

737K1

## INSTRUCTION MANUAL

For use with Combustible Gas and optionally available Oxygen and Toxic Gases


Read and understand instructions before use.




Approved  
UL913,  
For Class 1,  
Division 1,  
Groups C & D  
hazardous locations  
when used with  
alkaline batteries.


 **Warning:**  
To prevent ignition  
of flammable or  
combustible  
atmospheres,  
disconnect power  
before servicing.



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

 **NOTICE:** LEL sensor should be checked for accuracy after exposure to any gases containing silicones, high sulfur content, high concentrations of propane and high concentrations of CO (above 1000ppm) or exhaust gases. Continuously low calibration check results or fluctuation of zero readings may indicate sensor end of life or failure. Consult **Sensit Technologies** with any questions.


For best accuracy always zero in clean air environments similar in temperature and relative humidity to the environment where the instrument will be used. When continuously exposed to combustible gas concentrations beyond LEL for longer than 5 minutes always perform a calibration check prior to the next use.

 **WARNING:** To reduce the risk of ignition of a flammable atmosphere, batteries must only be changed in an area known to be nonflammable.

Do not mix batteries of different age or type.

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

**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.

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## PARTS AND ACCESSORIES

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### Standard Accessories (included)

Carrying Case, Alkaline Batteries, Wrist Strap, Extra Sensor Cap with O-Rings and Instruction Manual

### Accessories and Replacement Parts

ASG0150	Extension Adapter
ASG0128	Hydrocarbon Filter (6)
AJN02023	Hot Air Probe Assembly
AJN02013	Confined Space Probe with Tubing
AJN02021	Printer
AJN02033-PCIS	PC Interface with Software
CSC00100	SMART-CAL™ Automatic Calibration System
PJN0110	Sensor Cap with O-Rings
Calibration Kits	Contact us for correct Calibration Kit.

## GENERAL DESCRIPTION

The **Sensit®Gold 100** is designed to detect combustible gases, oxygen content and toxic gases when so equipped with the available sensors. Each model of the **Sensit®Gold 100** provides specific detection features based on available sensor options. Each **Sensit®Gold 100** can be re-configured or upgraded by the manufacturer for an additional charge should your sensing requirements change. Consult SENSIT TECHNOLOGIES for a listing of new sensors available for use with the **Sensit®Gold 100**.

### SENSING FEATURES

SENSIT® GOLD 100 INSTRUMENTS	LEL ALARMS	LEL/%GAS DISPLAY	LEAK DETECTION	CARBON MONOXIDE	OXYGEN	HYDROGEN SULFIDE
SENSIT GOLD 100 EX	●	●	●			
SENSIT GOLD 100 EX-CO	●	●	●	●		
SENSIT GOLD 100 EX <sup>Plus</sup>	●	●	●		●	
SENSIT GOLD 100 EX-CO <sup>Plus</sup>	●	●	●	●	●	
SENSIT GOLD 100 EX-TOX	●	●	●			●
SENSIT GOLD 100 EX-TOX <sup>Plus</sup>	●	●	●		●	●
SENSIT GOLD 100 4GAS	●	●	●	●	●	●

All **Sensit®Gold 100** instruments incorporate an advanced low power semiconductor sensor to measure combustible gases in LEL (Lower Explosive Limit) range and an advanced thermoconductivity based sensor to measure combustible gases in the percent volume range. The user may select either methane or propane gas readings from a user menu depending on the sensing requirements. An automatically backlit display shows all gas concentrations being measured. LEDs located on the front of the instrument indicate preset visual warnings of increased gas concentration. All gases are continuously sampled with the use of an internal pump.

## GENERAL DESCRIPTION *continued from page 2*

Audible and visual alarms warn the operator of hazardous conditions being sensed. The preset alarms are indicated by a red flashing LED, display indicator and alarm sound. The combustible gas alarm is preset from 50% LEL (2.5% methane or 1.1% propane) to 17% methane (12% propane). The carbon monoxide (CO) alarm is preset at 35ppm. The oxygen (O<sub>2</sub>) alarms are preset at below 19.5% and above 23.5%. The hydrogen sulfide (H<sub>2</sub>S) alarm is preset at 10ppm.

The **Sensit®Gold 100** instrument is approved by Underwriters Laboratories to UL913, for Class I, Division 1, Groups C & D hazardous locations when used with approved batteries.

**APPROVED BATTERIES: Duracell MN 1400BK or equivalent alkalines. Panasonic HHR300CH or equivalent NIMH (Nickel Metal Hydrides).**

## SPECIFICATIONS

### SENSOR SPECIFICATIONS

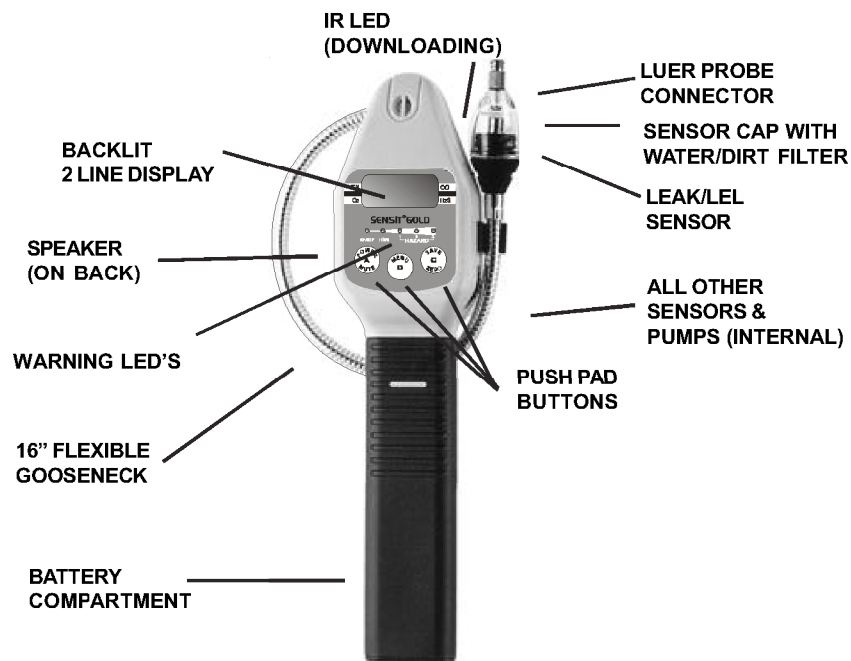
TYPE	RESOLUTION	RANGE	ACCURACY
LEL	0.1% up to 2% increments	0-100% LEL	±10%
%GAS	0.1%	2.5-100% GAS	±5%
PPM	1ppm or 10ppm increments	0-2,000ppm	±10%
O <sub>2</sub>	0.1%	0-25%	±0.2% or 2%**
CO	1ppm	0-2000ppm	±5ppm or 5%**
H <sub>2</sub> S	1ppm	0-100ppm	±2ppm or 5%**

\*\* *Whichever is greater*

### PRODUCT SPECIFICATIONS

Size:	11.5" x 3" x 2.32" (292 x 76 x 59 mm)
Weight:	1.2 lbs. (544 g)
Operational Temp:	0 to 120° F (-17.8 to 48.8° C)
Storage Temp:	-20° to 132° F (-28.9 to 55.6° C)
Battery Life:	Alkaline: approximately 12 hrs. continuous

## PRODUCT FEATURES



**Sensit@Gold 100** instruments are constructed of durable ABS plastic to withstand the rigors of field use.

Incorporated in the hand grip area is the **battery compartment**. All **Sensit@Gold 100** instruments require 3 "C" type alkaline batteries. APPROVED BATTERIES: *PROCELL® MN 1400* batteries or equivalent alkalines, *PANASONIC HHR300CH* or equivalent NiMH (nickel metal hydride) batteries provide approximately 12 hours of use. A **tick adjust knob** is located on the right side of the instrument that activates the audible tick sound that helps 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.

## PRODUCT FEATURES *continued from page 4*

The tick can be easily heard with the speaker located in the back of the instrument.

An **infrared LED** is located on the right side to allow the **Sensit@Gold 100** instruments to download calibration data and readings the operator has elected to save to the instrument's on-board memory.

A **flexible gooseneck** is used to assist in locating the source of gas leaks and remote sampling. A water/dirt trap is located at the end with a convenient luer style connector to attach sampling and probe accessories.

A **two line display** continuously updates the operator of all available gas concentrations and alarms simultaneously as well as indicates internal functions such as air flow and battery power.

Below the display is a series of LEDs that are preset to indicate combustible gas concentrations. The red LED on the right side will flash during any alarm condition.

There are **3 operational button pads** on the front of all **Sensit@Gold 100** instruments.

- **POWER/MUTE BUTTON (A):** Operates POWER and MUTE features and exit menu items.
- **MENU BUTTON (B):** To enter, change and select menu items.
- **SAVE/ZERO BUTTON (C):** Use for save data feature, manually zero sensors, scroll and change menu items.

## SENSOR TYPES AND PUMPS

### Combustible Gas Sensor

All **Sensit®Gold 100** instruments incorporate a highly sensitive and uniquely designed semiconductor 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 as low as 1ppm methane up to 100% LEL. Concentrations above 70% LEL are monitored or measured simultaneously with a state-of-the-art thermal conductivity sensor (TC).

This sensor is capable of measuring high concentrations of gas quickly and accurately. All readings are automatically switched between the scales of PPM (if so equipped), LEL and percent volume.

### The Pump

The **Sensit®Gold 100** instruments are equipped with a powerful and efficient rotary vane pump. A water/dirt filter at the end of the gooseneck protects the pump from foreign material. An additional internal filter also helps to protect the pump from damaging debris. There are audible and visual indicators that will show a blocked or improperly operating pump.

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

## BATTERY INSTALLATION/REPLACEMENT

**instrument and void the warranty.**

Battery replacement is necessary when the display reads **BAT LOW**, an audible alarm sounds and the green ready LED flashes. When the instrument remains in **BAT LOW**, a count down will appear starting at 300 seconds (5 minutes) which is the maximum time remaining before shut down.

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

Remove the battery sleeve cover by depressing the locking tab on the front of the handle with a coin or flat object and pulling the handle away from the top or display area of the instrument.

**NOTE: Observe the polarity markings on the inside of the battery holder. Improper battery installation will disable the instrument.**

Place three (3) approved batteries into the battery holder. For best results hold the battery compartment so that it lays in one of your hands. With your other hand install the battery that goes toward the front contact spring connector (top) first. The battery that is in contact with the rear spring connector second.

Finally insert the third battery in the center position by moving the first and second so that it compresses the spring contacts and allows the battery to go into place. If you do not use one of your hands to hold the bottom of the battery compartment the batteries may come out.

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

## OPERATION AND USE

**⚠ CAUTION: Always start any Sensit®Gold 100 in a gas free environment to insure a proper zero.**

1. Push the POWER/MUTE BUTTON (A). The following start-up sequence will be displayed.
  - a. Product name and model version number
  - b. System check for proper pump flow and battery strength
  - c. Date and time
  - d. Gas type
  - e. Serial number
  - f. Warm-up period. Minimum 30 sec., maximum 5 min.
  - g. Autozero of sensors
  - h. Work display
2. If the display fails to illuminate or BAT LOW is shown on the display, replace the batteries. There is room in the carrying case to keep an extra set.
3. If any sensor is past the intended calibration cycle, CAL DUE will appear during the start-up sequence. The instrument will also show which sensor is due for calibration at that time.
4. If after the warm-up period, the instrument determines that a sensor is inoperable, an ERROR message will flash for that sensor. Then FAIL will show on the display for the corresponding sensor.
5. The display will indicate LEL readings by showing an “L” next to the % symbol. Standard resolution is 0.1% LEL, the equivalent of 50ppm methane.

## OPERATION AND USE *continued from page 8*

As an option, the instrument is capable of displaying a range of 0.1% LEL up to increments as high as every 2% LEL. An alternative option is to request a PPM display. Resolution for this option is 1ppm or every 10ppm. An X on the display indicates that the instrument is not outfitted with that sensor.

6. Prior to use, test the integrity of the sensor cap and tubing. Use your finger to block the inlet of the sensor cap for 4-5 seconds. The display will read FLOW BLOCKED if all seals are intact. If this does not occur, change the sensor cap and “O” rings. A spare sensor cap and “O” rings are supplied with each instrument. During pump flow block, a beep will occur every 2 seconds until the pump restarts and adequate flow is present.
7. It may be necessary to manually zero the instrument based on company practices and environmental conditions. Always zero the instrument in a clean air environment.
8. When testing areas with elevated temperatures such as appliance vents or flues, always attach the optional hot air probe to the end of the sensor cap. These connections need only be finger tight. Failure to use the approved probe can result in damage to the instrument and may void the warranty.

**⚠ CAUTION: Do not handle the steel portion of any hot air probe after use as burns may occur!**



## OPERATION AND USE *continued from page 9*

9. When sampling 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 adapter slides onto the battery sleeve and is held in place by the locking nut assembly.

10. When sampling areas the appropriate sensors will cause the display to update when a gas is encountered. Additionally, if a combustible gas is encountered a series of LEDs on the front of the instrument will illuminate when the preset concentrations are reached. If any alarm condition exists for any sensor, based on their preset alarm points, the red (HAZARD 3) LED will flash and the alarm will sound unless it is muted.

Additionally, the reading for the gas exceeding the alarm set point will also flash.

The standard factory preset LED indicators and alarm points are:

a. Combustible gas: Methane, audio and visual alarm indicators from 10% LEL to 100% LEL.


- i. Green LED/Ready = 0% - 4.9%LEL Methane
- ii. Amber LED/Low = 5% - 9.9%LEL Methane
- iii. Red LED/Haz1 = 10.0% - 24.9% LEL Methane
- iv. Red LED/Haz2 = 25.0% - 49.9% LEL Methane
- v. Red Flashing LED/Haz3

METHANE: 50% LEL Methane to 17% volume Methane (LED indicator only above 17% volume Methane)

## OPERATION AND USE *continued from page 10*

PROPANE: 50% LEL Propane to 12% volume Propane (LED indicator only above 12% volume Propane)

- b. Oxygen - below 19.5% and above 22.5%
- c. Carbon Monoxide - 35ppm per utility industry standards
- d. Hydrogen Sulfide - 10ppm and above per Federal OSHA guidelines

 **Caution: There are gases that can poison or be cross sensitive to the combustible gas sensor.**

11. To disable the alarm, quickly press the POWER/MUTE BUTTON (A). To enable the alarm press the same button again. During an alarm the gas that has exceeded the preset alarm point will flash on the display and the HAZARD 3 LED will flash indicating a potentially unsafe condition.

When combustible gas readings exceed the alarm range, all LEDs (except green and red HAZ3) will turn off.

12. To assist in locating the source of small combustible gas leaks or surveying areas outdoors or indoors, rotate the thumbwheel located on the right side of the instrument until a steady ticking sound is heard. NOTE: There is no warm-up for this feature as it uses the LEL sensor that is already operating.

Move the sensor head toward the area suspected of leakage. As the sensor head moves closer to a leak source the tick will increase. When the tick becomes a steady tone rotate the thumbwheel in a clockwise direction while keeping the sensor

## **OPERATION AND USE** *continue from page 11*

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 the tick goes away you have moved away from the leak or there is no more gas present. The leakage rate may be less than the rate that the pump is drawing the sample. For best results always use the leak detector prior to using any liquid leak detection fluids as these sensors will detect their presence.

**13.** At any time the operator may save the readings on the display by pressing the ZERO/SAVE (C) button. This will save all readings for download at a later time. The memory is factory set to store 6 events. This can be adjusted from 1-15 at the factory. The most recent save is first during download. An optional Auto log software of extended memory can store up to 1,600 records. (Consult factory for details.)

**14.** Following Federal, State, Municipal and/or Company procedures move to the areas where gas readings are suspected or must be tested. Use necessary accessories to draw samples from areas not accessible with the instrument itself, such as confined spaces or flues. During sampling, the respective readings may change. Audible and visual alarms will activate when the preset limits are reached.

**15.** If the instrument encounters a gas it is not calibrated to, it may read "NSR" followed by a number. If the instrument is

## **OPERATION AND USE** *continue from page 12*

calibrated for natural gas "NSR" (Non Standard Reading) likely indicates a heavy gas (i.e.: heavier than air, such as gasoline, propane, carbon dioxide, etc.). If the instrument is calibrated for propane, "NSR" likely indicates gas lighter than air such as hydrogen, helium, methane or natural gas.

**16.** When being used in dark areas an automatic backlight will illuminate the display.

**17.** To turn instrument off, press/hold the POWER/MUTE BUTTON (A) until the beeping sound stops, about 5-6 seconds. Release the button and power down will occur.

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## **CALIBRATION CHECK**

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To verify the accuracy of any **Sensit®Gold 100**, it must be exposed to a known concentration of test gas that will test any sensor combination included in your particular model.

Any sensor that does not meet the specifications listed in this manual may require calibration or repair. A calibration check does not update the calibration due date. Full calibration is required to update these times.

A calibration past due message will illuminate during warm-up if calibration has not been performed per your company specified interval. Any time it is suspected that the **Sensit®Gold 100** is not working properly, check calibration.



## MENU

The **Sensit®Gold 100** has several categories within the User Menu. The first nine fields are standard with all instruments. The last three are only available in certain instrument models when ordered with the Extended Memory option.

**PRINT MENU:** Print Session Logs, Cal Log, access Smart-Cal communication, (print CO test or print CF test is optional with some extended memory units).

**CALIBRATION:** Calibrate all sensors, access Smart-Cal communication.

**GAS TYPE:** Select natural/methane or propane as primary gas to be sensed.

**POWER OFF:** Set the automatic shut off timer in minutes. (User adjustable)

**SET CLOCK:** Set date and time. Displayed using a 24 hour clock. (User adjustable)

**SHOW CAL LOG:** Display last calibration of all sensors.

**SHOW SES LOG:** Display saved gas readings with the corresponding date and time.

**BUMP TEST:** Perform automatic test for sensors response to calibration gas within 60 seconds or less.

**O2 TEST:** 20 second test to check depletion of the O2 sensor when exposed to the proper gas, such as 100% methane.

**SMART-CAL:** Access Smart-Cal communication.

**NOTE:** These additional fields are found on certain models ordered with the Extended Memory option.

**AUTOLOG:** Automatic storage of peak gas readings of up to 1,600 events.

## MENU *continued from page 14*

**SHOW CO TEST:** Display CO levels recorded during timed test.

**SHOW CF TEST:** Display calculated AIR FREE CO levels recorded during timed test.

### PRINT MENU

From the working display access the menu by pressing & holding the MENU BUTTON (B) until the top line of the display reads USER MENU. The bottom line will read PRINT MENU. Press & release the MENU BUTTON (B) once to enter the menu.

Prepare the optional IR printer. Aim the IR window (on the right side of the instrument) at the IR window on the printer.

Press & release the SAVE/ZERO BUTTON (C) to scroll to the item you want to print. Press & release the MENU BUTTON (B) to print that item.

To exit this menu, press & release the POWER/MUTE BUTTON (A) until the instrument returns to the working display.

### GAS TYPE

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Press & release the SAVE/ZERO BUTTON (C) until the bottom line reads GAS TYPE. Press & release the MENU BUTTON (B) once and the current primary gas type will appear.

To change the gas type, press & release either button (B) or (C). You can select either NAT (methane) or PRO (propane) as your primary gas. Once you have made your selection, press & release the POWER/MUTE BUTTON (A) to store the gas. Press

## **MENU** *continued from page 15*

& release the POWER/MUTE BUTTON (A) to return to the working display. **NOTE:** Prior to use, confirm that the instrument is reading accurately when switching gas types. Verification is recommended by conducting a Bump Test or Calibration.

### **POWER OFF**

From the working display access the menu by pressing & holding the MENU BUTTON (B) until the top line reads USER MENU and the bottom line will read PRINT MENU.

Press & release the SAVE/ZERO BUTTON (C) until the bottom line displays POWER OFF. Press & release the MENU BUTTON (B) once to enter the menu.

Press & release the MENU BUTTON (B) to decrease the minutes until automatic shut-off or press & release the SAVE/ZERO BUTTON (C) to increase the minutes.

**NOTE:** Setting this number to "0" will set the instrument to run continuously for as long as the battery power will permit. Press & release the POWER/MUTE BUTTON (A) to save the selection. To exit this menu, press & release the POWER/MUTE BUTTON (A) once more.

### **SET CLOCK**

From the working display access the menu by pressing and holding the MENU BUTTON (B) until the top line reads USER MENU and the bottom reads PRINT MENU.

Press & release the SAVE/ZERO BUTTON (C) until the bottom line displays SET CLOCK. Press & release the MENU BUTTON (B) once to enter the menu.

## **MENU** *continued from page 16*

The day will be the section flashing on the display. To change this section, press & release the MENU BUTTON (B) for adjustments. Press & release the SAVE/ZERO BUTTON (C) to advance to the next section (month, year or time).

Press & release the POWER/MUTE BUTTON (A) to save the selection. To exit this menu, press & release the POWER MUTE BUTTON (A).

### **SHOW / PRINT a CAL LOG**

#### **To Show a Calibration Log**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU, the bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SHOW CAL LOG.

Press & release the MENU BUTTON (B) once to enter the menu. Calibration data will be displayed. The sensor which was calibrated will appear on the top line and the date of the last successful calibration will appear on the bottom line.

Press & release the SAVE/ZERO BUTTON (C) to scroll to view the next available sensor calibration data. After viewing the calibration data for the last sensor, the next scroll will return the display to the USER MENU.

To exit this menu, press & release the POWER/MUTE BUTTON (A).

#### **To Print a Calibration Log**

From the working display, press & hold the MENU BUTTON (B)

until the top line reads USER MENU, the bottom line reads PRINT MENU. Press & release the MENU BUTTON (B) once to enter the menu, press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads CAL LOG.

Prepare the optional IR printer. Aim the IR window on the right side of the instrument at the IR printer. Press & release the MENU BUTTON (B) to print the log.

To exit this menu, press & release the POWER/MUTE BUTTON (A) to return to working display.

### **SHOW / PRINT a SESSION LOG**

#### **To Show a Session Log**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU and the bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SHOW SES LOG.

Press & release the MENU BUTTON (B) once to enter the menu. SESSION 1 will be displayed. This is the most recent data saved. Press & release the SAVE/ZERO BUTTON (C) to scroll to the session number you want to view.

Press & release the MENU BUTTON (B) once to enter that session's recorded day, month and time. Press & release the MENU BUTTON (B) once again to access the gas readings for that session.

Press & release the SAVE/ZERO BUTTON (C) to scroll to view the individual gas readings saved. Press & release the POWER/

MUTE BUTTON (A) once to access a different session number. Press & release the SAVE/ZERO BUTTON (C) to scroll to a new session number.

The standard number of available stored sessions is factory set at 6 but is factory adjustable up to 100. To exit this menu, press & release the POWER/MUTE BUTTON (A) to return to the working display.

#### **To Print a Session Log**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU and the bottom line reads PRINT MENU.

Press & release the MENU BUTTON (B) once to enter this menu, SESSION LOG will be displayed.

Prepare the optional IR printer. Aim the IR window, on the right side of the instrument, at the IR printer. Press & release the MENU BUTTON (B) to print the log.

Press & release the POWER/MUTE BUTTON (A) to return to the working display.

#### **BUMP TEST**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU and bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads BUMP TEST.

Prepare the appropriate certified gas mixture for your instrument model (see proper gas mixtures listed in the Calibration section).

**BUMP TEST continued:** Apply the gas to the instrument and press & release the MENU BUTTON (B) to start the BUMP TEST. The display will show the gas value being tested on the top line with registered gas value and a 45-60 second countdown on the bottom line.

The instrument will automatically check the LEL sensor and also the CO and H2S sensors, if they are installed.

If each sensor tested reads at least 80% of the value of the gas, within the time period required, the display will flash BUMP TEST PASS before returning to the USER MENU automatically.

Press & release the POWER/MUTE BUTTON (A) to exit and return to the working display.

If any sensor fails, the display will show BUMP TEST FAILED. This means that calibration is required. If calibration is unsuccessful, remove the instrument from service.

Consult the factory in the event of any failure. To exit this menu, press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **O2 TEST**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU and the bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads O2 TEST.

Apply recommended gas mixture void of oxygen, such as 100%

Methane or 100% Nitrogen and press & release the MENU BUTTON (B) to start the test. A 20 second countdown will begin. If the sensor shows proper depletion within this period, PASSED will flash on the display.

Press & release the POWER/MUTE BUTTON (A) to return to the working display.

If the O2 sensor does not respond properly within the 20 second test, FAILED will appear on the display. Remove the instrument from service. Consult the factory in the event of any failure.

Press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **SMART-CAL**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU and the bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SMART CAL.

Place the instrument into the cradle on the left side of the Smart-Cal Calibration Station. Attach the tubing from the station to the instrument.

Press & release the MENU BUTTON (B), the display will show SMART CAL communicating.

Press & release the CALIBRATE button on the Smart -Cal and calibration will begin automatically. If successful, CALIBRATION PASSED will show on display.

If unsuccessful, CALIBRATION FAILED will show. Let the instrument clear and repeat the calibration process. If the instrument will not pass, remove the instrument from service. Consult the factory in the event of any failure.

**Alternative methods to enter the Smart-Cal menu are:**

1. Enter the USER MENU. Press & release the MENU BUTTON (B) once to enter the PRINT menu. Press & release the SAVE/ZERO BUTTON (C), to scroll until the bottom line reads SMART-CAL.

Press & release the MENU BUTTON (B) once to begin Smart-Cal communication.

2. From the working display, press & hold the POWER/MUTE BUTTON (A) for 2-3 seconds. The display will read SMART CAL communicating.

**AUTOLOG (Automatically included with every unit that has the optional CF Test feature)**

With this feature the instrument will automatically save the peak readings of all sensors while the unit is operating in the working display.

These peak readings are stored in Events with a maximum capacity of 1,600 events.

They are stored accumulatively throughout day to day use until the maximum capacity is reached. Each use of the SAVE/ZERO BUTTON (C) to make a manual save will also record one event.

**To Retrieve Autolog Events:**

Stored autolog events can be downloaded to a PC using the serial port computer interface PCI-2s (PCI-2s with software order #AJN02033-PCIS). Please contact the factory for more information on this accessory.

**CONDUCT / SHOW / PRINT CO TEST**

**Only available as an option for instruments with CO and the extended memory feature.**

**To Conduct a CO Test**

From the working display, press & release MENU BUTTON (B) once, SELECT TEST will appear on the top line of the display.

Press & release the MENU BUTTON (B) again to enter the CO test menu. Press & release the MENU BUTTON (B) once more to start the test.

**NOTE:** Using the SAVE/ZERO BUTTON (C) may advance you to another test option depending on the instrument version.

A 180 second timed test will begin. (The time for this test is factory adjustable.) A countdown timer will show the remaining seconds of the test.

During this test period, the detected ppm CO level will be displayed on the left. Simultaneously, the peak ppm CO level detected will be displayed and recorded on the right.

The test number, date, time and detected peak ppm CO level will be automatically stored by the instrument for display or print-out at a later date.

Press & release the MENU BUTTON (B) to repeat the test. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**To Show a CO Test**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU, the bottom line reads PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SHOW CO TEST.

Press & release the MENU BUTTON (B) once. CO TEST 1 will appear. This represents the most recent CO test data stored.

Press & release the SAVE/ZERO BUTTON (C) to scroll to the test number you wish to view. Press & release the MENU BUTTON (B) to view the day, month and time of that test.

Press & release the MENU BUTTON (B) again to view the data for that test. Data from previous tests can be viewed by scrolling with the SAVE/ZERO BUTTON (C). Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**To Print a CO Test**

From the working display, press & hold MENU BUTTON (B) until the top line reads USER MENU, the bottom line will read PRINT MENU.

Press & release the MENU BUTTON (B) once. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads CO TEST.

Prepare the optional IR printer. The IR window is on the right side

of the instrument. Aim the IR window at the printer. Press & release the MENU BUTTON (B) to print the data. The printout will include the test number, number 1 being the most recent, the date and time of that test and the peak ppm CO level detected during that test.

Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**CONDUCT / SHOW /PRINT CF TEST**

**Only available as an option for instruments with CO and O2 and the extended memory feature.**

**To Conduct a CF Test**

**NOTE: The hot air flue probe must be used with the instrument when conducting this test to prevent damage to the instrument and to receive proper calculations.**

**IMPORTANT:** Air free CO levels or CF readings are calculated by the instrument based on CO and O2 levels detected during flue gas sampling of gas fired appliances.

From the working display, press & release MENU BUTTON (B) once, SELECT TEST will appear on the top line of the display.

Press & release the MENU BUTTON (B) again and the instrument will auto-zero and then enter the CF test menu.

Press & release the MENU BUTTON (B) once more to start the test.



**NOTE:** Using the SAVE/ZERO BUTTON (C) may advance you to another test option depending on the instrument version.

A 180 second timed test will begin. (The time for this test is factory adjustable.) A countdown timer will show the remaining seconds of the test.

The peak CF reading will start to flash "OPK". It will continue to flash until 20 seconds after the oxygen level drops below 18.9%. At this point, conditions are acceptable for a valid test calculation.

**If this segment continues to flash during the test period, conditions for a proper test were not possible. In this case any test results are invalid. The display and printout will show N/A for the peak CF reading. The test should be repeated.**

During the test period, the detected ppm CO level will be displayed on the top line. Simultaneously, the calculated ppm CF reading and the calculated peak ppm CF level will be displayed on the bottom line.

If the proper condition for an accurate test existed, the detected CO level, calculated CF level and the peak CF level will remain on the display at the end of the test.

The CF readings are automatically recorded by the instrument and can be viewed at a later date. In addition, the peak CF reading will be stored for a printout report.

Press & release the MENU BUTTON (B) to repeat the test. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**To Show a CF Test**

From the working display, press & hold MENU BUTTON (B) until the top line reads USER MENU, the bottom line will read PRINT MENU. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SHOW CF TEST.

Press & release the MENU BUTTON (B) once. CF TEST 1 will appear. This represents the most recent CF test data stored.

Press & release the SAVE/ZERO BUTTON (C) to scroll to the test number you wish to view. Press & release the MENU BUTTON (B) to view the day, month and time of that test.

Press & release the C again to view the readings of that test. Invalid test data will show as "N/A" for the peak CF level.

Data from previous test can be viewed by scrolling with the SAVE/ZERO BUTTON (C). Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**To Print a CF Test**

From the working display, press & hold the MENU BUTTON (B) until the top line reads USER MENU, the bottom line will read PRINT MENU.

Press & release the MENU BUTTON (B) once to enter this menu.

## **MENU** *continued from page 27*

Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads CF TEST.

Prepare the optional IR printer. The IR window is on the right side of the instrument. Aim the IR window at the printer. Press & release the MENU BUTTON (B) to print the CF test data.

Invalid test data will show as "N/A" for the peak CF level. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

Calibration is the process of setting the readings of the instrument to equal the value of certified calibration gases.

Prior to calibration allow the instrument to operate for 5 minutes in a room environment free of combustible, CO and H<sub>2</sub>S gases.

## **CALIBRATION**

Manually zero the instrument prior to beginning the calibration process.

**NOTE: Using calibration kits other than recommended by SENSIT TECHNOLOGIES may cause inaccurate readings. Repairs are required if any sensor fails to calibrate. Consult SENSIT TECHNOLOGIES for details.**

**NOTE: When calibrating, the numbers shown on the display represent the numbers seen by the microprocessor and should not be confused with actual gas readings. These readings will update every 5 seconds during calibration.**

The following instructions pertain to manual calibration of the **Sensit Gold 100**. If you are using the automatic Smart-Cal Calibration System, the procedure is different. See the Smart-Cal section of this manual (page 34) or consult the Smart-Cal instruction manual for details.

### **CARBON MONOXIDE (CO) CALIBRATION (100PPM CO/AIR)**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU.

Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read CALIBRATION.

Press & release the MENU BUTTON (B) once. The bottom line will read CO 100ppm. Apply 100ppm CO/Air calibration gas and press & release the MENU BUTTON (B) to start CO calibration.

## **CALIBRATION** *continued from page 29*

When the reading is satisfactory, the display will flash DATA SAVED indicating that calibration is complete for that sensor. The date for CAL PAST DUE is automatically reset for that sensor as well.

Scroll with the SAVE/ZERO BUTTON (C) if you need to calibrate another sensor. When finished, remove and shut off the gas supply. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **HYDROGEN SULFIDE (H<sub>2</sub>S) CALIBRATION (H<sub>2</sub>S 25 PPM)**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read CALIBRATION.

Press & release the MENU BUTTON (B) once. The bottom line will read CO/100 PPM. Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read H<sub>2</sub>S 25ppm. Apply 25ppm H<sub>2</sub>S/AIR to the instrument and press & release the MENU BUTTON (B) to start H<sub>2</sub>S calibration.

When the reading is satisfactory, the display will flash DATA SAVED indicating that calibration is complete for that sensor. The date for CAL PAST DUE is automatically reset for that sensor as well.

Scroll with the SAVE/ZERO BUTTON (C) if you need to calibrate another sensor. When finished, remove and shut off the gas supply. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

## **CALIBRATION** *continued from page 30*

### **COMBUSTIBLE GAS CALIBRATION (50% LEL METHANE)**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read CALIBRATION.

Press & release the MENU BUTTON (B) once, the bottom line will read CO/100 ppm. Press & release the SAVE/ZERO BUTTON (C) twice. The bottom line will read 50% LEL NAT. Apply 50%LEL methane/air calibration gas and press & release the MENU BUTTON (B) to start 50% LEL calibration.

When readings stabilize, the display will read DATA SAVED indicating calibration is complete for that sensor. The date for CAL PAST DUE is automatically reset for that sensor as well.

Scroll with the SAVE/ZERO BUTTON (C) if you need to calibrate another sensor. When finished, remove and shut off the gas supply. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **COMBUSTIBLE GAS CALIBRATION (100% METHANE)**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read CALIBRATION. Press & release the MENU BUTTON (B) once, the bottom line will read CO 100ppm.

Press & release SAVE/ZERO BUTTON (C) to scroll until the bottom line reads METHANE 100%. Apply 100% methane to

## **CALIBRATION** *continued from page 31*

the instrument. Immediately press & release the MENU BUTTON (B) to start 100% methane calibration.

When the reading is satisfactory, the display will flash DATA SAVED indicating that calibration is complete for that sensor. The date for CAL PAST DUE is automatically reset for that sensor as well.

Scroll with the SAVE/ZERO BUTTON (C) if you need to calibrate another sensor. When finished, remove and shut off the gas supply. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **COMBUSTIBLE GAS CALIBRATION (1.1% PROPANE or 50% LEL PROPANE)**

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Press & release the SAVE/ZERO BUTTON (C) once. The bottom line will read CALIBRATION. Press & release the MENU BUTTON (B) once. The bottom line will read CO 100PPM.

Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads PROPANE. Apply 1.1% propane (50% LEL propane) to the instrument. Immediately press & release the MENU BUTTON (B) to start propane calibration.

When the reading is satisfactory, the display will flash DATA SAVED indicating that calibration is complete for that sensor. The date for CAL PAST DUE is automatically reset for that sensor as well. Scroll with the SAVE/ZERO BUTTON (C) if you

## **CALIBRATION** *continued from page 32*

need to calibrate another sensor. When finished, remove and shut off the gas supply. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

### **OXYGEN SENSOR TEST**

To determine if the O2 sensor is working properly, verify the sensors reaction by exposing it to a calibration gas void of oxygen, such as 100% methane or 100% nitrogen.

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Scroll with SAVE/ZERO BUTTON (C) until the bottom line reads O2 TEST.

Apply proper gas and press & release the MENU BUTTON (B) to start the test. A 20 second countdown will begin. If the sensor shows proper depletion within this period, PASSED will flash on the display. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

If the O2 sensor does not respond properly within the 20 second test, FAILED will appear on the display.

Consult the factory in the event of any failure. Press & release the POWER/MUTE BUTTON (A) to return to the working display.

**NOTE: A calibration failure is indicated on the display by BAD CAL. Recalibration should be attempted. Any instrument that does not accept calibration should be taken out of service. Please contact SENSIT TECHNOLOGIES for any needed repairs.**

## USING THE SMART-CAL CALIBRATION STATION

From the working display press & hold the MENU BUTTON (B) until the top line reads USER MENU. Scroll with SAVE/ZERO BUTTON (C) until the bottom line reads SMART CAL.

Place the instrument into the cradle on the left side of the Smart-Cal Calibration Station. Attach the tubing from the station to the instrument. Press & release the MENU BUTTON (B), the display will show SMART CAL communicating.

Press & release the CALIBRATE Button on the Smart-Cal and calibration will begin automatically.

If successful, CALIBRATION PASSED will be displayed on the instrument. If unsuccessful, CALIBRATION FAILED will show. Let the instrument clear and repeat the calibration process. If the instrument will not pass, remove the instrument from service. Consult the factory in the event of any failure.

Alternative methods to enter the Smart Cal menu are:

1. Enter the USER MENU. Press & release the MENU BUTTON (B) once to enter the PRINT menu. Press & release the SAVE/ZERO BUTTON (C) to scroll until the bottom line reads SMART CAL. Press & release the MENU BUTTON (B) once to begin Smart Cal communication.

2. From the working display, press & hold the POWER/MUTE BUTTON (A) for 2-3 seconds. The display will read SMART CAL communicating. Please see the Smart-Cal Calibration Station instruction manual for additional information.

## FACTORY ADJUSTABLE FEATURES

ADJUSTABLE FEATURES (FACTORY ONLY)

<i>FEATURE</i>	<i>RANGE</i>	<i>DEFAULT</i>
Session Saves / BH Saves	1-15	6
Extended Memory	Up To 1600	Off
Purge Time	0 - 30 Seconds	0 Seconds
LEL	0-100% by .1% up to 2% increments	%LEL (by 0.1%)
PPM	0-2000ppm by 1ppm or 10ppm	Off
%GAS	0 - 100%	Off
Alarm - LEL	1 - 99%	50%
Alarm - %GAS (off)	2.5 - 100%	17% CH <sub>4</sub> - 12% PRO
Alarm - O <sub>2</sub> (low only)	17.5 - 22.5%	19.5% (OSHA)
Alarm - CO	5 - 300ppm	35ppm
Alarm - H <sub>2</sub> S	2 - 30ppm	10ppm
Cal Due Interval	30, 45, 60, 90, 180, 360 Days	30 Days
Show Session Log*	1-15	6
Show BH Test*	1-15	6

\* Can be disabled.

## WARRANTY

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Your **SENSIT@GOLD 100** is warranted to be free from defects in materials and workmanship for a period of two years after purchase (excluding calibration and batteries). The % gas sensor (TC) is warranted for 5 years. 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. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired for a service charge. Internal repair or maintenance must be completed by a SENSIT TECHNOLOGIES authorized technician. Violation will void warranty. Units must be returned postpaid, insured and to the attention of the Service Dept. for warranty or repair.

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