SENSIT® PMD2

PORTABLE METHANE DETECTOR

Uses highly methane-selective Tunable-Diode Laser Spectroscopy (TDLAS)

INSTRUCTION MANUAL

READ AND UNDERSTAND INSTRUCTIONS BEFORE USE.

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

WARNING: Only zero the instrument in a clean air 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.

CONTENTS

SPECIFICATIONS

SENSOR SPECIFICATIONS

Detection Technology	TDLAS (Tunable Diode Laser Absorption Spectroscopy)
Gases	Methane (CH4)
Measurement Range	0–50,000 PPM 0-100% LEL 5-100% VOL
Sensitivity	0.5 PPM
Resolution	0 - 10,000 PPM: 0.1 PPM 10,000 - 50,000 PPM: 1 PPM 0 – 100% LEL: 0.1% LEL 5 – 100% VOL: 0.1% VOL
Accuracy	±2 ppm or ±10% (Whichever Is Greater) At stable operating temperatures

PRODUCT SPECIFICATIONS

Size	8" x 4" x 3.5" (20.3 x 10.1 x 8.9 cm)
Weight	3.1 lb (1.4 kg)
Operational Temperature	–4°F to 122°F (–20°C to 50°C)
Storage Temperature	–4°F to 140°F (–20°C to 60°C)
Operational Humidity	15 to 95% RH, non-condensing
Battery Life	12 hours
Charging Time	Up to 8 hours
IP Rating	IP64
Display	3.2" Frontlit LCD - 336 x 536 Dots
Response Time	T90 < TBA
Datalogging Rate	1 log / second (Adjustable up to 1 log/ minute in second increments
Data Storage Capacity	475,000 logs - Data Logs 1024 logs - BarHole, Session, Cal, Logs

QUICK START GUIDE

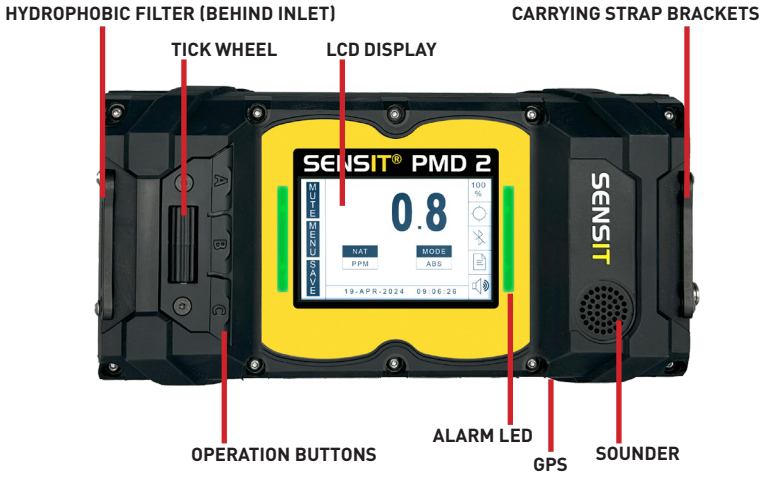
1. Remove the instrument and rechargeable battery pack from the carrying case. If the battery pack is not installed, install the battery into the instrument by sliding it in place, and install the screws.
2. Press and hold the A button until the instrument powers on. The LED bars will illuminate and 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 under 60 seconds.
4. During startup, when prompted, fully block the inlet and hold until "FLOW BLOCKED" is displayed. If no probe is installed, cover the end of the quick-connect fitting with your finger (~5 seconds). If using the telescopic probe, cover the end of the probe bell with your hand or a cap to create a complete seal (~ 10 seconds). If the test fails, check that the filter and O-ring are secure and all connections are airtight. Contact SENSIT 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 clean air, and attempt the zero again by pressing and holding the C button for five second, until *AUTOZERO* is shown on the display. Contact SENSIT if the instrument cannot pass the Autozero.
5. The work display will be shown with the methane reading. Once this is shown with no fail messages, and a flow block check has been successful, you are ready to use the instrument.
6. For best practice, SENSIT recommends to conduct a bump test daily before field use to confirm the instrument reads methane reliably and accurately. Access the User Menu by pressing and holding B for 5 seconds on the work display and select the Bump Test mode. Connect 0.1% vol / 1000 ppm (or the Smart-Cal360 station) methane calibration gas and start the bump test. The test will verify that the instrument reads within 10% of the known concentration (900–1100 ppm) to pass. SENSIT recommends treating a failed bump test as a prompt to recalibrate the instrument, and where failures persist, it is advised to contact the customer service for further assistance.
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. The instrument will not allow a zero if unsafe levels of methane is present and will show a fail message.
8. 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.

   Note: If the PMD2 is set on absolute mode (optional; available upon request), performing an Autozero will not zero the instrument to 0 ppm.
9. 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 Li-ion 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.

LED	STATUS
Orange/Yellow	Charger has power
Red	Battery is charging
Blinking Red	Battery outside charging temperature range
Green	Battery is fully charged

PUMP AND SAMPLING SYSTEM

All SENSIT® PMD2 instruments are equipped with a powerful and efficient pump that operates at 1.1 L/min.

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 condition. 2. Sensor failure/fault.
Solid Blue	Busy, not in gas detection mode (e.g., viewing logs, navigating menus, **Sync-IT**, **Smart-Cal 360** Communication)

PRODUCT FEATURES: SOFTWARE

WORK DISPLAY OPTIONS

METHANE SCALE AND RESOLUTION

The methane reading will be automatically displayed in one of the 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 above 100% LEL (equal to 5.0%VOL by default, see the section on LEL Definition).

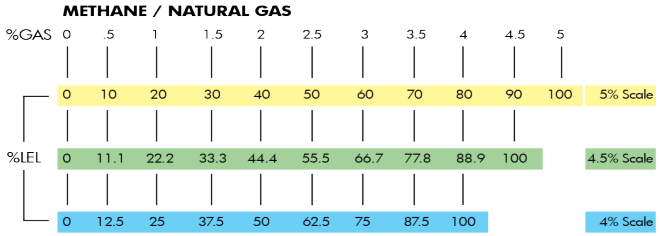
If the PPM option is enabled, the PMD2 will instead start at 0.0PPM or an absolute value, and automatically scale to either %LEL (if enabled) or %VOL at the specified upper limit. By default, this is 5,000PPM. Other options are 2,000PPM, 10,000PPM, or 50,000PPM. If set to 50,000PPM, the PMD2 will not scale to %LEL even if it is enabled, because 50,000 ppm is equal to the highest %LEL definition, 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 are specific to the work display and outlined below. The LED bars on the PMD2 turn red for all 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

An automatic flow block test is performed during startup.

When prompted, block the inlet and hold until the test passes and "FLOW BLOCKED" is displayed:

Without probe installed:

- Insert the quick-connect fitting and fully cover the open end of the fitting with your finger to create a complete seal (typically ~5 seconds).

With telescopic probe installed:

- Fully cover the end of the probe bell with your hand or a cap to create a complete seal (typically up to ~10 seconds).

Maintain a tight seal throughout the test. A "FLOW BLOCKED" message confirms a successful result.

If a flow block cannot be achieved, ensure the inlet filter is securely tightened to the inlet cap and inspect the filter O-ring for damage. Verify all probe connections and fittings are fully seated and airtight, and confirm the inlet is being completely sealed during the test. Contact SENSIT for additional assistance if the issue persists

If the automatic flow block test is not prompted during startup, perform the test manually after Autozero is complete and the work display is shown. Fully block the inlet as described above until "FLOW BLOCKED" is displayed.

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 clean air 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 either while installed in the instrument or as a standalone unit. In both cases, the charger connects directly to the battery pack.
The charger includes status LEDs to indicate charging progress, including:

Charging in progress
Fully charged
Fault conditions (e.g., battery temperature outside the acceptable charging range)

A full recharge from 0 to 100% typically takes up to 8 hours.

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 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.

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 & 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	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 90% or greater of the calibration gas value indicates a successful test.
CALIBRATION	Menu option for manual calibration of all methane calibration points
LED BRIGHTNESS	Allows the user to adjust LED indicator brightness to "Low" or "High" (default).
CAL LOG	Displays historical calibration information.
SESSION LOG	Displays manually saved gas readings.
BAR HOLE LOG	Displays automatically saved Bar hole records.
DATALOG	Displays automatically saved records in 1-second intervals (by default) from when the instrument is in use.
SMART CAL	Communication mode used in conjunction with the SMART-CAL 360 calibration station.
CAL DUE	Displays the next calibration due date for all calibration points.
LAST CAL	Displays the last calibration 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.
PPM ALARM	Allows user to set the PPM alarm from "0 ppm" (disabled) to 25,000 ppm in 1 ppm increments.

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 has 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 methane sensor to respond to at least 90% of the concentration (1000 ppm) 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 option for manual calibration of methane all different calibration points. 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.

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.

CALIBRATION

(SMART-CAL 360 - AUTOMATIC CALIBRATION)

STANDARD FEATURE

The **SENSIT PMD2** is compatible with the SMART-CAL 360 calibration/bump test station, which fully automates the calibration and bump test process. Gas cylinders are semi-permanently attached to the station, so all the operator needs to do is connect the hose, and initiate the process on the instrument and station by pressing a button. Calibration or Bump testing will then proceed automatically, concluding with a clear pass or fail indication.

Operators also have the option to calibrate or bump test the instrument manually by attaching individual gas cylinders and navigating to the manual calibration or bump test menu. For more information on the Smart-Cal360, contact SENSIT.

The Smart-Cal menu is used to place the PMD2 into a BLE communication mode, enabling calibration and bump testing via the Smart-Cal360 station. The instrument must be set to this mode before station-based calibration or bump testing can begin. Follow the instructions in the sections below to do so.

TO ENABLE SMART-CAL MODE

After start-up, allow the instrument to warm-up for 5 minutes. Press and hold the A button for 1-2 second and quickly release. SMART-CAL ENABLED will be displayed. Do not hold the button for more than 4-5 seconds, otherwise the instrument will power off. The instrument is now ready for calibration.

PERFORMING A SMART-CAL CALIBRATION OR BUMP TEST

1. Once the PMD2 displays SMART-CAL ENABLED, attach the instrument hose and press CALIBRATION or BUMP on the Smart-Cal360 touchscreen. If there is only a single PMD2 in range and a connection is successfully established, the PMD2 will display SMART-CAL CONNECTED. The calibration and/or bump will automatically proceed.

2. If more than one instrument is in BLE range and also in Smart-Cal mode, a list of available instruments will be shown. Select the appropriate PMD2 serial number of the instrument you would like to calibrate or bump test. Communication will be established with SMART-CAL CONNECTED displayed. The calibration and/or bump test will automatically proceed.

3. When the calibration and/or bump test process is complete, a status message will be displayed. A passed calibration accompanies a green LED indicator and a failed calibration accompanies a red LED indicator.

If a bump test fails, please calibrate your instrument.

If calibration fails, attempt a second calibration. If the failed calibration persists, remove the instrument from operation and contact SENSIT for further assistance.

LED BRIGHTNESS

STANDARD FEATURE
In this menu option, users can set the LED indicator's brightness to either LOW or HIGH. The SENSIT PMD2 is set to HIGH by default. A HIGH setting is recommended when working in an environment with direct sunlight. A LOW setting is desired when conducting leak survey in dark, low-light areas.

TO ADJUST LED BRIGHTNESS:

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 LED Brightness is shown near the top of the display.
3. Press and Release B to select LED Brightness and view the instrument selection (Low or High). Users can select between Low or High as needed.
4. Press and release the A button to return to the work 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*. Other test modes, such as *BAR HOLE*, 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.
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 PMD2, 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.

LAST CAL

STANDARD FEATURE
The last calibration menu option displays the last calibration date of a full complete calibration. This screen is also displayed during startup.

TO VIEW THE LAST CAL
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 Last Calibration is shown near the top of the display. The last calibration date will be shown for each calibration point.
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:

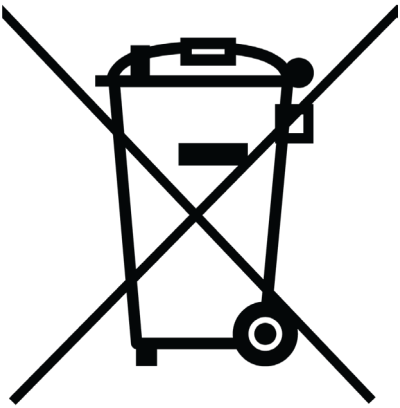
1. From the work display, press and hold the B button until *USER MENU* is shown near the top of the display.
2. Press and release the C button until *BAR HOLE PURGE THRESHOLD* is shown.
3. Press and release the B button to select and enter the *BAR HOLE PURGE THRESHOLD* menu. The current saved setting 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.

PPM ALARM

STANDARD FEATURE
The PPM alarm allows the user to configure a gas concentration threshold that will trigger an alarm. The alarm value is adjustable from 0 ppm (disabled) up to 25,000 ppm in 1 ppm increments, providing precise control based on application needs. The factory default setting is 10 ppm.

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 PPM Alarm is shown near the top of the display.
3. Press and Release B to select PPM Alarm. Users can adjust the PPM alarm value using the B and C button to increase and decrease the value.
4. The default PPM alarm value can be updated (10 ppm) by pressing and holding the B + C buttons simultaneously
5. Press and release the A button to return to the work display

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.

NOTES

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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

SENSIT® PMD 2 Instruction Manual (English)
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