

ClipSens

(Portable Single Gas Detector)

ClipSens: Disposable / ClipSens-P: Replaceable

User's Manual












Sensotran

More than 50 years of
experience in gas detection

Product Overview

ClipSens is a portable single gas detector designed to detect the presence of oxygen, toxic and combustible gases in the ambient environment. When activated, ClipSens continuously monitors ambient air for the presence of a specific gas and alerts the user to potentially unsafe exposure with LED, vibrating, and audible alarms in the event that gas concentration exceeds alarm set points. And the alarm set point, calibration range, and display configuration can be changed via Sensotran-IR Link (Optional)

WARNING

-  **Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, or other hazard, voids liability of the manufacturer.**
-  **Activate this product only if sensor, visual, detection, and audible cover are clear from contaminants such as dirt and debris that could block the area where gas is to be detected.**
-  **Do not clean and rub the LCD screen of the products with a dry cloth or hands in hazardous environment to prevent the static electricity.**
-  **Perform cleaning and maintenance of the products in fresh air that is free of hazardous gases**
-  **Test the response of a sensor regularly by the gas concentration exceeding alarm set point.**
-  **Test LED, audio and vibration manually.**
-  **Gas concentration measurements by the sensor can vary based on the environment (temperature, pressure and humidity). Therefore, calibration of ClipSens should be performed in the same (or similar) environment of the device's actual use.**
-  **If the temperature changes sharply during use of the device (e.g., indoors vs outdoors), the value of the measured gas concentration can suddenly change. Please use the ClipSens after the gas concentration value has stabilized.**
-  **Severe vibration or shock to the device may cause a sudden reading change. Please use ClipSens after the value of gas concentration has stabilized. Excessive shock to ClipSens can cause the device and/or sensor to malfunction.**

- ⚠ All alarm value is set based on the alarm standard that is required by international stands. Therefore, alarm values should be changed only under the responsibility and approval of the administration of the work site where the instrument is used.**
- ⚠ Use IR communications in the safety zone which is free of hazardous gases.**
- ⚠ Do not attempt to replace the battery and sensor as ClipSens is designed to be disposable. Changing the battery and sensor may impair intrinsic safety and the attempt will void warranty.**

⚠ CAUTION

- ⚠ Before operating this device, please read the manual carefully.
- ⚠ This device is not a measurement device, but a gas detector.
- ⚠ If calibration and self-test fails continuously, please do not use the device.
- ⚠ For the O₂ detector, perform calibration every 30 days in the fresh air environment.
- ⚠ Before use, please check the activation date, and if the activation date is past, please do not use the device.
- ⚠ Clean detectors with a soft cloth and do not use chemical substances for cleaning.
- ⚠ To maintain 24 months life time, avoid the below activities except the necessary cases to check events(Max/Min), lifetime/concentration, and alarm set points. Otherwise, the frequent use of the button will deplete the battery lifetime less than 24 months.
 1. Push the button frequently without valid reasons.
 2. Frequent alarm operation or alarms are remained for a long time.
 - *Normal Alarm Use: 1 time and 2 minutes per day.
 3. Connect with the Sensotran IR Link frequently except the bump testing.
- ⚠ View a serial number on the label at the back side of the device. (ex, 20170101)

ex) SG 01 01 001 2017(Year) 01(Months) 01(Day) 001(Manufacture Order)

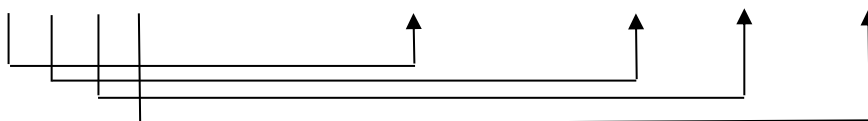


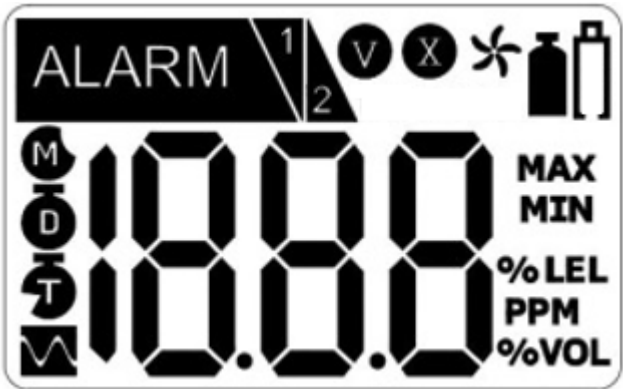
Table Contents

- 1. Diagram and LCD.....5
- 2. Activation6
- 3. Mode.....7
 - 3.1. Measure Mode7
 - 3.2. Display Mode7
 - 3.3. Alarms / Battery / Test Failure Display8
- 4. Event Log.....9
- 5. Hibernation Mode.....9
- 6. Calibration..... 10
 - 6.1. Fresh Air Calibration 10
 - 6.2. Standard Gas Calibration11
 - 6.3. Return to the Measurement Mode.....12
- 7. Specification 13
- 8. Self Test & Bump Test 14
 - 8.1. Self Test..... 14
 - 8.2. Bump Test 14
- 9. Certificates15

1. Diagram and LCD



- 1. IR Port
- 2. LCD display
- 3. Alarm LED
- 4. Buzzer
- 5. Button
- 6. Gas sensor
- 7. Gas Type



LCD display symbols

	Alarm condition		Remaining Month(Month)
	Low Alarm Display		Remaining Day
	High Alarm Display		Remaining Time(Hour)
	Stabilization Success		Max Peak Value
	Stabilization Failure		Min Peak Value
	Fresh Air Calibration		Measurement Unit
	Standard Gas Calibration		Lifetime less than 30 days Or Low Battery

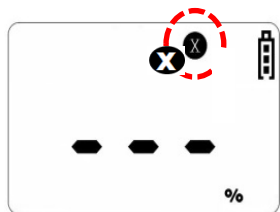
2. Activation


<Caution> Before use, check the activation due date on the box. If the activation date is past, do not activate the device.

Shelf Life: ClipSens-Oxygen: Within 6 months from manufacture

ClipSens-Toxic & Combustible: Within 12 months from manufacture

In a safety environment, when pressing pushbutton for 5 seconds, measurement gas and firmware version (i.e. v2.2) will be displayed and then this product will vibrate and flash. For 60 seconds countdown, the device will be stabilized. After stabilization is completed, "V" icon will flash on the display screen and the device will move to the detection mode.



In the event that stabilization of the device fails,  will appear on the display and gas measurement mode will not be entered. In this case, perform calibration or contact authorized reseller or Sensotran service center at +34 934 785 842 for repair/return information.

<Caution> Appropriate calibration of the device is required prior to operation. Always ensure that the device makes the proper detection response to the pertinent gas. Verify that foreign materials that could interfere with the detection of gas are not blocking the area where gas is to be detected.

3. Mode

3.1. Measure Mode






When activated, in the measurement mode, gas concentration or remaining battery life (Option) appears on the screen. - Oxygen concentration is displayed in percent by volume (%Vol) and toxic concentration is displayed in parts per million. (PPM)

3.2. Display Mode





In the Gas Measure Mode, by pressing pushbutton for one second, the following ICONs will appear in order.













Min (only for oxygen) -> Max -> clr -> Remaining Life time(   -> 1st alarm set point -> 2nd alarm set point -> Firmware version -> Calibration Concentration

At the last step, if you press pushbutton or do not push any button for a second, the device will return to Gas Measure Mode.

3.3. Alarms / Battery / Test Failure Display

When a gas concentration exceeds alarm set points,  or  will be displayed and the device will vibrate, flash (LED), and beep. To remove alarms, move to a clean air location. and then a gas concentration will reduce and alarm will stop.

Failure of Test and Calibration: Display  icon with beeping.

Alarm	Alarm Standard	LCD Display	Alarm and Vibration Display
1st Alarm	Exceeds 1st alarm	 icon & concentration	 Buzzer, LED  Vibration
2 nd Alarm	Exceeds 2nd alarm	 icon & concentration	 Buzzer, LED  Vibration
Remaining life	Below 30 days	 Icon	
Lifetime Expiration	Past 24 months		Lifetime is over. (Replace with a new ClipSens.)
Test Failure	Failure of sensor test / Failure of calibration	 Icon displays	
Battery Test	Low Power		
Bump Test	Bump Test Period		Press the push button to turn off the alarm
Calibration	Calibration Period		Press the push button to turn off the alarm

<Caution>All alarm value is set based on the alarm standard that is required by international stands. Therefore, alarm values must be changed only under the responsibility and approval of the administration of the work site where the instrument is used.

Alarm Set Point

ClipSens-P

Gas	O ₂	CO	H ₂ S	H ₂	SO ₂	Cl ₂	NH ₃	NO ₂
1 st	19,5%	25ppm	5ppm	100ppm	2ppm	0.5ppm	25ppm	3ppm
2 nd	23,5%	100ppm	10ppm	500ppm	5ppm	1ppm	35ppm	5ppm

4. Event Log

Last 30 events are stored on a device. Once 30 events are stored, the log events are removed automatically in the order starting at Event 1. And, the stored log events can be transferred to Sensotran-IR LINK. Each alarm event records followings:

- Types of alarms (1st or 2nd) / Alarm concentration in ppm or % / Peak concentration

5. Hibernation Mode

<Caution>

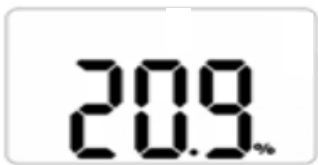
The hibernation mode is only available for ClipSens-P. It is the optional mode and excludes oxygen.

When you do not use the device temporarily, you can turn off it by pushing the hibernation mode. The hibernation mode will prolong the life time.

(Hibernation mode must be activated within 1 year.)

6. Calibration

<Caution>Initial calibration is performed on all devices prior to shipment. Once received, calibration should be performed monthly (or quarterly) depending on frequency of use.



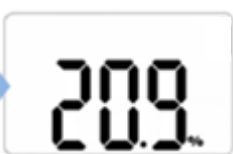
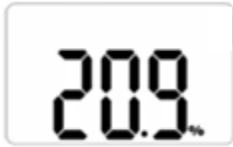
Standard Gas Calibration

6.1. Fresh Air Calibration

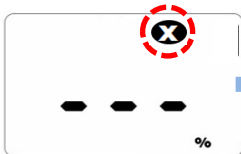


When pressing and holding the pushbutton for 5 seconds in the calibration mode(), * icon and 'CAL' mark will appear and flash.

And, press the pushbutton to initiate calibration for three seconds. When calibration begins, a countdown (starting at 10) will appear on the screen.






Once completed, V icon will blink several times on the display screen.




If calibration fails, an " X " Icon will appear on the display. If this continues, please contact the sales representative or Sensotran service center.

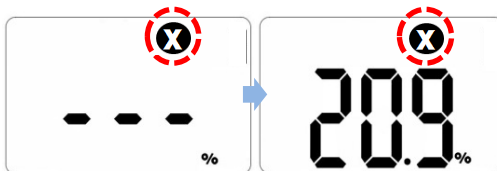
<Caution> Calibration should be performed in a fresh-air environment that is free for any influence of other gases (since calibration is assumed to be performed in an environment with the concentration of 20.9%). It is also recommended that calibration should be performed in a space that is not confined.


6.2. Standard Gas Calibration

When pressing and holding the pushbutton for 5 seconds in the calibration mode (,  icon and 'CAL' mark will appear, and when pressing pushbutton for one second,  con will appear. And then, press and hold the pushbutton for three second to initiate calibration. When calibration begins, a countdown (60 seconds or more depending on sensor types) will appear on the screen.




Once completed,  icon will blink several seconds on the display. Then, the device will return to Gas measure mode.



Once calibration fails,  icon will appear on the display. If this continues, please contact the sales representatives or Sensotran service center.

6.3. Return to the Measurement Mode.

In the standard calibration mode  , by pressing the pushbutton for a second the fresh air calibration, standard calibration, and **ESC** will appear on the display consecutively. In the ESC mode, press the pushbutton for 3 seconds, the device will be get out of the calibration mode. And press the pushbutton one time, it will return the measurement mode.



Calibration concentration.

				CLIPSENS-P				
Gas	O ₂	CO	H ₂ S	H ₂	SO ₂	Cl ₂	NH ₃	NO ₂
Concentration	0.0%Vol (N ₂ :99.9%Vol)	100ppm	50ppm	500ppm	10ppm	10ppm	50ppm	10ppm

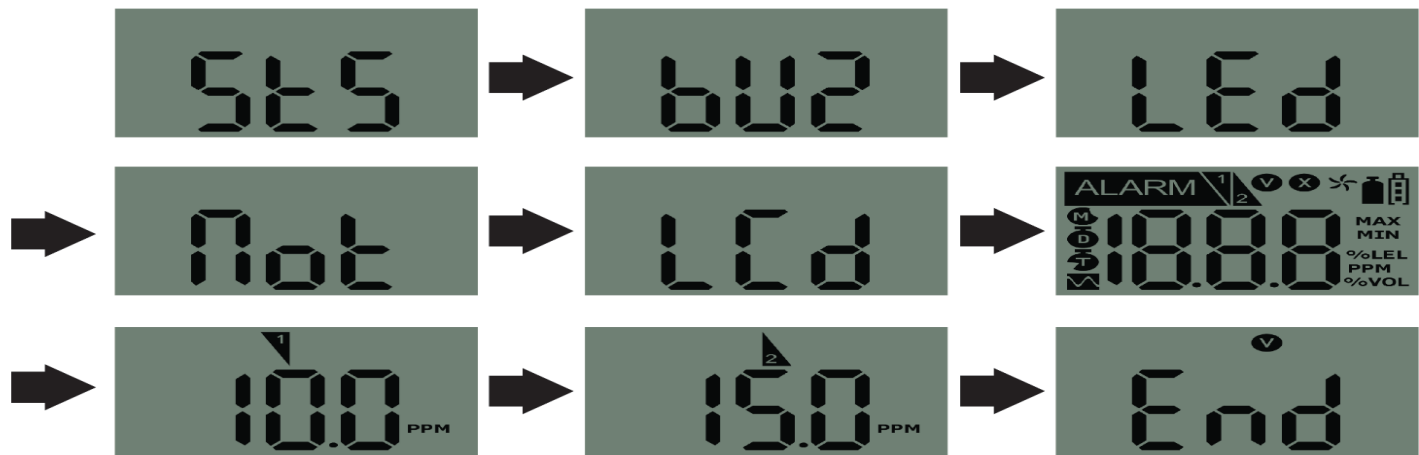
Users can change a calibration level via connecting with Sensotran-IR Link.


7. Specification

Model	ClipSens			ClipSens-P				
Measure Gas	O ₂	CO	H ₂ S	H ₂	SO ₂	Cl ₂	NH ₃	NO ₂
Range	0□30%Vol	0□500ppm	0□100ppm	0□1000ppm	0□50ppm	0□20ppm	0□100ppm	0□20ppm
Sensor Type	Electrochemical							
Measurement	Diffusion type							
Display	LCD display							
Audible	90dB at 10cm							
Warning Lamp	Red Flashing LEDs (Light-Emitting Diode)							
Vibration	Vibration Alarm							
Battery	Lithium Primary Battery							
Temperature & Humidity	-40°C □ +50°C(for Toxic) / -35°C □ +50°C(for O ₂) 5% □ 95% RH (non-condensing)							
Case	Rubber Enclosure							
Accessories	Calibration Cap, Manual, Calibration and Quality report							
Option	Sensotran-IR Link, Docking Station							
Size & Weight	Size: 54mm(W) x 91mm(H) x 32mm(D)/ Weight: 93g(Toxic), 104g(O ₂) (Battery, clip included)							
Operating Life	24 months, based on 2 minutes of alarm per day							
Event Log	Recent 30 alarms							
Approval	ATEX II 1G Ex ia IIC T4 Ga / CSA / KCS / INMETRO							

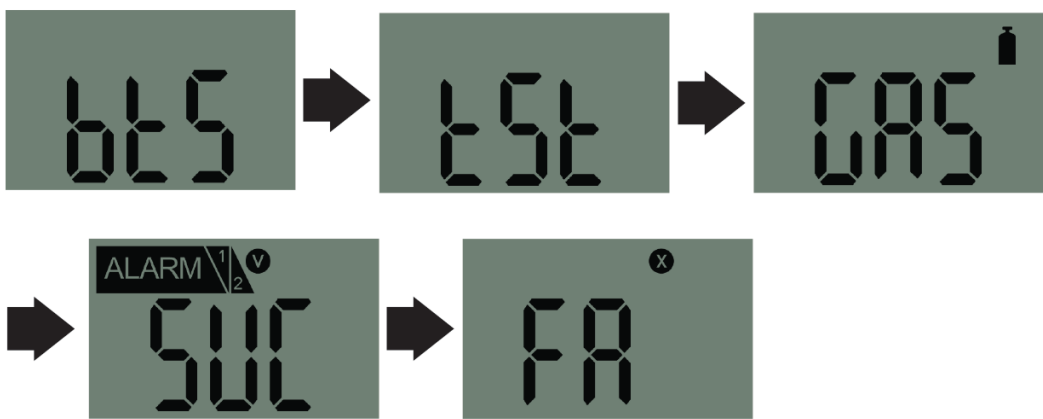
8. Self Test & Bump Test

8.1. Self Test



The default of Self-Test is 20hr, and the interval is 8hr□20hr, or N/A. To initiate the self test, please set the self test interval via the IR link. After the setting interval is activated, STS message will flash. (The message will flash until users perform the Self test.) Once you press the button, it will test buzzer, LED, Vibration, LCD, 1ST alarm, and 2ND alarm. After the test is completed, END message with  icon will be displayed. (Users are required to check the test processes manually.)

8.2. Bump Test





The interval of Bump-test is 1□365days, and the default is N/A. To initiate the bump test, set the bump test interval. Once the bump test time reaches, Bts message will flash. Once you press and hold the button for 3 seconds, the tst message will be displayed for 45 seconds (To cancel, press the

button for one second). Within the 45 seconds, apply a test gas (If no gases are applied, the bts message will flash again). After the selected gas is applied, if the test is successful, SUC message with will be displayed after 30 seconds. And then, remove the calibration cap and gas tube. If the test fails, FA message with will be displayed and bts message will be flashing until the test is successful.

9. Certificates


Intrinsic Safety:

The detector is in conformity of the following standards

ATEX:	 2198  II 1 G Ex ia IIC T4 Ga IP67 KRH16ATEX1048 Directive 2014/34/EU
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IECEX: **Ex ia IIC T4 Ga**

IECEX KTL 15.0018

 **Ex ia IIC T4 Ga**
Class I, Zone 0, AEx ia IIC T4 Ga
Class I, Division 1, Groups A, B, C, D, T4
C22.2 No. 60079-0:2015; C22.2 No. 60079-11:2014;
C22.2 No. 61010-1-12:2010; UL 61010-1,
Ed. 3; UL 913, Ed. 8; UL 60079-0, Ed. 6; UL 60079-11, Ed. 6

KCS: **Ex ia IIC T4**

KTL 16-KA2BO-0457

INMETRO **Ex ia IIC T4 Ga**
BVC16.5919


Compliance: **Electromagnetic Compatibility Directive 2014/30/EU**

Standards:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

- IEC 60079-0: 2011 Ed. 6
- IEC 60079-11: 2011 Ed 6
- UL 61010-1, Ed. 3
- UL 913, Ed. 8
- UL 60079-0, Ed. 6
- UL 60079-11, Ed. 6
- C22.2 No. 60079-0:2015
- C22.2 No. 60079-11:2014
- C22.2 No. 61010-1-12:2012
- EN 60079-0: 2012+A11:2013
- EN 60079-11: 2012

Manufacturing Approval:

The detector manufacturer is certified compliant with ISO 9001:2000 provisions

Limited Warranty

Sensotran warrants this product to be free of defects in workmanship and materials-under normal use and service-for two years (Hibernation Mode: 3 years) from the date of purchase from the manufacturer or from the product's authorized reseller.

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing, or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, water damage or other hazard, voids liability of the manufacturer.

In the event that a product should fail to perform up to manufacturer specifications during the applicable warranty period, please contact the product's authorized reseller or Sensotran service center at +34 93 478 58 42 to repair/return information.

Sensotran

More than 50 years of
experience in gas detection

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