



**PC-3500**  
**Indoor Air Quality Monitor**  
**User's Manual**  
**Version 0.3**

**GrayWolf Sensing Solutions, LLC**  
**6 Research Drive**  
**Shelton, CT 06484 USA**  
**Phone: 203-402-0477**

## 1. Unpacking and Inspecting the Instrument

Careful consideration was given to our packing material to ensure that your GrayWolf Instrument will reach you in perfect condition. If the Instrument has been subject to excessive handling during shipping, there may be visible damage to the shipping carton. In the event of damage, keep the shipping container and packing material for the carrier's inspection. Carefully unpack the Instrument from its shipping container and inspect the contents for damaged or missing items. If the Instrument appears damaged or something is missing, contact the carrier and GrayWolf immediately. Please save the container and packing material in case you have to return the Instrument.

## 2. Registering Your Product

It is important to register your product with GrayWolf to ensure that your warranty will be activated. To register your product, visit the GrayWolf Website and complete the form provided at:

<http://wolfsense.com/register.html>

## 3. Contacting GrayWolf

To order accessories, receive technical assistance, report damaged or missing items from your shipment, or to get the information for your nearest GrayWolf authorized reseller, please call **+1-203-402-0477**

## 4. Storing and Shipping the Instrument

This instrument utilizes a high quality advanced Lithium Ion Power Cell. This must be removed from the device prior to shipping the unit. If the unit needs to be packed and shipped for annual calibration or service, it is recommended to use the original packing materials. If they are not available please insure that the instrument is packaged in a box that is sturdy and that the unit is well protected with proper packing materials to cushion and protect the Instrument from harm during transit.

To store the instrument, place it in its optional case or in a box, under cover, within an environment as stated in our specifications.

## 5. Important Safety Information

This section presents important information intended to ensure safe and effective use of this product. Please read this section carefully and keep it in an accessible location.

- **Do not use near explosive, flammable, or reactive gases**
- **Do not attach directly to pressurized gases or liquids**
- **Do not improperly discard electronic instruments, only dispose in accordance with local regulatory requirements**
- **Defective or non-working Lithium-Ion batteries must be recycled; DO NOT DISPOSE IN TRASH**
- **This device contains a Class I Laser Product that is not accessible during normal operation; do not take this device apart, exposure to harmful laser radiation can occur**
- **Taking the device apart will void all warranties**
- **Do not use this device for any unintended purpose other than measuring of particles in ambient environments**
- **Do not operate the instrument with the inlet capped or plugged as this can cause damage to the Instrument**
- **Do not allow water or any other liquid to enter the inlet of the particle counter, this will damage the Instrument**
- **Any changes or modifications to GrayWolf equipment, not expressly approved by GrayWolf, could void the user's ability to operate the equipment, can risk serious injury and will void all warranties**

**FOR MORE COMPLETE WARNING AND CAUTION INFORMATION SEE USER MANUAL**

## 6. Installing Batteries



**CAUTION** - The GrayWolf Rechargeable Battery model EE-80003A is an intelligent battery pack with onboard processing to ensure proper cell loading and other functions that support the advanced power management features of this instrument. To ensure a long life for the batteries and for adherence to any local regulatory guidelines for the use, storage and disposal of Lithium Ion batteries, please follow these instructions carefully.



**WARNING** – Do not plug in or charge the GrayWolf Lithium-Ion rechargeable battery with any other power source other than the approved GrayWolf Rechargeable Battery External Charger - Model AS-99005A, or the GrayWolf Power Supply Model EE-80081.



Li-ion

**Caution: Dispose of GrayWolf lithium-ion batteries only at an approved local battery recycling center.**

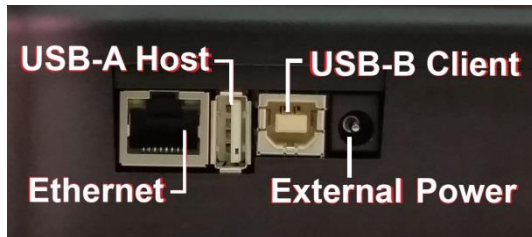
## 7. Product Views and Connections



Front View



Left Side View – Input / Output Connections



Rear View



Connecting Ethernet Cable



Connecting USB - B Client Cable



Connecting USB - A Host



## 8. Power Considerations and Connecting to AC Mains Power

The GrayWolf Instrument comes with a power adapter line cord for AC mains powered operation and battery charging. The power adapter is designed to operate with line voltage from 100-240V. The correct plug adapter must be used to match your local AC power adapter standard. If the Instrument power adapter does not have the proper plug configuration, please contact GrayWolf or an authorized reseller for service.

To install the country specific plug adapter, simply slide the adapter into the power supply as shown.



## 9. Install the GrayWolf's Battery Pack



Step 1 - Remove security screw with Phillips screwdriver



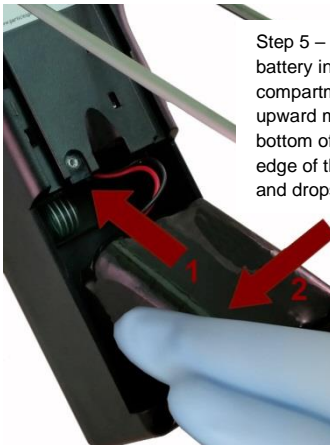
Step 2 – Pull out kick-stand



Step 3 – Push down latch while pulling battery compartment cover out and away



Step 4 – Insert battery connector plug into socket on PCB board in battery compartment. **Note: Red and black lead are closest to the bottom edge of the connector.**



Step 5 – Carefully push battery into the compartment, using an upward motion, until bottom of battery clears edge of the compartment and drops in freely.



Step 6 – Seat the battery's compartment cover in to bottom slot and push inward until the locking latch clicks. The security screw can be reinstalled with a screw driver or it can be removed for optional battery replacement use.



## 10. Turning the Unit On



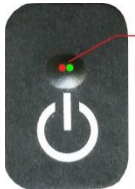
The External one-touch power and sample button on the handle will power the instrument on and off and will turn sampling on and off.

The one-touch external power button is conveniently located on the particle counter handle to allow for easy one touch operation. Holding the handle, place thumb over the button and press and hold until the particle counter turns on. Pressing the button momentarily starts the pump and begins sampling. Pressing the one-touch button again for 1 second stops sampling.

Holding the button for 2.5 seconds turns the instrument off. The unit can also be turned off from the power management screen.



## 11. Power and Charging Status LED

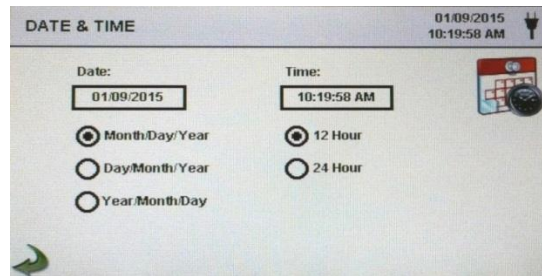


Power and charging status is indicated externally on the instrument in the middle of the one-touch power and sample button. The indication provides information on the charging rates and status (shown on right).

Green LED	Red LED	System State	Blink Timing On / Off
<input type="checkbox"/>	<input type="checkbox"/>	System Off, No AC Power	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC Charge Fast-Rate	1/4 sec. on / 1/4 sec off
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC Charge Slow-Rate	1/4 sec. on / 3/4 sec. off
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC Powered-On	Flash every 3 sec.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Battery Powered-On	Flash every 3 sec.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sleeping Mode	Both LEDs flash every 5 Sec. on battery

## 12. Operation – Initial Power Up – First Time Use

After the Particle Counter turns on for the first time a window will appear stating “Time of Day Clock Not Set”. Press OK to Set Clock.



### Date Format Button

Choose format for - Month/Day/Year, Day/Month/Year or Year/Month/Day indication by selecting the corresponding button on the touchscreen.

### Numeric Keypad

Touch date window, a numeric keypad will appear to allow for date change. For change or correction of input values navigate using < or > to move cursor. When complete, press OK button

### Time Format Button

Choose 12 hour or 24 hour clock indication by selecting the corresponding button on the touchscreen.

### Numeric Keypad

Touch time window, a numeric keypad will appear to allow for time change. Use 24 hour clock format for time entry to properly indicate AM or PM. For change or correction of input values navigate using < or > to move cursor. When complete press OK button - Time will display with AM/PM or in 24 hour format based on format selection.



### Back Arrow Icon

Press Back Arrow Icon on bottom left corner of the display to return to main home screen.

## 13. Included Items

Along with your 8000 Series Particle Counter you will also receive the following items:










Please check that all of the following items are included with your instrument.

Included Accessories		
Description	Part Number	Image
Isoprobe Threaded 0.1 CFM Nickel Plated Aluminum	PS-12041	
Purge Filter Assembly 0.1 CFM (2.83 LPM)	AS-99002A	
Rechargeable Battery 55Wh	EE-80003A	
Temperature / RH Probe 32-122°F (0-60°C) ±1°F (0.5°C), 15-90% ±2% (NOTE: This probe is optional for Model 8303)	EE-80014A	
Power Supply 15V ~2amp 100-240VAC (Select adapter -US, -EU, -UK or -CN)	EE-80081-XX	
USB Cable 6' (1.8m)	AS-99010	
Handheld User Manual and Data Transfer Software (USB Key)	MN-24001	








GrayWolf offers a number of optional accessories. Consult your User Manual or contact the GrayWolf Sales department or an authorized reseller for more information.

#### 14. Control and Menu Icons

Function Name	Location/Screen	Description of Function
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	<b>GrayWolf Logo Icon</b>	Home Screen	Press logo and a Product Information screen will appear displaying your model number, serial number, manufacture date, last calibration date, next calibration due date and number of channels activated on the unit. Press back arrow icon on bottom left corner of the display to return to home screen.
	<b>Speaker Icon</b>	Home Screen	Speaker Icon allows for volume adjustment using a pop-up slider bar. When pressed the cross bar on slider and move up and down for volume control. Icon will have red prohibited symbol when sound is turned off or muted.
<p data-bbox="289 537 391 594">20.2 C 35% RH</p>	<b>Temperature &amp; RH</b>	Home Screen	By pressing the temperature and RH value indication the screen will change to a large indication of the current Temperature, Relative Humidity and the current Barometric Pressure. Press back arrow icon on bottom left corner of the display to return to home screen.
<p data-bbox="282 636 414 693">2015/01/15 12:30:01 PM</p>	<b>Time and Date Indication</b>	Home Screen	To change time and date, press the date and time in the top right corner of the display and the change time and date screen will appear allowing for changes.
	<b>Power Management Icon</b>	Home Screen	On the top right of the display is the battery/power adapter indication icon. Pressing this icon displays the battery power management screen as well as the current battery status.
	<b>USB Communication Icon</b>	Home Screen	If a USB drive is connected, the USB Icon will appear. When pressed from the home screen the current record displayed will be saved to the USB drive.
	<b>Printer Indication</b>	Home Screen	If the Particles Plus Printer is connected to USB Port, the Printer Icon will appear. When pressed from the home screen the current record on screen will be sent to the printer.
	<b>System Warning Indication</b>	Home Screen	When the System Warning Indication Icon appears, please contact Particles Plus technical service for assistance. When pressed, the Instrument will display additional information.
	<b>Alarm Indication</b>	Home Screen	Visual indication of alarm condition if the particle count exceeds the user defined thresholds. When pressed this will silence the alarm.
	<b>Run Icon</b>	Home Screen	The Run Icon starts the instrument sampling. Once pressed the Run Icon will be replaced by the Stop Icon.
	<b>Stop Icon</b>	Home Screen	The Stop Icon stops the instrument from sampling.

## 15. Control and Menu Icons (Continued)

	Function Name	Location/Screen	Description of Function
	<b>Real-Time Meter &amp; Graphing Icon</b>	Home Screen	When pressed the Real-Time Icon switches between the Real-Time Meter mode, graphing of pulse/seconds and the Main Screen.
	<b>Recorded Data Icon</b>	Home Screen	When pressed, the Recorded Data Icon will display the saved data records page. All saved records can be accessed from this screen.
	<b>Reports Icon</b>	Home Screen	When pressed, the Reports Icon will display the standards options page, where ISO 14644-1, EU-GMP Annex 1, or Federal Standard 209E modes can be selected.
	<b>Particle Data Selection Icon</b>	Home Screen	When pressed, the Particle Data Icon changes the indicated values from particle count, count per cubic meter, or count per cubic foot and particle mass concentration (activated in channel management). These values are displayed simultaneously as differential and cumulative counts.
	<b>Differential Mode Icon</b>	Home Screen	When pressed, the Differential Mode Icon toggles the differential data values off and on the display during or after sampling.
	<b>Cumulative Mode Icon</b>	Home Screen	When pressed, the Cumulative Mode Icon toggles the cumulative data values off and on the display during or after sampling.
	<b>Location Menu Icon</b>	Home Screen	When pressed, the Location Menu Icon displays the Location and Recipe set up pages. This feature allows for the input of up to 1000 locations 20 characters long and up to 50 unique user-defined recipes.
<b>Mode: Automatic</b>	<b>Mode Indication</b>	Home Screen	The Mode Indication displays the current mode of operation the Instrument is set to. These modes include automatic, manual, continuous, and Real-Time Meter.
<b>Sample: 00:01:00</b>	<b>Sample Indication</b>	Home Screen	The Sample Time Indication displays the current sample time duration (Hours:Minutes:Seconds). This value will countdown from the set value for the sample time, displaying the amount of time left in the current sample. See Sampling Setup in Settings Menu.
<b>Hold: 00:02:00</b>	<b>Hold Indication</b>	Home Screen	The Hold Time Indication displays the current hold time, as an interval between samples. The maximum hold time is 99 hours, 59 minutes and 59 seconds. See Sampling Setup in Settings Menu.

## 15. Control and Menu Icons (Continued)



	Function Name	Location/Screen	Description of Function
Cycle: 1 / 3	Cycle Indication	Home Screen	The Cycle Indication displays the number of count samples that will be taken at a location in automatic mode. The maximum number of possible cycles that can be set is 9,999. The value is displayed as the sample number vs. the total number of samples to be completed in this cycle. See Sampling Setup in Settings Menu.
Record: 1 / 40000	Record Indication	Home Screen	The Records Indication is a display of the total number of sampling records saved in the Instrument out of the total number of records the instrument is capable of storing -- 40,000 possible saved records (rotating buffer) including particle count data, environmental data, locations and times per record.
	Settings Menu Icon	Home Screen	When pressed, the Settings Menu Icon brings you to the Settings Screen. All aspects of the Instrument's set-up can be managed from the icon driven sub-menus.
	Annotation Icon	Home Screen	The Annotation Icon, displays as a blue pencil. When pressed, written notation (up to 32 letters, can be added to a record during the time of the sampling, or after a sample has been taken. Advanced processing allows for annotations to be inserted while the unit is sampling with no interruption to the operation. The green pencil denotes that an annotation exists on that record. This feature can be disabled from the Configuration screen in Settings.
	Plus and Minus Button	Home Screen	When pressed, these icons scroll through 500 possible locations that can be saved and uniquely identified in the Locations set-up screen. Locations can have set recipes assigned to them in advance for ease-of-use during sampling.
	Green Flow & No Flow Indication	Home Screen	The three horizontal arrows indicate that the pump is working and that the internal flow sensor is detecting the correct flow rate through the Instrument. If a red line appears diagonally through three green arrows, it is an indication no flow.
	Back Arrow Icon	Various Screens throughout program	Press back arrow icon to return to the previous screen.

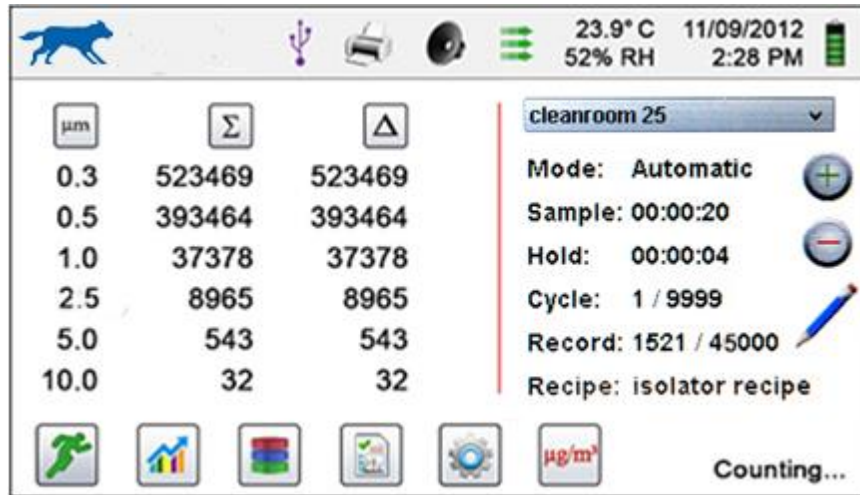
## 16. Operational Flow Chart - Menu Map





## 17. Sampling

### Main Sampling Home Screen



**Note:**  
Model 8303  
displays 3 channels



#### Taking a Sample

Using the one-touch power/sample button on the handle or the start sample icon on the display begins the sample.

To take a sample, press the start sample icon on the display, or momentarily press the one touch button on the particle counter's handle. This will begin the sample according to the sampling set-up parameters displayed on the right side of the home display. The sample setting can be changed in the Settings sub-menus.



#### Stopping the Sample

Using one-touch handle button or the stop sample icon on the display

To stop sampling, press the Stop Icon on the display or momentarily press the one touch button on the particle counter's handle.



#### Data Unit of Measure Selection

The Instrument can display the active sample or any recorded and saved record in count, count per cubic meter, count per cubic foot, or micrograms per cubic meter (in mass mode). This can be changed by pressing the icon, rotating through the data output indication options.

**For set-up menus instructions and detailed operations for your PC-3500 Series handheld particle counter please refer to your user manual.**