8000 Series
Operating Instructions

Setra Systems, Inc.

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Products by Setra Systems, Inc. - 8000 Series

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NOTICE: The contents of this manual are subject to change without notice.

Product Name: Setra Systems. Inc. 8000 Series Handheld Particle Counter
Model Numbers: 8306, 8506, 8506-20, 8506-30, 8303 & 8503

The following standards are applied only to the particle counters that are so labeled. EMC is tested using Setra Systems power supplies.

North America: EMI: FCC/ICES-003 Class A

FCC Compliance Statement for American Users

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

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1-1 Important Safety Information

This section presents important information intended to ensure safe and effective use of this product. Please read this section carefully and store 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 of in accordance with local regulatory requirements or contact Setra Systems for trade-in option.
- Defective or non-working Lithium-Ion batteries must be recycled, do not throw 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 no 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 vacuum pump.
- Do not allow water or any other liquid to enter the inlet of the particle counter, this will damage the unit.
- Any changes or modifications to Setra Systems equipment not expressly approved by Setra Systems could void the user's authorization to operate the equipment, can risk serious injury, and will void all warranties.

Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below.

Read the following carefully before handling the product.

WARNING:

Warnings must be observed carefully to avoid serious bodily injury.

CAUTION:

Cautions must be observed to avoid minor injury to yourself or damage to your equipment.

Important Note: The laser in this product is completely enclosed within a sensor with no user serviceable parts. In addition, the emission level does not exceed the AEL (accessible emission limit) of Class 1 under all conditions of operation, maintenance, service and failure.

1-2 Ergonomic Recommendations

CAUTION: In order to prevent or reduce the potential risks of ergonomic injury, follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company's safety programs to prevent employee injury.

- Reduce or eliminate repetitive motion
- Maintain a natural position while holding the Instrument
- Reduce or eliminate excessive force
- Keep objects that are used frequently within easy reach
- Perform tasks at correct heights
- Utilize a tripod or the built-in stand to use device in a freestanding mode
- Improve work procedures

1-3 Warnings for Use of Wireless Devices

Please observe all warning notices with regard to the usage of Setra Systems' particle counters with optional Wi-Fi communications module installed.

Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. Wireless devices should be switched off wherever you are requested to do so in hospitals, clinics, or health care facilities. These requests are designed to prevent possible interference with sensitive medical equipment.

Pacemakers

Pacemaker manufacturers recommend that a minimum of 15cm (6 inches) be maintained between a handheld wireless device and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with independent research and recommendations by Wireless Technology Research.

Persons with Pacemakers:
- Should ALWAYS keep the device more than 6 inches (15cm) from the pacemaker if turned ON.
- Should **not** carry the device on your chest.
- Should use the arm furthest from the pacemaker to minimize the potential for interference
- If you have any reason to suspect that interference is taking place, turn OFF your device.

Other Medical Devices

Please consult your physician or the manufacturer of the medical device to determine if the operation of your wireless product may interfere with the medical device.

1-4 Overview

Thank you for purchasing a Setra Systems particle counter, the most advanced handheld instrument available for measuring and monitoring particle counts in clean room and controlled environments for the Aerospace, Life Science, Data Storage, IAQ and Industrial Hygiene Markets.

This user manual will provide the detailed explanation and instructions for the proper use and operation of this feature-rich particle counter.

The Setra Systems 8000 series handheld particle counters provide the largest dynamic range of particle size measurement from 0.3 µm to 25.0 µm of any handheld, providing for true variable binning and allowing for channel size adjustment settings to 0.01 µm. This instrument utilizes 7 or more processors to maintain and manage the various functions of operation. It allows for the fastest, most efficient particle counting with high accuracy and resolution. The advanced processing also allows for many operations to take place simultaneously, even while the unit is sampling. This includes adding annotations to the current sample in progress, or adding annotations to *previously* recorded data while sampling is in progress.

The Real-Time Meter™ function is unique in its ability to fine tune the instrument's sensitivity in order to locate particle contamination sources with visual and audible indications. This versatile particle counter's ability to count higher than typical particle concentrations allows the Real-Time Meter to find point source contamination in cleanrooms as well as locating higher particle concentrations being generated in many industrial environments.

The 8000 series handheld particle counters also have a mass concentration mode, providing for particle mass monitoring of an environment for industrial health and safety regulatory purposes. The unit can measure with all (6) adjustable particle size channels (3 for model 8303) or capture PM levels indicated in µg/m3 with values corrected for particle density and refractive index correction.

The Technology designed into these particle counters includes advanced power management functions. Onboard processors in the battery packs manage cell loading and battery life. Advanced power monitoring features allow for >10 hours continuous monitoring use, or the industry's first sleep mode that permits the instrument to take intermittent samples over the course of a few months on one battery charge (dependent on sample settings).

The 8000 Series handheld particle counters also boast the most versatile communication methods and protocols of any particle counter on the market. The instruments allow for Ethernet or Wi-Fi, and USB Host or USB Client connectivity, providing for MODBUS RTU, ASCII, TCP, web-hosted server for remote operation, and USB connection to a PC or to a thumb drive for data uploads or downloads. The remote web server hosting feature allows for monitoring and control of the particle counter from any PC, smartphone or tablet simply by inputting the IP address of the particle counter on the local area network and entering it into any browser. The main processors allow for multiple connections from operators, staff and management, all with simultaneous access to review, monitor and control the operation of the instrument.

Thank you,

1-5 Specifications

Size Channels: **Model 8306**	Factory calibrated at 0.3, 0.5, 1.0, 2.5, 5.0, 10.0 μm variable binning
Size Channels: **Model 8506**	Factory calibrated at 0.5, 0.7, 1.0, 3.0, 5.0, 10.0 μm variable binning
Channels: **Model 8506-20**	Factory calibrated at 0.5, 0.7, 1.0, 5.0, 10.0, 20.0 μm variable binning
Channels: **Model 8506-30**	Factory calibrated at 0.5, 0.7, 5.0, 10.0, 20.0, 30.0 μm variable binning
Size Range	0.3 to 25 μm (8506-20: 0.5 to 55 μm, 8506-30: 0.5 to 75 μm)
Size Channels: **Model 8303**	Factory calibrated at 0.3, 0.5, 5.0 μm variable binning
Size Range	0.3 to 25μm
Size Channels: **Model 8503**	Factory calibrated at 0.5, 1.0, 5.0 μm variable binning
Size Range	0.5 to 25μm
Flow rates	0.1 CFM (2.83 LPM)
Light Source	Long life laser diode
Counting Efficiency	50% @ 0.3 μm; 100% for particles >0.45 μm per JIS
Zero Count	<1 count / 5 minutes (<2 particles / ft³) (per ISO 21501-4 & JIS)
Count Modes	Automatic, manual, cumulative/differential, mass concentration, count or concentration
Count Alarms	1 to 9,999,999 counts
Calibration	NIST traceable
Display	4.3″ (10.9 cm) WQVGA (480×272) color touch screen
Printer (Optional)	External thermal printer
Vacuum Source	Internal pump with automatic flow control
Filtered Exhaust	Internal HEPA filter
Number of Channels	6
Custom Size Channels	Calibration for custom size channels available
Audible Alarm	Adjustable built-in alarm
Battery	Removable Li-ion >10 hours continuous operation and >16 hours normal operation
Battery Recharge Time	<2 hours
Reports	ISO 14644-1, EU GMP Annex 1, FS 209E
Recipes	50 user-configurable recipes
Communication Modes	Ethernet and USB
Optional Communication Modes	Wireless 802.11 b/g, RS485 or RS232
Environmental Sensor	Includes temperature and relative humidity probe 32º to 122ºF (0º to 50ºC) ±1ºF (0.5ºC), 15-90% ±2% relative humidity (OPTIONAL FOR 8303)
Alarm	Alarms on counts for all particle sizes, low battery, sensor failure, environmental sensors and flow
Standards	ISO 21501-4 and JIS B9921
Calibration	Recommended minimum once per year
External Surface	High impact injection molded plastic
Dimensions (L x W x H)	10" x 5" x 4.5" (25.4 cm x 12.9 cm x 11.4 cm) includes handle and does not include probes

1-5 Specifications (continued)

Weight	2.2 lb. (1.0 kg)
Accessories	Quick start guide, operating manual on USB flash drive, isokinetic probe, temperature relative humidity sensor, purge filter, battery, data download software, USB cable, power supply & cable (8303 Rh/Temp Probe Optional)
Optional Accessories	Printed manual, carrying case, spare battery, external battery charger, external printer and isokinetic probes
Buffer Memory	45,000 sample records (rotating buffer) including particle count data, environmental data, locations and times. Scrollable on screen or printout
Sample Locations	Up to 1,000 locations 20 characters long
Sample Time	1 second to 99 hours
Power	110 to 240 VAC 50/60 Hz universal in-line power supply
Operating Conditions	41º to 104ºF (5º to 40ºC) / 20% to 95% non-condensing
Storage Conditions	32º to 122ºF (0º to 50ºC) / Up to 98% non-condensing
Warranty	2 Years. Extended warranties available.

Please note that specifications are subject to change without notice.

1-6 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-80127-XX**	
USB Cable 6' (1.8m)	**AS-99010**	
Handheld User Manual and Instrument Management Software (USB Key)	**MN-24001**	

1-7 Optional Accessories

Description	Part Number	Image
Wireless 802.11 b/g Output with Internal Antenna	EE-80092	
Handheld Carrying Case	AS-99015	
External Battery Charger 55Wh	AS-99005A	
Rechargeable Battery 55Wh	EE-80003A	
External Thermal Printer with 2 rolls of paper	AS-99011	
External Thermal Printer Paper - 1 Roll	AS-99012	
External Thermal Printer Cleanroom Paper - 10 Pack	AS-99013	
External Thermal Printer Spare Battery	AS-99014	

1-7 Optional Accessories (Continued)

Description	Part Number	Image
Isoprobe Threaded 0.1 CFM (2.83 LPM) Stainless Steel	PS-12070	
Isoprobe Barbed 0.1 CFM (2.83 LPM) Stainless Steel	PS-12022	
1/8" Inlet Barbed Fitting Stainless Steel	PS-12005	
Sample Tubing 1/4" OD (1/8" ID) per foot	AS-99018	
Handheld User Manual (Printed)	MN-24001P	
Handheld Validation Manual	MN-24002	
Certificate of Origin	MN-24000	
BACnet Gateway	229998	

1-8 Product Views

Front View

- Temperature & RH Probe
- Universal Sensor Port
- Isokinetic Probe
- 4.3" Color Touch Screen
- Power Switch & One Touch Sampling Button
- Touch Screen Stylus

Rear View

- 1/4"-20 Threaded Tripod Mounting Adapter
- Kick-stand
- Battery Compartment
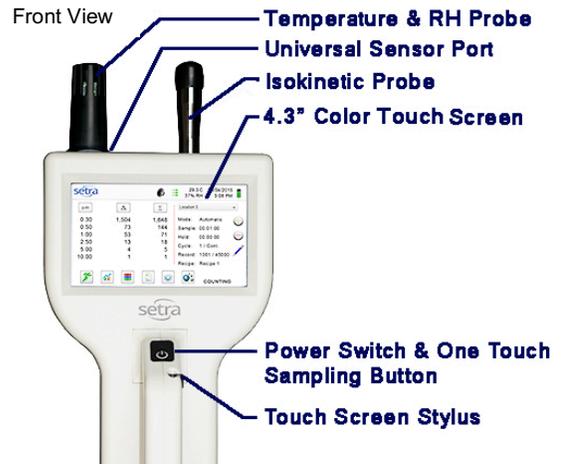
Left Side View – Input / Output Connections

- USB-A Host
- USB-B Client
- Ethernet
- External Power

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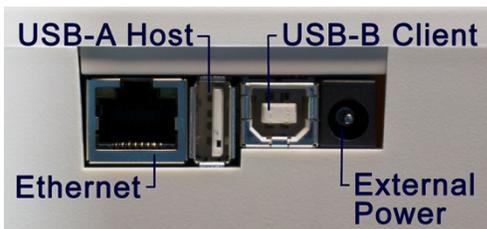
Connecting Ethernet Cable

Connecting USB - B Client

Connecting USB - A Host

Unpacking and Preparation for Use

2-1 Unpacking and inspecting the Instrument

Careful consideration was given to our packing material to ensure that your Setra Systems 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 Unit appears damaged or something is missing, contact the carrier and Setra Systems immediately. Please save the container and packing material in case you have to return the Instrument.

2-2 Registering Your Product

All Setra Systems Instruments are automatically registered upon sale for the warranty period and tracked by Serial number.

2-3 Contacting Setra Systems

To order accessories, receive technical assistance, report damaged or missing items from your shipment, or get contact information for your nearest Setra Systems authorized reseller, call **+1-800-257-3872 or Local: +1-978-264-0292**

2-4 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 it from harm during transit.

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

2-5 Power Considerations and Connecting to AC Mains Power

The Setra Systems 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 around the world. 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 Setra Systems or an authorized reseller for service.

2-6 Power Considerations & Connecting to AC Mains Power

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

2-7 Installing Batteries

CAUTION - The Setra Systems' 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 Setra Systems Lithium-Ion rechargeable battery with any other power source other than the approved Setra Systems Rechargeable Battery External Charger - Model AS-99005A, or using the Setra Systems

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Power Supply Model EE-80127-XX.   Using any other charger can cause fire, shock or serious injury.

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

2-7 Installing Batteries (continued)

Install the Setra Systems Battery pack into the instrument using the following steps:

Step 1 - Remove security screw with Phillips screwdriver.

Step 2 – Pull out kick-stand.

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

Step 4 –Insert battery connector plug into matching socket on PCB board in battery compartment. NOTE: red and black lead should be on bottom edge of connector.

2-7 Installing Batteries (continued)

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 into 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.

2-8 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.

2-9 Power and Charging Status LED (on power button)

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).
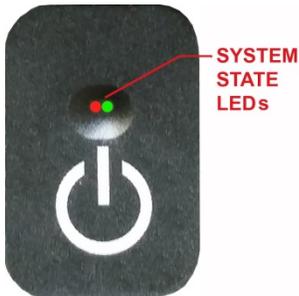
Unit plugged into AC (instrument screen on or off)
Charging: Red LED on
Charging Complete: Green LED on

Unit not plugged into AC (instrument screen on)
Battery Charge <10%: **Red LED** blinks every 3 seconds

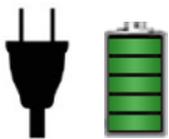**Unit not plugged into AC (instrument screen off)**
All LED's off

3–1   Control and Menu Icons

Function Name	Location/Screen	Description of Function

	Function Name	Location/Screen	Description of Function
	Setra logo icon	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.
	Speaker icon	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.
20.2 C 35% RH	Temperature & RH indication	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.
2015/01/15 12:30:01 PM	Time and Date Indication	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

3–1 Control and Menu Icons (Continued)

	Function Name	Location/Screen	Description of Function
	Power Management Icon	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.
	USB Communication Icon	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.
	Printer Indication	Home Screen	If the Setra Systems 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.
	System Warning Indication	Home Screen	When the System Warning Indication Icon appears, please contact Setra Systems technical service for assistance. When pressed, the Instrument will display additional information.

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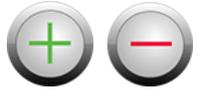|	Function Name	Location/Screen	Description of Function
	Alarm Indication	Home Screen	Visual indication of alarm condition if the particle count exceeds the user defined thresholds. When pressed this will silence the alarm.
	Run Icon	Home Screen	The Run Icon starts the instrument sampling. Once pressed the Run Icon will be replaced by the Stop Icon.
	Stop Icon	Home Screen	The Stop Icon stops the instrument from sampling.
	Real-Time Meter & Environmental TPM Screen Icon	Home Screen	Pressing the Real-Time Icon switches between the Real-Time Meter mode, graphing of pulse/seconds, The environmental PM2.5 indication display (with mass mode enabled) and the Main Screen.
	Recorded Data Icon	Home Screen	When pressed, the Recorded Data Icon will display the saved data records page. All saved records can be accessed from this screen.

3–1 Control and Menu Icons (Continued)

	Function Name	Location/Screen	Description of Function
	Reports Icon	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.
	Particle Data Selection Icon	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.
	Differential Mode Icon	Home Screen	When pressed, the Differential Mode Icon toggles the differential data values off and on the display during or after sampling.
	Cumulative Mode Icon	Home Screen	When pressed, the Cumulative Mode Icon toggles the cumulative data values off and on the display during or after sampling.

|	Function Name	Location/Screen	Description of Function
Location 2 ⌄	Location Menu Icon	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.
Mode: Automatic	Mode Indication	Home Screen	The Mode Indication displays the current mode of operation the instrument is set to. These modes include automatic, manual, and continuous.
Sample: 00:01:00	Sample Indication	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.
Hold: 00:02:00	Hold Indication	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.
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.

3–1 Control and Menu Icons (Continued)

	Function Name	Location/Screen	Description of Function
Record: 1 / 45000	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 -- 45,000 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 over a document 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 1000 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.

4-1 Operational Flow Chart – Menu Map

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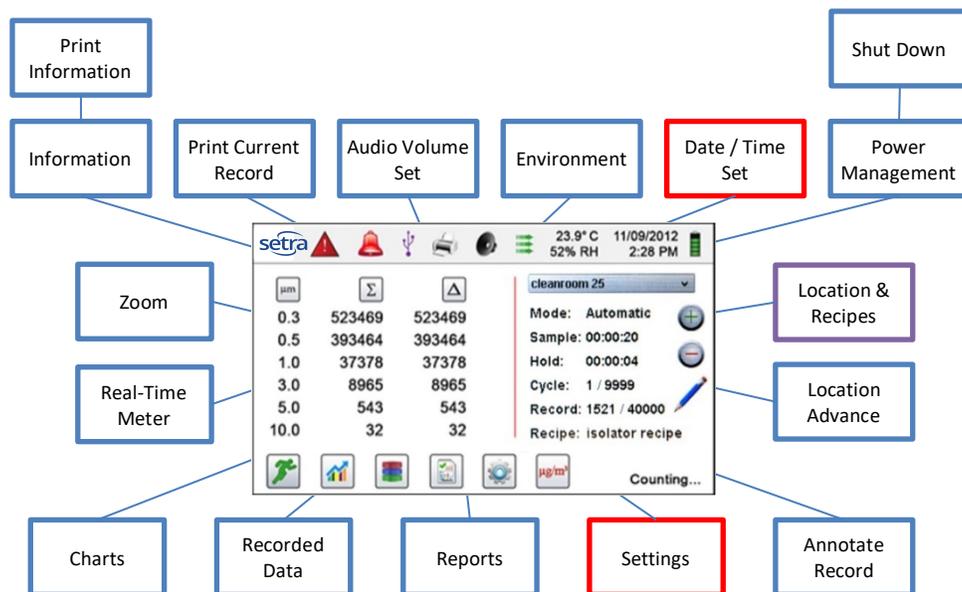
5-1 Operation – Initial Power Up – First Time Use

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.
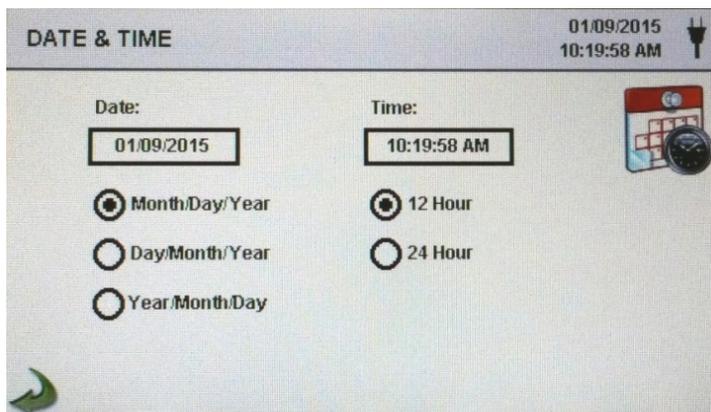
|		
Date Format Select Button		Choose format for - Month/Day/Year, Day/Month/Year, or Year/Month/Day indication by selecting the corresponding button on the touchscreen.
Numeric Keypad		Touch date window, a numeric keypad will appear to allow for date change. For change or correction of input values navigate using < or > to move cursor. When complete press OK button
Time Format Select 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 to return to the previous screen.

5-2 Display

The large color touch screen can zoom in and out on the home page at any time simply by touching any blank space on the screen.
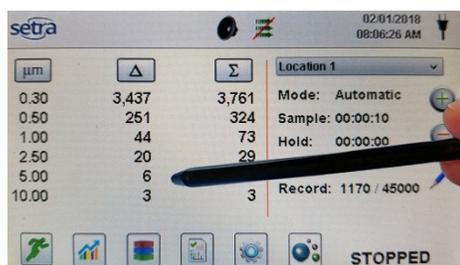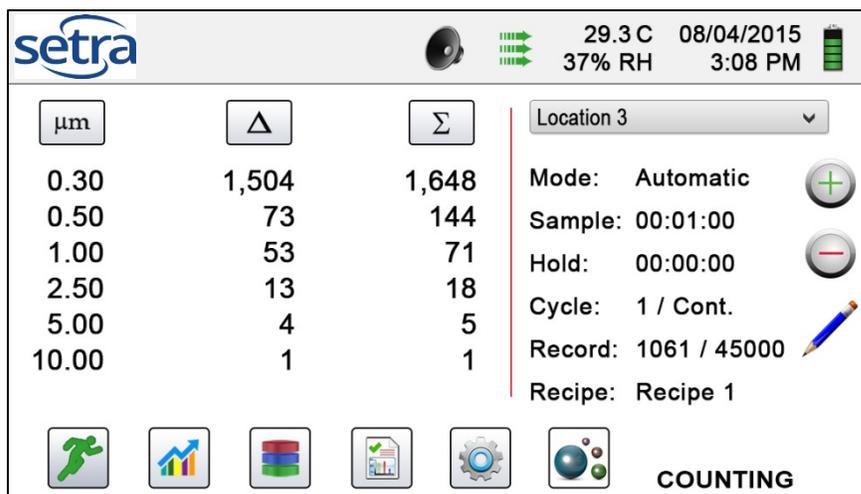

Un-Zoomed View   Zoomed View   25
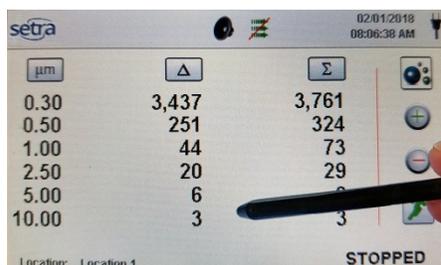
5-3 Taking a Sample

Main Sampling Home Screen

Note:
Model 8303 only displays (3) channels

| Icon	Title	Subtitle	Description
	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, select 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 the sampling event 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, counter per cubic meter, count per cubic foot, or micrograms per cubic meter (in mass mode, if enabled from the Channel Management Screen). This can be changed on the fly by pressing the icon, rotating through the data output indication options.

<p style="color:red; text-align:center">Important Note: Use minimum of 3 second sample to avoid unwanted counts. If a default of 3 seconds is not used, stray particles could be counted at start of sample.</p>

## 5-4 Real-Time Meter, & Environmental PM2.5 Display Function

The Instrument will display a bar graph visualization that rises and falls with the increase of pulses counted per second, per channel. This allows for the pinpointing of the cause of the contamination that is being detected in the environment. The closer the instrument is to the source, the higher the indication appears on the bar graph. This feature also graphically displays the pulses per second if the graph function is chosen, making the graph's historical information useful in point source detection.

5-4 Real-Time Meter and Graphing Function (continued)
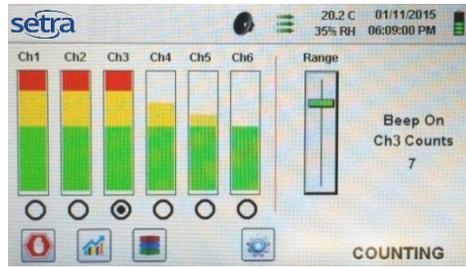
Channel 3 selected & signal at maximum value
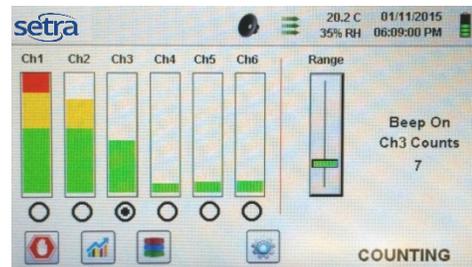
Range Slider Lowered to reduce Channel 3 value

While on Real Time Meter Page, the following steps allow for the features operation.
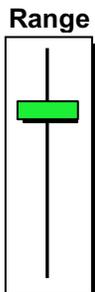
|		
	Start/Stop Sampling while on Real-Time Meter or Pulse Per Second Screen	The Sampling can be started or stopped from this screen using the Start/Stop icon buttons, or by using the one touch button on the handle.
	Channel Select – Radio Button	Select the channel size that is the focus of the contamination being investigated by clicking on the radio select button on the bottom of each channel. The channel selected also represents the data being displayed in the pulses per second graph mode.
Range	**Range – Sensitivity Adjustment Slider**	Using the touchscreen, drag the green Range slider bar up towards the top of the slider. This allows for the greatest sensitivity and signal from the contamination within the test area. As the unit gets closer to the concentration source the visual signal can increase and hit 100% of the indicated scale long before the actual source of the contamination is found. By pulling the Range Slider down, the sensitivity is reduced and the indication scaled down. This allows for more precise detection when getting closer to the contamination source. This procedure can be repeated until the source is identified.
	Switch to Particles Per Second Screen, or to Environmental PM2.5 Display	Pressing the Real-Time Meter Icon again, switches to the Particles per second graphical display page. Pressing it one more time displays the Environmental PM2.5 Air Quality Display. Pressing the Icon one more time returns the display to the home screen.

Real-Time Meter Particles/Second Graph
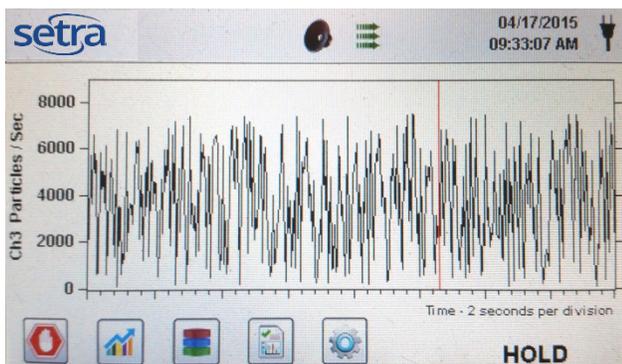
PM 2.5 Environmental Conditions Display
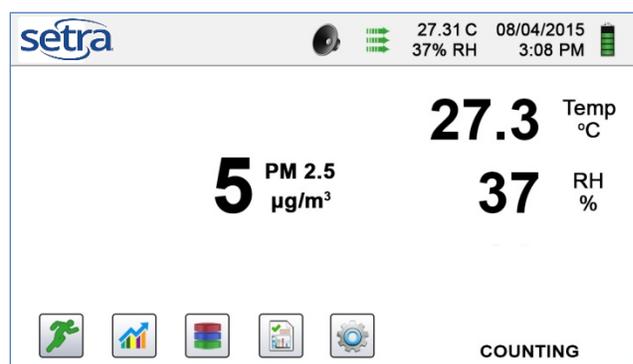
5-5 Recorded Data

The Particle counter will save up to 45,000 records. These records can be accessed by selecting the recorded data icon. The Recorded data page uses a horizontal slider bar that allows scrolling left and right through all records. Click on the white arrows for fine control in locating a specific record. Press the slider button with the stylus and drag left or right to navigate through large amounts of records quickly.

IMPORTANT NOTE: After the 45,000th sample is recorded the software must delete one block of flash memory to make room for the next record. Each block contains 28 records. After 28 records are deleted the next record number will become 44,972. The instrument will then count back up to 45,000 again. Each block removed is from the oldest records (first in, first out method).

Recorded Data Screen
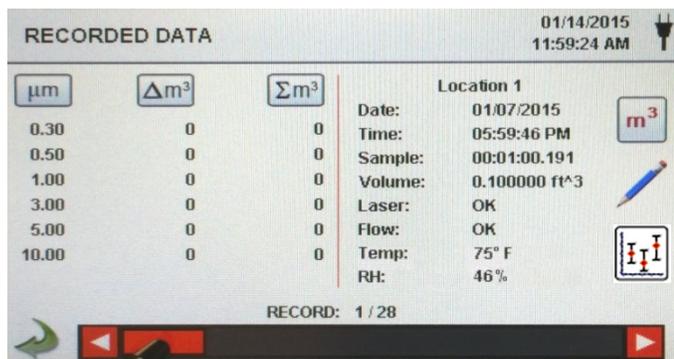
Print or Save the Current Record being displayed

If a Printer or USB thumb drive is attached to the instrument, the current record on the Recorded Data Screen can be downloaded or printed by pressing the corresponding Printer or USB Icon.

Turn off Indicated Cumulative or Differential value Columns

All displayed channel values can be turned off or back on from the recorded sample record by toggling the mode icons.

Change Indicated Data Units

The Recorded data indication can be changed to the corresponding calculated values by pressing the Particle Data Selection Icon. Press the icon to change view between particle count, count per cubic meter, count per cubic foot, or micrograms per cubic meter (if enabled for mass concentration mode in Channel Management).

**Adding Annotation To Recorded Data**

To add an annotation to an existing record, click on the **Blue** Pencil Annotation Icon. This allows for the inclusion of a written notation for the current sample record selected. The Annotation Keyboard will be displayed and the note can be entered. The **Green** pencil denotes that an annotation exists on that record. This feature can be disabled from the Configuration screen in Settings.
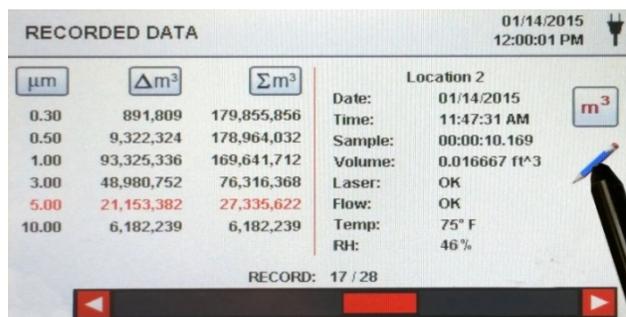
5-5 Recorded Data (continued)

Annotation Keyboard

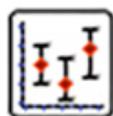
EDIT ANNOTATION FOR RECORD 17

door opened during sample
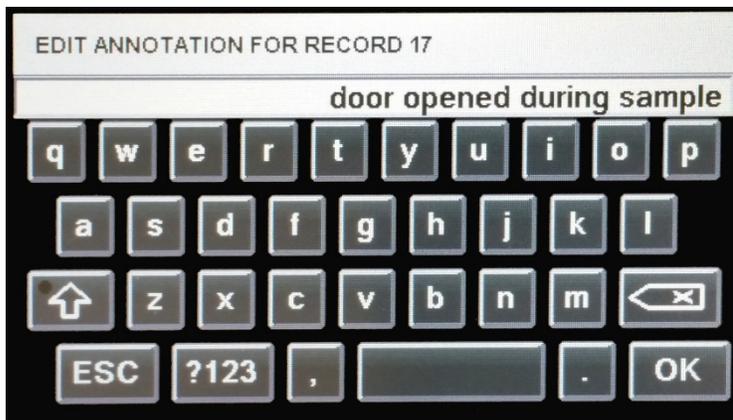
| Saved Annotation Indication and Icon | The green pencil over a document denotes that an annotation exists on that record. The annotation can be accessed or edited at a later time. |
| Special Notes – Cap Locks and Delete | Holding down the Shift button will activate or de-activate the cap locks functions. Holding down the backspace key will delete all text entered on the text line. |
| Statistics | Pressing the Statistics icon will provide an onscreen display of the min, max, and average values for the records selected. This function is disabled if a printer or USB stick is connected to the instrument. |

5-6 Reports

Accessing ISO, GMP, or Federal Standard Report Functions

REPORTS   01/14/2015
                                           12:01:52 PM

ISO 14644-1   EU-GMP ANNEX 1   FS 209E
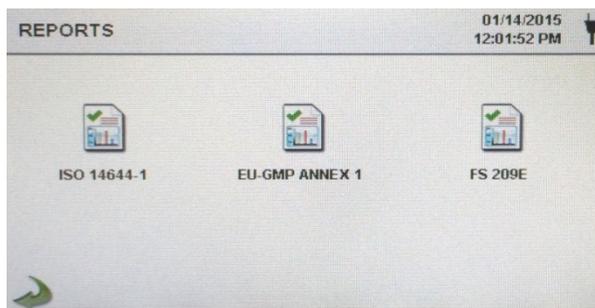
| ISO 14644-1 | Selecting this report icon allows for the generation of a report based on the parameters and guidelines of the ISO standard. |
| EU-GMP Annex-1 | Selecting this report icon allows for the generation of a report based on the parameters and guidelines of the European GMP Annex-1 standard. |
| FS 209E | Selecting this report icon allows for the generation of a report based on the parameters and guidelines of the US Federal Standard 209E. |

5-6 Reports (continued)

Selecting the specific report icon from the Reports Screen displays information for the chosen standard. The room parameters can be defined by pressing the Room Definition Button. To generate a report, select the Generate Report button. This creates a report document that can be saved to an external thumb drive, or printed to a connected printer.

By holding down the Create Report Button for 5 seconds, a sample report will be displayed with the current test records. These records will be added to the system's recorded data so that the values and information can be reviewed prior to actually completing the report and saving to an external source.

Generate

Create Report

After selecting Generate, the Report Generation screen displays.
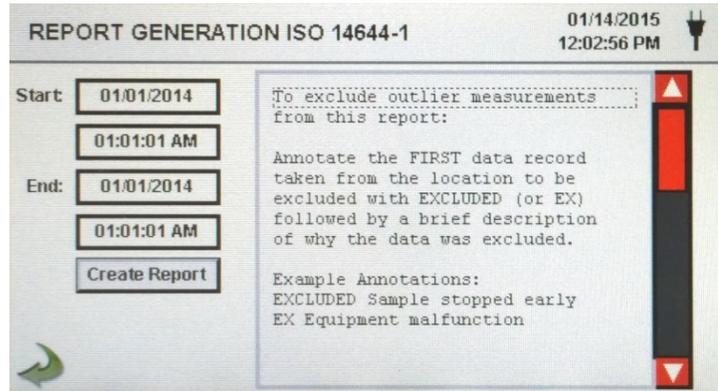
Create Report

The Start/End time and date are selected to enter the values. The report is created using the Create Report Button. If the values of the count or sampling set-up are incorrect, the report will indicate the errors prior to the report being generated. To exclude outlier measurements from the report:

Annotate the FIRST data record taken from the location to be excluded with EXCLUDED (or EX) followed by a brief description of why the data was excluded.
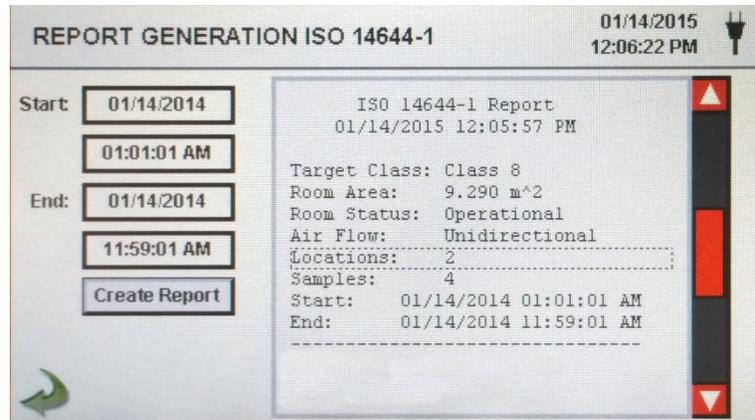
Example Annotations: EXCLUDED Sample stopped early or EX Equipment failure.

Room Definition
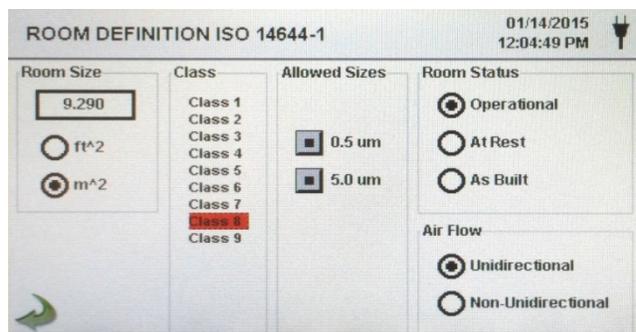
Each report standard has a Room Definition page that allows for information to be input defining the output of the generated report. Room size is input in square feet or square meters. The ISO class of the cleanroom being tested is selected, and the allowable sizes may be included or excluded in the report. The Room Status is selected as being Operation, At Rest, or As Built per the standard specification requirements. Airflow is recorded as being Unidirectional or Non-Unidirectional.

5-6 Reports (continued)

Sample of Report Output


```
REPORT GENERATION ISO 14644-1          01/14/2015
                                       12:06:22 PM

Start  01/14/2014              ISO 14644-1 Report
                              01/14/2015 12:05:57 PM
       01:01:01 AM
                           Target Class: Class 8
End:   01/14/2014          Room Area:    9.290 m^2
                           Room Status:  Operational
       11:59:01 AM         Air Flow:     Unidirectional
                           Locations:    2
       Create Report       Samples:      4
                           Start:   01/14/2014 01:01:01 AM
                           End:     01/14/2014 11:59:01 AM
                           ------------------------------
```

Printed Report Sample


```
|      ISO 14644-1 Report
     01/16/2015 06:54:08 AM

Target Class: Class 5
Room Area:      80.000 m^2
Room Status:  Operational
Air Flow:     Unidirectional
Locations:    9
Samples:      11
Start:    01/16/2015 06:53:01 AM
End:      01/16/2015 06:53:09 AM
------------------------------
Class Class 5 (at 0.3)      PASS

 Class Limit:    10,200.00 P/m^3
 Min Sample Vol: 0.00283   m^3

 Grand Mean:             6,349.21
 Std Dev:                2,154.42
 Std Error:                718.14
 95% UCL:                7,684.94

Location                Avg P/m^3
14644 Test Loc 1          8,750.0
14644 Test Loc 2          6,607.1
14644 Test Loc 3          2,107.1
14644 Test Loc 4          3,785.7
14644 Test Loc 5          5.857.1
------------------------------
Class Class 5 (at 0.5)      PASS

 Class Limit:     3,520.00 P/m^3
 Min Sample Vol: 0.00568   m^3

 Grand Mean:               706.35
 Std Dev:                  381.65
 Std Error:                127.22
 95% UCL:                  942.97

Location                Avg P/m^3
14644 Test Loc 1            750.0
14644 Test Loc 2            857.1
14644 Test Loc 3              0.0
14644 Test Loc 4            250.0
14644 Test Loc 5            785.7
------------------------------
Unit Serial #:              1000
Last Cal:             05/15/2014
-------- End of Report ---------
```

Printing or Saving a Report

To Print a report on screen, or save it to an installed thumb drive, press the corresponding icon on the.
Note: a thumb drive or printer must be connected to the instrument to display these icons.

6-1 Settings

Settings Screen

Select the Settings Icon to enter the main configuration menu. All settings for the instrument are accessed through this Settings screen. When the administrator password is in use, this screen is not available to regular users and may only be accessed and settings modified by the administrator.
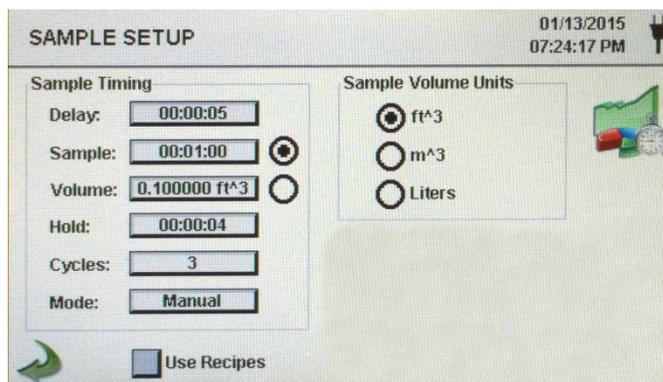

6-2 Sampling Setup

Settings Screen

The Sampling Setup Icon displays the Sample Timing, and Sample Volume Units selection windows. The option to utilize recipes instead of the general Sample Timing setup values is also accessed on this page with a selection box.

Delay

Pressing the Delay time box opens the Enter Time screen. The numeric touchpad is used to enter the amount of time the counter will wait before starting a sample in automatic mode.

The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum delay time is 99 hours, 59 minutes and 59 seconds. This feature is ideal to allow the operator to leave the area before the sampling begins.

5-6 Sampling Setup (continued)

Sample	Pressing the Sample Button opens the Enter Time screen with numeric touchpad for the entry of the amount of time the counter will sample in automatic mode. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum sample time is 99 hours, 59 minutes and 59 seconds.
Volume	Pressing Volume displays the numeric touchpad for the entry of the desired volume to be sampled. The volume will correspond to the units selected in the Sample Volume Units Selection on the Sample Setup Screen. The volume value entered will control the length of time per sample to achieve the desired sample volume.
Hold	Pressing the Hold Button opens the Enter Time screen with numeric touchpad for the entry of the amount of time the counter will hold between samples in automatic mode. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Hold delay time is 99 hours, 59 minutes and 59 seconds.
Cycles	Pressing Cycles displays the Enter Cycles Screen with numeric touchpad for entry of the number of sampling cycles to be taken at a specific location when the unit is in automatic mode.
	Enter ZERO (0000) to activate Continuous Sampling Mode.
Mode	The Mode icon opens the Select Sample Mode page. Select Automatic mode or Manual Mode. After making a selection, press OK to accept and return to the previous page, or select cancel.
Sample Volume Units selection	Choose from three different sample volume units: Cubic Feet (ft^3), Cubic Meters (m^3) or Liters.
Use Recipes Button	The Use Recipes button activates the Recipe Setup Page. Recipes associated with locations will be utilized in place of the general settings from the Sample Timing Setup screen.
Back Arrow Icon	Press back to last screen arrow on bottom left corner of the display to return to main settings screen.

6-3 Channel Management

This screen allows for many rich features to be controlled, including enabling or disabling channels, setting custom channel sizes, enabling or disabling alarms by channel and the setting of the alarm thresholds. The mass concentration mode may also be activated to allow entry of particle density and refractive index values by channel.

Channel Management Screen

	Enable Channel:	Size µm:	Enable Alarm:	Alarm Threshold:	Density g/ml:	Refractive Index:
Ch 1	■	0.30		5000000		
Ch 2	■	0.50		3520000		
Ch 3	■	1.00		832000		
Ch 4	■	3.00		3000		
Ch 5	■	5.00		29300		
Ch 6	■	10.00		350		

CHANNEL MANAGEMENT   01/14/2015 12:31:18 PM

Use Recipes ▢   Alarm On Σft³   ▢ Mass Mode

Enable Channel: Each channel can be turned on or off by pressing the corresponding radio button. When the channel is turned off all values related to that channel are ignored and will not be displayed or recorded.

Size (micron - µm) The individual channels (2 - 6) can have their target size adjusted, by pressing the corresponding Size µm field and entering the desired value with the numeric keypad.
This feature is also known as variable binning, and is ideal for focusing on specific, known particle sizes.

Enable Alarms Each channel can have an alarm enabled or disabled by pressing the selection button for the channel. The Alarm Threshold can be entered by pressing this field and entering a numerical value on the Enter Alarm Threshold Screen. This displays a numeric touchpad in order to enter the desired value. Once the value is entered, click ok, or cancel to return to the Channel Management screen.

Σ^{ft^3}

Alarm On By selecting the Cumulative Mode Icon the Channel Alarm Setup Screen is displayed. The Alarm On Threshold values will correspond to the eight (8) options listed on the Channel Alarm Setup page.

Channel Alarm Setup Page Δ - Differential count, Δft³ - Differential cubic feet, Δm³ - Differential cubic meter, Σ - Cumulative count, Σft³ - Cumulative cubic feet, Σm³ - Cumulative cubic meter, µg/m3 - micrograms per cubic meter, or PM - Particle Mass

Mass Mode Settings

| | Mass Mode | **Mass Mode Enable** | The Mass Mode button allows the instrument to display particle count data as calculated particle mass concentration in weight/volume units. The international SI unit for mass is (kg/m3), which can be translated to micro grams per milliliter (µg/ml) This is indicated as an accepted value for particle mass monitoring for environmental as well as health & safety applications. |

Density g/ml: The density of the particles to be measured can be entered to allow for higher accuracy and correlation to the actual mass concentration values. To do so, select the numeric field corresponding to the particle size channel and enter the desired density value in g/ml with the numeric touch pad. Press OK or cancel to return to the Channel Management Screen.

Refractive Index The refractive index of the particles to be measured can be entered in mass concentration mode. To do so, select the numeric field corresponding to the particle size channel and enter the desired density refractive index value with the numeric touch pad. Press OK or cancel to return to the Channel Management Screen.

Calculation of displayed Values on Main Screen for Mass Concentration Mode

µg/m3 Indicated Values Explained When Mass Concentration Mode is selected, µg/m3 is the measured value in the first column. The mass value for a channel size is the particle count between that channel and the next larger channel, calculated using the average particle size of the two channels. For example, the value in the 0.50 µm data field represents the mass of all particles counted between this channel and the next highest channel, calculated as the mass of a particle that is 0.75 µm.
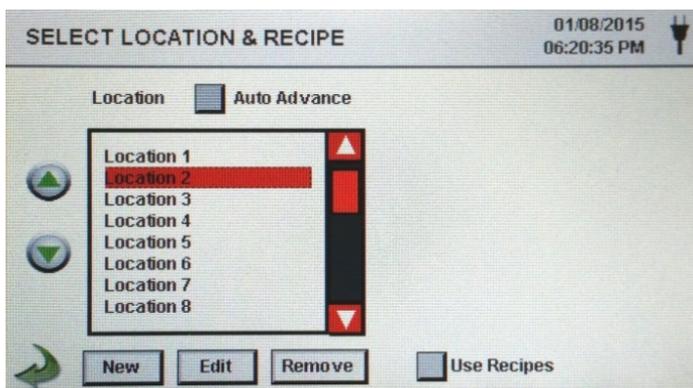
Particle Mass Indicated Valued Explained The column labeled PM shows the total particle mass of particles that are less than the displayed channel size. For example, the value displayed in the PM column for the 2.5µm channel is the particle mass (µg/m³ column) of all particles with a size less than 2.5µm, generally referred to as PM2.5.

6-4 Locations & Recipes

Pressing the Locations Icon opens the Select Location & Recipes screen. Up to 1000 unique location names can be created. This screen also provides for Location-specific recipes which utilize preset sample times, delays, hold times, cycles, etc. Over 50 unique recipes can be created to correspond to any number of locations.

Select Location &

Recipe Screen

	SELECT LOCATION & RECIPE	01/08/2015 06:20:35 PM
	Location ☐ Auto Advance	
	Location 1	
	Location 2	
	Location 3	
	Location 4	
	Location 5	
	Location 6	
	Location 7	
	Location 8	
	New Edit Remove ☐ Use Recipes	

Location Auto Advance — When a sample is completed and the instrument is set to automatic mode, Pressing this button auto advances to the next location.

Navigate up or down through location list — Navigate with the up and down white arrows on the right side of the list. The red slider button can also be pressed and dragged up or down with a stylus or finger to navigate quickly up and down the list.

Move Selected Location Up / Down through List Order — Move the selected location up or down using the Silver and Green up and down arrow buttons on the left side of the locations list. Locations can be moved in order to group common areas to be tested for more convenient selection during setup, prior to a sampling event.

New Location Entry — Press the New button to create a new location on the Location list. Selecting this button will display the Enter Name For New Location screen. Use the touchscreen keyboard to enter the name of the new location. Press OK to return to the previous screen.
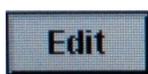
Edit Location — Press the Edit button to modify the location highlighted on the Location list. Selecting this button will display the Enter New Name For Location screen. Use the touchscreen keyboard to modify the name of the existing location. Press OK to return to the previous screen.
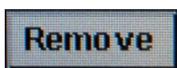
Remove Location — Press the Remove button to delete the currently highlighted location.

 Use Recipes

Use Recipes — Pressing this button displays the Recipes settings portion of the page. By selecting the Location on the left box, then setting the recipes from the right box, the location is configured with one of 50 possible user defined sampling setups.

Edit Recipe for Selected Location — Press the Edit button on lower right hand side of screen under recipe setup window, to enter the Recipe setup.
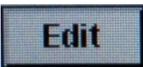
Recipe Information Appears on Right Side of Screen
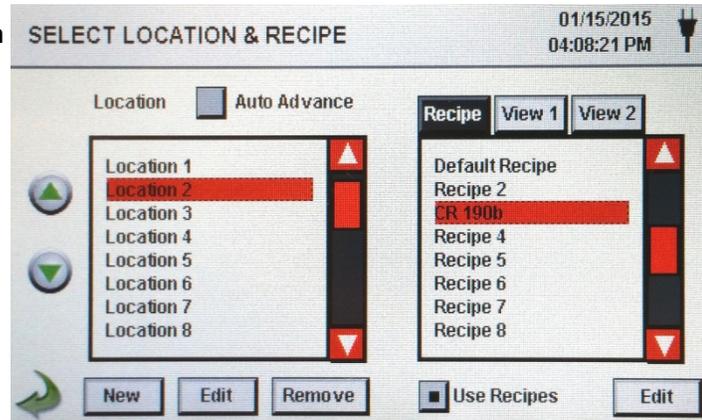
The instructions that follow are related to the illustration on the top of page 36

 New Recipe Entry — Press the New button to create a new recipe. The Enter Name For New Recipe screen will appear. Use the touchscreen keyboard to enter the name of the new recipe. Press OK to return to the previous screen.

 Edit Recipe — Press the Edit button to modify the existing recipe highlighted on the Location list. Pressing this button will display the Enter New Name For Recipe screen. Use the touchscreen keyboard to modify the name of the existing recipe. Press OK to return to the previous screen.
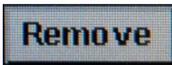
 Remove Recipe — Press the **Remove** button to delete the recipe that is highlighted on the Location list.
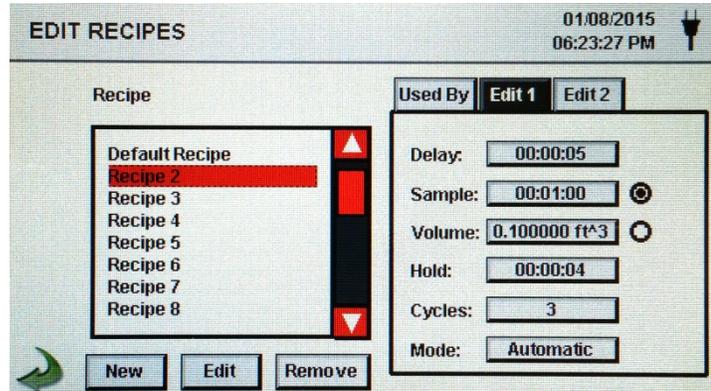
Used By Tab — The Used By window displays all locations currently set to use the current recipe when sampling.

6-4 Locations & Recipes (continued)

Edit 1 Tab	The Edit 1 tab allows for the sampling settings, including the delay time, sampling time, cycles and mode that can be set for that recipe.

Edit Recipe Tab 1 - Delay	Pressing the Delay time box opens the Enter Time screen. The numeric touchpad is used to enter the amount of time the counter will wait before starting a sample in automatic mode. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum delay time is 99 hours, 59 minutes and 59 seconds.
Edit Recipe Tab 1 - Sample	Pressing the Sample Button opens the Enter Time screen with numeric touchpad for the entry of the amount of time the counter will sample in automatic mode. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum sample time is 99 hours, 59 minutes and 59 seconds.
Edit Recipe Tab 1 - Volume	Pressing Volume displays the numeric touchpad for the entry of the desired volume to be sampled. The volume will correspond to the units selected in the Sample Volume Units Selection on the Sample Setup Screen. The volume value entered will control the length of time per sample to achieve the desired sample volume.
Edit Recipe Tab 1 - Sample or Volume selection buttons	Selecting Sample will cause the sample to be time based on the Sample time value entered. Selecting Volume will cause the sample to be based on the actual volume of air sampled to be measured and achieved before finishing the event.
Edit Recipe Tab 1 - Hold	Pressing the Hold Button opens the Enter Time screen with numeric touchpad for the entry of the amount of time the counter will hold between samples in automatic mode. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Hold delay time is 99 hours, 59 minutes and 59 seconds.

6-4 Locations & Recipes (continued)

|	
Edit Recipe Tab 1 - Cycles	Pressing Cycles displays the Enter Cycles Screen with numeric touchpad for entry of the number of sampling cycles to be taken at a specific location when the unit is in automatic mode.
	Enter ZERO (0000) to activate Continuous Sampling Mode.
Edit Recipe Tab 1 - Mode	The Mode icon opens the Select Sample Mode page. Select Automatic mode or Manual Mode. After making a selection, press OK to accept and return to the previous page, or select cancel.
Edit Recipe Tab 2 - Select Channel Alarm	Select the channels to activate the alarm threshold values set in the **Channel Management Screen**.
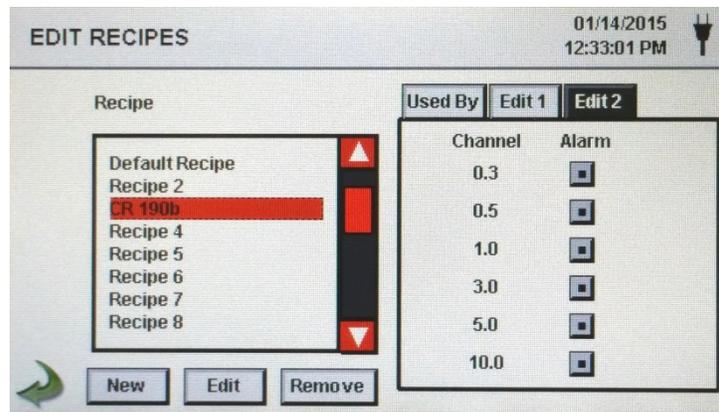
Back Arrow Icon	Press back to last screen arrow on bottom left corner of the display to return to the last screen, repeat this action to return to the settings screen or twice to return to the main home screen.

6-5 Configuration

Pressing this Icon opens the Configuration screen. Various parameters can be set from this page including language settings, USB configuration save options, and factory restore to default parameters.

Configuration Screen
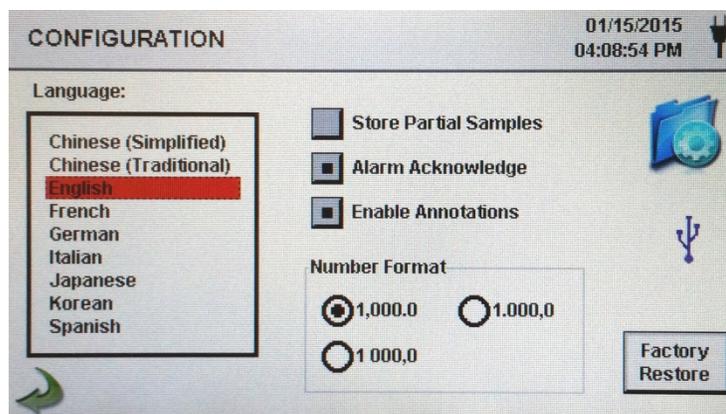
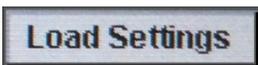|		
Language	Select and highlight the language to be used with your device. English is the Default.	
Store Partial Samples	Select this option to save values from a prematurely ended sampling. If this option is left unchecked, the Instrument will ignore partial sampling events.	
Alarm Acknowledge	During an alarm, the visual alarm bell and the audible sounder will continue to sound until the alarm bell icon is pressed when this option selected. If this option is not selected, then the alarm sounder and visual alarm indicator will function normally. Once the next sampling cycle starts (in automatic mode) the alarm indications will reset themselves.	
Enable Annotations	Selecting this option to allow annotations (notes) to be entered on to the sample record while it is taking place, or after the fact in the records history. These notes will be included in downloaded record data. If this is unchecked, the feature is disabled.	
Number Format	This selection box allows for setting the number formats: 1,000.0 - 1.000,0 - 1 000,0	
Factory Restore	This option will display the Factory Restore screen. Use this screen to restore Locations and Recipes, User Settings, and Retain Language Settings. You must hit the Confirm button to enact this feature.	
USB Icon	When a USB Thumb drive or mass storage device is plugged into the USB host port on the particle counter, the USB Configuration Save/Load Icon appears on the right side of the main Configuration screen. The Configuration Load/Save feature allows for saving the current configuration, including Recipes, locations and settings, from the instrument to the thumb drive. The feature can be used to restore the saved configuration back to any other Setra Systems handheld Particle Counter.	

6-5 Configuration (continued)

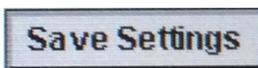**Configuration Load/Save Screen**
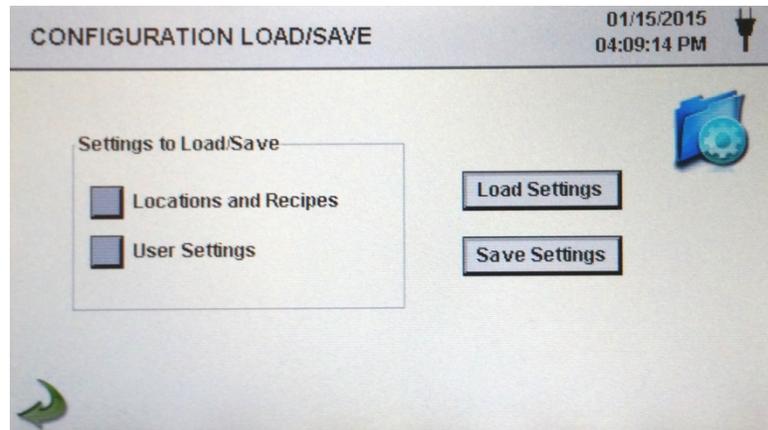
Settings to Load/Save	Use the two check boxes to select Locations and Recipes or User Settings for loading or saving with the USB thumb drive.
Load Settings	This button initiates the loading of a previously saved settings configuration into the current instrument.
Save Settings	This button will save the current configuration settings to the attached thumb drive or mass storage device.
back arrow Icon	Press the back to last screen arrow on bottom left corner of the display to return to the previous screen

6-6 Printer Setup

This screen allows for the configuration of your printing options.
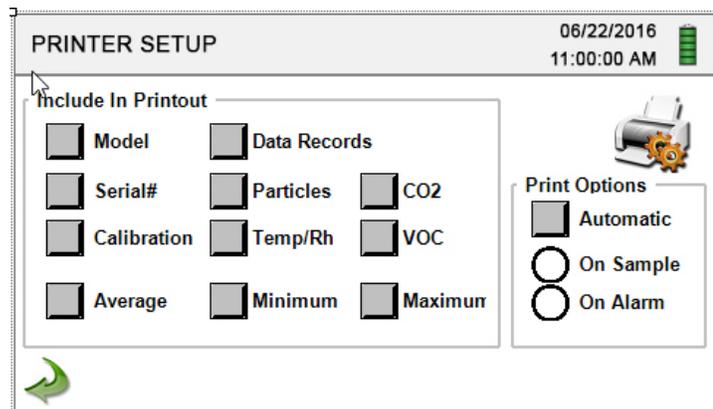
Automatic Printing	Selecting this option gives additional options to choose if the particle counter will print automatically 'On Sample' or 'On Alarm'
Include in Printout	Select each item of information to include with printed values and reports

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6-7 Communication

The instrument has multiple modes of communication for uploading or downloading data or configurations for operation. The modes of communication are Ethernet, RS485, RS232, USB Host or Client, and Optional Wi-fi Communications or Optional BACnet.

Communications Screen

Ethernet Communication	The particle counter can support Ethernet RJ-45 connection to a network for communications.
IP Address, Subnet Mask, & Gateway	Enter in the IP address for the device for your network the Subnet mask and gateway for your router. A numeric keypad will be displayed for entering these values.
USE DHCP	Specifying this will allow the device to obtain an IP address, subnet mask and gateway information from the router automatically

Wi-fi Settings Screen

Wi-Fi	The particle counter can support an optional Wi-Fi communications module. If this is to be used select this radio button, and input the IP address, Subnet Mask, and Gateway. A numeric keypad will be displayed for entering these values.
Wi-Fi SSID	Selecting this button allows for the entry of the name of the wireless router or network ID in order to connect to that router wirelessly. A keyboard will be displayed to allow for entry of these characters
Wi-Fi Password	Selecting this button allows for the entry of the password needed to access the wireless router on the network to be used. A keyboard will be displayed to allow for entry of these characters

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Modbus Settings Screen

Modbus Address — Enter in the Modbus address for the device for your network, A numeric keypad will be displayed for entering these values.

TCP Port — Enter in the TCP Port for the device for your network, A numeric keypad will be displayed for entering these values.

TCP Configuration Port — Enter in the TCP Configuration Port address for the device for your network, A numeric keypad will be displayed for entering these values.

Mode — Choose either ASCII, RTU or TCP

Baud — Select baud rate - 9600 / 19,200 / 38,400 / 57,600 / 115,200

Parity — Select Parity - Odd / Even / None

Register Set — Choose which register set to be communicated to your network or monitoring system.

BACnet via Modbus Gateway — If using the Modbus to BACnet gateway, set up Modbus and then precede to the BACnet Gateway Operating Instructions to continue to set up of BACnet connectivity. Once installed, the Modbus to BACnet gateway is a Modbus register.

IMPORTANT NOTE: — The Setra Systems MODBUS register map can be found in the Appendix at the back of this manual. Other Register Maps to match your current system configuration are available on request.

Internet of Things (IOT) — The Setra Systems Instrument can communicate to remote servers over a network or the Internet. The setup of this JSON protocol for IOT can be found in the IMS software communications settings options, while the instrument is connected to the PC running IMS with the included USB cable.

6-8 Environment

The Environment screen allows for the setting of the temperature, humidity and barometric pressure units, and to allow the instrument to activate an alarm associated with the sensors.

Environment Setting Screen

Enable Alarms   Selecting the enable alarm function for Temperature or Relative Humidity will allow the instrument to indicate if a low or high threshold for either environmental parameter is exceeded or dropped below the minimum set threshold.

Low Threshold   The low threshold value fields allow for the low threshold to be entered for either temperature, relative humidity, or both. When the field is selected a numeric keypad appears allowing for the values to be entered and saved.

High Threshold   The High Threshold value fields allow for the high threshold to be entered for either temperature, relative humidity, or both. When the field is selected a numeric keypad appears allowing for the values to be entered and saved.

Units   This section allows for selection of metric or standard values for temperature and barometric pressure.

6-9 Passwords

The Password Setup Screen allows for the secure operation of the instrument by authorized users, and configuration and setup changes by administrators in accordance with 21 CFR 11.

Password Setup Screen

6-9 Passwords (continued)

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Admin Password	Selecting this radio button activates the administrative password function for 21 CFR 1 compliance preventing any settings, time/date, or configurations to be changed by lower level users.
Admin Password - New Password / Confirm New Password	The two password entry fields allow for the password to be entered and saved. By selecting these fields it will bring up an alpha-numeric keyboard allowing for the user to enter a new administrator password. The default administrator password from the factory is **4321**
User Password	Selecting this radio button activates the user password function preventing any unauthorized use of the particle counter. User level access allows for using the instrument in its current configuration, and saving samples.
User Password - New Password / Confirm New Password	The two password entry fields allow for the password to be entered and saved. By selecting these fields it will bring up an alpha-numeric keyboard allowing for the user to enter a new user level password. The default user password from the factory is **1234**
Password Timeout	Password timeout is the length of time in minutes there is no activity on the particle counter. If the unit is operating and inactive for more than the amount of time entered, the next operation will require a User or Administrator password to continue. The default is 5 minutes.
Lock Now	The lock now icon puts the instrument immediately to the password enter screen. No activity is possible without entering the password to unlock the particle counter.
IMPORTANT NOTES	At any time during the operation of the particle counter, while passwords are active, the administrative password can be entered even if the user password is being requested. This will cause the unit to allow all administrative access to features, settings and configuration changes screens.

If at any time the administrative password is lost or forgotten, you can call or email Setra Systems for a temporary password that will be valid only for that day the password is requested. This is a unique password that will automatically expire at the end of the day it is issued. Due to 21 CFR 11 requirements, proof of ownership and administrative rights will need to be established. |

6-10 Clear All Samples

All records on the instrument can be cleared with this function. CAUTION – This is not reversible and all data will be lost. Back up all data to a PC or USB Memory device before using this function. This function is found in the Sample Settings Menu.

Clear Samples

Are you sure you wish to clear all samples?

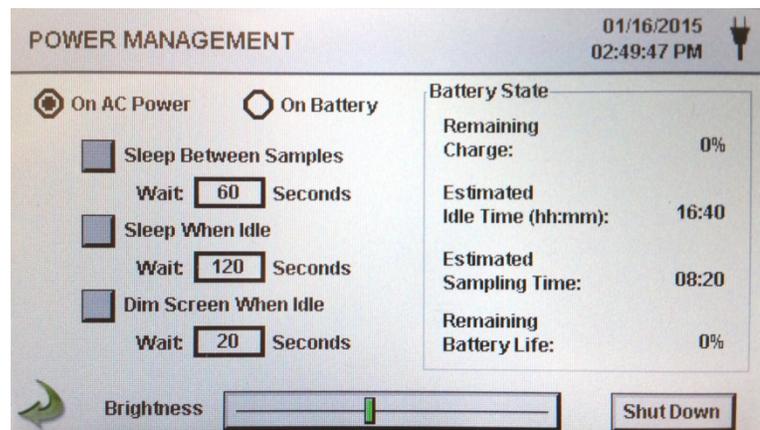Yes   No
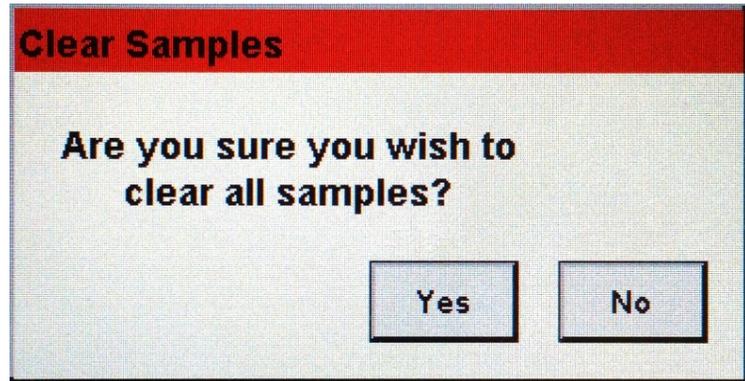
Confirmation Screen

By selecting the Clear Samples Icon in the Settings Screen, the confirmation screen will appear asking if the request should be completed. Selecting Yes will delete all recorded samples. Selecting No returns the display to the settings screen.

7-1 Power Management

The instrument utilizes advanced power management functions that are unique to Setra Systems. Please be certain to read the battery and power safety instructions at the beginning of this manual.

Power Management Screen

POWER MANAGEMENT

01/16/2015
02:49:47 PM

On AC Power   On Battery

Sleep Between Samples
Wait 60 Seconds

Sleep When Idle
Wait 120 Seconds

Dim Screen When Idle
Wait 20 Seconds

Battery State
Remaining Charge: 0%

Estimated Idle Time (hh:mm): 16:40

Estimated Sampling Time: 08:20

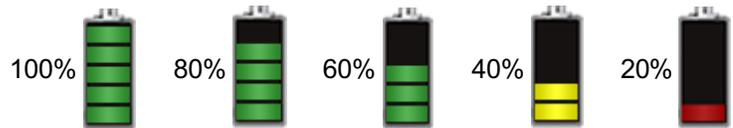Remaining Battery Life: 0%

Brightness

Shut Down

AC Adapter Icon   This Icon is visible when the instrument is plugged into AC mains power and pressing this icon brings you to the Power management screen.

7-1 Power Management (continued)

Battery Level Indicator/Icon   This icon also allows for access to the Power Management screen, and also serves as a visual indication of the battery's power level

Icon   The battery power level icon will display differently depending on the amount of battery power that is left in a percentage (20% to 100%)

The Power Level Indication is displayed as follows:

100%   80%   60%   40%   20%

Remaining Charge   (0 to 100%) - this is the percent of battery life left for this current charge displayed as a percent

Estimated Idle Time   (hours:minutes) - this is the amount of time in hours and minutes left for this current battery charge if the unit remains in the on power state, and without sampling.

Estimated Sampling Time   (hours:minutes) - this is the amount of time in hours and minutes left for this current battery charge if the unit is on, the pump is running and the unit is sampling.

Remaining Battery Life   This is a percent indication of the total life left on this battery pack during the life of the battery. This is useful for monitoring when to replace your power cells.

On AC Power Option   When Selected, all dimming timers, sleep mode timers and screen brightness bar settings will be valid when the unit is plugged into mains power using the AC adapter.

On Battery Option   When Selected, all dimming timers, sleep mode timers and screen brightness bar settings will be valid when the unit is not attached to mains power and operating on the removable internal batteries.

Sleep Between Samples   Selecting this button activates the feature for power down operation to conserve battery life. A timer window will appear, allowing for the input value of the amount of time, after completing a sample, before the system will go to sleep. This value is input by selecting the time input window box. This will bring up the numeric keypad allowing for the input, in seconds from 30 to 65,535 seconds. after entering value press ok to return to last screen. (Please note that the minimum time possible for the sleep mode will be 30 seconds, and if sampling delay time is also selected, that time is automatically added to this value.)

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Sleep When Idle Option	Selecting this button activates the timer box for this option to count the number of seconds after the unit is idle, with no activity, to go into sleep mode conserving battery power. The amount of time to wait before going to sleep is entered by selecting the time input window box. This will bring up the numeric keypad allowing for the input of the idle time value, in seconds from 1 to 65,535 seconds. After entering the value press ok to return to last screen. (Please note that the default value is 120 seconds.)
Dim Screen When Idle	Selecting this button allows the instrument to save power by dimming the display brightness after the touch screen is not pressed for the selected time. The amount of time to wait before dimming the screen is entered by selecting the time input window box for this option. This will bring up the numeric keypad allowing for the input of the wait to dim screen when idle time value, in seconds, from 20 to 65535 seconds. After entering the value press ok to return to last screen. (Please note that the default value is 20 seconds.)
Brightness Select Slider	Selecting the slider green vertical cross bar, move the slider to the left to decrease and to the right to increase the screen brightness.
Shutdown Icon	Power down the instrument through the interface immediately with this icon. The instrument can also be turned off from the power switch on the handle.
Back Arrow Icon	Press back to last screen arrow on bottom left corner of the display to return to main home screen.

8-1 Volume Controls

Volume Control Icon	By selecting the icon a volume slider control appears. Select the bar on the slider and increase or decrease the volume. Decreasing the slider to zero, mutes the speaker. A numerical value of the volume level appears at the bottom of the slider.
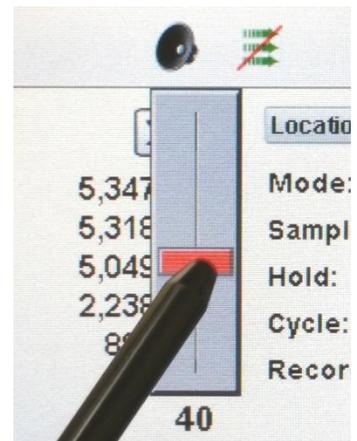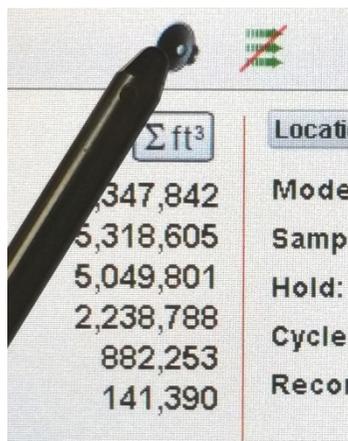
9-1 Instrument Management Software (IMS)

The particle counter also includes a PC based software utility that allows for the remote access to download data, field calibration for sensors, upload firmware updates, remote diagnostics direct to a service technician, and Real-Time Graphing remotely controlling the instrument over a USB or Ethernet Cable.

Please note that detailed instructions for the use of the IMS software are contained in the IMS Software Manual on the included USB thumb drive.

Load/Install to PC
To load the Setra Systems Communication Software, install the provided thumb drive in to your PC with the Windows (7™, 8™ and 10™) operating system. Open the thumb drive folder and select the web installer application file. Follow the installation prompts. Allow permissions with your PC and virus protection software during the installation process.

Start Software
Use the Setra Systems IMS Icon in the program folder or from the desktop to start the program.
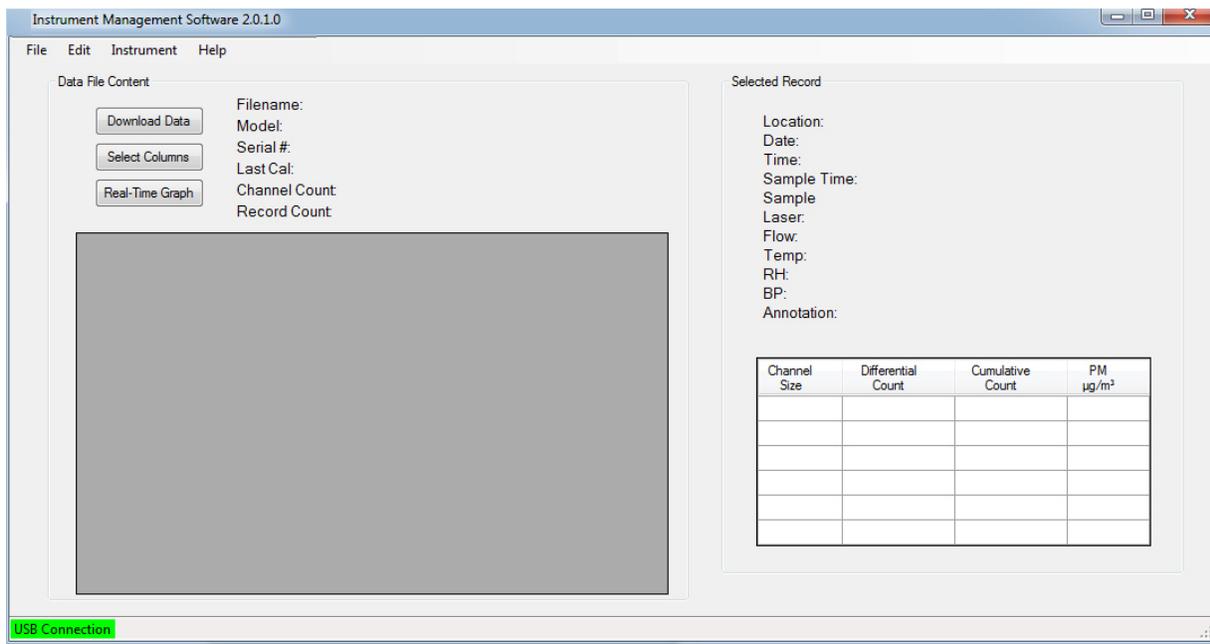
(Communication Software Main Screen Window Shown Above)

Connection Indication
When the meter is connected to the PC by the provided USB cable, and the software has successfully linked with the device, a Green USB Connection indication will appear on the bottom left side of the program window. A No Connection indication will be displayed when no device is connected or detected.

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10-1 Particle Counter Host Mode – Remote Monitor and Operation

Access your particle counter from a web browser from any PC, Tablet or smartphone

The Setra Systems particle counters can host and provide a browser based remote operation interface session. With advanced processing there can be many remote access sessions taking place concurrently with the unit still operating and recording samples. This is achieved through a built in web server software. This allows for direct communication through a local intranet (connected by Ethernet or Wi-Fi), using the instrument's IP address found in the communications setup screen
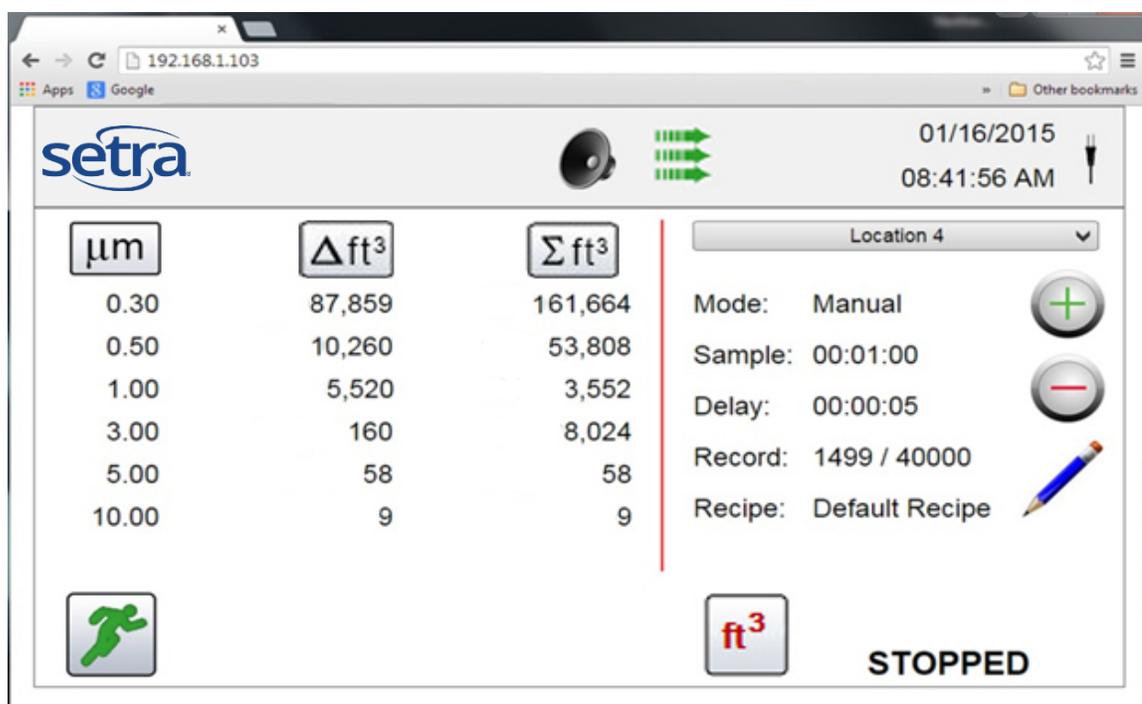
10-1 PC Communication Software (continued)

The Functions of Remote Web Based Operation.

The Instrument can have the sampling started, and stopped, It provides a full visual indication of the home page display, the + & - keys can allow the remote user to scroll through and select different locations to utilize; The Units can be changed from Count, to CNT/M3, CNT/F3, or µg/m3. The value columns for cumulative or differential can be turned on and off using the corresponding icons.

Connecting using Ethernet or Wi-Fi

The Instrument must be placed in Ethernet or optional Wi-Fi mode to allow for this feature, and the unit must also be connected to a working router on the same network as the PC. In the Communications Setup page, select apply settings with the use DHCP button selected, and the unit will automatically display the router issued settings to allow connection. Use that IP address that is saved on the Communication page, and enter that into any device browser to access the remote screen.

Note: the URL address is the IP address that the DHCP Router assigned to the Particle Counter. You can also provide a static IP address for the device through the communications setup screen and with access to your router's administrative functions to set a static IP in the client tables.

Appendix – A

The MODBUS Register Map can be found on the USB memory stick as a separate PDF document file.

11-1 Returns

When returning a product to Setra Systems, the material should be carefully packaged and shipped prepaid to:

Setra Systems, Inc.
159 Swanson Road
Boxborough, MA 01719-1304
Attn.: Repair Department

To assure prompt handling, please refer to return instructions at the following URL:

http://www.setra.com/tra/repairs/cal_rep.htm.

12-1 Warranty and limitation of liability

SETRA warrants its products to be free from defects in materials and workmanship, subject to the following terms and conditions: Without charge, SETRA will repair or replace products found to be defective in materials or workmanship within the warranty period; provided that:

a) the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of instructions furnished by SETRA;
b) the product has not been repaired or altered by anyone except SETRA or its authorized service agencies;
c) the serial number or date code has not been removed, defaced, or otherwise changed; and
d) examination discloses, in the judgment of SETRA, the defect in materials or workmanship developed under normal installation, use and service;
e) SETRA is notified in advance of and the product is returned to SETRA transportation prepaid.

Unless otherwise specified in a manual or warranty card, or agreed to in writing and signed by a SETRA officer, SETRA pressure, humidity, and acceleration products shall be warranted for one year from date of sale.

The foregoing warranty is in lieu of all warranties, express, implied or statutory, including but not limited to, any implied warranty of merchantability for a particular purpose.

SETRA's liability for breach of warranty is limited to repair or replacement, or if the goods cannot be repaired or replaced, to a refund of the purchase price. In no instance shall SETRA be liable for incidental or consequential damages arising from a breach of warranty, or from the use or installation of its products.

No representative or person is authorized to give any warranty other than as set out above or to assume for SETRA any other liability in connection with the sale of its products.

For all CE technical questions, contact Setra Systems, USA. EU customers may contact our EU representative Hengstler GmbH, Uhlandstr 49, 78554 Aldingen, Germany (Tel: +49-7424-890; Fax: +49-7424-89500).

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.