

# User Manual



## ZGAS

Smoke detector  
and CO detector ZigBee®

Revision : 6

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Status : Approved

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# Warranty

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The device supplied to the buyer and/or the recipient is guaranteed by **CLEODE** against any malfunctions originating from a design and/or manufacturing flaw, for a period of twelve (12) months following delivery. The buyer and/or recipient is (are) responsible for proving the existence of the said defects or flaws. This warranty is applicable in accordance with articles 1641 to 1648 of the French Civil Code and in compliance with the French statutory warranty. The warranty covers the replacement free of charge of devices and parts affected by a design and/or manufacturing flaw excluding conspicuous defects in the device that are covered by the buyer and/or the recipient

In order to invoke the warranty, the buyer must immediately send written notice to **CLEODE** of the flaws that it attributes to the device. It must enable **CLEODE** to have access to the device to observe these defects and repair them. The warranty provided by **CLEODE** is strictly limited to the equipment provided and shall only have for effect the replacement or repair, at **CLEODE**'s expense, on its own premises, of all devices or parts that are not functioning as a result of defects or flaws. **CLEODE** reserves the right to modify the devices in order to comply with the warranty.

The warranty does not apply to replacement or repairs that may result from normal wear and tear of devices, systems or products, damage or accidents resulting from negligence, failure to supervise or maintain, or incorrect use of the devices, systems and/or products.

The maintenance service is provided by **CLEODE** with all reasonable care possible and in compliance with the current state of the arts.

The exchange of parts or repairs performed under the warranty cannot result in extending the length of the warranty. In no event can the unavailability of the device due to servicing give rise to compensation for any reason whatsoever. The seller is released from all obligations relating to the warranty if the product or device has been modified without prior written consent, or if original parts have been replaced by parts which it has not manufactured without prior consent. If unforeseen damage is caused by the device, it is expressly agreed that the seller can only be liable for the reimbursement of monies received for the purchase of the device if it has been destroyed. Under no circumstances can the seller be held liable for indirect or contingent damage. The seller is released from any liability and the buyer waives any rights against it if an accident or direct or indirect damage is caused to the buyer following a defect, incorrect usage, incorrect maintenance or normal wear of the device sold.

## Revision table

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Version	Author(s)	Description of the version	Date
0.1	Cleode	Initial version	08/03/2009
1.0	Cleode	Validated document	08/06/2009
1.1	Cleode	Minor corrections	09/04/2009
2.0	Cleode	Validated document	09/04/2009
2.1	Cleode	Add Technical features chapter	09/25/2009
3.0	Cleode	Validated document	09/25/2009
3.1	Cleode	Modification of autonomy period	01/05/2010
4.0	Cleode	Validated document	01/05/2010
4.1	Cleode	Modification of battery management	05/20/2011
5.0	Cleode	Validated document	05/20/2011
5.1	Cleode	Update manual	10/13/2014
6.0	Cleode	Validated document	10/22/2014

## Reference documents

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N°	Document	Description
[1]	ZigBee_Cluster_Library_Public	ZigBee Cluster Library specification
[2]	ZigBee_Specification	ZigBee specification
[3]	ZigBee_Home_Automation	Home Automation profile specification

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# I. Introduction and specifications

## I.1 Introduction

The ZGAS is a smoke detector and a CO detector for users using a ZigBee® network.

It allows:

- To warn of too high a rate of carbon monoxide.
- To warn a detection of smoke.
- To make a sound if an alarm is detected or on request from the ZigBee® network.

For that it will make a sound symbolizing the type of abnormality detected:

- 1 short beep means the battery is low.
- 4 short beeps mean abnormal detection rate of carbon monoxide.
- 1 continuous beep means a smoke detector.

Upon detection of an anomaly, in addition to the audible alarm, the ZGAS sends an alarm on the ZigBee® network.

The product is as follows:

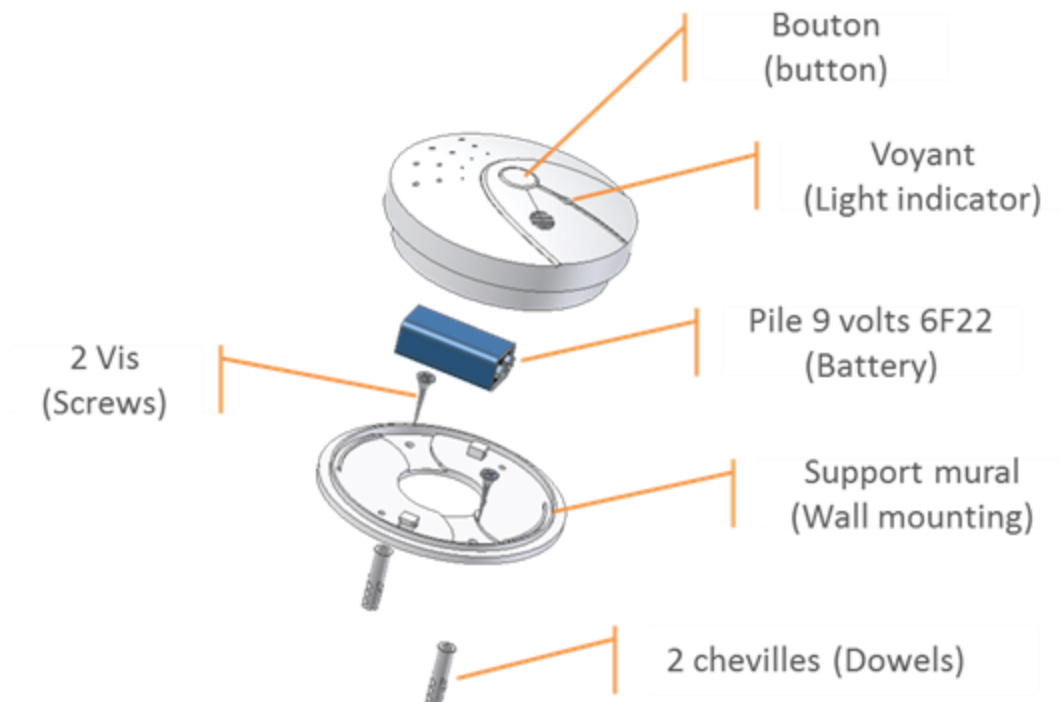


Figure 1 : Exploded View Product

## I.2 Meaning of the Light indicator

The red light allows viewing of sensor's status and the presence of smoke or carbon monoxide.

This indicator takes the following states according to procedures describes in the table below:

Legend :



Turn off









Slow flashing



Turn on during 2s



Fast flashing

Mode	State		Description
Default			Without separate announcement, the association remains off.
Start-up		2 times	At startup, the sensor flashes twice slowly.
Identification		The time is given in the frame Identify	On receiving identify command, the sensor blink slowly as the identification time isn't exceeded.
Manual start of the association phase		Up to 20 seconds	The device blinks slowly when he researches a coordinator.
Pairing OK		2 seconds	Once associated, the sensor turns on 2 seconds.
Smoke alarm or carbon monoxide alarm		continues	If the sensor detects the smoke or an abnormal level of carbon monoxide, the red light turns on until the end of the alarm.

## I.3 Specifications

Stack ZigBee™	ZigBee™ Pro 2007 Can operate on all 16 channels ZigBee
Radio range	30 m (inside)
Smoke detector	1% ~ 5% PI OBS
CO detector	100 ±50ppm
Temperature of use	5 to +40 °C
Sound	85 dB à 3m
Power	1 battery 9V 6F22
Battery Life	~ 1 year
Dimensions	Ø110mm – height 37mm



## II. 'Quick Start'

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Procedure of quick start:

- 1) Install the product (for details see section III.1)
- 2) Pairing the product ZGAS in the ZigBee® network (for details see section III.4)
- 3) The product is operational in your ZigBee® network.
- 4) Test the sensor (for details see section III.3)

# III. Procedures

## III.1 Installation

**IMPORTANT:** This product should be mounted on a wall or ceiling.

### III.1.1 Recommendation positioning

**Where to install:**

For maximum protection, install a ZGas on each level of housing. The risk is greater at night, it is recommended to place the sensors near bedrooms, see in the bedroom.

The ZGas can cover an area of about 50 m<sup>2</sup> of space without partitioning. For optimum functionality, the sensor mustn't be placed more than 5m from the farthest extremity of the room.

In the case of a hallway measuring more than 10 m long it is advisable to install two sensors with less than 10 m them.

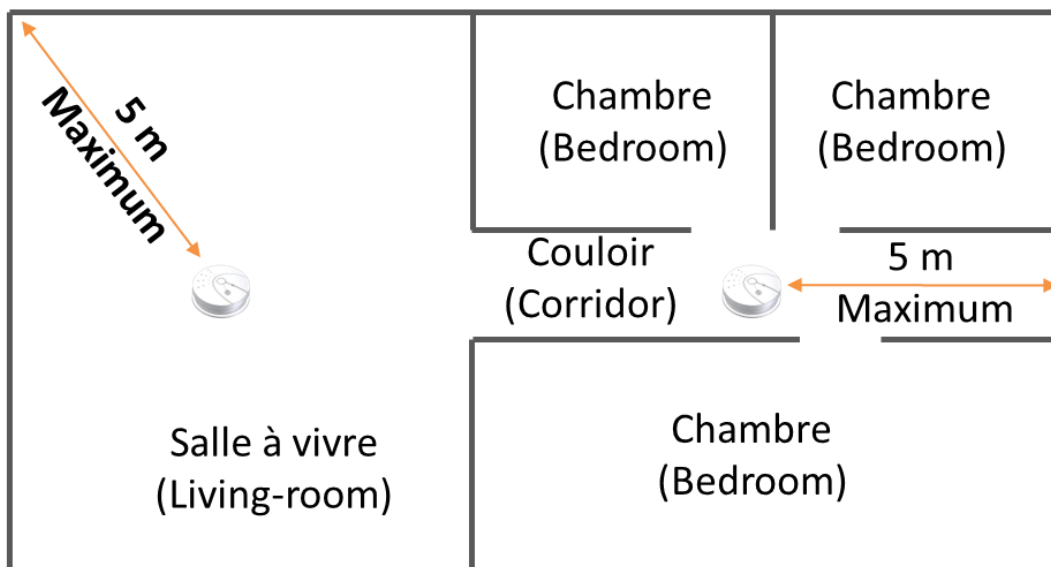


Figure 2 : Positioning on a level

Prefer a ceiling installation for residential construction. Then position the product ZGAS at least 30cm from a wall. For installation on a wall: position the product at least 10 cm of a wall/ceiling and up to 30cm below the ceiling (see diagram below).

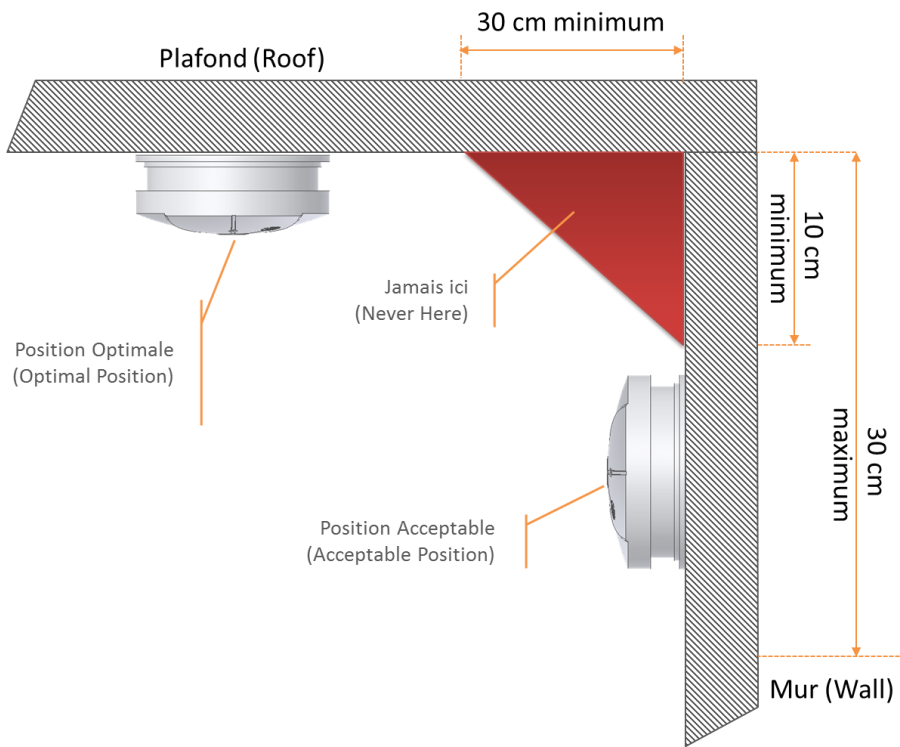


Figure 3 : Clearances when positioning

If you want to integrate the ZGas in a ZigBee® network, make sure it is installed in the area of network coverage and the audible alarm can be heard from every bedroom with the door closed.

**Where not to install:**

Do not install outdoors.

Do not install in a garage.

Do not install near a heat source (oven, grill, hob ...)

Do not install within 1 m around the following points:

- Heating vent or air conditioning.
- Fan
- Or others elements with high air flow.

Do not install in the wet room (shower, bath ...)

Do not install behind curtains or other objects that may block the sensors.

Do not install near a light source.

Do not install areas where the temperature is below 5 °C or greater than 40 °C.

Avoid excessively dusty, dirty or greasy that may damage the sensors.

Prefer areas away from doors and windows that open outward.

### III.1.2 Instructions to mount

- 1) Unlock ZGas of its socket by turning it clockwise.
- 2) Remove ZGas from its socket.
- 3) Select the correct location for your detector (see §III.1.1), drill two holes  $\varnothing 5.0\text{mm}$  in the ceiling (use the wall mounting as a template) and insert two plastic dowels in the holes.
- 4) Fix the socket to the ceiling using the screws supplied.
- 5) Insert and connect a new battery in the battery holder. Fix the product to the mounting socket by aligning the locking tabs.



**Warning :**

The detector can't be placed on its support without battery in the slot.

- 6) Turn clockwise to lock.

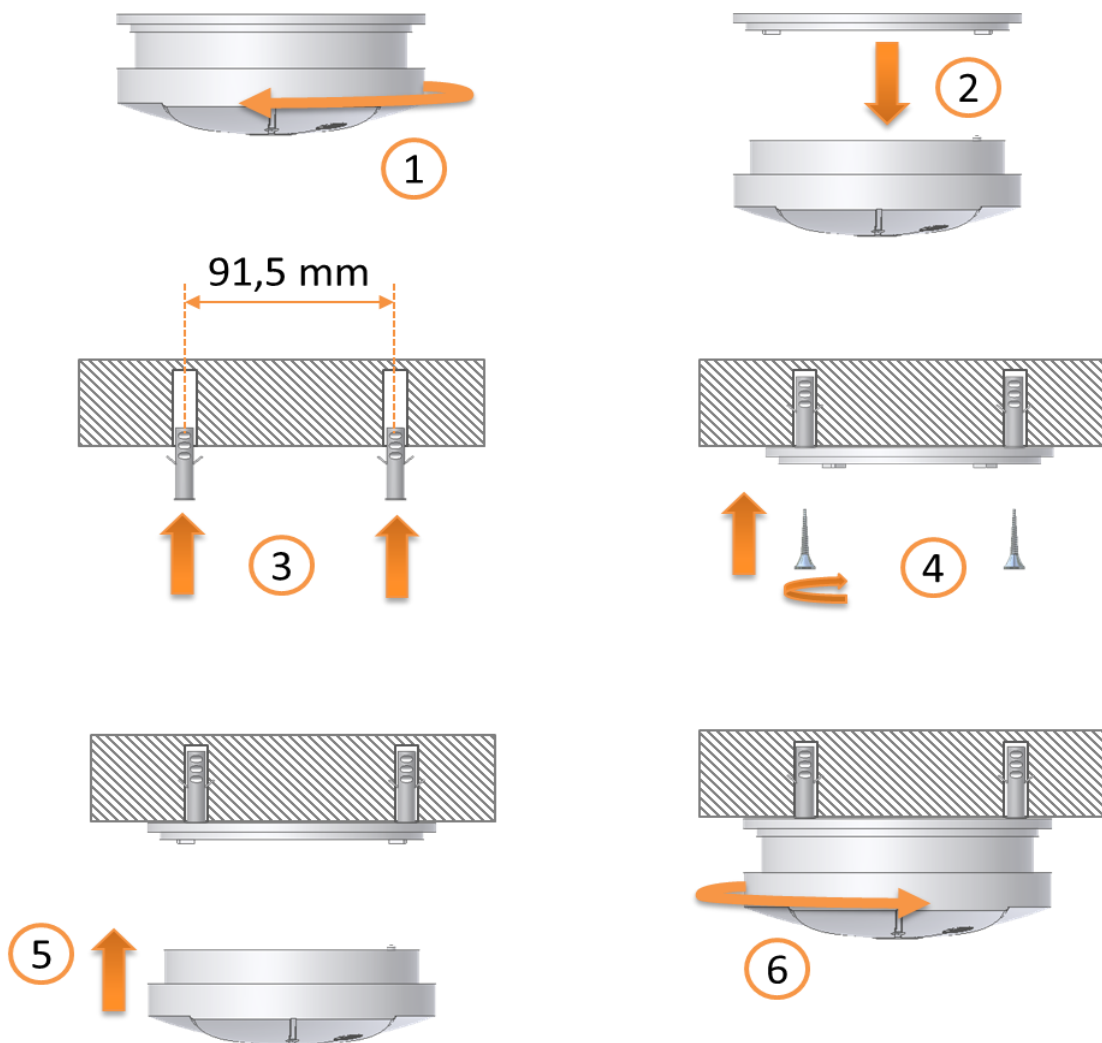


Figure 4 : Mounting of ZGas

## III.2 Changing the batteries

To change the batteries of ZGas, proceed as follows:

- 1) Unlock ZGas of its socket by turning it clockwise.
- 2) Remove ZGas from its socket.
- 3) Return the ZGas.
- 4) Remove the old battery.
- 5) Put a new battery.
- 6) Fix the product to the mounting socket by aligning the locking tabs.
- 7) Turn clockwise to lock.

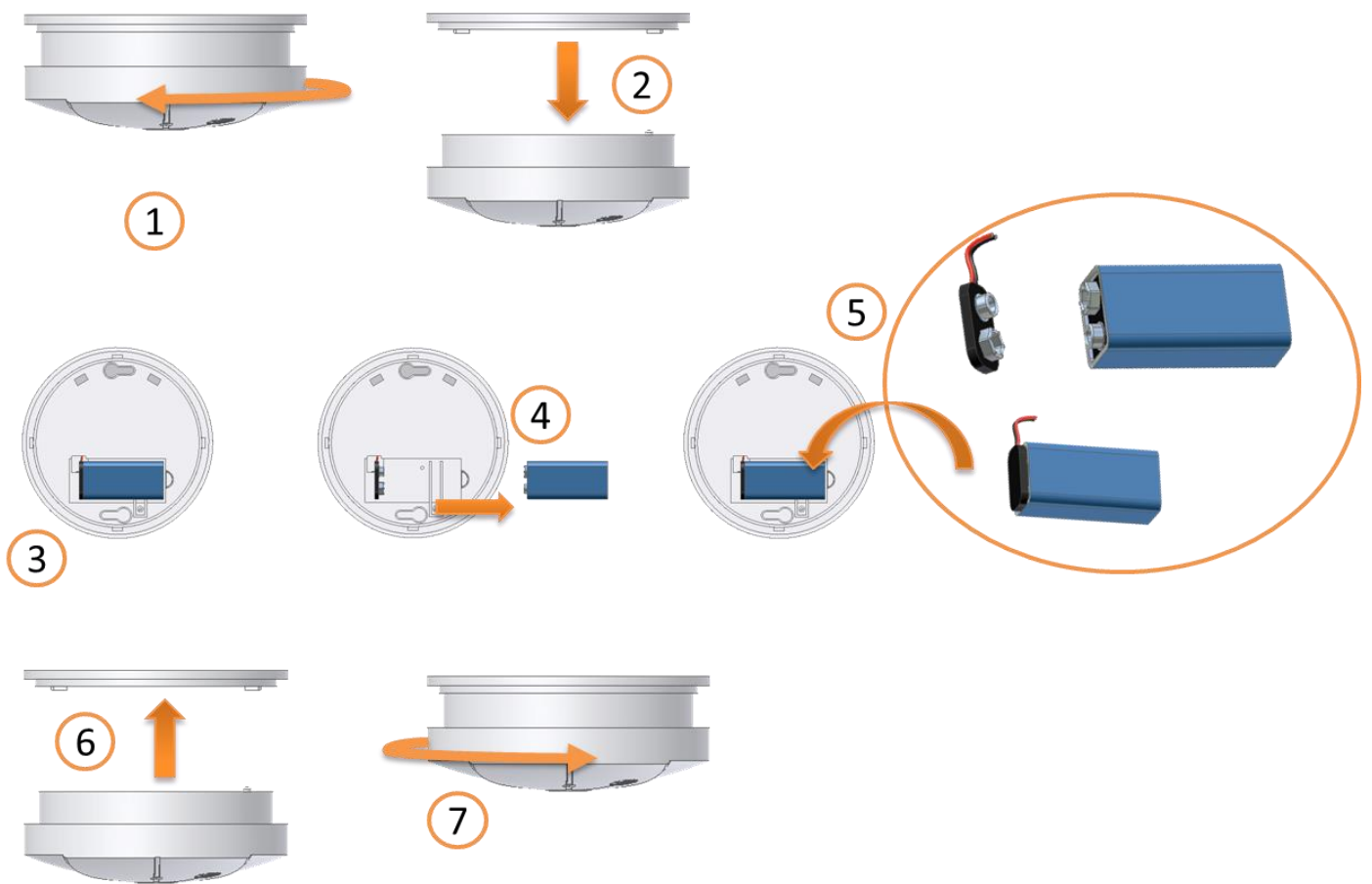


Figure 5 : Changing the battery

## III.3 Maintenance

### III.3.1 Check functionality

It is recommended to check the functionality of the sensor once a month, press the button once, the sensor beeps and the LED turns on and turns off.

### III.3.2 Maintenance

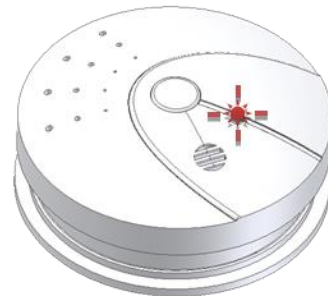
It is recommended to clean the sensor regularly to avoid obstruction of sensor:

- Cleaned the sensor surface with a soft cloth.
- Use a vacuum cleaner with a soft brush to remove dust that may accumulate at the openings of the case.

## III.4 Pairing the product for the first time

To pair the ZGas in a ZigBee® network, proceed as follows:

- 1) Allow the addition of ZigBee® object in your network (see the manual of your ZigBee® coordinator).
- 2) When the power is turned on, the ZGas trying to join a network during few seconds and blink twice.
- 3) If a coordinator is present and allows the ZGas to join, the red light turns on for 2 seconds and then turns off.



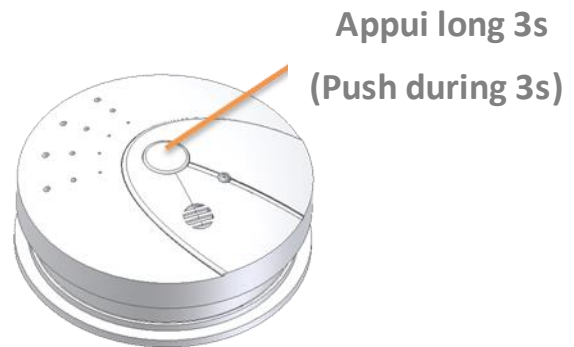
If the association isn't possible, the ZGas will sleep, it will automatically attempt to join a network after 15 minutes. This time will be doubled for each new association failure.

## III.5 Restart manually the pairing

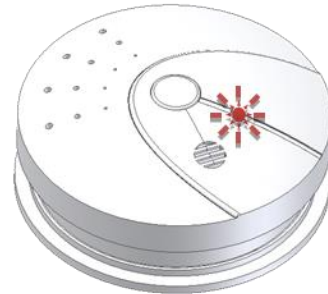
To pair the ZGas again in a ZigBee® network, proceed as follows:

- 1) Allow the addition of ZigBee® object in your network (see the manual of your ZigBee® coordinator)

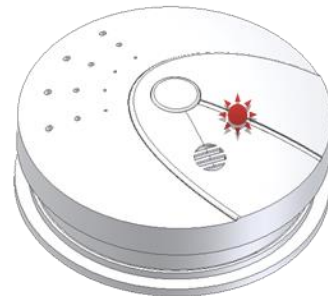
- 2) Hold 3 seconds the pairing button.



- 3) If the ZGAS was not associated it will flash rapidly during 20 seconds. The ZGAS is looking for a coordinator during this flashing.



- 4) If the association is successful, the red light turns on for 2 seconds and then turns off.



If the light is not flashing after performing a long press of 3 seconds, the ZGas is already associated in a network.



The ZGas saves network parameters automatically on which it is already connected.

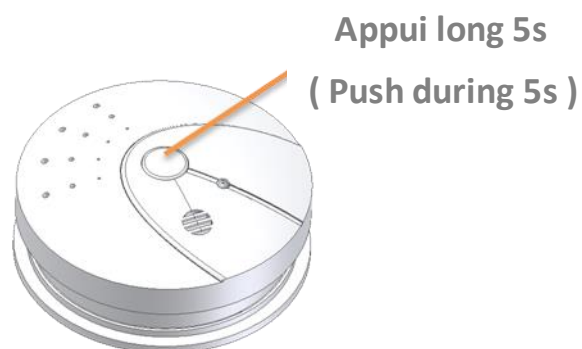
It is therefore possible in a network change (or when the network coordinator has been changed) that the product can't fit on the new network.

In this case, it is necessary to clear the existing network settings by performing a reset procedure (see paragraph below).

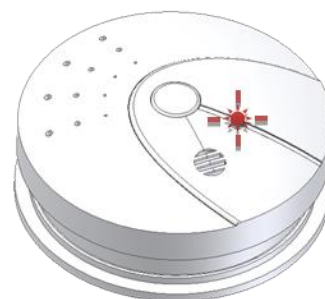
### III.6 Reset of network parameters of ZGas

To clear the network parameters of ZGas, proceed as follows:

- 1) Press the pairing button during 5 seconds.



- 2) If the product ZGas reset, the red led blinks 2 times and turns off.





# IV. Software interface

## IV.1 Presentation

Le ZGas contains an application type IAS Zone denied in the standard Home Automation (See document [3]).

This is fully compliant with the ZigBee® Pro 2007 and Home Automation profile. For more details on the data exchanged, please refer to the documents [1], [2] and [3].

## IV.2 Application

### IV.2.1 Description of the application

- Device ID : IAS Zone
- Endpoint : 1
- Clusters :

Server	Client
Basic (0x00)	/
Power Configuration (0x01)	/
Identify (0x03)	/
Alarms (0x09)	/
IAS Zone (0x0500)	/
IAS Warning Device (0x502)	/

### IV.2.2 Description of clusters

Here is a brief description of clusters and attributes implemented in the ZGas. For more details on the operation of these, please refer to the document [1].

#### IV.2.2.1 Cluster Basic

This Cluster provides information of version, manufacturer, model, etc...

Attributes	Attributes identifier
ZCLVersion	0x0000
ApplicationVersion	0x0001
StackVersion	0x0002
HWVersion	0x0003
ManufacturerName	0x0004
ModelIdentifier	0x0005

<b>DateCode</b>	0x0006
<b>PowerSource</b>	0x0007
<b>LocationDescription</b>	0x0010
<b>PhysicalEnvironment</b>	0x0011
<b>DeviceEnabled</b>	0x0012
<b>AlarmMask</b>	0x0013

#### IV.2.2.2 Cluster Power Configuration

This cluster is used to specify the level of low battery voltage threshold via the value of the attribute *BatteryVoltageMinThreshold*.

<b>Attributes</b>	<b>Attributes identifier</b>
<b>BatteryVoltage</b>	0x0020
<b>BAtteryAlarmMask</b>	0x0035
<b>BatteryVoltageMinThreshold</b>	0x0002

The report of the battery voltage is available to monitor the battery.

#### IV.2.2.3 Cluster Identify

This cluster is used to identify the device in the network. By writing the value of the attribute *IdentifyTime*, the red led of the device will flash during the time specified by this value.

<b>Attributes</b>	<b>Attributes identifier</b>
<b>IdentifyTime</b>	0x0000

#### IV.2.2.4 Cluster Alarms

This cluster is used to notify an alarm. For ZGas, the only alarm treated concerns the battery voltage. If the voltage is too low (less than *BatteryVoltageMinThreshold*) the attribute *AlarmCount* change to 1 and an alarm message is sent on the network.

<b>Attributes</b>	<b>Attributes identifier</b>
<b>AlarmCount</b>	0x0000

#### IV.2.2.5 Cluster IAS Zone

This cluster is used to report the value of the attribute *ZoneStatus* when the sensor has detected smoke or carbon monoxide. Upon detection and end of detection, a command of type *ZoneStatusChangeNotification* is sent in the network to indicate the new value of *ZoneStatus*.

Attributes	Attributes identifier
ZoneState	0x0000
ZoneType	0x0001
ZoneStatus	0x0002
IAS_CIE_Address	0x0010

The sensor performs an Enrolment request with the CIE (Control and Indicating Equipment) automatically after writing the IEEE address of CIE in the attribute *IAS\_CIE\_Address*.

The *ZoneStatus* attribute is a bitmap. The description of each bit is shown in the following table:

Bit	Description	Values
0	Monoxide Alarm	1 – Alarmed 0 – Not Alarmed
1	Smoke Alarm	1 – Alarmed 0 – Not Alarmed
2	Tamper	1 – Tampered 0 – Not Tampered
3	Battery	1 – Low battery 0 – Battery OK
4	Supervision reports	1 – Reports 0 – Does not reports
5	Restore reports	1 – Reports restore 0 – Does not reports restore
6	Trouble	1 – Trouble/failure 0 – OK
7	AC (mains)	1 – AC/Mains fault 0 – AC/Mains OK
8	Test	1 – Sensor is in test mode 0 – Sensor is in operation mode
9	Battery defect	1 – Sensor detects a defective battery 0 – Sensor battery is functioning battery
10-15	Reserved	Reserved

#### IV.2.2.6 Cluster Warning Device

This cluster is used to start a fire sound at the request of CIE of the time defined in the attributes MaxDuration.

Attributes	Attributes identifier
MaxDuration	0x0000

## Repair and maintenance

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Defective equipment shall be first reported to the CLEODE support team in order to be assigned an RMA number. Be prepared to state your name, company and the serial number of the defective item to the support personnel.

The item shall then be returned to CLEODE with the following documents:

- The RMA number
- A copy of the delivery slip
- A detailed description of the default and the test context

The maintenance period is typically four (4) weeks starting from the date of reception of the equipment at the CLEODE headquarters.

All technical requests should be sent to the following address or by email to:



CLEODE S.A.

Technical and Maintenance Service

3 rue Thomas Edison

22300 Lannion

FRANCE

Phone: +33 (0) 2 96 48 68 18

Fax: +33 (0) 2 96 48 19 11

Email: [support@cleode.com](mailto:support@cleode.com)

Web: <http://www.cleode.com>

**End of User Manual**