

GAS LEAK DETECTORS

RGH 138 - 238 c1 Eng.



- **With internal backup battery**
In event power failure this ensures:
 - continuity of operation and safety,
 - one hour autonomous operation.
- **Option of increasing autonomy with external backup battery**
- **Normally-closed (N.C.) valves with manual reset:**
 - intrinsic safety,
 - operate at very low voltage (4 V-).
- **Detectors conform to UNI CEI EN 50194 & UNI CEI EN 50244 regulations**

1. APPLICATION

RGH gas detectors, consisting of an electronic unit and a N.C. gas shut-off valve with manual reset, are devices that guarantee, even if the mains power supply should fail, safety in spaces where domestic gas appliances are present e.g. : hobs, boilers and calorifiers.

They can control, by means of a sensor inside the electronic unit, the concentration in the air of the most common types of combustible gas: methane (RGH 138), propane – LPG (RGH 238). The electronic unit can control a single N.C. shut-off valve with manual reset (ERC3..) functioning at very low voltage (4 V-).

MODELS

Code	Sensor	Alarm threshold	Solenoid supplied	DN	Maximum pressure	Passage diameter	Methane ⁽¹⁾	Propane LPG ⁽¹⁾
RGH 138. 15	Methane	0.80 % (8,000 ppm)	ERC 315	1/2"	500 mbar	10 mm	1.5 m ³ /h	–
RGH 138. 20	Methane	0.80 % (8,000 ppm)	ERC 320	3/4"	500 mbar	13 mm	2.3 m ³ /h	–
RGH 138. 25	Methane	0.80 % (8,000 ppm)	ERC 325	1"	500 mbar	17 mm	3.5 m ³ /h	–
RGH 238. 15	Propane-LGP	0.35 % (3,500 ppm)	ERC 315	1/2"	500 mbar	10 mm	–	0.9 m ³ /h
RGH 238. 20	Propane-LGP	0.35 % (3,500 ppm)	ERC 320	3/4"	500 mbar	13 mm	–	1.4 m ³ /h
RGH 238. 25	Propane-LGP	0.35 % (3,500 ppm)	ERC 325	1"	500 mbar	17 mm	–	2.2 m ³ /h

(1) Flow with pressure drop of 1 mbar(10 mm WG)

ACCESSORIES

Code	Description
ALH 835	Backup battery to increase autonomy of RGH by five hours. Wall mounting 130 x 80 x 37.
ABE 301	Emergency battery to keep open ERC valve without power from RGH.

2. TYPICAL INSTALLATION



3. TECHNICAL DATA

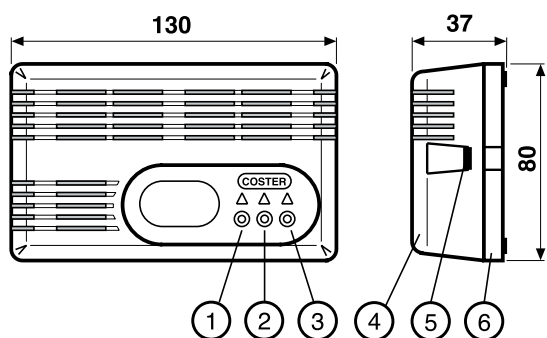
RGH detectors :

Power supply	230 V ~ ± 10%
Frequency	50...60 Hz
Consumption	1.5 VA
Autonomy with internal battery	1 hour
Autonomy with external battery (ALH 835)	1 ... 5 hours
Output	4 V - (1 valve ERC)
Acoustic signal	85 db / 30 cm
Sensor :	
- RGH 138. (methane)	Figaro TGS 2611-B00
- RGH 238. (Propane-LPG)	Figaro TGS 2610-B00
Sensor heating time	~ 120 seconds
Alarm threshold :	
- Methane (RGH 138)	0.80 % (8,000 ppm)
- Propane-LPG (RGH 238)	0.35 % (3,500 ppm)
Ambient temperature :	
- operation	0...40 °C
- storage	- 20...+ 60 °C
Permitted ambient humidity	Class F DIN 40040
Electromagnetic compatibility	CEE 93/68
Protection	IP 42
Weight	250 g

ERC valves :

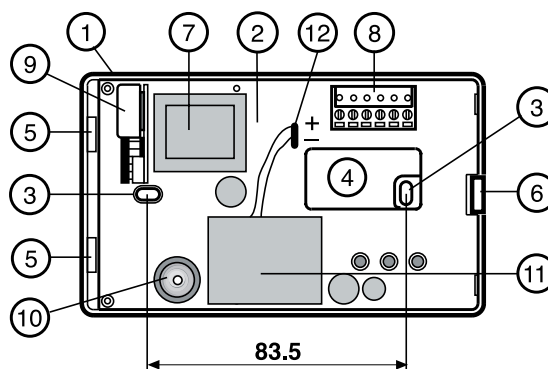
Type	normally closed (N.C.) with manual reset
Class	A
Group	2
Power supply	3...5 V -
Consumption	0.2 VA
Autonomy with emergency battery (ABE 301)	20 hrs
Test pressure	1,000 mbar
Maximum working pressure	500 mbar
Closure time	less than one second
Body	OT 58 brass
Plug	OT 58 brass
Seals	Viton O-Ring
Plug seal	rubber
Unions	female screwed
Working temperature	- 15...+ 60 °C
Protection	IP 55
Weight :	
- ERC 315	350 g
- ERC 320	450 g
- ERC 325	600 g

4. OVERALL DIMENSIONS DETECTOR



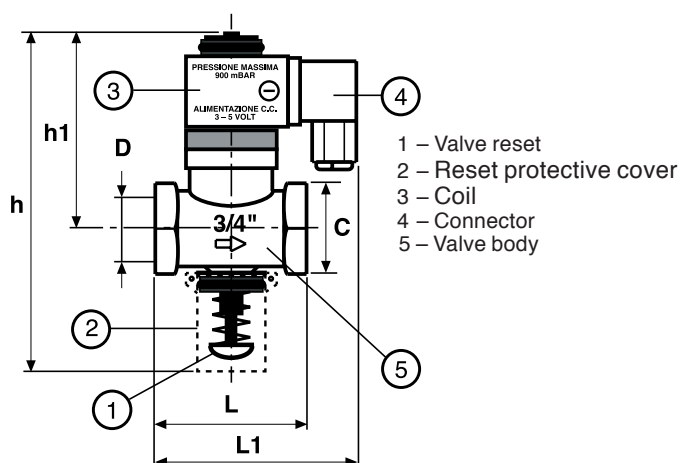
- 1 - Line LED
- 2 - Alarm LED
- 3 - Sensor fault LED
- 4 - Cover
- 5 - Cover blocking tongue
- 6 - Base

5. DETECTOR BASE



- 1 - Base
- 2 - Printed circuit
- 3 - Holes for fixing screws
- 4 - Cable entry cutout
- 5 - Cover securing elements
- 6 - Cover blocking tongue
- 7 - Transformer
- 8 - Terminal block for electric connections
- 9 - Gas sensor
- 10 - Acoustic alarm
- 11 - Internal backup battery
- 12 - Battery lead

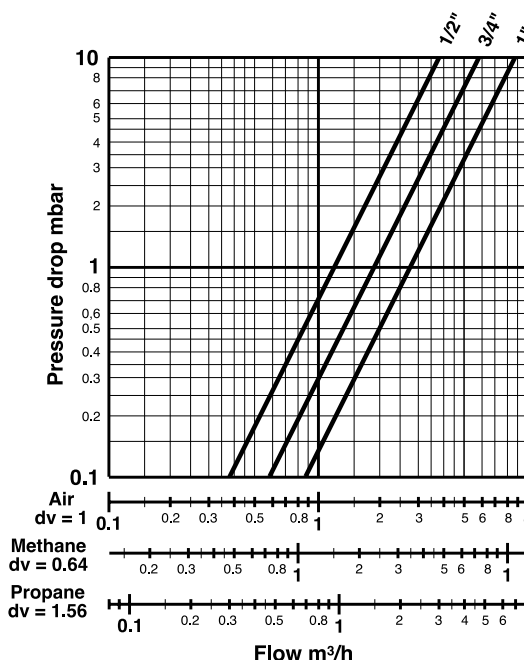
6. OVERALL DIMENSIONS SOLENOID VALVE



- 1 - Valve reset
- 2 - Reset protective cover
- 3 - Coil
- 4 - Connector
- 5 - Valve body

Model	L	L1	h	h1	C	D
ERC 315	56	79	127,6	75	28	1/2"
ERC 320	56	79	127.6	75	32	3/4"
ERC 325	61.5	79	134.6	75.5	40	1"

7. SOLENOID VALVES PRESSURE DROP



8. POSITIONING THE DETECTOR

The gas detector must be installed in the room in which any gas escape is most likely to take place: for example, the kitchen with its gas hobs, oven, water heater.

The correct positioning of the components of the system for detecting the presence of gas in the air is essential for ensuring that the system works properly and, consequently, for guaranteeing the safety of the rooms controlled and of the persons present. For this reason you are strongly advised to have the installation carried out by qualified persons.

8.1 Detector

The position of the detector depends on the type of gas to be controlled and, in particular, on the density of this gas in respect of air :

- **Methane** (a gas that is lighter than air and so tends to rise). Position: at a distance of 10...50 centimetres from the ceiling and, in any event, above the door and the highest window.
- **Propane-LPG** (a gas that is heavier than air and so tends to move downwards). Position: at a distance of 10...30 centimetres from the floor..

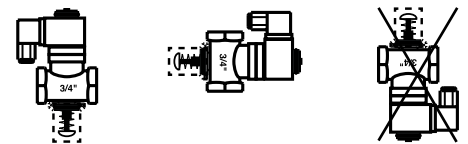
Furthermore, in order to ensure correct operation and to avoid false alarms due to the casual and momentary presence of gas, the detector **must not** be positioned:

- at a distance less than 1...2 metres from gas water heaters;
- at a distance less than 2...3 metres from gas hobs or gas ovens (also to avoid contaminating the sensors with grease or kitchen vapours),
- in the open,
- in closed spaces (e.g. behind a curtain, in a corner or a wardrobe),
- directly above or under the sink;
- near doors or windows,
- near air extractors,
- in places where temperature and humidity could fall outside the limits given under 3. Technical Data,
- in places where dust or dirt could block the sensor and so render it inefficient,
- in places where the air movement could be impeded by furniture,
- in places subject to possible sprays of water, in particular for detectors sited near the floor,
- in places difficult to access for the periodical checks of the detector.

8.2 Solenoid shut-off valve

This must be installed on the gas supply pipe, with the following precautions:

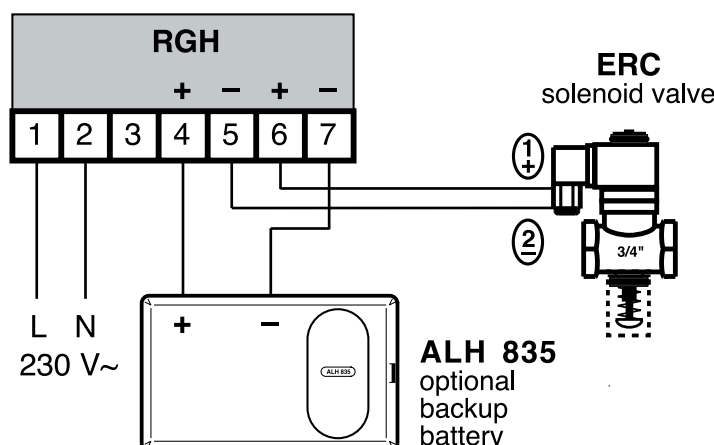
- the **flow direction** indicated on the valve body **must be respected**
- preferably in a space different from the one controlled
- in a place that is easily accessible, in particular for re-setting the valve
- if sited outside, it must be protected against the weather
- in plants with an outside propane-LPG tank, the valve must be installed downstream of the pressure reducing valve (30...40 mbar)
- in plants with gas cylinders, it must be installed downstream of the pressure reducing valve and, if possible, connected directly to this by means of a threaded union
- it can be mounted in any position except that with the union for the electric connections facing upwards.



9. ELECTRICAL CONNECTIONS

IMPORTANT : the detection system must always be in operation, so the electric power supply for the detector has to come directly from the mains supply without switches or other devices that could inadvertently render it inactive. For the wiring use 1.5 mm² cables .

10. WIRING DIAGRAM



WARNING:
When carrying out the wiring ensure that the polarities are respected.

11. OPERATION

11.1 Switching on

When connected to the power supply the green LED (4.1) lights. The detector does not acquire alarms and, accordingly, does not signal alarms for the first two minutes of operation: this is the time required for the sensors to become stabilised so that their readings can be considered correct and reliable.

11.2 Alarm

The internal sensor detects the concentration of gas in the air. If the alarm threshold is exceeded, the red LED (4.2) on the detector starts to flash. With a maximum delay of 30 seconds, which serves to avoid acquiring false alarms due to the temporary presence of gas, the red LED remains lit, the detector switches on the internal acoustic alarm and closes the gas shut-off valve.

11.3 Alarm threshold for combustible gases

For the combustible gases methane and propane-LPG, the alarm threshold must not be higher than a concentration equal to 20% of the LEL (Lower Explosive Limit = volumetric ratio in air of gas or combustible vapour, below which an explosive mixture is not formed) of the gas to be controlled (regulation UNI CEI EN 50194, point 4.3.3). For the gases under consideration we have the following values:

Type of gas	LEL	Maximum threshold (20% of LEL)	Alarm threshold of detector
methane	5% (50,000 ppm)	1% (10,000 ppm)	0.80% (8,000 ppm)
propane-LPG	2.1% (21,000 ppm)	0.42% (4,200 ppm)	0.35% (3,500 ppm)

11.4 Warning of sensor fault

The detector can signal the possibility that a sensor is faulty: if this should occur, the yellow LED on the detector face lights (4.3).

11.5 Control of the valve

The valve is of the normally-closed (N.C.) type with manual reset. To permit the gas to flow, the valve has to be set manually and electrically powered by the detector: when the detector enters the alarm state it removes power from the valve thereby bringing about its closure.

The gas can only flow again when the detector is no longer in the alarm state and after the valve has been reset.

11.6 Safety

The RGH detector can continue to guarantee safety even in the absence of the mains electricity supply: by means of its internal backup battery it can continue to function for at least one hour.

By connecting the optional external battery (ALH 385), the operating autonomy in the absence of mains supply can be increased by a further five hours.

12. PERIODIC MAINTENANCE

To ensure that the detector is continuing to function over time, it is necessary to check its operation at least once every three or four months. At least once a year you are advised to have it checked by a specialised technician.

12.1 Sensor life cycle

The detector must be checked by the date shown on the label on the cover.

After this date, in fact, the life cycle of the sensor expires and it must be replaced with a new one: it is necessary to calibrate the new sensor and carry out a complete check on the detector.

These operations must be carried out at COSTER T.E.'s factory.

13. WARNING: IN THE EVENT OF AN ALARM

First, remember that most people are able to recognise the presence of combustible gas (methane and propane-LPG) in the air even in concentrations lower than those that would set off the detector alarm, so that the odour of gas does not mean that the detector is broken and does not necessarily indicate a danger situation.

In any event, if you can smell gas and, above all, if the detector signals an alarm situation, do as follows:

- turn off all open flames and put out cigarettes, pipes, etc
- turn off all gas appliances
- do not operate electric switches since they could cause sparks
- do not use the telephone in the spaces where the gas is present
- for methane, close the central gas supply valve, whilst for propane-LPG close the gas cylinder or the storage tank
- open windows and doors in order to ventilate the rooms where the smell of gas has been noted.

If the cause of the alarm has been identified and definitely eliminated, you can restart the detector and reactivate the gas supply. If in any doubt about a possible gas leak, inform the emergency service of the gas supply company.

MC 18.05.00 Rev. : MZ 23.06.04



Head Office & Sales
Via San G.B. De La Salle, 4/a Tel. +39 022722121
20132 - Milan Fax +39 022593645

Reg. Off. Central & Southern
Via S. Longanesi, 14 Tel. +39 065573330
00146 - Roma Fax +39 065566517

Orders and Shipping
Via Gen. Treboldi, 190/192 Tel. +39 0364773200
25048 - Edolo (BS) Tel. +39 0364773202
Fax +39 0364770016

E-mail: info@coster.info Web: www.coster.info



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