

OPERATION MANUAL

ES-808 SCAMP

System Contamination and
Meteorological Platform

ES-808-9800

Rev A



POWERED BY ACOEM

Met One Instruments, Inc.
1600 NW Washington Blvd.
Grants Pass, OR 97526
Telephone: (541) 471-7111
Facsimile: (541) 471-7116
metone.com



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Met One Instruments, Inc. is now part of the Acoem international group of companies.

Met One Instruments has been designing and manufacturing class-leading meteorological, ambient air sensing, and air quality monitoring instrumentation since its inception in 1989. Its line of robust industrial-grade meteorological equipment, air particulate monitoring equipment, and indoor air quality monitoring systems have set the standard for the industry. Headquartered in Grants Pass, OR, Met One Instruments, Inc. is fueled by a dedicated expert team who is diligently working to advance the technology required to ensure continued improvements in human and environmental health now and for generations to come.

Acoem is committed to helping organizations and public authorities find the right balance between progress and preservation – safeguarding businesses and assets and maximizing opportunities while conserving the planet's resources. Headquartered in Limonest, France, Acoem delivers unrivaled inter-operable AI-powered sensors and ecosystems that empower our customers to make enlightened decisions based on accurate and timely information.

In 2021, Acoem acquired Met One Instruments, marking a pivotal moment when two industry leaders in the air quality monitoring sectors converged – creating a single, stronger and more future-focused provider of holistic environmental monitoring solutions. Now, **Met One Instruments Powered by Acoem** has opened new possibilities through an extensive offering of class leading, multi-parameter environmental monitoring and industrial reliability solutions. These integrated measurement systems, technologies, and services deliver comprehensive solutions for a range of applications, including environmental research, regulatory compliance, and industrial safety and hygiene.

For more information about **Met One Instruments Powered by Acoem**, please visit: metone.com

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1. INTRODUCTION

1.1 *About This Manual*

This document is organized with the most important information toward the front of the manual for easy reference by the user. All ES-808 owners and operators should read and understand installation, setup, and field calibration procedures. Other sections provide in-depth information on subjects such as theory, diagnostics, accessories, alternate settings, and other valuable information; consult as needed. An electronic version of this manual is also available at metone.com.

This manual is periodically revised for maximum accuracy and to incorporate new features or updates. User feedback is welcome. Electronic versions of this manual are available upon request.

1.2 *Technical Service and Warranty*

This manual is structured by customer feedback to provide the required information for setup, operation, testing, maintaining, and troubleshooting the ES-808 unit. If more support is required after consulting the documentation, it is encouraged to contact a Met One Instruments expert Technical Service representatives during normal business hours, 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday. In addition, technical information and service bulletins are often posted on our website. Please contact us to obtain a Return Authorization (RA) number before sending any equipment back to the factory. This allows the tracking and scheduling of service work and to expedite customer service.

Contact Information: Tel: + 541 471 7111
Fax: + 541 471 7115
Web: <http://www.metone.com>
Email: service@metone.com

Address: Met One Instruments, Inc.
1600 Washington Blvd
Grants Pass, Oregon
97526 U.S.A.

Please have the instrument serial number available when contacting the manufacturer. On most models manufactured by Met One Instruments, it will be located on a silver product label on the unit and printed on the calibration certificate. The serial number will begin with a letter and be followed by a unique five-digit number, such as U15915.



Figure 1-1 ES-808 SCAMP

1.3 ES-808 SCAMP

The Met One Instruments, Inc. model ES-808 “System Contamination and Meteorological Platform” or SCAMP, is a near-reference air quality and meteorological measurement system which automatically measures and records real-time airborne PM_{2.5} and PM₁₀ particulate concentration levels using the principle of right-angle laser light scatter. Sample air is drawn into the ES-808 detector chamber and passed through an intense laser beam. Particles in the sample air pass through the laser beam, causing light scattering. A detector, opposite the laser, collects the scattered light. The detector output is analyzed to determine the number and size of the particles. A mathematical process provides indicative particulate mass measurements in the data output.

The Meteorological parameters are measured via an integrated AIO 2 system, and the Carbon Monoxide levels are measured via an integrated CO sensor. Detailed descriptions of the ES-808 SCAMP measurement modes are found in Section 4 DATA RETRIEVAL. Measurement results are sent to a customized web-based dashboard where data can be viewed and downloaded. A satellite map is included on the dashboard.

1.3.1 Laser Radiation Safety and Conformity

The ES-808, when properly installed and operated, is considered a Class I laser product. Class I laser products are not considered to be hazardous.

This system contains a 100-mW diode laser which operates at a 785 nm wavelength. The beam is not visible to the naked eye but can cause damage if directly exposed to the eye. A protective optical housing fully encapsulates the laser beam and optics system within the ES-808. Do not attempt to disassemble the optical module. Failure to comply with this instruction could cause accidental exposure to laser radiation and/or damage to the system. The manufacturer certifies that this product operates in compliance with the following standards and regulations:

- **FDA / CDRH This product is tested and complies with 21 CFR, Subchapter J, of the health and Safety Act of 1968.**
- **US 21 CFR 1040.10.**

NOTE: Always power down the system and remove any electrical connections during service or repair.

NOTE: Only trained technicians should attempt to repair the ES-808. Routine maintenance does not require removing the weatherproof enclosure.

2. ES-808 SPECIFICATIONS

Table 2-1 Specifications

PARAMETERS	SPECIFICATIONS
Measurement Principles:	Right angle light scatter detection, using a laser diode as light source.
Number of Mass Channels:	2 (PM _{2.5} and PM ₁₀)
Sample Air Flow Rate:	1.0 LPM
Sheath Air Flow Rate:	1.0 LPM
Flow Control:	Active Volumetric Flow Control
Data Storage Resolution:	To the nearest 0.1 µg/m ³
Laser Type:	Class 1 Diode Laser, 100 mW, 785 nm.
Pump Type:	Brushless Diaphragm Pump.
Power Supply:	Universal 100-240 VAC input, 50/60Hz. Optional regulated 12VDC.
Battery:	Li-ION 14.5V, 5.2Ah, 75.92Wh.
Power Consumption:	0.85A (normal operation), 4A (charging)
Operating Temperature:	32 to +122° F
Storage Temperature:	-4° to +140° F
Ambient Humidity Range:	0 to 95% RH, non-condensing.
GPS:	Antenna – GPS location
Network Compatibility:	LTE-M (U.S. Domestic)
Data Update Rate to Cloud:	Standard: USA: 5 Minute – Factory settings options: 5, 15 minutes.
Data Storage on Cloud:	2 Years (oldest data is overwritten)
Compatible Software:	COMET™, terminal programs such as HyperTerminal®
Factory Service Interval:	12 Months typical, under continuous use in normal ambient air.
Mounting Options:	1" dia. pole mount bracket – standard. EX-905 tripod included.
Unit Weight	23 lbs.
Unit Dimensions	Height: 21" Width: 10.5" Depth: 10.5"
AIO 2 PARAMETERS	SPECIFICATIONS
Wind Speed Operating Range	0 to 168 mph (0 to 75 m/s)
Wind Speed Calibrated Range	0 to 134 mph (0 to 60 m/s)
Wind Speed Accuracy	1.1 mph (±0.5 m/s) or 5% of reading (whichever is greater)
Wind Speed Resolution	.1 mph or m/s
Wind Direction Range	0 to 360 degrees
Wind Direction Accuracy	±5° (including Compass)
Wind Direction Resolution	1.0°

Alignment Compass Accuracy	±2°
Alignment Compass Resolution	1°
Temperature Accuracy	±0.36 °F from 32 to 122 °F
Temperature Resolution	0.1 °F or C
Relative Humidity Accuracy	±3% @ 25 °C
Relative Humidity Resolution	1.0%
Barometric Pressure Range	500 to 1100 hPa (mbar) (14.76 - 32.48 inHg)
Barometric Pressure Accuracy	±0.5 hPa @ 25 °C
Barometric Pressure Resolution	0.1 hPa
External Rain Gauge Input	Resolution 0.25mm or 0.01", user selectable
External Solar Radiation Sensor Input	Measured in W/m ²
Measurement Rate Output	1 Hz
Signal Output Type	RS-232, RS-485, and SDI-12
CO PARAMETERS	SPECIFICATIONS
Sample Gas Type	Carbon Monoxide (CO)
Gas Concentration Range	0-250 PPM
Gas Sensor Type	Electromechanical
Enclosure Water Resistance	Weather Resistant (when installed properly)
Communication Type	RS-485
Detector Life Expectancy	7 years

Specifications may be subject to change without notice.

2.1 ES-808 SCAMP Physical Attributes

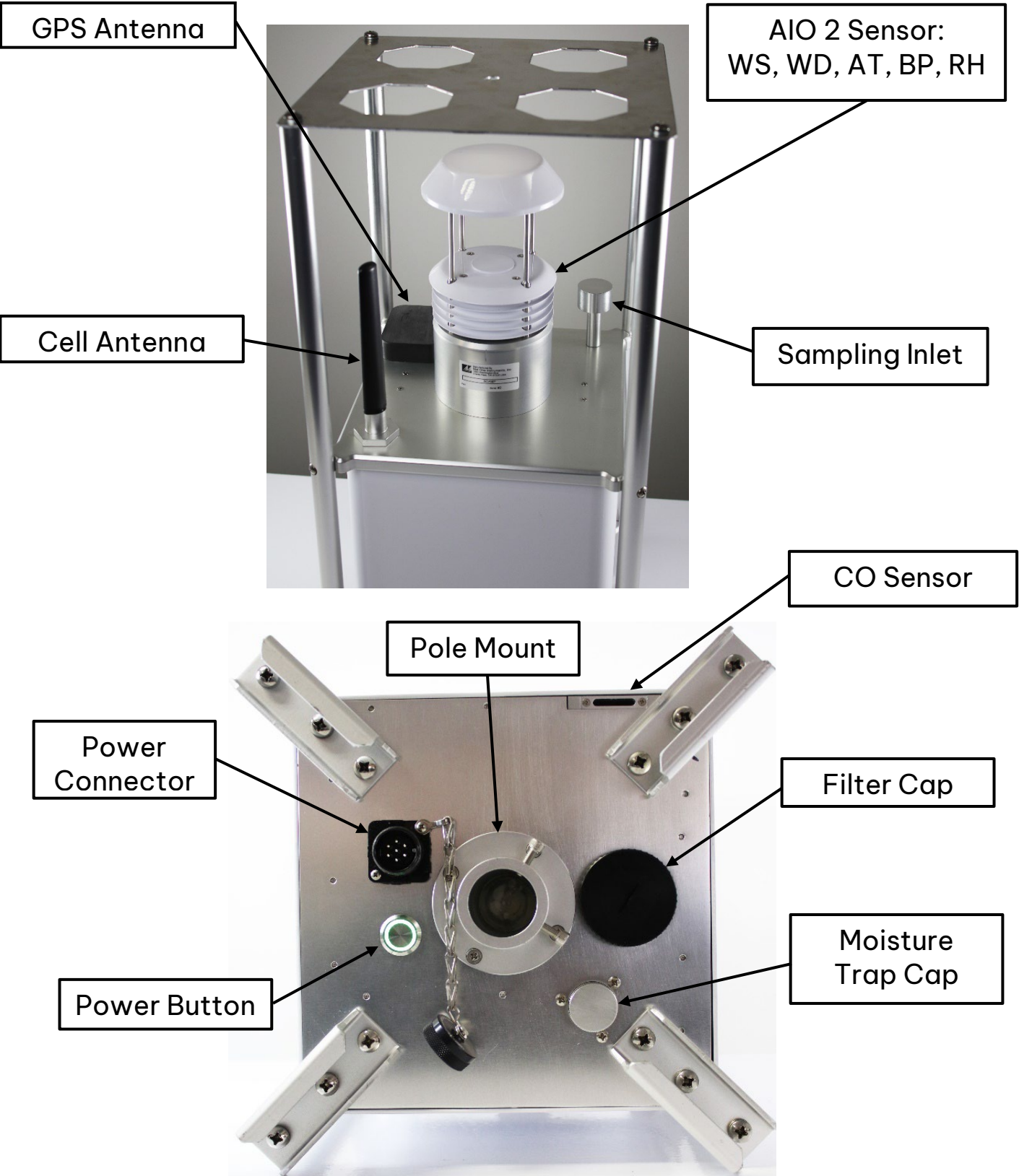


Figure 2-1 ES-808 Physical Attributes

3. ES-808 SETUP and STARTUP

The ES-808 is designed for rapid deployment and easy setup by a single person in less than 10 minutes. This section describes the instrument's basic assembly, configuration, and start-up.

When unpacking a new ES-808, verify that the contents are undamaged. If the shipping cartons are damaged, notify the carrier immediately. Verify that the included accessories are correct and complete. Contact the technical service department at service@metone.com or (541) 471-7111 if anything is missing from the shipment. See the Shipment Contents section for more details.

3.1 *Unpacking the ES-808*

The ES-808 is supplied with the following standard accessories:

ES-808 SCAMP Accessories Check Off List

- ☐ Operator's manual
- ☐ Calibration Certificates
- ☐ External power supply and cable
- ☐ EX-905 Aluminum Tripod

The following optional accessories are available to order for the SCAMP ES-808:

- ☐ Weatherproof Transport Case
- ☐ Solar Power Kit. 120W, 18 VDC

3.2 Tripod Setup

The Met One EX-905 aluminum tripod is a standard accessory and recommended mounting option for the ES-808 in most outdoor applications. To deploy the tripod, follow the instructions below.

3.2.1 Tripod Leg Deployment

The EX-905 is shipped in the storage/transport configuration shown in **Figure 3-1**. In this configuration the tripod mast is upside down. To deploy and secure the tripod, follow the steps below.

1. Withdraw the three stainless steel detent pins from the tripod mast base by pulling the rings attached to the three pins.
2. Flip the tripod so the mast is pointing up, this will allow the leg brackets to pivot down into the mast base slots.
3. Line up the hole in the leg bracket with the detent pin holes in the mast base slot.
4. Insert each pin until the detent ball is visible from the other side securing the legs in the open position. Make sure the assembled tripod is rigid and stable.

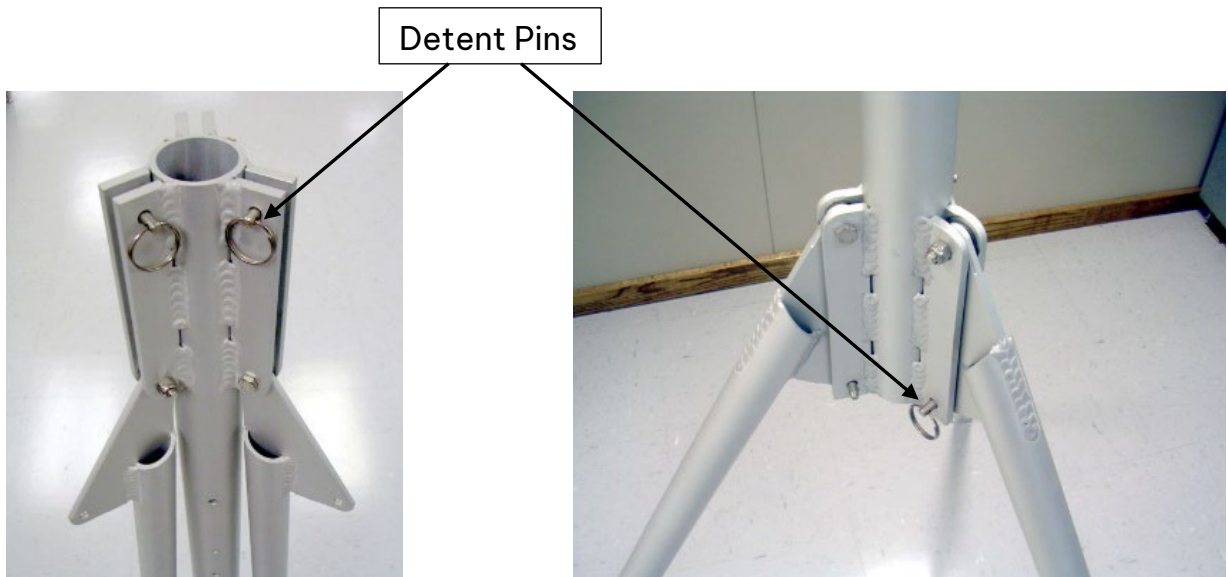


Figure 3-1 Tripod Storage/Transport Configuration

Figure 3-2 Tripod Legs Deployed

3.2.2 Securing the EX-905 Tripod

Stand the tripod on a surface that is as level as possible. The tripod feet can be secured to the ground or mounting surface with bolts, screws, or tent pegs if necessary. Secure the tripod legs to protect the system in windy conditions.

3.3 Setting Up the ES-808

Set up the ES-808 hardware items and accessories as described below:

1. Position the SCAMP mast receiver onto the EX-905 small 1" diameter mast.
2. There are two Allen cap screws included with the ES-808. Thread the screws into the two tapped holes located near the bottom of the mast receiver and tighten the screws securing the SCAMP to the EX-905 mast (**see Figure 3-3**). Do not overtighten.

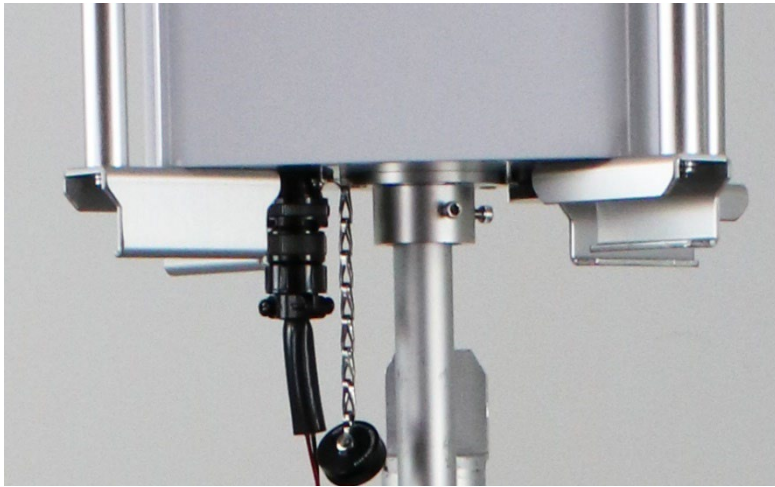


Figure 3-3 ES-808 to Mast

3.4 Power-Up and Starting Operation

Press the power button (**see Figure 2-1**) on the bottom of the ES-808. The power button bezel will illuminate green, indicating power is on. After a brief moment, there will be an audible beep followed by the pump turning on. The ES-808 will automatically begin sampling and reporting data to the Cloud. The default data reporting interval is five minutes.

NOTE: Please allow several data intervals worth of time for the first data points to appear.

3.4.1 Power Options

1. **Battery:** The ES-808 is built with an internal battery for short-term remote operation. **Be sure that the battery is fully charged before use.** The internal battery will last up to 48+ hours with a full charge. The battery will fully charge in ~4 hours with a minimum voltage of 18V DC at 120W.

2. **Power Supply:** Use the included EX2-100-240-2 power supply (see **Figure 3-5**) to operate the ES-808 using AC power. Mount the power supply to one of the legs of the tripod using the included U-bolts (see **Figure 3-4**). Use the round pinned connector to power supply cable into the power input on the bottom of the ES-808. Plug the power supply input into an AC power outlet.



Figure 3-4 Power Supply Mounting



Figure 3-5 Power Supply

3. **Solar:** The 84186 solar panel assembly is an optional power system for extended remote deployments where AC power is unavailable. The panel assembly includes a cable and compatible connector to mate with the ES-808.



Figure 3-6 Solar Kit Front View



Figure 3-7 Solar Kit Back View

Solar Deployment: To open the solar panel assembly, release the strap clips. After the clips are released, unfold the case to reveal the solar panels. A zipper compartment located on the back side of the solar panel kit houses the power cable that connects to the bottom of the ES-808. Also located on the back side of the panels are braces to support the panels in an upright position. The top end of each brace is permanently attached with stitching. The bottom of each brace is secured to the case by Velcro. To deploy the supports, release the Velcro end and unfold each support away from the panel assembly. Lean the panel assembly back on the braces at the desired angle for the best sun exposure.



Figure 3-8 Solar Kit Supports



Figure 3-9 ES-808 Solar Kit

4. DATA RETRIEVAL

Met One Instruments, Inc. offers two options for downloading and viewing data from the ES-808 system: a custom Grovestreams webpage and COMET software. This section will cover both options.

4.1 Web Interface

The Grovestreams webpage is the first method for downloading and viewing data. At the time of purchase, each customer will be provided a private link to a custom dashboard where users can view, chart, and download/export their data from the Web.

4.1.1 Cloud Service

The ES-808 uses a cloud service for storing and viewing data when cellular signal is available. After the sensor collects data, it connects to the secure Cloud site via its internal cell modem and will push the data to the cloud site. Users may then go to their Grovestreams dashboard and view their data in gauge, chart, and tabular formats.

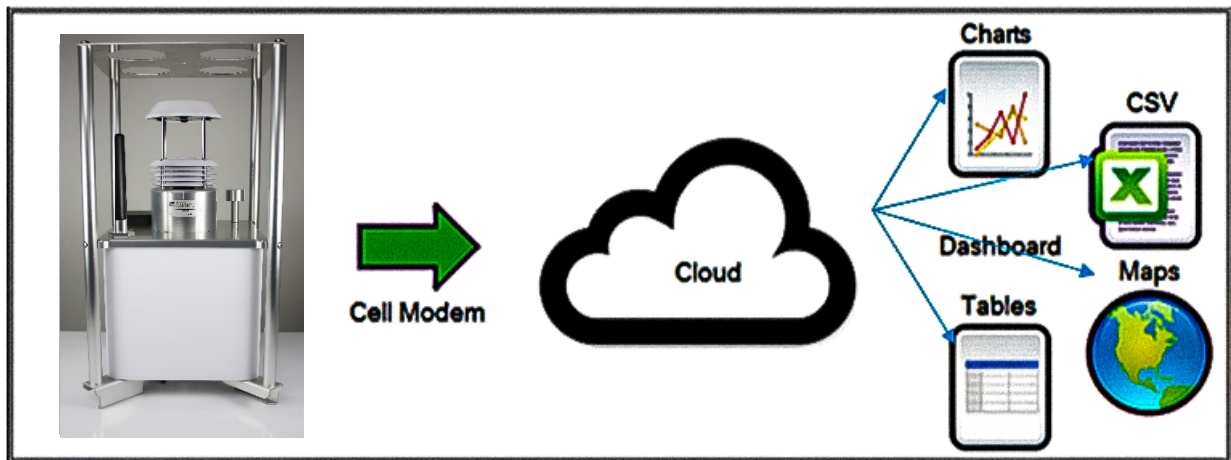


Figure 4-1 Cloud Data Diagram

4.1.2 Web Portal Dashboard View

A Grovestreams web link is included with each system. Below is an example of what the Web link dashboard will provide.

Table 4-1 Available Grovestreams Parameters (see Figure 4-2)

1. Concentration, PM2.5 and PM10	2. Carbon Monoxide levels
3. Wind speed	4. Wind Direction
5. Temp, RH, BP	6. Historical Data
7. Satellite Map for GPS location	

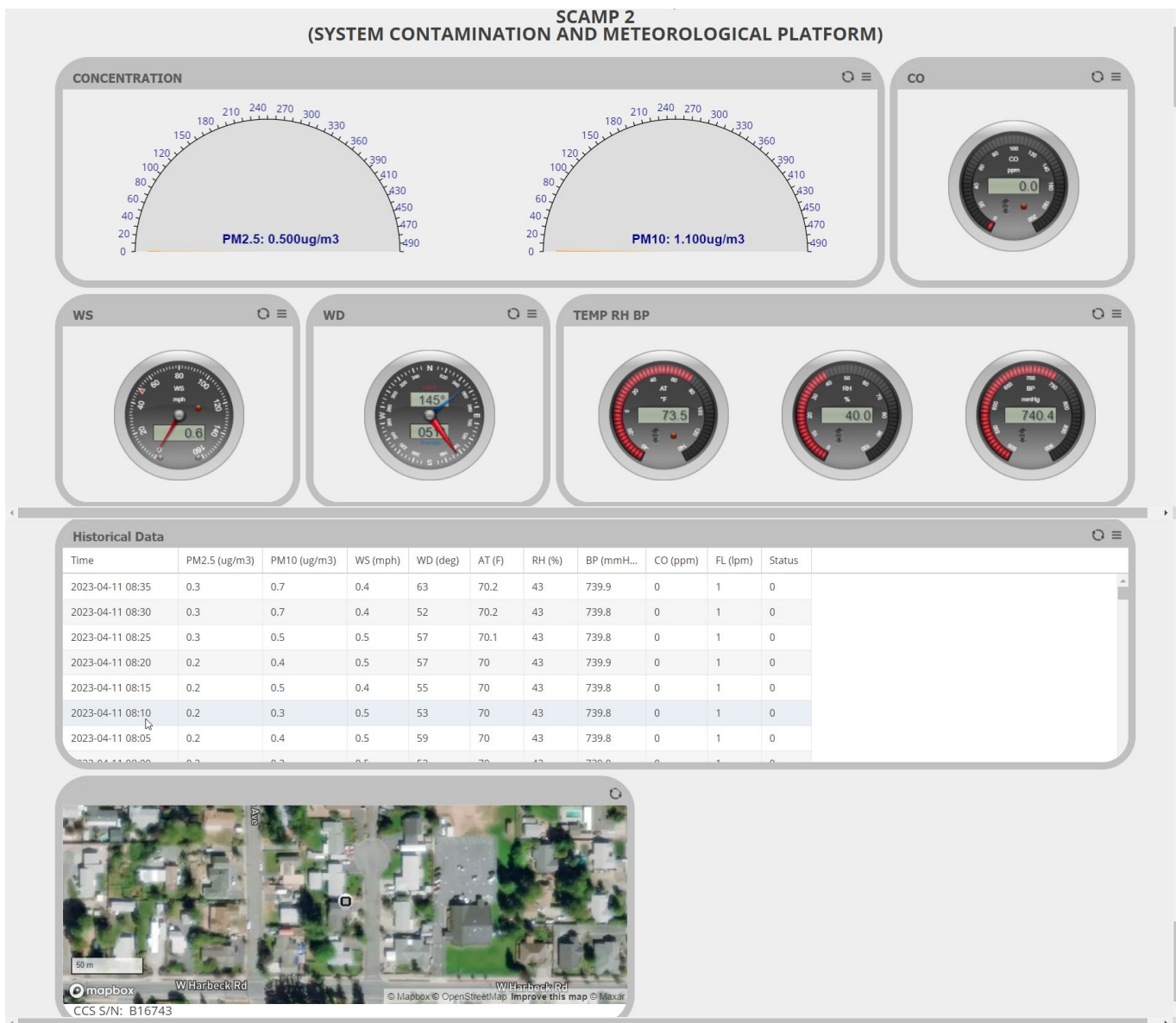


Figure 4-2 Dashboard View

4.1.3 Data Storage

Up to two years of data records can be stored on the Cloud. When full, the oldest records will be overwritten. Met One Instruments, Inc. recommends using the COMET Utility software to routinely download and store the data on a local computer or network. COMET automatically creates a time-stamped, comma-separated CSV data file after it is downloaded. The CSV file is saved in the "My Documents>COMET2Data>Met One Instruments, Inc. Cloud " folder path when data is downloaded on a local computer.

4.2 COMET Software

The ES-808 is compatible with COMET software, available as a free download at metone.com. COMET is a simple, Windows-based, communications terminal program developed by Met One Instruments, Inc. COMET allows the user to connect to the cloud and download the data from each cloud service webpage.

The COMET software also contains a comprehensive PDF user's manual for the program. Install the program onto the computer in use and review the manual for more operational details.

A link to the COMET software is available at <https://metone.com/software/>.

COMET is a communications terminal program used to retrieve data from the ES-808 using a direct local connection, a remote connection via an IP address, or a variety of modem options.

Warning: A Silicon Labs CP210x Driver for the USB connection must be installed before connecting to the USB Type B port. Driver download weblink:

<https://www.silabs.com/products/development-tools/software/usb-touart-bridge-vcp-drivers>

4.2.1 COMET Installation

Download the COMET software onto a PC and run the Windows Installer Package. Follow the on-screen instructions to complete the COMET installation process. When installed, run COMET software from the Programs directory. Create a new station for the ES-808 and use it to retrieve the data from the monitor.

4.2.1.1 COMET Software Updates

After installing the COMET Software, check for the latest version. Please reference the COMET Service Manual for more information. The manual can be downloaded at metone.com/support-documents/.

4.2.2 Cloud Station Setup

The first time the COMET program runs, a prompt will appear to create a new station for the Cloud site. If COMET does not show a prompt, go to the top left menu and select Add New Station to create a new station.

Select “Cloud” (highlighted yellow) and click the next button in the bottom right corner of the screen.

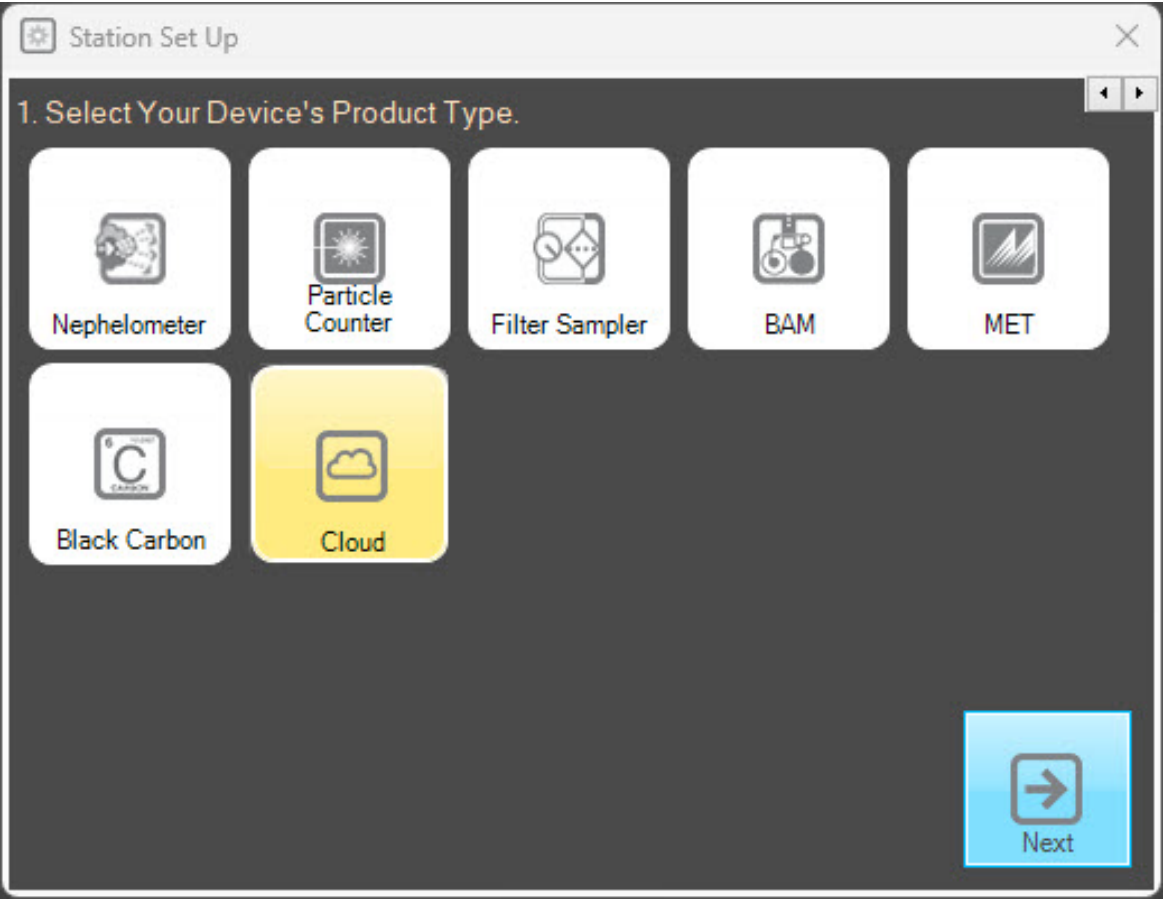


Figure 4-3 Device Product type Selection (Cloud)

Select “Met One Cloud” (highlighted yellow) and click the next button in the bottom right corner of the screen.

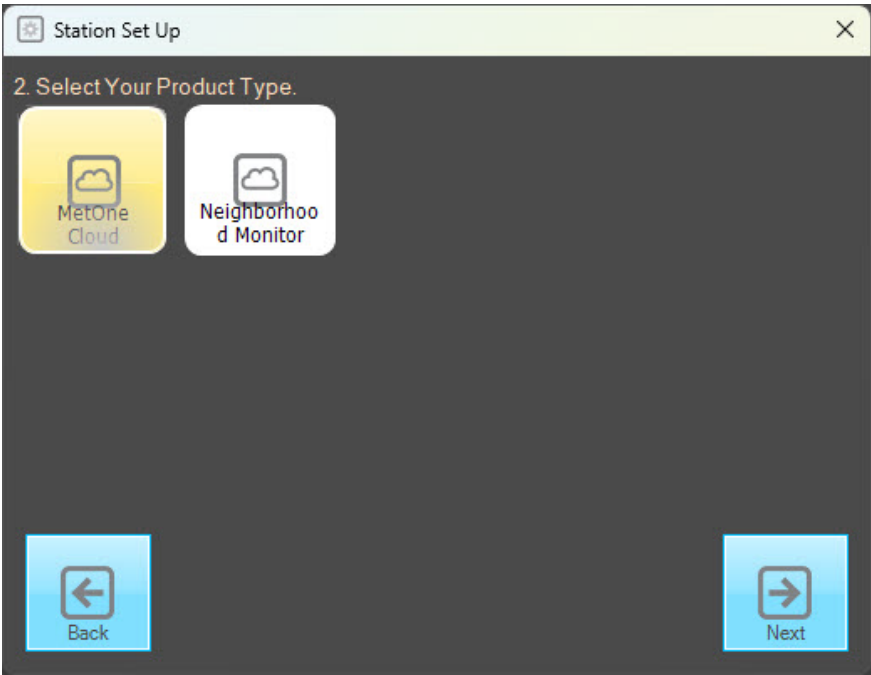


Figure 4-4 Product Type Selection

Enter a station name, API key provided with the instrument, and serial number for the ES-808. When completed, click on the “Finish” button in the bottom right corner of the screen.

Note: The API Key for each ES-808 is located on the provided configuration sheet. A digital copy can be obtained from the Met One Instruments Service department.

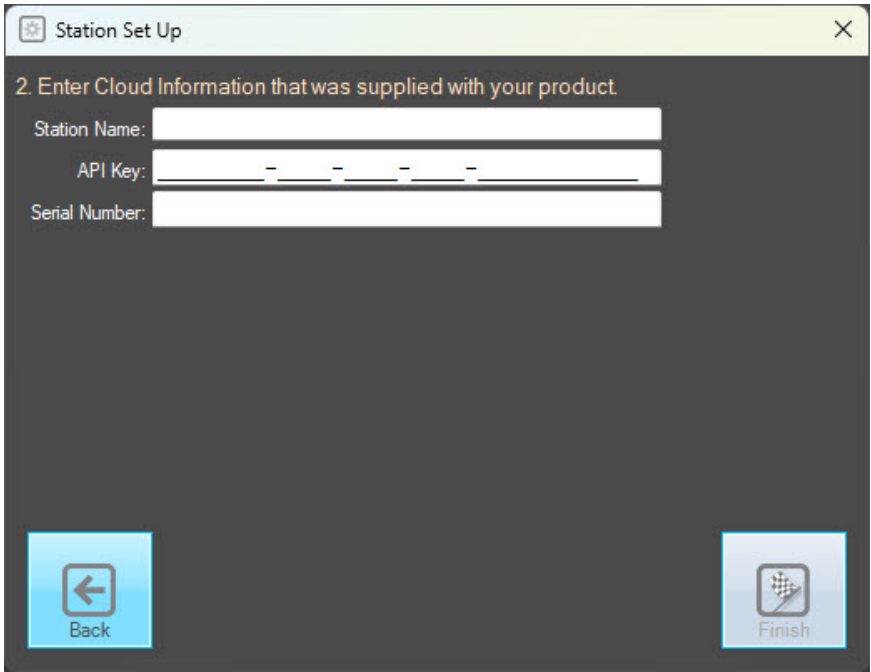


Figure 4-5 API Key/Serial Number Input screen

Click the “Retrieve” button to open the “Retrieve Data” menu screen. The button location is in the upper left corner, to the right of the “Station Set Up” button. The Retrieve Data prompt will appear where a data range can be selected. Click the OK button to download the station’s data stored in the cloud.

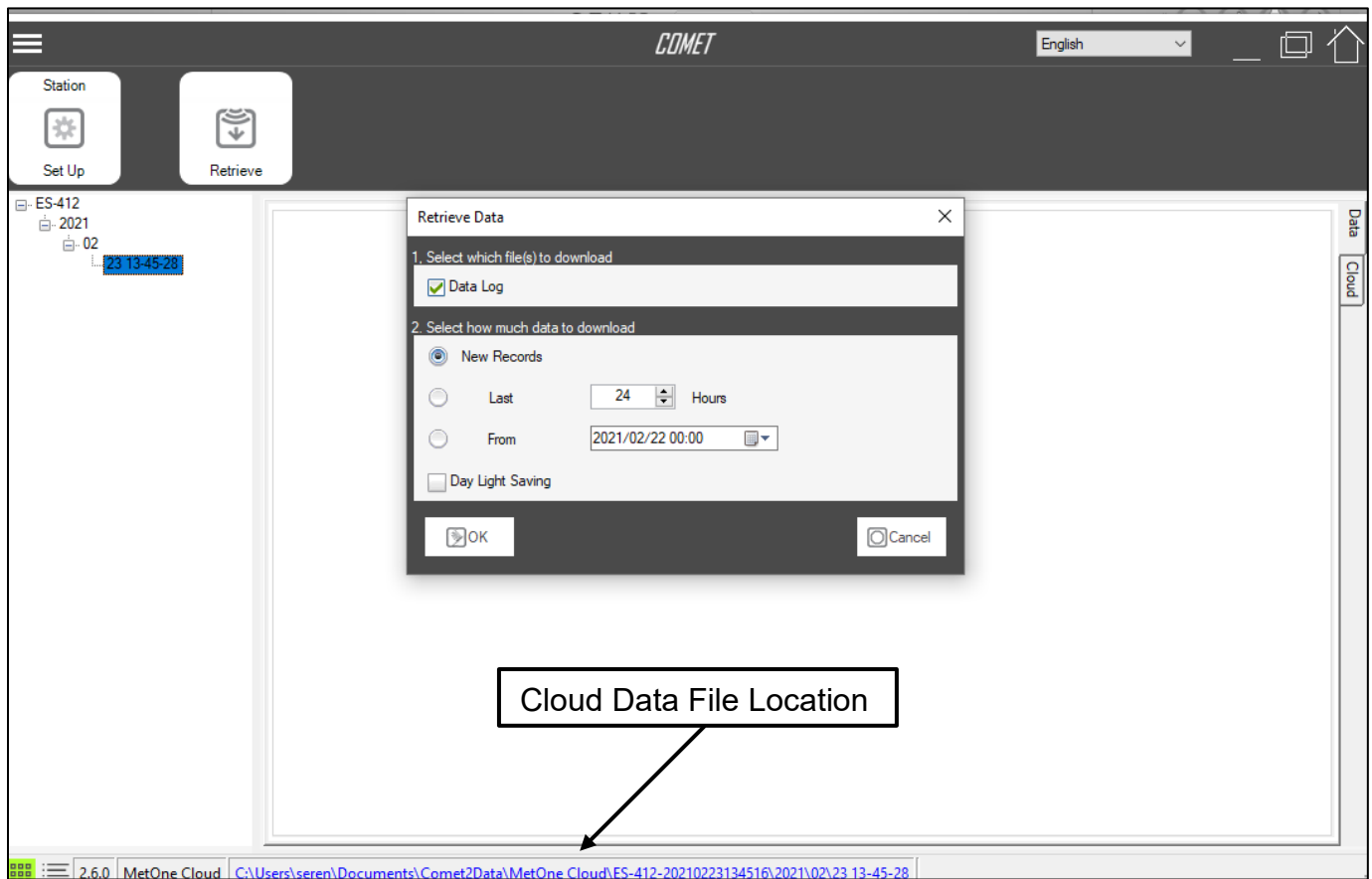


Figure 4-6 Data Retrieval screen

COMET will connect to the Cloud allowing device’s data to be downloaded. After COMET downloads data from the Cloud, a CSV file is created. The CSV file can be accessed by clicking on the blue link at the bottom of the COMET Software window. **See Figure 4-6.**

5. DATA PLANS and RENEWALS

The ES-808 includes three years of cellular data and website hosting at no extra charge. The cloud service can be renewed by contacting the Met One Service department at service@metone.com or 541-471-7111.

The following yearly data plans are available:

680786	CCS Data Plan, 5 Min USA
680785	CCS Data Plan, 15 Min USA

6. ES-808 PARTICULATE MEASUREMENT METHOD

The Met One Instruments, Inc model ES-808 is a type of air quality sensor that automatically measures and records real-time airborne PM10 and PM2.5 particulate concentration levels using the principle of right-angle laser light scatter. This section describes the measurement systems.

6.1 *Sheath Air*

The Particle Profiler uses a sheath air system. When a particle counter is to be used to sample aerosols containing high concentrations of particles, the sensor should incorporate sheath air to prevent particles from contaminating the internal optics of the sensor. The particle-laden sample air is enclosed in a sheath of clean filtered air that prevents particles from escaping. Sample air is drawn into the ES-808 by an internal pump. A flow sensor controls the flow rate to maintain a constant 1 LPM flow on the inlet nozzle. Additional air is added around the sample flow to contain the particles.

6.2 *Detection*

The ES-808 is always ready to detect particles. Sample air is drawn into the detector chamber and subjected to an intense laser beam. The sample stream passes through the laser beam at 90 degrees. The beam travels through the sample chamber and terminates in the light trap. Particles pass through the laser beam, disrupting the light and scattering it. The amount of light scattered is proportional to the size of the sample particles—a portion of the light scatters toward the elliptical mirror, which directs the beam to the detector. The detector output is then analyzed to determine the number of particles and the size of the particles. Detected particles are multiplied by a fixed density to provide an indicative particulate mass measurement.

6.3 *Sizing and Counting*

The amount of scattered light is converted to a voltage pulse based on the pulse signal's amplitude when passing through one or more of the size discriminators and into the associated counter(s).

6.4 Calibration

Calibrations are performed at the Met One Instruments service facility. Ideal polystyrene latex (PSL) spheres are used to assess the sensitivity, accuracy, resolution, and false count level. The particle detector is compared to a reference mono-dispersed (single size) suspension of PSL spheres in clean filtered air for both calibration and certification of performance specifications. This calibration technique serves two purposes:

1. Provides a standard traceable reference.
2. Provides a measure of how well the unit maintains its calibration (reproducibility).

6.5 K-Factor

The ES-808 SCAMP SYSTEM's PSL sphere calibration provides a consistent calibration but does not generally match the characteristics of all ambient particulate. A K-factor (multiplier) must be established for best accuracy and correlation to collocated instruments.

It is recommended to compare the ES-808 readings to local regulatory monitors distinguished as Federal Reference Monitors (FRM) or Federal Equivalent Monitors (FEM). Contact local air quality authorities for information on FEM or FRM sample locations and how to access that data for comparison. Be aware that site sample durations will vary from hourly to 24-hour data. The ES-808 sample duration must match the reference sample duration to calculate the K-factor correctly.

Calculate the K-factor for each particulate size as the reference concentration divided by the ES-808 concentration over the same sample duration. For example, if the reference total concentration was $51 \mu\text{g}/\text{m}^3$ and the ES-808 total concentration was $38 \mu\text{g}/\text{m}^3$, then the K-factor would be 51 divided by 38 or 1.342. It is advisable to calculate this number for each PM size.

The K-factor is only valid at the same site and for the same particulate type. If the local particulate source changes, the K-factor will no longer be valid. The accuracy of the mass output can be affected by variations in size, color, shape, and index of refraction of the sampled particles.

7. MAINTENANCE and TROUBLESHOOTING

This section provides information about routine maintenance of the ES-808 and for performing more detailed diagnostic tests if a problem is encountered. The ES-808 generates error messages on the display and in the data log if a failure or problem is detected. There is often a simple solution, but persistent errors often signify a failure that will require investigation.

WARNING: The ES-808 SCAMP SYSTEM should only be serviced or calibrated by factory-authorized personnel.

The ES-808 is an extremely component-dense assembly! Only skilled and trained electro-mechanical technicians should attempt any disassembly or repairs inside the ES-808. Routine maintenance procedures do not involve removing the ES-808 assembly from the enclosure. Calibrating particle sensors like the one in the ES-808 SCAMP SYSTEM requires specialized equipment and a skilled technician. Met One Instruments, Inc. maintains a calibration facility for calibrating particle counters according to industry-accepted methods using NIST traceable standards. The ES-808 Particle Profiler should be calibrated on a 12-month basis.

CAUTION: Improper handling of the Particle Profiler may result in exposure to laser radiation that could cause blindness.

7.1 *Factory Service Interval*

The ES-808 must be periodically returned to the factory for service and recalibration. The recommended period is 12 months during continuous use. However, some users establish intervals depending on the harshness of the sampling conditions, particulate levels, and data scrutiny. High concentration operation will often require more frequent factory service.

Factory service primarily consists of optical system cleaning, laser/detector checks, and recalibration. As-found calibration checks can also be requested. Contact the Met One technical service department to schedule ES-808 service. A Return Authorization (RA) number must be obtained before the unit is returned.

7.2 Basic Problem and Cause/Solution Table

The following tables contain information on common problems and steps to identify and remedy those issues that may occur while operating the ES-808. Met One Instruments, Inc. welcomes customer suggestions for new items to be included in this section for future manual revisions. If the solution is not found in the following table, contact one of Met One Instruments, Inc. expert service technicians to help resolve the problem.

Table 7-1 Problem and Solutions Table

Problem:	Flow failures or low flow.
Cause/Solution:	<ul style="list-style-type: none">• Check the filter. This must be replaced periodically.• Try to DEFAULT the flow sensor calibration. If corrupted flow calibration parameters are entered into the flow calibration, it may appear that the flow system is not working.• Verify the internal AT and BP sensor's function. They appear as FT and FP on the Data Report when their output is enabled. Failed sensors can affect the flow.• The sample pump itself will eventually wear out and need to be replaced. It should last at least a year under normal conditions. Check the other possibilities first.

Problem:	Optical system alarms and failures
Cause/Solution:	<ul style="list-style-type: none">• The ES-808 must be periodically returned to the factory for optical system cleaning. The period will depend on particulate levels.• Check the filter and replace as needed.• The laser diode has a finite lifetime which will be reduced at high temperatures. It may eventually fail and need to be replaced at the factory.

7.3 Suggested Periodic Maintenance Intervals

Table 7-2 shows the recommended interval for regular ES-808 maintenance, field checks, and service tasks.

Table 7-2 Maintenance Schedule

Maintenance Item	Suggested Period
AQ Flow Audit/Calibration	Monthly
Moisture Trap Inspect and Drain	Quarterly
Replace Filter	Yearly
Calibrate Sensor	Yearly

7.4 Flow Path

This section provides a visual guide for the ES-808 SCAMP flow path and its components.

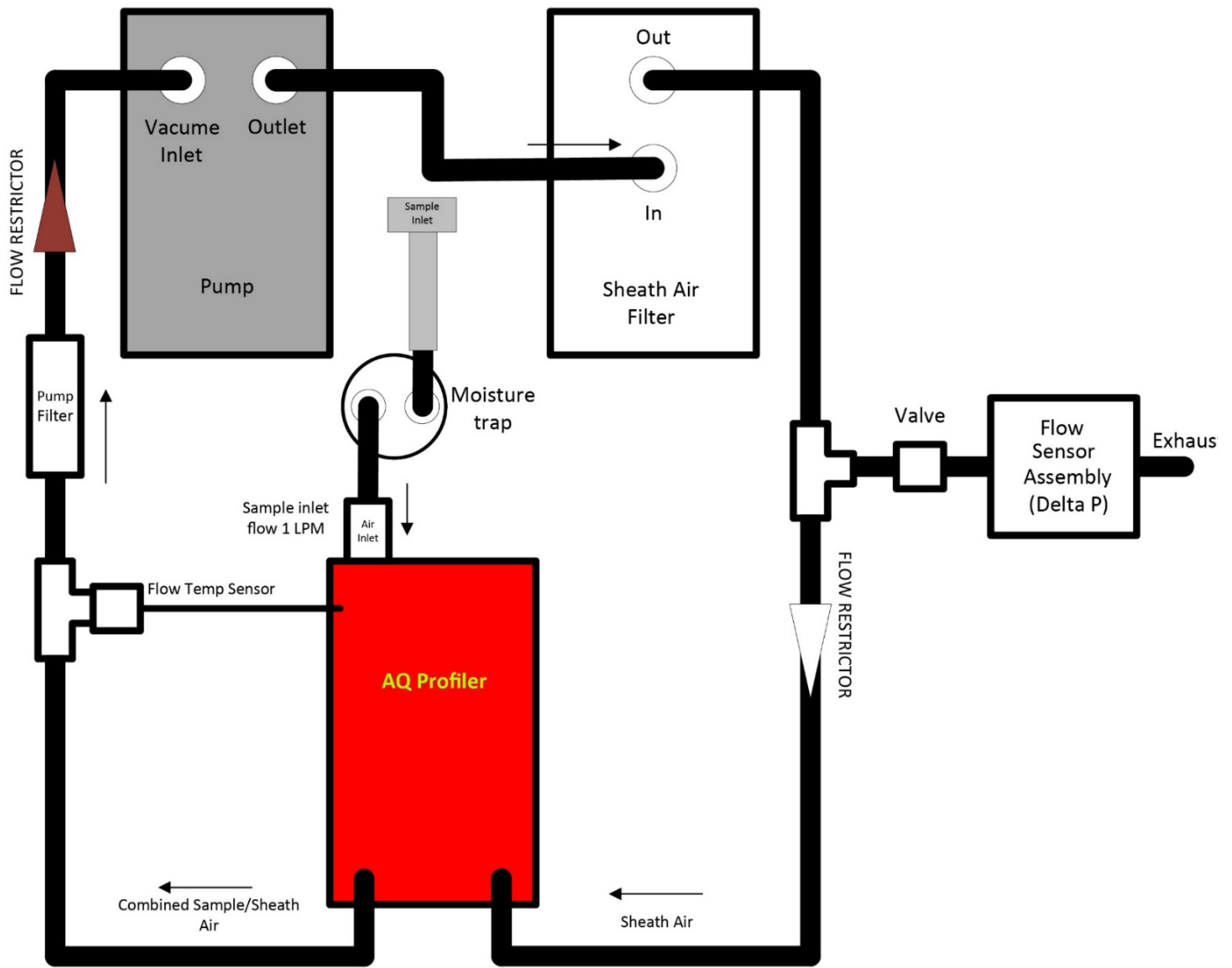


Figure 7-1 Flow Path

7.5 Filter Change

The filter holder (black cap) is next to the pole mount on the bottom side of the instrument. It can be removed by unscrewing the black Delrin filter holder. The expected lifetime of the filter is one year, but in areas with heavy particulate concentration, it may need to be replaced more often. The replacement filter PN# is 580358.

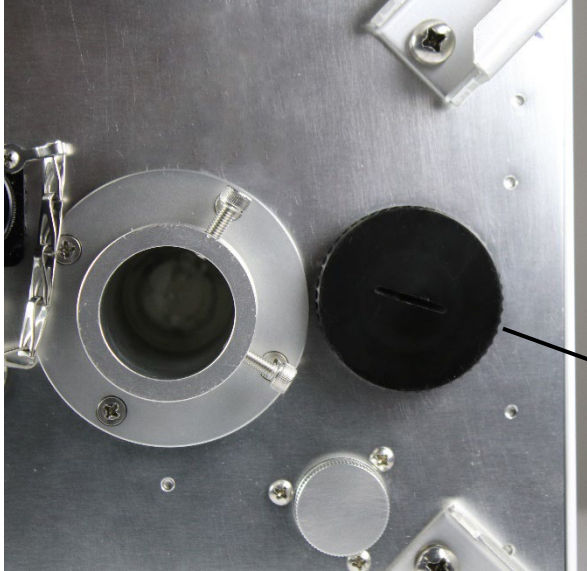


Figure 7-2 Filter holder and Filter Installed



Figure 7-3 Filter Holder and Filter Removed

7.6 Moisture Trap

The ES-808 utilizes a moisture trap to collect excess moisture in the flow path during sampling. The moisture trap is located at the bottom of the ES-808 (see Figure 2-1) It is suggested to check/drain the trap quarterly.

NOTE: Adverse environmental conditions such as rain or fog will require increased inspection frequency.

7.7 Sample Inlet Cleaning

The sampling inlet must be cleaned periodically. The time interval between cleanings varies depending on local particulate levels. To clean the inlet, follow the instructions below.

1. Separate the inlet cap from the inlet tube by pulling up on the inlet cap to expose the inlet tube. Set the inlet cap aside to inspect and clean later.
2. Remove the moisture trap cap from the bottom of the ES-808 indicated in **Figure 2-1**. This will allow any loose debris to be blown out.
3. Fold a pipe cleaner in half and run the folded end down the inlet tube in an up-and-down, circular motion to remove any stuck particulate. A cotton swab can also be used.
4. Spray a generous amount of window cleaner down the inlet tube to rinse out any leftover particulate and allow the cleaner to drain out the moisture trap. If any particulate is left over, repeat steps three and four.
5. With a can of compressed air, spray down the inlet to dry out the remaining window cleaner.
6. Inspect the inlet cap for any debris. If dirty, perform steps three through five for the inlet cap.
7. Replace the moisture trap cap and inlet cap to begin sampling.

7.8 Flow Calibration

NOTE: This procedure assumes the user is familiar with the use of a Terminal emulator utility and Flow Calibration procedures with Met One Instruments products.

Connect a Mini-USB to the bottom of the AQ Profiler. (AQ profiler will need to be unfastened from the frame and manipulated to gain access to the USB connector.) Connect the other end of the USB cable to the computer with terminal emulator software installed. Connect a flow meter to the inlet nozzle and allow the flow to stabilize. If it is not $1.00 \text{ LPM} \pm 0.05 \text{ LPM}$, then it needs to be calibrated:

1. Enter the inlet flow value from a calibrated flowmeter with a 'RF_#.###' command.
2. Allow the flow to stabilize.
3. Repeat as necessary to achieve 1.0LPM.






The flow calibration can be defaulted by issuing an "RF 0" command. This may be useful if the calibration is difficult to achieve the flow setpoint.

8. PARTS and ACCESSORIES

8.1 Consumables, Replacement Parts, and Accessories

The following parts are available from Met One for maintenance, replacement, service, and upgrades. If unsure about a part needed, please contact the technical service department. Some of these parts may require technical skills or special instructions before use or installation.

Table 8-1 Parts and Accessories

Description	Part Number	Graphic
Sample Pump Module Assembly	81643-2	
Flow Sensor, Differential Pressure	82258-2	
Temperature Sensor Assembly and Harness	80957-2	
Air Filter, 0.01 micron	580358	
O-Ring, Filter Holder	720074	
Power Supply, 100-240 VAC input, 24 VDC output, Weatherproof	EX2-100-240-2	
4 panel Solar Power Assembly Folded dimensions: 15" x 21" x 1" (H x W x D) Weight: 10lbs.	84186	
Battery Cell Assembly (internal)	84187	
ES-808 Factory Service and Recalibration	Contact Met One Service Department: 541-471-7111 service@metone.com	