SENSIT® PMD 2

PORTABLE METHANE DETECTOR

For use with combustible gases and optionally available oxygen and toxic gases.

INSTRUCTION MANUAL

READ AND UNDERSTAND INSTRUCTIONS BEFORE USE.

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FOR YOUR SAFETY

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

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

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

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

⚠ WARNING: Only zero the instrument in a gas free environment.

⚠ WARNING: To maintain intrinsic safety, service must be performed by factory authorized technicians with approved replacement parts only. No substitution of components is permitted.

⚠ WARNING: All accessories are to be used in an area known to be non-flammable.

⚠ WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

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QUICK START GUIDE

1. Remove the instrument and rechargeable battery pack from the carrying case. If the battery pack is not installed, install the battery into the instrument by sliding it in place, and install the screws.
2. Press and hold the [A] button until the instrument powers on. The LED bars will illuminate and the **SENSIT** logo will be shown on the display.
3. In clean air, allow the instrument to go through the startup sequence, warmup, and Autozero. This typically takes 45 seconds or less but can take up to 5 minutes.
4. An automatic flow block test may be prompted during startup. If so, place your finger over the inlet at the end of the inlet and wait until the test passes. This should happen within 5 seconds. If flow block cannot be achieved make sure the filter is installed tight on the inlet cap and replace the O-ring on the filter, contact **SENSIT Technologies** for assistance.

   If the automatic flow block test is not prompted during startup, perform this test after the Autozero is complete and the work display is shown. *FLOW BLOCKED* will be displayed.

   NOTE: If any FAIL messages occur during the Autozero, ensure that the instrument is in clear air, and attempt the zero again by pressing and holding the [C] button until *AUTOZERO* is shown on the display. Contact **SENSIT Technologies** if the instrument cannot pass the Autozero.
4. The work display will be shown with the gas reading. Once this is shown with no fail messages, and a flow block check has been successful, you are ready to use the instrument.
5. Following federal, state, municipal, and/or company procedures, conduct the leak investigation, survey, or other procedures as needed. See the Operation and Use and Quick Menu Test Modes sections in the instruction manual for detailed information.
6. If the source of an odor or known leak needs to be pinpointed, use the *TICK* feature. To enable, press and release the [B] button to enter the *QUICK MENU*. Press and release the [B] button again to enable *TICK*.

   An audible ticking sound will be heard. Move the end of the probe or tubing towards the area suspected of leakage. As you get closer to the source, the tick rate will increase. Press and release the [B] button or roll back the thumb wheel to decrease the tick. Press and release the [A] button to deactivate.
7. To zero out very small levels of gas, press and hold the [C] button until *AUTOZERO* is shown on the display. This should only be done to set the instrument zero to your working environment, (e.g. to zero out a small level of CO on a street with heavy vehicle traffic). The instrument will not allow a zero if unsafe levels of gas are present and will show a fail message.

   Note: If the **PMD2** is set to show absolute readings instead of relative, performing an Autozero will not zero the instrument to 0ppm.
8. When your investigation is complete, press and hold the [A] button until the instrument displays *POWER OFF SHUTDOWN.*

PRODUCT FEATURES: HARDWARE

RECHARGEABLE BATTERY AND CHARGING STATION

The **SENSIT® PMD2** comes standard with a rechargeable battery pack. This battery pack is installed in the body of the instrument and secured with a door and two screws. The battery pack can be charged while still installed in the instrument, or when removed, with the included charger. The charger has status LEDs on it to indicate the charging status of the battery.

PUMP AND SAMPLING SYSTEM

All **SENSIT® PMD2** instruments are equipped with a powerful and efficient pump operates at 1.0 L/min,1.5 L/min, or 2.0 L/min, depending on what is specified at the time of order.

A 0.45 micron hydrophobic dirt and water filter installed in the inlet assembly protects the internals of the instrument from foreign material. There is an additional internal filter that also helps to protect the internals from larger damaging debris. If water or dirt does enter the instrument causing the flow to be restricted, a flow blocked message will be displayed.

⚠ **WARNING:** Operating the **SENSIT® PMD2** with a damaged or altered filter can cause damage to the instrument and void the warranty.

LED BARS

The LED bars on the **SENSIT® PMD2** display different colors and patterns to alert the operator of various conditions. **See the chart below for information on each.**

COLOR	INDICATION
Solid Green	"Ready" indication. No current alarm condition or failure.
Blinking Green	Low battery indication. The work display will also give an indication on screen to alert the operator.
Blinking Red	1. Any alarm conditions. 2. Sensor failure/fault.
Solid Blue	Busy, not in gas detection mode (e.g., viewing logs, **SMARTLINK**, **SMART-CAL 360** Communication)

PRODUCT FEATURES: SOFTWARE

WORK DISPLAY OPTIONS

COMBUSTIBLE GAS SCALE AND RESOLUTION

The combustible gas reading will be automatically displayed in one of three options on the **SENSIT® PMD2**: PPM, %LEL, or %VOL. By default, the reading starts in the PPM scale (from 0.0ppm) and will automatically switch to %LEL above 5000ppm (configurable) and then to %VOL above100%LEL (equal to 5.0%VOL by default, see the section on LEL Definition).

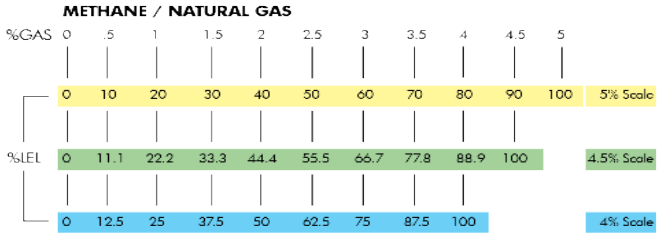
If the PPM option is enabled, the **PMD2** will instead start at 0.0PPM or an absolute value, and automatically scale to either %LEL (if enabled) or %VOL at the specified upper limit. By default, this is 2,000PPM. Other options are 5,000PPM, 10,000PPM, or 50,000PPM. If set to 50,000PPM, the **PMD2** will not scale to %LEL even if it is enabled, because at the highest LEL Definition, 50,000PPM is equal to 100%LEL.

In addition, the display resolution for the PPM and %LEL scales are customizable. The default display resolutions and options for each scale, while on the work display, are listed below.

	DEFAULT	**RESOLUTION**
PPM	0.1PPM	0.1PPM, 1PPM or 10PPM
%LEL	0.1%LEL	0.1% - 2.0%LEL [0.1% increments]
%VOL	<5.0%VOL: 0.01%VOL ≥5.0%VOL: 0.1%VOL	Not adjustable

LEL DEFINITION

By default, the **SENSIT® PMD2** defines the lower explosive limit (LEL) as 5.0%VOL methane. This is factory adjustable between 4.0% and 5.0% for methane in 0.1% increments, based on company or industry requirements. This will affect how the instrument displays the %LEL scale. For example, if the LEL definition is 4.0%VOL, 2.5%VOL methane will display as 62.5%LEL. **See the chart below for examples for natural gas.**



ALARMS

The **SENSIT® PMD2** has audible and visual alarms to warn the operator when hazardous conditions are being sensed. The alarm setpoints specific to the work display and are outlined below. The LED bars on the **PMD2** changes color based on alarm conditions. See the following sections for information on each.

WORK DISPLAY ALARMS

WORK DISPLAY ALARM SETPOINTS	DEFAULT
LEL	50.0%LEL
EX - PPM	10PPM
UEL SETPOINTS	**DEFAULT**
NAT	17.0%VOL

OPERATION AND USE

⚠ **CAUTION:** Always start any **SENSIT® PMD2** in a gas free environment to ensure a proper zero.

NOTE: Fully read and understand this section of the instruction manual before using your **SENSIT® PMD2**.

This section of the manual outlines the operation and use of the **SENSIT® PMD2** by general categories. Due to the many custom options available, and many different applications the instrument can be used in, there is not one comprehensive sequential set of instructions for using the instrument. For a quick list of instructions to get up and running, see the Quick Start Guide at the beginning of this manual, use this Operation and Use section for more detailed instructions, and use the sections that cover the Quick Menu and User Menu for more specific instructions for each test mode and menu.

POWER-ON AND STARTUP SEQUENCE

Before powering on the **SENSIT® PMD2**, ensure that you are in a gas free environment, and that you have a charged battery pack installed in the instrument, secured with the battery door.

Press and hold the [A] button until the **SENSIT** logo appears on the display and the LED bars illuminates. The instrument will not be ready to use until it reaches the work display, and both a successful autozero and flow block check have been performed. The startup process will take less than 45 seconds typically but can take up to a maximum of 5 minutes depending on the output/ stability of the sensor.

BUMP TESTING AND CALIBRATION

To verify the accuracy of any **SENSIT® PMD2**, it must be exposed to a known concentration of test gas that will test the sensor response. This is known as "bump testing". This can be done either by exposing the instrument to gas from the working display or using the bump test feature which tests the sensor and gives a pass or fail message. For more information, see the Bump Test section in this manual.

A sensor that does not meet the specifications listed in this manual may require calibration or repair. A bump test does not calibrate the unit and does not update the calibration due date. Full calibration is required for that.

A calibration past due message will be displayed during startup if calibration has not been performed per your company specified interval. Any time it is suspected that the **SENSIT® PMD2** is not working properly, check calibration.

THE WORK DISPLAY

After the startup process, the work display will be shown. This is the main working screen of the instrument, and what will be used most of the time when detecting gas. The live gas reading is shown on screen.

FILTER INTEGRITY AND FLOW BLOCK CHECK

Prior to use, a flow block check needs to be performed to test the integrity of the filter and internal tubing. Block the inlet of the instrument or attached probe. Within a few seconds, *FLOW BLOCKED* should be shown on the display. This ensures all seals are intact and there are no air leaks in the probe or instrument. Press and release the C button to restart the pump and return to the previous screen. If flow block is not detected, check the integrity of the filter and connections on the probe and instrument. If flow block cannot be achieved, contact the factory for assistance. An airtight system is crucial for accurate readings.

READY FOR USE

After the startup process and Autozero are complete, and a successful flow block check has been done, the instrument is ready for use. The "work display", which is shown, will show live gas readings. The operator does not need to leave this screen for most general-purpose use. However, there are a few specialized test modes for specific applications, such as bar hole testing and tick. See the Quick Menu section for more information on these.

To use the **SENSIT® PMD2** for gas detection, always follow federal, state, municipal, and/or company procedures, then follow these generalized steps below for using the **SENSIT® PMD2**.

1. It may be necessary to manually zero the instrument based on company practices and environmental conditions. To do so, press & hold the C button until *AUTOZERO* appears at the top of the screen. Always zero the instrument in a clean air environment. If the instrument is setup to display absolute readings, an Autozero will not set the instrument to 0ppm.
2. Always perform a flow block check when using any probe or attachment.
3. When sampling the sensor will cause the display to update when methane is encountered. A combination of LED patterns and messages on the work display will occur when the preset concentrations are reached. If any alarm condition exists, based on the preset alarm points, the red LED will flash, and the alarm will sound unless it is muted. Additionally, the reading will flash on screen. The standard alarms and LED patterns can be found in the features section.
4. To mute the alarm, quickly press and release the A button. To unmute the alarm press and release the same button again. During an alarm, the reading will flash on the display, and the red LED will flash indicating a potentially unsafe condition. When methane readings exceed the alarm range UEL, the audible alarm will turn off. If the alarm condition no longer exists or was muted, the alarm sound will activate if a new alarm condition is encountered.
5. To assist in locating small leaks, utilize the *TICK* feature. See the Quick Menu section for more information.
6. Following Federal, State, Municipal and/or Company procedures move to the areas where gas readings are suspected or must be tested. Use the proper accessories to draw samples into the instrument. During sampling, the respective readings may change. Audible and visual alarms will activate when the preset limits are reached.

POWER OFF & BATTERY CHARGING

POWER OFF

To power off the **SENSIT® PMD2**, ensure you are in a gas free environment, and then press and hold the [A] button until the power off screen is shown. The instrument will purge for 10 seconds (by default) and then power off. During this purge, you can press and release the [A] button again to stop the power off process.

BATTERY CHARGING

The **SENSIT® PMD2** battery pack can be charged installed in the instrument or standalone. In both cases the charger is plugged directly into the battery pack. Status LEDs are located on the charger to show when the battery pack is charging, charged, and if there are any issues such as the pack being outside of the allowable temperature range for charging.

QUICK MENU TEST MODES

Depending on what type work the **SENSIT® PMD2** is being used for, there are a variety of test modes available that are designed to be used for specific tasks. For example, using *Bar hole* mode for below-grade leak investigation.

To access these test modes, enter the Quick Menu from the working display by pressing and releasing the [B] button. *QUICK MENU* will appear near the top of the display. You can scroll through this menu by pressing and release the [C] button, and selecting the mode currently shown on screen by pressing and releasing the [B] button. See the following sections for information about these test modes.

TICK

STANDARD FEATURE

PURPOSE: Assist in pinpointing small combustible gas leaks

TICK mode is a standard feature in the **SENSIT® PMD2**. It gives the operator a ticking, audible tone that gets faster as the gas concentration increases. This assists in pinpointing small combustible gas leaks by allowing the operator to rely on the tone and not have to watch the display of the instrument. It detects very small changes in gas concentration, which lets the operator very accurately and repeatably pinpoint the source of the leak.

The tick can be very gradually adjusted with the thumbwheel on the top of the instrument or can be instantly reset to a "baseline" tick rate by using the B button. This gives the operator a lot of control, and as the leak is searched for, small changes can be made to narrow down the source.

TO USE TICK:

1. From the working display, press and release the B button to enter the *QUICK MENU*. The first option in the menu is tick.
2. Press and release the B button to enable it. Upon activation, an audible tick can be heard, and a bar graph is displayed. The bar graph is a visual representation of how fast the tick rate (empty bar = no tick, full bar = max tick). To pinpoint a leak, move the probe toward the area suspected of leakage. As you move closer to a leak source, the tick rate will increase. When the tick becomes a steady tone, either rotate the thumbwheel to decrease the tick rate or press and release the B button to reset the tick rate to the baseline level. Then, a higher concentration of gas can be searched for using the same procedure. When this process no longer finds a higher concentration, the source of the leak has been pinpointed.
3. If the tick slows down or goes away, you have moved away from the leak or there is no more gas present.

BAR HOLE TEST

STANDARD FEATURE
PURPOSE: Below grade leak investigation
LOG SIZE: 2,048 Records

BAR HOLE MODE is a default feature in the **SENSIT® PMD2**. It is intended for use when conducting a below grade leak investigation, generally in a hole bored in the ground with a plunger bar or drill. It gives the operator a separate screen from the working display that shows the combustible gas reading in the %VOL scale (both real time and peak reading).

Bar hole mode is a timed test, which helps to ensure consistent results are achieved if multiple tests are done, whether to grade a leak or map leak migration. Each *BAR HOLE* test is logged in its own log, with results, date and time, and GPS coordinates (if installed), that can be retrieved wirelessly from the **SENSIT® PMD2** with Smart-Link 360 Software.

TO CONDUCT A BAR HOLE:

1. If you are sampling below grade in a hole, a bar hole probe is required for use while in this mode. Attach the bar hole probe to the fitting to the inlet of the instrument and perform a flow block check by blocking the inlet(s) of the probe. Within 10 seconds, *FLOW BLOCKED* should be shown on the display. This ensures all seals are intact and there are no air leaks in the probe or instrument. Press and release the [C] button to restart the pump and return to the previous screen. If flow block is not detected, check the integrity of the filter and connections on the probe and instrument. If flow block cannot be achieved, contact the factory for assistance. An airtight system is crucial for accurate readings.
2. From the working display, press and release the [B] button to enter the *QUICK MENU*.
3. Press and release the [C] button until *Bar hole TEST* is shown.
4. Press and release the [B] button to enter *Bar hole TEST* mode. A message will be displayed instructing you to attach hardware.
5. To begin a bar hole test, insert the probe into the location for the survey and then press and release the [B] button. A ≤15 second countdown for the test will start (the time may differ depending on the pump flow rate). The current percent of gas by volume detected will be displayed on the left side of the display. The peak percent of gas by volume detected will be displayed on the right side of the display. When the test ends, the pump will shut off and any sustained and peak readings will be shown and recorded.
6. If you have another test to take, remove the probe from the test location and press and release the [C] button to purge the gas out of the instrument. The purge process will start and continue until the desired setpoint is reached. This is set to 0.0%VOL by default and adjustable in the User Menu. When the purge stops, insert the probe into the next location and press and release the [B] button to start another test.
7. To exit bar hole mode, press and release the [A] button once to return to the quick menu, or twice to return to the work display.

STANDBY MODE

OPTIONAL FEATURE
PURPOSE: Puts the instrument in a low-power mode, for when you will need to use it again soon and do not want to fully power it off and back on again.

The **SENSIT® PMD2** has an optional "standby" mode that allows the operator to put the instrument in a low power state. This can be used if you don't need to use the instrument for a short amount of time and want to reduce battery consumption and time over fully powering the instrument off and back on again.

TO ENABLE STANDBY MODE:

1. From the work display, press and release the [B] button. *QUICK MENU* will appear near the top of the display.
2. Press and release the [C] button until *STANDBY* is shown.
3. Press and release the [B] button to activate *STANDBY MODE*. The gas readings will be removed and "STANDBY" will be shown on screen.
4. To resume normal operation and exit *STANDBY MODE*, press and release the [A] button. A brief warmup will be shown to ensure sensor is stable/operational.

PEAK MODE

OPTIONAL FEATURE

PURPOSE: Maintaining peak readings on the display for situations where the screen cannot be observed.

Work display peak readings in the **SENSIT® PMD2** is an optional feature that is used to maintain peak readings on the display (in addition to the real-time readings). The most common use case for this is when the instrument is being used in a situation where the display cannot be immediately observed. The peak reading remains on the screen until cleared so that no readings are missed.

TO ENABLE WORK DISPLAY PEAK READINGS:

1. From the working display, press and release the [B] button. *QUICK MENU* will appear near the top of the display.
2. Press and release the [C] button until *PEAK MODE* is shown.
3. Press and release the [B] button to enter *PEAK MODE*. The working display will be shown with an additional peak reading in brackets below the real-time reading.
4. Conduct the investigation or survey following federal, state, municipal, and/or company procedures. The highest measured value of combustible gas will be shown in addition to the measured value. PPM, LEL, or VOL will be shown depending on instrument configuration and gas concentration measured.
5. To reset the peak readings, press and hold the [C] button until *AUTOZERO* is displayed (**NOTE:** this should be done in a gas free environment).
6. To exit the *PEAK MODE*, press and hold the [A] button for 2-3 seconds. The peak readings will be removed, and the standard working display will be shown.

USER MENU

The **SENSIT® PMD2** has a user-accessible menu that is used for user-level tasks such as performing a manual calibration, viewing logs, etc. A brief description of each menu option is listed below, followed by more details for each in the following section(s). Any options that are not available by default are listed as such (for example, a log for a non-default test mode). Other non-user adjustable settings are in the password protected Expert Menu.

To access the USER MENU from the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display. While in this menu, pressing and releasing:

- the [A] button will exit to the working display
- the [B] button will select the currently shown option
- the [C] button will scroll through each menu option

SET TIME Allows the user to adjust the instrument time in 24-hour format (hours and minutes). When installed and configured, this is set automatically by GPS.

SET DATE Allows the user to adjust the instrument date (day, month, and year). When installed and configured, this is set automatically by GPS.

TIME ZONE Allows the user to set the instrument time zone (hours and minutes). This is an offset from UTC +0.

GPS **OPTIONAL FEATURE**
When installed and configured, this shows the status of the GPS signal received by the instrument and the latitude and longitude coordinates.

BUMP TEST Perform automatic test for sensor response to calibration gas within 60 seconds or less. A response of 80% or greater of the calibration gas value indicates a successful test.

CALIBRATION Contains options for *AUTOCAL* and manual calibration of of all calibration points.

CAL LOG Displays historical calibration information.

SESSION LOG Displays manually saved gas readings.

BAR HOLE LOG **OPTIONAL FEATURE**
Displays automatically saved Bar hole records.

DATALOG **OPTIONAL FEATURE**
Displays automatically saved records from when the instrument is in use.

SMART CAL Communication mode used in conjunction with the **SMART-CAL 360** calibration station.

NEXT DUE Displays the next calibration due date for all calibration points.

BAR HOLE PURGE THRESHOLD Adjustment for the level of gas needed (in %VOL) for a Bar Hole purge to be complete. Default is 0.0%VOL.

SET DATE

STANDARD FEATURE
NOTE: If the CAL REQUIRED option is enabled, the SET DATE feature will not be available.

The *SET DATE* option allows the user to adjust the clock date saved in the **SENSIT® PMD2's** internal memory. There are two ways in which the clock date can be automatically updated so that this adjustment is never needed:

- **SENSIT® PMD2** instruments with GPS installed have the option to have the clock date be automatically updated via GPS signal (date is received along with location information). The *GPS CLOCK MODE* setting in the Expert Menu controls this.
- When a **SENSIT® PMD2** communicates with a **SMART-CAL 360** calibration station (e.g. for calibration or bump testing), the internal clock is automatically updated and synchronized with the station clock. This is not optional and happens with every communication, to avoid issues with instruments in the same fleet having mismatched clocks.

TO VIEW OR ADJUST DATE:

1. To access the *SET DATE* menu from the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display. Press and release the [C] button until *SET DATE* is shown. The currently saved instrument date will be displayed while viewing this menu option. If an adjustment needs to be made, follow the instruction below.
2. Press and release the [B] button to select the *SET DATE* menu. The *DAY* option will be shown.
3. Pressing and releasing the [C] button will scroll through *DAY, MONTH*, and *YEAR*. To make an adjustment to one of these, press and release the [B] button. The setting will be flashing.
4. Use the [B] and [C] buttons to adjust the number down or up.
5. When correct, press and release the [A] button to return to the *SET DATE* menu. If another adjustment is needed, press and release the [C] button to scroll to the appropriate option.
6. When the date is correct, press and release the [A] button to return to the User Menu. Press and release the [A] button again to return to the work display.

SET TIME

STANDARD FEATURE
NOTE: If the CAL REQUIRED option is enabled, the SET TIME feature will not be available.

The *SET TIME* option allows the user to adjust the clock time saved in the **SENSIT® PMD2's** internal memory. Additionally, there are two ways in which the instrument time can be automatically updated so that this adjustment is never needed:

- **SENSIT® PMD2** instruments with GPS installed have the option to have the clock time be automatically updated via GPS signal (time is received along with location information). The *GPS CLOCK MODE* setting in the Expert Menu controls this.
- When a **SENSIT® PMD2** communicates with a **SMART-CAL 360** calibration station (e.g. for calibration or bump testing), the internal clock is automatically updated and synchronized with the station clock. This is not optional and happens with every communication, to avoid issues with instruments in the same fleet having mismatched clocks.

TO VIEW OR ADJUST TIME:

1. To access the *SET TIME* menu from the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display. The first option in the User Menu, *SET TIME*, will be shown. The currently saved instrument time will be displayed while viewing this menu option. If an adjustment needs to be made, follow the instruction below.
2. If the hour position needs to be adjusted:
   a. Press and release the [B] button to select the *SET TIME* menu. The hour position will be flashing.
   b. Press and release the [B] button to select, and then use the [B] and [C] buttons to adjust the number down or up.
   c. When correct, press and release the [A] button to return to the User Menu. The setting will no longer be flashing.
3. If the minute position needs to be adjusted:
   a. Press and release the [B] button to select the *SET TIME* menu, and then press and release the [C] button. The minute position will be flashing.
   b. Press and release the [B] button to select, and then use the [B] and [C] buttons to adjust the number down or up.
   c. When correct, press and release the [A] button to return to the User Menu. The setting will no longer be flashing.
4. When the time is correct, press and release the [A] button to return to the work display.

TIME ZONE

STANDARD FEATURE

The *TIME ZONE* option allows the user to adjust the clock time zone saved in the **SENSIT®** **PMD2's** internal memory. The time zone is an offset from GMT/UTC+0. This may only need to be set once, and can be done at the factory per the instrument setup, but may need to be adjusted if:

- an instrument moves to a new location that is in another time zone, or
- an instrument is being used in an area that observes daylight savings.

If you are located in the U.S., you can find your UTC time zone by visiting https://www.time.gov/.

TO VIEW OR ADJUST TIME ZONE:

1. To access the *TIME ZONE* menu from the working display, press and hold the [B] button until the clicking stops and *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *TIME ZONE* is shown. The currently saved instrument time zone will be displayed while viewing this menu option. If an adjustment needs to be made, follow the instruction below
3. Press and release the [B] button to select the *TIME ZONE* menu. The *HOURS* setting will be shown.
4. Pressing and releasing the [C] button will switch between the *HOURS* and *MIN* settings. To make an adjustment to one of these, press and release the [B] button. The setting will be flashing.
5. Use the [B] and [C] buttons to adjust the number up or down.
6. When correct, press and release the [A] button to return to the *TIME ZONE* menu. If another adjustment is needed, press and release the [C] button to switch to the other option.
7. When the time zone settings are correct, press and release the [A] button to return to the User Menu. Press and release the [A] button again to return to the work display.

BUMP TEST

STANDARD FEATURE

The *BUMP TEST* feature is a semi-automated response test for all sensors installed in the **SENSIT® PMD2**. This can be done simply by applying gas to the instrument while on the work display, but using the *BUMP TEST* feature ensures the test is consistently timed and gives the operator a clear pass or fail message for each sensor. The **PMD2** requires the response for each sensor be at least 80% of the gas value called out on the display.

The gas concentration needed to do a bump test is 1000ppm (0.1%VOL) methane, balance air

TO PERFORM A BUMP TEST:

1. Power on the **SENSIT® PMD2** and allow it to warmup and arrive at the work display.
2. Prepare the calibration/bump gas necessary based on the sensor configuration of your instrument.
3. From the work display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
4. Press and release the [C] button until *BUMP TEST* is shown.
5. Press and release the [B] button to select and enter the *BUMP TEST* menu. The applicable sensor to be tested will be shown with a message instructing the operator to attach the gas.
6. Attach the gas shown on-screen. Once the instrument has detected it, the bump test for that sensor will begin. A passed or failed message will be shown after the test is complete, and the next gas will be shown.

   NOTE: If the timer shown on-screen expires before the test passes, a fail message will be shown. Double-check there are no issues with the gas supply and re-calibrate any sensor that cannot successfully pass a bump test.
7. Repeat step 6 for all sensors, until the results screen is shown.
8. Press and release the [A] button once to return to the user menu, or twice to return to the work display.

CALIBRATION

(MANUAL CALIBRATION)

STANDARD FEATURE

The calibration menu in the **SENSIT® PMD2** contains the options for both the (manual) Auto Calibration feature and manual individual sensor calibrations. It does not contain the option for **SMART-CAL**, if you are calibrating the instrument using a **SMART-CAL 360** calibration station. For information on Smart-Cal, see the section in this manual, or the instruction manual for the station.

The following instructions show how to perform manual calibrations of individual sensors in the **SENSIT® PMD2**. If you are using the automatic **SMART-CAL 360** Calibration Station, or the *AUTO CALIBRATION* option, the procedure is different.

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 to 10 minutes in a room environment free of combustible gases.

Currently, the *AUTO CALIBRATION* feature is not supported.

TO MANUALLY CALIBRATE THE PMD2

NOTE: The gas used for this calibration point depends on whether the instrument is set to show "absolute" or "relative" readings (option in the user menu). If set to "absolute", the calibration gas required is 100% nitrogen. If set to "relative" the calibration gas required is "clean air", meaning ambient air from where the calibration is being performed.

1. From the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *CALIBRATION* is shown.
3. Press and release the [B] button to enter the *CALIBRATION* menu.
4. Press and release the [C] button until *CLEAN AIR* or *NITROGEN* is shown.
5. Attach the calibration gas to the inlet (no attachment required for clean air). Ensure gas is flowing.
6. Press and release the [B] button to start the calibration.
7. Wait for either a *PASSED* or *FAILED* result to be shown.
    a. If *PASSED* is shown, the calibration was successful, and the calibration due date will be automatically reset for that sensor. Remove the calibration gas.
    b. If *FAILED* is shown, leave the calibration gas attached and attempt calibration again. If successful calibration cannot be achieved, remove the instrument from service and contact the factory for assistance.
8. *METHANE 1000PPM* (or 0.1%VOL) will be shown. Attach that calibration gas and press and release the [B] button to start the calibration.
9. Wait for either a *PASSED* or *FAILED* result to be shown.
    a. If *PASSED* is shown, the calibration was successful, and the calibration due date will be automatically reset for that sensor. Remove the calibration gas.
    b. If *FAILED* is shown, leave the calibration gas attached and attempt calibration again. If successful calibration cannot be achieved, remove the instrument from service and contact the factory for assistance.

10. *METHANE 2.5%VOL* will be shown. Attach that calibration gas and press and release the B button to start the calibration.
11. Wait for either a *PASSED* or *FAILED* result to be shown.
    a. If *PASSED* is shown, the calibration was successful, and the calibration due date will be automatically reset for that sensor. Remove the calibration gas.
    b. If *FAILED* is shown, leave the calibration gas attached and attempt calibration again. If successful calibration cannot be achieved, remove the instrument from service and contact the factory for assistance.
12. *METHANE 100%VOL* will be shown. Attach that calibration gas and press and release the [B] button to start the calibration.
13. Wait for either a *PASSED* or *FAILED* result to be shown.
    a. If *PASSED* is shown, the calibration was successful, and the calibration due date will be automatically reset for that sensor. Remove the calibration gas.
    b. If *FAILED* is shown, leave the calibration gas attached and attempt calibration again. If successful calibration cannot be achieved, remove the instrument from service and contact the factory for assistance.
14. The display will return to the *CALIBRATION* menu. Press and release the [A] button once to return to the *USER MENU*, or twice to return to the working display.

CAL LOG

LOG SIZE: 4,096 records
STANDARD FEATURE
The **SENSIT® PMD2** stores every manual calibration (including manual Auto Calibration) and **SMART-CAL 360** calibration in a log on the internal memory of the instrument. Both successful and unsuccessful attempts are recorded. When the log memory is full, the oldest record will be overwritten.

TO VIEW THE CALIBRATION LOG:
1. From the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *CAL LOG* is shown.
3. Press and release the [B] button to select and enter the *CAL LOG* menu.

   The most recent record will be displayed. The top of the screen will list "Record __" with the record number. Each record contains the date/time of calibration, result, gas type, calibration gas, and data for both the zero and calibration. See the image below for an example.
4. To go to the previous record (decrease the record number), press and release the [C] button. To go the next record (increase the record number), press and release the [B] button.
5. Press and release the [A] button once to return to the User Menu, or twice to return to the working display.

SESSION LOG

LOG SIZE: 2,048 records
STANDARD FEATURE
At any time when using the **SENSIT® PMD2** while on the work display or when any applicable test modes are enabled, the operator can press and release the [C] button to manually save a record of the data. "DATA SAVED" will be shown on the display when this is done. These records are stored in the session log, in the internal memory of the instrument. When the log memory is full, the oldest record will be overwritten.

Test modes where session logs can be saved, in addition to the normal work display, are: *TICK, LEAK SEARCH,* and *PEAK MODE*. Other test modes, such as *BAR HOLE* or *CO TEST*, have their own separate logs.

TO VIEW THE SESSION LOG:

1. From the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *SESSION LOG* is shown. If you do not see this option in the user menu, it may be disabled per the factory configuration of your instrument. Contact **SENSIT Technologies** for assistance.
3. Press and release the [B] button to select and enter the SESSION LOG menu.

   The most recent record will be displayed. The top of the screen will list "Record __" with the record number. Each record contains the date/time of the session and sensor outputs at that time. GPS coordinates (if equipped).
4. To go to the previous record (decrease the record number), press and release the [C] button. To go the next record (increase the record number), press and release the [B] button.
5. Press and release the [A] button once to return to the User Menu, or twice to return to the working display.

BAR HOLE LOG

LOG SIZE: 2,048
OPTIONAL FEATURE
Any time a *BAR HOLE* test is performed using the **SENSIT GOLD G3**, a log of that test is automatically saved in the internal memory of the instrument. When the log memory is full, the oldest record will be overwritten.

For information on how to perform a *BAR HOLE TEST*, see that section in this manual.

TO VIEW THE BAR HOLE LOG:

1. From the working display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *BAR HOLE LOG* is shown. If you do not see this option in the user menu, it may be disabled per the factory configuration of your instrument. Contact **SENSIT Technologies** for assistance.
3. Press and release the [B] button to select and enter the *BAR HOLE LOG* menu.

   The most recent record will be displayed. The top of the screen will list "Record __" with the record number. Each record contains the date/time of the bar hole test and sensor outputs at that time. GPS coordinates (if equipped).
4. To go to the previous record (decrease the record number), press and release the [C] button. To go the next record (increase the record number), press and release the [B] button.
5. 5. Press and release the [A] button once to return to the User Menu, or twice to return to the working display.

CALIBRATION NEXT DUE

STANDARD FEATURE

The calibration next due menu displays the next due date for full calibration. This is same screen that displays during startup. Both the next due date and the days remaining until that date will be displayed.

TO VIEW THE NEXT DUE DATE(S):

1. From the working display, press and hold the [B] button until USER MENU is shown near the top of the display.
2. Press and release the [C] button until *CALIBRATION NEXT DUE* is shown near the top of the display. The next due date and days remaining until that date will be shown for each installed sensor.
3. Press and release the [A] button to return to the work display.

BAR HOLE PURGE THRESHOLD

STANDARD FEATURE

After a *BAR HOLE TEST* is performed using the **SENSIT® PMD2**, a built-in purge option lets the user automatically purge the instrument of gas before another test is completed. By default, this purge requires that the reading on-screen reach 0.0% volume to be successful, before another *BAR HOLE TEST* can be completed.

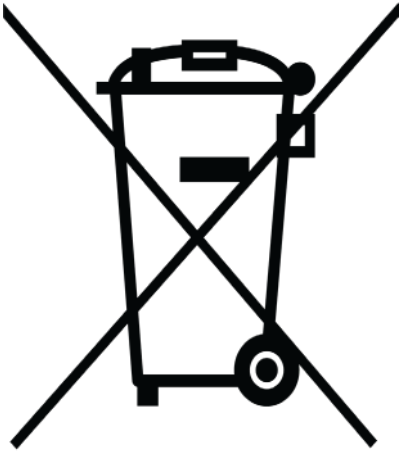
At the operator's option, this "threshold" can be raised from 0.0, up to a maximum of 9.0%, if it is deemed that it isn't necessary to completely purge the instrument.

TO ADJUST THE BAR HOLE PURGE THRESHOLD:

1. From the work display, press and hold the [B] button until *USER MENU* is shown near the top of the display.
2. Press and release the [C] button until *BAR HOLE PURGE THRESHOLD* is shown.
3. Press and release the [B] button to select and enter the *BAR HOLE PURGE THRESHOLD* menu. The current saved setting will be displayed (0.0% by default).
4. To increase the setting, press and release the [C] button. To decrease the setting, press and release the [B] button.
5. Once the setting is at the desired number, press and release the [A] button once to return to the *USER MENU* or twice to return to the work display.

NOTES

EU WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) DIRECTIVE



In August of 2005, the European Union (EU) implemented the EU WEEE Directive 2002/96/EC and later the WEEE Recast Directive 2012/19/EU requiring Producers of electronic and electrical equipment (EEE) to manage and finance the collection, reuse, recycling and to appropriately treat WEEE that the Producer places on the EU market after August 13, 2005. The goal of this directive is to minimize the volume of electrical and electronic waste disposal and to encourage re-use and recycling at the end of life.

Sensit Technologies LLC has met its national obligations to the EU WEEE Directive. Sensit Technologies LLC has also elected to join WEEE Compliance Schemes in some countries to help manage customer returns at end-of-life. If you have purchased. Sensit Technologies LLC branded electrical or electronic products in the EU and are intending to discard these products at the end of their useful life, please do not dispose of them with your other household or municipal waste. Sensit Technologies LLC has labeled its branded electronic products with the WEEE Symbol (figure above) to alert our customers that products bearing this label should not be disposed of in a landfill or with municipal or household waste in the EU.

WARRANTY

Your **SENSIT® PMD2** is warranted to be free from defects in materials and workmanship for a period of two years after purchase (excluding calibration and batteries). The circuit boards are 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.

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SENSIT

MADE IN THE USA
WITH GLOBALLY SOURCED COMPONENTS

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