GS920 Seismic activity Natural Gas & L.P.G. Detector

GS920 Seismic Activity Natural Gas / Propane Sensor

Natural Gas

LPG

Seismic activity

IP42

FEATURES

- Seismic Activity
- Natural Gas or Propane detection sensor
- 230V AC 50Hz Power Supply
- 12V DC Battery backup option
- Catalytic Sensor Technology
- -10°C to +40°C Operating temperture
- IP42 Protective Rating
- CE Certified and approved to EN50194 & EN61779
- 6 Year sensor lifespan
  (in clean air and within operating temperature)
- 2 Year Guarantee - 3 Year by Registering at duomo.co.uk

APPLICATION

The GS920 is a stand alone gas detector for detcting methane or LPG sensor (specify at order stage) with an integrated seismic detector that will shut off 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

As gas concentrations exceed 10%LEL the relay on the unit will actuate into an alarm state. 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/s2).

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 waring device such as an audible alarm or flashing beacon.

SPECIFICATION

Power

Power Supply	230V AC 50Hz +/- 10%
Secondary Battery	12V DC - 1.2Ah +/- 10%
Current Consumption	2W @ 230V

Technical Specification

Earthquake Proof Sensor	6th degree of Mecalli scale
Gas(es) Detected	L.P.G or Natural Gas
Sensor Technology	Catalytic
Dimensions	Width 115mm | Height 150mm | Depth 45mm
LED indicator	Green: Power ON Yellow: Fault Red: Alarm
Mounting	Wall Mounted or Embedded box
Alarm Threshold	10% of LEL
Working Temperature	-10°C to 40°C
Functioning Humidity	0-90% Relative Humidity
Body Material	ABS Self Extinguishing
Protective Rating	IP42

Compatibility

Calibration Gas Compatibility	Duomo Nat Gas / L.P.G Test Gases

Approvals, Certifications and Guarantee

Approvals	CE Certification: No.96125
Guarantee	2 Year as Standard 3 Year by Registering at www.duomo.co.uk

BATTERY CONNECTION

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

Firstly, It can be used to power the unit itself for up to one hour in the events of mains failure.

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

t: 01905 797989
e: sales@duomo.co.uk | **w:** www.duomo.co.uk

Precautions and Maintenence

Check the integrity of the unit after having removed it from the box.
Check that the data written on the box correspond to the type of gas used.

When doing the electrical connections, follow the drawing closely.

Any use of the detector for purposes other than the intended one is considered improper and as a result of which Duomo (UK) therefore disclaims any responsibility for possible damages caused to people, animals or objects.

Do not allow the sensor to become wet.

The product is not waterproof either when immersed in water or exposed to high levels of humidity.

Every six months must perform a function check of the sensor and connected controller. Suitable test gas must be used to avoid damaging the sensor. Disabling the sensor or the controller must be carried out by a suitably trained technician.

Every year a more accurate check must be performed by qualified personnel. Please call Duomo (UK) on 01905 797989

Important Notes

IMPORTANT: Assembly / maintenance of the appliance must be carried out by qualified personnel and in accordance with applicable laws and regulations including EN 60079-10.

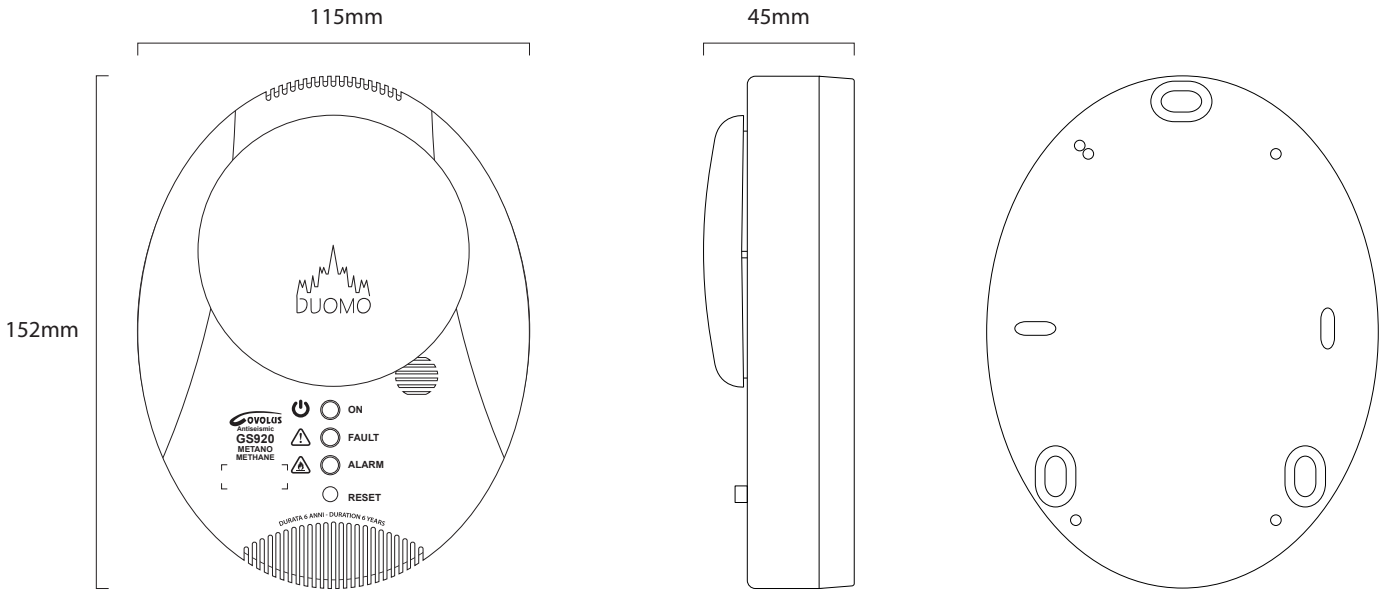
The manufacturer assumes no responsibility for the use of products that have to comply with particular environmental and / or installation standards.

IMPORTANT: Before connecting the equipment, it is recommended that you read the instruction manual carefully and keep it for future reference.

Electrical Connections

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

Overall Dimensions (mm)



Configuration and Testing

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Power ON and Testing

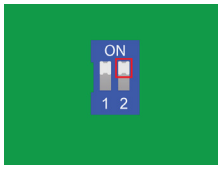
Once the device has been turned on, the MAINS LED will blink for approximately 60 seconds, after which it will remain ON.The GS920 will then be ready for detection.

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. (Do NOT use a cigarette lighter to perform a test as this could damage the sensor).

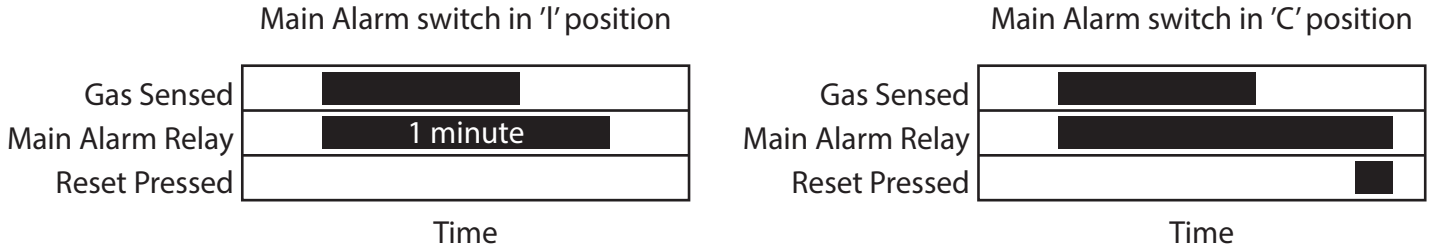
Configuring the GS920

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 Zone 1 On.

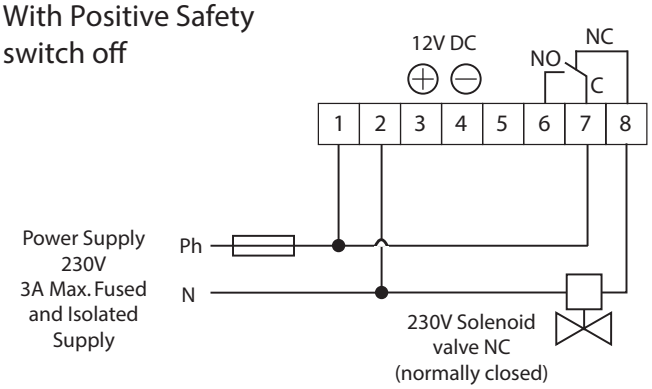


Switch 2 on the DIP switch
Main alarm relay actuation method.This can be configured to provide either a continuous or a pulsed output alarm operation, whilst gas is sensed. When the main alarm is actuated in an alarm condition, if the switch is in the 'ON' position the relay is set to impulse functioning. 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 Zone 1 Explosive.

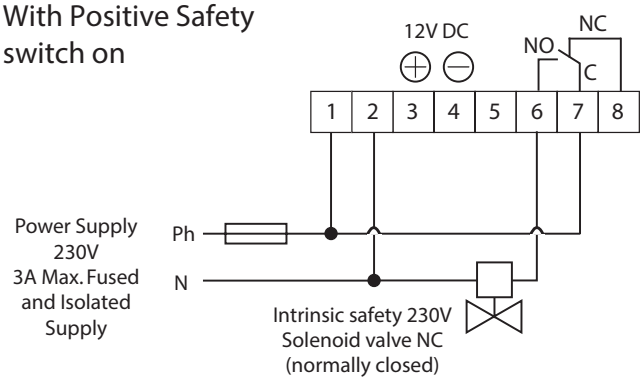


Connections and Wiring Diagram

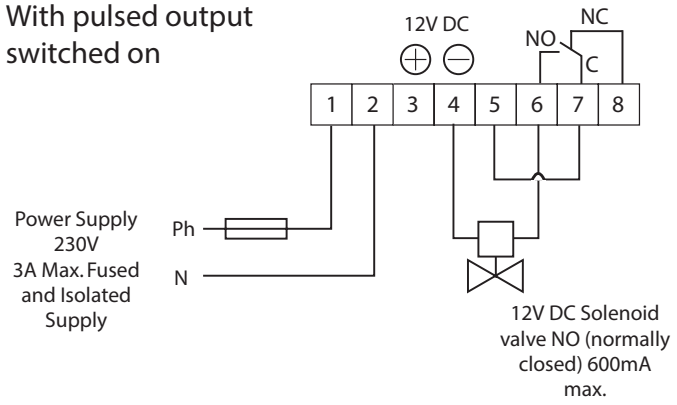
With Positive Safety switch off



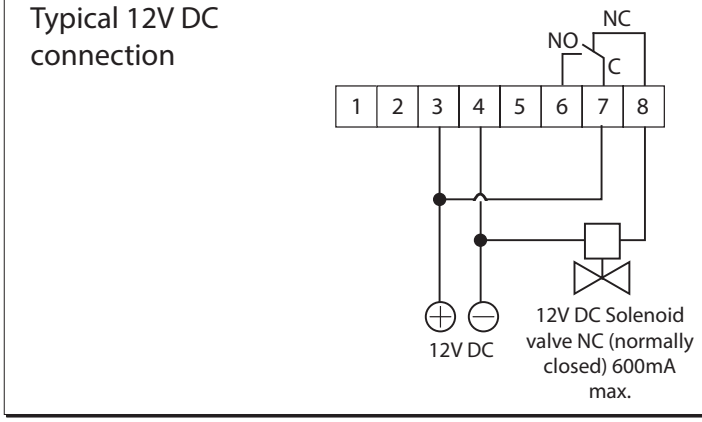
With Positive Safety switch on



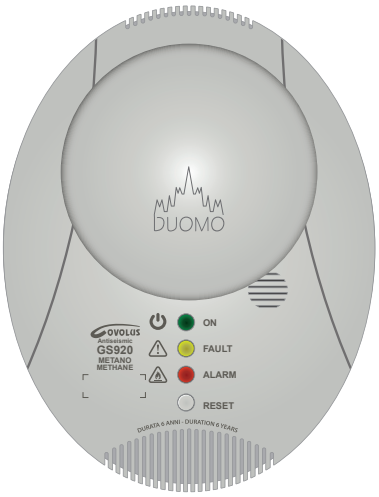
With pulsed output switched on

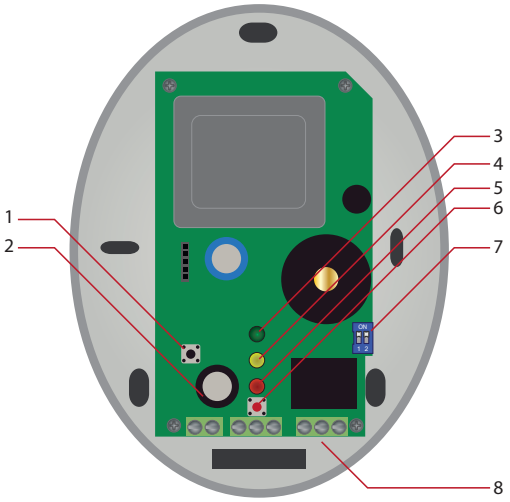


Typical 12V DC connection



Layout

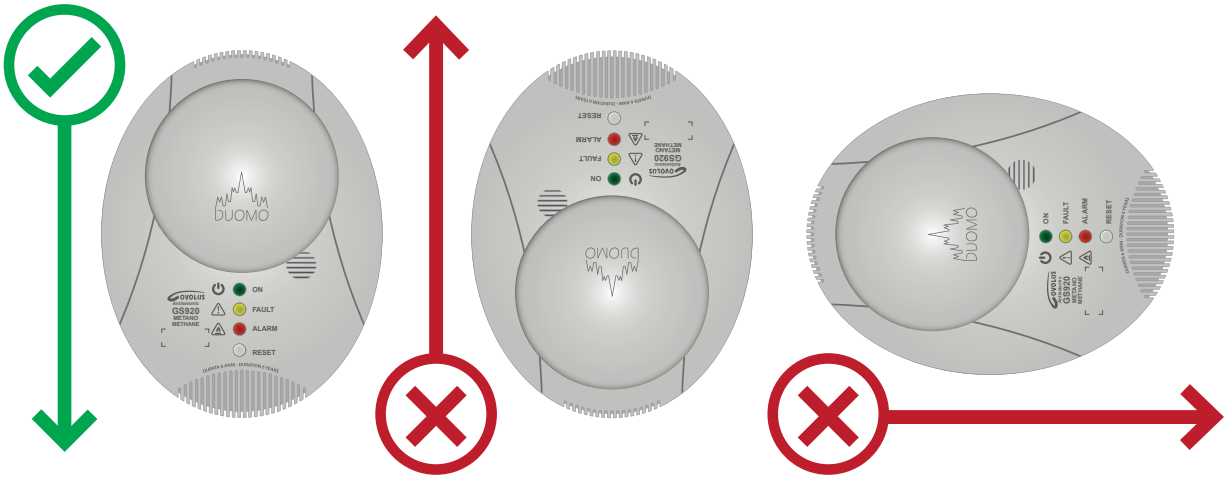




1. **Test Button** - Only to be used in testing in laboratory by qualified technician.
2. **Catalytic Sensor** - Sensor for Methane or LPG detection
3. **Power On** - Intermittent when system in test mode. Static when fully operational.
4. **Fault** - Illuminates when sensor is not functioning correctly and should be replaced. After 6 years this will flash continuosly and beep every hour.
5. **Alarm** - Will illuminate when Methane or LPG concentration exceeds 10% LEL
6. **Reset** - Reset the GS920
7. **Micro switches** - Switch 1 turns Positive Safety option ON or OFF. Switch 2 changes the unit between pulsed (ON) and continuous (OFF) functioning mode.
8. **Terminal connections** - See wiring diagram above

Sensor Orientation

The GS920 must be mounted as shown below pointing vertically down.

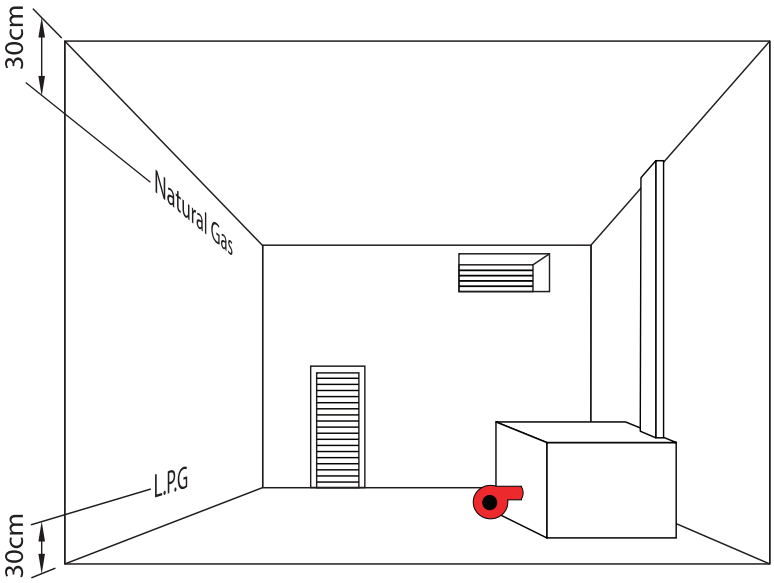


Sensor Positioning

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 30cm from the ceiling of the protected area.

LPG is heavier than air, therefore the GS920 sensor should be mounted 30cm from the lowest point on floor of the protected area. Natural Gas is lighter than air and the GS920 should be mounted 30cm from the highest point from ceiling of the protected area.



If you require assistance regarding locating sensors please call our Droitwich factory on (01905) 797989 or email us: sales@duomo.co.uk

Important Notes

Always check the wiring before powering up the system.

Do not test this sensor with anything other than Duomo test gas. Concentrations above this will damage the sensor and shorten sensor life.

The installation of this gas sensor does not release the user from observing all the regulations concerning the characteristics of the installation and use of gas appliance, the ventalation of the protected environment and the removal of the products of combustion. Duomo (UK) will not be held responsible or liable for any damage caused to people, property or animals resulting from incorrect connection, installation or application of this gas sensor.

To ensure correct function after installation Duomo provide a commissioning service using calibrated test gases. For this service call +44 1905 797989.

In case of alarm

Extinguish any naked flames.
Do not switch lights or electrical devices on or off.
Open all windows and door to increase ventalation.

- 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 reamins constant and the cause is not evident or not possible to eliminate turn off the emergency isolation valves to the area and contact your gas provider emergency line. They will advise accordingly.

Troubleshooting

The Problem	The Solution
The sensor does not power up	Check that the 12/24 VDC power is present, and that positive and negative polarity has not been inverted.
The fault LED is illuminated	If the yellow fault LED remains illuminated check if a 5 year peroid has elapsed since installation date. If the LED is blinking check if the earthquake proof sensor has been triggered. To reset, press the reset button.
The detector is repeatedly issuing an alarm	Check that there are no gas leaks. If the fault light is also illuminated, proceed as in the previous paragraph
The detector does not shut off connected devices when going into alarm state.	Check wiring is correct and that the jumper that carries the power to the relay has been set properly. All relays must be free from electrical power. Check the connection drawing.
Connected Solenoid valve is not operating well	Check that nothing is draining power. Direct connection to the GS920 is not permitted for 12V DC solenoid valves or sirens with 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.
This is a working document and will be updated as new troubleshooting and FAQs become apparent. If your issue is not listed here please call Duomo (UK) on 01905 797989 and inform us so we can list your issue and associated solution here.	

Still experiencing difficulties?

If you have made the checks above and are still experiencing diffculties then please call **Duomo (UK) Ltd** on **+441905 797989** for technical assistance.

Commisioning, Service & Maintenence

Commisioning

It is strongly recommended that this SGM595 gas sensor and connected detection system is commissioned and serviced by Duomo Commissioning Engineers or engineers approved by Duomo. A quotation for commissioning or service will be provided upon request.

Email site details and preferred date for commissioning or service to sales@duomo.co.uk to the Duomo Service Department. Or call +44 1905 797989

The benefits of this equipment being commissioned by Duomo are:

- On board spares - If for whatever reason this equipment doesn't function correctly Duomo engineers will have spares on board to ensure that the commissioning is successful.
- A Duomo Commissioning Certificate is provided - A certificate from the original maufacturer ensures that the commisioning or servicing carried out is at a high professional standard by a competent and qualified service engineer.

It is prudent to make electrical connection to the detector terminal plus when withdrawn and leave the plug off the detector so that the Duomo Engineer is the first to power up the unit on site. This allows wiring to be checked prior to commissioning and avoids damage due to incorrect connection. Guarantees for this product will become void if damage is caused by the installer.

Maintenence

This sensor must be function checked as described above using calibrated test gas every 6 months.

To arrange for a Duomo engineer to conduct this work or to arrange a service contract please call +44 1905 797989.

Notes

DUOMO
GAS SAFETY CONTROLS

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