

AQM-150

Air Quality Monitor

**ACTIVE Particle Control Technology
for Cleaner AirTM**



Operating Guide

Thank you for purchasing the SecureAire AQM-150 Air Quality Monitor, the most advanced handheld instrument available today. With a large dynamic measuring range that spans from 0.3 μm to 25.0 μm , with true variable binning for channel size adjustment settings to 0.01 μm . The Real-Time Meter function is unique in its ability to fine-tune the instrument's sensitivity in order to locate particulate sources with visual and audible indications.

This versatile Air Quality Monitor'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 indoor environments.

Happy Monitoring!

**Air
Purification
for a Safe,
Healthy,
and Clean
EnvironmentTM**



Declaration of Conformity

In accordance with EN ISO/IEC 17050-1:2010

Manufacturer's Name: SecureAire LLC

Manufacturer's Address: 1968 Bayshore Blvd.
Suite 207
Dunedin, FL 34677

Application of Council Directives

EMC: 2014/30/EU

RoHS 2: 2011/65/EU

Low Voltage Directive: 2006/95/EC

Application of Council Directives

EMC: EN 61326-1:2013

CISPR 11:2009+A1:2010

RoHS 2 Technical Documentation: EN 50581:2012

Safety Requirements: EN 61010-1:2010

Product Name: Handheld and Remote Particle Counter

We hereby declare that the equipment specified above conforms to the above Directives and Standards.

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 Particles Plus 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 Particles Plus equipment not expressly approved by Particles Plus 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.

Legal Notices

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Technical Support: Please contact us at 813-300-6077 with any questions or problems.

Printing History

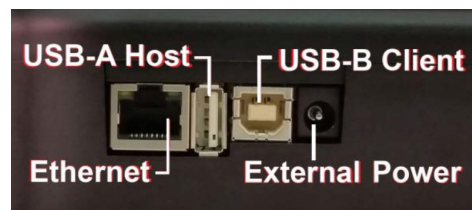
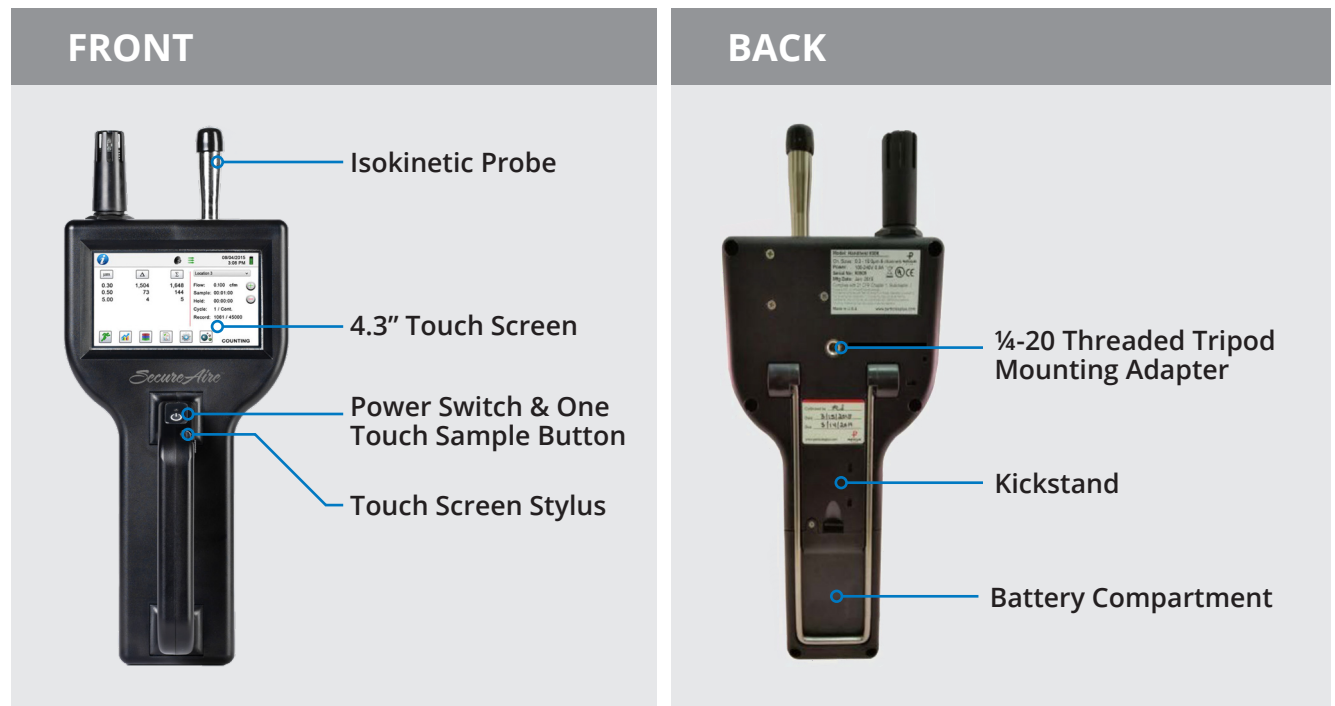
This manual was first printed in July 2020. The edition number will change when a new edition is printed. Minor changes may be made at reprint without changing the edition number. The part number will change when extensive changes are made.

Package Contents

Included Accessories

Description	Part Number	
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 8303 & 8503	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	
Handheld Carrying Case	AS-99023	

AQM-150 Product Views



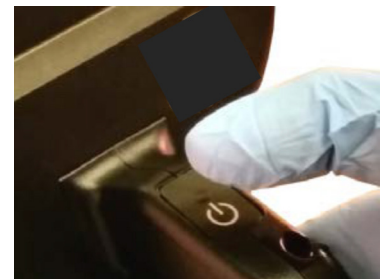
**Left-side View:
Input/output connections**

Operating the AQM-150

Powering Up and Charging Status LED (on power button)

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.

1. Pressing the button momentarily starts the pump and begins sampling.
2. Pressing the one-touch button again for 1 second stops sampling.
3. Holding the button for 3 seconds turns the instrument off.



Prior to starting the instrument, you must remove the sensor probe cap, failure to do so will cause damage to the internal pump. Also, when storing the instrument, please make sure that the sensor probe cap is replaced.

Operating Instructions

Power and charging status are 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.



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 LEDs off



Running the AQM-150

Start and stop sampling icon buttons

Controls the instrument to begin sampling or to stop sampling.

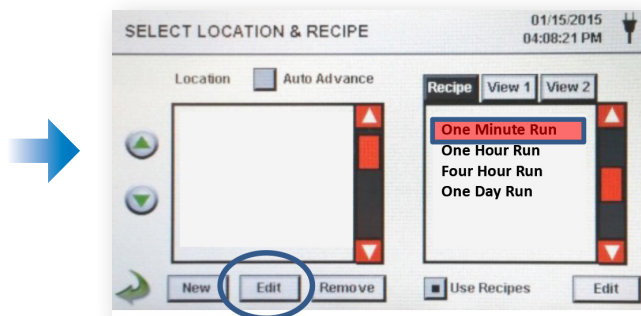
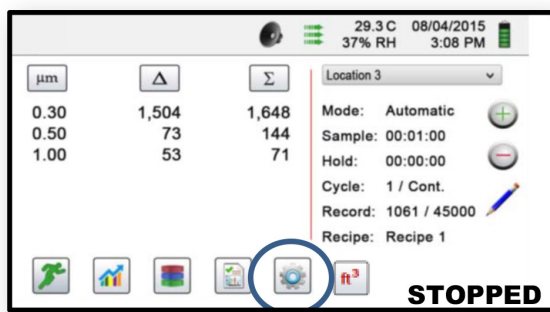
There are three preloaded programs on the AQM-150

One Minute Run — Set for taking a count every minute.

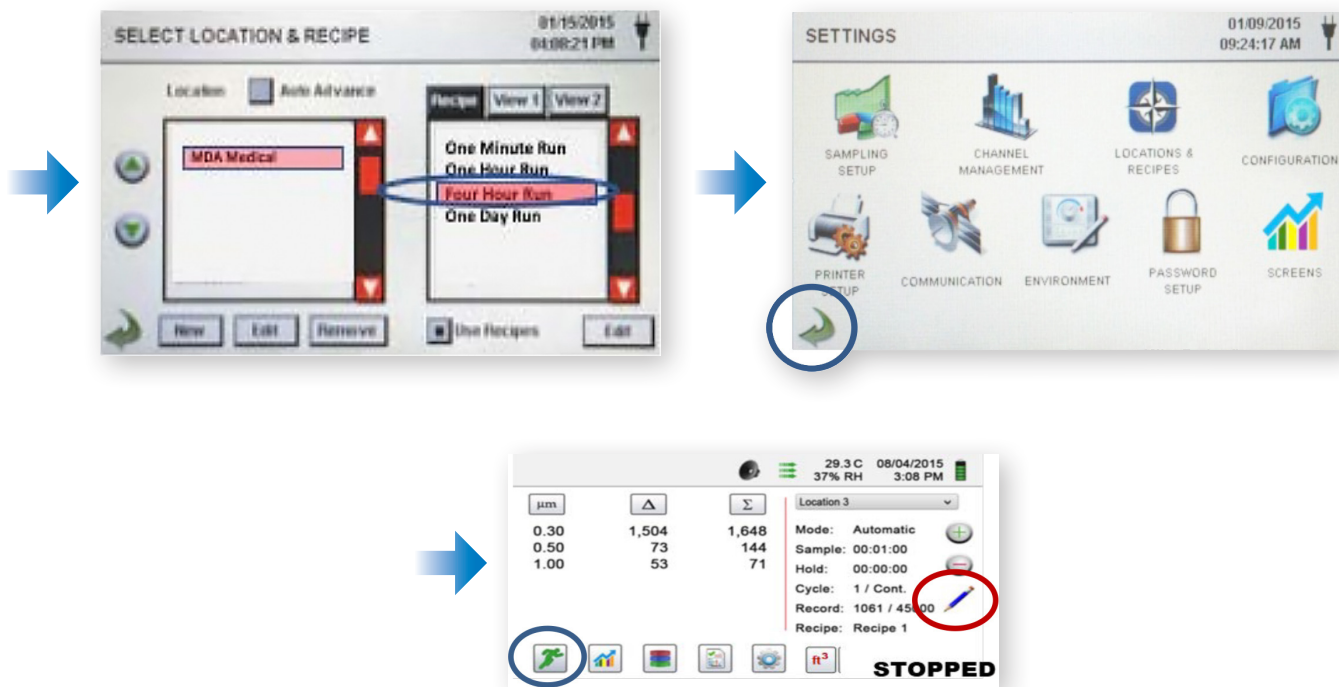
One Hour Run — set for taking a count every hour.

Four Hour Run — set for taking a count every 4 hours

The following steps should be followed to switch between the programs.

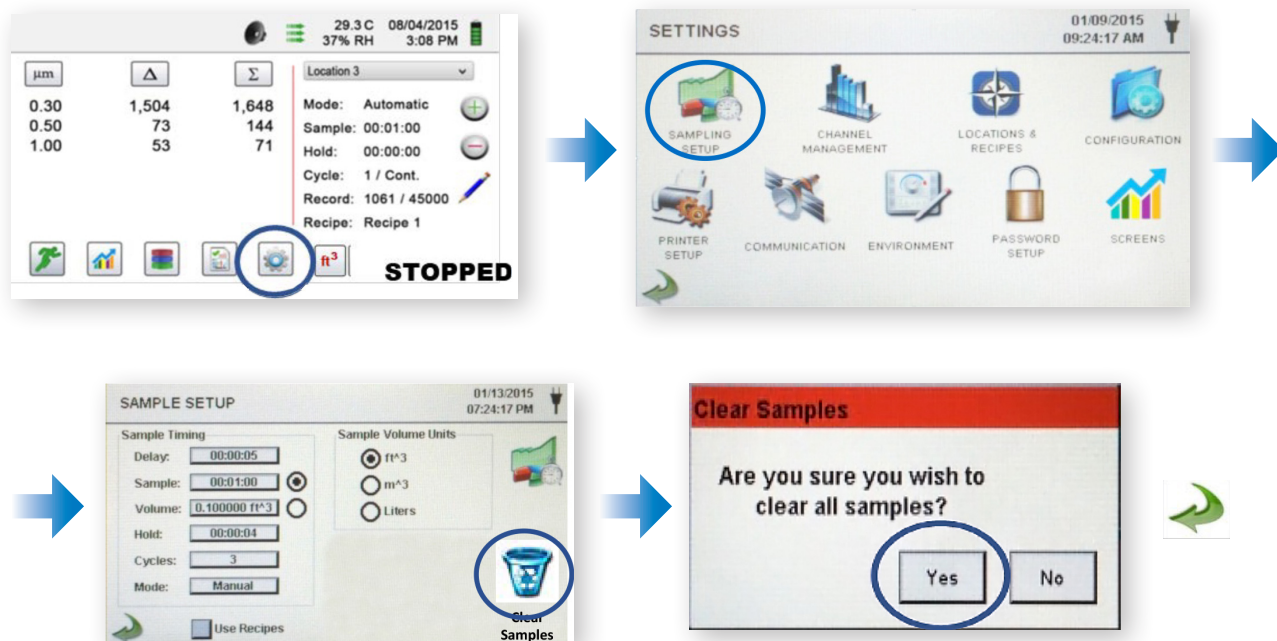


Operating Instructions



Clearing Data in AQM-150

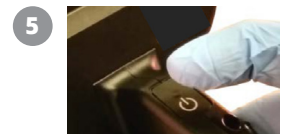
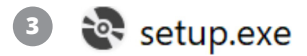
The following steps should be followed to clear the data from the AQM-150.



Operating Instructions

Collecting Data on a PC

- 1 Insert the provided Thumb Drive into a USB port on your PC.
- 2 Connect the provided USB cable (6') to AQM 150 and your PC.
- 3 Install setup.exe. on your PC.
- 4 Open setup.exe on your PC.
- 5 Turn AQM 150 on.



For most efficient operation, follow the following steps:

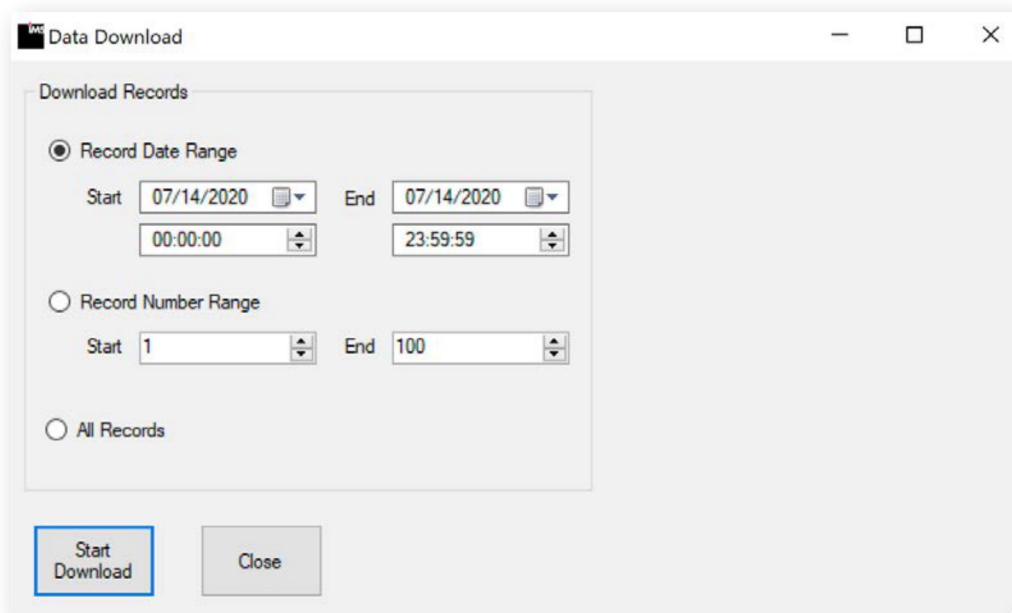
The screenshots show the 'Select Columns to Display' dialog box in the AQM 150 software. The dialog has a tree view on the left and an 'OK' button on the right. The tree view is expanded to show the following options:

- All
- Sample Information
 - Date
 - Time
 - Location
 - Annotation
 - Sample Duration
 - Flow Rate
 - Laser OK
 - Flow OK
- Channel Information
 - Ch1 Size
 - Ch1 Count
 - Ch1 Alarm
 - Ch2 Size
 - Ch2 Count
 - Ch2 Alarm
 - Ch3 Size
 - Ch3 Count
 - Ch3 Alarm
 - Ch4 Size
 - Ch4 Count
 - Ch4 Alarm
 - Ch5 Size
 - Ch5 Count
 - Ch5 Alarm
 - Ch6 Size
 - Ch6 Count
 - Ch6 Alarm
- Sensors
- Diff Counts
- Cum Counts
 - FT3
 - CntsCumFT3 Ch1
 - CntsCumFT3 Ch2
 - CntsCumFT3 Ch3
 - M3
 - Raw
 - PM
 - Other

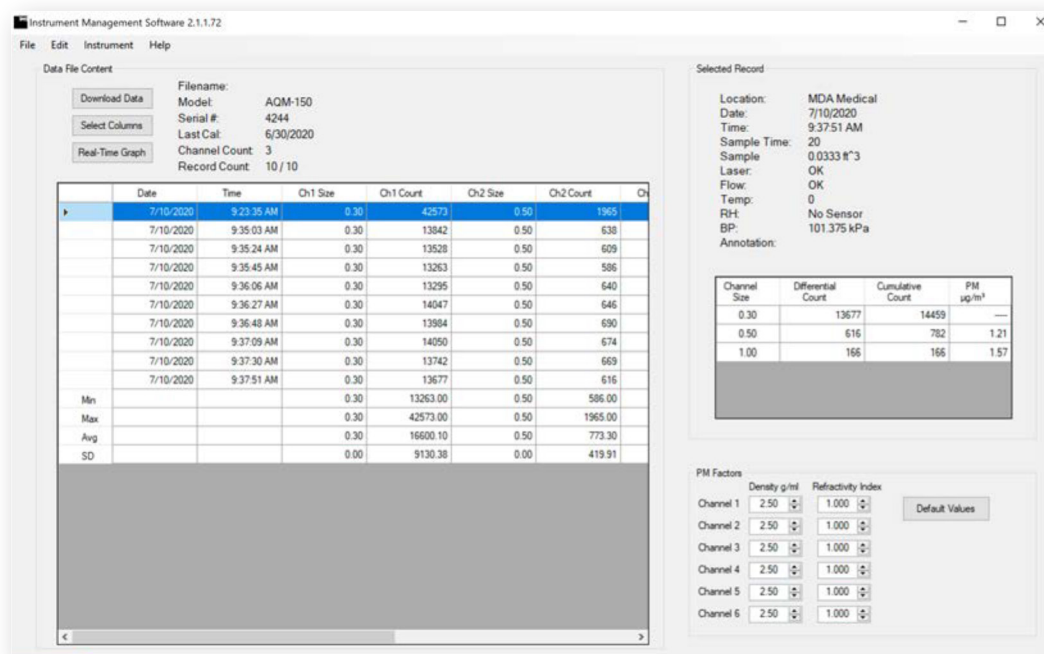
- Starts the data download from the connected instrument
- Select the Data Columns to be displayed and copied to clipboard
- Fast Access to Real-Time Graph remote operation screen

Operating Instructions

1. Click on Select Columns
2. Click the checkmarks shown in Sect Columns to Display. **Click Ok**
3. Click on Download Data

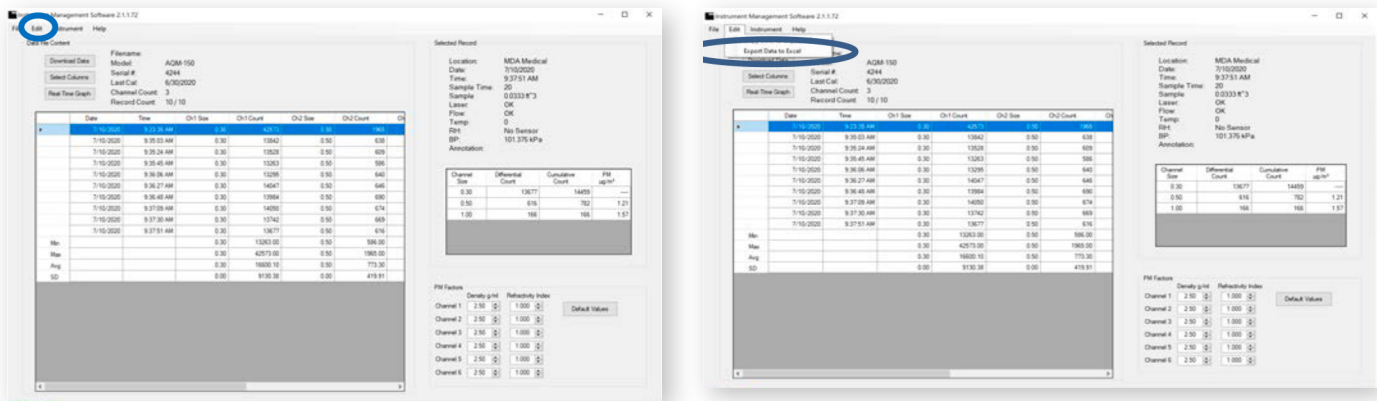


- 3a. Choose the Record Date Range you wish to download
- 3b. Click on "All Records".
- 3c. Click on Start Download
- 3d. Data will be shown in IMS.
- 3e. To download data in Excel:



Operating Instructions

3e. To download data in Excel:



Real-Time Graph (RTG) and Settings

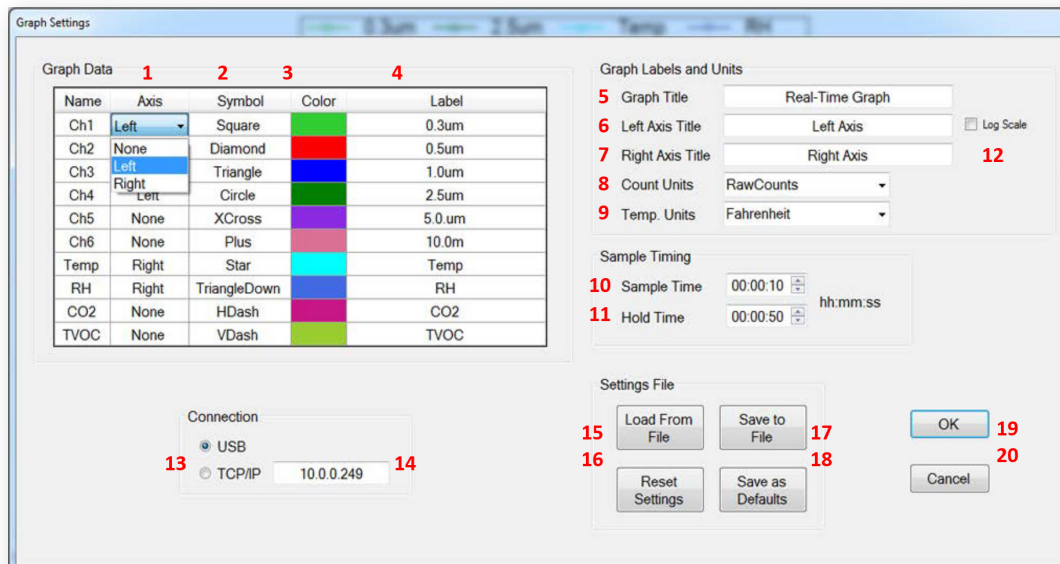


When running the Real Time Graph Mode, it must be set up independent of the recipes in the AQM-150.

1. Connect using the USB Cable provided.
 - a. Connect the USB cable to the instrument and to the PC
 - b. Click on the Real-Time Graph button.

The Real-Time Graph will collect and save the information from the remote operation session but will only save this information as graph data. For the complete data download you must pull the data from the AQM 150 using a USB memory stick or by connecting directly with the USB cable and running the **Download Data** function. A step by step example is provided in Appendix A.

The Real-Time Graph feature for remote operation and visual display of sample data in real time is able to be customized to user preferred settings. It is also the screen for setting up the communications mode the instrument and software will use to communicate.



Corresponding Graph Settings:

- 1. Axis** – Turn on/off channel/sensor data or set to display on left or right axis.
- 2. Symbol** – Choose the symbol for the data point for that channel/sensor.
- 3. Color** – Choose the color for the channel/sensor data to use on the graph.
- 4. Label** – Create custom label for specific channel or sensor.
- 5. Graph Title** – Change the graph title.
- 6. Left Axis Title** – Change the left axis title.
- 7. Right Axis Title** – Change the right axis title.
- 8. Count Units** – Select Raw Count, Count per M³, Count per Ft³, or PM.
- 9. Temp. Units** – choose the temperature units (Celsius or Fahrenheit).
- 10. Sample Time** – Amount of time set for sample (hh:mm:ss).
- 11. Hold Time** – Amount of time set for delay before next sample begins (hh:mm:ss).
- 12. Log Scale** – Turns on feature for values to display in Log Scale on graph.
- 13. Connection Type** – Select USB or TCP/IP for connection method to instrument.
- 14. Enter IP address** of instrument (default IP address is 10.0.0.249).
- 15. Load From File** – Previously saved settings can be loaded from a file.
- 16. Reset Settings** – Resets all settings on screen to factory default.
- 17. Save to File** – Saves the current settings to a file for later use.
- 18. Save as Default** – Saves the current settings to be default when started.
- 19. OK** – Acknowledges and accepts the current settings and returns to RTG screen.
- 20. Cancel** – Cancels the current settings page and returns to the RTG Screen.

Purge Filter Procedure for “Zero” Count Testing

The Purge Filter procedure is used to verify that the AQM-150’s internal sensor is clean and free from any built-up debris. In addition, this verifies that the monitor has been recalibrated to a confirmed “Zero” particle reading. It is recommended that this procedure be performed at least 3X per year or when an important analysis is performed, i.e., a hospital operating room study.

Purge Filter Use and Procedure:

1. Unscrew the Isokinetic Probe and replace it with the 0.1-micron Purge Filter.
2. Run unit until all counts at 0.3u have reached a Zero (0) value.
(This should take no longer than 5 minutes.)
3. Remove the 0.1-micron Purge Filter and re-attach the Isokinetic Probe.

The AQM-150 is clean and ready for re-use.

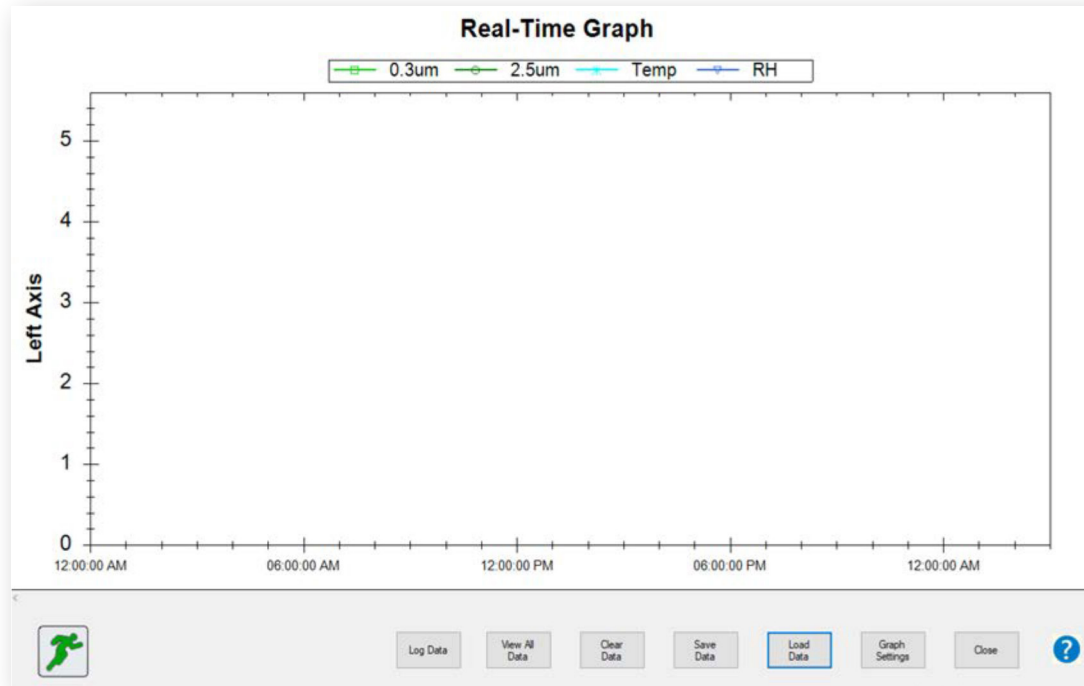


Important Notes:

1. Always keep the Cap on Isokinetic Probe when the AQM-150 is not in operation.
2. Never keep Cap on Isokinetic Probe when the AQM-150 is in operation.

Appendix A

Downloading data from the Real-Time Graph Function



Selecting Axis, Symbol and Color

Graph Settings

Graph Data

Name	Axis	Symbol	Color	Label
Ch1	Left	Square	Green	0.3um
Ch2	None	Diamond	Red	0.5um
Ch3	Left	Triangle	Blue	1.0um
Ch4	Left	Circle	Green	2.5um
Ch5	None	XCross	Purple	5.0 um
Ch6	None	Plus	Pink	10.0m
Temp	Right	Star	Cyan	Temp
RH	Right	TriangleDown	Blue	RH
CO2	None	HDash	Magenta	CO2
TVOC	None	VDash	Light Green	TVOC

Graph Labels and Units

Graph Title: Real-Time Graph

Left Axis Title: Left Axis Log Scale

Right Axis Title: Right Axis

Count Units: RawCounts

Temp. Units: Fahrenheit

Sample Timing

Sample Time: 00:01:00 hh:mm:ss

Hold Time: 00:00:00

Settings File

Load From File Save to File OK

Reset Settings Save as Defaults Cancel

Connection

USB TCP/IP 10.0.0.249

Name	Axis	Symbol	Color	Label
Ch1	Left	Square	Green	0.3um
Ch2	None	Diamond	Red	0.5um
Ch3	Left	Triangle	Blue	1.0um
Ch4	Right	Circle	Green	2.5um
Ch5	None	XCross	Purple	5.0 um
Ch6	None	Plus	Pink	10.0m
Temp	Right	Star	Cyan	Temp
RH	Right	TriangleDown	Blue	RH
CO2	None	HDash	Magenta	CO2
TVOC	None	VDash	Light Green	TVOC

Color

Basic colors:

Custom colors:

Define Custom Colors >>

OK Cancel

Detailing Test Parameters

Graph Settings

Graph Data

Name	Axis	Symbol	Color	Label
Ch1	Left	Square	Green	0.3um
Ch2	None	Diamond	Red	0.5um
Ch3	None	Triangle	Blue	1.0um
Ch4	Right	Circle	Green	2.5um
Ch5	None	XCross	Purple	5.0 um
Ch6	None	Plus	Pink	10.0m
Temp	None	Star	Cyan	Temp
RH	None	TriangleDown	Blue	RH
CO2	None	HDash	Magenta	CO2
TVOC	None	VDash	LightGreen	TVOC

Graph Labels and Units

Graph Title:

Left Axis Title: Log Scale

Right Axis Title:

Count Units:

Temp. Units:

Sample Timing

Sample Time: hh:mm:ss

Hold Time: hh:mm:ss

Settings File

Connection: USB TCP/IP

Buttons: Load From File, Save to File, OK, Cancel, Reset Settings, Save as Defaults

← Fill in

Saving File by Name

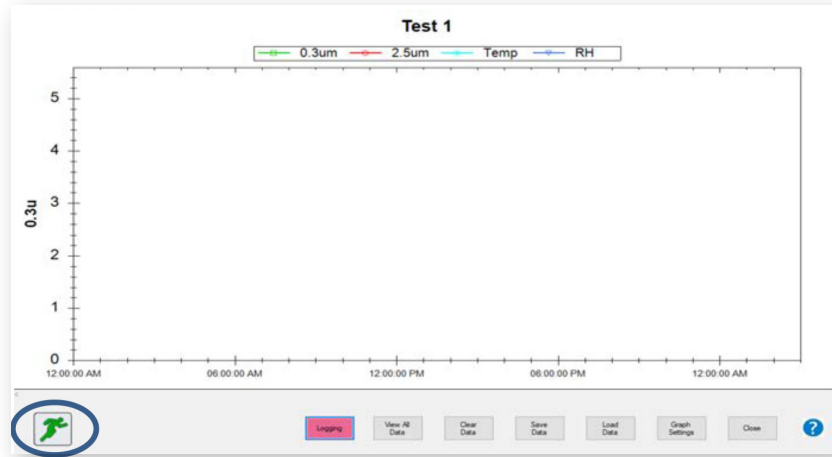
Save As

File name: Save as type: lmsLog file (*.csv)

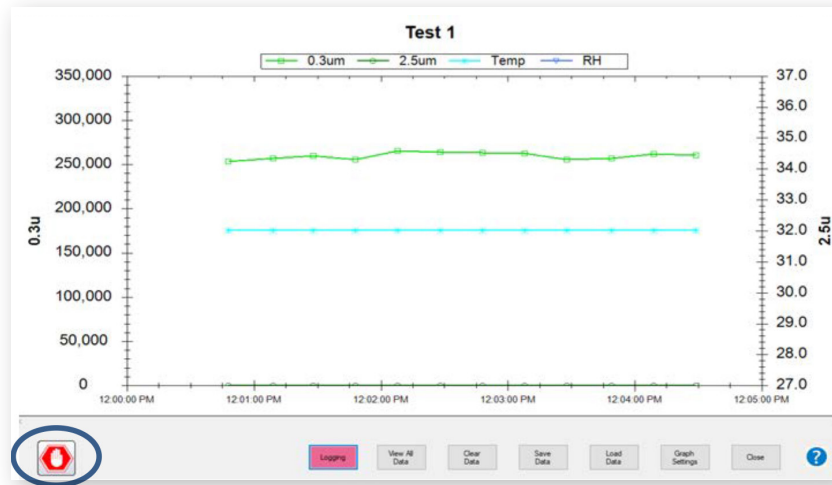
Buttons: Save, Cancel

Log Data, View All Data, Clear Data, Save Data, Load Data, Graph Settings, Close

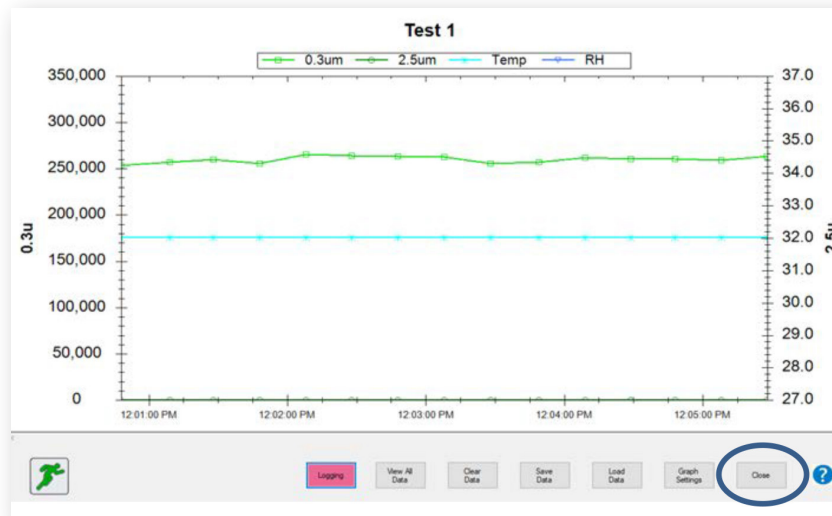
Running the Test



Completing the Test

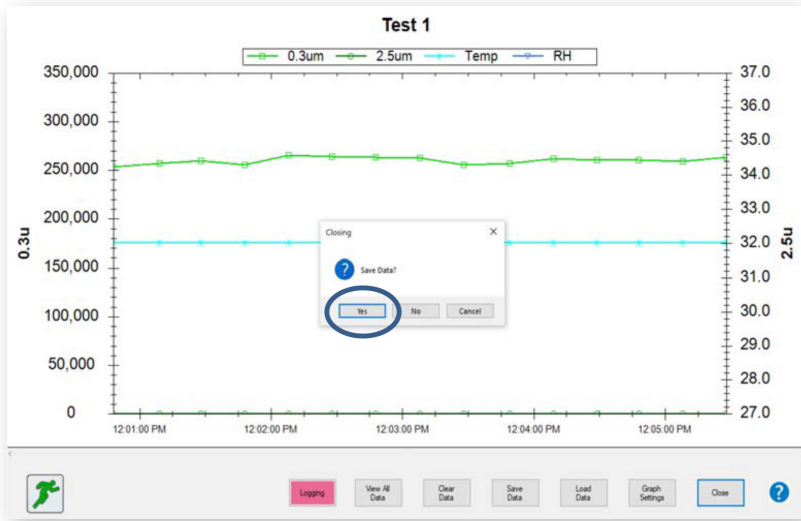


Closing the Test File

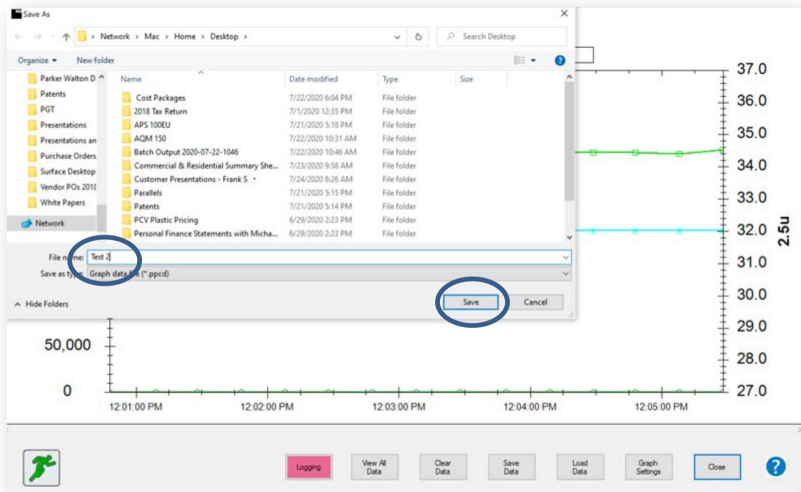


Appendix A

Saving the Data



Naming the File



About SecureAire: SecureAire is headquartered in Dunedin, Florida. The Company is the industry leader in **Active Particle Control™**, which is based upon technologies developed and employed in Semiconductor Cleanrooms. SecureAire has advanced and developed highly sophisticated air purification technologies that make *air flow the dominant transport mechanism for airborne contamination*.

Please contact SecureAire at 813-300-6077 with any questions or concerns.

For more information please visit us at our website www.secureaire.com.

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