



# GS920 Detector (with seismic cutoff)



- 230V AC 50Hz power supply
- Catalytic sensor
- 3-axis accelerometer
- IP42 protective rating
- Operating temperature from -10°C to 40°C
- EN50194 for explosive gases
- EN61779 for flammable gases
- 3 year guarantee

## Application

The GS920 is a methane or LPG sensor with an integrated seismic detector that will shut off a gas valve in the event of seismic activity making it an ideal sensor in areas prone to earthquakes.

With a built-in relay the GS920 can be used to shut off a gas valve in the event of a leak, or operate remote sirens and beacons to alert those nearby of a potential hazard.

## Operation

Using a built-in 3-axis accelerometer, the GS920 will shut off a gas valve and halt the gas supply when seismic activity reaches 6 on the Modified Mercalli scale (or 60 - 70cm/s<sup>2</sup>).

Stopping the gas supply in a building at this time is a valuable, and potentially life-saving, exercise. Ruptured pipework due to buildings shifting can cause undetected leaks and an increased risk of explosion.

A further relay on the unit is pre-set to actuate at 10% LEL of either methane or LPG. This relay can break the electrical connection to a gas valve, or make a connection to an external warning device such as an audible alarm, flashing beacon etc.

## Features

It is possible to connect a 12V DC battery to this unit to perform two functions.

Firstly, it can be used to power the unit itself for up to one hour in the event of a mains failure.

Secondly, the battery can power a remote 12V DC manual-reset solenoid valve or siren, over 300mA.

## Power on & Testing

Once the device has been turned on, the MAINS LED will blink for approximately 60 seconds, after which it will remain ON. The GS920 will then be ready for detection.

Press the TEST button on the PCB to simulate a gas leak. The ALARM LED will light up and the relay will actuate after 5 seconds. After the alarm, the LED will turn itself off, the buzzer will stop and the connected appliances will be turned off.

To complete the test, issue gas from a pre-calibrated bottle of Duomo test gas. This test should be carried out at least once a year. NOTE: Testing using a common cigarette lighter could damage the sensor.



**CAUTION!**  
Carefully read the following instructions prior to installation of this device.  
Always keep this pamphlet for future reference. This unit must be installed in accordance with the regulations in force.

# Accelerometer

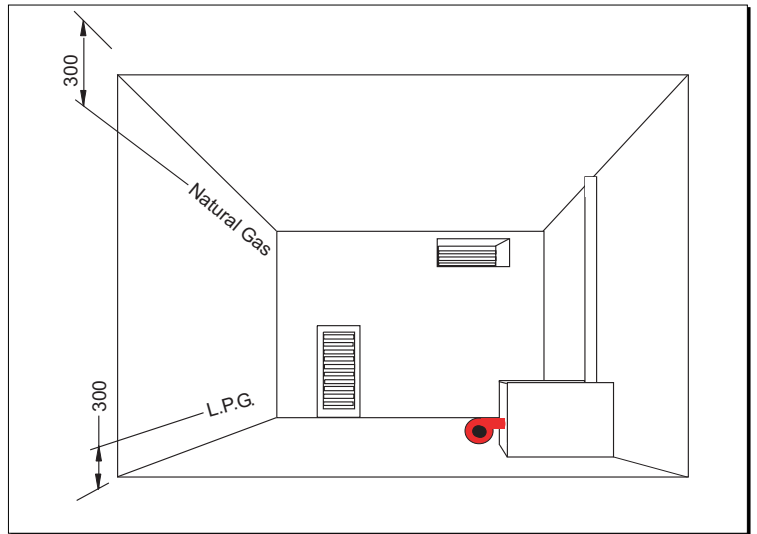
NOTE: Upon first powering up this unit the green LED on the fascia will flash intermittently for 10 days. This indicates that the accelerometer inside the unit is steadying itself in its new position. This does not affect the operation of the unit.

## Positioning Sensors

The GS920 sensor should be mounted in accordance with certain considerations. Do not position next to burners, heaters or ovens where temperatures above the room ambient may be experienced. It is, if possible, better to mount the sensors on the opposite wall. This is, of course, dependant on the size of the protected area.

Natural gas is lighter than air and will therefore rise, meaning the GS920 sensor should be mounted 300mm from the ceiling of the protected area.

LPG is heavier than air and will therefore drop, meaning the GS920 sensor should be mounted 300mm from the floor of the protected area.



If you require assistance regarding locating sensors please call us or fax a drawing of your application to us and we will advise accordingly.

## Configuring The GS920

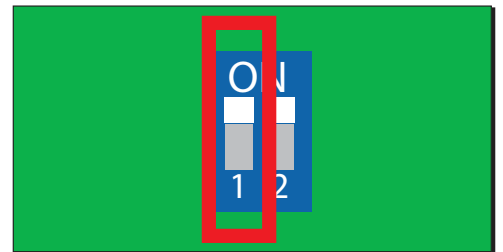
The GS920 has two DIP switches on the PCB. The left switch is used to activate the intrinsic safety option. The right switch is used to select a pulsed output to a connected gas valve.

The GS920 can be configured to provide several modes of operation. The configurable parameters are:

### Switch 1 on the DIP switch

Intrinsic safety determines the condition of the main alarm relay and hence the operation of the gas valve. When it is 'ON' the relay is in a normally open state. When it is 'OFF' the relay is in a normally closed state. **NOTE:** This affects how the gas valve operates and means that you may need to change how it is wired to the GS920.

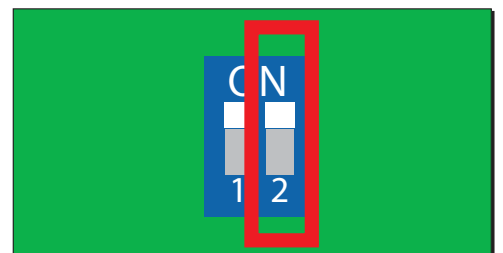
### Example shows Intrinsic Safety on



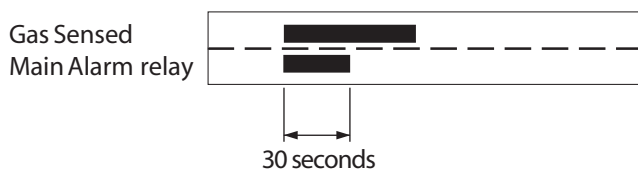
### Switch 2 on the DIP switch

Main alarm relay actuation method. This can be configured to provide either a continuous or a pulsed output alarm operation, whilst gas is sensed. When the main alarm is actuated in an alarm condition, if the switch is in the 'ON' position the relay is set to impulse functioning. Each pulse lasts about 30 seconds. Positioning the switch to 'OFF' the relay goes into continuous functioning mode, until the gas level drops under the alarm threshold.

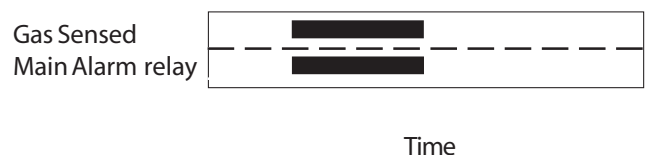
### Example shows detector configured for a pulsed main alarm



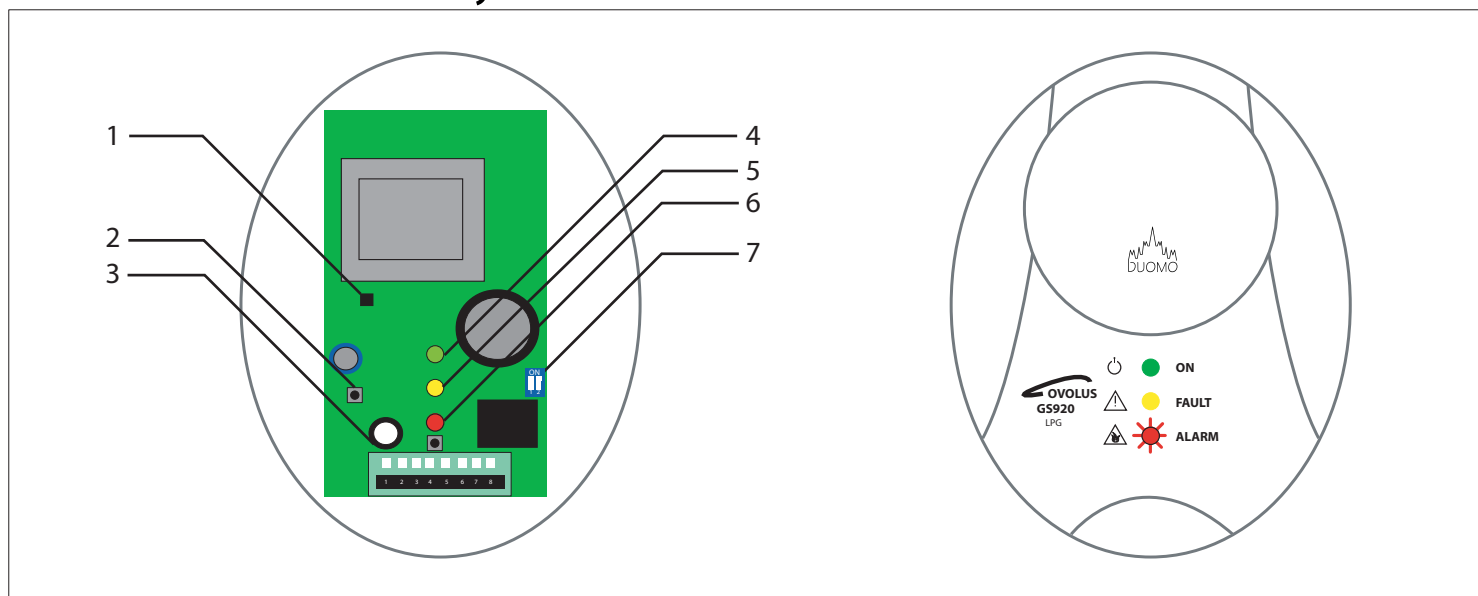
Main alarm switch in 'ON' position



Main alarm switch in 'OFF' position



# GS920 Fascia & PCB Layout



## Key

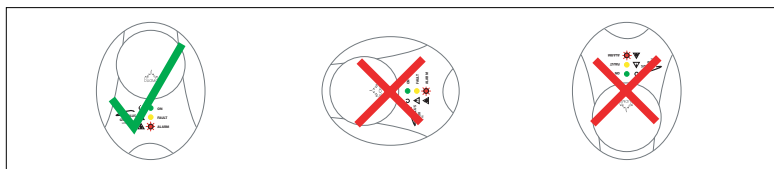
- 1. Accelerometer** - 3-axis accelerometer
- 2. Test button** - Only to be used for testing in the laboratory by a qualified technician.
- 3. Catalytic sensor** - Sensor for detecting either methane or LPG.
- 4. Power on** - When blinking, indicates that the system is in test. After 60 seconds, the light will remain lit to indicate that it is fully operational.
- 5. Fault** - When lit, indicates that the catalytic sensor is not working efficiently and must be replaced. After 6 years this LED will blink continuously and the unit will emit a beep every hour.
- 6. Alarm** - This LED will come on when the concentration of either methane or LPG rises above 10% LEL.
- 7. Micro switches** - Switch 1 - Turns the 'Intrinsically Safe Operation' setting to ON or OFF. Switch 2 - Changes the unit between pulsed (ON) or continuous (OFF) functioning mode.

## In case of alarm

- Extinguish any naked flames.
  - Do not switch lights or electrical devices on or off.
  - Open all windows and doors to increase ventilation.
  - If the 'ALARM' LED is off the levels of gas have dropped. A responsible, qualified person is now safe to find the cause of the alarm.
- If the alarm sound remains constant, and the cause is not evident or possible to eliminate turn off the emergency isolation valves to the area and contact your gas provider emergency line. They will advise accordingly.

## Installing A Sensor

The sensors must be mounted as shown below.



## Before calling a technician

**If the device does not start up** - Check that the 230V power is correctly connected. If powered by the battery, check that the 12V DC power is correctly connected and that the battery is charged.

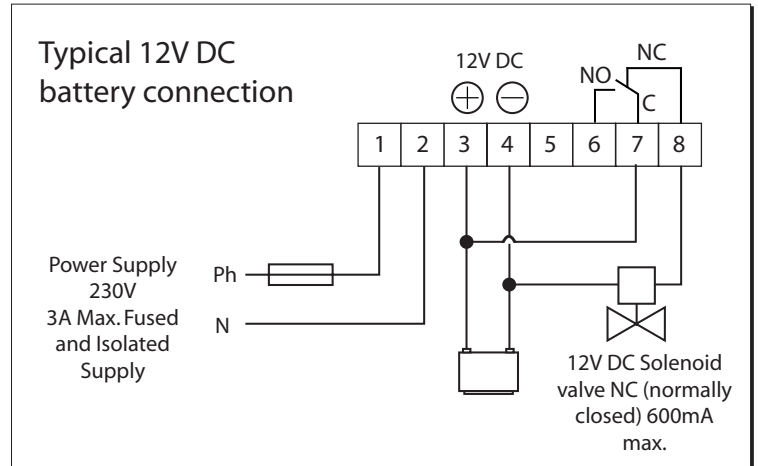
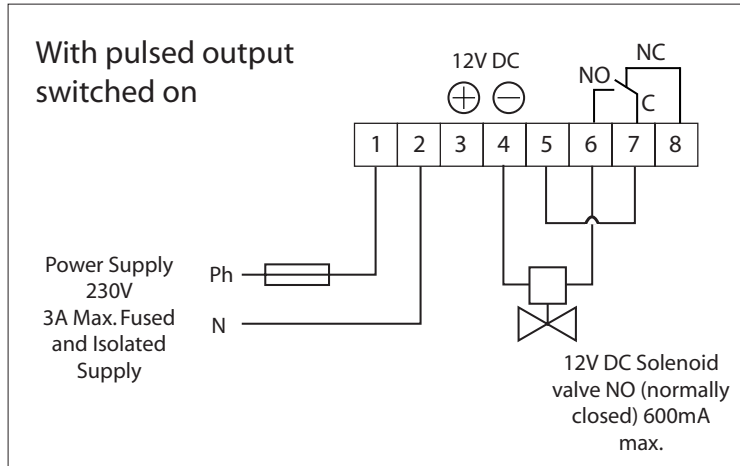
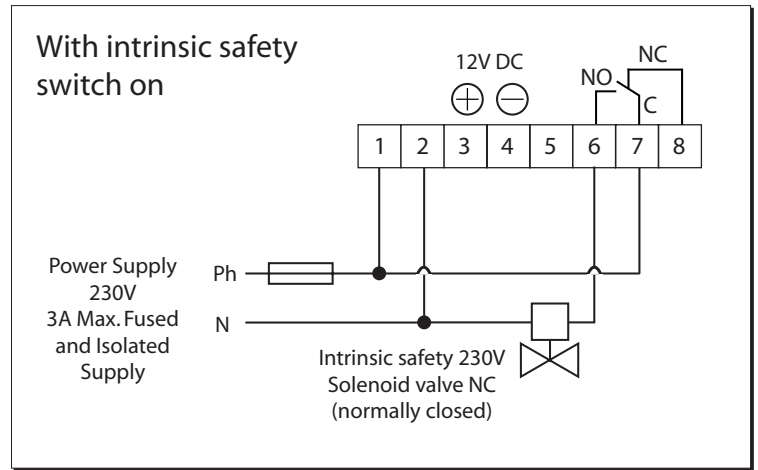
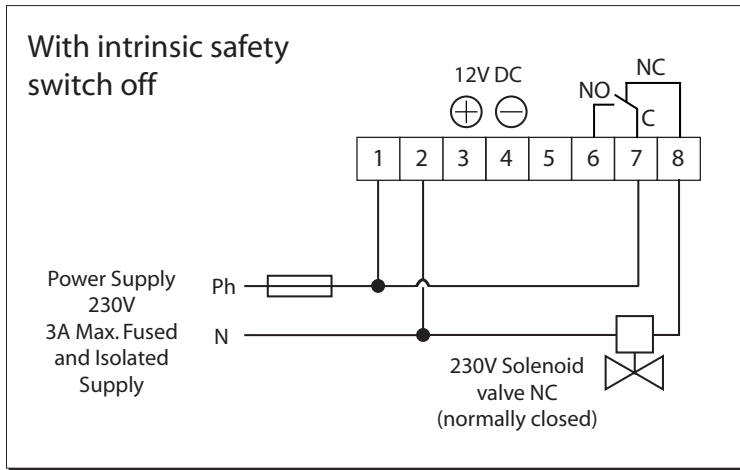
**If the fault LED is lit** - If the yellow LED remains on, check if a five year period has elapsed after the installation date. If the LED is blinking, check if the earthquake-proof sensor has been triggered. To reset, press the reset button.

**If the detector is repeatedly issuing an alarm** - Check that there are no gas leaks. If the alarm signal and the fault indicator light turn on together, proceed as in the previous paragraph.

**If the detector is issuing an alarm and does not shut off the devices connected to it** - Check that the wiring is correct and that the jumper that carries power to the relay has been set properly. All relays must be free from electrical power. Check the drawing of the connections.

**If a 12V DC solenoid valve is connected to the detector, which does not work well** - Check that nothing is draining the power. Direct connection to the GS920 is not permitted for 12V DC solenoid valves or sirens with a power demand higher than 300mA. To connect a solenoid valve with a higher power demand you have to use a battery. You can connect a pulsed 12V DC reset solenoid valve.

# Wiring Diagram



## Electrical Connections

Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to regulations in force. Keep in mind that the signal cables should be laid separate from the power cables.

## Operating specifications

The installation of the GS920, its maintenance and its out of service removal at the end of its functioning life must be carried out by authorised and/or specialist personnel (according to norm EN 60079-10).

The catalytic sensor is guaranteed for 6 years (in clean air). The detectors functioning temperature range is from -10°C to 40°C.

**WARNING!** The catalytic sensor does not tolerate a gas concentration exceeding 40% LEL. Anything above this can permanently damage the sensor. The detector must be tested by simulating the presence of gas using a Duomo pre-calibrated bottle of test gas.

## Warning

The installation of this sensor does not exempt the user from complying with all regulations concerning the characteristics, installation and use of gas appliances.

Particularly, the ventilation of spaces and the elimination of combustion products are described in the UNI norms according to ART. 3 LAW 1083 / 71 and relevant legal provisions.

## Technical Specifications

Mains power.....	230V AC 50Hz +/- 10%
Battery power.....	12V DC - 1.2Ah +/- 10%
Current consumption.....	2W @ 230V
Explosive gas sensor.....	Catalytic
Alarm threshold.....	10% of LEL
Earthquake proof sensor.....	6 <sup>th</sup> degree of Mercalli scale
Functioning temperature.....	-10°C to 40°C
Functioning humidity.....	0 - 90% relative humidity
Degree of protection.....	IP42
Mounting.....	External wall mount or embedded box
Body material.....	ABS self-extinguishing
Dimensions.....	115 x 150 x 52
Warranty.....	3 years

