SENSORCON
Precision Gas Sensing

Instruction Manual

for Carbon Monoxide and Hydrogen Sulfide Inspector Models

ASSEMBLED IN USA

INSPECTOR

KNOW YOUR ENVIRONMENT

Introduction

Thank you for choosing the Sensorcon Inspector. This manual covers the features, specifications and operating instructions for the Sensorcon Inspector Carbon Monoxide (CO) and Hydrogen Sulfide (H2S) Meters listed below:

INS2 Series

INS2-CO-01 ..... Inspector Basic (CO)
INS2-CO-02 ..... Inspector Industrial (CO)
INS2-CO-03 ..... Inspector Industrial Pro (CO)
INS2-H2S-03 ..... Inspector Industrial Pro (H2S)

INS Classic Series

INS-CO-01 ..... Classic Inspector Basic (CO)
INS-CO-02 ..... Classic Inspector Industrial (CO)
INS-CO-03 ..... Classic Inspector Industrial Pro (CO

Maximum Operating Conditions

Temperature: -20°C to +50°C (-4°F to +122°F)
Humidity: 20-90% R.H. (0-99% intermittent)

Warranty

INS2 Series (CO and H2S)..... Two Year Limited Warranty
INS Classic Series (CO) ..... One Year Limited Warranty

Sensorcon recommends that every Inspector be calibrated every 6 months at a minimum to ensure safe and accurate operation. Regional and/or company-specific policies and standards may require more frequent calibration or bump test intervals for compliance. Please adhere to your organization's policies regarding calibration and bump testing. An EOL (End of Life) symbol will display on the LCD after two years of use. A successful calibration will remove the EOL notification for an additional 180 days. Future successful calibrations can continue to be done as long as the electrochemical sensing element remains in good condition. For complete warranty information, visit: **sensorcon.com/warranty**

Practical Considerations

Short-term measurements (i.e. <1hr) in any humidity (0-99% R.H.) are fine as long as condensation does not block the sensor inlet. Longer term exposure to extreme humidity or temperature outside the specified range can result in damage to the sensor. Please note that the LCD display and sensor will not function properly at colder temperatures outside of the specified operating range.

NOTE: Exposure to higher temperatures and humidity can damage the device.

Inspector Features Comparison

CO Models: / CO Classic Models: / H2S Model:	INS2-CO-01 / INS-CO-01	INS2-CO-02 / INS-CO-02	INS2-CO-03 / INS-CO-03 / INS2-H2S-03
Water Resistant	✓	✓	✓
Shockproof	✓	✓	✓
Pre-set Alarms	✓	✓	✓
Visual Alarm	✓	✓	✓
Audio Alarm	✓	✓	✓
Vibrating Alarm		✓	✓
Intrinsically Safe		✓	✓
Adjustable Alarms			✓
24 Hour TWA			✓

Certifications

All Models:

CE CERTIFIED

⚠ **WARNING: DO NOT SERVICE THIS DEVICE IN A HAZARDOUS ENVIRONMENT**
⚠ **AVERTISSEMENT: NE PAS RÉPARER CET APPAREIL DANS UN ENVIRONNEMENT DANGEREUX**
⚠ **WARNING: EXPOSURE TO HIGHER TEMPERATURES CAN CAUSE DAMAGE TO THIS DEVICE**
⚠ **AVERTISSEMENT: EXPOSITION À LA SURPRESSION LES TEMPERATURES PEUVENT CAUSER DES DOMMAGES À CET APPARE**

Industrial & Industrial Pro Models ONLY:

CONFORMS TO UL STD 913;
CERTIFIED TO CSA STD C22.2 NO 157
Intertek/ETL control number 4004813

⚠ **WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY**
⚠ **AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LASECURITE INTRINSEQUE**
⚠ **WARNING: DO NOT REMOVE THE BATTERY IN A POTENTIALLY EXPLOSIVE ATMOSPHERE.**
⚠ **AVERTISSEMENT: NE RETIREZ PAS LA BATTERIE DANS UNE ATMOSPHÈRE POTENTIELLEMENT EXPLOSIVE**

Technical Specifications

CO Range: 0-500ppm, display 0 to 1,999ppm
H2S Range: 0-400ppm
Resolution: 1ppm
CO Accuracy: +/-10%, 0 to 500ppm
H2S Accuracy: +/-10% or +/-1ppm (which ever is greater)
Initial Response Time: < 5 seconds
T90 Response Time: < 20 seconds
Display: real-time continuous readings
Size: 3.2" x 2.2" x 0.86"
Weight: 4 ounces
Battery Life: 2 years (depending on alarm condition)
CO Alarm Set Points: 35ppm low, 200ppm high
H2S Alarm Set Points: 10ppm low, 15ppm high
Alarms: Vibrating (Industrial & Industrial Pro), Audio and visual
Temperature Range: -4 to 122°F (-20 to 50°C)
Humidity Range: 20 - 90% (0 to 99% intermittent)

Lanyard Loop & Clip
A clip is on back of the device. Use this to attach to your shirt or other location.

Sensor Inlet
Where gas is measured. Keep it clean and do not puncture the membrane.

LED Indicator Lights
These red lights will flash when the gas concentration is high enough for an alarm. There are four lights around the LCD.

LCD Display
Shows gas concentration from 0-1,999 parts per million for CO and 0-400 parts per million for H2S

Power / MUTE Button
Press & hold to turn the power ON or OFF. Press to mute the buzzer for up to 5 Minutes.

Buzzer / Speaker
Makes a beeping sound when an alarm is active. Do not puncture the membrane.

MAX Button
Press to make the LCD display the maximum concentration measured while the function is enabled.

Note: New readings will only be displayed after a new high is encountered.

Battery Indicator
Displays when the battery is low and needs a replacement.

Time Weighted Average Pro
Displays the maximum 8 hour average in the last 24 hours. (Industrial Pro model only)

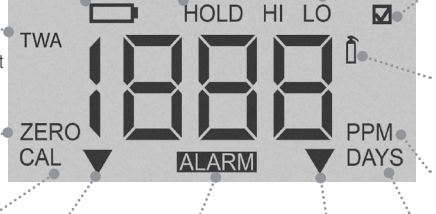
Zero
Displays as 1st step during calibration to establish 0 ppm status.

Cal
Indicates the device is in calibration mode.

HOLD
Displays a countdown for powering off or entering the calibration mode.

HI
Displays when the HIGH alarm is exceeded (200ppm for CO and 15ppm for H2S).

LO
Displays when the LOW alarm is exceeded (35ppm for CO and 10ppm for H2S).



Check Box
Indicates a successful zero calibration.

Gas Icon
Displays when applying gas in calibration mode.

PPM
Displays on the screen when measuring gas.

DAYS
Indicates the number of days until calibration is due.

Arrow 1
Displays over MUTE to indicate when alarm is muted.

ALARM
Displays when the lower alarm level has been exceeded (35ppm for CO and 10ppm for H2S).

Arrow 2
Displays over MAX to indicate the device is in MAX hold mode.

NOTE: Time Weighted Average (TWA) is a feature that is only available on the Industrial Pro Inspector Model.

Operating Instructions

1. Turning on the Inspector

Hold **POWER/MUTE** for 1 to 2 seconds to turn on. A 10 second count down timer allows the sensor to warm up before displaying real-time readings.

2. Muting audible alarms

If an alarm occurs and you want to mute the sound, briefly press the **POWER/MUTE** button.

3. Shutting off the Inspector

Simply hold **POWER/MUTE** for 3 seconds to turn the device off. A count down from 3 will be displayed while you are shutting off the Inspector.

4. Turning on MAX mode

To enable **MAX mode**, briefly press the **MAX** button. **MAX** mode will only show the highest, peak reading encountered by the Inspector while the **MAX** mode is active. The display will only show another value once a new, higher reading is encountered.

Advanced Operating Instructions

1. Entering the advanced features menus

Press the **POWER/MUTE** and **MAX** buttons at the same time for 5 seconds to access the advanced features series of menus. Only **CAL** mode is available for the Basic and Industrial Inspector models, while the Industrial Pro will have four advanced features (**TWA, CAL** mode, Lo Alarm **SEt** mode and Hi Alarm **SEt** mode). To exit, press **POWER/MUTE** as many times as required to exit.

2. Viewing TWA readings (Industrial Pro Only) Pro

Press the **POWER/MUTE** and **MAX** buttons at the same time for 5 seconds to access the **TWA** screen which displays the maximum 8 hour exposure during the last 24 hours. To exit, press **POWER/MUTE** as many times as needed to exit.

3. Adjusting the Lo Alarm (Industrial Pro Only) Pro

Press the **POWER/MUTE** and **MAX** buttons at the same time for 5 seconds to access the advanced features series of menus. Press **POWER/MUTE** twice to get to the Lo Alarm **SEt** screen. Push or push and hold the **MAX** button to adjust the Lo Alarm to a setting from 5 to 100ppm for CO or 1 to 20ppm for H2S. Press **POWER/MUTE** as many times as needed to exit.

4.) Adjusting the Hi Alarm (Industrial Pro Only) Pro

Press the **POWER/MUTE** and **MAX** buttons at the same time for 5 seconds to access the advanced features series of menus. Press **POWER/MUTE** thrice to get to the Hi Alarm **SEt** screen. Push or push and hold the **MAX** button to adjust the Hi Alarm to a setting from 40 to 500ppm for CO or 11 to 100ppm for H2S. Press **POWER/MUTE** as many times as needed to exit.

Pro **Look for the Pro Icon**

This icon calls out features that are specific to our Pro Models (INS2-CO-03, INS2-H2S-03, and INS-CO-03).

Calibration Instructions for Basic & Industrial Inspector

Calibration is done at the factory or by the customer using a gas regulator, some Tygon tubing and calibration gas (50ppm for CO and 15ppm for H2S). Calibration is recommended every 6 months. Visit sensorcon.com for more information.

Follow these steps below to calibrate the Basic or Industrial Inspector:

1. Entering CAL mode

Press the **POWER/MUTE** and **MAX** buttons at the same time for 5 seconds to access the **CAL** screen.

2. Performing the ZERO cal

In a clean air environment, press the **MAX** button to begin **ZERO** calibration. A 30 second countdown timer will be displayed while zero calibration is being done. Once complete, the sensor will beep, quickly flash **CAL dn** and then quickly flash the **BASELINE** value just before continuously displaying the word **GAS**. If you want to continue on with the GAS calibration, skip to step 3. If you only want to perform **ZERO** cal and not the gas calibration, press **POWER/MUTE** to exit. **no CAL** will flash on the screen before returning to normal operation.

Note: ZERO cal in a non-clean environment will cause errors in the readings!

3. Performing GAS cal

When **ZERO** cal is complete, use 1/4" OD, 1/8" ID Tygon tubing to attach the cal gas cylinder and regulator to the sensor inlet. Turn on the gas flow (rate of 0.3 to 0.5L/min). Press the **MAX** button to start the **GAS** cal process. A timer will countdown from 60 seconds for CO and 120 seconds for H2S. Once the countdown has finished, the sensor will beep, quickly flash **CAL dn** and then display the **SENSITIVITY** for 2 seconds before returning to normal operation. If there is an issue with the sensor calibration, the sensor will display **err** before returning to normal operation. If the sensor displayed **err** during calibration, please contact Sensorcon for further support.

Note: Do not service this device in a hazardous environment.

Calibration Instructions for the Industrial Pro Inspector Pro

1. Entering CAL mode

Press the **POWER/MUTE** and MAX buttons at the same time for 5 seconds to access the advanced features series of menus. Press **POWER/MUTE** once to get to the **CAL** screen.

2. Performing the ZERO cal

In a clean air environment, press the **MAX** button to begin **ZERO** calibration. A 30second countdown timer will be displayed while zero calibration is being done. Once complete, the sensor will beep, quickly flash **CAL dn** and then will show the **BASELINE** value. Pressing the **MAX** button will advance to the next screen displaying the word **GAS**. If you want to continue on with the **GAS** calibration, skip to step 3. If you only want to perform **ZERO** cal and not the gas calibration, press **POWER/MUTE** to exit. no CAL will flash on the screen before returning to the next advanced features series of menus. To return to normal operation, press **POWER/MUTE** two more times to exit.

Note: ZERO cal in a non-clean environment will cause errors in the readings!

3. Performing GAS cal

When **ZERO** cal is complete, use 1/4" OD, 1/8" ID Tygon tubing to attach the cal gas cylinder and regulator to the sensor inlet. Turn on the gas flow (rate of 0.3 to 0.5L/min). Press the **MAX** button to start the **GAS** cal process. A timer will countdown from 60 seconds for CO and 120 seconds for H2S. Once the countdown has finished, the sensor will beep, quickly flash **CAL dn** and then display the **SENSITIVITY** for 2 seconds before returning to normal operation. If there is an issue with the sensor calibration, the sensor will display **err** before returning to normal operation. If the sensor displayed **err** during calibration, please contact Sensorcon for further support.

Note: Do not service this device in a hazardous environment.

CO Exposure Chart

CO Level	Effect
1,600 PPM	Dizziness in 20 minutes. Death in 1 hour.
1,000 PPM	Loss of consciousness after 1 hour.
800 PPM	Dizziness and headache after 45 minutes.
400 PPM	Life threatening in and around 3 hours.
200 PPM	Dizziness, nausea, fatigue ***HIGH ALARM POINT STARTS***
100 PPM	Sight headache after 1-2 hours.
50 PPM	Maximum possible exposure in workspace.
35 PPM	NIOSH 10 hour TWA ***LOW ALARM SET POINT STARTS***
25 PPM	Max TWA Exposure for an 8 hour work-day (ACGIH).
10 PPM	Possible heath effects with long-term exposure.
0 PPM	Normal fresh air with no CO.

EPA & NIOSH Concentration Guidelines

Carbon Monoxide

0-5ppm Average inside homes
35ppm NIOSH 10hr exposure limit
200ppm NIOSH 15min. exposure limit

Hydrogen Sulfide

0.005ppm Average inside homes
10ppm NIOSH 8hr exposure limit
15ppm NIOSH 15min. exposure limit

Contact Information

sales@sensorcon.com
sensorcon.com

Hours of Operation

Monday through Friday: 8am to 4pm
Note: East Coast Time Zone

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