

# INSTRUCTION MANUAL

# SENSIT<sup>®</sup> HXG-2d

## Combustible Gas Detector

Read and understand instructions before use.



710183

UL 913

Intrinsically Safe for Use in  
Class I, Groups C and D, T3  
Hazardous Locations

For use in clean dry areas only.

Suitable for combustible gases such as Methane,  
Butane, Propane and Natural Gas





851 Transport Drive • Valparaiso, IN 46383 (USA)  
Phone: 219.465.2700 • [www.gasleaksensors.com](http://www.gasleaksensors.com)

# FOR YOUR SAFETY

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## NOTICE

 **CAUTION:** This safety symbol is used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 **WARNING:** This safety symbol is used to indicate a potentially hazardous situation which, if not avoided, may result in serious injury.

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 **WARNING:** Do not replace batteries when an explosive atmosphere is present.

 **WARNING:** Use only DURACELL® PROCELL, Type PC1400 Alkaline Batteries


 **WARNING:** Do not mix batteries of different age or type.


 **WARNING:** For use in clean dry areas only.

 **WARNING:** Not for use in atmospheres of oxygen greater than 21%.

 **WARNING:** Substitution of components may impair intrinsic safety.

 **WARNING:** ONLY zero instrument in a gas free environment.

 **WARNING:** To maintain intrinsic safety, service must be performed by factory authorized technicians with approved replacement parts only.

 **WARNING:** All Accessories are to be used in an area known to be non-flammable.

 **WARNING:** Use only sensor from SENSIT Technologies. PN 375-2611-01

**NOTE:** Performance/Accuracy aspects of this product have not been assessed and are not covered as a part of the SGS approval.

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# **PARTS AND ACCESSORIES**

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## **Standard Accessories (Included)**

Soft Carrying Pouch	360-00006
T10 Torx Wrench	360-00105
Duracell "C" Alkaline Battery (ea)	310-00004*
Wrist Strap	360-00040
Instruction Manual	750-00022

## **Accessories and Replacement Parts**

LEL Sensor	375-2611-01
Sensor Cap with Filter Disc	882-00036
Filter Disc Replacement	360-00203
Extension Adapter	870-00012

## **Calibration Kits**

Methane Calibration Kit 2.5% Methane/Air (21L), Regulator, Hose	881-00017
Propane Calibration Kit 1.1% Propane (21L), Regulator, Hose	881-00073

## **Replacement Gas Cylinders**

2.5% Methane/Air (21L)	315-080012
1.1% Propane/Air (21L)	315-080022

Contact Factory for additional options.

## GENERAL DESCRIPTION

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The **SENSIT® HXG-2d** is designed to detect combustible gases. This instrument incorporates an advanced low power semiconductor sensor to measure a wide variety of combustible gases in both the PPM and %LEL range. The PPM readings auto-range to %LEL when the concentration exceeds 990PPM (2%LEL methane or 4.5%LEL propane).

Optionally all readings can be set to a resolution of 0.1%LEL only (PPM off). An “on demand” backlight allows use in dark environments. A user activated “TICK” control assists in locating small gas leaks.

Audible and visual alarms warn the operator of hazards. The alarms can be set in either the PPM or LEL modes. The default alarm is 10%LEL methane/propane.

The instrument is adjusted at the factory for either methane or propane as the primary gas, and is calibrated accordingly. The primary gas can be selected when ordering.

The **SENSIT® HXG-2d** meets US UL913 requirements when used with approved batteries.

The **SENSIT® HXG-2d** is operated using approved alkaline batteries only.

**⚠ Warning: Never mix batteries of different age or type.**

# SPECIFICATIONS

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## SENSOR SPECIFICATIONS

TYPE	RESOLUTION	RANGE	ACCURACY
PPM	10ppm	0-990ppm	±10%
LEL	0.1%	0-100%LEL	±10%

## PRODUCT SPECIFICATIONS

Size:	10" x 3" x 1.6" (254 x 76 x 41 mm)
Weight:	1.2 lbs. (544 g)
Operational Temp:	-20° to 40° C (-4 to 104° F)
Battery Life:	Alkaline: 50 hours continuous

The **SENSIT® HXG-2d** meets US UL913 requirements when used with Duracell PC1400 batteries.



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For use in clean dry areas only.

# PRODUCT FEATURES

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## PRODUCT FEATURES

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**SENSIT® HXG-2d** instruments are constructed of durable high impact ABS to withstand the rigors of field use.

Incorporated in the hand grip area is the battery compartment. All **SENSIT® HXG-2d** instruments require 3. Duracell PC1400 batteries provide approximately 50 hours of continuous use.

A push button located in the center of the instrument activates an audible tick sound that will help in locating the source of a gas leak. This tick is generated by using specialized circuitry in combination with the LEL sensor located at the end of the gooseneck assembly. The tick can be easily heard with the speaker located in the back of the instrument.

A flexible gooseneck is used to assist in locating the source of gas leaks and remote sampling.

The display continuously updates the operator of changes in gas concentrations and alerts of low battery power.

A green LED on the left side indicates the instrument is ready for use. A red LED indicates the preset alarm points have been exceeded.



# PRODUCT FEATURES

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There are 3 operational button pads on the front of all **SENSIT® HXG-2d** instruments.

## **BUTTON (A) POWER/MUTE**

Operates the POWER and MUTE features and exit menu items.

## **BUTTON (B) TICK/CAL**

Use to operate TICK or begin calibration.

## **BUTTON (C) LIGHT/ZERO**

Use to turn on the backlight or manually zero the sensor.

# SENSOR TYPE

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## COMBUSTIBLE GAS SENSOR

All **SENSIT® HXG-2d** instruments incorporate a highly sensitive semiconductor type sensor. The function and accuracy of the sensor are monitored and controlled by specialized circuitry and a microprocessor. This sensor is capable of measuring concentrations of 10ppm of methane/propane up to 100% LEL. Factory calibration uses methane or propane depending on preset gas type.. This sensor will detect many combustible gases.


## SENSOR FILTER REPLACEMENT / CLEANING

Remove sensor cap by pressing retaining tab located on side of sensor and pulling the cap away from base. Filter will be loose inside. Clean filter with mild soap and water and thoroughly dry filter cap. Replace Cap/Filter on base until retaining tab engages.

**NOTE:** Operating the instrument without a sensor cap or with an altered sensor cap can cause damage to the instrument and void the warranty.

# **BATTERY INSTALLATION/REPLACEMENT**

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 **CAUTION:** Always change batteries in an environment free of combustible gases.

 **Warning:** Do not mix batteries of different type or age.

Battery replacement is necessary when the BAT icon is illuminated and the green LED is flashing. This warning indicates there is approximately 15 minutes or less operational time before the instrument turns off automatically due to insufficient battery power.

Remove the battery sleeve cover by removing the battery sleeve screw with a T-10 screwdriver. Depress the locking tab on the front of the handle with a coin or flat object and pull the battery sleeve handle away from the top or display area of the instrument.

Place 3 approved batteries into the battery holder. Observe the polarity markings on the inside of the battery holder for proper battery installation. Improper installation will cause the instrument not to operate.

Replace the battery sleeve and allow the locking tab to snap into position. Replace the battery sleeve retaining screw. Check to be sure the handle is secure to the instrument body by firmly pulling the handle away. The handle will remain in place if a proper connection is made.

# OPERATION AND USE

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 **CAUTION:** Always start any SENSIT® HXG-2d in a gas free environment to insure a proper zero.

1. Push and hold the power button (A) until the display and backlight illuminates.
2. If the display fails to illuminate or the BAT icon is shown on the display, replace the batteries.
3. During successful start-up the instrument will display:
  - a. Display all segments
  - b. Turn on and off the backlight
  - c. Display “S2d” as the model number
  - d. Cal Gas (CH<sub>4</sub> or PRO)
  - e. Display software version
  - f. Display “50.0%” or “10.0%” indicating the LEL Calibration point for the instrument for CH<sub>4</sub> gas type only.
  - g. Display “dIS” indicating display resolution of PPM / %LEL or both.
  - h. Display “AL” followed by the alarm set point.
  - i. Activate the alarm sound and red LED for 3 beeps
  - j. Continue to flash all segments until proper warm-up is attained (no more than five minutes)
  - k. Flash “Zro” indicating fresh air zeroing
  - l. Working display is shown

**NOTE:** A failure to properly zero due to the presence of gas is indicated by “bAd” + cal icon illuminated on the display. Pressing the ZERO (C) button for 6 seconds and releasing will restart the zeroing process.

**NOTE:** If a sensor is completely inoperable or improperly zeroed at start up, the display will show “bAd”.

## OPERATION AND USE

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4. All instruments read with a resolution of 10ppm up to 990ppm. The scale automatically switch to LEL when 990ppm is exceeded with a resolution of 0.1% LEL.

Optionally all readings may be displayed in LEL only. Readings beyond 100% LEL are indicated by “OL” (overload).

5. It may be necessary to manually zero the instrument based on company practices and environmental conditions.

 **CAUTION: Zeroing should be done in a gas free environment only.**

6. When testing high areas or overhead lines the use of the optional extension adapter will allow a broom handle or painters stick to extend the instrument to the area where sensing must be accomplished. This slides onto the battery sleeve and is held in place by the locking nut assembly.

7. When a gas is sensed the display will update. If an alarm condition exists, based on a preset alarm point, the red LED will flash and the alarm will sound.

8. During an alarm condition (factory default at 10% LEL methane) the display will flash and an audible alarm will sound indicating a potentially unsafe environment. To disable the audible alarm press and release the MUTE button (A). To enable the alarm press and release it again.

## **OPERATION AND USE**

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**NOTE: These instruments have cross sensitivities to a variety of gases.**

9. To assist in locating the source of small combustible gas leaks or surveying areas outdoors or indoors, press and release the TICK/CAL button (B). This will start an audible tick preset at 2-3 ticks per second.

Move the sensor toward the area suspected of leakage. As the sensor moves closer to a leak source the tick will increase. When the tick becomes a steady tone press the TICK/CAL button (B) again while keeping the sensor head in the same position. This will slow down the tick and allow the operator to find a higher concentration using the same procedure.

If there is no tick, press the TICK/CAL button (B) again to reset to the steady ticking sound. For best results always use the leak detector prior to using any liquid leak detection fluids as these sensors will detect their presence.

10. Following Country, Province, State, Municipal and/or Company procedures move to the areas where gas readings are suspected or must be tested. During sampling the respective readings may change. Audible and visual alarms will activate when the preset limits are reached.

11. When being used in dark areas press and release the LIGHT/ZERO button (C) to turn on the back light Press again to turn off.

12. To turn instrument off, push and hold the POWER/MUTE button (A) for 5-6 seconds until "OFF" appears on the display.

## **CALIBRATION CHECK**

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To verify the accuracy of any **SENSIT® HXG-2d** it must be exposed to a known concentration of test gas. Any sensor that does not meet the specifications listed in this manual may require calibration or replacement.

Any time it is suspected the **SENSIT® HXG-2d** is not working properly, has read “OL” or has been exposed to silicone, check calibration.

## **CALIBRATION**

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Calibration is the process of setting the readings of the instrument to equal the value of the certified calibration gas. The instrument should operate for 5 minutes before calibrating.

**NOTE:** Use of calibration kits other than those offered or approved by SENSIT TECHNOLOGIES may cause inaccurate readings.

Repairs may be required if the instrument fails to calibrate. Use only sensors supplied by SENSIT TECHNOLOGIES or their authorized representative.

**NOTE:** During the calibration process the numbers on the display are not the actual gas concentration.

(Continued on next page)

# CALIBRATION

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**STEP 1:** Prepare 50%LEL or 10% LEL Methane/Air, or 50%LEL Propane/Air, depending on what calibration point the unit calls for, and proper regulator and adapter. Press and hold the ZERO (C) button to reset fresh air zero (indicated by “Zro” on the display)

**STEP 2:** Press and hold the TICK/CAL button (B) for 6 seconds until “CH4” or “PRO” is displayed.

**STEP 3:** Attach the adapter to the sensor cap assembly.

**STEP 4:** Press the TICK/CAL button (B) and the cal icon will flash and numbers will change on the display. Upon completion, the working display will appear with the gas reading.


A reading of “bAd” indicates unsuccessful calibration. Repeat process if “bAd” appears. Press the POWER/MUTE button (A) to clear the “bAd” display reading and go to the working display.

Continued unsuccessful calibrations may indicate faulty sensor. Any instrument that will not calibrate or continues to indicate “bAd” on the display, should be taken out of service. Please contact Sensit Technologies for further assistance.




# SENSOR REPLACEMENT

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 **WARNING:** Perform service only in areas known to be non-flammable.

 **WARNING:** Substitution of components may impair intrinsic safety.

 **WARNING:** Use only sensor from SENSIT Technologies.  
Part Number 375-2611-01

**Step 1:** Turn off instrument.

**Step 2:** Remove sensor cap and sensor retainer filter.

**Step 3:** Remove sensor. Observe the location of the tab relative to the white dot beneath, on the circuit board.

**Step 4:** Replace sensor. Be sure to align the sensor tab directly over the white dot.

**Step 5:** Place sensor retainer filter inside sensor cap and install sensor cap.

**Step 6:** Turn instrument on and wait for zero process to complete. “bAd” indicates improperly installed sensor or additional warm-up time is required. Allow the instrument to operate for 10 minutes, then press and hold the C button to reestablish zero. If “bAd” remains on the display, remove the instrument from service.

**Step 7:** If zeroing of the replacement sensor was successful and at least a 5 minute warm-up has been observed, proceed with the calibration instructions.

## ADJUSTABLE FEATURES

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<b>MENU ITEMS</b>	<b>RANGE</b>	<b>DEFAULT</b>
Alarm PPM	100-990%	OFF
Alarm - LEL	2-60%	10%
Show PPM	10PPM Resolution	ON
Gas Type	Methane or Propane	Methane (CH4)

### **Changing the calibration gas for CH4 (methane) or PRO (propane)**

1. While the unit is on and in the working display, press and release the A and C buttons together until the display shows Opt.
2. Press and release the C button until CAL CH4 or CAL PRO is displayed.
3. Press and release the B button until desired calibration gas is displayed (CH4 or PRO).
4. Press and release the A button. The unit will exit back to its working
5. Turn the unit off and back on. Verify during the warm-up sequence that the gas type desired is displayed. Calibrate to the gas type displayed.

## OPTIONS MENU

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The option menu is used to change the unit to show ppm/LEL or LEL only. It is also used to change the alarm point of the unit in ppm or LEL. LEL alarm point is adjustable from 2% to 60%. PPM alarm point is adjustable from 99 to 990 PPM. Use the steps below to make adjustments.

### **How to configure for LEL or PPM and LEL display (Current alarm point remains)**

1. Press and release the A and C buttons together and release. "Opt" will be shown
2. Press and release the B button. "diS" and "%" will be shown on display. Chose from one of the options listed:
  - a. (LEL only display) Press and release the B button. "AL" and "%" will be shown on display. Press and release the A button. Unit will return to working display.
  - b. (PPM and LEL display) Press and release the C button. "diS", "%" and "ppm" will be shown on display. Press and release the B button. "AL" and "ppm" will be shown on display. Press and release the A button. Unit will return to working display.

# OPTIONS MENU

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## **HXG-2D Option Menu (continued)**

### **How to change LEL Alarm point with PPM readings on display**

1. Press and release the A and C buttons. "Opt" will be shown.
2. Press and release the B button. "diS" and "%" will be shown.
3. Press and release the C button. "diS, %" and "ppm" will be shown.
4. Press and release the B button. "AL" and ppm" will be shown.
5. Press and release the C button. "AL" and "%" will be shown.
6. Press and release the B button. Current LEL alarm point will be shown. Use the B button to decrease this number, or use the C button to increase this number.
7. Press and release the A button. "CAL" and "CH4" will be shown.
8. Press and release the A button. Unit will return to working display.

# OPTIONS MENU

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## **How to change LEL Alarm point with LEL readings on display**

1. Press and release the A and C buttons. “Opt” will be shown.
2. Press and release the B button. “diS” and “%” will be shown.
3. Press and release the B button. “AL” and “%” will be shown.
4. Press and release the B button. Current LEL alarm point will be shown. Use the B button to decrease this number, or use the C button to increase this number.
5. Press and release the A button. “CAL CH4” will be shown.
6. Press and release the A button. Unit will return to working display.

## **How to change PPM Alarm point with PPM readings on display**

1. Press and release the A and C buttons and release. “Opt” will be shown.
2. Press and release the B button. “diS” and “%” will be shown.
3. Press and release the C button. “diS”, “%” and “ppm” will be shown.
4. Press and release the B button. “AL” and “ppm” will be shown.
5. Press and release the B button. Current ppm alarm point will be shown. Use the B button to decrease this number, or use the C button to increase this number.
6. Press and release the A button. “CAL CH4” will be shown.
7. Press and release the A button. Unit will return to working display.





# WARRANTY

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Your **SENSIT® HXG-2d** instrument is warranted to be free from defects in materials and workmanship for a period of two years after purchase (excluding sensor, calibration and batteries). If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at our option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect, or improper maintenance. A purchase receipt or other proof of date of original purchase will be required before warranty performance will be rendered. Instruments out of warranty will be repaired for a service charge. Return the unit postpaid and insured to:

SENSIT Technologies  
851 Transport Drive  
Valparaiso, IN 46383

Phone: (219) 465-2700  
888 4 SENSIT (473-6748)  
Fax: (219) 465-2701

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.