The declaration of conformity may be consulted at www.satel.pl/ce

Signs in this manual

Caution – information on the safety of users, devices, etc.

Note – suggestion or additional information.

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This manual covers the following detectors:

DG-1 CO – carbon monoxide detector,

DG-1 LPG – LPG detector (propane-butane),

DG-1 ME – natural gas detector (methane),

DG-1 TCM – soporific gases detector (e.g. chloroform vapors).

The detectors detect hazardous levels of the gases mentioned above. They are intended to be used as part of an alarm system. This manual applies to the detectors with electronics version 2.3.

1. Features

- Electrochemical gas sensor.
- Digital gas detection algorithm.
- Digital temperature compensation.
- Prealarm feature (DG-1 LPG and DG-1 ME only).
- LED indicator.
- Built-in sounder.
- Gas sensor supervision (not applicable to DG-1 CO).
- Supply voltage control.
- Tamper protection against enclosure opening.

2. Description

Gas detection

Table 1 shows the gas concentration levels to generate an alarm. In case of the DG-1 LPG and DG-1 ME detectors, prealarm is also indicated.

	DG-1 CO	DG-1 LPG	DG-1 ME	DG-1 TCM
Gas concentration to generate alarm	50 ppm for 75 minutes 100 ppm for 25 minutes 300 ppm for 1 minute	20% lower explosive limit		6000 ppm $CHCl_3$
Gas concentration to generate prealarm	-	10% lower explosive limit		-

Table 1.

The DG-1 TCM detector does not work selectively. Alarm may be generated not only by chloroform vapors, but also by vapors of paints, lacquers, or alcohol, as well as by other organic compounds (e.g. refrigerants, like freon (chlorofluorocarbon), tetrafluoroethane, or chlorodifluoromethane, but also by cat urine).

Alarm signaling

Alarm is indicated by:

- turning on the alarm output,
- flashing of the LED indicator,
- intermittent beep sound.

The alarm signaling will end when gas concentration drops below the hazardous level.

The sensor reaction is delayed, hence the end of signaling can take place even a few minutes after gas concentration dropped below the hazardous level.

Prelarm signaling

The DG-1 LPG and DG-1 ME detectors indicate prealarm by:

- flashing of the LED indicator,
- intermittent beep sound.

The alarm output remains turned off.

Prealarm signaling will end when gas concentration drops below the 10% lower explosive limit.

Trouble

The detector reports trouble when:

- gas sensor is faulty (not applicable to DG-1 CO).
- supply voltage is below 9 V (± 5%) for more than 2 seconds.

Trouble signaling

Trouble is indicated by:

- turning on the alarm output,
- flashing of the LED indicator,
- intermittent beep sound.

Trouble signaling will continue as long as the trouble exists.

LED indicator

The LED indicators differ in color depending on the detector:

DG-1 CO – red,

DG-1 LPG – green,

DG-1 ME – yellow,

DG-1 TCM – blue.

The LED indicates:

- warm-up – 3 short flashes,
- alarm – flashing (1 second ON, 1 second OFF),
- prealarm – short flash every 2 seconds (0.25 second ON, 1.75 seconds OFF),
- trouble – flashing rapidly (0.25 second ON, 0.25 second OFF).

Sounder

The sounder indicates:

- warm-up – 3 short beeps,
- alarm – intermittent beep sound (1 second ON, 1 second OFF),
- prealarm – short beep every 2 seconds (0.25 second ON, 1.75 seconds OFF),
- trouble – rapid intermittent beep sound (0.25 second ON, 0.25 second OFF).

You can disable the sounder by removing the jumper from the BUZ ON/OFF pins.

3. Electronics board

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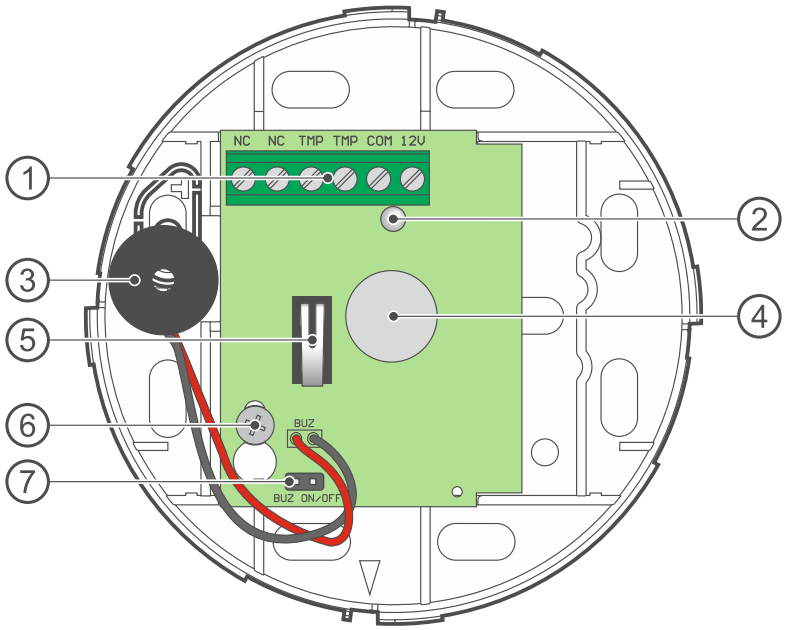


Figure 1 shows the inside of the gas detector after opening the enclosure.

① terminals:

NC - alarm output (NC relay),
TMP - tamper output (NC),
COM - common ground,
12V - power input.

The detector's alarm output must be connected to a zone programmed in the alarm system as a permanently armed zone.

② LED indicator.

③ sounder.

④ gas sensor. The sensors differ in shape depending on the detector.

⑤ tamper protection against enclosure opening.

⑥ screw to fasten the electronics board.

⑦ pins to enable / disable the sounder:

jumper ON – sounder enabled,
jumper OFF – sounder disabled.

4. Tips for installation

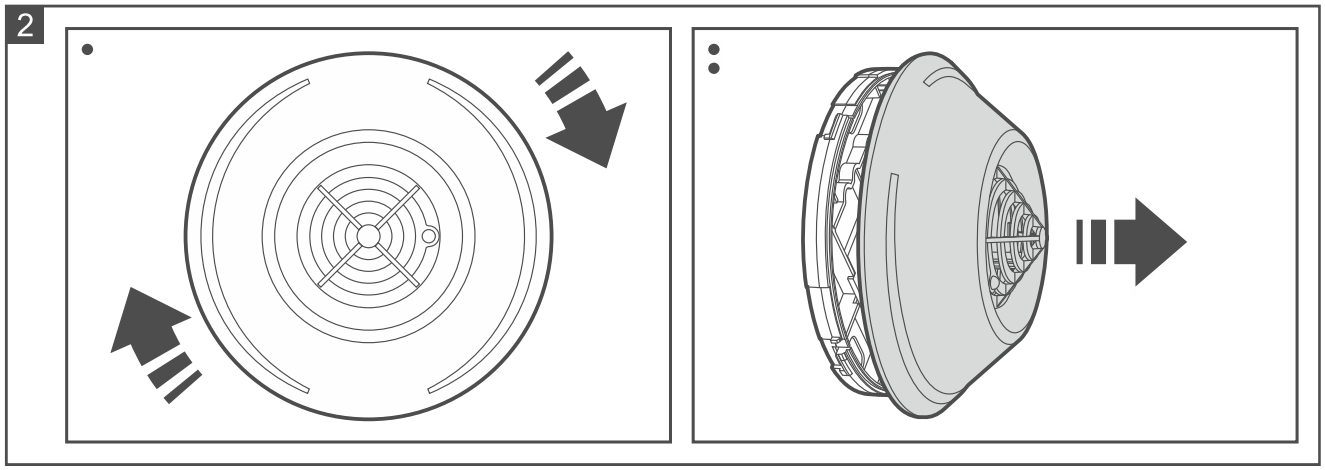
- The detector should be installed indoors, in spaces with normal air humidity.
- Do not install the detector outdoors.
- The DG-1 TCM and DG-1 LPG detectors should be installed at a low level, just above the floor.
- The DG-1 ME detector should be installed at a high level, just under the ceiling.
- The DG-1 CO detector should be installed at a height of about 1.5 meters.
- Do not install the detector in places where lacquers, glues, paint removers or aerosols are used. It may negatively impact the gas sensor operation.

- It is not recommended to install the detector in spaces where industrial type equipment is working.

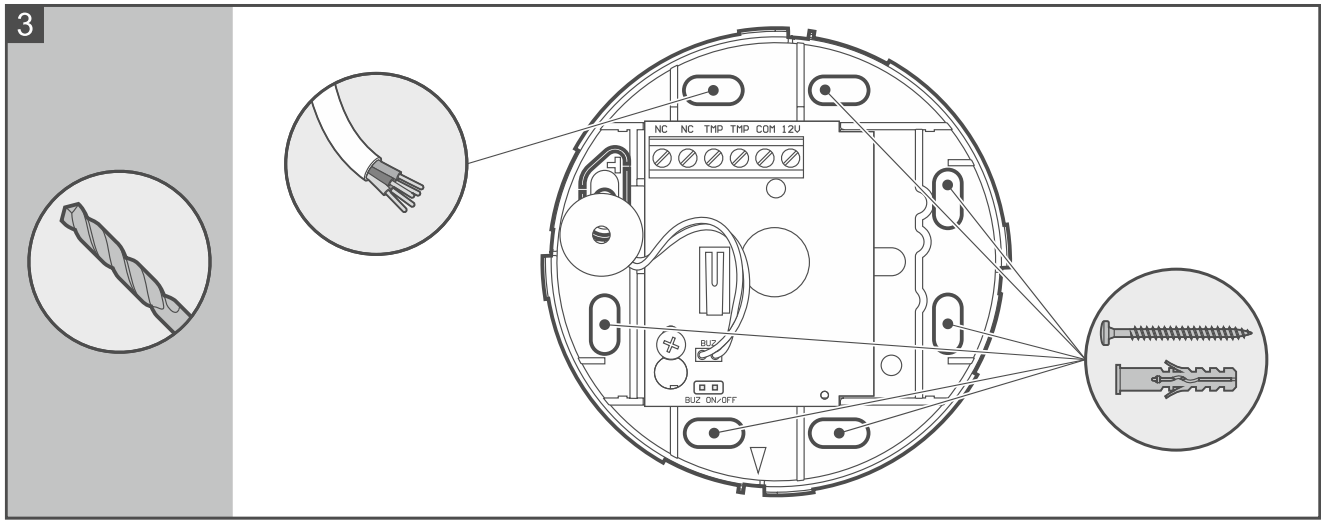
5. Installation

Disconnect power before making any electrical connections.

1. Turn the enclosure cover clockwise and remove it (Fig. 2).

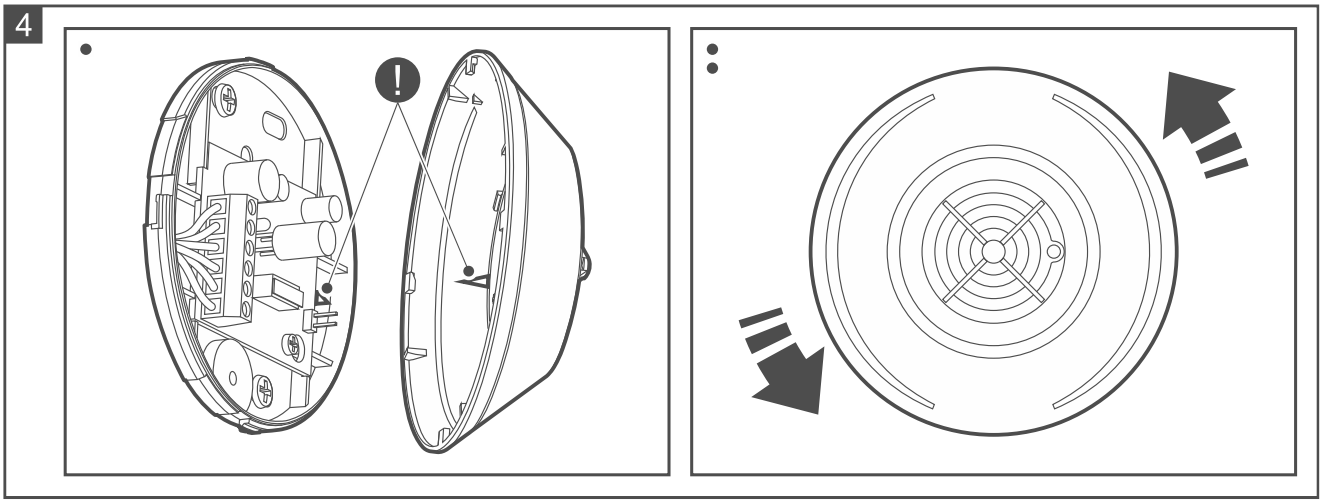


2. Drill the holes for screws and cable in the enclosure base (Fig. 3).



3. Place the enclosure base against the wall and mark the location of mounting holes.
4. Drill the holes in the wall for wall plugs (anchors). The wall plugs provided with the detector are intended for concrete or brick. For other types of surface (drywall, styrofoam), use other appropriately selected wall plugs.
5. Run the cable through the hole in the enclosure base.
6. Secure the enclosure base to the wall with screws.
7. Connect the wires to the corresponding terminals.
8. Remove the jumper from the BUZ ON/OFF pins if you want to disable the acoustic signaling.
9. Replace the detector cover so that the marks on the cover and the enclosure base are aligned and turn the cover counter-clockwise (Fig. 4).
10. Power up the detector. The start-up of the detector will be indicated by three LED flashes and three short beeps.

4



It is not allowed to test the detector by any improvised methods (e.g. by using lighter gas).

During the detector operation the gas sensor heats up.

In the first five minutes after power-up, the DG-1 TCM detector is stabilizing. It may indicate alarm during that time.

After power-up, the DG-1 CO detector requires approximately 2 minutes in clean air for calibration and must not be subjected to a gas test then. Warm-up is indicated by a short flash of the LED indicator every 2 seconds.

6. Specifications

Supply voltage ..... 12 VDC (±15%)

Standby current consumption:

- DG-1 CO ..... 7 mA
- DG-1 LPG ..... 35 mA
- DG-1 ME ..... 35 mA
- DG-1 TCM ..... 85 mA

Maximum current consumption:

- DG-1 CO ..... 16 mA
- DG-1 LPG ..... 45 mA
- DG-1 ME ..... 45 mA
- DG-1 TCM ..... 105 mA

Outputs

- alarm (NC relay, resistive load) ..... 40 mA / 16 VDC
- tamper (NC) ..... 100 mA / 30 VDC

Relay contact resistance (alarm output) ..... 26 Ω

Gas sensor life ..... 5 years (on average)

Operating temperature range ..... -10...+55°C

Dimensions ..... ø 97 x 36 mm

Weight

- DG-1 CO ..... 63 g
- DG-1 LPG ..... 62 g
- DG-1 ME ..... 63 g
- DG-1 TCM ..... 64 g