User Manual

Domestic Gas Detector
FIDEGAS® Ref. D-195i

WARNING: READ INSTRUCTIONS CAREFULLY BEFORE PUTTING INTO OPERATION OR SERVICE.

TO FACILITATE PROPER OPERATION USE TEST KIT FIDEGAS® AS DESCRIBED IN THE USER MANUAL. THE TEST KIT COMPLIES WITH RITE AND GAS REGULATION UNE 60670-6 and UNE 60601

MANUFACTURED BY:

COMERCIAL DE APLICACIONES ELECTRÓNICAS, S.L.

P.º Ubarburu 12

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20014 **SAN SEBASTIÁN - ESPAÑA**

www.fidegas.com

TECHNICAL SERVICE:

CONTENTS

WRITTEN AND APPROVED BY:
Quality Department

1. GENERAL

The domestic gas detector **Ref. D-195I** detects the presence of combustible gas **Natural Gas (METHANE) or Liquefied Petroleum Gas (LPG: BUTANE/PROPANE)** and is prepared for an automatic gas shutting off in case of a gas leakage with the outmost security and precision due it's design which follows **EN 50194-1/2** standard guideline, rigorously complying with **European Directive 2014/30/UE** requirements for **Electromagnetic Compatibility** and **European Directive 2014/35/UE** for **Low Voltage**.

1.1 GAS DETECTION

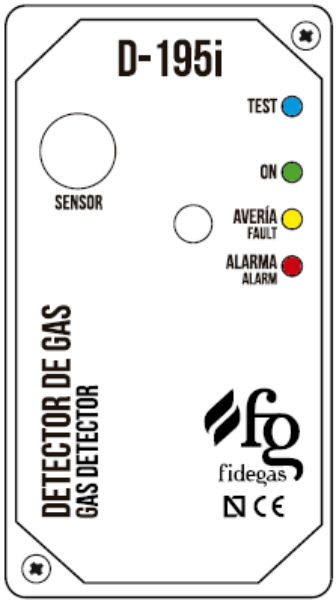
Gas detection is done by a **catalytic technology** sensor which is not affected by variations in temperature, atmospheric pressure or humidity, therefore achieving very precise gas detection within the prefixed limit.

Preset alarm level: 17% LIE (Lower Explosive Limit).

THE ADJUSTMENT IS DONE BY THE MANUFACTURER WITH A MIXTURE OF CERTIFICATED TEST GAS.

THE VERIFICATION PERFORMED BY THE ACCREDITED LABORATORY "ENAC" ON COMPLIANCE OF ALL CLAUSES OF EN 50194-1/2 STANDARD, GUARANTEES THE SECURITY AND RELIABILITY OF THESE SYSTEMS, AS IS SPECIFIED IN THE DECLARATION OF CONFORMITY UE.

1.2 INDICATIONS



- **Green** LED (**ON**): Power indication.
- **Yellow** LED (**WAIT**): Sensor warming-up time and y failure-fault conditions indication.
- **Red** LED (**ALARM**): Gas alarma indication.
- **Blue** LED (**TEST**): Test request and end-of-life sensor indication.
- Acoustic warning: Sound support for optical indications.

1.3 OUTPUTS

- **AV-AL**: Potential-free output normally closed (LP-NC) associated with the detector alarm and fault states.

Maximum admissible values: 30V, 500mA

- **12Vdc-GND**: Constant voltage output (12Vdc).

Maximum output power: 2,4W

2. OPERATION

2.1 WARM-UP

Make sure that the connections are correct and that there are not any short circuits in the outputs, then connect the detector to the mains 100-240 Vac or 12/24 Vdc, depending on the model. The **green** led will turn on and the **yellow** led will blink for 30 seconds (sensor warm-up time). During this time the LP (dry contact) output remains open (see part 4) and the gas detection is disabled.

Once the sensor warming up time is expired the detector will perform an output test, and if all the connections are correct, LP output will close, the **yellow** led will turn off and, if there is no gas detection, only the **green** led will be illuminated.

At this moment the detector is operative and ready to detect gas. The shut off valve can be manually reset although it is recommended to before perform a test (see part 5) as the final step of the installation process.

2.2 ALARM

It will be activated when detecting the presence of alarm gas concentrations or above. In this state the **red** led will be switched on together with an acoustic warning system and **LP output** remains **open**.

Explosion Limits of METHANE %Vol. in AIR	**LEL = 4.4**	**HEL = 17**
Explosion Limits of PROPANE % Vol. in AIR	**LEL = 1.7**	**HEL = 10.9**
Explosion Limits of BUTANE %Vol. in AIR	**LEL = 1.4**	**HEL = 9.3**

NOTE: *Data obtained from **EN 60079-20-1** Standard used for the equipment calibration.*

METHANE GAS (Natural Gas)

%VOLUME	**0.44**	**0.88**	**1.32**	**1.76**	**2.2**	**2.64**	**3.08**	**3.52**	**3.96**	**4.4**
% EN LEL	10	**20**	30	40	50	60	70	80	90	100

PROPANE GAS

% VOLUME	**0.17**	**0.34**	**0.51**	**0.68**	**0.85**	**1.02**	**1.19**	**1.36**	**1.53**	**1.7**
% EN LEL	10	**20**	30	40	50	60	70	80	90	100
% VOLUME	**0.14**	**0.28**	**0.42**	**0.56**	**0.7**	**0.84**	**0.98**	**1.12**	**1.26**	**1.4**

BUTANE GAS

IT IS RECOMMENDED TO INSTALL A 12 Vdc FIDEGAS® VALVE THAT SHUTS OFF THE GAS WHEN THE GAS CONCENTRATION IN THE ENCLOSURE REACHES THE ALARM LEVEL.

2.3 FAULT

The **permanent** activation of **yellow** led indicates that the **device** is in a state of **failure-fault.**

The **intermittent** activation of **yellow** led and the acoustic signal indicates that the **sensor is faulty**.

In both cases the **LP output** remains **open.**

2.4 TEST AND END-OF-LIFE

The **intermittent** activation of **blue** led indicates the need to perform a **test.** See parts 5 and 6.6. This warning will be activated every 6 months approximately.

The **permanent** activation of **blue** led indicates the **end-of-life** of the detector. In this case, perform a test, and in case that it passes the test, it is recommended to send the detector to factory for it recalibration.

3. INSTALLATION

3.1 INSTALL IN:

Ideally, the detector should be installed in any room that contains a gas appliance (heater, boiler, stove, etc.).

The detector must be installed in the place to be protected and where gas can presumably accumulate, at a distance of about 1.5 meters from any gas appliance or smoke output (boiler) and apart of possible air flows.

There should be no obstacles like columns, furniture, etc., between the detector and the point of gas consumption that could avoid the gas reaching the detector.

Avoid places where dirt can obstruct the entry of gas to the sensor, considering that it covers an area of approximately 25 m2. This covering area applies to the perimeter of gas consumption points, trying therefore to cut the trajectory of gas advancing towards inner spaces.

Adjust the length of wires so they can be placed inside the connection box. Install the external lid over the circuit carrier and finish apparatus installation.

Natural Gas is a mixture of gases lighter than air (**methane** density 0.55) that when it escapes, it rises upwards and accumulates itself in upper areas making it difficult to be dispersed. The main component of **Natural Gas** is **Methane** and its proportion varies according to the process by which it is obtained.

TO DETECT **NATURAL GAS** (**METHANE**), THE GAS DETECTOR SHOULD BE INSTALLED NEAR THE CEILING, TYPICALLY AT A DISTANCE OF 30 CM FROM THE CEILING.

LPG is a mixture of gases heavier than air (**propane** density 1.56 and **butane** density 2.05), that when it escapes, it descends to the floor and accumulates itself in the lower areas making it difficult to be dispersed. **LPG** main components are **Butane** and **Propane**, and the proportions vary according to the process by which it is obtained from oil.

TO DETECT **LPG** (**BUTANE / PROPANE**), THE GAS DETECTOR SHOULD BE INSTALLED AS LOW AS POSSIBLE, TYPICALLY AT A DISTANCE OF 10-20 CM ABOVE THE FLOOR. THE INTRODUCTION OF CABLES SHOULD BE DONE THROUGH THE LOWER SECTION IN ORDER TO AVOID WATER ENTERING..

3.2 DO NOT INSTALL IN FOLLOWING CONDITIONS:

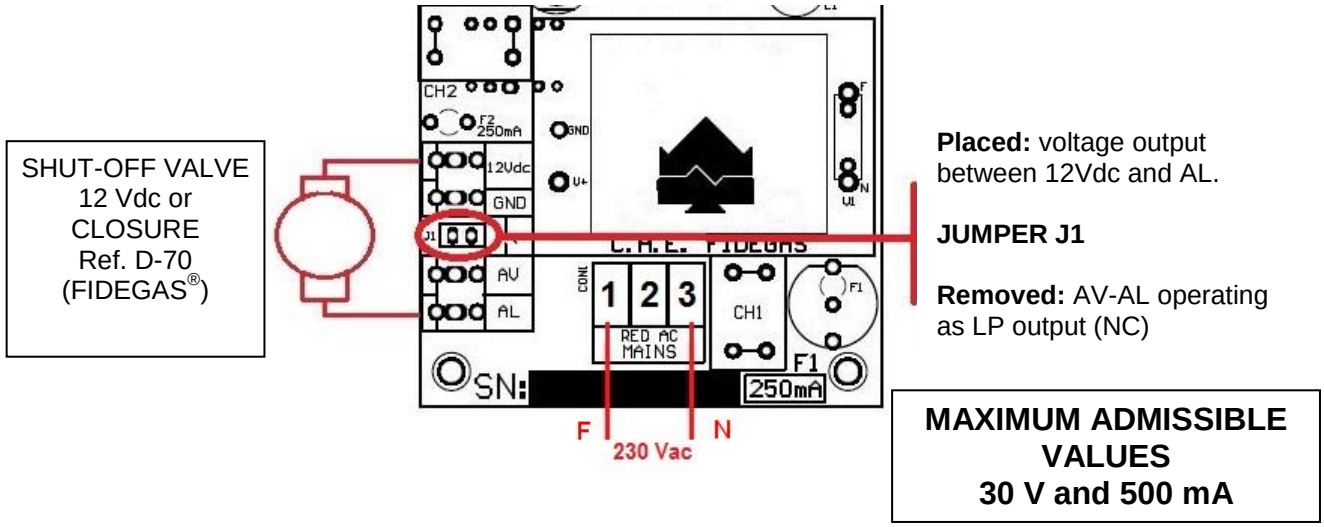
- Closed places (for example in a cupboard or behind a curtain);
- Where it can be obstructed (for example by furniture);
- Directly above a sink;
- Close to a door or window;
- Near a fan or extractor;
- Just above or below a sink;
- Very close to the cooking appliance;
- Close to air flows or similar ventilation;
- In a damp or wet place;
- Where dirty and dust can obstruct the inlet of gas to the sensor;
- Places where temperature can be lower than -10 ºC or higher than 50 ºC.

4. CONNECTIONS

- Connect to mains supply 100-240 Vac in the terminal marked as RED AC MANIS by means of a bipolar swith (cut of both phases). Make the connection with a power supply wire that complies with HD 21/22.

- To connect a 12 Vdc FIDEGAS® gas cutoff device: connect it as shown in the figure keeping jumper 1 in place so that the cutoff device is deactivated with the gas detection alarm.

- To use AV-AL output as a potential-free output normally closed (LP-NC) jumper J1 must be removed.



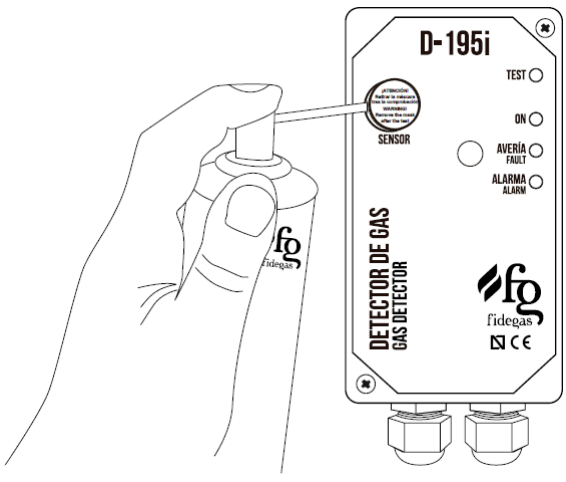
CAUTION: MAXIMUM POWER IN 12 Vdc OUTPUT; 2.4 W.

5. OPERATIONAL TEST

Use of the Test Kit FIDEGAS®:

1. Remove the mask from the test kit and place it on the detector's cover (in such a way that it completely covers the sinterized metal filter, *indicated as SENSOR*).
2. Insert the cannula (tube) into the hole of the mask, **drop gas for 2-3 seconds and wait 5 seconds** without removing the mask until the alarm is activated. In the case the alarm is not activated, repeat the process releasing more gas.

It is recommended to carry out this operation ***EVERY SIX MONTHS.***



After testing, the detector needs a recovery time (<20 s) while the gas leaks out and normal operation is re-established.

Do not use gas lighters or flammable vapours that could lead to wrong conclusions.

When the test kit presents low pressure, more gas application time is needed to carry out the test..

When the test spray indicates no pressure, it is invalid for further testing.

TEST METHOD FOR D-195i WITH INTEGRATED SENSOR.

6. RECREATIONAL VEHICLES AND CRAFT

6.1 GENERAL

There is a specific version of the detector, **Ref: D-195i 12V,** to install in recreational vehicles and craft that can detect the presence of **Liquefied Petroleum Gas (LPG: BUTANE/PROPANE)** or **Gasoline**. The design follows **EN 50194-2** standard guideline for **combustible gases**, rigorously complying with **European Directive 2014/30/EU** requirements for **Electromagnetic Compatibility** and **European Directive 2014/35/UE** for **Low Voltage.**

The **combustible gases** detection is performed by a remote sensor, installed outside the detector.

6.2 INSTALLATIOIN

Make connections before installing the detector. Adjust the length of the wires so that they can be placed inside the junction box. Place the outside cover to finish the installation of the device

The detector must be installed inside the vehicle, in a location that enables the correct viewing and listening alarm and wherever unlikely to be knocked or damaged.

LPG is a mixture of gases heavier than air (**propane** density 1.56 and **butane** density 2.05), when it escapes it descends to the floor and accumulates itself in the lower areas therefore making it difficult to disperse. **LPG** main components are **Butane** and **Propane**, and the proportions vary according to the process by which it is obtained from oil.

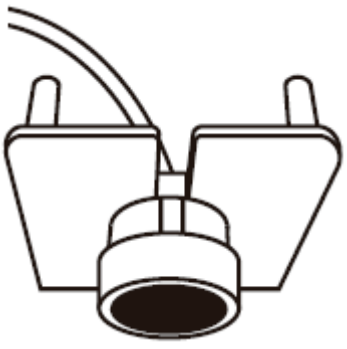
For LPG detection:

The **remote sensor** must be installed by the support in the place to protect and where the gas tends to accumulate, separated 1.5 meters from gas consumption points or smoke ventilation and away from air flows.

Gasoline is liquid and its composition is highly variable depending on its origin (composed of tens of hydrocarbons). Its vapours are also heavier than air although they are low volatile at ambient temperature. Regarding the sensibility of the sensor is considered equivalent to **Hexane** and the alarm level is adjusted to 17% LEL of **Hexane**.

For gasoline detection:

Install the **remote sensor** by the support in the bilge vertically pointing downwards and ensuring it to the structure.



Position of the remote sensor:

Place the remote sensor with the provided support in the proper position matching the sensor enclosure marks with the support's gap.

Classification of environmental conditions 6K3/6B1/6S1/6M3 is shown on the back of the enclosure, as defined in the standard EN 60721-3-6.

6. RECREATIONAL VEHICLES AND CRAFT

6.3 PRECAUTIONS

- No gas detector should be considered as an alternative to follow good practice of shutting off gas when leaving vehicles.
- For boats, due to their water tightness and LPG being heavier than air, gas accumulation may occur during periods of non use. This may not be detected because the power to the device may have been switched off. The danger of ignition resulting from reconnecting the electrical supply will not be avoided by de gas detector.
- There should be NO obstacles such as columns, furniture, etc., between the remote sensor and gas consumption points that could avoid the gas reaching the remote sensor.

6.4 DO NOT INSTALL THE REMOTE SENSOR IN:

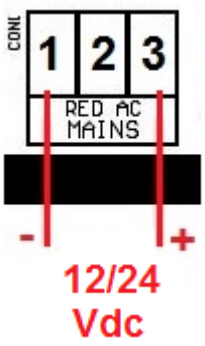
- Below the level of the circuit breaker of the bilge's pump;
- In an enclosed space (for example in a cupboard or behind a curtain);
- Directly above a drain;
- Next to a door or window;
- Next to an extractor fan;
- Directly above/below a sink;
- In the immediate vicinity of a cooking appliance;
- Next to an air vent or other similar ventilation openings;
- In a damp or humid location;
- Where dirt and dust may block the sensor;
- In an area where the temperature may drop below -10ºC or exceed 50ºC.

6.5 CONNECTIONS

Detectors installed in boats and caravans are 12/24 Vdc powered. The polarity of the terminal must be considered for proper operation.
(1 Negative – 3 Positive).

Outputs operate the same as in the domestic version 100-240Vac powered.

The remote sensor is connected to a specific connector inside the detector.



6.6 OPERATIONAL TEST

To execute the operational test, an alarm has to be started using the test kit as follows

1. Place the mask application gas so that it completely covers the sensor.
2. Insert the cannula (tube) of the test spray into the hole of the mask and drop gas **during 2 and 3 seconds**, **wait 5 seconds** for the alarm to be triggered. In case the alarm is not triggered, repeat the process releasing more gas. Then remove de mask application gas.

It must be done an operational test when the TEST warning is activated or EVERY SIX MONTHS.

Do NOT use gas lighters or flammable vapours that could lead to wrong conclusions.

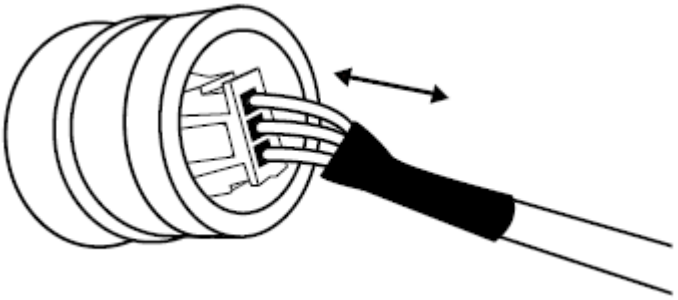
When the test spray indicates low pressure, more time of gas release will be needed to perform the test. When the test spray indicates no pressure it is invalid for further testing

6.7 CALIBRATION AND SENSOR REPLACEMENT

To revise or calibrate the detector both the detector and the remote sensor must be sent to factory. So, the cable must be disconnected from both sides, on the electronic board and on the remote sensor in order to leave the cable in the installation.

In necessary, the sensor will be replaced with a new one and calibrated with its electronic board.

The D-195i gas detector is composed of an electronic board and a sensor head. These elements are calibrated together in factory; therefore they should not be exchanged.



PRECAUTIOIN: Do not pull the cable when disconnecting the cable from the connectors of the sensor and from the detector.

7. WHAT SHOUL BE DONE IN CASE OF ALARM OR SMELL GAS

7.1 IN DOMESTIC INSTALLATIONS:

Keep calm, and carry out the following actions:

- Extinguish all naked flames, including all smoking material;
- Turn off all gas appliances;
- Do not switch on or off any electrical equipment, including the gas detection apparatus;
- Turn off the gas supply at the gas main control and/or (with a LGP supply) the storage tank;
- Open doors and windows to increase ventilation;
- Do not use a telephone in the building where the presence of gas is suspected.

If the alarm continues to operate, even after an alarm resetting action where appropriate, and the cause of the leak is not apparent and/or cannot be corrected, vacate the premises and **INMEDIATELY NOTIFY** the gas supplier and/or the gas emergency 24 h-service in order that the installation may be tested and made safe, and any necessary repair carried out.

If the alarm stops and the reason for the alarm having operated is identified, (for example a gas tap switched on with the burner unlit), after stopping the gas release and ensuring that all appliances are turned off, the main gas supply may be reinstated.

7.2 IN RECREATIONAL VEHICLES AND CRAFT:

If leakage of liquefied petroleum gas or an accumulation of petrol vapour is suspected or detected, the following action should be taken immediately:

- Shut off the supply of gas or petrol by closing the main valve(s);
- Extinguish all naked flames and other sources of ignition, e.g. heaters, cookers, pilot lights, cigarettes, etc.;
- Do not operate electrical devices including electronic communication equipment (e.g. mobile phone, radio);
- Ventilate by creating a through draught to disperse the gas. For caravans and motor caravans open all doors and windows;
- If possible, evacuate the area because a leak with no fire my form an explosive mixture;
- When necessary inform the emergency services.
- For boats: if the leakage is from a cylinder or a removable tank and it cannot be stopped, remove it to a position where leaking will safely disperse away form the vessel and other vessels in the vicinity. If this cannot be done, suspend the LPG cylinder under water rather than risk an explosion. Extreme care should be taken to remove the cylinder and/or the self-contained appliance in such a way as to prevent spillage of the liquid.

Do not use the installation again until it has been checked and any fault rectified by a competent person.

8. PRECAUTIONS

INSTALLATION OF A DETECTOR SHOULD NOT BE USED AS A SUBSTITUTE FOR PROPER INSTALLATION, USE AND MAINTENANCE OF FUEL BURNING APPLIANCES INCLUDING APPROPRIATE VENTILATION AND EXHAUST. DETECTORS SHOULD BE INSTALLED BY A COMPETENT PERSON OR AN AUTHORIZED INSTALLER.

* Remember that if the detector has been disconnected, there may be gas accumulation during that period that will not be detected; therefore it is recommended closing the main circuit gas inlet.

* Make sure that the detector is correctly connected to the mains supply of 100-240 Vac o 12 Vdc. The connection of the **FIDEGAS®** gas shut off device it should be done as indicated in the previous section, and it's consumption should be less than ***200 mA for 12 V dc***

* It is possible to smell the gas before the detector triggers the alarm, because of the gas diffusion process that makes the gas to reach our nose before the detector.

* When installing a gas detector where it should **NOT** be installed must be considered (see 3.2 and 6.4).

* Never sink, wet or spray the detector with water or any liquid. Do not paint with synthetic paintings near the detector.

* Avoid cleaning close to the detector with detergents containing bio-alcohol, industrial solvents, or other products with silicone in suspension. When cleaning the detector only use a damp cloth with clean water.

* The detector must not be in contact with the following substances since it might irreversibly get damaged:

- SILICONE vapours. **Do not use cables containing silicone.**
- TRICLOROETHYLENE, Plumb tetraethyl.
- Sulphur compounds (sulphur dioxide, hydrogen sulphide, etc.).
- Halogen compounds (halogen hydrocarbons, etc.).
- Organic phosphorus compounds (herbicides, insecticides, etc.).

* None of the detector elements should be manipulated, neither the adjustment, since it might cause an irreversible failure of the detector or an electrical shock.

* Field calibration adjustment is not allowed.

*** It is recommended to send the detector to the manufacturer for calibration when the lifetime is exceeded or in case the operational test fails.**

*** Lack of compliance of these BASIC precautions can lead to equipment malfunction. THE MANUFACTURER IS NOT RESPONSIBLE FOR HANDLING OF EQUIPMENT NOR FOR THE DAMAGE THAT COULD LEAD FOR INCORRECT USE.**

This product complies with the European Directive **2002/96/CE WEEE** (Waste Electrical and Electronic Equipment). The policy provides general framework around the area of the European Union for removal and recycling of waste electrical and electronic equipment.
Please do not dispose the product in household waste.

9. TECHNICAL CHARACTERISTICS

DOMESTIC/HOME SYSTEM (100-240 Vac)

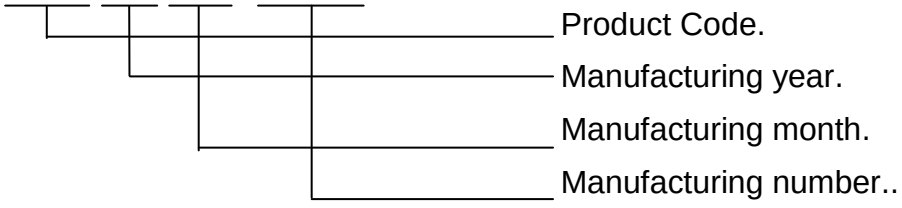
- **Supply voltage:** 100-240 Vac / 50-60Hz
- **Maximum power consumption:** 5W (with charge).
- **Class II** ⧈ **Degree of protection**: IP X2D.
- **Detected gases:** Natural Gas (Methane) or LPG (Butane/Propane)

BOATS AND CARAVANS (12/24 Vdc)

- **Supply voltage** 12/24 V dc.
- **Maximum power consumption:** 2 W (without charge)
- **Class III** ◈ **Degree of protection**:, Detector: IP X2D. Remote sensor: IP44
- **Detected gases:** Gasoline (Hexane) or LPG (Butane/Propane)

GENERAL

- **12 V output:** maximum admissible power of 200mA (2.4W).
- **LP alarm outputs:** maximum admissible values 30V, 500mA.
- **Alarm level:** 17% LEL (Lower Explosive Limit).
- **Sensor's lifetime:** catalytic sensor, protected with metal mesh filter. Estimated lifetime, five (5) years in clean air. It is recommended to carry out an operating test EVERY SIX (6) MONTHS.and always when TEST request indication is on.
- **Test, end-of-life and fault warnings**.
- **Warm-up time:** 30 s.
- **Stabilization time**: 1 hour.
- **Response time:** T_{90} < 20 s.
- **Covering area:** 25 m^2 approximately.
- **Relative temperature and humidity:** (- 10 to 50) ºC and (0 to 90) % HR.
- **Pressure limits:** (850 to 1150) mbar.
- **Serial Nº: C C C A A M M X X X X**



- **Size:** 170 x 70 x 45 mm. **Weight**: 475 g.

AENOR Certificate of Product Nº 030/002387 and 002388.

GUARANTEE CONDITIONS

This guarantee is issued by C.A.E., S.L. a FIDEGAS® manufacturer, specifically for the original purchaser who shall appear in this document and covers the apparatus against eventual failure and malfunction as long as it has been used correctly as indicated in the User Manual, and taking into account the following conditions:

1.- Five (5) years against any manufacturing defect. CE

2.- This guarantee will become void if any of the following cases can be proved:

a) **The apparatus has been repaired or modified, or any foreign device has been added or introduced, or if qualified personnel who are not part of our team has worked with it.**

b) **The apparatus has suffered any damage.**

c) **The serial / manufacturing number has been altered or does not coincide with our records.**

3.- The present guarantee document shall not be modified.

4.- Postage costs will be paid for by the user.

NON-COMPLIANCE OF THESE CONDITIONS WILL AUTOMATICALLY RENDER THIS GUARANTEE VOID AND ALL COSTS WILL BE PAID FOR BY THE USER.

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COMERCIAL DE APLICACIONES ELECTRONICAS, S.L.
C/ Paseo Ubarburu 12 Tel. +34 943 463 069 Fax. +34 943 471 159
20014 SAN SEBASTIAN – SPAIN www.fidegas.com

INSTALLED BY: _____

RECALIBRATING GAS DETECTOR EXTENDS ITS LIFETIME.

APPARATUS:

USER: _____

ADDRESS: _____

STATE: _____ **DATE:** _____

C.A.E., S.L. GUARANTEE FOR THE COMPANY Rev. 3 (07/08)

COMERCIAL DE APLICACIONES ELECTRONICAS, S.L.
C/ Paseo Ubarburu 12 Tel. +34 943 463 069 Fax. +34 943 471 159
20014 SAN SEBASTIAN – SPAIN www.fidegas.com

INSTALLED BY: _____

RECALIBRATING GAS DETECTOR EXTENDS ITS LIFETIME.

APPARATUS:

USER: _____

ADDRESS: _____

STATE: _____ **DATE:** _____

C.A.E., S.L. GUARANTEE FOR THE USER Rev. 3 (07/08)

EU DECLARATION OF CONFORMITY

MANUFACTURER: **Comercial de Aplicaciones Electrónicas S.L.**

ADDRESS: Paseo Ubarburu 12 - 20014 San Sebastián - España

PRODUCT DESCRIPTION:

Domestic Gas Detector Ref. D-195i:

The product above mentioned is declared, under our responsibility, to conform with the requirements of the following European directives:

1. **Directive LVD 2014/35/EU** Making available on the market of electrical equipment designed for use within certain voltaje limits abolishing Directive 2006/95/CE (DOCE 29/03/2014 – Serie L, nº 96/357).

2. **Directive EMC 2014/30/EU** Electromagnetic compatibility abolishing Directive 2004/108/CE (DOCE 29/03/2014 - Serie L, nº 96/379).

This conformity is assumed in reference with the following harmonized standards:

- **EN 50194-1:2009** Electrical apparatus for the detection of combustible gases in domestic premises. Test methods and performance requirements.
- **EN 50194-2:2006** Electrical apparatus for the detection of combustible gases in domestic premises. Electrical apparatus for continuous operation in a fixed installation in recreational vehicles and similar premises. Additional test methods and performance requirements.
- **EN 50270:2015+AC:2016-08** Electromagnetic compatibility. Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen.
- **EN 50271:2010** Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies.

The “Laboratorio Oficial J.M. Madariaga” (**LOM**) accredited by **ENAC Nº 22/LE036** and the “Laboratorio Central Oficial de Electrotecnia” (**L.C.O.E.**), accredited by **ENAC Nº 3/LE130/LE190**, have **CERTIFIED** that the product complies with these standards.

AENOR Certificate nº 030/002387 and 002388.

Issued on: **2015/05/05** Expires on: **2025/05/05**

San Sebastián,

JULIO BOUZAS FUENTETAJA
MANAGING DIRECTOR