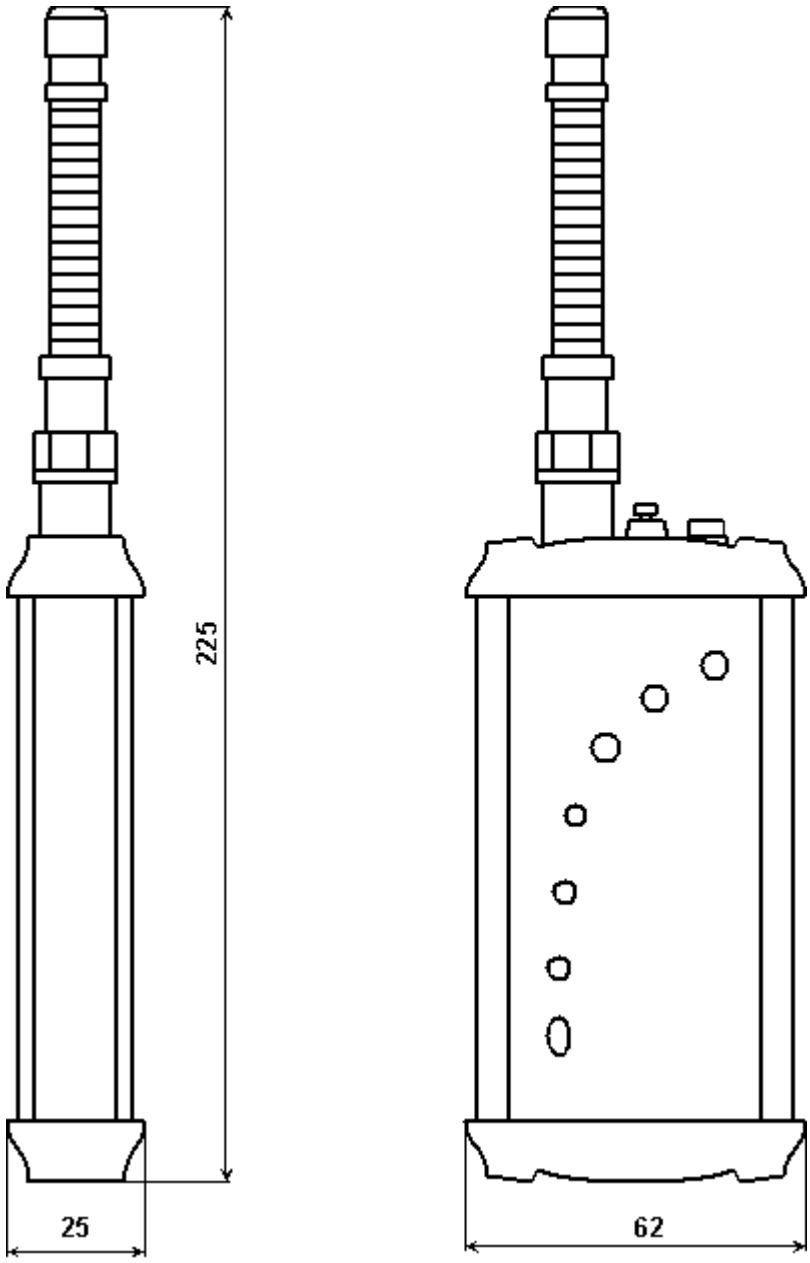
Technical Specifications and User Guide for the GD51 Detector

The GD51 detector is a device designed for an inspection of flammable gas leakage. Its main advantages are easy operation and application, small size and high mechanical resistance. The body is made of duralumin. The detector comprises a sensitive heated semiconductor sensor. The GD51 device allows to detect different flammable gases. Exceeding the preset concentration is indicated optically by six indicator lights and acoustically by a built-in siren. The device can be controlled (switched on) by a rocker switch.
The GD51 detector has fixed built-in batteries to power the device in operation. Charging the internal batteries is possible with a common AC adapter. The charging process is automatically controlled by the device electronics. The device is intended for use in normal environment as a simple portable indicator of flammable gases.



Technical Specifications:

Mechanical dimensions:	225 x 62 x 25 mm
Weight:	approx. 200 g
Detectable gas:	flammable gases such as methane, hydrogen, propane, butane, etc.
Max. detected concentration:	50% LEL, e.g. for methane = 2.5% of the volume
Standard calibration gas:	methane (LEL = 5% of the volume)
Detection instability:	+/- 10%
Warm-up time:	max. 1 minute
Time to steady the signal T(90):	max. 5 minutes
Recovery time:	max. 1 minute
Operating time when fully charged:	approx. 6 hours
Charging duration:	max. 12 hours
Charging adapter voltage:	6 V DC (or 9 or 12 V)
Operating environment:	without a danger of explosion, 5 to 35 °C
Humidity:	20 to 90 % RH
Storage environment:	10 to 30 °C, 20 to 80 % RH
Max. storage life:	1 year
Designed according to:	ČSN EN 60079-29-1
The tests performed in the laboratory:	AZL No. 1025

Operating the GD51 Device

1. Switching On

The GD51 device is switched on by a rocker switch on top of the unit. After switching on a green "ON" indicator light turns on, you will hear 3 short beeps and the device enters the warm-up phase. At this moment, all indicator lights from the lowest to the highest value are turning on gradually. The termination of the heating phase is signaled acoustically by 2 beeps. The green "ON" indicator light stays on and the device is ready for operation. In case the sensor wasn't ventilated enough after the last measurements, the detector may indicate the presence of gas after switching on (see below). In this case leave the detector in clean the air for several minutes - the signalling should drop to zero - the sensor is ventilated.

2. Gas Detection

When in operation, the "ON" indicator light is on. Short beep sound signalizes function every 50 seconds. To inspect the monitored equipment, move the detector sensor slowly at a **distance of 1-2 cm** near the places with a possible gas leakage. When using the device, make sure there is **no sensor contamination**

from the object, such as grease, liquid, dust, etc.

The increase in gas concentration at the sensor is indicated by an appropriate indicator light signalling the corresponding concentration level. A finer resolution and any increase or decrease in the concentration can be identified by flashing of the nearest indicator light. In this way it is possible to detect up to 18 different concentrations.

Exceeding the concentration is signalized also acoustically by short beeps. With the concentration increasing, the frequency of the beeping increases as well. The user can use the button located next to the power switch to choose the level at which the acoustic signalling should start.

If there is a sharp increase in the concentration, draw the sensor away from the leak source and trace the place from a larger distance (5-10 cm). Be careful, a high gas concentration can damage the sensor.
If the device has indicated any gas concentration, leave it in clean air before switching off to ventilate, so that the signal drops to zero, and then switch the device off.

3. Power Supply

The GD51 device is powered from fixed battery cells firmly built into the body of the device. When measuring, the device continuously monitors the state of its batteries. If a voltage drop is detected, the detector will indicate the battery status by two short beeps every thirty seconds. Another drop in voltage leads to the detector switching off.
If the detector starts signalling a drop in the battery voltage regularly, it is necessary to recharge the batteries (see below).

4. Battery Charging

Battery charging is accomplished by connecting the AC adapter to the connector on the bottom of the device. A charging adapter with an output voltage of 6 V can be used (in case of emergency max. 12 V). We recommend a charging adapter with the voltage of 6 V. The batteries can be charged in two ways:

a) When switched off, connect the device to the AC adapter. A minimum trickle current flows through the batteries. In this way the device can be charged indefinitely.

b) When you connect the device to the AC adapter and then switch it on, a new recharge cycle starts, during which the batteries are charged, but measurements are not possible. The batteries are charged until full. The charging duration is signalized by the indicator lights gradually switching on from the highest to the lowest. At the same time the "ON" and "Bat" indicator lights are on. When an adapter with a higher voltage is used, it is signalized by the "Bat" indicator light flashing. The charging failure is signalized by two short beeps and the "Bat" indicator light flashing.
After the charging is finished, only the green "ON/Bat" indicator light is on and the current flowing into the battery changes into a trickle current.

5. Device Failure

The GD51 device performs an internal inspection of a proper function of its several parts. If a fault is detected (e.g. sensor failure, etc.), the yellow "ERROR" indicator light turns on and the detector stops working. Turn it off and try to boot it again after 5 minutes. In case of persistent failure, contact the manufacturer or send the device for service.

6. Detector Inspection and Calibration

According to the frequency of use, we recommend checking the GD51 detector once every 3 months (if used very often - permanently) or once a year (less frequent use) using a calibration gas mixture.
The detector with charged batteries should be switched on at least 15 minutes before being checked. Apply the sensor to a calibration gas with a concentration of approx. 1% methane in the air. The device should show a corresponding concentration with a signaling resolution of 1 division.

Also a test vial can be used for testing the gas detection ability of the device. Apply the vial or other container with a liquid comprising alcohol close to the sensor, so that it is about 0.5 cm from the mouth of the container. The detector should respond and at least the indicator light for 20% LEL should turn on. After finishing the test, the detector, when switched on, should be left for at least 15 minutes in clean air to ventilate. We do not recommend testing the detector for the test substance over a long period of time.

7. Limitations of Application

The GD51 detector is designed to detect flammable gas leakage in a standard atmosphere. It should be not located in flue gas or used for a gas mixture analysis. In the presence of some interfering gases in the atmosphere, the signalization may be biased. Interfering gases act additively on the sensor (the effects are cumulative).
The use of the device in an environment where there are some special substances containing e.g. sulphur, phosphorus, chlorine, arsenic, etc. may lead to the so-called sensor poisoning and its permanent damage.
The GD51 device is used in an environment without a danger of explosion and it is not intended for use in locations designated as Zone 0, Zone 1 or Zone 2. The device must not be used in places with high humidity, and a penetration of water droplets or other chemicals into the gas sensor must be prevented.
The device is designed for normal non-aggressive environment.

Accessories

- Charging AC adapter
- Test ampule with alcohol

Service

Any repairs or technical assistance can be provided at:
J.T.O. System, s.r.o., 1. máje 823, 756 61 Rožnov pod Radhoštěm, CZ, http://www.jto.cz,

tel. +420 571 843 343

If the device is taken out of service, it must be disposed in environmentally friendly way - i.e. brought to the designated collection point for disposal of electronic waste.