

GrayWolf
Sensing Solutions



DirectSense™ PPC
Monitoring Kits



User Manual

NOTE: A copy of this manual can be loaded onto your Pocket PC (PPC) computer for viewing with Adobe Acrobat Viewer. If you have purchased your PPC from GrayWolf, it will already be loaded. Please see the section titled “Documents” for details.

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' DirectSense™ probes 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.

This manual is published solely for instructional purposes related to the operation of GrayWolf's DirectSense™ IAQ, DirectSense TOX, DirectSense AIR, DirectSense RH and WolfSense™ products. Some of the details contained in this manual are derived from information proprietary to GrayWolf Sensing Solutions, LTD, and its publication does not convey any right to reproduce or use the contained information for any other reason than for the operation and use of the described products. Reproduction or any other use of this material requires the express written consent of GrayWolf Sensing Solutions, LTD.

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GrayWolf
Sensing Solutions

DirectSense™ PPC
Monitoring Kits
User Manual

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Congratulations on purchasing your GrayWolf DirectSense PPC kit. This manual may help you to take full advantage of your monitoring system. However, **the user interface is designed to be intuitive**. Once you have loaded WolfSense PPC application software onto your Pocket PC (PPC) mobile computer (the WolfSense PC program is preloaded if you purchased the PPC from GrayWolf)...**try it out! Tap around the various screens. You might discover that you don't need to refer to this manual much at all!**

Help files are available in all WolfSense software. Additional Help resources can be found by tapping each parameter on the PPC display. Use these Sensor Tips as a quick reference for "Do's and Don'ts" Government & Industry Guidelines, Maintenance and Specifications. The Technical Support page of GrayWolf's website, www.wolfsense.com has FAQs, and links for software updates and device support. Information and instructions for GrayWolf's optional Add-On software modules are detailed in the WolfSense Add-On Software Modules User Manual.

Table of Contents

INTRODUCTION	1
POWERING	3
SETTING UP THE HARDWARE AND SOFTWARE	4
NAVIGATING IN WOLFSENSE PPC	7
DATA ORGANIZATION	10
Creating, Selecting and Deleting Location Files	10
TYPES OF LOGS	12
Figure 11 – Log Menu	12
Snapshot Log.....	12
Standard Timed Log	12
THE LOGGING PROCESS.....	13
Append or Overwrite	15
Log Information.....	16
Stored Readings	16
ASSOCIATED NOTES.....	16
Text Notes	17
Drawing Notes	18
Tap Drawing in the NOTEBOOK dialog box.	18
PROBE MENU	21
PROBE INFORMATION	21
PROBE CALIBRATION DATA	21
PROBE CALIBRATION.....	22
NAVIGATING IN WOLFSENSE PC.....	26
Using WolfSense PC's Transfer Utility	27
WOLFSENSE PC SOFTWARE	30
Viewing and Printing Location Files, Notes and Calibration Data.....	30
REFER TO THE HELP FILES IN WOLFSENSE PC FOR DETAILED	
INSTRUCTIONS ON ALL FEATURES.	31
MAINTENANCE, CLEANING, SERVICE	31
SUMMARY OF CAUTIONS	33
TROUBLESHOOTING	33
SPECIFICATIONS	34
PROBES & ACCESSORIES	36

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Introduction

GrayWolf Sensing Solutions provides fully integrated systems for measuring indoor air quality, toxic gases, airspeed and other parameters. A Pocket PC running WolfSense™ PPC application software takes readings of air quality, toxic gas, airspeed, moisture or other parameters from a probe connected through the serial port. You may choose to view live readings as they happen and/or log the readings for future use. Later, when the PPC is connected to a desktop PC via the docking cradle, 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.

In the **DirectSense™ IAQ PPC** kit, the probe (model **IQ-410**) has four sensors, which provide up to nine measurements: Temperature (°F/°C), Relative Humidity (%RH), Carbon Monoxide (ppm CO), and Carbon Dioxide (ppm CO₂) are the primary measurements. Dew Point Temperature, Absolute Humidity, Wet Bulb Temperature, Humidity Ratio and Specific Humidity are derived from the Temperature and Relative Humidity sensor readings. You choose to display one (1), or up to all nine (9) readings. The optional **VentCal™** software module (available early 2004) may be used to calculate Outdoor Air (OA) Ventilation rates as air changes per hour, OA ventilation per floor area or OA per occupant.

The **DirectSense TOX PPC** kit utilizes the **TG-501** probe to measure up to five toxic gas sensors along with temperature including Sulfur Dioxide (SO₂), Nitrogen Oxide (NO₂), Ammonia (NH₃), Hydrogen Sulfide (H₂S) and Carbon Monoxide (CO). See the specifications on page 32 for a complete list.

The **DirectSense AIR PPC** kit uses the **AS-201** airspeed probe to measure airspeed and temperature and display a calculated volumetric flow reading. Optional software modules, GrayWolf's **DuctCal** and **HoodCal**, can be used for duct traverse flow calculations and fume hood face velocity testing respectively.

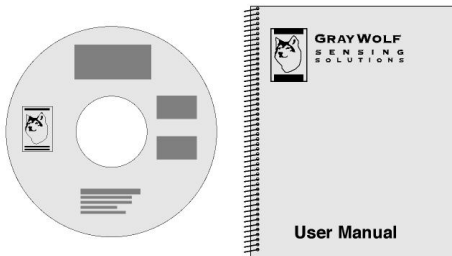
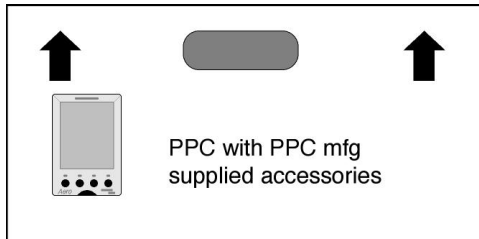
The **DirectSense RH PPC** kit uses the **RH-302** or **RH-310** probes to measure Temperature and Relative Humidity. You can also measure Dew Point, Absolute Humidity, Wet Bulb Temperature, Humidity Ratio and Specific Humidity, which are derived from the Temperature and Relative Humidity readings. The RH-310 probe is an "upgradeable" version of the RH-302. The RH-310 can be later fitted with either or both the Carbon Dioxide and/or one (non-polarized) electrochemical gas sensor.

Each probe can also be purchased as an accessory to each kit. Other available probes include the **IQ-402** for CO₂, %RH and temperature, the **CD-202** and **CD-210** for CO₂ and temperature and the **CO-202** and **CO-210** for CO and temperature.

Unpacking your GrayWolf Monitor

Figure 1 Your GrayWolf monitor kit provides everything you need to start measuring:

- Probe (or probes): IQ-410 and/or AS-201, TG-501 & RH-302 (check probe label, included probes depend on specific DirectSense kit purchased). Each probe cable terminates in a “universal” connector.
- AD-Px adapter: fits the probe’s “universal” connector to the PPC serial socket (varies by PPC model).
- WolfSense™ software on CD-ROM, which includes a copy of your User Manuals.
- PPC with accessories supplied by the PPC manufacturer: AC adapter, PC synchronization software (on CD ROM) and, depending on the model, docking cradle or synchronization cable.
- PCC-PH01 PPC pouch with belt clip and neck strap (See page 35)
- PCC-05IQ or PCC-06AS probe pouch (See page 35)
- *Optional* PCC-10P hard-shell security case (See page 35).



IQ-410 IAQ, TG-501 Toxic Gas or RH-302/310 %RH Probes



AS-201 Airspeed Probe

Powering

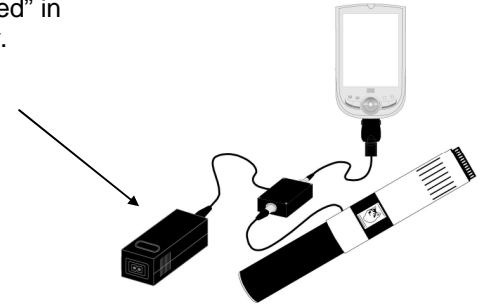
The PPC will run off its internal rechargeable battery pack or with the help of the AC adapter supplied with the PPC. **Before** first use, charge the battery according to the instructions in your PPC manual.

NOTE: Charge your PPC batteries frequently to avoid data loss. The PPC uses minimal power even when turned off.

The probes run on a separate set of batteries or with another AC adapter (GrayWolf model ACC-ADY2). The probes each come with two alkaline batteries installed. WolfSense PPC software will warn you if the probe's and/or the PPC's battery voltage is low. If, when you plug in the probe, the batteries are expired, you will see "No Probe Attached" or "Probe Batteries Exhausted" in the upper left-hand corner of the PPC display.

Figure 2 – Using the Optional AC Adapter to Power the Probe

The optional ACC-ADY2 AC power adapter allows you to continuously power the probe if you will be taking readings longer than the expected life of the probe batteries.



Changing Batteries on the Probes

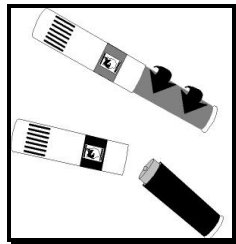


Figure 3 - Battery Location on the IQ-410, TG-501 and RH-302/310 probes

For the IQ-410, IQ-402, TG-501, RH-302/310 CD-202/210 and CO-202/210

Hold the top of the probe with one hand and the handle with the other. Twist the probe handle in a counterclockwise direction.

Remove the old batteries. Insert 2 new D-cell alkaline batteries, ensuring that the battery positive is to the top.

Carefully screw the handle back onto the probe, taking care not to cross-thread the handle or over-tighten it.

For the TG-501 (and RH-310 when outfitted with an electrochemical gas sensor), allow 10 minutes for the sensors to stabilize before use after changing batteries. If TG-501 batteries have been removed for more than a few minutes, Nitric Oxide or EtO sensors will require 24 hours to stabilize.

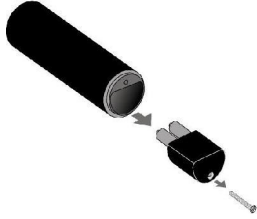


Figure 4 - Battery Location on the AS-201

The AS-201 uses 2 AA batteries for power. To change the batteries, remove the screw from the base of the probe handle.

Remove the battery holder and replace the used batteries with new ones taking note of the battery orientation label. Put the battery holder back in the probe and replace the screw.

When taking portable measurements, use the instant-on/instant-off feature of the PPC to extend battery life. When setting up the PPC to work only from a battery pack for an extended period of time, minimize display brightness to conserve battery power.

If the PPC batteries and the backup batteries are completely depleted, all data files on the PPC, as well as WolfSense PPC Application software, will be erased. You will need to reinstall the WolfSense PPC application software from your desktop PC, or from one of the storage methods your PPC features such as internal Flash ROM or an optional removable Compact Flash card such as the GrayWolf ACC-CF256. Most PPC devices now feature nonvolatile Flash memory or Flash ROM onto which a backup copy of WolfSense will be stored, and logged data will be written to. A backup copy of WolfSense and data can also be stored on an external CF card. See the next section for re-installing WolfSense and recovering data.

Setting up the Hardware and Software

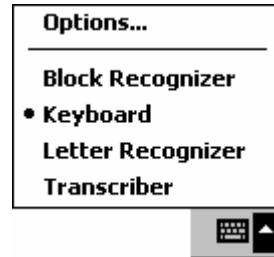
The serial port on the PPC is used to connect to the:

- docking cradle to link to the desktop PC during installation of the WolfSense software (pre-installed by GrayWolf if PPC has been purchased from GrayWolf);
- probe while taking readings, using AD-Px adapter;
- docking cradle to transfer to the desktop PC files of readings collected from the probe.

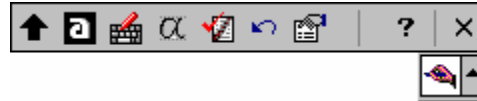
The PPC will be referred to as a Mobile Device by the desktop PC.

The PPC has several features that will help you navigate in WolfSense:

- You will use the stylus pen to tap options on the display the way you would click the left mouse button for your desktop PC.
- You will tap the **Keyboard** icon at the bottom of the PPC screen to maximize and minimize the keyboard. You will “type” on the keyboard by tapping the keys with the stylus pen.



- Alternatively use **Transcriber** for handwriting recognition.



1. Familiarize yourself with the PPC user manual and instructions for ActiveSync, the Microsoft software that synchronizes your PPC with your desktop PC.
2. If you have purchased your PPC from GrayWolf, skip this step (as the PPC will already be set up). Follow the instructions for setting up the PPC, including the manufacturer's recommendation for the number of hours to charge the battery pack before the first use—even if powering it with the AC adapter provided with the PPC.

NOTE: If you have purchased your Pocket PC from GrayWolf, WolfSense PPC software is pre-loaded onto your PPC before shipping. Tap Start, then tap



WolfSense to start the application.

Before you can analyze your data, however, you must load WolfSense PC software onto your desktop PC. Complete the steps below to establish a link between the PPC and the desktop PC for sharing data and to install WolfSense PC software on your desktop PC for data analysis.

3. Install the synchronization software (Microsoft ActiveSync) on your desktop PC. When prompted, connect the serial or USB cable from the docking cradle to the desktop PC and place the PPC in the docking cradle (or connect via the synchronization cable)

4. Install the WolfSense software from the CD-ROM supplied in the kit:
 - If the CD doesn't run automatically, from the PC **Start** menu, run **[CD-ROM drive]:\Setup.exe**.
 - When prompted, choose the option to set up *only* PC files.
Choose the option to load both PC and Remote files only if you did not purchase your PPC from GrayWolf, or if you have lost the **WolfSense PPC** icon from the **Start, Programs** menu of the GrayWolf-supplied PPC.
 - The Setup program loads WolfSense PC software onto the desktop PC.
5. Tap **Start, WolfSense** to start WolfSense software.

Re-installing WolfSense PPC application software onto your PPC from a flash card (easiest method): Although the name of the Flash ROM and Compact Flash Card designation vary with each PPC manufacturer, the folder can be accessed by tapping Start, Programs then File Explorer. Show **My Device** and tap to open the Flash ROM or Compact Flash Card folder. Tap the WolfSense application file,



designated by a GrayWolf wolf head logo, named **CFSetup** and follow the instructions on the screen.

Re-installing WolfSense PPC application software from a PC: Follow step 4 above.

Navigating in WolfSense PPC

The menus of GrayWolf's WolfSense application software are described briefly below:

File - access to **Help** files, **Notes** to add/edit associated notes, **Open** to access logged files, **Documents** to view related .Pdf, Doc, etc files, including GrayWolf Operator Manuals on PPC screen, **Exit** WolfSense.

View - **Statistics** to view min/max/avg for live readings. **View All** to display all primary measurement parameters. **Change Units** of measure. Tick individual measurement parameters to include or exclude on screen.

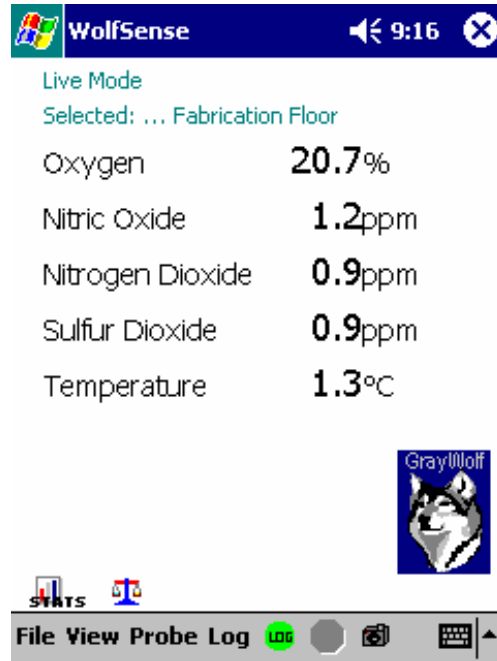


Figure 5 - WolfSense PPC Live Screen (TG-501 probe) Menu

Probe - to see **Information** about the probe or for **Calibration** of the probe. **View Active Cal** for probe calibration data. Access to Basic Volume Flow and AddOns modules: VentCal (Q403), DuctCal and HoodCal

Log - to set up how readings will be logged: as **Snapshot Log** or **Standard Timed Log**. To set or create **Location (data)** files. To toggle the Log Option to log average readings and set the desired average time for readings to be logged over. To **Start** or **Stop** a log.



To Start a Timed Log



To End a Timed Log (this icon is only available during a timed log session)



To Store a Snapshot Log

Keyboard Icon - You will tap the **Keyboard** icon at the bottom right of the PPC screen to maximize and minimize the keyboard. You will "type" on the keyboard by tapping the keys with the stylus pen. Alternatively, **Transcriber** (or other handwriting recognition) icon will appear here, selected with ^ at right.

Live Mode

Once the probe is attached, WolfSense PPC will display live readings from the probe in real time.

To change the units of measure, double-tap the current value. (Also see CHANGE UNITS below.)

When the AVAILABLE UNITS dialog box appears, tap the desired unit of measure: for example, Fahrenheit, Celsius or Kelvin (absolute).

To remove a parameter from the display, tap **Disable Display**.

Tap **Sensor Tips** to open the Sensor Tips menu.

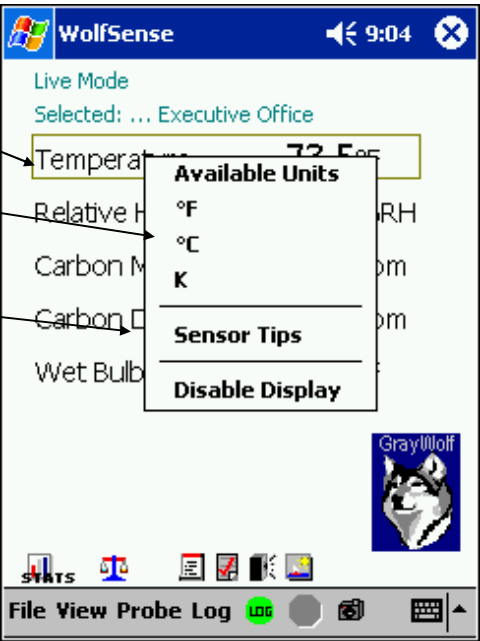


Figure 6 - Live Screen – Change Units (IQ-410 probe)

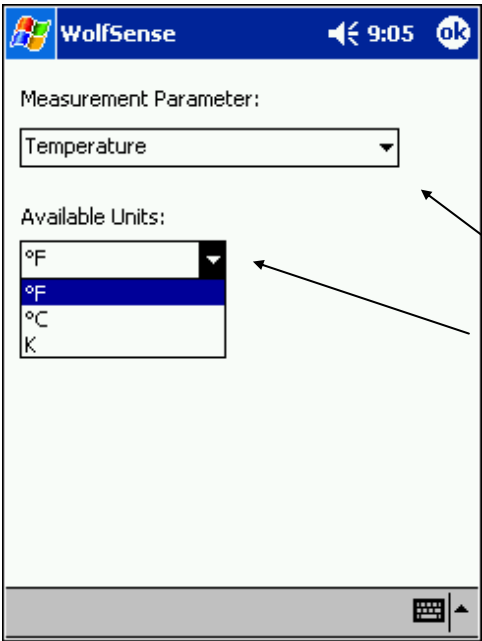


Figure 7 - CHANGE UNITS screen

Another way to change the units of measure is to tap **View, Change Units**.


In the CHANGE UNITS screen, tap the pull-down menu arrow for Measurement Parameter.

Tap the measurement parameter you want.

Tap the pull-down menu arrow for Available Units.

Tap the unit of measure you want to display.

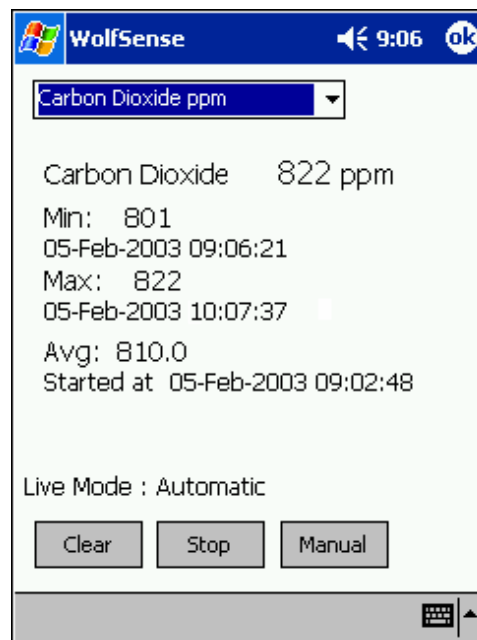
Statistics

The Statistics screen displays the minimum, maximum and average readings for a single parameter on a separate screen that may be minimized and kept on the screen. While Statistics is running in Automatic mode, you may close the Statistics window and re-open it later by tapping  on the main WolfSense PPC screen.


The **Manual/Auto** button toggles between Automatic and Manual modes.

In **Auto** mode, readings taken from the probe at approximately one-second intervals to update the minimum and maximum values, and are automatically added to the readings used to calculate the average. The **Stop/Resume** button lets you stop and resume readings in Auto mode.

In **Manual** mode, tap **Add** to add readings manually to the tally of readings included in the statistics calculations for the chosen parameter.



Clear resets the minimum, maximum and average to zero.

 Tap the **Statistics** icon or **View, Statistics**.

To choose a different parameter for display, tap the pull-down menu arrow. Tap the new parameter

Figure 8 - STATISTICS screen Auto mode

Data Organization

Logged readings are stored in individual data files called location (.loc) files. Calibration data, text notes, and drawing notes are also stored and organized as attachments to these location files (see “Associated Notes” on page 16). Location files can be stored in the PPC’s \My Documents folder, the PPCs Internal Flash ROM or onto an optional Compact Flash Card. The user selects the destination from a pull down menu on the Log Locations screen. The default destination is the PPC’s Internal Flash ROM (if available).

For example, you may want to log readings for the "Principals Office," "Teachers Lounge," and "Cafeteria". The three location files could have these example file names:

- \ HP Safe Store\WolfSense\Principals Office.loc
- \ HP Safe Store\WolfSense\Teachers Lounge.loc
- \ HP Safe Store \Cafeteria.loc

Creating, Selecting and Deleting Location Files

When a log begins, readings will be collected in a location file you have created and selected. This location file will be used to collect readings, and to attach notes to, until you select a different location file for logging. When you create new location files, enter names that are meaningful for your use.

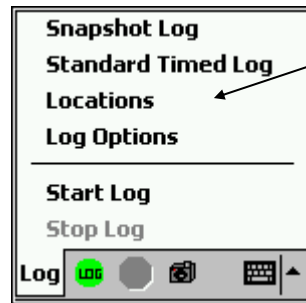


Figure 10 - Log menu

Please Note: Data stored in the My Documents folder will be erased if the PPC undergoes a Full Reset or experiences a complete power loss.

To change the file name, tap and place the cursor in the name box, then tap the **Keyboard** icon on the PPC's toolbar. "Type" the new file name using the stylus.

Tap New or Select to accept the file name. The files path (where the Data will be logged to) will be detailed at the bottom of the screen and the new file will be highlighted.

Tap Select to select the new Location file

Tap Note to access the Notes menu. The Notes menu can also be accessed by tapping File Notes from the main WolfSense PPC screen.

To create a location file.

From the main WolfSense PPC screen, tap **Log, Locations**.

Choose the location logged data will be stored to: either My Documents, Storage Card, Internal Flash ROM.

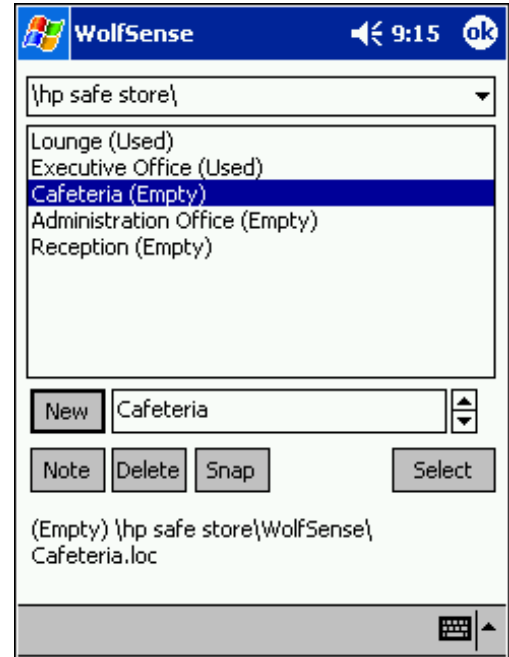


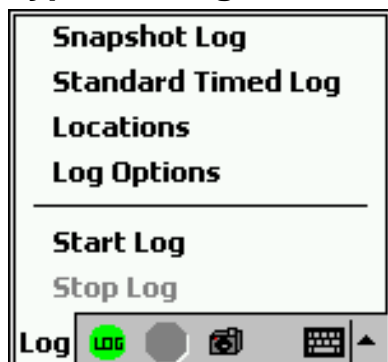
Figure 9 – SELECT LOCATION dialog box

To delete a file tap to highlight the file to be erased and tap Delete. You will be prompted to confirm this action.

To view stored data tap to highlight the file name where the data is stored and tap View.

To take a "Snapshot" set of readings tap Snap. The reading will be logged to the last selected file.

Types of Logs



WolfSense PPC offers two ways to log data into a location file:


- Snapshot Log - manually.
- Standard Timed Log - at pre-set intervals initiated at the measurement site and until stopped by user.

Figure 11 – Log Menu

Snapshot Log

The Snapshot Log lets you log values from the probe manually—even supplemental values if you are running a Standard Timed log.

There are several ways to initiate a Snapshot Log:

- Tap the  icon or
- Tap **Log**, **Snapshot Log** or
- Tap **Log**, **Locations**, **SNAP** or
- Manually press the ENTER key on the PPC (this is the center of the large oval key at the bottom of HP iPaq PPCs).

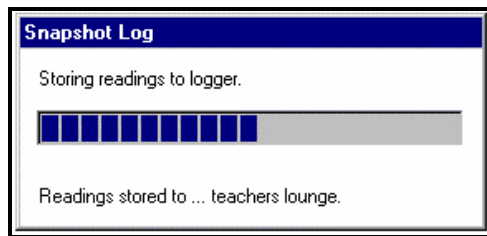


Figure 12 - Confirmation Message from Snapshot Log

The dialog box confirms the name of the location file to which values are being logged.

Standard Timed Log

The Standard Timed Log program logs readings in a location file at pre-set intervals—until you stop the data logging or exit from WolfSense PPC. From the STANDARD TIMED LOG SETUP dialog box, set the location file to be used and the interval between readings.

Tap **Select** to change or create the location file for logging. (See page 10 for details.)

To change the interval, tap the hour, minute or second digits. Tap the **Keyboard** icon and type your choice, or use the up and down arrows.

Tap **Start Log** to begin data logging, or tap **OK** to save the time interval and exit.

When finished logging data, tap **Log**, **Stop Log** to end the logging session or tap the Stop toolbar button



If you try to exit WolfSense PPC while a log is running, you will see this warning: "Quitting application will stop logger."

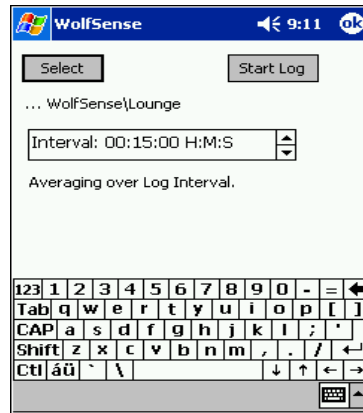


Figure 13 - STANDARD TIMED LOG SETUP dialog box

The Logging Process

To start either of the two types of data logging, follow these steps:

1. Make sure the probe is securely attached to the serial port. Set the parameters you wish to log. All parameters selected in "Live" mode will be recorded. See "Live Mode" on page 8.

Select a location file for storing the readings for these parameters.
See “

2. Data Organization” on page 10.
3. Choose Log, Log Options to set up logging of an average (choice of logging the avg over the log interval, a 5 second avg, 1 minute, etc). If “Avg Readings For:” is not ticked, instantaneous ~1 second data captures are recorded.

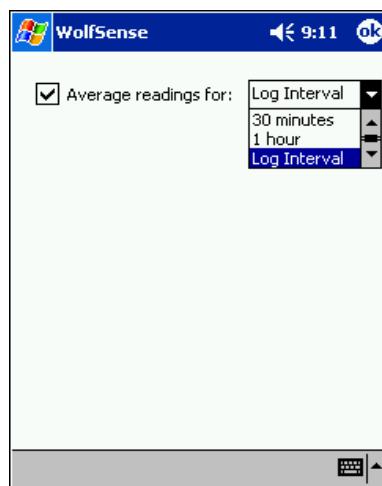





Figure 14 Log options

4. Start the logger:
 - a. For a Standard Timed log:
 - i. Tap **Log, Standard Time Log**.

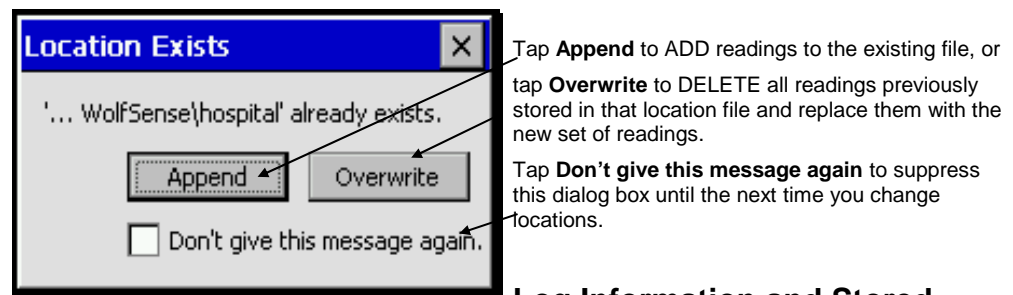
Set the time interval for the log. See “

- ii. Standard Timed Log" (page 12).
 - iii. To initiate the log, tap **Start Log** or tap the Start toolbar button .
 - iv. To stop the log from the WolfSense PPC screen, tap **Log, Stop Log** or the Stop toolbar button .
- b.** For a Snapshot log:
- i. Tap **Log, Snapshot Log**. Snapshot logs record a single set of readings and do not have to be stopped.
 - ii. Tap **Log, Locations, SNAP**
 - iii. Tap the  icon
 - iv. Manually press the ENTER key on the PPC (this is the center of the large oval key at the bottom of the HP/Compaq iPaq PPCs)

Note: Take care to wait for completion of the averaging period when logging averages with the Snapshot logging mode.

Append or Overwrite

The LOCATION EXISTS dialog box appears the first time you try to add readings to a file that already exists and contains logged data.



Log Information and Stored Readings

Figure 15 – LOCATION EXISTS dialog box

Log Information

During logging, the type of log and the name of the location file being used appear on the display, along with the readings.

The type of log (logging mode) and the name of the location file being used will appear at the top left-hand corner of the screen.

The **Log** icon will appear at the lower left-hand corner of the screen.

Stored Readings

You may view stored readings after logging them in a file. Tap **File, Open**. Select the file you wish to view by tapping to highlight it then tap **Select**.

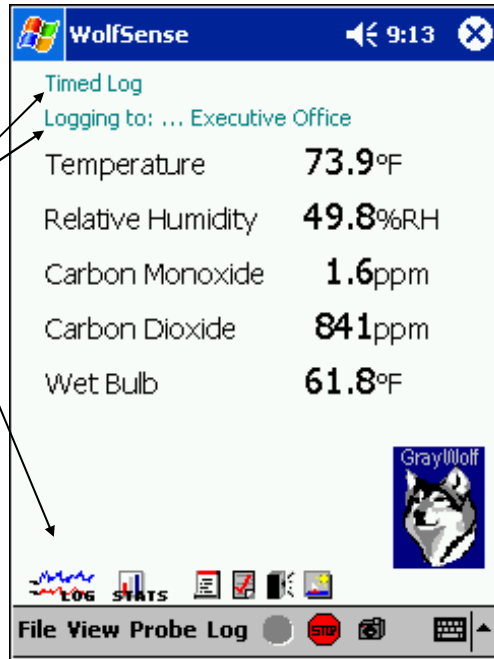


Figure 16 - View while Logging*

You can also transfer the location file from the PPC to a desktop PC. (See **“WolfSense PPC to WolfSense Data Transfer”** on page 27.) Then open the location file in WolfSense PC.

*Note; WolfSense 2.01 alternatively allows a “rolling display” in log mode, with several sets of previous readings displayed.

Associated Notes

Text notes, drawings, audio notes and Word template reports can be attached to each Location file. Optionally (with **Advanced Annotation** software), event notes, digital photo files, Pocket CAD/CAM and custom linked notes may also be attached. On the **File, Notes** screen tap Note to access the Notes menu. Alternatively, use the **Log, Locations** menu, highlight the desired Location and select **NOTE**.

Each location file may have one each text note, drawing note, audio note or custom note and unlimited Pocket Word templates and event notes attached. All notes may be updated as often as needed.

All notes (except audio notes and some custom notes) may be printed from the desktop PC after transferring location files from the PPC to the desktop PC. See **“Viewing and Printing Location Files, Notes and Calibration Data”** on page 27. Just

as you do when you set up a log, you must first select the location file for which you wish to create notes.

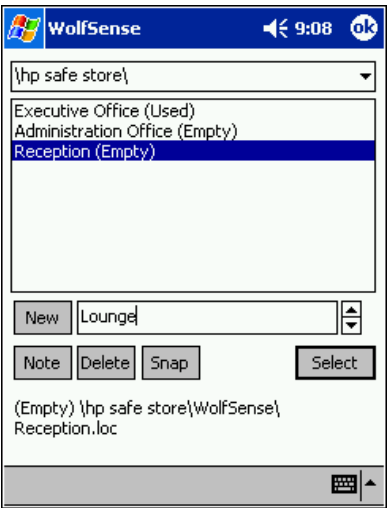


Figure 17 SELECT LOCATION dialog box: Using Notes

NOTEBOOK dialog box.

Tap **Create**.

The **Edit** button will be available only if a note already exists for the location.

From the main WolfSense PPC screen,
tap **Log, Locations**.
Tap the desired location file name to highlight it.
Tap **Note**.
The Notes Dialog box will open so you may create a text note or drawing note for that location.

Text Notes

Tap **Text** in the



Figure 18 NOTEBOOK dialog box

Tap inside the edit window to activate the cursor

Tap the **Keyboard** icon on the PPC toolbar.

Type or revise a text note using the text editor provided.

Tap the **Enter** key to start new lines of text; tap the arrow keys to move the cursor through the text.

Tap the **Keyboard** icon to minimize the keyboard.

Tap **Save/Close** to exit the editor, or tap **Cancel/Close** to close the note editor without saving any changes.

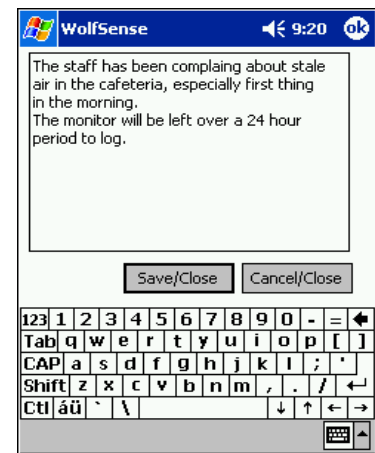


Figure 19 - Text Note window

Drawing Notes

Tap **Drawing** in the NOTEBOOK dialog box.

Tap **Create**.

The **Edit** button will be available only if a drawing already exists for the location file selected.

Create a drawing with the ink-capture editor provided.

To draw points, tap on the screen.

To draw freehand, hold the stylus on the screen while moving it.

To remove all points drawn since the last time the stylus touched the screen, tap **Undo**.

To remove all points, tap **Clear**.

Tap **Cancel/Close** to close the editor without saving any changes, or Tap **Save/Close** to save the file with changes.

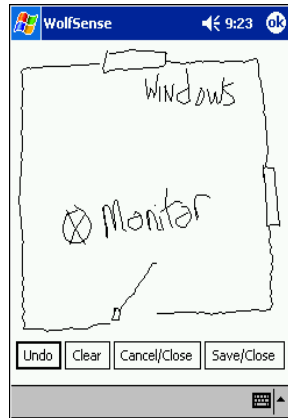


Figure 20 Drawing Note Window

Documents

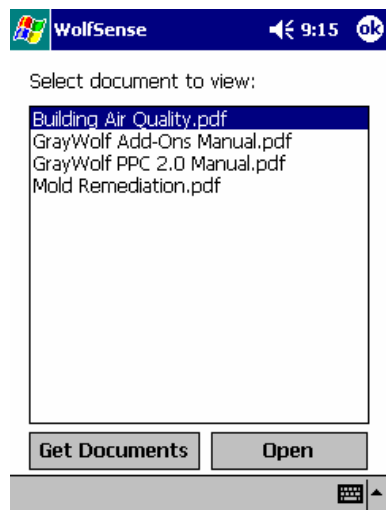


Figure 21 – Documents screen

Select **File, Documents** to open files that you want easy access to while running the WolfSense application. Click **Open** to open up the files, including Adobe Acrobat .pdf files and Pocket Word files.

Click **Get Documents** to add any files on your PPC to the Documents list. Use Microsoft ActiveSync to load documents onto your PPC from your PC, or download them on-line if your PPC has internet connectivity.

Note, you'll need to install Adobe's free Acrobat Reader for PPCs to read .pdfs. It is available on line at:

<http://www.adobe.com/products/acrobat/acrrmobiledevices.html>

Probe Menu

From the **Probe** menu, you will be able to view information about the probe, calibrate the probe, or view active calibration data. You can also set the parameters for Basic Volume Flow calculations and access the optional Add-On Modules DuctCal, HoodCal and VentCal.



Figure 22 – Probe menu

Probe Information

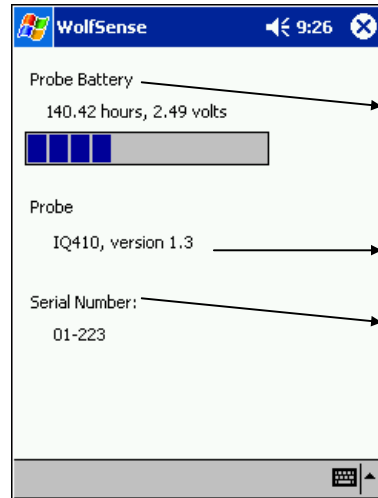


Figure 23 - PROBE INFORMATION display

To display the status of the probe, tap **Probe, Information.**

Probe Battery - how much battery time is left. Battery life calculations are based on standard alkaline batteries used at 70°F (21°C). Battery life will vary depending on the battery manufacturer and the ambient temperature at which the probe is used.

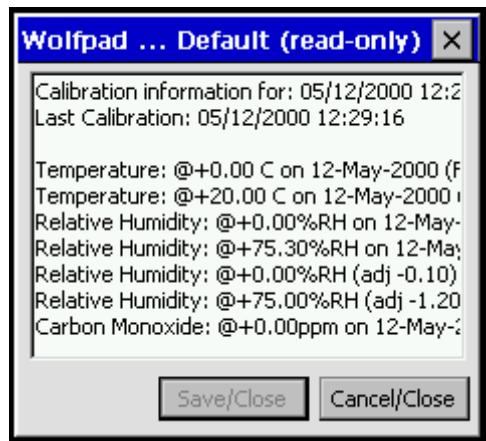
Probe Type - model number of probe.

Serial Number - unique identifier of probe.

Probe Calibration Data

Calibration data includes date, last factory calibration, last user calibration and settings for each parameter. It is stored in the probe and a copy is made (along with the measurement data) in every location file. Any time calibration data changes, the new data is appended to the calibration data already in the location file so you have a complete record of calibrations for all measurement data in each location file. Any

location file transferred from the PPC to the desktop PC will carry this calibration data with the measurement data.



You may view calibration data from WolfSense PPC on the PPC or on your desktop PC after location files have been transferred to it.

From the WolfSense PPC main screen, tap **Probe**, **View Active Cal** or the **Calibration Data** icon in the lower left-hand corner of the screen.



From the WolfSense PC main screen, open a location file and click on the **Calibration Data** icon in the lower right-hand corner of the screen.

Figure 24 – Probe Calibration Data

Probe Calibration

The probe may be calibrated in one of three ways:

- at the factory, according to GrayWolf standards;
- at the factory (or an outside calibration laboratory) using NIST-certified traceable standards;
- by the user (described in this section).

You cannot change factory and NIST calibrations. Dew Point, Wetbulb Temperature, Absolute Humidity, Specific Humidity and Humidity Ratio, which are all derived from Temperature and Relative Humidity, has no calibration.

The range for each parameter has two pre-set calibration points. Normally, you only change these points to match reference equipment, reference gas or salt values for calibration.

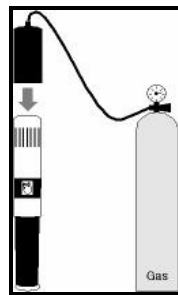


Figure 25 - Calibration Environment for Gas Sensors
CA-HD1Flowhood over Probe

Calibration should be performed at least every 12 months on the %RH and temperature sensors and at least every 6 months on gas sensors, although certain Toxic Gas sensors and the O₂ frequent calibration. Refer to the on page 32 to determine the will meet your accuracy frequent calibration is also sensors are exposed to heavy cigarette smoke. Note protocols advise calibrating CO frequently. The airspeed probe factory for calibration every 12 application, every 6 months for test applications.

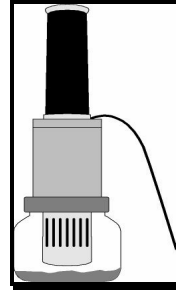


Figure 26 - Calibration Environment for %RH: CA-RH1 cal kit probe adapter jar with salt solution.

sensor require more sensor drift specifications calibration frequency that requirements. More recommended if the contaminants such as that most IAQ monitoring and CO₂ sensors more should be returned to the months for most fumehood face velocity

GrayWolf provides kits for %RH, See “

CO and CO₂ calibration.

Probes & Accessories” on page 36 for the contents of each kit. Inquire about the availability of reference gases for other gas sensors.

To set up the correct calibration environment for the gas sensors place the flowhood over the probe (**Figure25**). For Relative Humidity (%RH)*, place the probe upside down in the adapter on the jar of salt solution (**Figure 26**).

Note: If WolfSense detects that a sensor may have drifted out of specification, the ^{*Check}CAL icon will appear, along with a * next to the parameter that may need to be checked. However, do NOT rely on this indicator to ensure proper calibration because WolfSense can only detect sensor drift in some instances.



Figure 27 - PROBE CALIBRATION dialog box

GrayWolf.

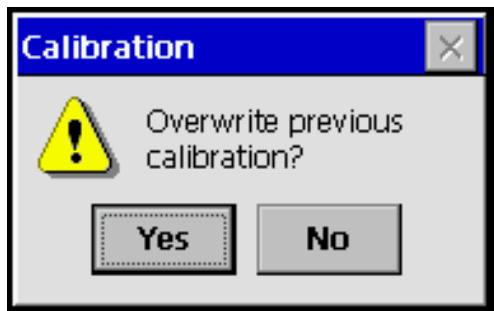


Figure 28 - CALIBRATION Warning dialog box

To calibrate the probe, tap **Probe, Calibration**.

Tap the ▼ arrow to see the drop-down list of user-calibrated parameters.

Tap the parameter you want to calibrate.

Tap the high or low point value.

Tap the keyboard button to Edit the CAL POINT to match your reference value, if necessary. CAL POINT must match the gas or %RH reference you use. Recommended STABILITY TIMES are shown but, but you may edit it if you wish. The Stability Time is, essentially, a fudge factor that allows extra stabilization, in addition to the stability that the user has determined.

If you are over writing a previously done User Calibration a warning window with the message "Overwrite previous calibration?" will appear. You must select Yes to continue.

Tap **Calibrate** to begin the calibration process.

Optional: Tap **Default** to force all calibrations to revert to the factory defaults for calibration points and stabilization times initially supplied by

Optional: Tap **Clear** to remove the current calibration. If a user calibration is cleared, the probe will use a NIST calibration (if available) or the factory calibration.

Clear affects only the selected calibration point.

If you changed the calibration point value, you will be prompted to confirm this action.

WARNING! Confirming this action will overwrite the existing calibration settings.

Tap **Yes**.

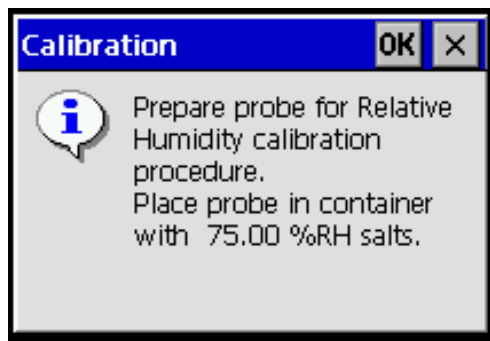


Figure 29- Set up Calibration Environment

A countdown screen shows the additional stabilization time allowed and remaining for this measurement.

Once the stabilization time has elapsed, the software will automatically record the current value of the measurement. You may then continue with the other calibration point or other measurement parameters.

Place the probe in the appropriate calibration environment.

Start the flow of gas across the gas sensors, or place the probe in the %RH jar and adapter.

Tap **OK**.

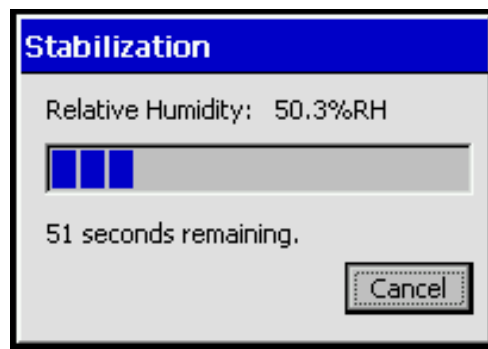


Figure 30 - Calibration Countdown screen

All calibration information is stored in the probe so that each probe “remembers” its correct calibration values. You will be prompted to send the updated calibration information to the probe.

NOTE: No changes to the calibration information are confirmed to the probe until you tap **OK** to exit the calibration dialog box.

Tap **Yes** to send the new calibration information to the probe, **No** to abandon your changes, or **Cancel** to return to the calibration dialog box.

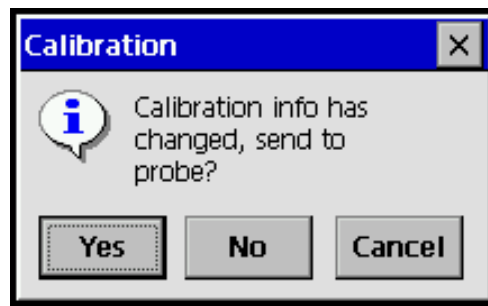


Figure 31- Last Chance to Stop Changes to Calibration Settings of Probe

Navigating in WolfSense PC

WolfSense PC is the data analysis and report generation software that is supplied to run on your WIN 95/98/2000/NT/Me/XP computer.

From the main screen, you will perform all the functions available with WolfSense PC. The pull-down menus and toolbar buttons are described briefly below.

Pull-Down Menus

File - to manage files: OPEN, OPEN RESULTS from Add-Ons modules, NOTEBOOK open DOCUMENTS PRINT, PRINT PREVIEW and SETUP EXPORT, list of recently used files, TRANSFER, EXIT.

Edit - to COPY selected columns onto the Windows clipboard so they may be pasted into Word, Excel or other programs. All columns are selected by default. Select a particular column or columns by clicking on the column headings.

View - to show or hide the TOOLBAR, STATUS BAR and location file STATISTICS and to CHANGE

FONT.

Window - to CASCADE or TILE windows, ARRANGE ICONS, location file in use.

Graph - to CREATE graphs.

Help - to show HELP Topics, MOBILE DEVICE HELP for additional help with WolfSense PPC Links to MANUALS, FAQs, ABOUT WOLFSENSE PC.

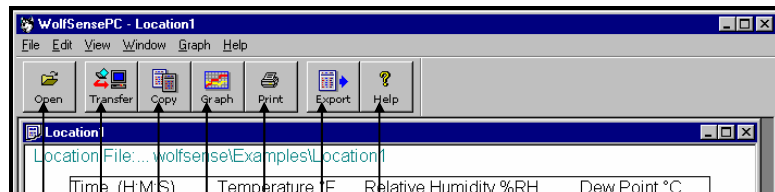


Figure 32 - WolfSense PC Pull-down Menu and Toolbar Buttons for Open Files

Toolbar Buttons

Help - shows HELP TOPICS on WolfSense PC.

Export - EXPORTS data in comma-separated file to a word processor, spreadsheet or other program.

Print - PRINTS tables or charts as they appear on the screen.

Graph - displays data graphically, with many options for constructing the GRAPH.

Copy - to COPY columns onto the Windows clipboard for pasting into other applications. See Pull-down Menu, EDIT, above.

Transfer - TRANSFERS files manually between the PPC PC and the desktop PC

Open - OPENS location files in the PC directory you chose at installation for transferred files.

WolfSense PPC to WolfSense PC Data Transfer

After gathering data on the PPC using WolfSense PPC, you will use the file transfer utility in WolfSense PC to move location files from the PPC to your desktop PC's hard drive. WolfSense PC software on the desktop PC will print, graph and/or export to spreadsheets the transferred location file data.

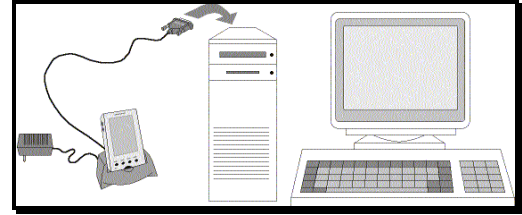


Figure 33 – PPC connected to desktop PC for file transfer

NOTE: *It is recommended that you frequently move location files from the PPC to your desktop PC's hard drive for permanent storage. To make it easier to locate your transferred files Make sure the location files on the PPC are placed in the My Documents\WolfSense folder that was created during installation.*

When you are ready to transfer files from the PPC to the desktop PC, attach the serial or USB cable from the docking cradle to your desktop PC and place the PPC in the docking cradle. When the desktop PC and PPC are communicating, the connection icon will appear on the task bar of both the PPC and PC. If the desktop and PPC do not connect automatically, you may have to initiate communications manually:

- From your PC desktop, double-click on the **Microsoft ActiveSync** icon. Click on **File, Connection Settings** and make sure that the box for "ALLOW SERIAL CABLE OR INFRARED CONNECTION TO THIS COM PORT" is checked. Check the Communications parameters.
- If you are using a USB cradle make sure that the box for "Allow USB connection with this desktop computer" is checked.
- You may need to lift the PPC from the cradle and place it back onto the cradle.
- Check that the cable from the cradle is connected to the correct PC port.
- If you are still having trouble connecting to the desktop PC try a Soft Reset.

Using WolfSense PC's Transfer Utility

WolfSense PC uses Microsoft ActiveSync™ software to establish the link between your PPC and desktop PC. The Transfer Utility then moves location files from the PPC to your desktop PC.

From the PC desktop, click on **Start, Programs, GrayWolf, WolfSense PC** or click on the **WolfSense PC** icon.

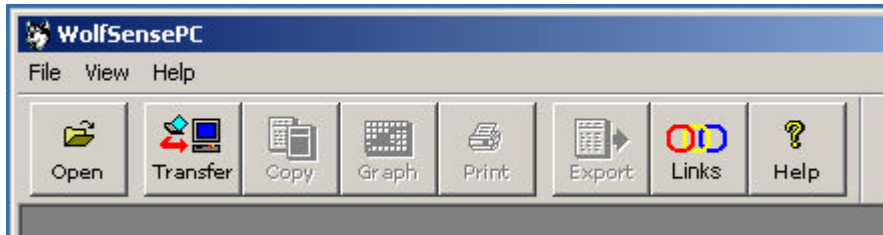


Figure 34 - WolfSense PC Main Screen Tool Bar

Activate the Transfer Utility by clicking on **File, Transfer** or the **Transfer** toolbar button.

ActiveSync (or WolfLink) will link the PPC and desktop PC.

Then you will see the TRANSFER dialog box below. It works like the Windows™ Explorer:

- Expand or collapse a tree item by clicking the + and - signs.
- Select a location file by clicking on its name.
- A selected item appears in reverse video.

Once connected, you will see the names of the location files in the \My Documents\WolfSense folder on the PPC.

WolfLink Software

The Transfer Utility in WolfSense PC normally uses MicroSoft's Active Sync to establish the connection between the desktop computer and Pocket PC. ActiveSync is a separate program that must be installed and setup on the users Desktop Computer.

For users who do not want to use ActiveSync (and for systems that are not compatible) GrayWolf has developed an alternative method called WolfLink.

Using WolfLink:

If ActiveSync is NOT installed on your system, pressing the TRANSFER button in WolfSense PC will automatically start WolfLink. If ActiveSync is installed on your system, you may uninstall it or use Windows Explorer to run WolfLink.

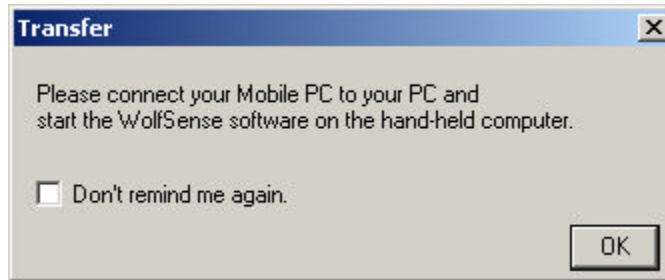


Figure 35 – WolfLink Transfer Dialog Box

When you start WolfLink, you will receive a message instructing you to make sure that WolfSense is running on your Pocket PC.

Start WolfSense on the Pocket PC. Make sure the cables are connected to an available communications port on your PC. The WolfLink Transfer program will cycle through Comm ports until it is able to connect to the Pocket PC.

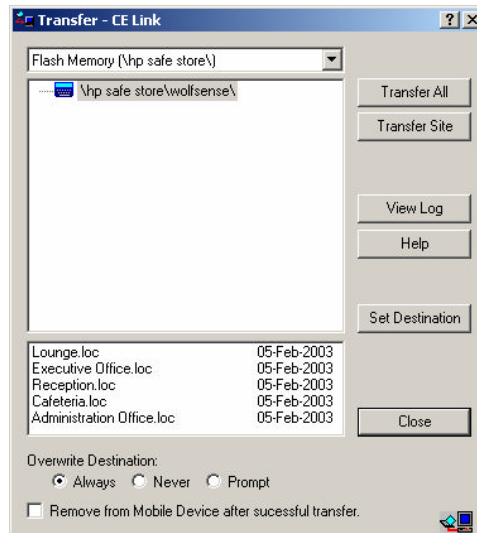


Figure 36 - WOLFSENSE TRANSFER dialog box

Select the location of your .loc files or -

Click on **Transfer All** to transfer all locations. Files will be saved to the last directory selected or to MY Documents\WolfSense by default

When connected to the PPC, **Transfer Site** and **Transfer All** have the same effect.

Click on **View Log** to see the results of the last transfer, such as errors and files deleted.

Click on Set Destination to change the directory and drive .loc files are saved to.

OVERWRITE DESTINATION - Check ALWAYS or NEVER to overwrite any location files already stored on the desktop PC. ALWAYS is the default at first use.

REMOVE FROM MOBILE DEVICE AFTER MOVE - The default is to leave location files that were transferred on the PPC. If you wish to delete files after they are moved, check the checkbox.

Click on **Close** when you have finished transferring all the location files you need.

NOTE: Although only .loc location files are displayed, all associated Note files, report templates and calibration data files are moved with them.

WolfSense PC Software

Viewing and Printing Location Files, Notes and Calibration Data

Although Data, Notes and Calibration Information may be viewed on the PPC, location files are viewed optimally from WolfSense PC on the desktop PC. Location files, Text Notes, Drawing Notes and Calibration Data may only be printed and manipulated from WolfSense PC. See “Navigating in WolfSense PC” on page 253 for ways to manipulate your data. Printing and graphing are shown below.

After file transfer is complete, click on **Start, Programs, GrayWolf, WolfSense PC**.

From the main WolfSense PC screen, click on **File, Open** or the **Open** toolbar button to see location files now stored on your desktop PC.

Click or scroll through the location file names to find the location file you want to open.

Click on the location file name.

Click on **Open**.

The file will open in a columnar format.

To print the location file, click on **File, Print, OK** or the **Print** toolbar button.

The icons in the lower right-hand corner indicate if a text note, drawing note or calibration data file exists for this file.

To print a text note, drawing note or calibration data, click on the icon in the lower right-hand corner of the screen to open the associated text note, drawing note, or calibration data file.

Click on **File, Print, OK**.

Figure 37 - Location File Open in WolfSense PC

Time (H:M:S)	Temperature °F	Humidity %RH	Dew Point °F	CO ppm	CO2 ppm
06-Oct-2007 19:14:48	73.9	45.7	51.6	0.0	364
19:19:48	75.1	44.0	51.7	0.0	405
19:24:48	75.5	43.8	52.0	0.0	421
19:29:48	75.7	43.5	51.9	0.0	425
19:34:48	76.9	43.3	52.1	0.0	427
19:39:48	76.0	43.3	52.1	0.0	434
19:44:48	76.1	43.2	52.1	0.0	430
19:49:48	76.1	42.7	51.8	0.0	427
19:54:48	76.1	42.5	51.7	0.0	427
19:59:48	76.2	42.4	51.7	0.0	427
20:04:48	76.1	42.6	51.8	0.0	449
20:09:48	76.2	43.8	52.6	0.0	493
20:14:48	76.1	43.3	52.2	0.0	476
20:19:48	76.1	43.2	52.1	0.0	463



Figure 38 - Notes and Calibration Data icons

Graphing Data Files in WolfSense PC

WolfSense PC offers options for creating graphs: an x-axis and one or multiple y-axes; grids and labels; and titles that may or may not be displayed.

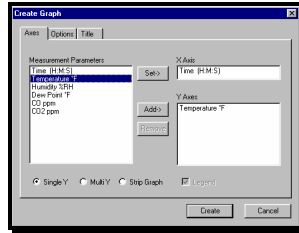


Figure 39 - Graph Axes

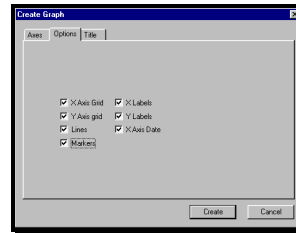


Figure 40 - Graph Options

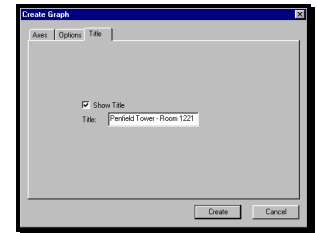


Figure 41 - Graph Title

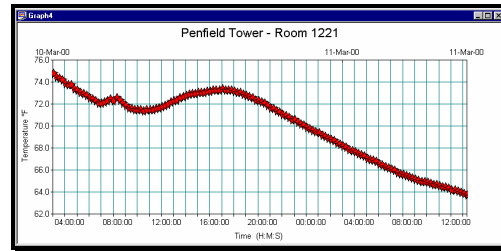


Figure 42 - Graph Generated from WolfSense PC

Refer to the Help files in WolfSense PC for detailed instructions on all features.

Maintenance, Cleaning, Service

PPC

Please refer to your user manual for specific instructions on the care of your PPC.

Probe

The probe requires very little maintenance: battery changes, periodic calibration, CO sensor replacement, (typically every 24-36 months), dusting.

See “Powering” on page 3 for details on battery changes.

The %RH, CO and CO₂ sensors may be calibrated in the field following the instructions in “**Probe Calibration**” on page 19. The temperature sensor is calibrated at the factory. It is recommended that you return your probe to GrayWolf for an annual factory recalibration and check-up.

The CO sensor has an expected operating life of approximately two years. Other electrochemical sensors also have a limited operating life. Refer to the TG-501 Sensor Table on page 32 for details. You may order replacement sensors from GrayWolf or return the probe to GrayWolf to have the sensors changed.

To change the CO or other electrochemical gas sensors yourself:

1. Unscrew the probe handle from the probe body. (See **Figure 3** on page 3.)
2. **Carefully** remove the black cap from the top of the probe. The temperature sensor is mounted inside the cage atop the cap. For probes shipped prior to July 2003, there is a wire from the sensor that goes from the cap to the probe PCB, and it can easily be broken if the cap is not *very carefully* removed. The cap is press fit and can normally be removed by hand. Hold the probe in both hands and push the cap away using your thumbs. Stop pushing immediately after the cap releases from the body and gently fold the cap over taking care not to damage the temperature sensor leads.
3. Unscrew the screw acting as the battery positive terminal at the probe body base.
4. Carefully pull out the circuit board from the probe body, making sure that the cable is fed in and that wires are not snagged.
5. Unplug the electrochemical cell, which is stuck with an adhesive pad to the board.
6. Plug in the replacement electrochemical cell *into the same socket* using the supplied adhesive pad to stick it down.
7. To reassemble the probe, use the reverse procedure.

Before using the probe with the new sensor, calibrate the sensor using the procedure described in “**Probe Calibration**” on page 19. Biased sensors (NO and EtO) must stabilize for at least 24 hours before calibration.

When not using the probe for a period of time, store it in a cool, dry, dust-free environment. The recommended storage temperature is 32°F to 70°F (0°C to 21°C). If the storage period will be more than four weeks, remove the batteries from the probe before storing.

If the outside of the probe becomes dirty, you may clean it using a slightly damp cloth. It is not recommended that you clean inside the probe. If the inside does get dirty or dusty, the probe should be returned to GrayWolf for servicing.

Summary of Cautions

Avoid operation in direct sunlight as %RH measurements may become erratic.

Do not immerse the probe in water.

This is a precision instrument. Do not drop the probe or subject it to undue vibration or shock.

When not using the probe for a period of time, store it in a cool, dry, dust-free environment. The recommended storage temperature is 32°F to 70°F (0°C to 21°C). If the storage period will be more than four weeks, remove the batteries from the probe before storing (except in the case that your TG-501 probe is outfitted with Nitric Oxide or EtO sensors as these sensors require a biasing voltage, even during long-term storage).

Refer to your PPC User Manual for tips on its long-term storage. Please note if you intend to store the device for several weeks or longer you may need to reinstall WolfSense when you go to use the PPC again.

Do not place the probe in an environment where condensation will form on it. The CO₂ sensor is an optical sensor, which uses an active detector and a reference detector for stable long-term readings. If condensation has formed on one of the detectors or if there are temperature differences between the two detectors, CO₂ readings may be erratic until the sensor has stabilized to its new environment.

Troubleshooting

Symptom – The Pocket PC has locked up

First try a Simple Reset to close all programs and applications that are running and restart Windows CE. Whether the power is on or off, use the stylus pen to press the **Reset** button (usually found on the back of the unit).

If the unit does not respond to the Simple Reset, you will need to perform a Full Reset, which returns the PPC to its original state as shipped from the factory.

A Full Reset erases from your PPC all data, files, and programs that have been added (like WolfSense). It does not erase hard-programmed software like Windows CE. Nor will it erase anything stored on the Internal Flash ROM or Compact Flash Card, which maintains a backup copy of WolfSense, as well as any data that you have recorded with WolfSense.

1. Back up the PPC to the desktop computer through synchronization before performing the Full Reset. This may not be possible since doing a Full Reset usually means the unit has not responded to less drastic measures.

Symptom – GrayWolf icon no longer appears on the PPC Start Menu

The GrayWolf application, WolfSense PPC, is not hard-programmed onto the PPC like Windows CE. If the icon no longer appears on the Start menu, you will need to reinstall the program from the internal Flash ROM, the optional ACC-CFx Removable Compact Flash Card or from your desktop PC. (see “Setting up the Hardware and Software” on page 4).

Symptom – No communication with the probe

Check to ensure that:

- The probe is plugged in properly.
- The probe has good batteries.
- If possible try to power the probe with the AC adapter, ACC-ADY2
- There is no visible physical damage to the connectors on the probe cable and AD-Px adapter.
- The battery contacts are clean and not corroded.
- The CO₂ sensor is flashing (visible through the slots) to indicate power is on.
- Another application on the PPC has not locked the use of the serial port. Shut down any other applications. If this fails, you may have to reset the PPC.

Symptom – Bad or erratic CO₂ or %RH readings

Check to ensure that:

- The probe is shielded from direct sunlight. Readings from these sensors can be affected by strong direct light.

Symptom – Bad or erratic CO₂ readings

Check to ensure that:

- The sensor is plugged into the circuit board by looking at the sensor through the machined slots. There is an o-ring between the sensor and the PCB. The sensor has gold contact legs and these should NOT be visible
- You have not moved the probe from a cold environment to a relatively warm, humid environment. This may cause condensation on the sensor, which will temporarily shift readings.
- The probe is not in a variable temperature air stream.

The CO₂ sensor is an optical sensor, which uses an active detector and a reference detector for stable long-term readings. If condensation has formed on one of the detectors or if there are temperature differences between the two detectors, CO₂ readings may be erratic until the sensor has stabilized to its new environment.

Symptom – CO₂ sensor continues to flash after the PPC is turned off

It is normal for the sensor to flash for a minute or two after power-down.

Specifications

Pocket PC

16MB RAM minimum (WolfSense IAQ/TOX/AIR/RH combined utilize <1 MB)
Windows™ CE 2.0, CE 3.0 ("Pocket PC 2002+" OS recommended)

DESKTOP PC (minimum requirements)

Windows™ 95/98/NT/2000/Me/XP
20MB minimum available hard disk space

PROBES

IQ-410 IAQ Probe

<i>Parameter</i>	<i>Range</i>	<i>Accuracy</i>
Carbon Dioxide	0 to 10,000ppm	±3%rdg ±50ppm
Carbon Monoxide	0 to 500ppm	±2ppm <50ppm, ±3%rdg >50ppm
Relative Humidity	0 to 100%	±2%rh <80%rh, ±3%rh >80%rh
Temperature	15° to 160°F (-10° to 70°C)	1%rdg ±0.6°F (±0.3°C)
Dew Point	-27° to 158°F (-33° to 70°C)	±4°F for %RH >10% (±2°C)

Probe Response Time: All sensors exhibit 90% response < 1 minute

Probe Dimensions: 2 in. (5cm) diameter X 12.5in. (30cm) length

Probe Weight with Batteries: 1 lb. 10 oz. (0.7kg)

Probe Power: Typical battery life with 2 alkaline D cells of 150 + hours @ 70°F (21°C); or 5VDC with AC adapter

TG-501 Toxic Gas Probe

<i>Parameter</i>	<i>Range</i>	<i>Limit of Detection</i>	<i>T₉₀ Response</i>	<i>Sensor Drift</i>	<i>Expected Life</i>
SO ₂	0-20.0ppm	0.2 ppm	<25 sec	<2% per mo	2 years
NO ₂	0-20.0ppm	0.1ppm	<20 sec	<2% per mo	2 years
NO	0-200ppm	1ppm	<20 sec	<2% per mo	2 years
CO	0-500ppm	1ppm	<35 sec	<2% per mo	2 years
H ₂ S (combo)	0-200ppm	0.5ppm	<35 sec	<5% per yr	3 years
H ₂ S (solo)	0-100.0ppm	0.1ppm	<20 sec	<2% per mo	2 years
HCN	0-100ppm	0.5ppm	<200 sec	<2% per mo	2 years
HCl	0-30ppm	0.7ppm	<70 sec	<3% per mo	18 months
NH ₃	0-100ppm	1ppm	<120 sec	<5% /6 mo	2 years
Cl ₂	0-10.0ppm	0.1ppm	<60 sec	<2% per mo	2 years
EtO	0-20.0ppm	0.3ppm	<120 sec	< 5% per yr	2 years
O ₃	0-1.00ppm	0.02ppm	<120 sec	<5% /6 mo	18 months
O ₂	0-25.0%	0.2%	<10 sec	<3% /3 mo	1 year

Probe Dimensions: 2 in. (5cm) diameter X 12.5in. (30cm) length

Probe Weight with Batteries: 1 lb. 10 oz. (0.7kg)

Probe Power: Typical battery life with 2 alkaline D cells of 1500 + hours @ 70°F (21°C); or 5VDC with AC adapter

AS-201 Airspeed Probe

<i>Parameter</i>	<i>Range</i>	<i>Accuracy</i>
Air Velocity	0 to 6000 fpm (0-30 m/s)	±3% of reading ± 3 fpm (0.015 m/s)
Temperature	15° to 160°F (-10° to 70°C)	±2°F (1.1°C)

Probe Dimensions: 31.5" (800mm) extended, 14.9" (380mm) collapsed length
1.5" (38mm) diameter handle, 0.375" (9mm) diameter tip.

Probe Weight with Batteries: 13 oz (375 grams)

Probe Power: Typical battery life with 2 alkaline AA cells of 30 + hours @ 70°F (21°C); or 5VDC with AC adapter

RH-302 and RH 310 Relative Humidity Probes

<i>Parameter</i>	<i>Range</i>	<i>Accuracy</i>
Relative Humidity	0 to 100%	±2%rh <80%rh, ±3%rh >80%rh
Temperature	15° to 160°F (-10° to 70°C)	1%rdg ±0.6°F (±0.3°C)
Dew Point	-27° to 158°F (-33° to 70°C)	±4°F for %RH >10% (±2°C)

Probe Dimensions: 2 in. (5cm) diameter X 12.5in. (30cm) length

Probe Weight with Batteries: 1 lb. 10 oz. (0.7kg)

Probe Power: Typical battery life with 2 alkaline D cells of 1000 + hours @ 70°F (21°C); or 5VDC with AC adapter

Probes & Accessories

PROBES

IQ-410	CO, CO2, %RH and Temperature Probe
AS-201	Telescoping Hotwire Airspeed Probe
TG- 501	Toxic Gas Probe (up to 5 gas sensors)
RH-302/ RH-310	%RH and Temperature Probes
CD-202/ CD-210	CO2 and Temperature Probes
CO-202/ CO-210	CO and Temperature Probes
IQ-402	CO2, %RH and Temperature Probe

PLUG-IN INSTRUMENTS

PM-201C	Thermo MIE Particulate Concentration Monitor w/serial card & software
PM-202C	Thermo MIE Particulate Concentration Monitor w/Cyclone, acces. & soft.
PC-102C	ARTI/MetOne 2 Channel Particle Counter w/CF serial card & software
PC-106C	ARTI/MetOne 6 Channel Particle Counter w/CF serial card & software
SL-601C	CEL 440 Sound Level Meter w/CF serial card & software

ACCESSORIES

PH-02	Compaq/HP iPaq Pocket PC Computer
PH-11	Dell Axim Pocket PC Computer
PH-21	Intermec Ruggedized Pocket PC Computer with barcode scanner
HH-04	NEC MobilePro 900 Handheld Computer
MN-01/2/3	Fujitsu Mini-Notebook Computer(s)
ACC-CF516	Compact Flash Memory Card provides extended data storage, easily removeable for use with a CF card reader.
ACC-SD516	516 MB Secure Digital Expansion Card
ACC-KEY1	Folding PPC Keyboard
ACC-PR1	Portable Printer
ACC-CAM1	Digital Camera
ACC-BC1-PH	Barcode scanning wand kit
ACC-TR1	Tripod for IQ-410 type GrayWolf probes and CEL 440 sound level meter
ACC-MNT1	PPC mount kit for ACC-TR1
SP-PRB-HDL2	Replacement probe handle for IQ-410 type GrayWolf probes (w/threading for ACC-TR1)

Cases	
PCC-05IQ	Probe pouch for IQ-410, TG-501, RH-302 or RH-310
PCC-06AS	Probe pouch for AS-201
PCC-10P	Hardshell security carrying case with lock
PCC-PH01	PPC pouch w/neck strap and belt clip

Connectors	
AD-P2	Probe to PPC adapter for HP iPaqs
AD-P11	Probe to PPC adapter for Dell Axims
AD-Px	Probe to PPC adapter for other PPCs
AD-H4	Probe to PPC adapter for NEC MobilePro 900 HPCs
AD-L9	Probe to PPC adapter for Notebook Computers
ACC-USB	USB to 9 pin serial D-shell adapter



Figure 44 – Open PCC-10P hardshell security carrying case.



Figure 5 –PCC-PH01 PPC pouch (front) with neck strap and belt clip. Also PCC-05IQ IAQ & toxic gas probe pouch (back) with shoulder strap.

Tip: To avoid influencing the CO₂ or %RH readings with your breath, wear the PCC-05IQ soft pouch behind you.



Figure 43 PCC-05IQ and PCC-06AS (longer) probe pouches

ACCESSORIES (continued)

Calibration	
CA-GS12	CO and CO ₂ calibration kit for IQ-410 probe includes: 300 & 1000ppm CO ₂ reference gases, 0.5 & 90 ppm CO reference gases, case, flowhood and regulator
CA-GSxx	Gas calibration kits for specific toxic gas sensors
CA-HD1	Gas calibration hood and duct-bleed accessory
CA-RH1	%RH calibration kit

Power	
ACC-ADY2	110/240VAC adapter for probes

SOFTWARE

DuctCal	Duct Traverse Calibration software
HoodCal	Fumehood Face Velocity Calibration software
VentCal	Ventilation Rate Calculation software
Advanced Parameters	Added OEM sensor msmts (Particle counting/concentration, sound level)
Advanced Reporting	Enhanced WolfSense PC Data Analysis, Reporting software
Advanced Annotation	Barcode locations and event/photo/custom note enabling software
Soft-CAD1-PH	Pocket CAD software for CAD/CAM drawing on PPCs
WolfSense PPC	Software for DirectSense Pocket PC applications
WolfSense HPC	Software for DirectSense Handheld PC applications
WolfSense LAP	Software for DirectSense Notebook/Laptop applications
SWS-PH01	1-year subscription to WolfSense PPC & WS PC upgrades

SPARES

ACC-ST3	Replacement styluses (set of 3) for HP iPaq Pocket PC
SEN-0-CO	Replacement CO sensor
SEN-xxx	Other replacement toxic gas sensors (inquire)
CO-0	0.5 ppm CO calibration gas cylinder
CO-95	95 ppm CO calibration gas cylinder
CO ₂ -300	300 ppm CO ₂ calibration gas cylinder
CO ₂ -1000	1000 ppm CO ₂ calibration gas cylinder
CO ₂ -5000	5000 ppm CO ₂ calibration gas cylinder
	Inquire about availability of other reference gas cylinders

IMPORTANT PRODUCT WARNING:

GrayWolf Sensing Solutions' DirectSense™ probes 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.
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- (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.

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Feedback

We appreciate your input. Please e-mail any comments or suggestions you may have about this manual to manuals@wolfsense.com.