Contador de Partículas Portatil 3 Canales Airy

PP-HH503

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

Product Name: Airy Technology. H Series Handheld Particle Counters

Model Numbers: H306, H506, H303, H503

The following standards are applied only to the particle counters that are so labeled. EMC is tested using Airy Technology 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 Airy Technology 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 not use this device for any 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 Airy Technology equipment not expressly approved by Airy Technology 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.

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 with the instrument in a freestanding mode

1-3 Warnings for Use of Wireless Devices

Please observe all warning notices with regard to the usage of Airy Technology' 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 an Airy Technology particle counter, the most advanced handheld instrument available.

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

The Airy Technology particle counters have a large dynamic range measuring from 0.3 µm to 25.0 µm, with true variable binning 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. The advanced processing also allows for many operations to take place simultaneously, even while the unit is sampling.

This versatile particle counter's ability to count higher than typical particle concentrations allows for a wide range of applications from cleanrooms, indoor air quality investigations, and ambient air testing.

The instrument can measure all (6) adjustable particle size channels (3 size channels for the H303 & H503) and indicate in raw count, count per cubic meter, and count per cubic feet displayed as differential and cumulative counts simultaneously.

The technology designed into these particle counters includes advanced power management functions, and the industry's first sleep mode. This permits the instrument to take intermittent samples over the course of a few months, minimizing power consumption and increasing system life.

The Airy Technology particle counters have versatile communication methods and protocols including Modbus TCP, USB Host, USB Client and (optional) Wi-Fi, (optional) MODBUS RTU and ASCII.

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, all with simultaneous access to review, monitor and control the operation of the instrument.

Thank you,

AIRY
TECHNOLOGY

1-5 Specifications

Size Channels (Model H306)	Factory calibrated at 0.3, 0.5, 1.0, 2.5, 5.0, 10.0 µm variable binning
Size Channels (Model H303)	Factory calibrated at 0.3, 0.5, 5.0 µm variable binning
Size Range (Model H306, H303)	0.3 to 25µm
Counting Efficiency (Models H306 & H303)	50% @ 0.3 µm; 100% for particles >0.45 µm per JIS
Size Channels (Model H506)	Factory calibrated at 0.5, 0.7, 1.0, 3.0, 5.0, 10.0 µm variable binning
Size Channels (Model H503)	Factory calibrated at 0.5, 0.7, 1.0 µm variable binning
Size Range (Model H506, H503)	0.5 to 25µm
Counting Efficiency (Model H506, H503)	50% @ 0.5 µm; 100% for particles >0.75 µm per JIS
Flow rates	0.1 CFM (2.83 LPM)
Light Source	Long life laser diode
Zero Count	<1 count / 5 minutes (<2 particles / ft³) (per ISO 21501-4 & JIS)
Count Modes	Cumulative & differential raw counts, count per cubic meter, counter per cubic feet
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 or 3
Custom Size Channels	Calibration for custom size channels available
Battery	Removable Li-ion >10 hours continuous operation and >16 hours normal operation
Battery Recharge Time	<2 hours

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
Weight	2.2 lb. (1.0 kg)
Accessories	Operating manual on USB flash drive, isokinetic probe, purge filter, battery, data download software, USB cable, power supply & cable)
Optional Accessories	Temperature/humidity probe, 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. (H303 & H503 - 1 Year)
Communication Modes	Ethernet and USB
Optional Communication Modes	Wireless 802.11 b/g, RS485 or RS232
Environmental Sensor (Optional)	temperature and relative humidity probe 32º to 122ºF (0º to 50ºC) ±1ºF (0.5ºC), 15-90% ±2% relative humidity (Optional for 8303 & 8503)
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

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	
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
Handheld Carrying Case	**AS-99023**	
External Battery Charger 55Wh	**AS-99005A**	
Rechargeable Battery 55Wh	**EE-80003A**	
Temperature / RH Probe 32-122°F (0-60°C) ±1°F (0.5°C), 15 - 90% ±2%	**EE-80014A**	
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**	
Isoprobe Threaded 0.1 CFM (2.83 LPM) Stainless Steel	**PS-12070**	
Isoprobe Barbed 0.1 CFM (2.83 LPM) Stainless Steel	**PS-12022**	

Description	Part Number	Image
1/8" Inlet Barbed Fitting Stainless Steel	PS-12005	
Handheld User Manual (Printed)	MN-24001P	
Certificate of Origin	MN-24000	

1-8 Product Views

Front View

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

Rear View

- ¼-20 Threaded Tripod Mounting Adapter
- Kickstand
- Battery Compartment
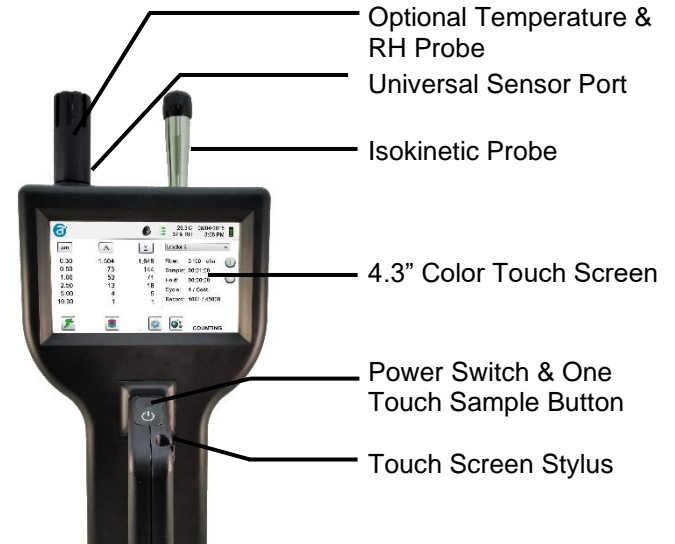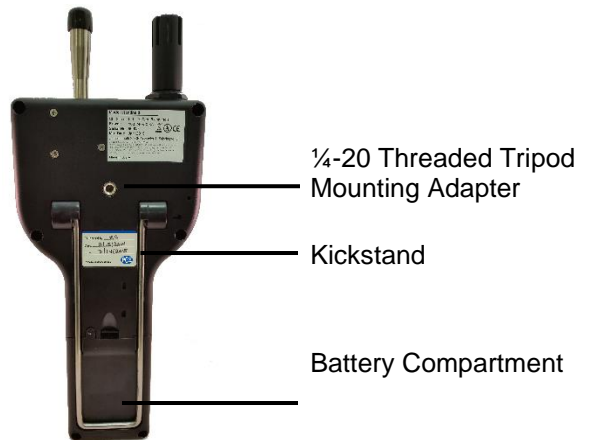
Left Side View – Input / Output Connections

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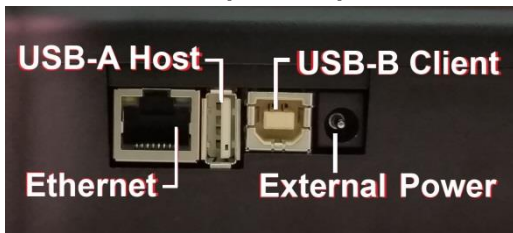
Connecting Ethernet Cable

Connecting USB - B Client

Connecting USB - A Host

2-1 Unpacking and Inspecting the Instrument

Careful consideration was given to our packing material to ensure that the Airy Technology 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 Airy Technology immediately. Please save the container and packing material in case you have to return the instrument.

2-2 Registering Your Product

It is important to register your product with Airy Technology to ensure that your warranty will be activated. To register your product, visit the website and complete the form provided at the following link:

http://particlesplus.com/particles-plus-warranty-product-registration/

2-3 Contacting Airy Technology

To order accessories, receive technical assistance, report damaged or missing items from your shipment, or get contact information for your nearest Airy Technology authorized reseller, call **+1-781-341-1850.**

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 instrument 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 ensure that the instrument is packaged in a box that is sturdy and that the instrument 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 the Specifications in Section 1-5.

2-5 Power Considerations and Connecting to AC Power

The Airy Technology instrument comes with a power adapter line cord for AC 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 Airy Technology or an authorized reseller for service.

To install the country specific plug adapter, simply slide the adapter into the power supply as shown.
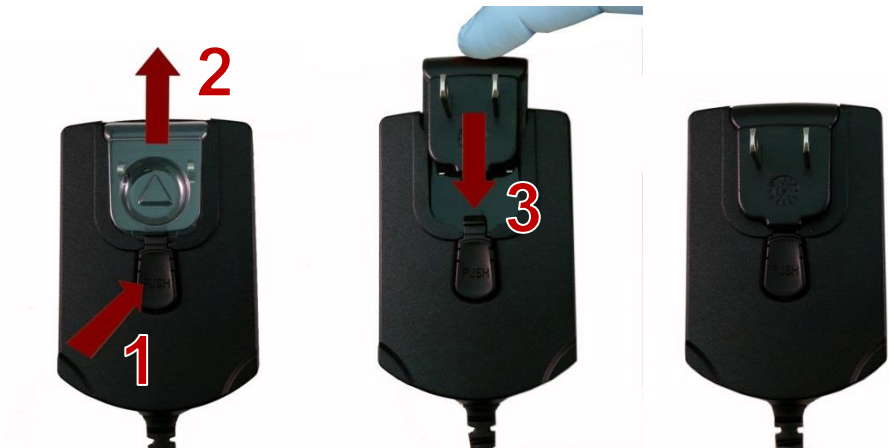
2-6 Installing Batteries

CAUTION - The Airy Technology' rechargeable battery 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 Airy Technology Lithium-Ion rechargeable battery with any other power source other than the approved Airy Technology Rechargeable External Battery Charger Model AS-99005A or the Airy Technology Power Supply Model EE-80127-XX. Using any other charger can cause fire, shock or serious injury.

Caution: Dispose of Airy Technology Lithium-Ion batteries at an approved local battery recycling center.

Install the Airy Technology Battery pack into the instrument using the following steps:
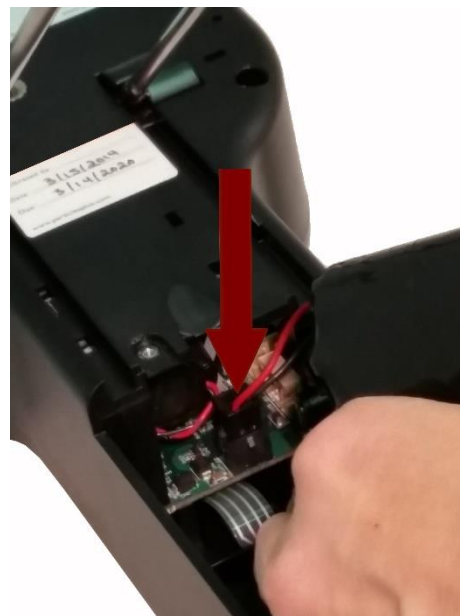

Step 1 - Remove security screw with Phillips screwdriver

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 matching socket on PCB board in battery compartment
NOTE: Red and black lead should be on bottom edge of 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 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

2-7 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.

2-8 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).
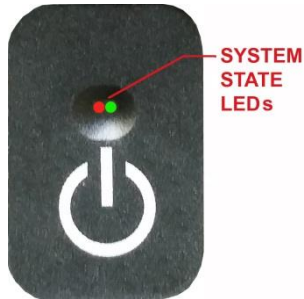
Unit plugged into AC (instrument screen on or off)
Charging: Red LED on
Charging Complete: Green LED on

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)**
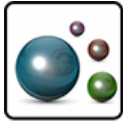All LED's off

3-1 Control and Menu Icons

	Function Name	Location/Screen	Description of Function
	Airy Technology logo Icon	Home Screen	Press the logo and the 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 the Back-Arrow icon on bottom left corner of the display to return to Home screen.
	Speaker Icon	Home Screen	Press the speaker icon to adjust volume using a pop-up slider bar. Press 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 Indicator**	Home Screen	Press the temperature and RH value indicator, to open a larger screen that displays Temperature, Relative Humidity, and the current Barometric Pressure. Press the Back-Arrow icon on bottom left corner of the display to return to Home screen. (Only when optional probe installed.)
2019/08/15 12:30:01 PM	**Time and Date Indicator**	Home Screen	Press the time and date to change the current time and date.
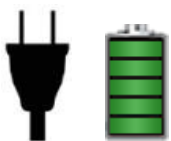
	Function Name	Location/Screen	Description of Function
	Power Management Icon	Home Screen	Press the battery/power adapter indicator to display the battery power management screen, as well as the current battery status.
	USB Icon	Home Screen	If a USB drive is connected, the USB Icon will appear. Press the USB Icon to save the current record to the USB drive.
	Printer Indicator	Home Screen	If the Airy Technology Printer is connected to USB Port, press the Printer Icon to print the current record.
	System Warning Indicator	Home Screen	When the System Warning Indication Icon appears, press to display additional information. Please contact Airy Technology technical service for assistance should the Icon remain visible.
	Alarm Indicator	Home Screen	Visual indication that the instrument has exceeded the user-defined thresholds. Press icon to silence the alarm.
	Run Icon	Home Screen	Press the Run icon to start sampling. Once pressed the Run icon will be replaced by the Stop icon.
	Stop Icon	Home Screen	Press the Stop icon to stop the instrument from sampling.
	Recorded Data Icon	Home Screen	Press the Recorded Data icon to display the saved data records page. All saved records can be accessed from this screen.

|	Function Name	Location/Screen	Description of Function
	Particle Icon	Home Screen	Press the Particle icon to change the indicated values from particle count to count per cubic meter, count per cubic foot,
	Differential Mode Icon	Home Screen	Press the Differential Mode icon to toggle the differential data values on and off.
	Cumulative Mode Icon	Home Screen	Press the Cumulative Mode icon to toggle the differential data values on and off.
Location 2	**Location Menu Icon**	Home Screen	Press the Location Menu icon to display the Location set-up page. This feature allows for the input of up to 1,000 locations.
Flow: 0.100 cfm	**Flow**	Home Screen	Provides an indication of the pump flow rate
Sample: 00:01:00	**Sample Indicator**	Home Screen	The Sample Time indicator displays the current sample time duration (Hours:Minutes:Seconds). This value will count down from the set value for the sample time, displaying the amount of time left in the current sample (go to Settings, then Sampling Setup to change Sample Timing).
Hold: 00:02:00	**Hold Indicator**	Home Screen	The Hold Time indicator displays the current hold time as an interval between samples. The maximum hold time is 99 hours, 59 minutes and 59 seconds (go to Settings, then Sampling Setup to change Hold Time).
Cycle: 1 / 3	**Cycle Indicator**	Home Screen	The Cycle indicator displays the number of count samples that will be taken at a location in automatic mode. The maximum number of possible cycles is 9,999. The value is displayed as the sample number vs. the total number of samples to be completed in this cycle (go to Settings, then Sampling Setup to change Cycles).

	Function Name	Location/Screen	Description of Function
Record: 1 / 45000	**Record Indicator**	Home Screen	The Record indicator displays the total number of sampling records saved in the instrument. The instrument is capable of storing 45,000 records in a rotating buffer.
	Settings Menu Icon	Home Screen	Press the Settings Menu icon to open the Settings Screen. All aspects of the instrument's set-up can be managed from the icon driven sub-menus.
	Plus and Minus Buttons	Home Screen	Press the Plus or Minus icons to scroll through 1,000 possible locations that can be saved and uniquely identified in the Locations setup screen. Locations can have set recipes assigned to them in advance for ease-of-use during sampling.
	Flow & No Flow Indicator	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 the arrows, it is an indication of a flow error.
	Back-Arrow Icon	Various Screens	Press Back-Arrow icon to return to the previous screen.

4-1 Operational Flow Chart – Menu Map

Print Information

Information — Print Current Record — Audio Volume Set — Environment — Date / Time Set — Power Management — Shut Down

Zoom — Locations

Charts — Recorded Data — Settings — Location Advance

Print Records

Sampling Setup — Channel Management — Locations — Configuration

Printer Setup — Communications Setup — Environment Setup — Password Setup — Clear Samples

Modbus Setup — Channel Alarm Setup — Configuration Load/Save — Factory Restore

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.
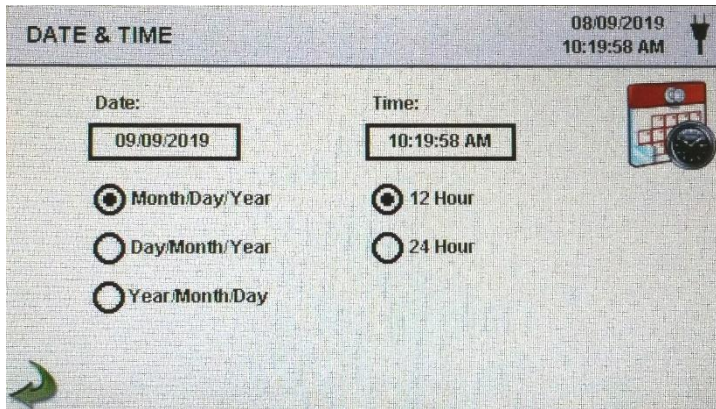
|	
Date Format Select Button	Choose format for Month/Day/Year, Day/Month/Year, or Year/Month/Day by selecting the corresponding button on the screen.
Numeric Keypad	Press Date within the window and a numeric keypad will appear to change the date. To change the values, use the < or > to move cursor. When 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	Press Time within the window and a numeric keypad will appear to change time. Use 24-hour clock format for time entry to properly indicate AM or PM. To change the values, use the < or > to move cursor. When complete press OK button. Time will display AM or PM or 24-hour format based on the selection.
Back-Arrow Icon	Press Back-Arrow icon to return to the previous screen.

5-2 Display

Press any blank space on the screen to zoom in or out on the Home page.
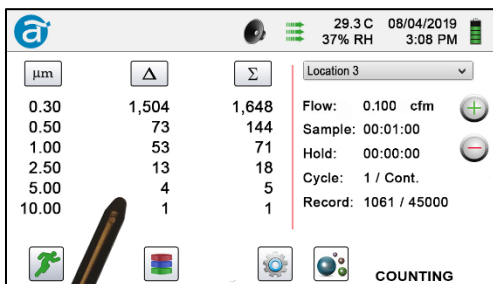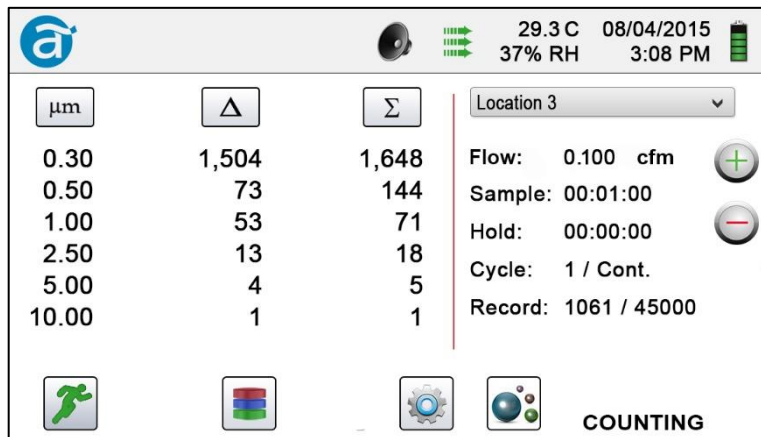

Standard View   Zoomed View

24
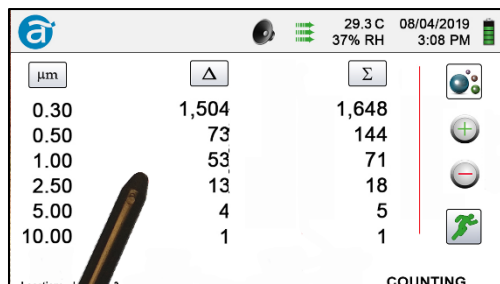
5-3 Taking a Sample

Main Sampling Home Screen

NOTE: Model H303-& H503 only display 3 channel sizes

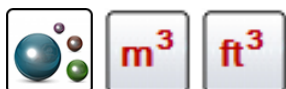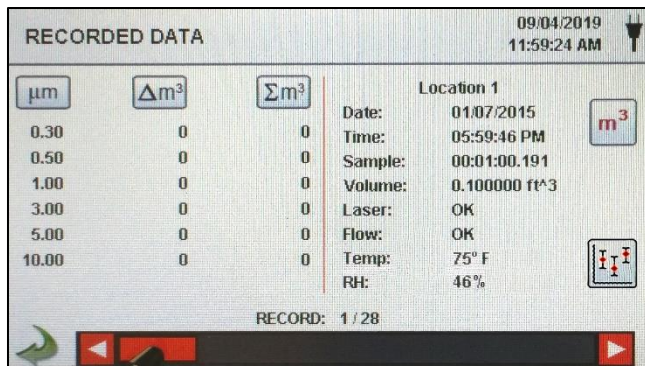|	Taking a Sample	Using the one touch power/sample button on the handle or the Run icon on the display begins the sample	To take a sample, press the one touch power/sample button on the handle or the Run icon on the screen. This will begin the sample according to the sampling setup parameters displayed on the right side of the Home screen (go to Settings, then Sampling Setup to change Sample Timing).
	Stopping the Sample	Using the one touch power/sample button on the handle or the Stop icon on the display stops the sample	To stop a sample, press the one touch power/sample button on the handle or the Stop icon on the screen.
	Data Unit of Measure Selection		Press the Particle icon to change the indicated values from particle count to count per cubic meter or count per cubic foot.

5-4 Recorded Data

The instrument stores up to 45,000 records that can be accessed by selecting the recorded data icon. The Recorded data page uses a horizontal slider bar for scrolling left and right through all records. Press 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.

NOTE: After the 45,000th sample is recorded, the software deletes one block of 250 records. After the block is deleted the next record number will become 44,751. The instrument will then store data to record 45,000 before repeating this process. Each block removed is from the oldest record first, following a first in / first out method.

Recorded Data Screen

RECORDED DATA				09/04/2019 11:59:24 AM
µm	Δm³	Σm³	Location 1	m³
0.30	0	0	Date: 01/07/2015	
0.50	0	0	Time: 05:59:46 PM	
1.00	0	0	Sample: 00:01:00.191	
3.00	0	0	Volume: 0.100000 ft^3	
5.00	0	0	Laser: OK	
10.00	0	0	Flow: OK	
			Temp: 75° F	
			RH: 46%	
		RECORD: 1 / 28		

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 Cumulative or Differential Columns

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

Data Units

Data Units can be changed to the corresponding calculated values by pressing the Particle icon. Press the icon to change between particle count, count per cubic meter, or count per cubic foot.

Statistics

Pressing the Statistics icon will provide an onscreen display of the minimum, maximum, and average values for the records selected. This function is disabled if a printer or USB stick is connected to the instrument.

6-1 Settings

Settings Screen Press the Settings Menu icon to open the Settings Screen. All aspects of the instrument's set-up can be managed from the icon driven sub-menus. When the administrator password is in use, this screen is not available and may only be accessed and settings modified by the administrator.
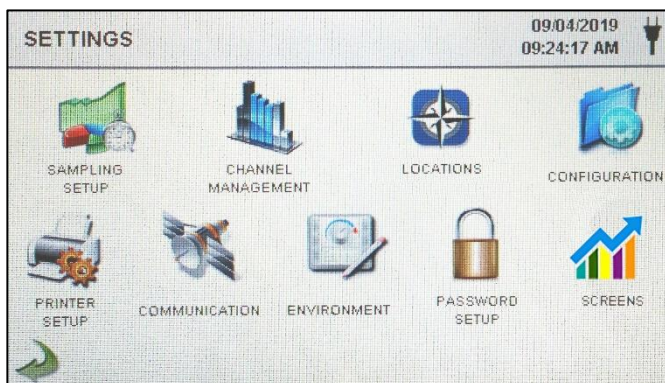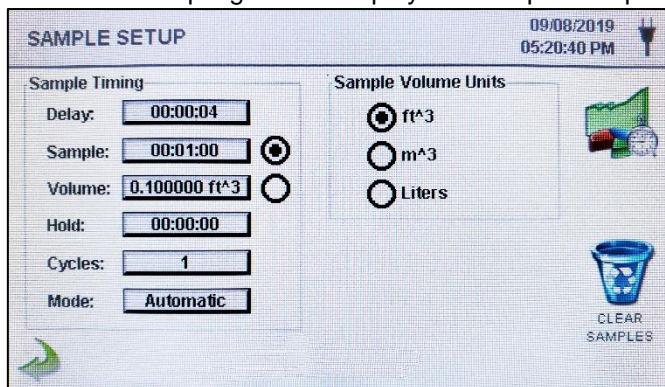

6-2 Sampling Setup

Sampling Setup Screen Press the Sampling icon to display the Sample Setup screen.

Delay Press the Delay window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Delay time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.
NOTE: This allows the operator to leave an area before sampling begins.

	Sample	Press the Sample window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Sample time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.
	Volume	Press the Volume window to open the Enter Sample Volume screen. To select the value to change, use the < or > to move cursor. The volume value entered will control the length of time per sample to achieve the desired sample volume.
	Sample or Volume Selection Buttons	Selecting the Sample button will cause the sample to be time based. Selecting the Volume button will cause the sample to be based on the volume of air to be measured.
	Hold	Press the Hold window to open the Enter Time screen. This controls the amount of time the instrument will hold between samples in automatic mode. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Hold time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.
	Cycles	Press the Cycles window to open the Enter Cycles screen. This controls the number of sampling cycles to be taken at a specific location when the unit is in automatic mode. To select the value to change, use the < or > to move cursor. When complete press OK button.
		NOTE: Enter (0000) to activate Continuous Sampling Mode.
	Mode	Press the Mode window to open the Select Sample Mode screen. Select Automatic or Manual. When complete press OK button.
	Sample Volume Units	Select Cubic Feet (ft^3), Cubic Meters (m^3) or Liters.

Clear All Samples   Press Clear Samples icon to open the Clear Samples window. All records on the instrument can be cleared with this function. **NOTE**: This action is not reversible, and all data will be cleared by pressing the Yes button.
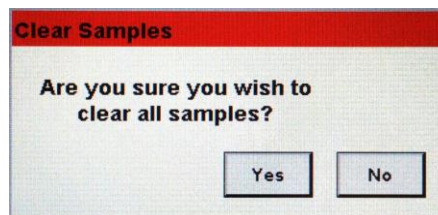
Back-Arrow Icon   Press the Back-Arrow icon to return to the previous screen.

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6-3 Channel Management

This screen provides control of many rich features such as enabling or disabling channels, setting custom channel sizes, enabling or disabling alarms by channel, and the setting of the alarm thresholds.

Channel Management Screen

CHANNEL MANAGEMENT				08/14/2019 12:31:18 PM
Enable Channel:	Size µm:	Enable Alarm:	Alarm Threshold:	
■ Ch 1	0.30		5000000	
■ Ch 2	0.50		3520000	
■ Ch 3	1.00		832000	
■ Ch 4	2.50		3000	
■ Ch 5	5.00		29300	
■ Ch 6	10.00		350	
			Alarm On Σ ft³	

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 µm Press the Size µm window to open the Enter Channel Size screen. This controls the particle size measured and recorded for the selected channel. This feature is also known as variable binning and is ideal for focusing on specific particle sizes. To select the value to change, use the < or > to move cursor. When complete press OK button.

Enable Alarms Each channel can have an alarm enabled or disabled by pressing if the User Recipes button is not selected. If enabled, Press the **Alarm Threshold** window to open the Enter Alarm Threshold screen. To select the value to change, use the < or > to move cursor. When complete press OK button.

Alarm On Press the Alarm On button to open the Channel Alarm Setup screen. Select Δ (Differential Count), Δft³ (Differential Cubic Feet), Δm³ (Differential Cubic Meter), Σ (Cumulative Count), Σft³ (Cumulative Cubic Feet Count), Σm³ (Cumulative Cubic Meter Count), PM (µg/m³).

CHANNEL ALARM SETUP	09/08/2019 05:22:30 PM
Alarm On:	
○ Δ ● Σ	
○ Δft³ ○ Σft³	
○ Δm³ ○ Σm³	

6-4 Locations

Press the Locations & Recipes icon to open the Select Location & Recipe screen. Up to 1,000 unique location names can be created. Pressing the User Recipes button allows the creation of location specific recipes which utilize preset sample Delay, Sample or Volume, Hold, Cycles, Mode and Channel Alarm.50 unique recipes can be created and assigned to any number of locations.

Select Location & Recipe Screen
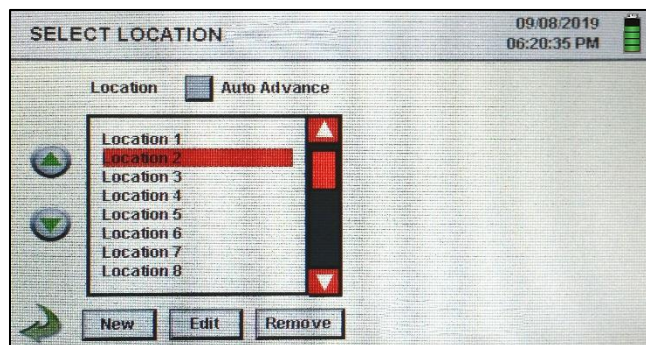
0000

|		
	Location Auto Advance	Select the Location Auto Advance button to auto advance to the next location.
	Slider	The Select Location & Recipe screen uses a vertical slider bar for scrolling through all locations. Press white arrows for fine control. Press the slider button with the stylus and drag to navigate through large amounts of locations quickly.
	Change Sequence of Locations	Press the silver and green up and down arrow buttons on the left side of the locations list to change the sequence of locations.
	New Location Entry	Press the New button to open the Enter Name For New Location screen. Use the keyboard to enter the name of the new location. Press OK to save the new location name or ESC to return to the previous screen.
	Edit Location	Press the Edit button to open the Enter Name For New Location screen. Use the keyboard to edit the name of the location. Press OK to save the new location name or ESC to return to the previous screen.
	Remove Location	Press the Remove button to delete the currently highlighted location.
	Back-Arrow Icon	Press the Back-Arrow icon to return to the previous screen.
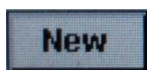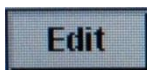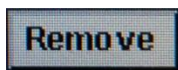
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6-5 Configuration

Press the Configuration icon to select Language, Store Partial Samples, Alarm Acknowledgement, Enable Annotations, Number Format, Save Configuration to a USB thumb drive, and Factory Restore.

Configuration Screen
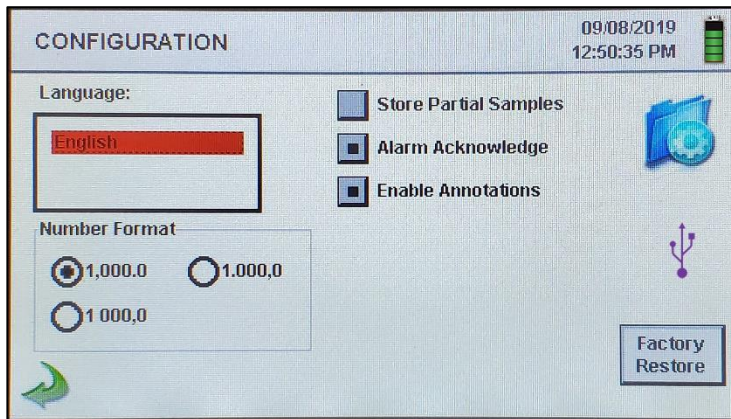
Language	Select and highlight the language to be used with your device.
Store Partial Samples	Select the Store Partial Samples button to save values from a prematurely ended sampling. If this option is left unchecked, the instrument will ignore partial sampling events.
Alarm Acknowledge	Select the Alarm Acknowledge button and the visual alarm bell and the audible sounder will continue to sound until the alarm bell icon is pressed on the Main screen.
Number Format	Select between 1,000.0, 1.000,0 or 1 000,0
Factory Restore	Press the Factory Restore button to open the Confirm Factory Restore screen. Select Settings to Restore and press the Confirm button.

When a USB thumb drive is plugged into the USB host port, the USB icon will appear on the Configuration screen. Press the USB icon to open the Configuration Load/Save screen. Select Settings to Load/Save and press Load Settings or Save Settings.
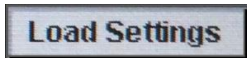**NOTE:** This feature can be used to load the instrument's configuration to any other Airy Technology particle counter.

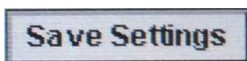**Configuration Load/Save Screen**
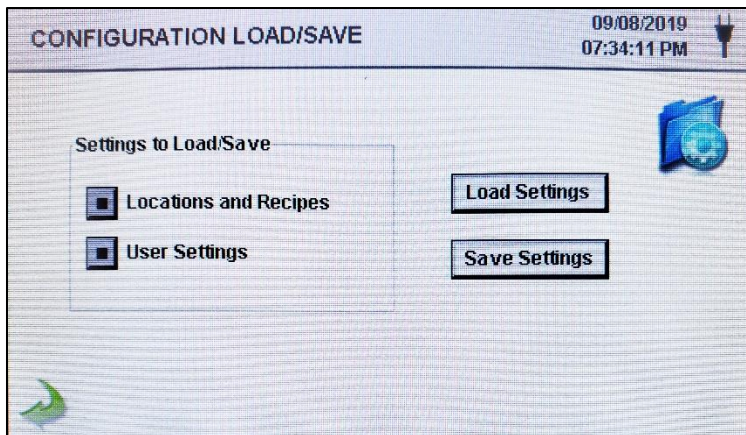
| Settings to Load/Save | Select the check boxes to choose Locations and Recipes and/or User Settings to load or save to a USB thumb drive. |
Load Settings	Press the Load Settings icon to initiate loading a previously saved settings configuration into the instrument.
Save Settings	Press the Save Settings icon to initiate saving the current configuration to a USB thumb drive.
Back-Arrow Icon	Press the Back-Arrow icon to return to the previous screen.

6-6 Printer Setup

Press the Printer Setup icon to open the Printer Setup screen.
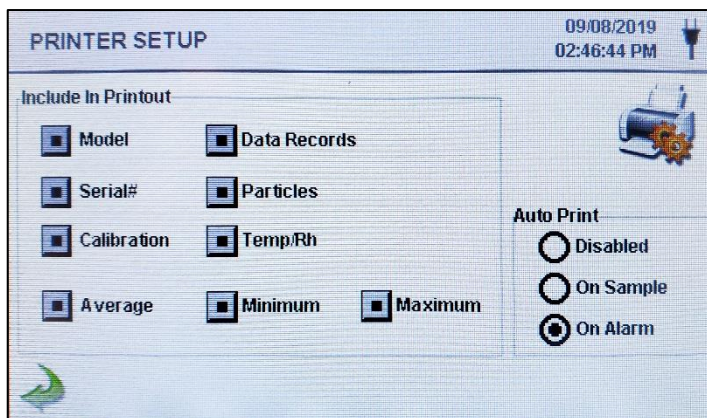
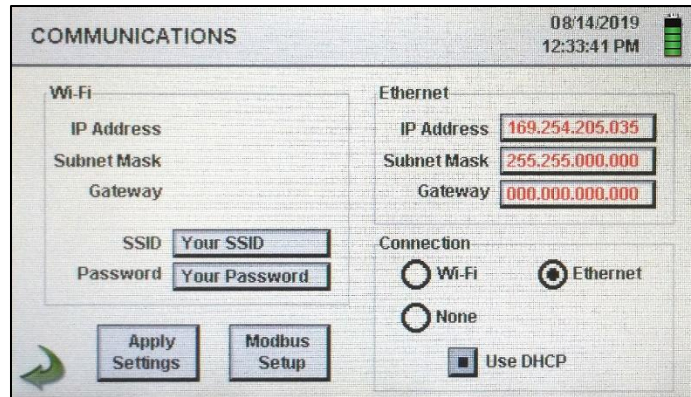| Include in Printout | Select each item to be included in printed values and reports. |
| | |
| Automatic Printing | Select Print Options Automatic button to enable automatic printing On Sample or On Alarm. |

6-7 Communication

The instrument has multiple modes of communication for uploading or downloading data or configurations for operation. The modes of communication include Ethernet, RS485, RS232, USB Host or Client, and Optional Wi-Fi. Press the Communication icon to open the Communications screen.

Communications Screen

Ethernet Communication   Select the Ethernet radio button for Ethernet connection.
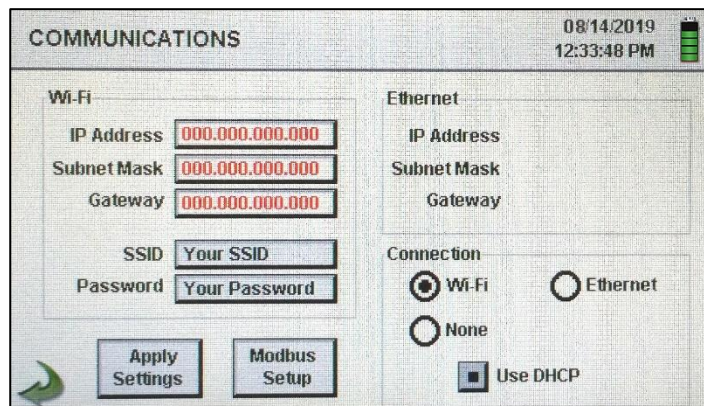
Use DHCP   When the DHCP button is selected the instrument will obtain an IP address, subnet mask and gateway information from the router automatically.

IP Address, Subnet Mask, & Gateway   If the DHCP button is not selected Press the IP Address, Subnet Mask and Gateway windows to enter the desired values for your router. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

Wi-Fi Communication   The instrument can support an optional Wi-Fi communication module. Select the Wi-Fi radio button for Wi-Fi connection.

Use DHCP When the DHCP button is selected the instrument will obtain an IP address, subnet mask and gateway information from the router automatically.

Wi-Fi IP Address, Subnet Mask, & Gateway If the DHCP button is not selected Press the IP Address, Subnet Mask and Gateway windows to enter the desired values for your router. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

Wi-Fi SSID Press the Wi-Fi SSID window to enter the Wi-Fi SSID and press OK.
NOTE: Case Sensitive.

Wi-Fi Password Press the Wi-Fi Password window to enter the Wi-Fi Password and press OK.
NOTE: Case Sensitive.

Modbus Setup Press the Modbus Setup icon to open the Modbus Setup screen.
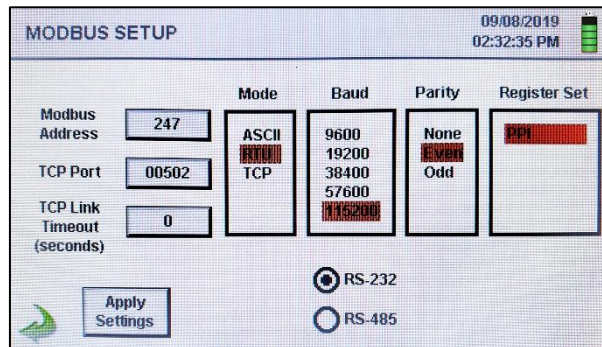
Modbus Address Press the Modbus Address window to open the Enter Modbus Address (0-247) screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

TCP Port Press the TCP Port window to open the Enter Modbus TCP Port screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

TCP Link Timeout The TCP Link Timeout is useful when a connection to a remote computer is absent for longer than the expected time (perhaps due to a router connection drop). This could allow the connection to be automatically reestablished.

Press the TCP Link Timeout window to open the Enter Modbus TCP Link Timeout screen. A numeric keypad will be displayed for entering the number of timeout seconds. To select the value to change, use the < or > to move cursor. When complete press OK button.

NOTE: Setting the TCP Link Timeout to 0 disables the timeout function.

Mode	Select ASCII, RTU, or TCP.
Baud	Select 9600, 19200, 38400, 57,600, or 115200.
Parity	Select Parity, Odd, Even, or None.
Register Set	Select Register Set.
RS-232 or RS-485	Select RS-232 or RS-485 radio button. **NOTE:** The Baud, Parity, and RS-232 or RS-485 are not used if TCP is selected.
Apply Settings	Press the Apply Settings icon to apply Modbus Setup settings.
Back-Arrow Icon	Press the Back-Arrow icon to return to the previous screen.
MODBUS Register Map	The MODBUS register map can be found in the Appendix at the back of this manual.
Internet of Things (IOT)	The 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 Instrument Management Software (IMS) Manual.

6-8 Environment

Press the Environment icon to open the Environment screen to set Barometric Pressure (BP) Units, Temperature (Temp) Units, Enable Low and High Alarm, Setting Low and High Alarm and Show on Home.

Environment Setting Screen

	Select Barometric Pressure (BP) Units in Inches of Mercury (inHg) or Millibar (mbar).
Units	Select Barometric Pressure (BP) Units in Inches of Mercury (inHg) or Millibar (mbar).
	Select Temperature (Temp) Units in Fahrenheit (°F) or Celsius (°C).
Show on Home	Select Show on Home Button to display the selected value on the Main screen.
Enable Alarms	Select the Enable Alarm button to Enable Alarms.
Low Alarm	Press the Low Alarm window to open the Enter Low Threshold screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.
High Alarm	Press the High Alarm window to open the Enter High Threshold screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

6-9 Passwords

Press the Password Setup icon to open the Passwords screen.

Password Setup Screen

|	
User Password	Select the User Password button to enable User Password, preventing any unauthorized use of the instrument. The User Password allows the use of the instrument in its current configuration and saving samples.
New Password **Confirm** **New Password**	Press the New Password window to open the Enter New User Password (4-15 Chars) screen. Press the Confirm New Password window to open the Confirm New User Password (4-15 Chars) screen. Press Confirm Change Button to save changes. **NOTE:** The default User Password is **1234.**
Admin Password	Select the Admin Password button to enable Admin Password, preventing access to Settings screens, Time/Date, and configurations by Users.
New Password **Confirm** **New Password**	Press the New Password window to open the Enter New Admin Password (4-15 Chars) screen. Press the Confirm Admin Password window to open the Confirm New Admin Password (4-15 Chars) screen. **NOTE:** The default Admin Password is **4321.**
Password Timeout	Press the Password Timeout window to enter the number of minutes (1-99) the instrument will timeout due to inactivity. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button. **NOTE:** The default is five (5) minutes.
Lock Now	Press the Lock Now icon to immediately lock the instrument. LOST PASSWORD: Please call or email Airy Technology for a temporary password that will be valid for the day the password is requested. **NOTE:** This unique password will automatically expire at the end of the day it is issued.

7-1 Power Management
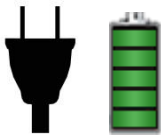
 Press the AC Adapter icon or Battery Indicator icon to open the Power Management screen.
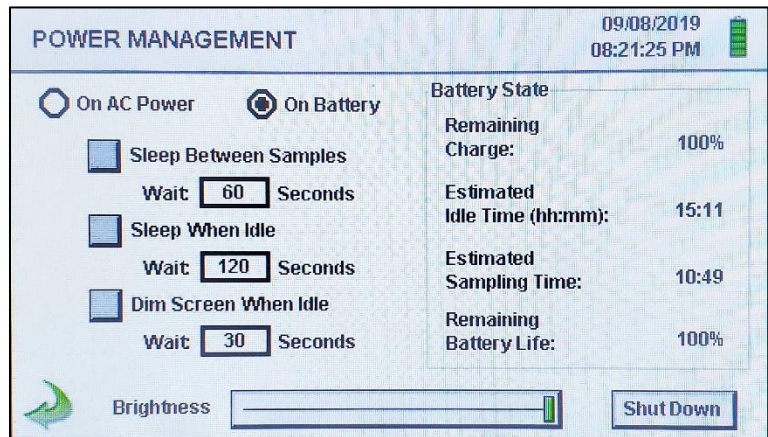

| **AC Adapter Icon** | The AC Adapter icon is visible when the instrument is plugged into AC mains power. |

| **Battery Indicator Icon** | The Battery Indicator icon is visible when the instruments is operating with battery power. The icon also serves as a visual indication of the battery's power level. The battery power level icon will display differently depending on the amount of battery power remaining. The power level indications are as follows: |

100%   80%   60%   40%   20%
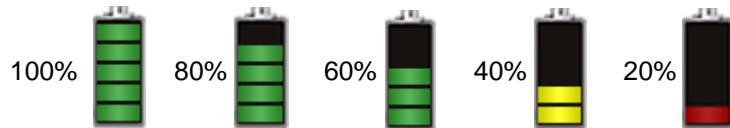
| **Battery State Remaining Charge** | Percent of battery charge remaining. |

| **Battery State Estimated Idle Time** | Estimated amount of time remaining if the instrument is powered on without sampling. |

| **Battery State Estimated Sampling Time** | Estimated amount of time remaining if the instrument is sampling. |

| **Battery State Remaining Battery Life** | Percent of battery life remaining. |

| **On AC Power On Battery** | Select the radio button to choose the settings for On AC Power and ON Battery. |

Sleep Between Samples	Selecting the Sleep Between Samples button activates the feature for powering down the instrument between samples to conserve battery life. Press the Sleep Between Samples Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds from 0 to 65,535. To select the value to change, use the < or > to move cursor. When complete press OK button. **NOTE:** A Hold Time has to be set for a minimum of 38 seconds in order to activate Sleep Between Samples.
Sleep When Idle	Selecting the Sleep When Idle button activates the feature for powering down the instrument when idle. Press the Sleep When Idle Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds from 10 to 65,535. To select the value to change, use the < or > to move cursor. When complete press OK button.
Dim Screen When Idle	Selecting the Dim Screen When Idle button activates the feature for dimming the instrument's screen when idle. Press the Dim Screen When Idle Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds. To select the value to change, use the < or > to move cursor. When complete press OK button. **NOTE:** The minimum Dim Screen When Idle Wait Time is 10 seconds.
Brightness Slider	Press and slide the Brightness Slider to increase and decrease screen brightness.
Shut Down Icon	Press the Shutdown Icon to immediately Shut Down the instrument.
Back-Arrow Icon	Press the Back-Arrow icon to return to the previous screen.

8-1 Volume Controls

Volume Control Icon

Press the Volume Control icon to enable the Volume Control Slider. Slide the Volume Control Slider Bar to adjust the volume. A numeric value appears at the bottom of the slider to indicate relative volume. Moving the Volume Control Slider Bar to 0 mutes the instrument.
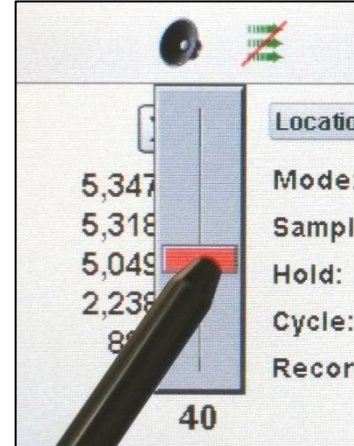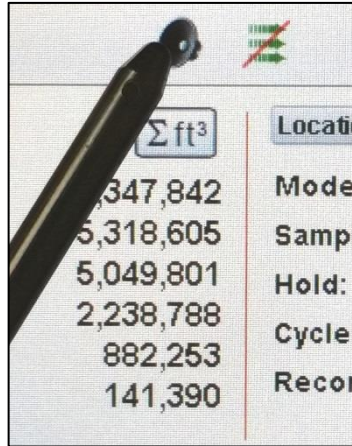
9-1 Instrument Management Software (IMS)

The instrument includes a PC based software utility for real-time graphing, downloading data from the instrument, field calibration of sensors, firmware updates, remote diagnostics direct to a service technician, and more.

NOTE: Detailed instructions for the use of the IMS software are contained in the IMS Software Manual on the included USB thumb drive.

Software Installation

Plug the provided thumb drive into your Windows PC and select the IMS Install web installer application file. Follow the installation prompts.

Start Software

Use the IMS Icon in the program folder or on the desktop to start the program.

Connection Indication

Connect the instrument to a PC with the provided USB cable to establish a connection between IMS and the instrument. When a connection has been established the Green USB Connection indication will appear.

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10-1 Remote Operation

The instrument may be accessed with a web browser via Ethernet (wired or Wi-Fi), using the instruments IP address found in the Communications screen. The following functions can be performed remotely: Start and Stop sampling, change Data Units, select Locations and turn on/off displayed channel values.

The Instrument must be placed in Ethernet or optional Wi-Fi mode and the unit must also be connected to a working router on the same network as the PC.

In the Communications screen, select the Use DHCP button and the unit will automatically display the router issued settings. Enter the displayed IP address into any device browser to access the remote screen.

NOTE: The URL address is the IP address that the DHCP Router assigned to the instrument. A static IP address can be provided for the device through the Communications screen by deselecting the Use DHCP button and entering the IP address.
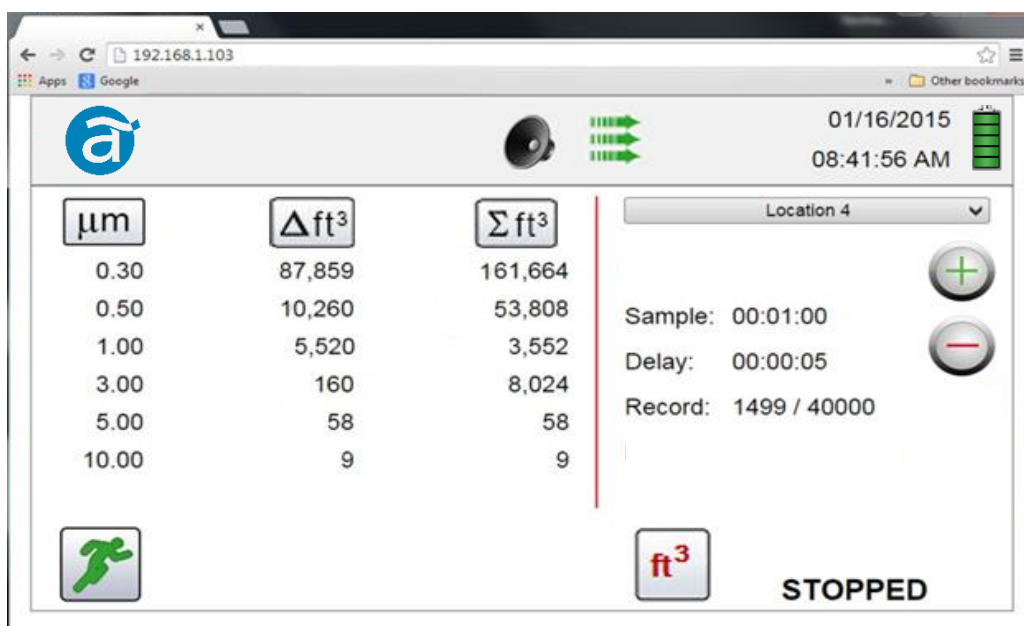
Appendix – A
Modbus Register Map
The MODBUS Register Map can be found on the USB thumb drive.

Appendix – B
Environmental Sensor Data Logging
Environmental sensor data can be logged without running the pump or laser by deselecting all particle channels on the Channel Management screen. An All Channels Are Disabled screen will appear when the Back-Arrow button is pressed. Press Yes to confirm and No to cancel.

twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

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