

Gas Detector with Earthquake-proof Device

GS920 - v 3

To protect your family



The **GS920** is a high-technology device, thanks to its innovative **“Seismic Detection”** feature and the possibility of selecting the **“Intrinsic Safety Control”**, is a leading-edge technological device. A microprocessor was used to create a complete surveillance and control system with maximum flexibility. Together with its catalytic sensor technology, it detects the presence of explosive gas, such as: **Methane or LPG**, with trip threshold calibrated at 10% of Lower Explosion Limit. Using the built-in relay it can activate: solenoid valves, sirens, and any other alarm signal device. The micro switch makes it possible to select the relay impulse functioning, to connect manual reset solenoid valves, or the continuous functioning, and to activate N.C. class **“A”** solenoid valves and sirens. Another micro switch allows turning on/off the **“Positive Safety”**. The power supply unit allows driving of a manual reset solenoid valve with a 12Vdc coil, without any buffer battery. If the voltage absorption is too high, you can later integrate a suitable backup battery. The battery is recharged automatically.

The **“Seismic Control”** allows closure of the solenoid valve, stopping the gas original source! This control is vital in seismic regions! The relay, free of voltage, allows installation of multiple detectors on a single solenoid valve, providing control of multiple dangerous environments. The technical scheme is completed by a circuit that controls the catalytic sensor **“efficiency level”**, and signals any possible fault. These technical features make the detector ideal for civil environment safety according to EUROPEAN REGULATIONS.



Important: Assembly / maintenance of the appliance must be carried out by qualified personnel and in accordance with applicable laws and regulations. The manufacturer assumes no responsibility for the use of products that have to comply with particular environmental and / or installation standards.



Important note

Before connecting the equipment, it is recommended that you read the instruction manual carefully and keep it for future reference. It is also recommended to perform the electrical connections correctly as per enclosed drawings, observing the instructions and the Standards.

N.B. Refer to the documentation in all cases where the symbol is on the side

<p>Installation and user guide</p>	<p>CONFORMITY</p> <p>EN 50194 EN 50270 CEI 216-3 EN 61010-1 Installation EN 60079-29-2</p>
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Precautions

CHECK the integrity of the probe 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 **BEINAT S.r.l.** therefore disclaims any responsibility for possible damages caused to people, animals or objects.

INSTALLATION

When performing the installation, please remind that if you pierce the **GS920** container, it will lose its properties and its conformity to REGULATIONS.

TERMS and EXPECTATIONS: The installation of the **GS920** detector, its ordinary and extraordinary maintenance, and its out of service removal at the end of the functional life guaranteed by the manufacturer, must be carried out by **authorized and/or specialized personnel**.

Do not allow it to become wet.

The detector can be seriously damaged when immersed in water. Remember that the probe has an IP30 protection degree.

Do not drop it.

Heavy knocks or falls during transportation or installation can damage the appliance.

Avoid abrupt temperature fluctuations.

Sudden temperature variations can cause condensation and the probe could work poorly.

Cleaning

Never clean the device with chemical products. If necessary, wash with a moist cloth.

Absolutely avoid using any cloth dipped in thinners, alcohol and chemical detergents.

MAINTENANCE



The user periodically (every 6 months) must perform a check of the operation of the control unit by spraying a suitable test gas at the base of the probes connected until the alarm condition is reached.

- At least once a year make a more accurate check by a specialist technician.
- Disabling the detector must be carried out by qualified personnel.



Technical Specifications

Mains power	230/240 VAC 50/60 Hz +/- 10%
Battery power (optional)	12 V. dc \pm 10%
Current consumption	3.6W @ 230V
Range of relay contact switching	10A 250V resistive
Battery charger	controlled by the microprocessor
Type of insulation	Classe II <input type="checkbox"/>
Type of gas detected:	Methane with model for Natural Gas LPG model for LPG
Explosive gas sensor	Catalytic
Explosive gas detector alarm threshold	At 10% of L.E.L.
Sensor's faults detected by Fault Circuit	Interruption, short circuit, or wear
Detection capsule end-of-life warning	After 6 years
Positive safety control	Built in
Timed or continuous functioning solenoid valve selection	Using a switch
Earthquake-proof sensor	Three-axis accelerometer
Trigger sensitivity	6th degree on the Mercalli scale
Audible and visual signal alarm by	LED diode and buzzer
Test phase duration	60 seconds
Functioning temperature	-10°C to +40°C
Functioning humidity	0÷90% RH non condensed
External degree of protection	IP42
Mounting	External wall mount, or embedded box 503
Body material	ABS self-extinguishing
Dimensions	115x150x52

Sensor characteristics

Code	Type of Gas	Sensor	Range	Temperature
GS920	Methane	Catalítica	LEL 0-100%	-10+50°C
GS920	LPG	Catalítica	LEL 0-100%	-10+50°C

Functional Features Of Gas Sensors

The installation of the **GS920** detector, its ordinary and extraordinary maintenance, and its out of service removal at the end of the functional life guaranteed by the manufacturer, must be carried out by authorized and/or specialized personnel.

The CATALYTIC technology sensor duration is guaranteed for 6 years (in clean air).

The detector's functioning temperature ranges from **-10°C to + 40°C**.

WARNING!

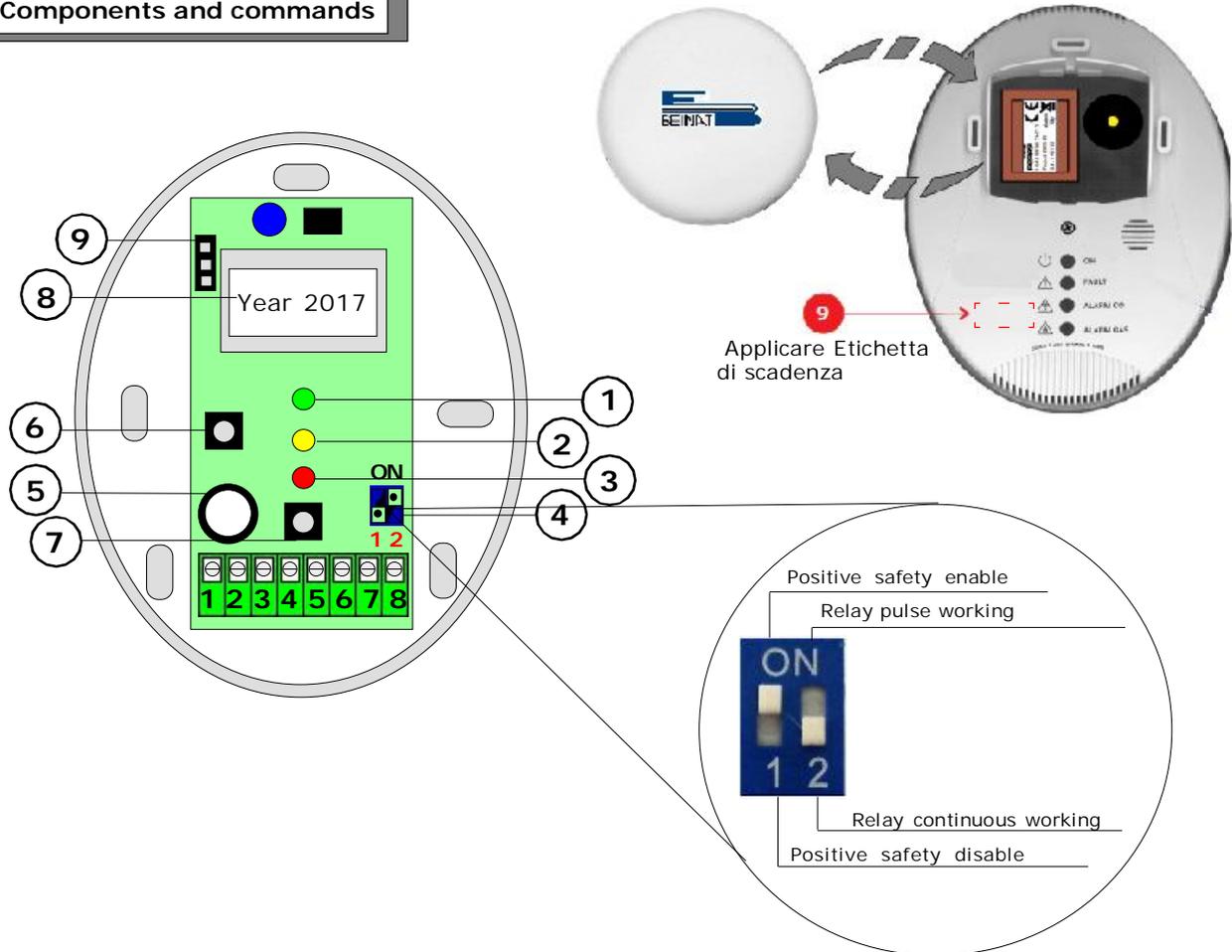
The CATALYTIC probe does not tolerate a gas detection exceeding **100% of L.E.L.**, with consequent natural death of the sensor.

Each immediate puff of gas that exceeds **100% of L.E.L.** takes away months of life from the sensor.

The detector must be tested by simulating the presence of gas by issuing it from a pre-calibrated testing aerosol.

A common cigarette lighter near the sensor does not guarantee excellent functioning.

Components and commands



1) MAINS connected indication LED. When the green LED is blinking, the **GS920** performs a test of the sensor's efficiency status, and gets it to the functioning temperature. This phase lasts about 60 seconds. At the end, the LED stops blinking and the green light remains ON.

During the test period, the GS920 does not detect the gas.

2) FAULT and functional life wear indication LED.

If this LED turns on, it means that the gas detection catalytic sensor is not working efficiently and must be replaced by an authorized technician.

The sensor duration is guaranteed for 6 years (in clean air). After six years, the yellow LED will start a quick blinking. You will hear a short beep every hour.

3) ALARM indication LED. This LED turns on when room gas concentration exceeds the danger level, at 10% of L.E.L.

4) Micro switches:

Switch 1: Positioning the switch to ON – **Positive safety working** – the relay is excited at the end of the latency time and switches on each alarm.

Positioning the switch to OFF – Normal operation – the relay switches on each alarm.

Switch 2: Positioning the switch to ON, the relay is set to impulse functioning. Each pulse lasts about 30 seconds.

Positioning the switch to OFF, the relay goes in continuous functioning mode, until the gas threshold drops under the danger level.

5) Catalytic sensor for Methane or LPG explosive gas detection.

6) TEST button. This button is used to simulate a gas leak, after installation.

7) RESET button. This button is used to stop the alarm, when triggered by an EARTHQUAKE.

8) Identification label, registration number and manufacturing year, located under the ABS small dome.

9) TEST POINT for testing. It is used in the laboratory or by a qualified technician.

9) Label of the gas sensor expiration date.

This label should be applied by the technician during installation, keeping in mind that the detector should be overhauled after 5 years.

WARNING! Actions to be taken in case of alarm

- 1) Put out all free flames.
- 2) Close the main gas tap or the LPG cylinder tap.
- 3) Do not turn any lights on or off; do not turn on any electrical device or appliance.
- 4) Open windows and doors in order to increase ventilation.



If the alarm stops, its cause must be found and the relevant consequent measures taken.

If the alarm continues and the cause of gas presence cannot be found or removed, abandon the building and call the emergency services when outside (fire department, distributors, etc.)

Warning !!

If you have the following symptoms: vomiting, sleepiness, or else, go to the closest first aid station and inform the operators that you could have been poisoned by **Gas Methane or LPG**.



Electrical connections



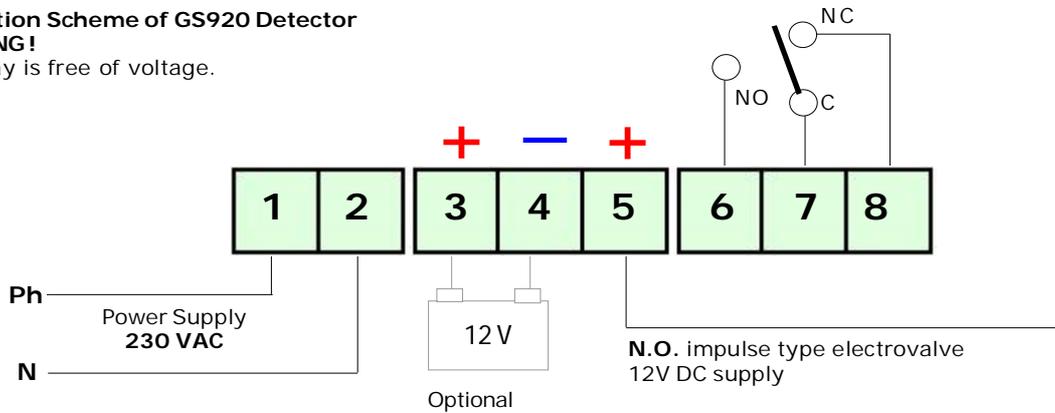
WARNING

Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to Regulations in force. An automatic disconnecting switch (appropriately identified as the detector sectioning device) must be incorporated in the electrical system, suitably located and easily accessible.

Connection Scheme of GS920 Detector

WARNING!

The Relay is free of voltage.



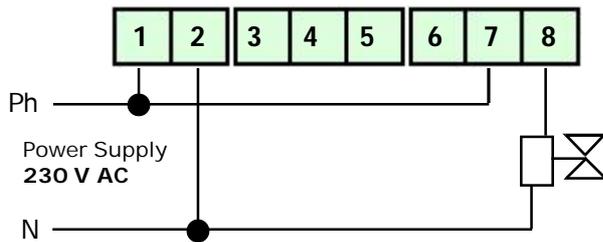
Normally closed electrovalve 230VAC

Without Intrinsic Safety

The electrovalve is a **N.C.** Automatic or manual retrig

Note

To connect a **N.O.** Electrovalve swap the connections between pin 8 and 6

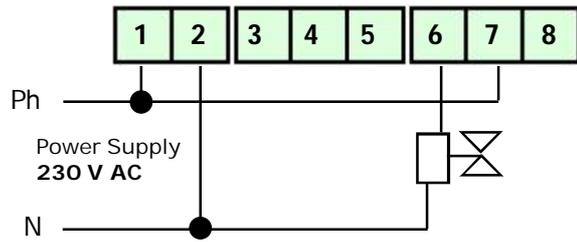


With Intrinsic Safety

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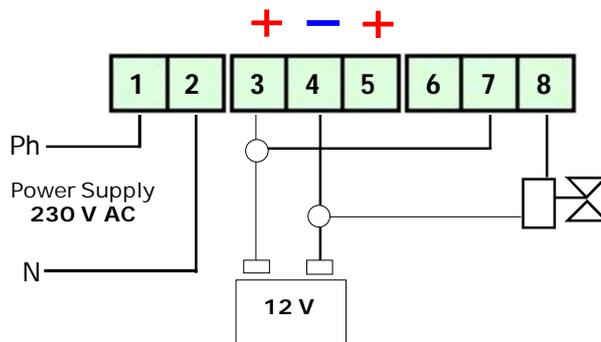
Is not allowed to connect a **N.O.** electrovalve



Normally close electrovalve 12 VDC without intrinsic safety

The drawn electrovalve is a **N.C.** type with manual or automatic reset.

The power supply is 12VDC 1A MAX with the help of a battery.



A 12VDC 1.2Ah battery can be connected to the **GS920** gas detector.

The detector itself provide the needed charge for the battery.

The battery must be connected between the pin 3 and 4 (pin 3 is the positive, 4 is negative)

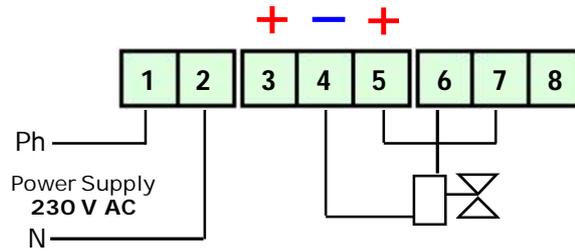
The battery option is useful for:

- back-up of the gas detector with a duration of about 1 hour
- supply a 12VDC electrovalve with a continuous absorption of less than 600mA

Electrical connections

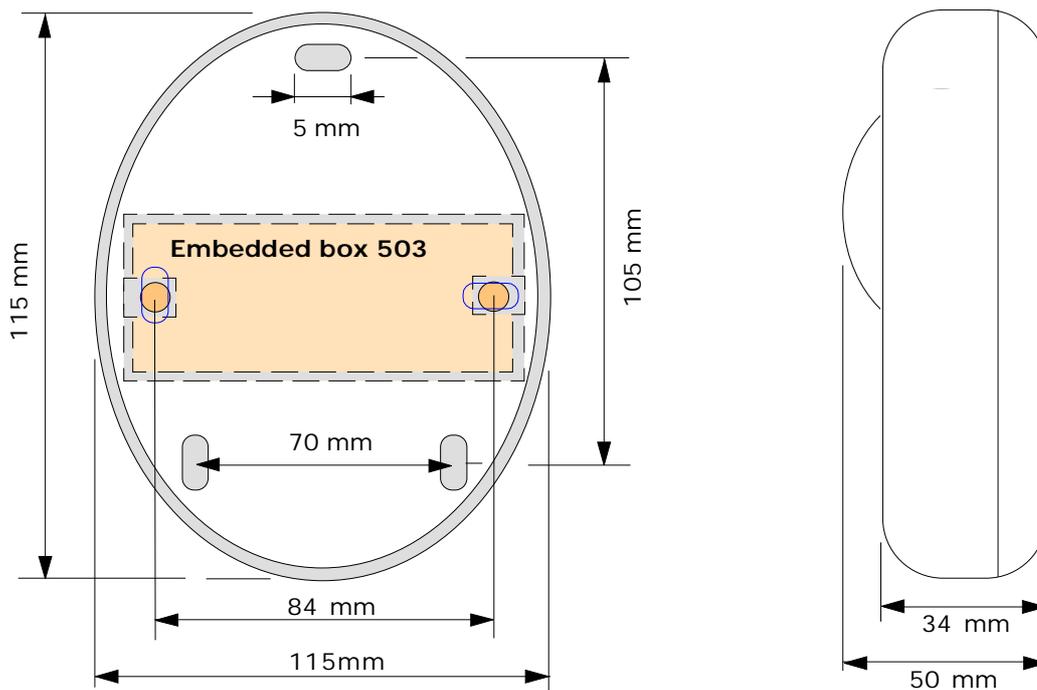
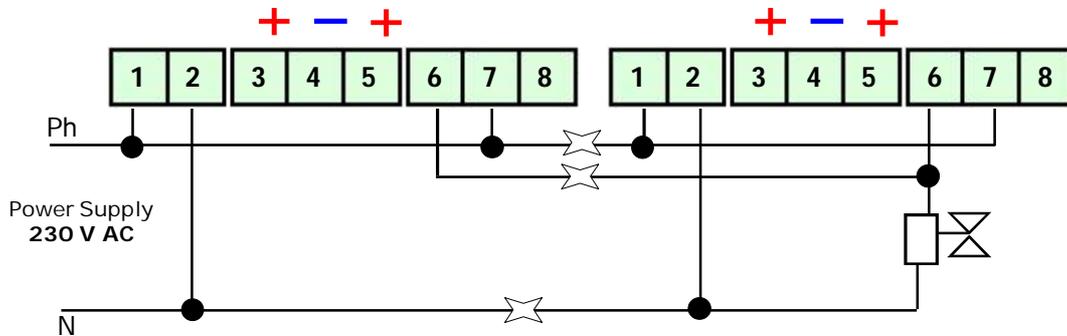
Normally open electrovalve 12 VDC with intrinsic safety

The drawn electrovalve is a Normally Open type with manual reset and with a power supply of 12V 600mA MAX. The activation is impulsive.



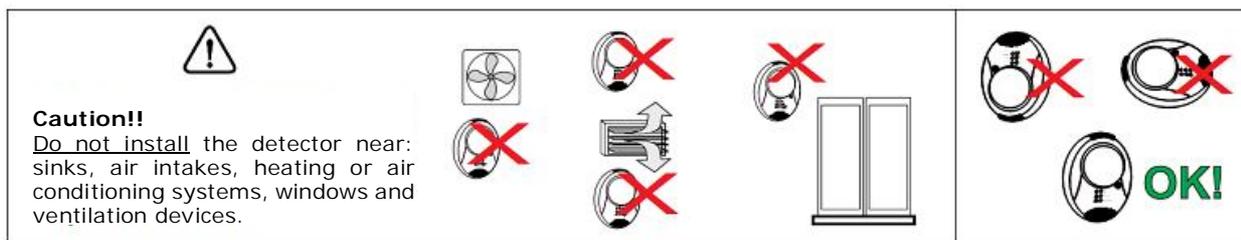
Connecting 2 Gas Detectors in Parallel with Normally open electrovalve 230V AC without intrinsic safety

The drawn electrovalve is a **Normally Open** type with **manual reset** and with a power supply of **12V 600mA MAX**. The activation is **impulsive**.



Installation measures and positioning

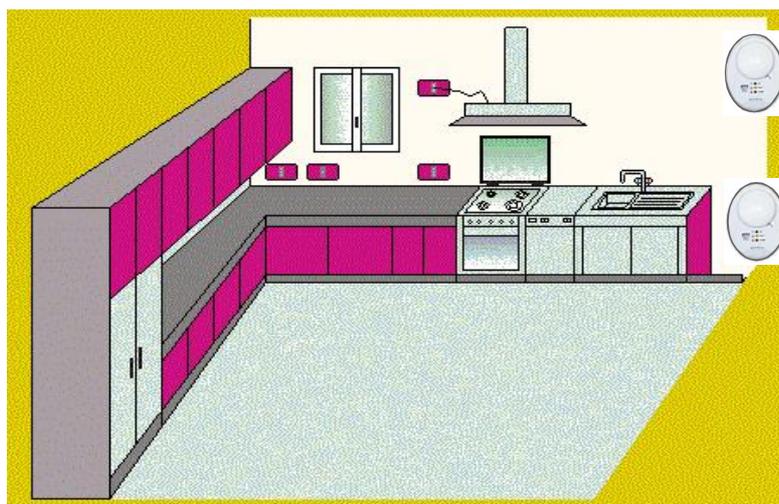
The position of the detector is a crucial factor for its correct functioning during gas detection. In order to obtain the maximum results from a device and minimize the probability of false alarms, it is recommended to follow this scheme and keep in mind the following general regulations.



The detector must be located at different heights, according to the type of gas. These heights are:

- **30 cm** from the lowest point of the floor in order to detect **heavy gases, LPG, etc.**
- **30 cm** from the highest point of the ceiling in order to detect **light gases, Methane**
- The detector **should not be placed** near the appliances to be controlled (boilers, burners, industrial kitchens, etc.) but on the opposite wall.
- The detector **should not be** affected by smoke, vapour, etc. as they could distort its measurement. It should be located away from sources of heat, ventilators or fans.

**It must not be installed, on a wall in plasterwork.
It must be installed only on walls in masonry**



METHANE gas detector
max. 30 cm from the ceiling

LPG gas detector
max. 30 cm from the floor

Turn on and testing

Once the device has been turned on, the MAINS LED will start blinking for about 60 seconds, after which it will remain ON. Now **the GS920 is ready for detection of explosive gas.**

After 24 hours from installation begin the self-learning antiseismic period (from this time the detector **MUST NOT be moved from the installation position for any reason**).

After 10 days, the self-learning period is finished and the device is capable to detect seismic movement.

Testing

Press the button near the detection capsule to simulate the presence of gas.

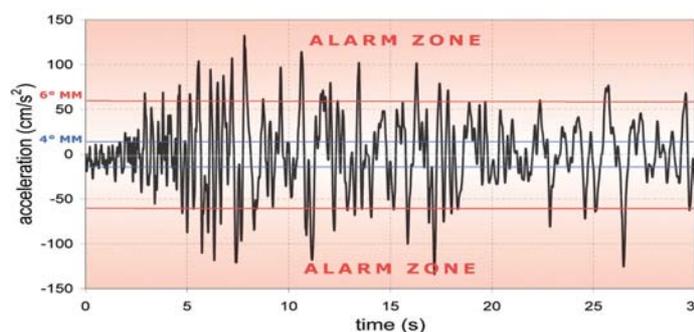
The ALARM LED lights up, and the relay shifts its functioning mode after 5 seconds. After the alarm, the LED will turn off, the buzzer will stop, and the connected appliances will be turned off.

To complete the general test, issue gas from a pre-calibrated aerosol within 20% of L.E.L. Testing using a common cigarette lighter could damage the sensor. This test should be carried out at least once a year.

Modified Mercalli Scale

MM Degree	Accel (cm/s ²)	Description
1	1	Not felt by many people unless in favourable conditions.
2	2	Felt by a people at rest, especially on the upper floors of buildings or in favourable position
3	3	Felt by people indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake
4	15-20	Hanging objects swing. Vibration like passing of heavy trucks, or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In its upper range, wooden walls and frame creak.
5	30-40	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
6	60-70	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). DETECTOR TRIGGERED
7	100-150	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
8	250-300	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
9	500-550	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged; general damage to foundations; frame structures, if not bolted, shifted off foundations; frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
10	>600	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
11	-----	Rails bent greatly. Underground pipelines completely out of service.
12	-----	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Earthquakes and relevant trigger thresholds



INSURANCE. This device is insured by the SOCIETÀ REALE MUTUA for the PRODUCT'S GENERAL LIABILITY up to a maximum of 1,500,000.00 EURO against damages caused by the device in case of failures in functioning.

WARRANTY. The warranty term is 3 years from manufacturing date, in agreement with the following conditions. The components acknowledged as faulty will be replaced free of charge, excluding the replacement of plastic or aluminium cases, bags, packing, batteries and technical reports.

The device must arrive free of shipment charges to **BEINAT S.r.l.**

Defects caused by unauthorized personnel tampering, incorrect installation and negligence resulting from phenomena outside normal functioning shall be excluded from the warranty.

BEINAT S.r.l. is not liable for possible damage, direct or indirect, to people, animals, or things; from product faults and from its enforced suspension of use.



DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.

This symbol on the product or its packaging indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment, such as for example:

- sales points, in case you buy a new and similar product
- local collection points (waste collection center, local recycling center, etc...).

By ensuring this product is disposed of correctly, you will help prevent potential negative consequence for the environment and human health, which could otherwise be caused by inappropriate waste handing of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Attention: in some countries of the European Union, the product is not included in the field of application of the National Law that applies the European Directive 2002/96/EC and therefore these countries have no obligation to carry out a separate collection at the "end of life" of the product.



GS920 GAS DETECTOR

Lo styling è della b & b design

Purchase Date

Stamp and signature of the dealer

Registration Number

In agreement with our continuous development policy, we reserve the right to modify our products without notice.

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