

GrayWolf

Sensing Solutions



AdvancedSense Pro

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Manual

GrayWolf Sensing Solutions

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DISCLAIMER:

Determining the suitability for use of any equipment described in this manual remains SOLELY THE RESPONSIBILITY OF THE END USER.

PRODUCT WARNING:

GrayWolf Sensing Solutions' probes, AdvancedSense™ Pro kits are NOT suitable for use in flammable or potentially explosive environments. They are NOT certified intrinsically safe. They are also NOT intended for use in confined spaces where operator safety might be at risk due to exposure levels, such as reduced oxygen, during the course of the instrument survey.

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INTRODUCTION

GrayWolf Sensing Solutions provides fully integrated systems for measuring a range of key parameters for Industrial Hygiene, HVAC, Facility Management, Environmental Contracting, Indoor Air Quality and other applications. An AdvancedSense™ Pro running WolfSense™ application software takes readings of air quality, toxic gas, airspeed, moisture, temperature or other parameters from a probe connected through the serial or USB port. The AdvancedSense Pro also includes K thermocouple temperature sockets, built in Wi-Fi and a camera. The AdvancedSense Pro also offers the option for built-in auto-ranging and auto-zeroing differential pressure or for barometric pressure sensors. Particulate meters may also be interfaced via a serial port. You may choose to view live readings as they happen and/or log the readings for future use. If data was not logged it can still be accessible later with WolfSafe, which enables previous data to be recovered. Later, when the AdvancedSense Pro is connected to a desktop PC via the sync cable, any logged readings and associated notes are transferred to the desktop PC for printing, graphing or exporting from WolfSense PC data analysis software. WolfSense PC also assists in the creation of reports, incorporating the data and notes that have been collected. Logged data is also able to be emailed directly from the AdvancedSense Pro when Wi-Fi is present, or remote access to the device via the optional GrayWolf Live subscription.

SPECIFICATIONS

General

Dimensions	96.0mm (3.8in.) w. x 177mm (7.0in.) h. x 47.0mm (1.8in.) d.
Construction	Rugged polycarbonate plastic with rubberized side grips. IP64
Weight	700gr (1 lb 8.5 oz.) Add 50gr (1.5 oz.) for auto-zeroing ΔP option
Screen Size	3.5" HVGA 320 x 480 color touch screen with backlight
Memory	32GB for data-logging (millions of readings) and notes (photo/video/audio), help videos, documents and WolfSafe™ auto-data backup
Camera/LED	Integral 2MP photo/video camera and 17cd LED illuminating/inspection light
Wireless Network	WiFi 802.11 a/b/g with integrated antenna and Bluetooth 4.0 standard (may optionally have wireless hardware removed)
Audio	Integral electret microphone (on front) and 8 ohm speaker (on back)
Mounting	1/4" – 20 thread (on back) for belt clip, etc. (& for included mini tripod/stand)
Operating Range	-10°C to 50°C (15°F to 122°F), 0 to 100 %RH non-condensing
Warranty	1 year, extended warranty available.

Power

Battery	4250 mAh Lithium Ion rechargeable
Battery Life	18+ hours typical for new battery with backlight off (and probes self-powering) The AdvancedSense Pro can power DirectSense probes. Battery life will vary when powering probes, pressure sensors, or wireless.
Recharge Time	4 hours typical. Red/Green front LED displays charging/fully charged status
Power Supply	100/240VAC, 50-60Hz external charger. Specify local plug

Connectors

2 x Lemo 8F pin for GrayWolf DirectSense probes (the AdvancedSense Pro will support up to 4 x DirectSense probes with Y-adapters)
1 x Lemo 7F pin for particulate meters or RH-AS2 %RH, °C/°F probe
2 x sub-mini type K thermocouple temperature sockets. Range -80 to 1100°C (-110 to 2010°F)
1 x Lemo 7M pin for formaldehyde meter, borescope, external photo/thermal imaging camera or optional USB key download adapter cable.
1 x USB mini B socket.
1 x 12V, 2.1mm DC power socket

All specifications are subject to change without further notice.

INCLUDED ACCESSORIES

Description	Part	Image
1 m mini USB to USB A download cable supplied as standard		
User Manual and Data Download Software (USB Key)	ACC-USBTD	
100/240VAC external charger	ACC-PWR-ASP1	
Mini-tripod for AdvancedSense Pro	ACC-TPD-M2	

OPTIONAL ACCESSORIES

Description	Part	Image
Cable for connecting AdvancedSense Pro to external storage device for download/upload of files. Also for AdvancedSense Pro to specific IR cameras and borescopes	AD-L7F-USBF	
Pouch for AdvancedSense Pro with belt strap, hand strap and neck strap. Also has eyelets for rear camera and for inspector LED.	PCC-AS01	

Hardshell case for AdvancedSense Pro and AS-201/202A airspeed probe and PIT-504 pitot tube kit and accessories. Alternatively, use for AdvancedSense and a DirectSense probe.	PCC-22AS	
Hardshell security case for single probe monitoring. Stores AdvancedSense meter and up to 2 x IQ or TG probes (plus airspeed probe), accessories.	PCC-10A	
Hardshell security case for dual probe monitoring. Stores AdvancedSense meter, 4 x IQ or TG probes (plus airspeed probe), accessories.	PCC-15A	
Hardshell roller case for WolfPack (also holds AdvancedSense Pro, tablet or laptop PC, several spare probes, probe handles and accessories)	PCC-16	

External instrument bracket installed on PCC-10 or PCC-15 security cases (up to two maximum). Two come as standard on WolfPacks.	ACC-BRK1	
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CALIBRATION ACCESSORIES

Description	Part	Image
Calibration hood for DirectSense probes (comes with 1m and 30cm tubing lengths).	CA-HD2	
High range VOC gas calibration kit includes cal hood, regulator, tubing, PCC-GC2 case, 0.0ppm hydrocarbon reference gas and 8750ppm isobutylene span gas Low range VOC gas calibration kit includes cal hood, regulator, tubing, PCC-GC2 case, 0.0ppm hydrocarbon reference gas and 7.5ppm isobutylene span gas	CA-GS25H CAGS25L	

Carbon dioxide and carbon monoxide gas calibration kit includes cal hood, regulator, tubing, PCC-GC4 case, 375 & 1250ppm CO ₂ reference gases, 0ppm hydrocarbon gas and 95ppm CO reference gases	CA-GS12	
%RH calibration kit for DirectSense probes includes: 23% & 75% reference salts	CA-RH1	
105 liter calibration gas cylinders. GrayWolf offers a broad range of calibration gases to be used for field calibration/verification of the many gas sensors that we offer. Inquire about the reference values available (and model numbers) for specific gases.	CA-XXX-XX	
0.3 lpm standard regulator for calibration gas cylinders. 0.5 lpm stainless steel regulator for use with reactive reference gases.	CA- REG1 CA-REG5	

ADVANCEDSENSE PRO VIEWS

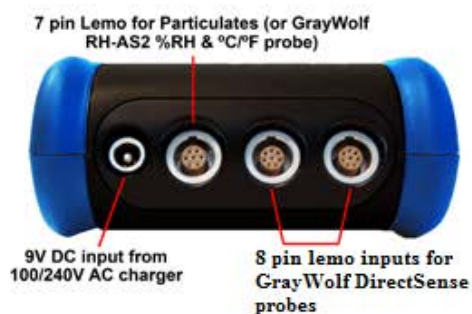
Front



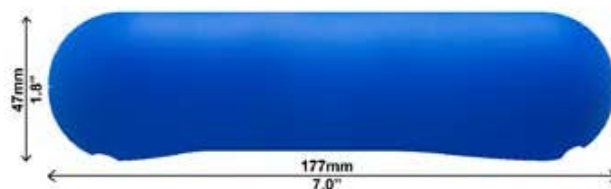
Top



Bottom



Side



Back



ADVANCEDSENSE PRO CONNECTIONS

DirectSense Probes

Attach GrayWolf's DirectSense probes to the center and rightmost sockets (8-pin) on the bottom of the AdvancedSense unit. The bottom connectors utilize a self-latching system: Align the red dot on the probe connector with the red dot /square notch on the socket and simply push the probe connection axially into the socket. Once the probe is latched the connection cannot be broken by pulling on the cable. To disconnect, pull on the outer sleeve of the connector to disengage the latch and then withdraw the probe connector from the socket.

Particulate Meters

The particulate meter's connector attaches to the leftmost 7-pin socket. Use the AD-PC3016-L7 cable with the GrayWolf 6-Channel Particle Counters (PC-3016A, and PC-4000) and the AD-PM1500-L7 cable with the Thermo pDR-1500 (PM-205) Particulate Meter. On AdvancedSense Pro go to Probe>Select External Probe or select the Select External Probe tile from the apps menu and select appropriate particulate meter from the dropdown.



AS-RH2 Temperature and Humidity Probe

The AS-RH2 probe can be connected directly to the AdvancedSense Pro or with the optional extension cable and handle. Connect the ACC-RH-HDLA extension cable and handle or the AS-RH2 probe directly to the 7 pin Lemo connector next to the DC power input.

Thermocouples and Differential Pressure

K-type thermocouple temperature probes connect to the yellow sockets on top (right socket is "Temp 1", left socket is "Temp2"). Either socket may be used for individual temperature probes. Both sockets may be used simultaneously when differential temperature is needed. For static or differential air pressure measurements, the AdvancedSense Pro must have either the DP-701L-A or DP-702LH-A pressure sensors installed. Connect the supplied flexible tubing to the differential pressure ports at the top of the AdvancedSense Pro (left port is for positive pressure (+), right port is for negative pressure (-)).

FM-801 Formaldehyde Meter

Attach one end of the AD-FM801-L7F cable to the USB Socket in the side of the FM-801 Formaldehyde Meter. Connect the other end to the Lemo connector on TOP of the AdvancedSense Pro, located next to the thermocouple sockets. On AdvancedSense Pro go to Probe>Select External Probe, or select the Select External Probe tile from the apps menu and select FM-801 Formaldehyde meter.



Connecting a USB Key

Connect the optional AD-7LFUSB Cable to the Lemo connector on TOP of the AdvancedSense Pro, located next to the Thermocouple sockets. Insert a USB Flash Drive into the other end of the cable.

Connecting a Data Sync Cable

To connect the AdvancedSense Pro meter to your computer for data downloading or to update software, use the supplied USB cable (via the Mini-USB data output socket at the top of the AdvancedSense Pro) and connect it to the USB port on your computer. On Windows 8, 7 and Vista systems, the connection between the AdvancedSense Pro and PC is facilitated by Mobile Device Center which is built into the Windows Operating System. The connection should initiate automatically and the Mobile Device Center application will open.

If the connection does not start automatically, you may need to install a driver update. Visit support.GrayWolfSensing.com for information on downloading the Mobile Device Center drivers.

On Windows XP systems, you need to install Microsoft's Active Sync. ActiveSync is a free program and is available from our updates page: support.GrayWolfSensing.com

POWER

If you press the Power button, the unit will turn on. When powered on the unit will automatically start the WolfSense data logger software. If you press and HOLD the power button down for 3 seconds, the unit will initiate a shut down, stopping the logger and finishing all operations. If you hold the power button for more than 12 seconds the unit will shut down immediately (this is the same as depressing the recessed reset button).

If the unit ever appears to 'lock-up' the unit can be reset by inserting the stylus into the recessed Reset button on the top of the unit and then pressing the Power button to restart. Resetting the unit will NOT result in loss of data.

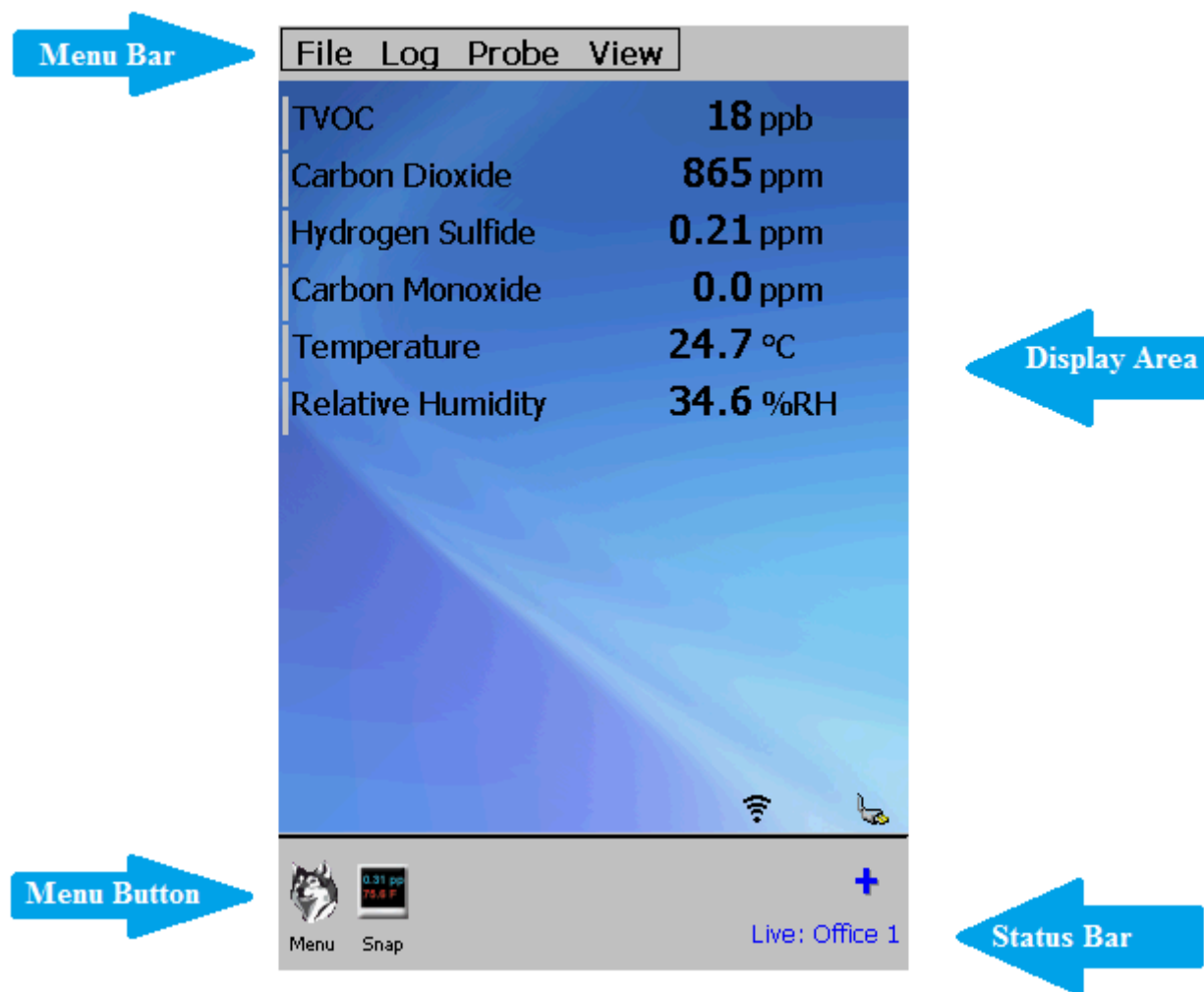
CHARGING

The AC charge indicator will illuminate **Red** while charging and will turn **Green** when fully charged. If the charge indicator light does not turn green, the unit may need an additional charge cycle; unplug the AC adapter for several seconds and re-insert it to complete charging. A flashing charging indicator means there is a battery fault.

NAVIGATING IN WOLFSENSE

WolfSense software is divided into a series of **Screens**, each screen providing a particular function such as showing live readings, graphing data, starting a trend log, choosing a location, averaging, etc.

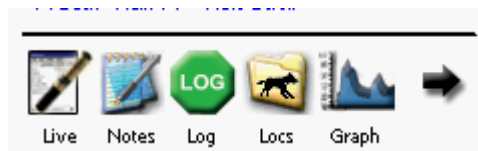
The software will always start on the **Live Screen** which displays current readings from the attached probe(s).



Each Screen consists of:

Menu Bar - use for access to drop down menus. Note: Position of Menu Bar varies between versions.

Menu Button – Click the WolfHead menu icon to open an **Icon Menu** of WolfSense functions and screens. If you do not select a menu item the Icon Menu automatically closes after a few seconds. Click the right arrow to navigate through to find a specific function.

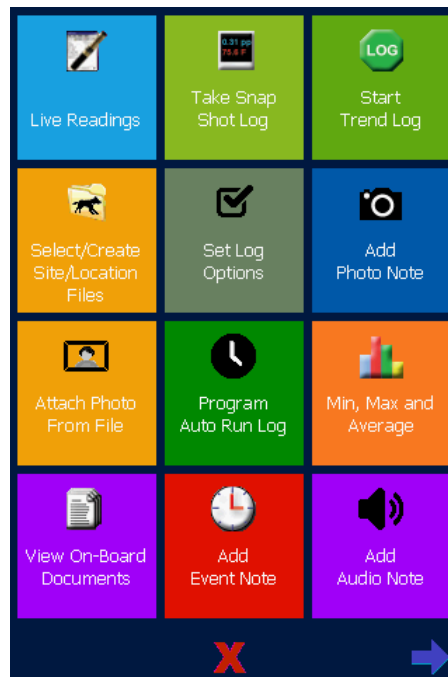


Display Area – The contents of each screen is shown in the display area. On the Live Tab, readings are shown.

Status-Bar – The Status Bar shows error messages and logger status.

Notes Icons – Displays Notes associated with the currently selected location file. Click the + sign to quickly add additional notes to a data file.

Apps Button – There is a physical button on the front of the unit (see below figure) to access the apps tiles for access to the numerous functions available on the AdvancedSense Pro. The apps button can be pressed again to go back to the prior screen or you may click the red X at the bottom of the screen



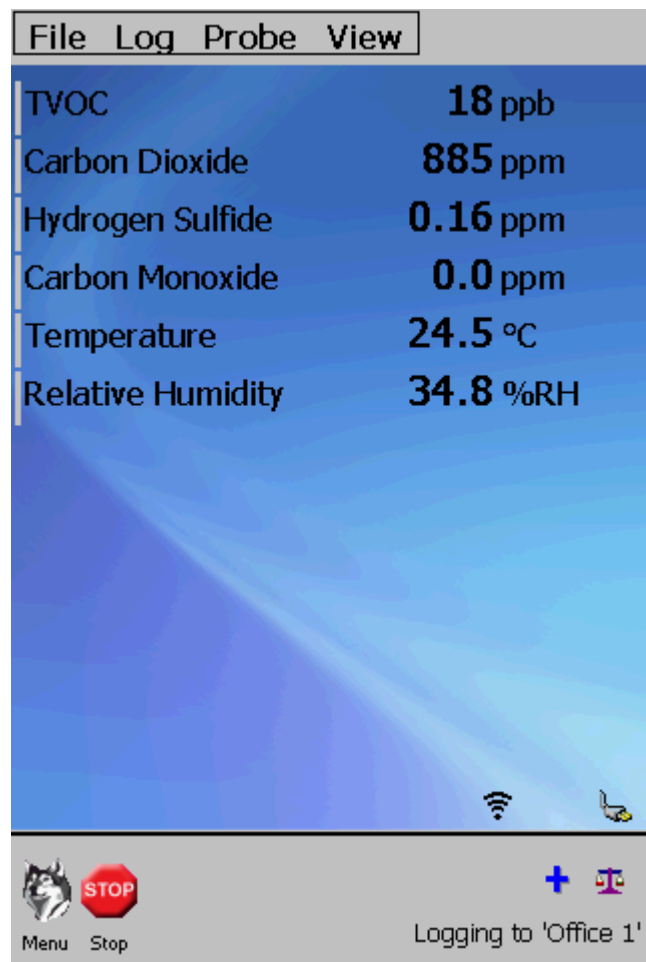
Example tile screen from apps

Navigation

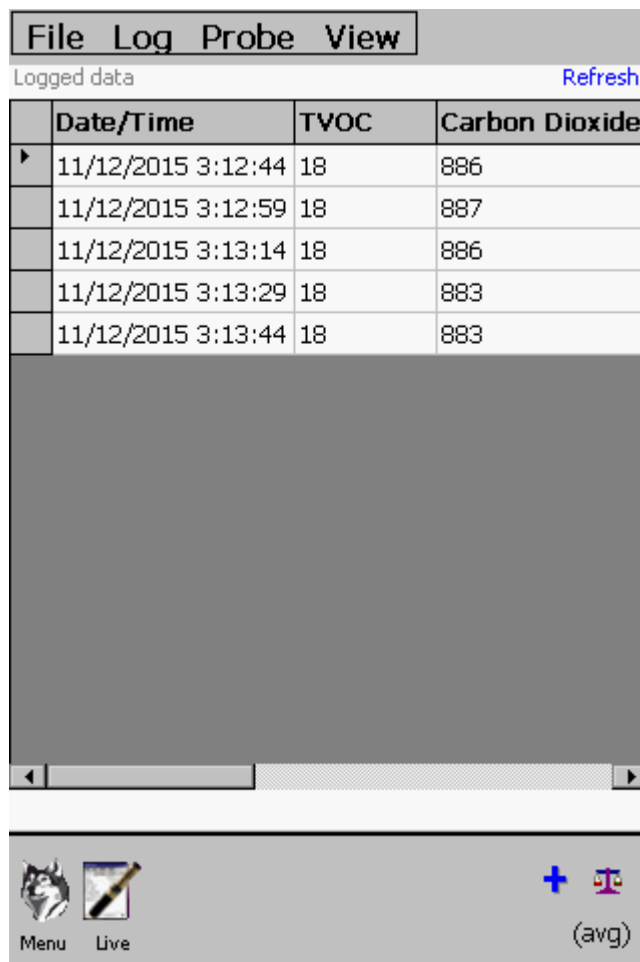
From any screen, you can return to the Live Reading screen by clicking/tapping on the LIVE icon or by selecting LIVE READINGS from the VIEW Menu.



Depending on the selected Screen, certain menu items will be pinned (always visible). For example, on the Location Screen, the Start Log icon is pinned and when the logger is running the Stop Log icon is pinned. Whenever you are not on the Live Screen, the Live icon will be pinned to the menu.



Example logging screen



Example of screen with Live pinned to bottom

Certain icons like the Menu and Live will always be displayed as the first item in the list. The remaining icons will reposition themselves according to how often they are used.

As an alternative to navigating with the Menu Bar icons, you may also select functions from the drop down text menus.

Another alternative is using the physical apps button on the AdvancedSense Pro which will allow the navigation of various tiles.

Power / Battery Status Indication

The System Battery Status is shown in the lower right corner of the Live Readings Screen



Indicates fully charged battery.



Indicates battery level is OK.



Indicates battery level is low/critical.



Indicates System is powered by AC and charging.

Tapping on the icon will give additional information on the system battery as well as the status of the probe batteries.

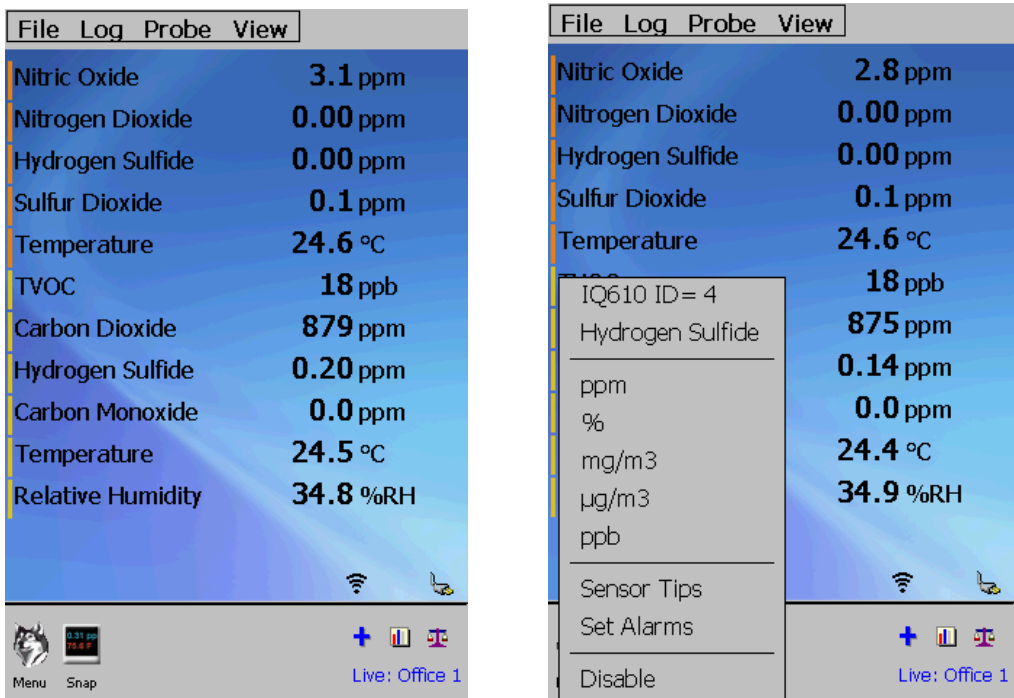


Indicates Probe(s) are being powered by the AdvancedSense (battery or AC power)

When the System Battery reaches a critical level, the software will alert you with a countdown screen. If the countdown is ignored the unit will stop logging and power down.

Live Readings

Readings from the attached probe or probes are displayed on the Live screen. If multiple probes are attached, each probe's readings are displayed with different colored bar to the left of the parameter name. If all the readings will not fit on the screen, the << *Back*, *Next* >> and *Auto-Scroll* links are given. *Next* and *Back* will manually move through the reading screens while *Auto-Scroll* will automatically cycle through the screens.



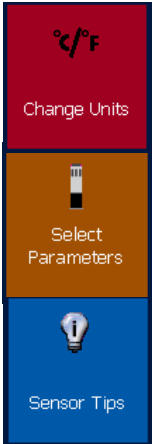
Clicking or tapping on a reading will display a pop up reading for the parameter. At the top of the menu, the first two lines display the Probe Name, Probe ID number and Parameter selected. Additional status information may also be displayed below the parameter name (see next page for more info).

Next, a list of unit symbols available for the parameter is displayed next; you may select a unit from this list to change units (but not while the unit is logging.) Units can also be changed by selecting the Change Units tile from the app menu.

Select *Disable* to remove the reading from the display and the log file. To re-enable readings choose Probe>Select Parameters, or select the Select Parameters tile from the apps menu.

Select *Sensor Tips* to display information about Measurement Tips, Typical Background Levels and Government and Industry Guidelines for the selected parameter. Sensor Tips can also be accessed by selecting Probe>Sensor Tips or selecting the Sensor Tips tile from the apps menu.

In addition to the colored bar to the left of the readings, the Parameters and Units themselves may be colored to indicate conditions. Depending on the background colors and theme you have selected, the colors will vary slightly.



Parameter Colors:

Black/White	Readings stabilized and ready for logging.
Gray	Parameter is stabilizing. Normally this takes under a minute. The exception is the PID (VOC) sensor which takes 20 minutes.
Red/Orange/Yellow	Indicates one of the following conditions: Calibration errors are detected on the parameter. Accompanied by an asterisk (*) and a Check Calibration message in the Status Bar. If you have set a high or low alarm or warning, the readings will change color and the alarm icon will appear in the lower-right of the alarm screen.  The probe battery is low and readings may be unreliable.

To determine the status of a colored reading, tap or right-click on the parameter to bring up the Pop-Up Menu for the parameter.

The top lines will show the probe model, ID and the selected parameter name. The next line will show the status.

Possible Status indicators include:

- Calibration Warning
- Bypass Stabilization
- Low Battery or Critical Battery

- View Alarms

Click on the message to see more details.

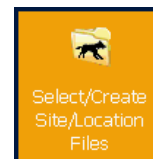
Important Note on Calibration Warnings:

Calibration warnings can indicate the following:

- 1) The probe is in need of Factory Calibration. Check Probe / Advanced Calibration / Show Calibration Reminders to see if the probe is beyond Factory Calibration.
- 2) A User Calibration performed on the probe has brought the calibrated readings outside of the range of measurements.
- 3) The sensor is damaged or is in need of replacement.

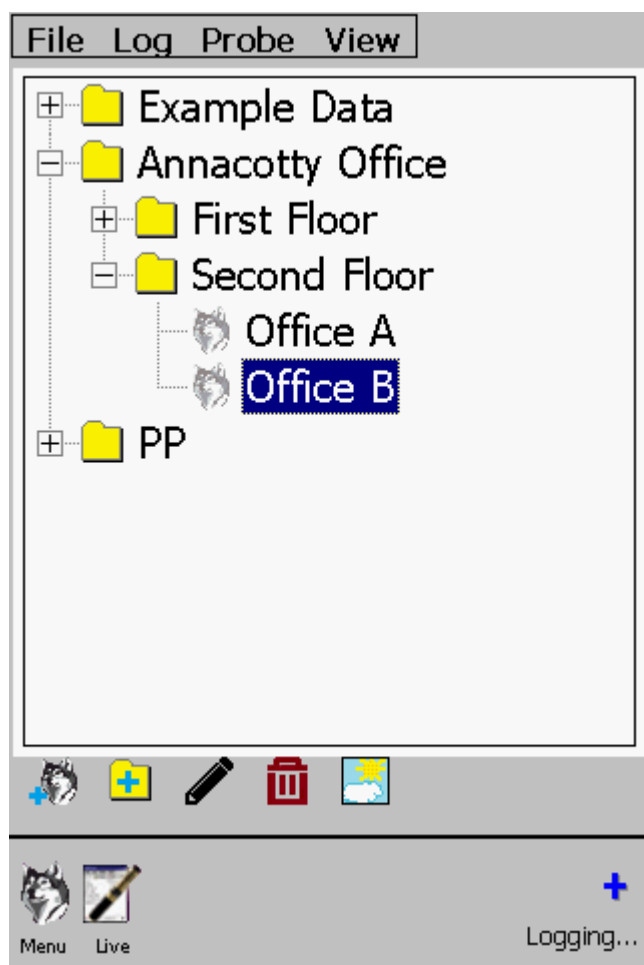
See the section on User Calibration for additional information.

CREATING SITES AND LOCATIONS



Access the Locations Screen by selecting the Location Icon from the Icon Menu

or by choosing Locations on the Log Menu, or selecting the Select/Create Site/Location Files tile from the apps menu.



Logged readings are stored in individual data files called **Location** (.loc) files. Calibration data, text, audio, photos, videos, events, drawings and template reports are also stored and organized as attachments to these location files.

Location files are further organized into Site Folders or **Sites** which correspond to the Windows folder system.

Each Site folder may contain multiple sub-sites and multiple location files to further organize the data. For example, a site folder called "Annacotty Office" may have one sub-site for the "First Floor" containing a location for the "Calibration Lab" and another sub-site called "Second Floor" containing locations for "Office A" and "Office B".

In the above example, here's how the sites and locations would be represented in the Windows File System:

The root site in the WolfSense file system is:

\My Documents\WolfSense

so the three location files would have these file names:

\My Documents\WolfSense\Annacotty Office\First Floor\Calibration Lab.loc

\My Documents\WolfSense\Annacotty Office\Second Floor\Office A.loc

\My Documents\WolfSense\Annacotty Office\Second Floor\Office B.loc

To create a new site or location, click on the 'New Site'  or 'New Loc'  links. The Site or Location will be created within the site you have selected (unless you check the Top-Level Site checkmark).

Logged data is stored only in a location file. Sites are used solely for organizational purposes.

Newly created location files are automatically selected. The next time a log begins readings will collect in the location file you just selected. This location file collects readings until you select a different location file for logging.

The 'Outdoor'  link creates a new location suitable for storing outdoor air data relative to the currently selected Site and Location. For example, if you select the Second Floor Site and click Outdoor, a location is created and selected entitled 'Outdoor Air Second Floor'.

To rename a previously created site or location, click on the site or location and then click 'Rename' .

To delete a site or location, click on the site or location and then click the 'Del'  button. This gives two options, either to completely **delete** the location, or to **clear** it of all information but leave the location itself.

When deleting a site, all information and locations contained within the site will also be deleted.

A  next to a location means that the location is empty, while a  means that there is information present.

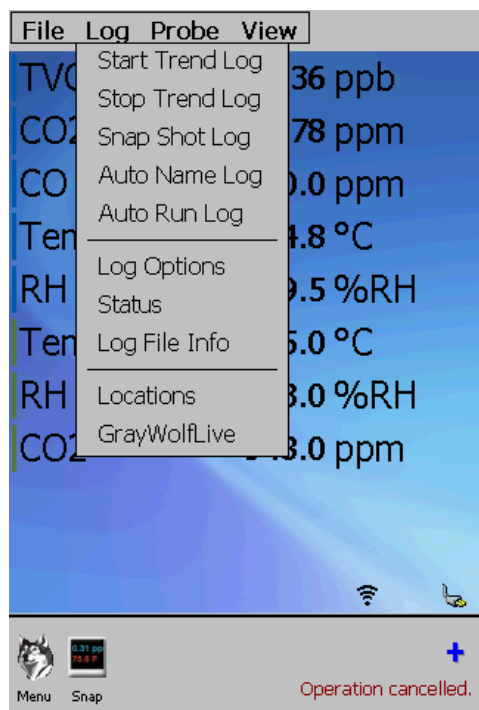
LOGGING DATA

There are three ways to log data into a location file:

- A Trend Log - at pre-set intervals initiated manually and until stopped by user.
- Snapshot Log – manually initiated single point readings
- Auto Run - at pre-set intervals between pre-programmed start and stop times.

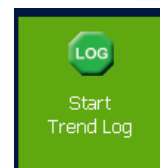
At any time there is the ability to click the Switch to Auto Name on the bottom. For more information on Auto Name Logs, go to the Auto Name Log section.

TREND LOG



A Trend Log can be set up in the following ways:

- Tapping/Clicking the log icon on the Icon Menu.
- Tapping/Clicking on the Start Trend Log tile from the apps menu.
- Selecting **Start Trend Log (Log Menu)**.



The Log Window then pops up and prompts you to select a location and interval settings.

Once the correct settings have been chosen, click '**Start Log**' and the log will begin.



Snap Shot Log Readings

The Snapshot Log lets you manually log one or more sets of values. Snap Shot log is an efficient way to store sets of readings as you perform a walk-through survey. You can also temporarily interrupt a Trend or Auto Start/Stop Log to store readings using the same probes to another location such as the outdoor air conditions (to an “Outdoor” log file).

To initiate SnapShot log, select the **Log Menu**, and **Snap Shot Log**, or under the apps menu select the Take Snap Shot Log tile.

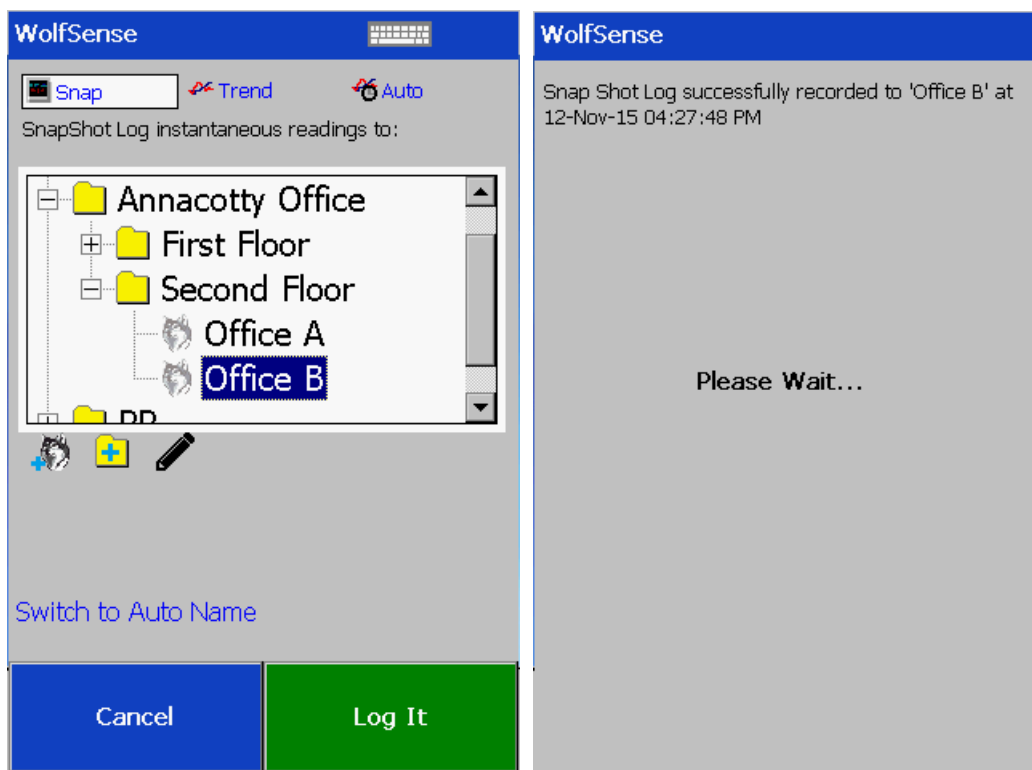


Alternatively, if you have enabled advanced Snap Shot Log options under Log Options

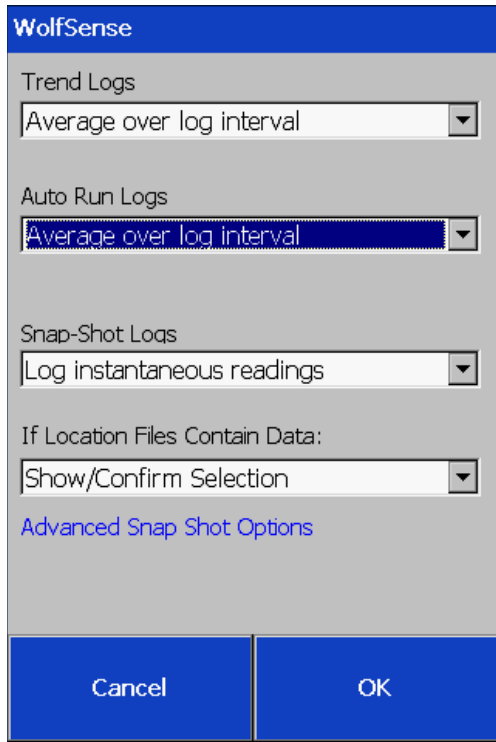


(See next section), you can initiate the log from the Live screen by pressing the Snap icon.

When you first initiate the snap shot log, the following screen is shown which allows you to change Locations, create a new Site and Location or change the Log Options. When you have made your selections, press **LOG IT** and the readings will be stored. Note if averaging is enabled, the readings will be averaged first.



LOG OPTIONS



The WolfSense Log Options screen features a blue header with the 'WolfSense' logo. It contains four dropdown menus: 'Trend Logs' (set to 'Average over log interval'), 'Auto Run Logs' (set to 'Average over log interval'), 'Snap-Shot Logs' (set to 'Log instantaneous readings'), and 'If Location Files Contain Data:' (set to 'Show/Confirm Selection'). Below these is a blue link for 'Advanced Snap Shot Options'. At the bottom are 'Cancel' and 'OK' buttons.

Log Options may be accessed by using the **Log Options** menu item from the **Log** menu or by using the Options link from the Start Log screen, or selecting the Set Log Options tile from the apps menu.



For Trend Logs and Auto-Run Logs, you have the option of storing instantaneous (un-averaged) readings or readings that have been averaged over the log interval. For example, if you have set your Trend Log interval for 1-minute, readings are averaged in a sliding buffer for 1 minute up until a sample is stored. In instantaneous readings mode, the current readings are stored un-averaged.

For Snap Shot Logs in addition to Log Instantaneous readings, there is Log 5-second average, Log 10-second average, and Log 15-second average.

For If Location Files Contain Data there are three options:

Always Append – By default, if you log additional points to a location file, the system will prompt to overwrite or append. By checking this option, the system will assume you always intend to append.

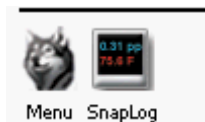
Show/Confirm Selection – Each time will prompt a selection of Append, or Overwrite each location file.

Prompt for Action - By enabling, each time a new log is taken the system will display an alternate window when taking Snap Shot Logs only allowing you to Auto-Increment Location Names, create Date/Time Stamp names or quickly type an alternate name in.

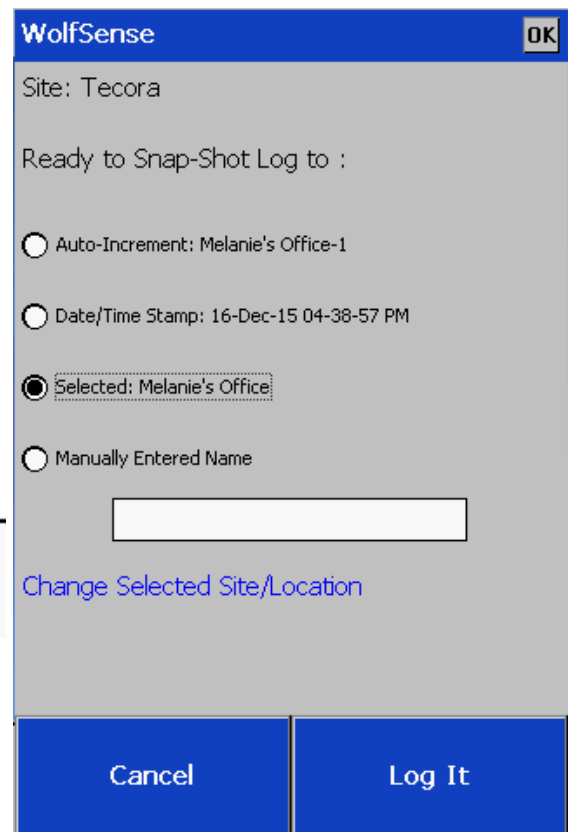
Advanced Snap Shot Options

Quick Feedback for Snap Shot –Selecting allows for little to no user interface feedback when logging instantaneous readings. It is useful when performing repetitive logging operations.

Include Snap-Shot Icon on Menu-For Snap Shot logs you may enable a hardware button to initiate a **Snap Shot Log** from the **Live Readings Screen**.



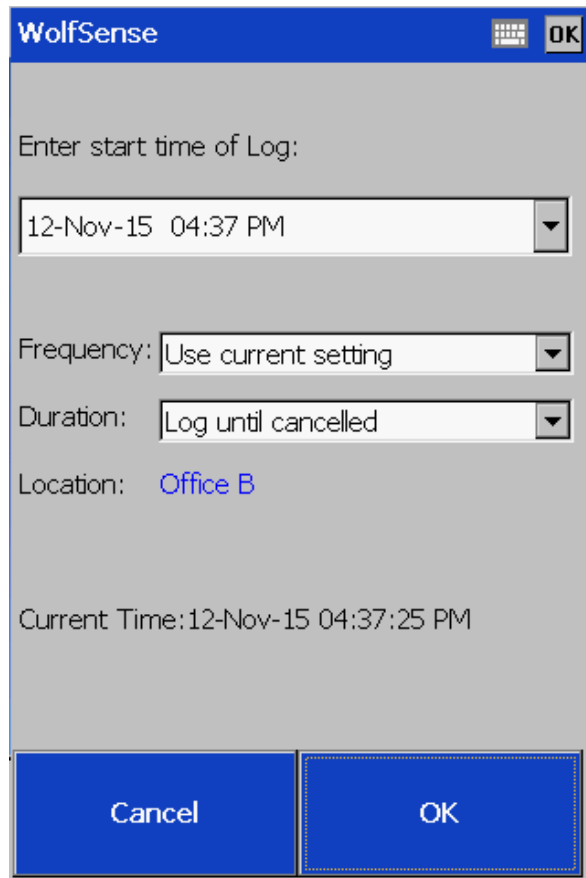
Delay Log for 5 seconds – you can delay the start of a log for 5 seconds. This is useful if you need to initiate the log and then move the probe into position. (for example, if you are measuring air speed at a duct opening.)



The WolfSense Prompt for Action screen has a blue header with 'WolfSense' and an 'OK' button. It shows 'Site: Tecora' and 'Ready to Snap-Shot Log to :'. There are four radio button options: 'Auto-Increment: Melanie's Office-1', 'Date/Time Stamp: 16-Dec-15 04:38-57 PM', 'Selected: Melanie's Office:' (which is selected and has a dashed border), and 'Manually Entered Name'. Below these is an empty text input field. A blue link 'Change Selected Site/Location' is at the bottom. At the very bottom are 'Cancel' and 'Log It' buttons.

Sample *Prompt for Action* Screen

Auto-Run



WolfSense OK

Enter start time of Log:

12-Nov-15 04:37 PM

Frequency: Use current setting

Duration: Log until cancelled

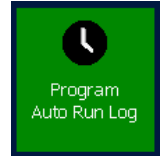
Location: Office B

Current Time: 12-Nov-15 04:37:25 PM

Cancel OK

The Auto-Run feature will automatically start a trend log at a specified date and time.

The Auto-Run feature can be accessed from the '**Log**' menu, or the Program Auto Run Log tile from the apps menu.



Choose a start time, interval (frequency) and duration settings.

Click OK and the Auto-Run will commence at the specified time.

To check the Auto-Run command is in place, go to '**Log, Status**' and see if there are any pending Auto Run commands.

To cancel an Auto-Run command, click on '**Log, Auto Run**' and click '**Cancel Pending Log**'.



To stop both Trend and Auto-Run logs click on the button or click '**Log, Stop Trend Log**'.

AUTO NAME LOG

Auto Name log is used to help simplify the logging process, specifically the naming of locations (.locs). It will automatically assign names to location files based on either existing input, Outdoor air, or time and date. There are two ways to access Auto Name log:

- Click Log>Auto Name Log
- From the Log screen select Auto Name from the bottom

WolfSense

Snap Trend Auto

Trend Log averaged readings to:

Office B1

Outdoor Date/Time

Modify the auto generated name above and press ENTER or click buttons below to start log. Or use the DATE/TIME and OUTDOOR links to generate names.

Interval: - 10 + mins - 0 + secs

Switch to Sites/Locations

Cancel Start Log

From the Auto Name screen there is the ability to select between Snap, Trend, and Auto Logs.

If a location name is already made within the selected Site, the software will auto-increment the name. In this example there was already an Office B, so the next sample created is Office B1. The next location name would be Office B2, then Office B3, etc. Alternatively Outdoor can be clicked to take an outdoor reading, or Date/Time will automatically assign the current date and time as the location name.

Once the name is selected, simply click Start Log to begin testing.

To change back to Sites/Locations instead, click Switch to Sites/Locations at any time.

WolfSense

Snap Trend Auto

Trend Log averaged readings to:

Log 05-May-16 01-42-22 PM

Outdoor Date/Time

Press ENTER or button below to start the log.

Interval: - 10 + mins - 0 + secs

Switch to Sites/Locations

Cancel Start Log

PREFERENCES



Select Wallpaper-changes the wallpaper on the Live Screen. Can be selected from the drop down menu, or an alternative can be loaded.

Select Language-change the language on the device.

Lock Display-puts a password on the AdvancedSense Pro so the screen cannot be changed while logging.

Backlight Control-adjusts the brightness of the backlight.

Align Touchscreen-aligns the touchscreen along with the help of the stylus. Used when alignment appears to be off.

Customizations-Custom Wolf Interface (CWI)- Enables the ability to customize the menus, buttons, tiles and features available on the AdvancedSense PRO. All units are shipped with a Standard Interface and a Basic Interface. Basic interface is a sub set of features available in Standard mode. Additional customizations and branding are available by contacting SalesTeam@GrayWolfSensing.com.

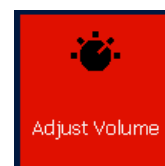
In order to select user preferences, go to View>Preferences and then select the appropriate item. Alternatively most can be found as a tile under the apps menu. Each has an app tile next to the description below for ones accessible via the tiles.

Under Preferences there is the ability to change the Display Preferences, Set Volume, Audio Queues, Select Wallpaper, Select Language, Lock Display, Backlight Control, Align Touchscreen, and the Custom wolf Interface (CWI).

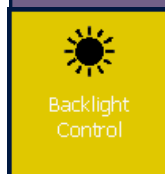
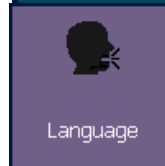
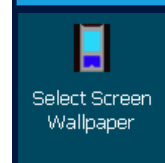
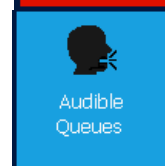
Display Preferences-change the parameter names to chemical symbols and abbreviations



Set Volume-change the volume of the AdvancedSense Pro



Audio Queues-select between tones and voice queues or no tones at all.



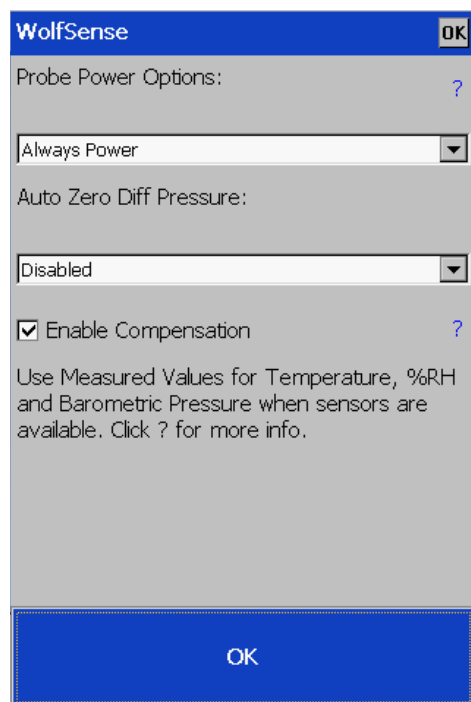
RESCAN PROBES

If probes are connected to the AdvancedSense Pro and they are not being registered by the AdvancedSense Pro, manually rescanning for the probes may be necessary. In order to rescan for probes go to Probe>Rescan Probes, or alternatively select the Rescan Probes tile from the apps menu.

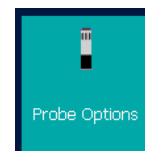


This will lock up the screen for a few seconds while the rescanning occurs. If this does not resolve the issue it is recommended to check the batteries in the probe handle, perform a soft reset and/or checking the Probe Options for the probe and selecting Always Power.

PROBE OPTIONS

A screenshot of the WolfSense Probe Options screen. The screen has a blue header with "WolfSense" and an "OK" button. Below the header, there are two dropdown menus: "Probe Power Options:" with "Always Power" selected, and "Auto Zero Diff Pressure:" with "Disabled" selected. There is a checkbox labeled "Enable Compensation" which is checked. Below the checkbox, there is a note: "Use Measured Values for Temperature, %RH and Barometric Pressure when sensors are available. Click ? for more info." At the bottom of the screen is a large blue button labeled "OK".

Under Probe>Probe Options there is the ability to select the power options for the probe. Alternatively select the Probe Options tile from the apps menu.



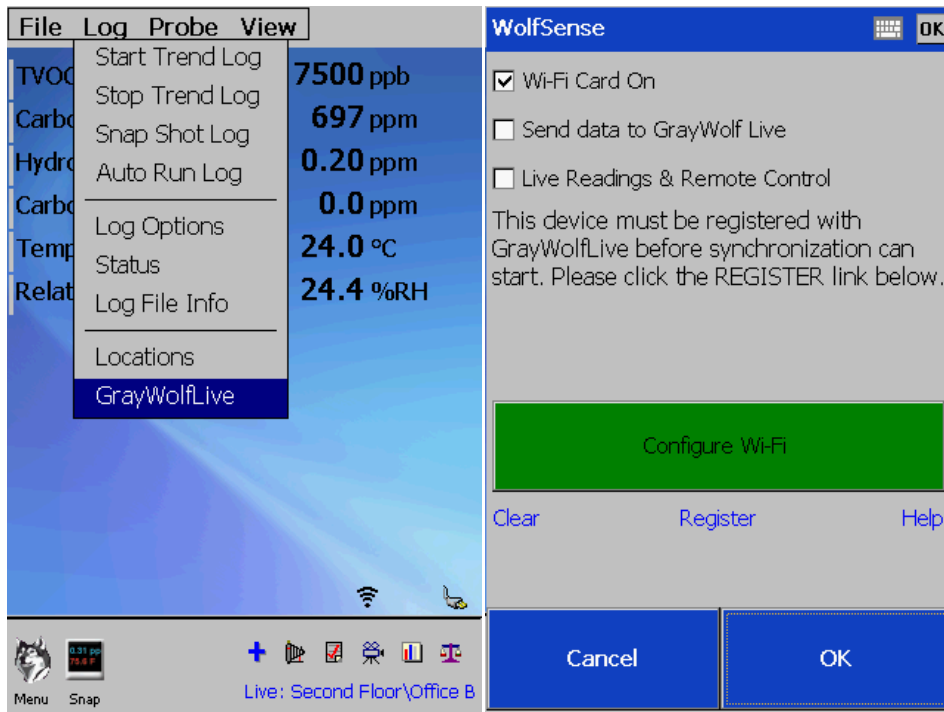
The dropdown will give three choices, Always Power, Never Power, and Power on Low Batteries.

If a differential pressure sensor is installed it will give the options for the frequency of auto zeroing.

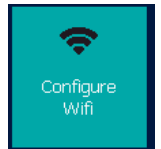
There is the ability to select Enable Compensation for compensating readings based on temperature, %RH, and barometric pressure.

WIFI CONNECTIVITY

Wi-Fi can be used to download Live Updates (whether software, help videos, and/or documents), to email data files using WolfMail, contact technical support, or with a paid GrayWolf Live subscription.

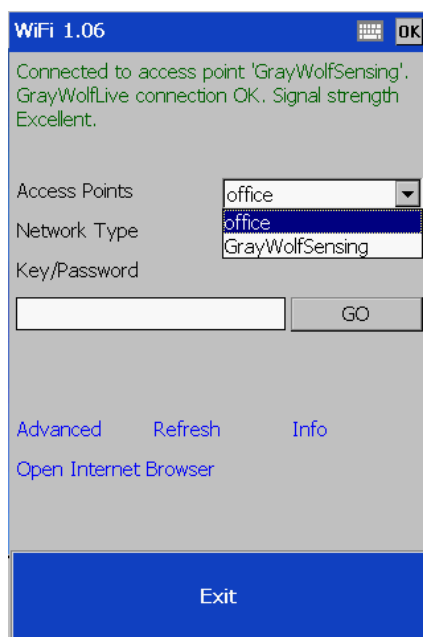


From LOG menu, select **GrayWolfLive** or from the apps menu select the **Configure WiFi** tile .



Check **Wi-Fi Card On**.

Select **Configure Wi-Fi** button.



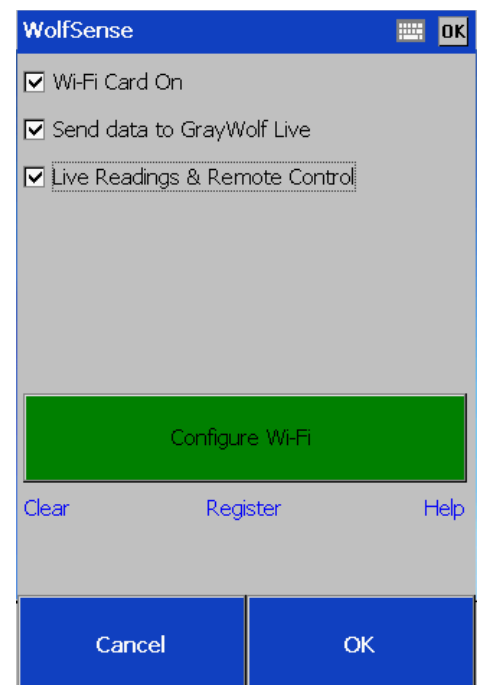
Select the WiFi connection from the Access Points drop down list

Enter Wi-Fi key or password

Select **GO** button

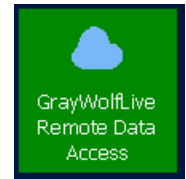
When Wi-Fi connection is established, message at top will turn **green** and report signal strength.

If the network requires additional authentication or log-in, use the **Open Internet Browser** link at bottom of the screen.



If utilizing a GrayWolf Live account (GrayWolf Live is a paid annual subscription):

GrayWolf Live can also be accessed via the GrayWolfLive Remote Access tile in apps menu.



Check **Send Data to GrayWolfLive** (Note: Uncheck if you do not want logged readings synchronized to GrayWolfLive.)

Check **Live Readings & Remote Control** (Note: uncheck to disable this feature.)

Select **Register**

Select **OK** and the registration utility will be started.

The utility may take a minute to start. If it does not appear, exit the software with FILE menu, EXIT and RESTART or use the soft-reset button and repeat the above steps.

A screenshot of the GrayWolfLive registration dialog box. It has a title bar "GrayWolfLive". Inside, there are two text input fields: "Device Name:" with "AdvancedSense Meter" entered, and "Email:" with "demo@graywolfsensing.com" entered. Below the fields are two buttons: "Cancel" and "Register". At the bottom, there is a paragraph of text: "GrayWolfLive must register this device before it can start syncing data to the web. Please enter the email address registered with GWL and enter a name for this device."

Enter device name and the email address registered to GrayWolfLive. (Note: the device name may be modified using the GrayWolfLive website later.)

Press the **Register** button.

NOTES:

You only have to perform registration once per device. If you need to re-register your device to associate it with another GrayWolfLive account, you may re-register. If you have multiples of the same device to register, you might consider including the device serial number in the Device Name to help keep the registrations organized.

When viewing live readings on your device, the Wi-Fi  icon will appear on the screen when a network is detected and files or live readings are being synchronized.

The  Wi-Fi error icon will appear when:

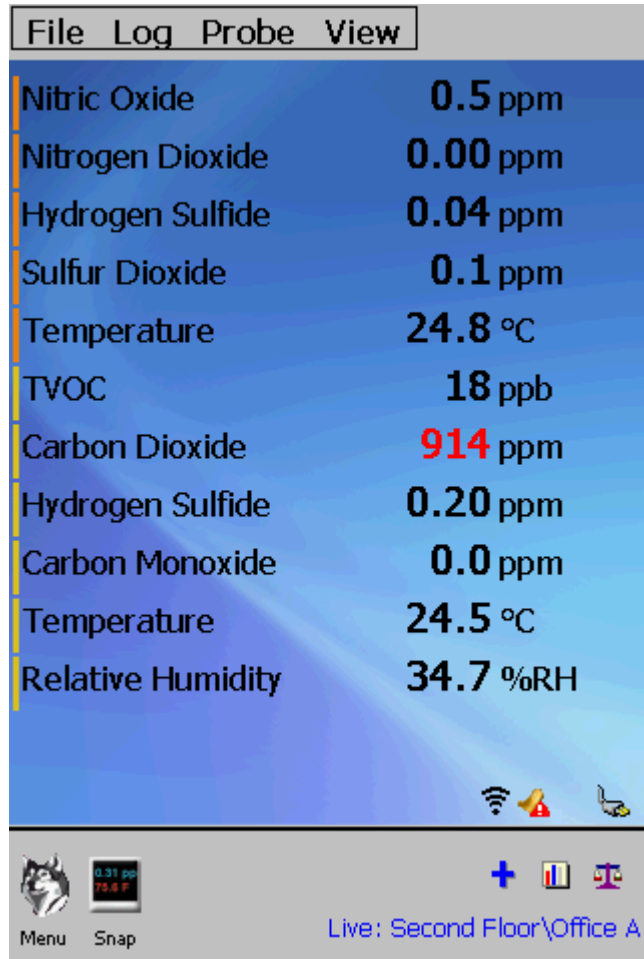
- There is no network detected or
- A connection to the GrayWolfLive website cannot be established

When no icon is shown, the GrayWolfLive system is disabled or the WiFi card is not powered on.

A screenshot of the GrayWolfLive registration dialog box, similar to the one above, but with a success message overlay. The message box has a title bar "Name" and contains the text: "This system was successfully registered with GrayWolfLive." with "OK" and "X" buttons. The background dialog box is partially obscured by this message.

USING ALARMS

Alarms and Warnings may be defined for each parameter and will alert you when a value goes above or below a set point. The values may be the instantaneous readings, a 15-minute STEL average or an 8-Hour Time Weighted Average (TWA).



IMPORTANT: The alarm feature in WolfSense is meant to be informational only, for interpretation by an educated professional. It is not intended to be relied upon for use as a personal safety monitor.

When any alarm is active (defined) on the system, the yellow alarm icon will be displayed in the lower-right corner of the LIVE screen:  Clicking on this icon will display a report of current alarm states.

When any alarm is tripped, the parameter will change colors and alarm icon will start to “ring” by moving back and forth and displaying an exclamation point:  Additionally, if sounds have been enabled and the speaker volume is turned up, an audible alarm will be given.

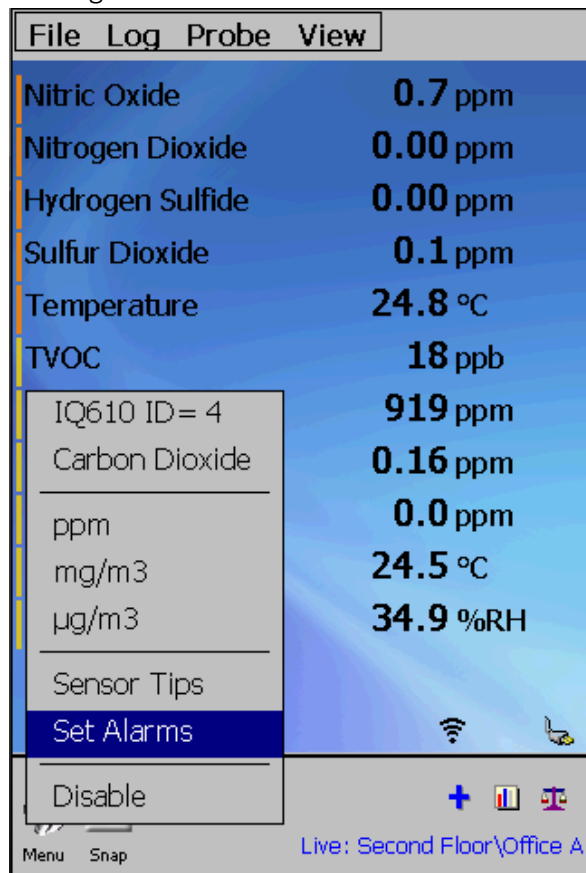
Alarms are set for a specific parameter, not a specific probe. Once an alarm is set for a parameter, it will be active for any probe hooked up to the system that measures that parameter.

STABILIZATION NOTE: Alarms will not start to give warnings for a parameter until ALL readings on a probe have stabilized. Of particular note is the longer stabilization time for the PID sensor. While the alarm system is inactive waiting for stabilization, the inactive alarm icon is display: 

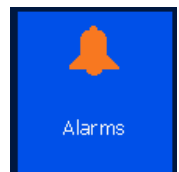
Alarm Averaging:

15-minute STEL and 8-hr TWA Alarms utilize zero-weighted averages. The averages do not start accumulating until all parameters on a probe have stabilized. If you change units for any parameter, all alarm averages are reset. For low warnings and low alarms utilizing 15-Min STEL and 8-hr TWA, the entire average buffer needs to be filled before an alarm is tripped. This means if you have an 8-hr TWA low alarm set for O₂, the alarm is not analyzed for a minimum of 8 hours while the full 8-hr average is computed. This is only the case for LOW Warnings and Alarms because of zero-weighting.

Setting Alarms



To set an alarm for a parameter, tap on the parameter name to display the Reading Menu. Select SET ALARMS. Alternatively select the Alarms tiles from the apps tiles.



NOTE: If you are using multiple probes, it does not matter which probe you use to set the parameter. Once an alarm is set for a parameter, it is valid across all probes that contain that parameter.



WolfSense [OK]

Alarms for Carbon Dioxide ppm

☐ Low Warn [] []

☐ Low Alarm [] []

☒ Hi Warning Readings 1000

☐ Hi Alarm [] []

[Options](#) [Remove all Alarms](#)

Help **Cancel** **OK**

LOW and HI Warnings may be set for each parameter. Select the CHECK box in front of the alarm type to activate the alarm. Choose the reading type drop down to select if the alarm or warning is to be determined based on the instantaneous reading, the 15-minute STEL average or the 8-Hr TWA.

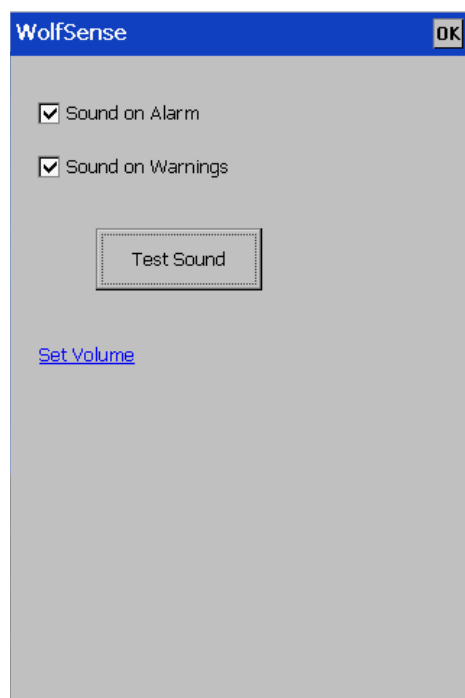
NOTE: When using STEL/TWA for hi warnings and alarms, the averages are zero-weighted. If at any point the reading of the weighted average goes above the set point, the alarm/warning is tripped. With low warnings and alarms, the averages are also zero-weighted and therefore the averaged value is not used until the full average is calculated (15 mins or 8-hours). The current zero-weighted alarm value is shown in the alarm report.

To disable an alarm, uncheck the box in front of the alarm.

The REMOVE ALL ALARMS link will erase every alarm for every parameter.

Options

Use the options link to set sound alert options for alarms.



WolfSense [OK]

☒ Sound on Alarm

☒ Sound on Warnings

[Test Sound](#)

[Set Volume](#)

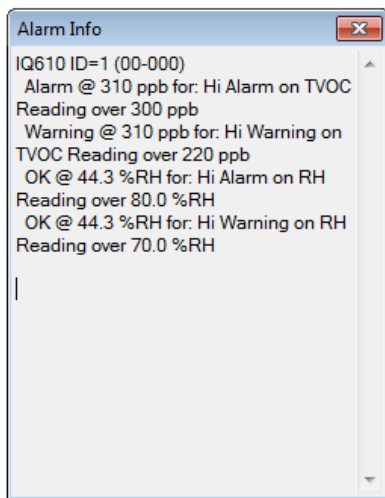
The system can give audio alarms on both warnings and alarms. Please make sure to test the sound and set your system volume.

Alarm Info

When any alarm is active (defined) on the system, the alarm icon will be displayed: 🛎️. When any alarm is tripped, the alarm alert icon will be displayed: 🚨 and the readings will be shown in colors (typically Orange for Warning and Red for Alarms).

Alarm Report

Clicking/Tapping on the alarm icon 🛎️ will display the Alarm Report which displays the status of all alarms (Set, Warning, Alarmed).



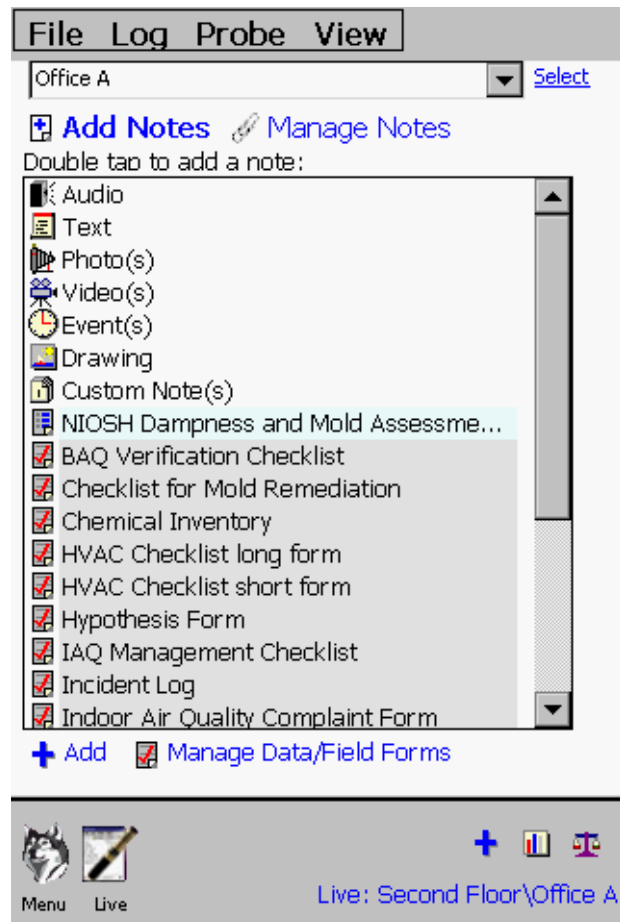
The Alarm Report shows a list of parameters with alarm set points for each probe and the status: (OK, Warning, Alarm).

If instantaneous readings are selected, the report will show the status, current reading, set point and alarm type (hi/low).

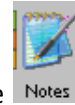
For averaged readings, the reading displayed is the current zero-weighted average value.

The Alarm Report will auto-refresh every few seconds.

CREATING NOTES



Notes may be attached to logged data for documentation and productivity purposes.

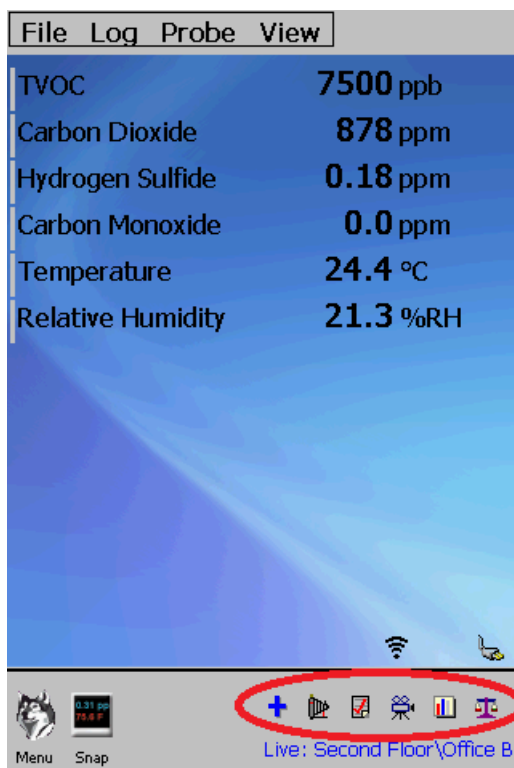


To access the note system, click on the Note icon from the Menu Bar or select **Notes** from the **File Menu**.

Notes will automatically be displayed for the selected location at the bottom of the screen near the status bar.

To add a note, select the Add Note link or the blue 'Plus Sign'. The screen will switch to the add mode and display the different types of notes you can add.

To delete a note, click the Delete Link and then select the note you wish to delete.

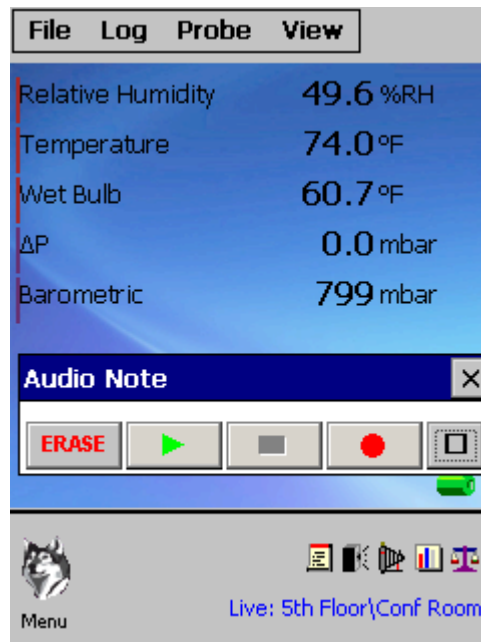


After any note is added it will show up on the Live Screen for easy access later to view or edit (as seen circled in red, left).

AUDIO NOTES

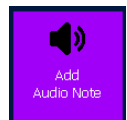


Full Screen Mode



Toolbar Mode

Text Notes can be accessed from the Manage Notes page, as previously discussed, or by clicking the blue plus sign then the text note icon ( ) from the Live screen, or by selecting the Add Audio Note tile from the apps menu.



Use the Audio Notes editor to capture audio using the AdvancedSense Pro's built in microphone.

The Audio Notes recorder can be used in Toolbar mode or full-screen mode. In Toolbar mode, the control can be present on the screen while performing other operations like initiating the logger or reviewing readings. To toggle between toolbar mode and full-screen mode, use the ToolBar button and  maximize button. Reposition the tool-bar audio recorder by tapping/clicking in the caption bar (where the Audio Note title appears) and drag it to a new portion of the screen.

In either mode, the RECORD button will initiate a record. If a recording already exists, pressing RECORD will append the audio file.

STOP will stop either playback or recording.

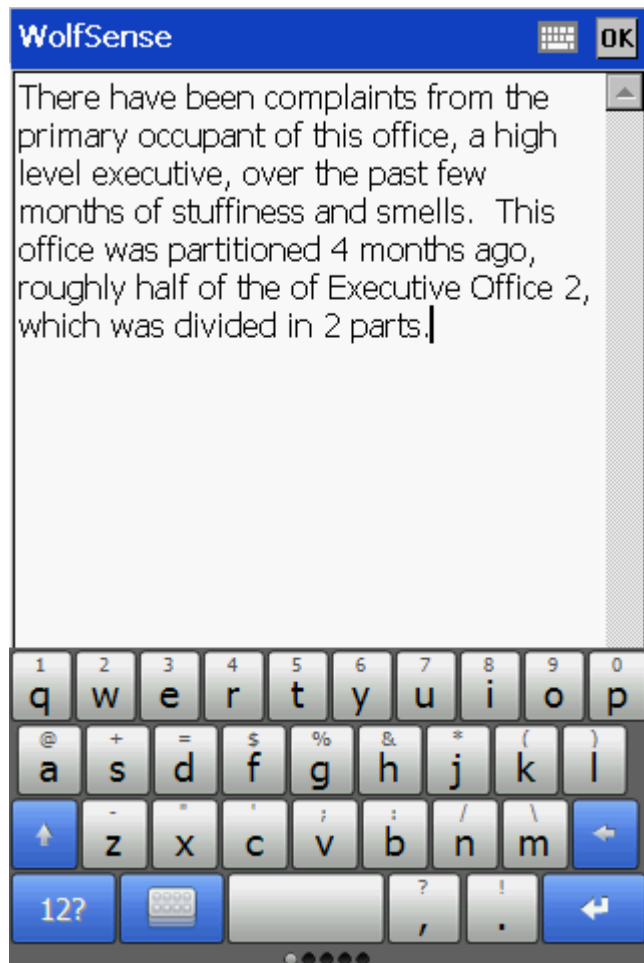
Use PLAY to review the audio note.

ERASE will delete the entire audio note.

A rough estimation of the amount of recording capacity you have remaining is displayed in full-screen mode.

Click the X in the upper-right corner of the control to close the recorder.

TEXT NOTES



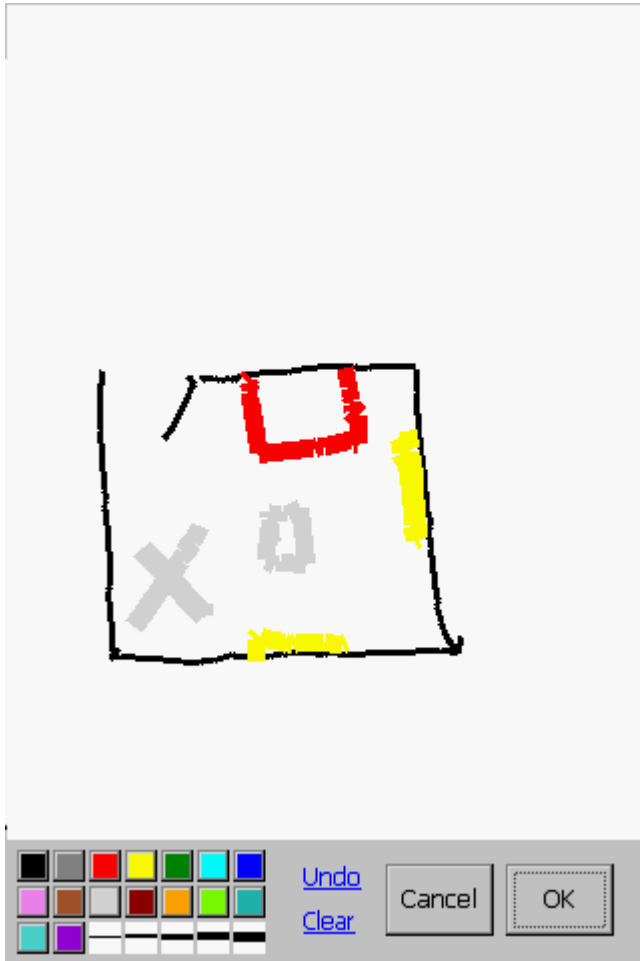
Text Notes can be accessed from the Manage Notes page, as previously discussed, or by clicking the blue plus sign then the text note icon ( ) from the Live screen.

To add text, click on the page and type. To start new lines of text press '**Enter**' and use the arrow keys to move through the text.

To exit without saving the note, click the keyboard icon to have the keyboard disappear and then click '**Cancel**'.

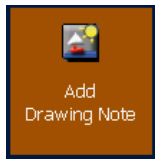
To exit and save the note, click '**OK**'.

DRAWING NOTES



Drawing Notes can be accessed from the Manage Notes page, as previously discussed, or by clicking the blue plus sign followed by the Drawing Note

icon (, or by selecting the Drawing Note tile from the apps menu.



Drawing Notes allow you to attach visual information such as location plans and sketches.

[Undo](#) will clear the last action on the screen.

[Clear](#) will clear the whole image from the screen.

To exit without saving the note click '**Cancel**'.

To exit and save the note, click '**OK**'.

EVENT NOTES

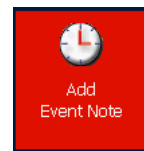
Date/Time	Event
11/13/2015	Door opened

Event notes can be accessed via the Manage Notes page, as previously discussed, or by clicking the blue plus

sign  followed by the event notes  icon from the

Live screen, or by clicking the menu  icon followed

by the event note icon , or by selecting the Add Event Note tile from the apps menu.



Event Notes allow you to enter text information with a time tag attached.

To add an event, type a short description into the field and click '**Add**'. It automatically records the time and date.

To remove an event afterwards, click on the event and then click '**Delete**'. Click on the keyboard icon in the top bar to get rid of the keyboard.

To save the events, just click '**Close**'. Close can be seen once the keyboard icon in to top bar is clicked.

Hint: When you later generate trend graphs of your data, using WolfSense PC desktop download and analysis software, you can select to have "Event Notes" auto-display as a graphic vertical bar (at the time that they occurred) within the trend graph.

FIELD FORMS

Chemical Inventory

File Number: —
Date: —
Building Name: —
Address: —
Completed by: —
Phone: —

The inventory should include chemicals stored or used in the building for cleaning, maintenance, operations, and pest control. If you have an MSDS (Material Safety Data Sheet) for the chemical, put an "x" in that row. If not, ask the chemical supplier to provide the MSDS, if one is available.

Sections 2 and 6 discuss pollutant sources. Section 4 discusses MSDSs.

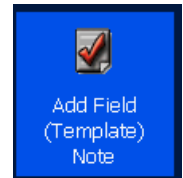
☐ Hypoallergenic Form
☒ IAQ Management Checklist
☒ Incident Log
☒ Indoor Air Quality Complaint Form

+ Add ☒ Input Panel

Menu Live

Field Forms are pre-formatted Word templates that allow you to store certain information quickly and neatly. There are 17 such document templates provided with WolfSense such as: Chemical Inventory, Incident Log, Ventilation Worksheet and Log of Activities & System Operations.

Field forms can be accessed via the Manage Notes page, as previously discussed, or by clicking the Add Field (Template) Note tile through the apps menu.

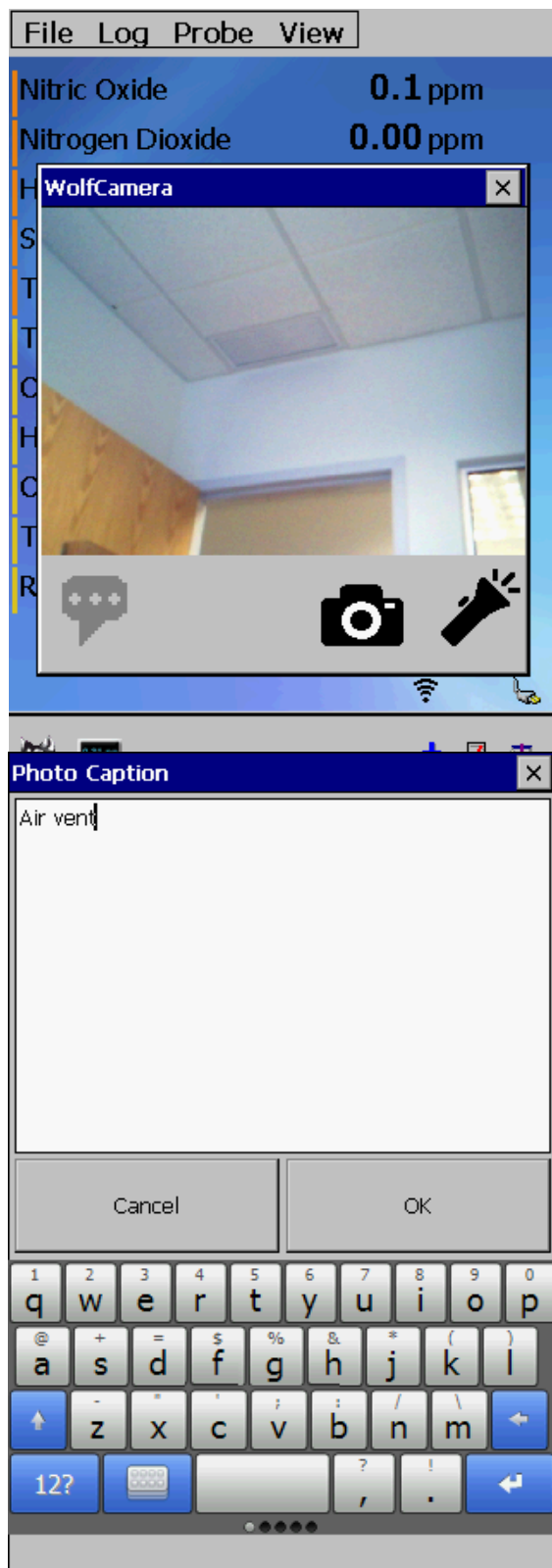


To select a Field Form, simply click on '**Field Form**' on the notes page, select the appropriate document from the drop down menu and click '**Add**'. This opens the field form in Microsoft Word.

To save the Field Form, save the document as normal. Click '**File, Save**'.

You can create as many field form documents as you like, though only one of each type.

PHOTO NOTES



Picture Notes can be accessed via the Manage Notes page, as previously discussed, or by clicking the blue plus sign  followed by the photo notes  icon from the Live screen, or by clicking

the menu  icon followed by the photo icon , or clicking the apps button and navigating to the Add Photo Note tile.

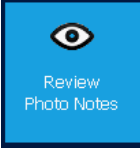


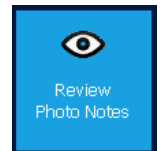
Clicking the Camera icon once the WolfCamera is open will take a photo.

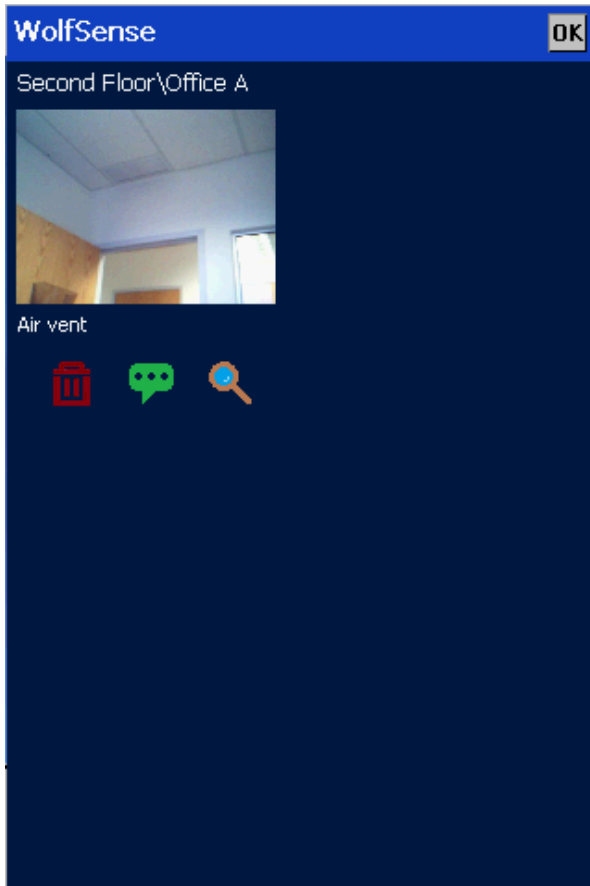
Clicking the flashlight icon will turn on the LED light for the picture.

Once a photo is taken a caption can be added by clicking on the now dark bubble in the bottom left of the WolfCamera screen. Click 'Cancel' to not save the photo caption, or 'OK' to accept and save the caption.

To review photo notes that have been taken, go to the Manage

Notes page to View, select the  from the Live Screen or select the Review Photo Notes  tile from the apps menu.





Once reviewing the photo notes, the captions can be edited by clicking on the green bubble, viewed by clicking on the magnifying glass, or deleted by clicking on the red trash can.

After clicking on the magnifying glass to enlarge the photo there is the ability to delete the photo by clicking the red trash can, editing or adding a caption by clicking the green bubble, or drawing on the photo by clicking on the black pencil.

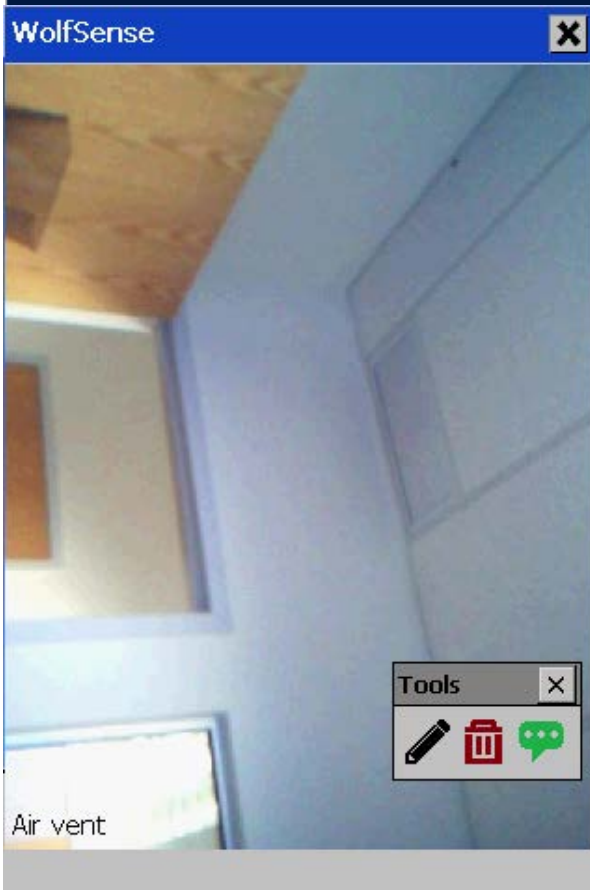
When clicking on the black pencil, there is the ability to modify the photo. This enables the user to draw on the photo, as seen below.

Undo will clear the last action on the screen.

Clear will clear the whole image from the screen.

To exit without saving the modified picture click '**Cancel**'.

To exit and save the modified picture, click '**OK**'.



VIDEO
NOTES



Picture Video Notes can be accessed via the Manage Notes page, as previously discussed, or by clicking the



Menu



Video

menu icon followed by the photo icon

Clicking on the black video icon or the red circle will start recording when WolfVideo opens. To stop recording click the red square. The flashlight icon can be clicked to activate the LED light. After a video is stopped a caption can be added by clicking on the green bubble. A new clock icon will replace the video camera icon after a video is recorded. This icon can be placed to add a time stamp on the video.

To review the video click on the new video note icon  from the Live screen, or from the Manage Notes page.

CALIBRATION DATA

WolfSense OK

Select Probe

TG501 (03-525) ▼

Calibration: office b

Temperature (Factory cal on 6/22/2015)
Factory set points = (Low) 20.0°C, (High) 40.0°C
::User cal (Low) @23.8°C offset= 1.8°C from Factory Cal
on 11/6/2015 1:49 PM

Carbon Monoxide (Factory cal on 3/10/2015)
Factory set points = (Low) 0.0ppm, (High) 96.0ppm

Sulfur Dioxide (Factory cal on 6/22/2015)
Factory set points = (Low) 0.0ppm, (High) 5.0ppm

Nitrogen Dioxide (Factory cal on 6/22/2015)
Factory set points = (Low) 0.0ppm, (High) 5.0ppm
::User cal (Low) @0.0ppm offset= -0.1ppm from Factory
Cal on 7/21/2015 6:43 PM

Hydrogen Sulfide (Factory cal on 6/22/2015)
Factory set points = (Low) 0.0ppm, (High) 10.0ppm
::User cal (Low) @0.0ppm offset= -0.1ppm from Factory
Cal on 7/20/2015 7:09 PM

Nitric Oxide (Factory cal on 6/22/2015)
Factory set points = (Low) 0.0ppm, (High) 25.0ppm

Oxygen (Factory cal on 3/9/2015)
Factory set points = (Low) 0.0%, (High) 20.9%

▼

Calibration data includes date, time, last factory calibration, last user calibration and set points for every parameter in each probe. The calibration information is stored in the probe's non-volatile memory. When initiating a log (Trend, Snapshot, AutoRun), a snapshot of the current calibration information is stored with the readings in the location file.

To access the current active calibration data, select Probe Menu / Advanced Calibration / Display Active Cal. To access the calibration information associated with a logged data file, click on the Calibration Icon  from the Notes Screen or Notes Bar.

REVIEWING DATA

File Log Probe View			
Logged data			Refresh
Date/Time	Nitric Oxide	Nitrogen	
11/13/2015 4:29:42	0.2	0.02	
11/13/2015 4:29:57	0.1	0.01	
11/13/2015 4:30:12	0.2	0.01	
11/13/2015 4:30:27	0.1	0.00	
11/13/2015 4:30:42	0.1	0.00	
11/13/2015 4:30:57	0.1	0.00	
11/13/2015 4:31:12	0.1	0.00	
11/13/2015 4:31:27	0.1	0.00	
11/13/2015 4:31:42	0.1	0.00	
11/13/2015 4:31:57	0.1	0.00	
11/13/2015 4:32:12	0.1	0.00	
11/13/2015 4:32:27	0.1	0.00	
11/13/2015 4:32:42	0.1	0.00	



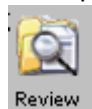




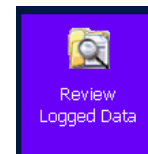


Menu Live
13-Nov-2015 16:32:27

Select File>Open or select the Review



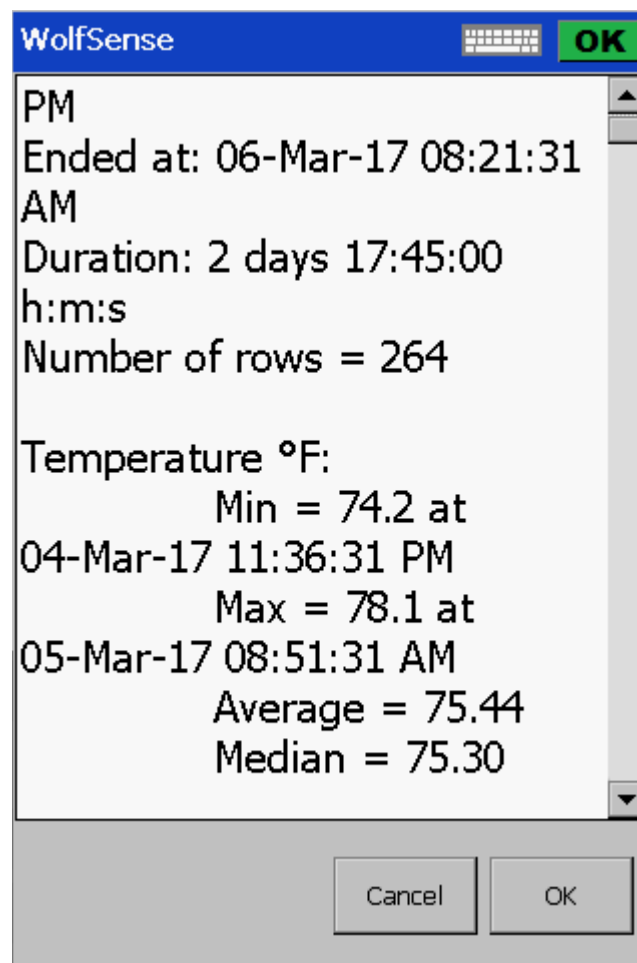
button from the Icon Menu, or select the Review Logged Data tile from the apps menu to review logged readings.



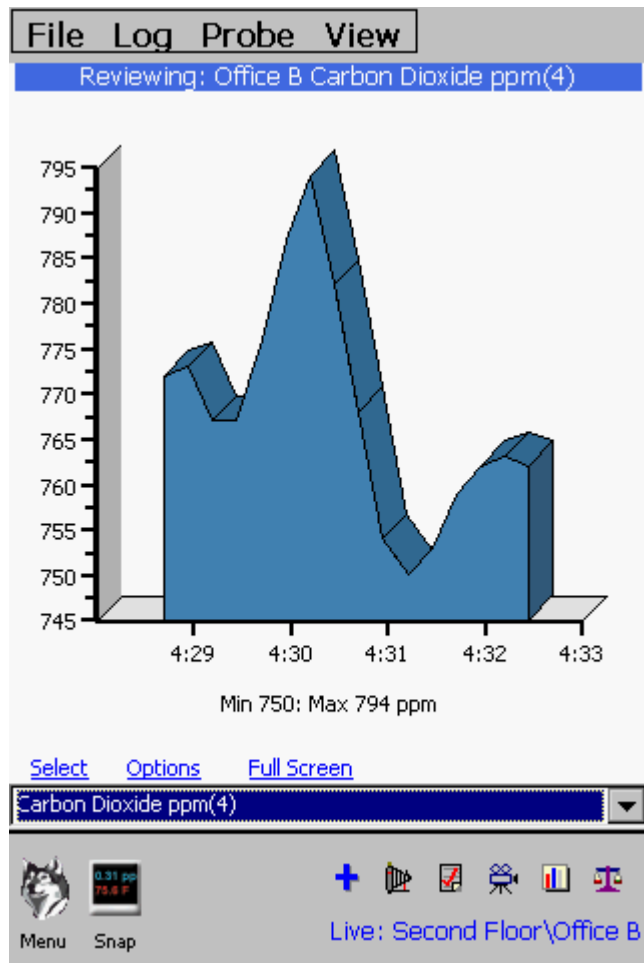
If the logger is currently logging to the location you are reviewing, click the REFRESH link to update the display.

When reviewing data while logging, only the most recent 100 rows of logged data are displayed.

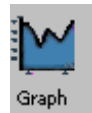
Clicking on the **Stats** (Min/Max/Avg) icon  brings up a list of the min, max, median and average values along with the start and stop time, total duration and number of rows.



GRAPHING DATA



While logging data or after data is logged it can be viewed as a graph by selecting View>Graph, or clicking the Graph icon from the tray menu



or selecting the View Graph tile from the apps menu.



The dropdown allows the ability to change between logged parameters to view.

Select-pick a location file to view.

Options-change 3-D, versus 2-D, colors, time scale, full screen, and time format.

Full Screen-puts the graph in a full screen.

MINMAX

The screenshot shows the MINMAX software interface. At the top, there is a menu bar with 'File', 'Log', 'Probe', and 'View'. Below the menu bar, the main display area shows two parameters: 'Carbon Dioxide' with a reading of '879 ppm' and 'Hydrogen Sulfide' with a reading of '0.14 ppm'. At the bottom left, there are navigation buttons '<<' and '>>'. Below these buttons, it says 'Manual Mode : Samples taken 0'. There are also buttons for 'Clear', 'Add', 'Manual' (with a dropdown arrow), and 'Log'. At the very bottom, there is a status bar with icons for 'Menu' and 'Live', and the text 'Live: Second Floor\Office B'.

To take logs and see the minimum, maximum, and average values while logging MinMax can be used. This can be accessed through View>Min/Max/Avg, or clicking



on the MinMax icon from the tray menu or clicking on the Min, Max and Average tile from the apps menu.



Live readings will be shown for each parameter being monitored. Clicking Add will add a new data point to the sample in Manual mode. Clicking Log will start a trend log. Selecting Manual or Auto from the dropdown will change the status to enable trend logs or manual samples.

Clicking the << and >> icons will change the screen.

Each time a new data point or sample is added the new min, max and average values will be shown under the live readings.

Hitting Clear will get rid of all of the samples taken and reset the average, minimum and maximum values.

The screenshot shows the MINMAX software interface after logging. The menu bar remains the same. The main display area now shows 'Carbon Dioxide' with a reading of '865 ppm' and 'Avg 870 ppm'. Below this, it shows 'Min 868 ppm at 17-Nov-15 03:17:08 PM' and 'Max 872 ppm at 17-Nov-15 03:17:02 PM'. For 'Hydrogen Sulfide', it shows a reading of '0.15 ppm' and 'Avg 0.16 ppm', with 'Min 0.12 ppm at 17-Nov-15 03:17:08 PM' and 'Max 0.19 ppm at 17-Nov-15 03:17:06 PM'. At the bottom left, the navigation buttons '<<' and '>>' are still present. Below them, it says 'Manual Mode : Samples taken 17'. There are also buttons for 'Clear', 'Add', 'Manual' (with a dropdown arrow), and 'Log'. At the very bottom, the status bar is the same as the previous screenshot, showing 'Menu', 'Live', and 'Live: Second Floor\Office B'.

PROBE CALIBRATION

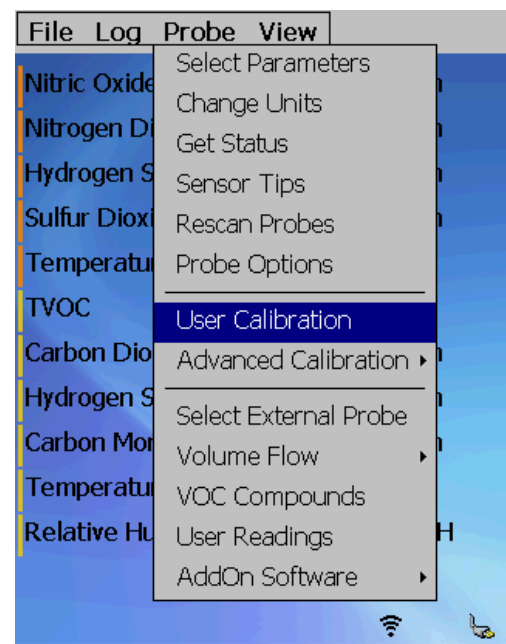
The probe may be calibrated in one of five ways:

- at the Factory, according to GrayWolf standards
- by a GrayWolf Authorized Calibration Laboratory to GrayWolf standards
- at the Factory to GrayWolf standards and with a certificate of traceability to NIST issued
- by a GrayWolf Authorized Calibration Laboratory to GrayWolf standards and with a certificate of traceability to NIST issued
- by the User (described in the next section).

With the appropriate calibration kit / equipment a user calibration can be performed on most gas sensors. Standard calibration kits include a regulator, calibration hood with tubing & reference gas to calibrate VOC's, CO₂, CO and other gases. Additional reference gases for H₂S, NH₃, etc can be purchased. A calibration kit (CA-RH1) can also be purchased for user %RH calibration; check with your local sales rep for additional info. Contact your GrayWolf sales representative or local distributor for availability of additional reference gases, or for questions regarding user calibration of Temperature, Barometric Pressure or Particulate sensors.

GrayWolf recommends annual Factory (or Authorized Cal Lab) calibration of all sensors. Each Electrochemical gas sensor is different so reference sensor tips in the WolfSense software for additional calibration recommendations. PID (VOC) sensors *require* the user to perform more frequent calibrations. A User calibration of the PID sensor should be performed each week that it is in use, or even better, before every use. For most other gas sensors, performing interim User calibrations can improve accuracy and reliability. Specific applications, protocols or S.O.P.s may require more frequent User (or Factory) calibrations.

USER GAS SENSOR CALIBRATION

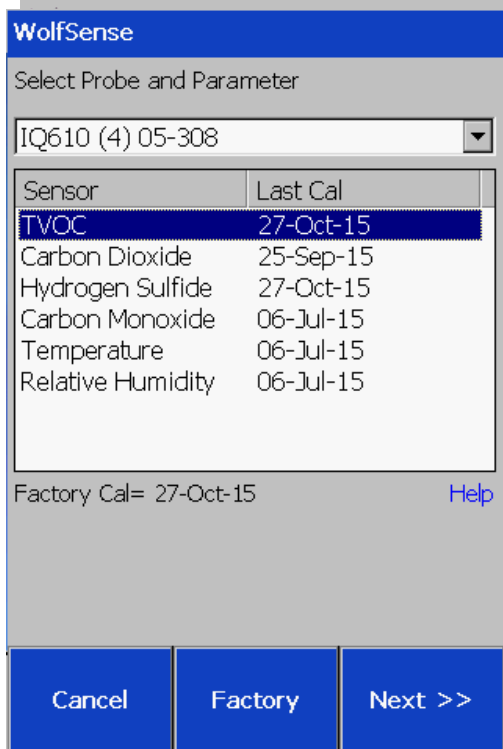
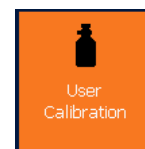


Important: For optimum results; before attempting calibration, the probe should be powered on for a minimum of 5 minutes, to fully stabilize prior to calibration. However, if a PID (VOCs) sensor is being calibrated, a longer stabilization period (20 minutes minimum) is recommended. If the PID sensor has been subjected to a “dirty” environment, powering overnight prior to calibration can be useful to “burn off” pollutants that have accumulated on the sensor. Proper sensor stabilization is imperative for successful User calibrations.

Access the Calibration Wizard by tapping User Calibration from the



Probe Menu, or selecting the cal icon from the Menu, or the User Calibration tile from the apps menu.



Select the parameter you wish to calibrate from the list of available sensors.

Click NEXT to continue.

You can choose to calibrate the high point, the low point or both points. For the most accurate calibration, GrayWolf always recommends that you calibrate both points.



WolfSense

☒ Calibrate Low Point
 ppb

☒ Calibrate High Point
 ppb

[Special Info for PID Cal](#)

You may calibrate the low, high or both points. For optimum accuracy, a 2-point calibration is recommended. To modify set points to exactly match your reference value, check the box below.

☐ Modify Set Points

Cancel **<< Back** **Next >>**

The default low and high gas concentration values for the selected gas are displayed. If your reference gasses are of a different concentration check the Modify checkbox. Refer to your Calibration Reference Gas labels for the proper values. Then enter the new values into the Low and High Point fields and press NEXT

Note: For VOC calibration, the zero reference gas recommended is Hydrocarbon-Free, 0.0 ppm gas. The high-point reference gas (for the low range ppb sensor), should be Isobutylene between 5.0 ppm and 10.0 ppm. GrayWolf typically supplies 7.5 ppm or 10.0 ppm gas. For the high range ppm sensor GrayWolf typically supplies a 3500 ppm Isobutylene gas. **See chart on following pages for more details.**

Screw the 0.3 LPM flow rate regulator snugly onto the tank. Place the Calibration Hood over the probe. To turn on the regulator, turn the dial counter-clockwise to open/ clockwise to close. (On older regulators, push the dial in and turn a quarter turn.) To check gas is flowing, put calibration hood to ear and listen for a slight hiss (although this is not recommended for Cl₂, HCl or other reactive reference gases).

The readings will update on the display. After a couple of minutes the readings should stabilize and not fluctuate. When the readings are stabilized, press the MEASURE button.

WolfSense

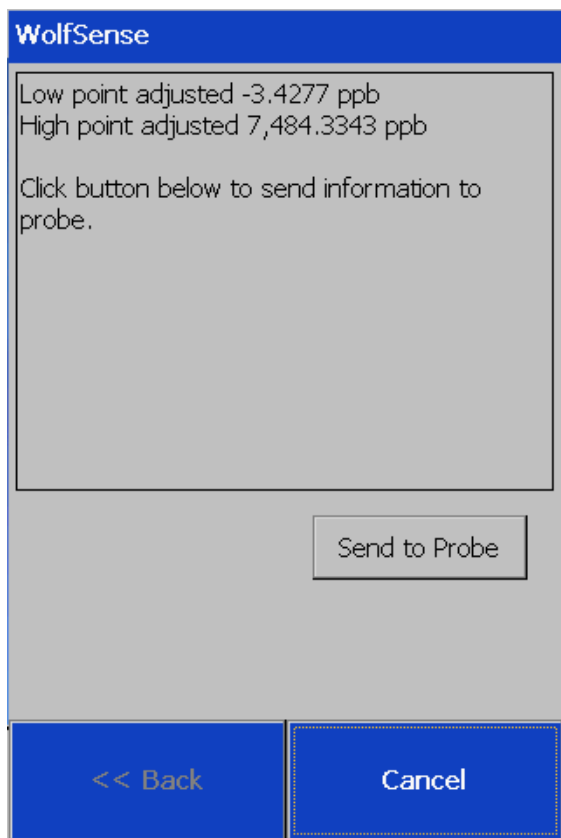
Start Low point 50 ppb calibration. Allow the gas to flow until the reading below stabilizes, which is normally within 3-5 minutes. Min. recommended stabilization time is 30 secs (a small amount of "noise" bouncing around the stab. value is not unusual). When stable, press the MEASURE button and then WAIT for the 15 second countdown to complete BEFORE removing the hood.

16 ppb **Measure** Elapsed: 3 secs

[Video Help](#) [More Information](#)

Cancel **<< Back** **Next >>**

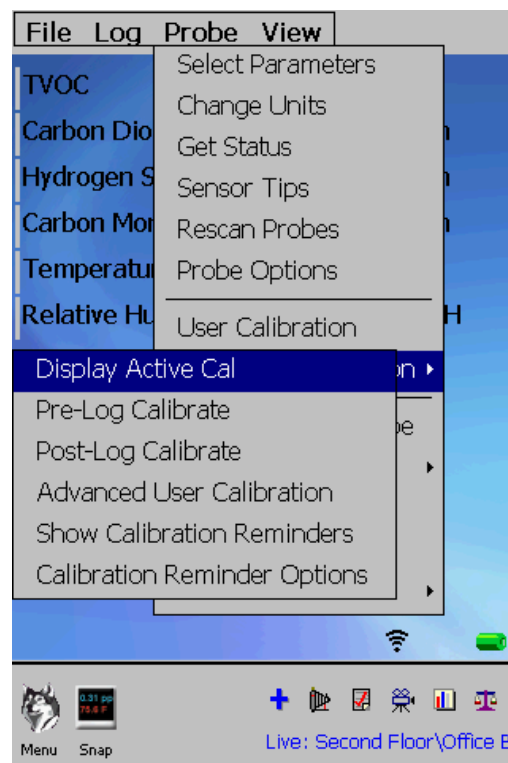
The Calibration Wizard will measure the points and display a message on successful calibration.



Repeat the procedure for the High Point calibration.

When the calibration is complete, a report will be displayed showing the adjustments made to the readings. Tap the SEND TO PROBE button to send the readings to the probe.

After the calibration is complete, you can view the current settings by selecting Probe Menu / Advanced Calibration / Display Active Cal



Restoring Factory Default Settings may be necessary if the User Calibration does not appear to be reading as expected. To restore factory settings, Select Probe menu, User Calibration, select the parameter to reset and press the FACTORY button. If you do not select a specific parameter all sensors will be reset to factory defaults.

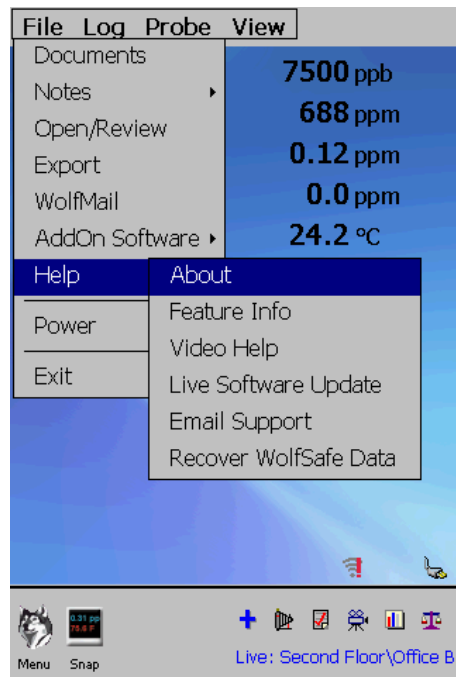
Typical Calibration Set Points and Gas Ranges

In order to properly calibrate your probe, Gray Wolf recommends that the following gas and concentrations be used:

Gas	Range	Typical Set Point
CO	Low	0.5 ppm
CO	High	95 ppm
CO ₂	Low	375 ppm
CO ₂	High	1250 ppm
VOC	Low	0 HC Air*
VOC	High PPB range	7500 ppb or 10,000 ppb
VOC	High PPM range	3500 ppm or 5000 ppm

* NOTE: Zero Hydrocarbon Air cylinders may contain a mixture of CO and CO₂ (typically specified on the label), and may be used for the low cal of those gases with reduced accuracy. For optimum accuracy, it is recommended that reference gases closer to the CO LOW and CO₂ LOW calibration values referenced above be utilized to calibrate the CO & CO₂ sensors.

HELP

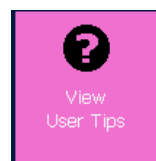


There are many different Help options available on the AdvancedSense Pro. All of these are able to be accessed via File>Help.

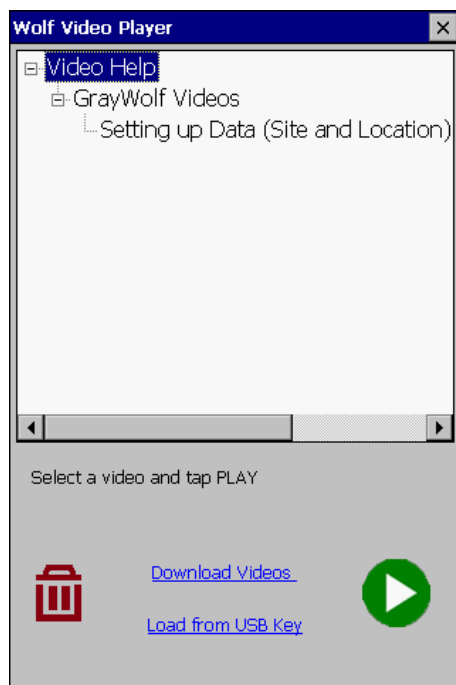
About-Gives information on the operating software on the AdvancedSense Pro and other analytics. This can alternatively be accessed by selecting the About This Meter/Software tile from the apps tiles.



Feature Help- Provides pop up help tips. This can alternatively be accessed by selecting the View User Tips tile from the apps tiles.



Video Help- On-board help videos are available demonstrating how to change probe batteries, calibrate a probe, reset an AdvancedSense Pro, utilize certain accessories, as well as other educational video help



briefs. This can alternatively be accessed by selecting the View Help Videos tile from the apps tiles.

Select a video from the list, and then click the red trash can to delete a video or the green circle to play a video.

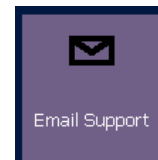
Videos can be downloaded on the device when connected to Wi-Fi, or alternatively through a USB key.

You may alternatively find them on-line at:

<http://videos.graywolfsensing.com/>

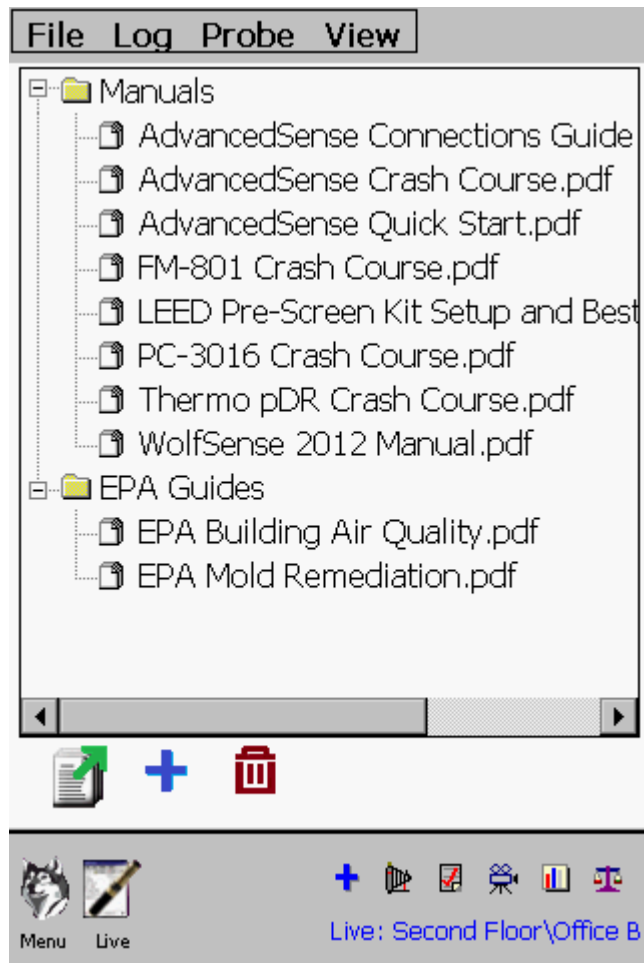
Live Software Update-Automatically update the AdvancedSense to the latest version of software when connected to Wi-Fi.

Email Support-Directly email Tech Support from the AdvancedSense Pro providing pertinent information to Tech Support. This can alternatively be accessed by selecting the Email Support tile from the apps tiles.



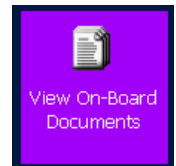
Recover WolfSafe Data-Recover data that was automatically logged in the background. Helpful if a logged never was successfully started.

DOCUMENTS



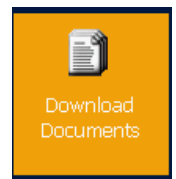
There are preloaded documents on the AdvancedSense Pro, and the ability to download documents via Wi-Fi, or add customized documents.

Documents can be accessed by clicking File>Documents or the View On-Board Documents tile from the apps menu.



Select the pdf, then click the  icon to open a pdf. To close the pdf click Menu>Exit.

Click the blue plus sign to download additional documents while connected to Wi-Fi, or click the Download Documents tile under the apps menu.



Select a pdf and then click the red trash can to delete a document.

EXPORTING DATA WITH A USB KEY

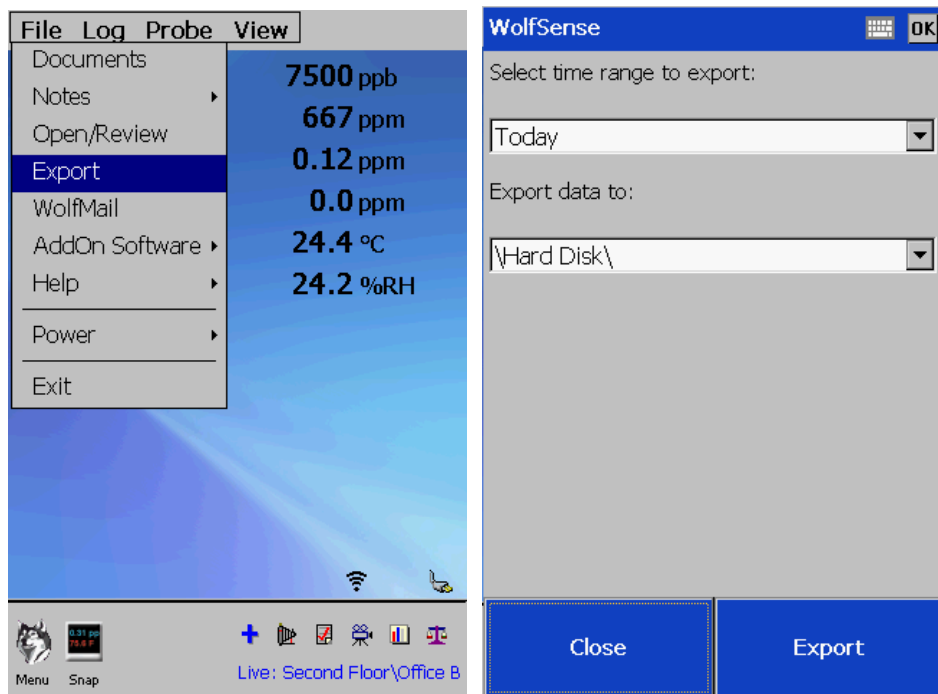
Using a USB Key or SD Memory Card to retrieve data from your GrayWolf Datalogger.



Connect the optional AD-L7F-USB Cable to the top LEMO plug on the AdvancedSense Pro. Place a GrayWolf USB Key (up to 2GB) into the end of the AD-L7F-USB Cable.

NOTE: It is possible to use your own USB Key but not all USB Keys will work with the AdvancedSense Pro. To ensure the USB key will work please order it from

GrayWolf.



Once the USB Key is connected select the FILE menu and EXPORT. Alternatively select the Export Readings tile from the apps menu.



When the EXPORT dialog appears select the time range to Export. Choices are TODAY, THIS WEEK, THIS MONTH, THIS YEAR and ALL.

The selected range of data will be exported to the USB Key organized in folders set up on the instrument. All

corresponding to the Site Folders you Notes and Calibration Info are also exported.

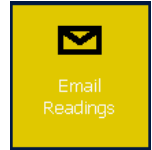
Once the data is exported onto the USB Key, remove the key from your AdvancedSense Pro and insert the key into one of the USB slots on your PC.

EMAILING DATA

All AdvancedSense Pros come pre installed with Wi-Fi cards. If the Wi-Fi card is on and connected to a Wi-Fi connection all data can be emailed directly from the device. See section on Wi-Fi connectivity to set Wi-Fi up.



Go to File>WolfMail to access the WolfMail screen. Alternatively go through the apps menu and select the Email Readings tile.

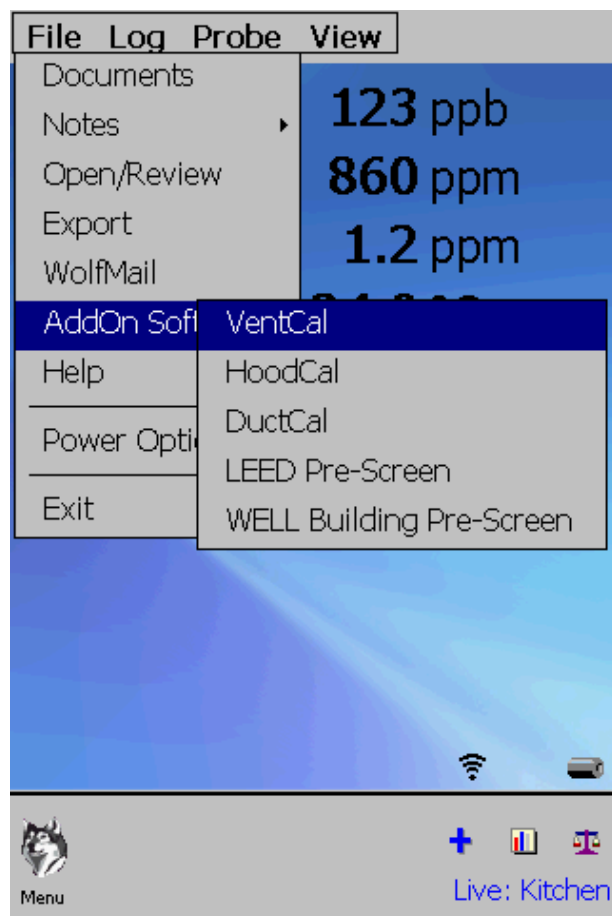


In the WolfMail screen there is the option from the drop down to select either a Location or a Site. Selecting Location will allow just one Location file to be sent. Selecting Site will allow all Location files within a Site to be sent.

The To, Subj, and Message section are all to be completed with the keyboard. There is the ability to send a CSV file incase the recipient does not have WolfSense PC with through the check box or the lower drop down menu.

Click the keyboard icon to dismiss the keyboard and either cancel or send the data.

ADDON SOFTWARE



Additional AddOn Software can be accessed from File>AddOn Software. Each program can alternatively be selected through the app menu tiles as well. There are four different programs listed.

VentCal-an additional purchased software for assisting in calculating ventilation rates.

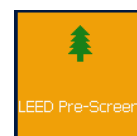


HoodCal-an additional purchased software for assisting in monitoring laboratory hoods.



DuctCal-an additional purchased software for assisting in duct volume flow.

LEED Pre-Screen-Sets up device to be used for the LEED EqC4 Pre-Screen application. Sets up all units to be in proper units and instructs on how to set up equipment.



WELL Building Pre-Screen- Sets up device to be used for the WELL V1 Indoor Air Pre-Screen application. Sets up all units to be in proper units and instructs on how to set up equipment.



INSPECTION LIGHT

The LED located on the back of the AdvancedSense Pro can be controlled to assist in lighting, acting as a

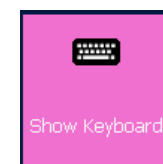


flashlight. The LED controls can be accessed by selecting the Light icon from the tray menu or the Inspection Light tile from the apps menu. The Inspection Light will remain on for 1 minute and then automatically turn off.



KEYBOARD CONTROLS

The keyboard can be shown or hidden by selecting View>Keyboard Show/Hide or by selecting the Show Keyboard tile from the apps menu.



Exiting the Software

On AdvancedSense Pro there is no reason to shut down the software. Simply place the unit in Stand By or Power Down mode. However, if you are instructed to shut down the software to upgrade the software, choose **Exit** from the **File** Menu.

Addendums

Electrochemical Probe Addendum

In order for probes with electrochemical sensors installed to operate properly it is important that the batteries be left in the probe. The device may contain sensors that require a bias voltage, provided by the two D-Cells. If the batteries are removed the probe will require additional time (up to 10 minutes) for the readings to stabilize. If the batteries are removed for a long period of time (>1 day) the sensors may take longer than 24 hours to stabilize.

PID Probe Addendum

In order for probes with a PID sensor installed to operate properly it is important that a user calibration of the PID sensor be performed each week that it is in use, or even better, before every use. Frequent calibration of the PID sensor will maximize the accuracy of the VOC reading. If the probe has not been used for some time, it is best to “burn-in” the PID sensor by connecting the probe to your system and starting up the WolfSense software for up to 20 minutes before calibrating. A longer burn-in may be considered if the PID sensor has been subjected to contamination. A detailed description of how to perform a user calibration can be found in the preceding section.

Using Thermocouple Probes with AdvancedSense Pro and WolfPack

If you are using a thermocouple probe while you have connected a USB cable between your WolfPack or AdvancedSense Pro unit and your Desktop PC or Notebook PC, electrical interference may influence the readings. Use a USB cable with a suppressor to minimize interference. (USB cables with suppressors will have a protrusion containing a magnet between the two ends of the cable.)

IMPORTANT PRODUCT WARNING:

GrayWolf Sensing Solutions' probes and WolfPack™, AdvancedSense™ and DirectSense™ kits are NOT suitable for use in flammable or potentially explosive environments. They are NOT certified intrinsically safe. They are also NOT intended for use in confined spaces where operator safety might be at risk due to exposure levels, such as reduced oxygen, during the course of the instrument survey.

Warranty

GrayWolf Sensing Solutions LTD and its subsidiary GrayWolf Sensing Solutions LLC (hereafter collectively referred to as "GrayWolf") will warranty parts and labor for any manufactured defects in its products for 12 months. The warranty does not cover abuse (e.g., products crushed, dropped, electrically shocked, heat-stressed or water-saturated), hazard, accident, transportation or causes beyond ordinary use. All service, including repair, maintenance and sensor replacements, must be performed by GrayWolf or one of its authorized service centers. Defects on finished goods manufactured by others, such as computer systems, are excluded and are covered by the original manufacturer's warranty (usually one year).

Limitation of Warranty and Liability for GrayWolf Products

- (a) Except as otherwise agreed in writing, GrayWolf warrants, under normal conditions of operation, each product sold (except for finished products not of its manufacture) against defects of material and workmanship, provided that such product has been properly utilized. This warranty applies to the original purchaser only and shall commence to run from the date of shipment and shall continue for a period of twelve (12) months. In any event, GrayWolf's liability for any such defects of material and workmanship shall not exceed the cost of replacement of defective parts upon timely notification of such defect in writing delivered to GrayWolf's North American home office. GrayWolf shall not be liable for damage or destruction caused during delivery or caused other than by employees of GrayWolf.
- (b) GrayWolf shall, at its option, repair such defects or replace the parts or products found defective. All defective parts are to be returned immediately, freight prepaid, to GrayWolf. GrayWolf will make no allowance for repairs or alterations made by the purchaser unless made with the advance written consent of GrayWolf. GrayWolf assumes no liability for costs of disassembly of defective parts and equipment. Shipment by purchaser of all repairs and replacements under this warranty are F.O.B. GrayWolf's factory, North American service facility or authorized service representative, and method of shipment will be determined by GrayWolf. The purchaser will pay shipping costs and insurance in both directions of products, parts, or components shipped for warranty service hereunder. The purchaser will be responsible for risk of loss in both directions. Replaced parts or components will become the property of GrayWolf. Replacement parts or components may contain recycled, refurbished, or remanufactured parts equivalent to new parts and shall be warranted for the remainder of the original warranty period for the products.
- (c) Products that are not covered by warranty, such as products that have been subjected to physical misuse or are beyond the warranty period, will have an estimate submitted before the repair work commences. All out-of-warranty repairs carry a 90-day warranty from the date of return shipment.
- (d) GrayWolf shall not be liable for delays, deprivation of use, or any other damages, direct or indirect, which may result to the purchaser because of defects in the product or because of the purchaser's inability to operate it or use it to his satisfaction. GrayWolf will not be liable to anyone for special or consequential damages of any kind. GrayWolf neither assumes nor authorizes any person to assume for it any other obligation or liability with respect to GrayWolf products. GrayWolf does not warranty that the equipment is fit for any particular purpose unless notice of the purpose is specifically submitted to GrayWolf in writing and is specifically confirmed by an officer of GrayWolf to you.
- (e) Finished goods manufactured by others, including computers, batteries, carrying cases and bar coding wands are not warranted by GrayWolf, but are covered by the original manufacturer's warranty.

EXCEPT FOR THE FOREGOING EXPRESS WARRANTY, THERE ARE NO WARRANTIES, REPRESENTATIONS, OR GUARANTEES, EXPRESS OR IMPLIED, EXCEPT AS ARE EXPRESSLY SET FORTH HEREIN. THE FOREGOING WARRANTY IS THE ONLY WARRANTY MADE BY GRAYWOLF. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE ONE-YEAR DURATION OF THIS WRITTEN WARRANTY AND IS STRICTLY LIMITED TO THE RETURN AND REPAIR OR REPLACEMENT OF THE EQUIPMENT. IN NO EVENT SHALL ANY CLAIM EXCEED THE PURCHASE PRICE OF THE EQUIPMENT PAID BY THE PURCHASER. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR FOR THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.



WOLFSENSE TECHNICAL SUPPORT

For Drivers, Updates, TechNotes visit:

<http://support.graywolfsensing.com/>

Software e-mail: support@graywolfsensing.com

Phone: 1-203-402-0477 (in Europe 353-61921736)

GrayWolf on the Web: <http://www.GrayWolfSensing.com>

For Videos on Changing Probe Batteries, Probe Calibration, etc visit:

<http://www.wolfsense.com/VideoHelpOnBoard.html>