AirVision/CEM

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Introduction to AirVision Concepts 6

Open Data Acquisition and Import 6
Combined Data Editing and QA Tools 7
Post-processing/Workflow 7
User-defined Shortcuts For Communication Activities 8
Sophisticated Data Relationships 8

Chapter 1 Installing AirVision 9

Installing Microsoft .NET Framework 10
Installing SQL Server 11
Installing the AirVision Database 12
Installing the AirVision Server 17
Running Standard or Enterprise SQL Server 2008/2012/2014 17
Running SQL Server Express 17
Installing the AirVision Client on Secondary Computers 18
Logging In to AirVision 18
Accessing Profiles After Logging In 20

Chapter 2 Configuring AirVision 21

Configuring System Preferences 23
Site and Parameter Setup 24
Adding and Editing Sites 24
Adding and Editing Parameters 26
Configuring Parameter Templates 30
Adding Loggers to Sites in Data Source Details 32
Text Strings in Digital I/O 33
Logger Properties Tabs 33
Adding Channels to Data Loggers 35
Adding Communication Routes 39
TCP/IP Routes 39
Adding Serial Routes for Direct Communication 41
Associating an Existing Route to a Logger 42
Testing Your Connection 43
Logger Download 44

Setting Up Calibrations 45
Configuring Automatic Calibrations 46
Configuring Phases 47
Externally Initiated Calibration 48
Configuring Instrument Controlled Calibrations 50
Configuring Interactive (Menu) Calibrations 51
Configuring User-Initiated Calibrations 52
Configuring Input/Output Lines for Digital Events 53
Configuring Digital Timed Events 53
Configuring Digital Triggered Events 54
Advanced Alarm System 57
Configuring Alarms 58
Configuring Alarm Checks 61
Adding Notifications to Users to Receive Alarms 62
CEM Regulatory Reports 63
Excess Emissions Report 63
Monitor Downtime Report 64
Unit Operation Report 65
30-Day Rolling Average Report 66
7-Day Rolling Average Report 67
Cumulative Emissions Report 68
Scheduling Tasks 69
Task Scheduler 70
Schedule Task Wizard 81
Task Display 84
Favorites Editor 85
Creating a Favorite 85
Favorite Detail Tab 85
Favorite Query Tab 85
Configuring Security 87
User Editor 87
My User Settings 88
Groups Editor 89
Group Permissions 90
GSI Driver Editor 91
Data Rollup Processor 92

Chapter 3 Realtime Trend Display 95

Realtime Display 95
Tabular Display 97
Realtime Trend 101
Right Click Data 104

Chapter 4 Reports 105

Criteria Pane 107
Filters 108
Favorites 110
Basic Reports 111
Daily Summary Report 111
Daily Parameter Report 112
Monthly Report 113
Calibration Reports 115
Calibration Results 115
Calibration Trend Graph 116
Statistical Reports 119
Data Recovery Report 119
Statistical Report 120
Configuration Reports 121
Calibration Configuration Report 121
Channel Configuration Report 122
Parameter Configuration Report 123
Scheduled Tasks Report 124
Site Configuration Report 125
Logger Reports 126
Alarm Journal 126
Central Messages 127
Input Line Status Report 128
Power Failure Report 129
Sample Data Reports 130
Monthly Sample Data Report 130
Other Reports 131
Annotations Report 131
Audit Trail Report 132
LogBook Report 133

Chapter 5 Data Editors 134

Average Data Editor 135
Linear Data Editor 136
Cell Color Codes in Flags Editor 137
Right-Click Options 138
Cross-Tab Data Editor 140
Matrix Data Editor 141
Time Series Graph 142
Scatter Plot Graph 146
Histogram 147
Calibration Data Editor 148
Using the CGA / Opacity Audit Utility 150
LogBook Entry Editor 152

Chapter 6 Help & Support 153

Agilaire Support 154
AirVision Manual 154
AirVision Wiki 154
How To--Step by Step 154

Chapter 7 List Editors 155

Log Book Category Editor 156
Math Editors 157
Central Math Processor 157
Modem Types 159
Parameter Tag Editor 160
Unit Editor 161
Journal Controller 162

Chapter 8 Additional Features 163

Fill Data Gaps 164
Table Export 165
Table Import 166

Introduction to

AirVision Concepts

Welcome to AirVision, the first software that addresses current air monitoring needs while accommodating future technical innovations. Developed by industry veterans and engineered from the ground up in response to users' needs, AirVision is the first software to successfully combine:

- Open data acquisition and import
- Combined -Data and Quality Assurance tools
- Post-processing/Workflow
- User-defined shortcuts for communication activities
- Sophisticated data relationships

Open Data Acquisition and Import

AirVision supports an open system of modular drivers that can be added to provide connectivity to any source of data. The driver manages the details of data collection and uses standard interface to exchange data with AirVision's core. Third parties and end users can construct new drivers for AirVision, providing an open solution to manage future requirements. AirVision is designed specifically along the concept that eventually networks (or significant parts of networks) will consist of smart instruments connected to a central AirVision data management hub through broad-band connections.

To normalize these data sources, AirVision utilizes an open system that allows any end user or company to develop drivers for a particular data source. The driver incorporates all the necessary knowledge and logic to collect data and return data to the database through a standardized data access layer.

Combined Data Editing and QA Tools

To optimize quality assurance, AirVision opens up the process between data collection and final reporting through an open modular approach. Open Data Processors can be scheduled and triggered by the Task Manager to automate quality assurance while also controlling the points of data access and display.

The Automatic Data Validation Processor Module.(ADVP) assigns a quality grade (1-10) for each data point based initially on instrument/data logger flags, but allows you to generate rules that affect the quality code. The ADVP can be triggered to run automatically after data collection to grade each data point, and the quality grade can be used to prevent suspect or bad data from being published to the web or shared with other organizations.

The grades can also be used to focus quality assurance efforts on the most suspect data points Data can be compared against other parameters at the same site, different sites (spatial testing), or historical composite values for that particular parameter and/or site (e.g., comparing this hour's value compare to the same hour and day of the week over the previous five years). ADVP functions also include persistency checks.

Post-processing/Workflow

AirVision's post-processing of data is not limited to data editing and other manual functions. Its powerful and expandable data post-processing capabilities optimize the quality assurance process.

AirVision opens up the process between data collection and final reporting through an open modular approach similar to Open Data Sources. Open Data Processors can be scheduled and triggered as defined by the you in the Task Manager to automate quality assurance while also controlling the points of data access and display. These post-processing tasks can include:

- Automatic data validation
- Zero or other calibration data adjustments
- Web publishing, tables, real-time charts and maps
- Email alarms
- Emailed reports

User-defined Shortcuts For Communication Activities

The parameter editor allows you to define parameter data. In AirVision a parameter can come from any kind of data source--it is no longer correlated with data logger channels. The parameter editor contains basics such as units, EPA reporting codes, and graph limits. This editor allows you to enter/modify a list of parameter types that each parameter can be referenced to, so the application can more easily correlate parameters with different names (e.g., “Opac” vs. “Opacity”).

Linking parameters to parameter types makes reporting easier and eliminates the necessity to link individual selections together. Instead, details can be configured for an EPA parameter type. The Parameter Template Editor can be used to add new template definition if a suitable one cannot be found in the default list.

Parameter information can be auto-filled by selecting a parameter template and the option to auto-fill EPA codes and units. Units are selected from a pick list, so that unit conversions (e.g., ppm to ppb) and unit types (e.g., whether rainfall or solar radiation is totaled, not averaged) are handled automatically. The parameter editor also supports the designation of alternate analyzer units that differ from reporting and editing units for digital data acquisition where the analyzer reports data in units different from that the customer prefers (ppm vs. ppb). The conversion is handled at the time of data acquisition (polling, file import) and data is stored in the regular EPA units in the database.

In both the site and parameter editors, you will be able to create meta-data fields to handle customer-specific data fields, such as analyzer serial number and installation date.

Sophisticated Data Relationships

Our Agilaire customers have requested that AirVision handle new and more complex data relationships such as managing data from parameters in a hierarchical fashion. For example, there may be analyzer diagnostic values (pressure, flow, internal temperature) associated with a primary measurement like SO2 or NOX AirVision supports these relationships as part of its original design, a feature unique in its industry rather than as an afterthought or modification to an existing database.

Parameter configuration also allows the designation of a parent parameter to form parent-child relationships that can be used to drill down in the data editor. A typical example is designating analyzer diagnostic parameters, such as sample flow and box temperature, to be children of the primary analyzer pollutant value (e.g., NOx), so that a suspect reading could be investigated by drilling down in the data editor. Another use could be to group parents & children in a columnar data report.

Chapter 1

Installing AirVision

AirVision must be installed on Windows 7 / Server 2008 or better (through Windows 7/8 or Server 2008R2). 4GB of RAM is recommended. Before AirVision can be installed, the following software must be installed on your computer: **SQL Server 2008**, **SQL Server 2012, SQL Server 2014,** or **SQL Express** with all available service packs, as well as **.NET Framework includes versions 3.5SP1 and 4.0**. SQL will request that the Windows Component **Internet Information Services (IIS)** be added, but IIS is NOT necessary for AirVision and does not have to be enabled.

Below are the requirements for systems where AirVision and its database will be installed.

AirVision and SQL Server installed on the same machine:

- Windows 7, 8, 10, Server 2008R2, or Server 2012 -SQL Server 2008 R2, 2012, 2014
- Microsoft .NET Framework versions 3.5SP1 and 4.0.

▶ **Note:** I version 4.5 will be required beginning in 2016

- i7 processor or equivalent
- 6GB memory minimum, 8+GB recommended
- 500GB hard drive, 1TB recommended
- on board serial ports if modem polling still in use

AirVision only installed on machine (with SQL hosted elsewhere):

- Windows 7, 8, 10. Server 2008r2, or Server 2012
- Microsoft .NET ,ramework versions 3.5SP1 and 4.0.

▶ **Note:** I version 4.5 will be required beginning in 2016.

- i5 processor or equivalent
- 4GB memory minimum
- 100GB hard drive
- on board serial ports if modem polling still in use

SQL Server installed on machine (with AirVision installed elsewhere):

- Windows 7, 8, 10, Server 2008r2, or Server 2012 -SQL Server 2008 R2, 2012
- Microsoft .NET Framework versions 3.5SP1 and 4.0.

▶ **Note:** I version 4.5 will be required beginning in 2014**

- i5 processor or equivalent
- 4GB memory minimum
- 500GB hard drive, 1TB recommended
- reliable, high speed connection to AirVision server-firewall / security allowances for AirVision server to read, write, and execute against the SQL database ***If running in a virtualized environment, Windows and SQL Server 2012 are both strongly recommended due to known performance issues with earlier versions in virtual configurations.***

Installing Microsoft .NET Framework

If you don't already have .NET Framework versions 3.5SP1 and 4.0 installed on your computer, you can download it from the Microsoft website. Follow the instructions in the installation wizard.

Installing SQL Server

Before SQL Server can be installed, .NET Framework both versions 3.5SP1 and 4.0 must be installed.

⇨ **Important!** Although AirVision will operate with either SQL Server or SQL Express, SQL Express has a file size limit of 4G, so if you convert files from E-DAS Ambient to AirVision (i.e., to SQL files) you will run out of room quickly in SQL Express, especially if you are converting and collecting minute data. Even though SQL Express is a free download, Agilaire recommends that you start with the full version of SQL Server 2008 or 2012 to avoid upgrading later. SQL Express will stop functioning when it has reached its capacity of 4G.

To install SQL Server or SQL Express, insert the media with the installation set and follow the instructions in the wizard. In the first screen check the box to accept the license agreement and click **Next**.

The default features are sufficient in the **Feature Selection** screen, but you can select the program features you want installed. The most important feature to install is **Client Tools**. Click **Next**.

- Selecting the 'default' install instance is acceptable.
- System and Local Service accounts should be selected if not prepopulated.
- A desired user should be added as **admin.**

Agilaire recommends **Mixed Authentication Mode** for AirVision as well as AV-Trend (if you intend to use remote synchronization functions). You must enter and confirm a **password** for the System Administrator. Click **Next** to continue.

The remaining setup screens are self-explanatory. Follow the directions and click **Finish** in the **Completing Microsoft SQL Server Setup** screen.

▶ **Note:** If you set up SQL in **Windows Authentication mode**, you must must log in to SQL with Windows Authentication, not SQL Server Authentication, or the AirVision Service won't start.

▶ **Note:** If you install **SQL ServerExpress**, **Management Studio** (free download) is a separate installation. SQL Express must be installed first, before Management Studio. Management Studio will not work without SQL.

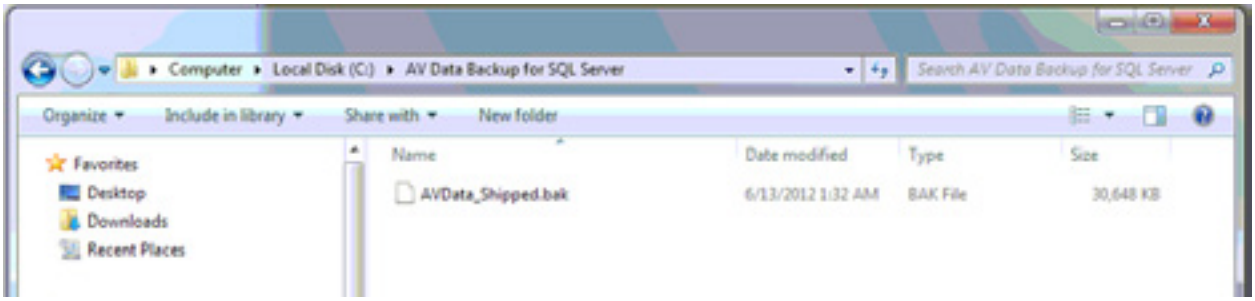
⇨ **Important!** If SQL Express is installed on the same computer as AirVision Server, **the SQL Express login name** must be **.\SQLExpress** instead of your computer name.

SQL will request that the Windows Component **Internet Information Services (IIS)** be added, but IIS is not necessary for AirVision at this time and does not have to be enabled.

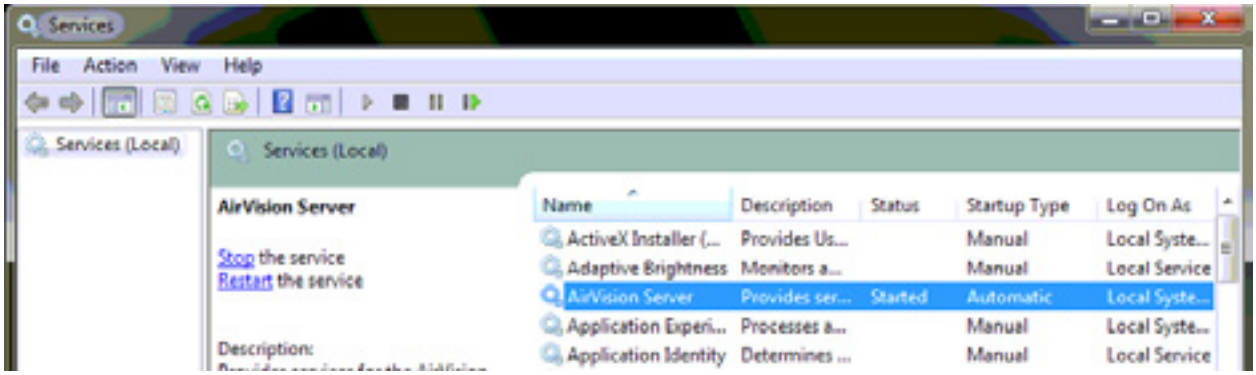
Installing the AirVision Database

After you have installed SQL Server:

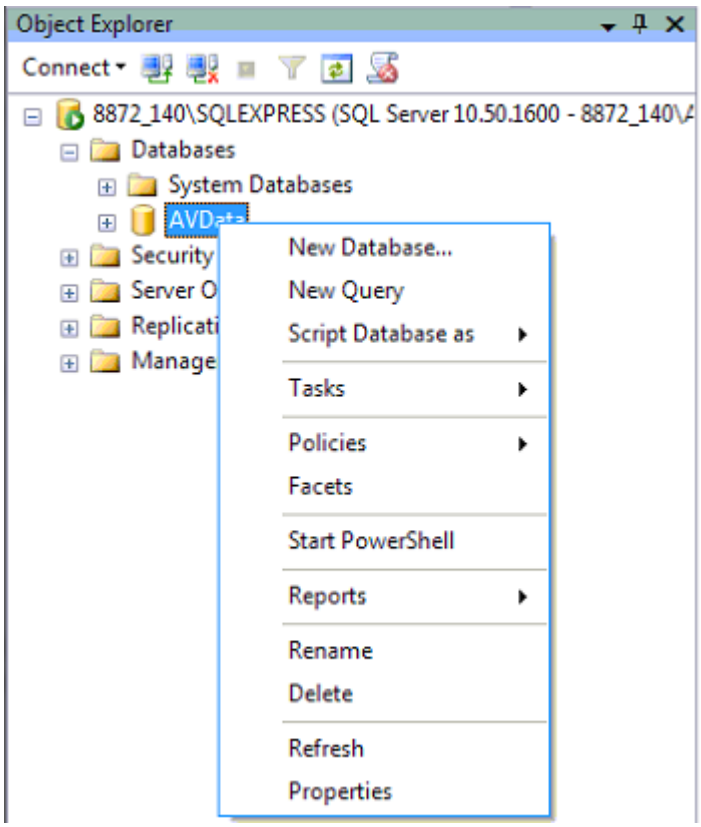
1. From the Windows **Start** menu, select **All Programs** > **Microsoft SQL Server** (or **Microsoft SQL Server 2008**) > **SQL Server Management Studio**.
2. Right-click the **Databases** folder and select **New Database**. For the **Database name**, enter **AVData** and click **OK**.
3. **Click** to select the database you just created (AVData).
4. Confirm you have an 'As Shipped' database backup.



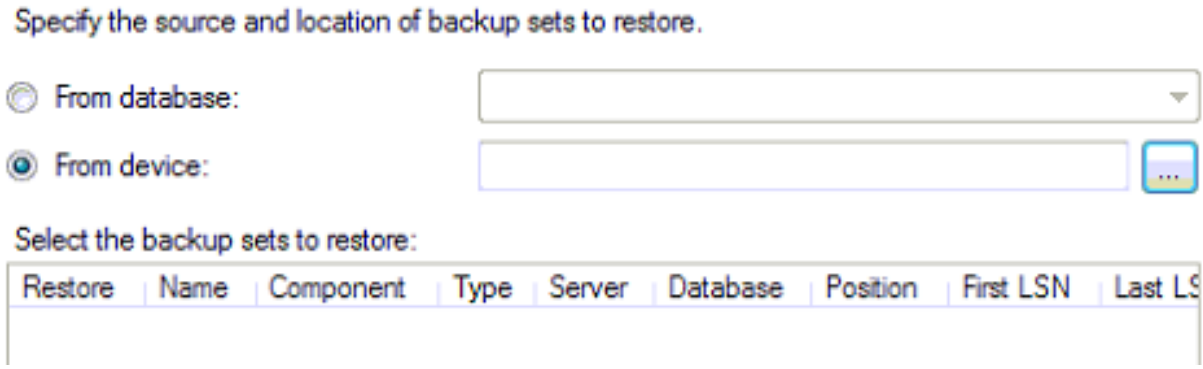
5. Under Windows Services (under "Start" button), stop the AirVision Server service



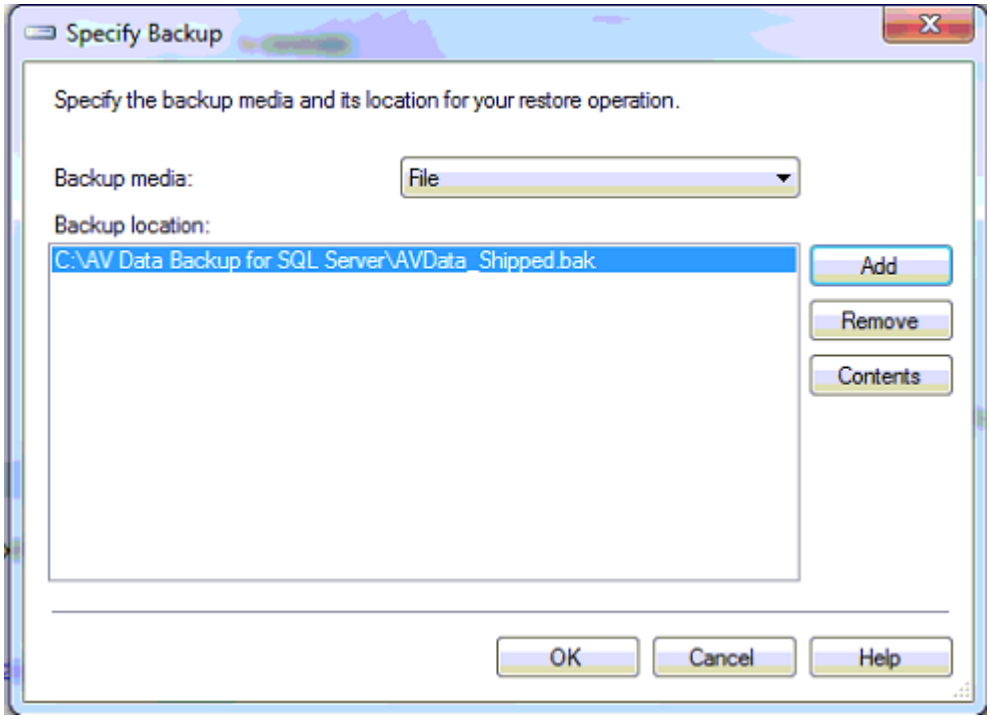
6. Open SQL Server, log in, expand "Databases" on the left, right click on the AVData database and choose **Tasks->Restore Database**.



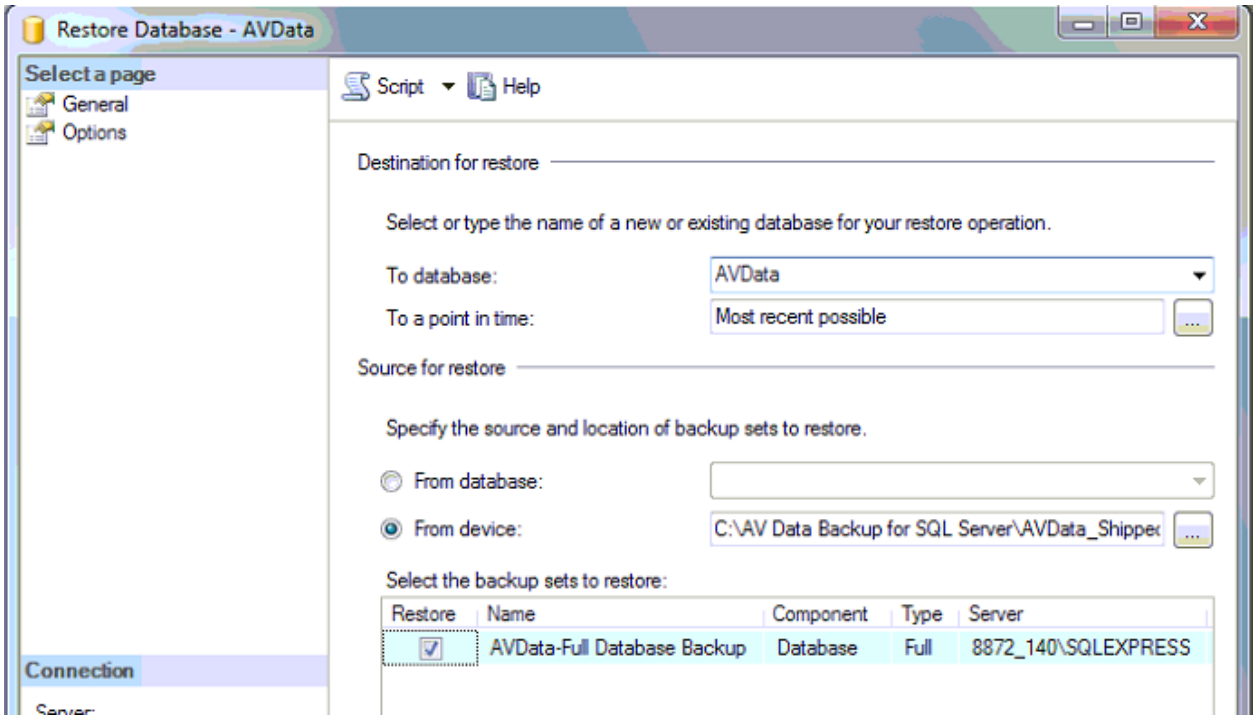
7. Select '**From device**' and click the '**...**' button.



8. Select the AVData_Shipped.bak file provided by Agilaire, then click **OK**.

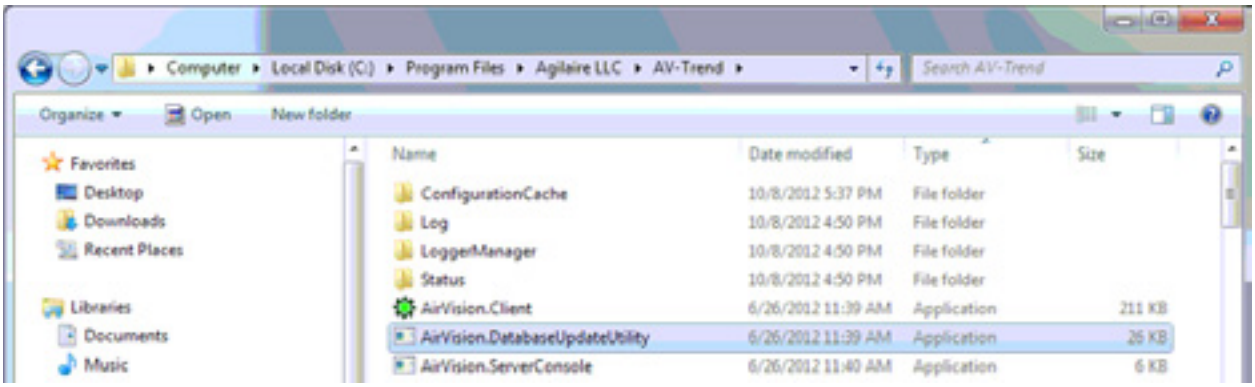


9. Set the 'To database' as AVData, place a check mark in the box next to the .bak file you selected, then click **OK**.

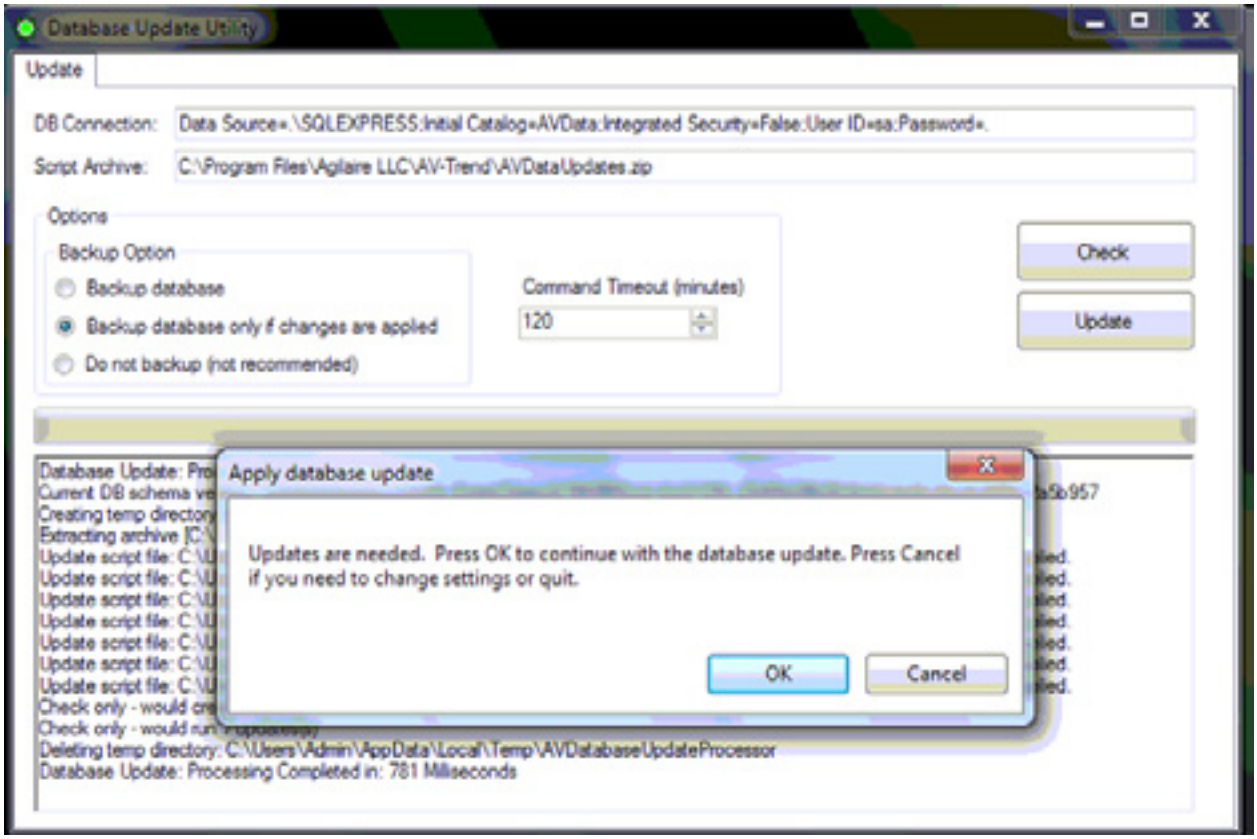


10. Once the restore completes, start the AirVision Server service that you stopped in step 3.

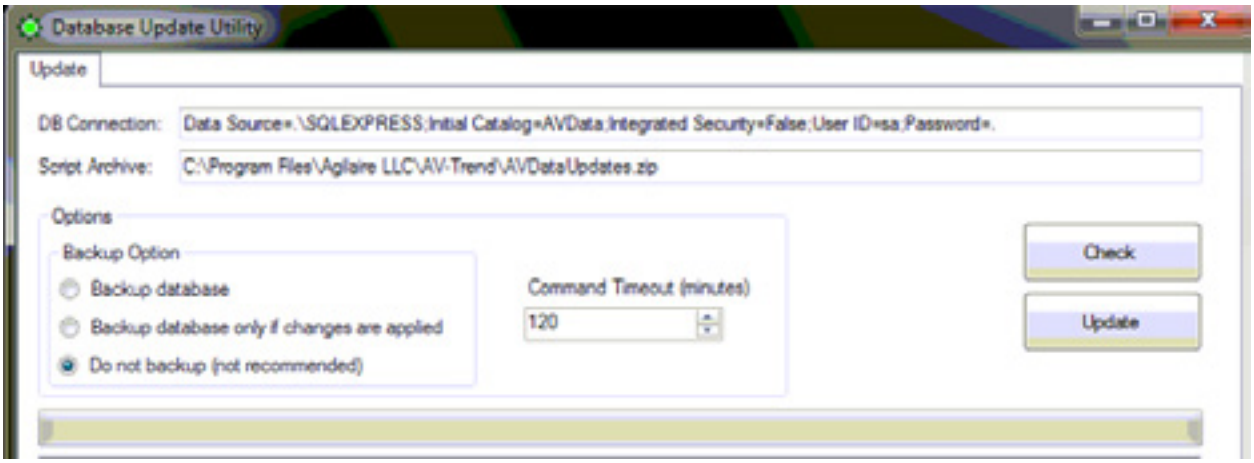
11. If you are not 100% certain that your database matches the version of the software you are running, navigate to **C:\Program Files\Agilaire LLC\AirVision\Server** and launch the **AirVision.DatabaseUpdateUtility**.



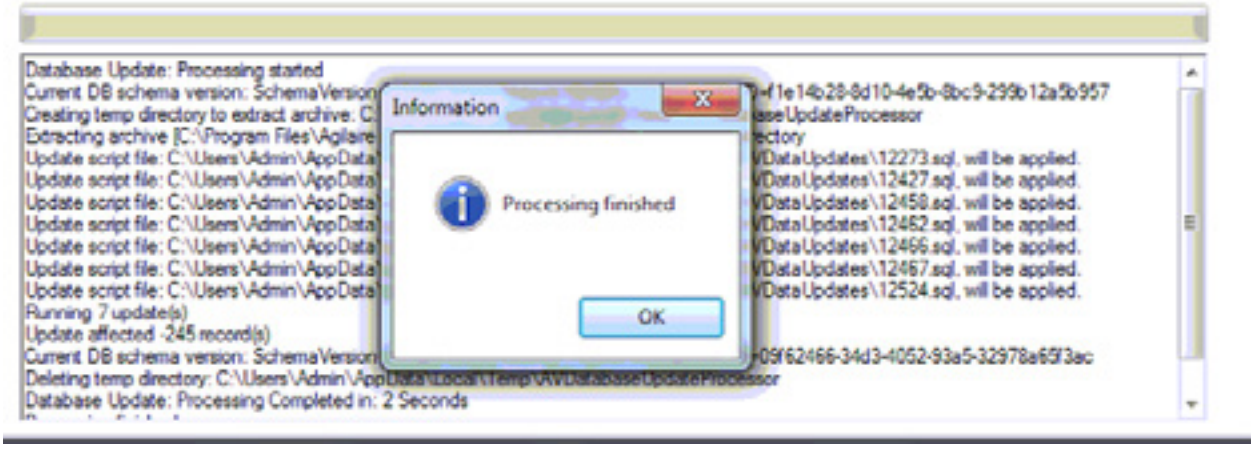
12. If you have a newer version of AirVision installed than what was originally loaded on the system, you will see the following window:



13. Click **Cancel,** then select the 'Do not back (not recommended)' option, click **OK**, then click the **Update** button.



14. When the updates complete, you should see the following message:



15. Close the Update Utility window.

16. Restart the AirVision Service.

17. SSMS and the Windows Services window can both be closed as well.

Installing the AirVision Server

1. After you run the appropriate script to install the database for the first time or upgrade the database as described in the previous section, continue to browse the AirVision installation media. Double-click to open the **Server** folder.
2. Within the **Server** folder, double-click to open the file **AVServerSetup.msi** to install the server part of the AirVision software for new installations, or **setup.exe** for upgrades.
3. When the installation begins, most of the screens are self-explanatory.
   - You will want to review and accept the **End-User License Agreement** in order to proceed with the install.
   - The default install directory is C:\Program Files\Agilaire LLC\Server (you can also browse to change the install directory if desired).
4. Click **Next** to accept the default destination directory (C:\Program Files\Agilaire LLC\Server) or browse to change the directory and then click **Next**.
5. The final screen will say the AirVision Server has been successfully installed. Check the selection box to launch the **Server Settings Editor** and click **Finish**.
6. You will be prompted if you want to install the AirVision Client. If you do not want want to install the Client, unclick this box.

Running Standard or Enterprise SQL Server 2008/2012/2014

If you installed AirVision using either Standard or Enterprise SQL Server for your database, click the **Test Connection** button after the installation. You should see a message box saying your connection was successful.

Running SQL Server Express

If you are running SQL Express, you will need to make a change to the Database Server field in the Server Settings Editor (Windows **Start** menu/Agilaire LLC/AirVision/Server Settings Editor) for both the **Default Connection Settings** tab and the **Advance Settings** tab. Replace **local** with the name of the computer along with \SQLEXPRESS. For example, if the computer name is **yourcomputername**, then you would replace local with **yourcomputername\SQLEXPRESS**.

▶ **Note:** If you don't know your computer name, right click the **My Computer** icon on the Windows Desktop, select > **Properties** > **Computer Name** tab, and find **Full computer name**: The name given before the first period in the path is the computer name. The name given after the first period is the domain name, which is not needed for this step.

Don't make any other changes. Don't add any other characters or spaces or delete any previously existing characters or spaces because unnecessary changes can cripple the operation of the conversion utility. After you have replaced **local** with **yourcomuternamе\SQLEXPRESS**, save and close the file, then click the **Test Connection** button. If a successful message box pops up click **OK**, then click the **Save** button at the bottom right. You will not see anything happen when the **Save** button is clicked. After saving click the **X** button in the top right corner to close the screen.

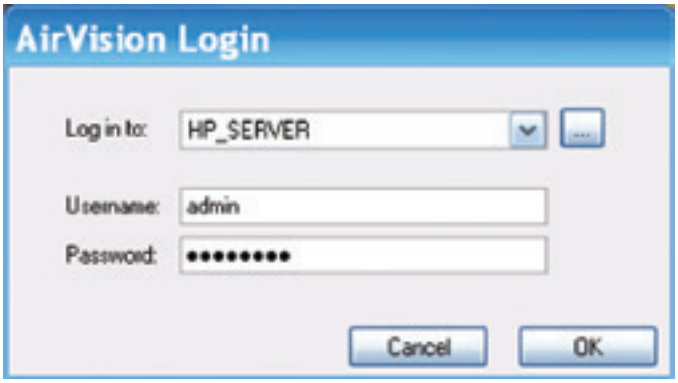
Installing the AirVision Client on Secondary Computers

▶ **Note:** If you are upgrading AirVision from a previous version, you no longer have to uninstall the old version before you run the Client installation.

1. After you have installed the AirVision Server and the AirVision SQL database, continue to browse the AirVision installation CD (double-click to open **My Computer**, then right-click the **CD drive** and select **Open**). Double-click to open the folder **Client**. Within the Client folder, double-click to run **AirVisionClient_Installer.exe**. Click **Next** in the first screen to continue.
2. Accept the license agreement and click **Next**.
3. Enter your **User Name**, **Company Name** (optional), and the unique **Product ID** (required) supplied by Agilaire. Click **Next**.
4. Click **Next** to accept the default destination directory (C:\Program Files\Agilaire LLC\Server) or browse to change the directory and then click **Next**.
5. The final screen will say the AirVision Client has been successfully installed. Click **Finish**.

Logging In to AirVision

Double-click the AirVision icon on your desktop and log in to the AirVision Client. If you are logging in for the first time click the square button to open the **Profiles** screen.



AirVision Login

In the profiles screen, click the **Add Profile** button. If your Server and Client are on the same machine, accept the default PC name. If you are installing a remote Client, change the default name in the box to the name of the server you wish to log into.

Enter **admin** as the **Username**, click **Set Password** and enter **Agilaire**.

Click the **Test Connection** button to see if AVTrend is communicating with the database.

Air Vision Profiles

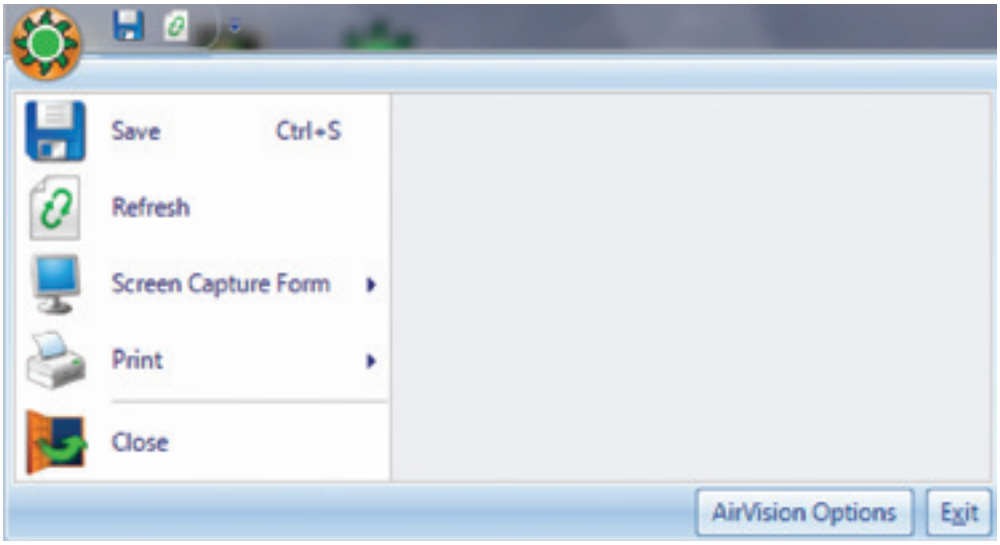
Accessing Profiles After Logging In

After you are logged into AirVision, you can access the Profiles screen by clicking the AirVision icon in the upper left corner of the screen (beside the **Save** icon). From this Profiles screen you can:

- **Save**
- **Capture** the AirVision screen
- **Print**
- **Close** the Profiles screen.

- You can also open **AirVision Options**, which brings up the same Profiles screen you saw when you logged in.

- You can close AirVision altogether by selecting the **Exit** button.



AirVision Profiles seen by clicking the AirVison icon in the upper left corner of the AirVision screen after you have logged in

Chapter 2

Configuring AirVision

AirVision provides nearly unlimited flexibility in setting up systems and configuring servers. This chapter explains how to set up the following parts of AirVision:

- Configuring System Preferences
  Configuration Editors > Site/Parameter
- Configuring Server Preferences
  Configuration Editors > Server Configuration
- Setting up Sites and Parameters
  Configuration Editors > Site/Parameter
- Configuring Parameter Templates
  Configuration Editors > Parameter Template Editor
- Adding Loggers to Sites
  Configuration Editors > Server Configuration
- Adding Channels to Data Loggers
  Configuration Editors > Data Source Details
- Adding Communication Routes
  Configuration Editors > Server Configuration
- Associating a Logger to a Logger Driver
  Configuration Editors > Server Configuration
- Testing Your Connection
  Utilities > Link to Logger
- Downloading Configurations
  Utilities > Logger Download
- Setting up Calibrations
  Configuration Editors > Data Source Details
- Scheduling Tasks
  Configuration Editors > Task Scheduler

- Adding E-Mail Service to the Executive
  Configuration Editors > Server Configuration > Double-click Executive in Tree Menu > Service Components tab

- Adding Users and Email Addresses
  Configuration Editors > Security > User Editor

- Configuring SMTP Settings
  Configuration Editors > Server Configuration > Double-click Email Service in Tree Menu

- Scheduling Email Alarms
  Configuration->Alarm Configuration

- Adding Recipients to the Notification Subscriptions
  Configuration Editors > Notification Subscriptions

- Scheduling Tasks
  Configuration Editors > Report Configurations > AIRNow/FTP Setup

- Scheduling Tasks
  Configuration Editors > Task Scheduler

- Schedule Task Wizard
  Configuration Editors > Task Scheduler > Run Schedule Wizard

- Task Display
  Utilities > Scheduled Task Status

- Favorites Editor
  Configuration Editors > Favorites Editor

- Configuring Security
  Configuration Editors > Security

For information about starting the AirVision Service and logging in to AirVision, see “Chapter 1 Installation.”

Configuring System Preferences

To set up system preferences, open the **Site/Parameter** screen from **Configuration Editors** and double-click the **System** icon. The System is the agency or area, such as Knox County or State of Tennessee. Typically, each agency setup will only have one System, but it is possible to set up more than one by clicking the **Add System** button. (A second system could be used to help separate, for example, air toxics or water quality data from the other quality data).

Enter the following:

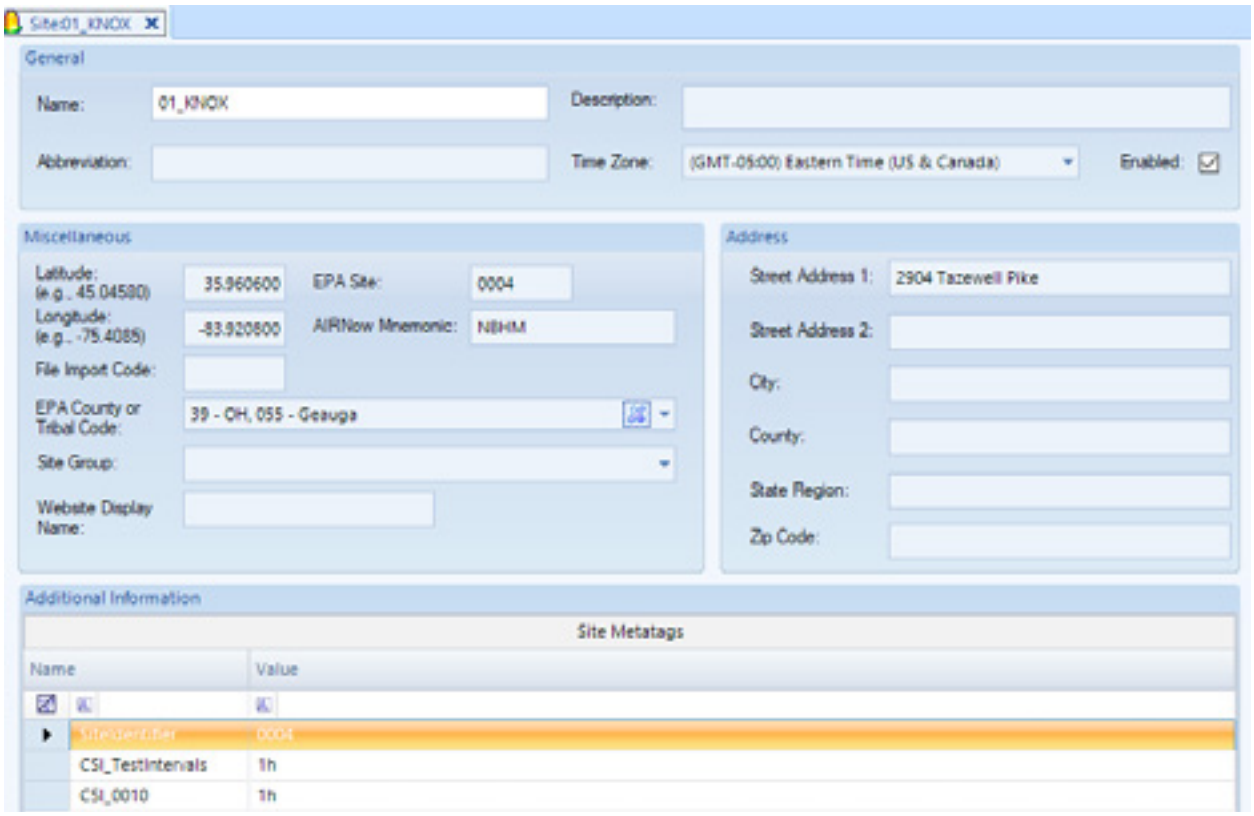
System Name
County Code
Agency Code
Time Zone.(select from a drop-down list).

Click the **Save** icon.

System Configuration from Site/Parameter Config Editor

Site and Parameter Setup

The **Site/Parameter Editor** from the **Configuration** menu allows administrators to add, edit, and delete sites and parameters. In AirVision, a Site typically represents a single CEM emission point / stack. A **Site** is a logical organization of a physical monitoring area and can contain data from several sources, such as data loggers and directly polled analyzers.



Site Configuration from the Site/Parameter Editor in Configuration Editors

Adding and Editing Sites

To add a site, select **Configuration Editors** > **Site/Parameter**, and highlight your **System name**. Click the **Add Site** button and enter a **Name** for the **Site**.To edit a Site, double-click a **Site** from the Site/Parameter tree.

To save new or edited sites, click the **Save** icon from the upper left-hand corner of the AirVision screen, or click the Agilaire icon and select **Save**. Fields in the Site Configuration Editor are described below.

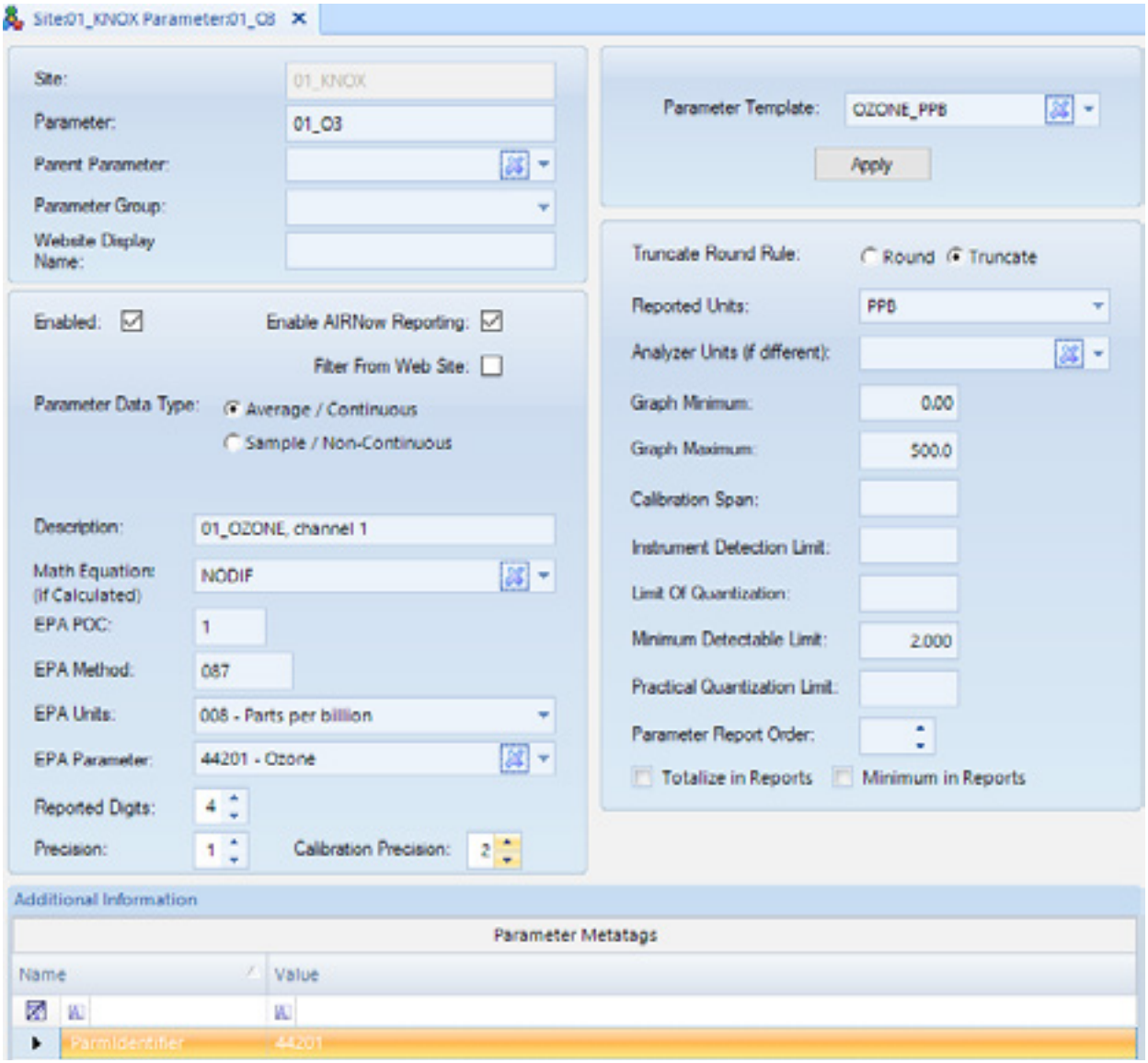
The Site Editor contains the following fields for information about the site:

◆ Name (Required)	Alphanumeric characters to refer to the site, e.g., NKnox.
◆ Description	Brief description of the site, e.g., North Knoxville (optional).
◆ Name (Required)	Alphanumeric characters to refer to the site, e.g., NKnox.

◆ Description	Brief description of the site, e.g., North Knoxville (optional).
◆ Abbreviation	This field is used for special file import formats only.
◆ Time Zone (Required)	Select from drop-down list.
◆ Enabled (Required for polling)	Check the box to enable the site. If this box is not selected the site will not be polled.
◆ Latitude	To comply with EPA standards, enter latitude in decimal format. For example, 75 degrees, 15 minutes, and 0 seconds would be entered as 75.250000. Enter up to 2 places and a minus sign if needed to the left of the decimal and up to 6 places to the right of the decimal.
◆ Longitude	To comply with EPA standards, enter longitude in decimal format. For example, 75 degrees, 15 minutes, and 0 seconds would be entered as 75.250000. Enter up to 2 places and a minus sign if needed to the left of the decimal and up to 6 places to the right of the decimal.
◆ EPA Site	Not used in CEM.
◆ File Input Code	Single character used for file import templates in special cases only.
◆ EPA County or Tribal Code	Not used in CEM.
◆ Site Group - (Optional)	Allows user to organize sites into user-defined groups (e.g., “Rural”, “Downtown”, “NCore”). Names of parameter groups must first be entered into the **Site Groups Editor** in Configuration->List Editors. Normally, this is an AirVision Server-Side function, and is only shown in the 8872 / Site AV-Trend PCs for display purposes.
◆ Website Display Name (AirVision only)	Allows user to define a name to use to display the site in AgileWeb that is different than the regular AirVision name. If the field is blank (and the site is configured to display in AgileWeb), the regular AirVision site name is used by AgileWeb.
◆ Address	Physical address of the Site.
◆ Additional Information	You can add notes at the bottom of the Site Editor by clicking on the asterisk at the bottom of the screen. Enter a **Name**, for example “Distance to tree line,” and a **Value**, for example “70 feet.” When you have completed your entry press the **Enter** key on your computer keyboard. Your entry will be moved to the next row in the Additional Information section.

Adding and Editing Parameters

To add a parameter configuration, select a **Site** from the **Site/Parameter** tree and click the **Add Parameter** button near the top of the AirVision screen. To edit a parameter select a **Site** and then double-click a **Parameter**.



Parameter Configuration from the Site/Parameter Editor in Configuration Editors

The **Parameter** screen displays the following fields:

◆ Site	The Site you selected in the Site/Parameter tree will automatically be displayed.
◆ Parameter	Alphanumeric characters to identify the Parameter.
◆ Parent Parameter	A Parent Parameter can be designated to form relationships that can be used for drill-down in the Data Editor. For example, a primary analyzer pollutant such as NOx could be a parent and designated diagnostic parameters such as sample flow or box temperature could be children. Another example would be to assign particulate parameters as parents and metals for XRF (X-ray fluorescence) analysis as children. If the parameter has a parent parameter, select it from the drop-down list.
◆ Parameter Group - (Optional)	Allows user to organize parameters into user-defined groups (e.g., “Gases”, “Met”, “Particulate”, “PAMS”). Names of parameter groups must first be entered into the **Parameter Groups Editor** in Configuration->List Editors. Normally, this is an AirVision Server-Side function, and is only shown in the 8872 / Site AV-Trend PCs for display purposes.
◆ Parameter Template	Parameter information can be filled in automatically by selecting a Parameter Template, which will set up EPA codes and units. Basic Parameter Templates are provided in AirVision. They can also be configured in the **Parameter Template Editor**, which defines basics like units, EPA reporting codes, and graph limits. (See “Configuring Parameter Templates.”) You shouldn’t have to make changes to the Parameter Template unless the defaults become outdated by changing EPA regulations. If you want to automatically fill in parameter information using a template, select a parameter template from the drop-down list and click **Apply**.
◆ Enabled	Check the box to enable the parameter.
◆ Filter from Website	Not used in CEM.
◆ Parameter Data Type	Select a data type: **Average** for continuous data, **Sample/Non-Continuous** for data that is not continuous (e.g., FRM, AirToxics, PAMS, etc).
◆ Description	Enter a brief description of the parameter (optional).

◆ EPA POC	Not used in CEM.
◆ EPA Method	Not used in CEM.
◆ EPA Units	Not used in CEM.
◆ EPA Parameter	Not used in CEM.
◆ Reported Digits	Total number of digits, including decimal places, that will be reported to the EPA.
◆ Reporting Precision	Number of decimal places for reporting precision.X's and Y's to the right of the reporting precision field illustrate the format of the digits/precision, e.g., XX.YY indicates a total of four Reported Digits with a Reporting Precision of two.
◆ Cal Report Precision	Number of decimal places to the right to use for calibration report, calibration error calculations, and AQS reporting of 1-Point Precision Checks.
◆ Truncate/Round Rule	Determines whether data in reports will be rounded or truncated.
◆ Reported Units	Units that will be used for reports e.g., PPM.
◆ Analyzer Units	If the analyzer units are different from the primary parameter, select analyzer units from the drop-down list.
◆ Graph Minimum	Lower y-axis limit for graph display.
◆ Graph Maximum	Upper y-axis limit to for graph display.
◆ Calibration Span	This field is determined by the instrument. Enter the configured calibration span value for the parameter to determine the parameter's calibration error (at the data logger).
◆ Instrument Detection Limit (DL)	Not used in CEM.
◆ Limit of Quantization (LOQ)	Not used in CEM.
◆ Minimum Detectable Limit (MDL)	Not used in CEM.
◆ Practical Quantization Limit (PQL)	Not used in CEM.

◆ Parameter Report Order	Parameters in reports are printed in the same order that they are shown under each site. Select Parameter Report Order to change the order parameters appear in reports Report Order only applies to Daily Summary and Monthly Reports.
◆ Totalize in Reports	If this option is selected, Monthly Reports will show a total of data rather than an average. Totalize in Reports is most commonly used for rainfall.
◆ Minimum in Reports	If this option is selected, Monthly Reports will show a minimum of data rather than a Maximum. Minimum in Reports is most commonly used for temperature.
◆ Additional Information	You can add notes at the bottom of the Parameter Editor by clicking on the asterisk at the bottom of the screen. Enter a **Name**, for example “Data Last Certified,” and a **Value**, for example “9/1/2008.” To add another row when you have completed your entry, press the **Tab** key on your computer keyboard. A blank row will be displayed.

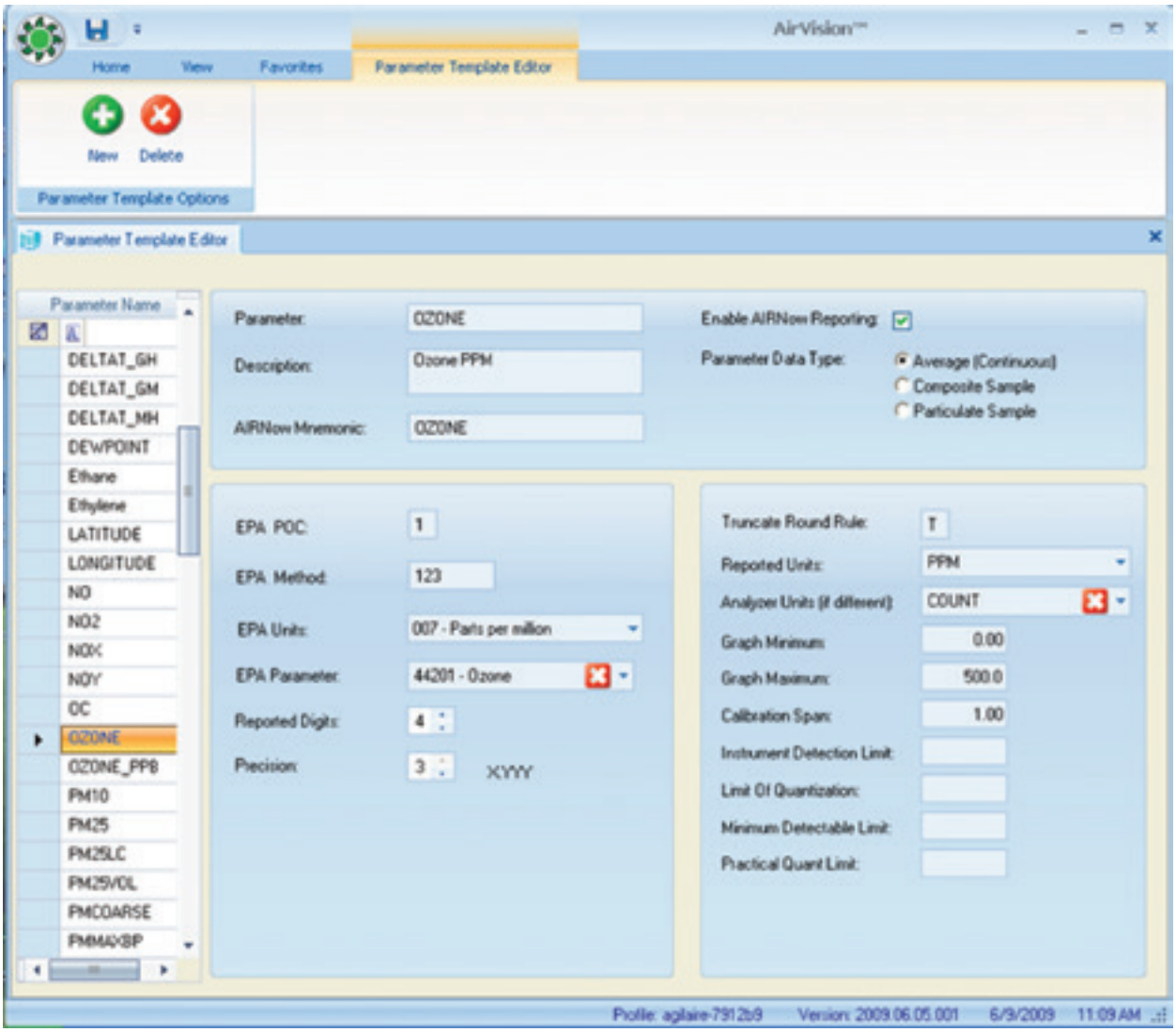
Configuring Parameter Templates

Basic **Parameter Templates** are provided by AirVision (**Configuration Editors** > **Site/Parameter**), such as S02, NOX, CO. You shouldn't have to make changes to the standard Parameter Templates unless the defaults become outdated by changing EPA regulations, but if you have unique setups you can configure new templates in **Configuration Editors** > **Parameter Template Editor**. The Parameter Template Editor defines basics like units, EPA reporting codes, and graph limits, and allows you to configure details for an EPA parameter type.

In AirVision a parameter can come from any kind of data source--it is not correlated with data logger channels. Parameter templates allow you to avoid repeating configurations for the same parameter at multiple sites , for example, file import templates, report setups, ADVP rules. The Parameter Template Editor allows you to enter or modify a list of parameter types that each parameter can be referenced to, so AirVision can correlate parameters with different names (e.g., Opacity, OPAC). Linking parameters to parameter types makes reporting easier and eliminates the necessity to link individual site/parameter selections together.

All fields in the Parameter Template Editor were explained in the previous section "Adding and Editing Parameters."

▶ **Note**: A Parameter Template is required for any parameter imported with the File Import Tool, E-Mail Alarms, or ADVP. File Import is the the most common reason for a user to add to the Parameter Template table.



Configuring Parameter Templates

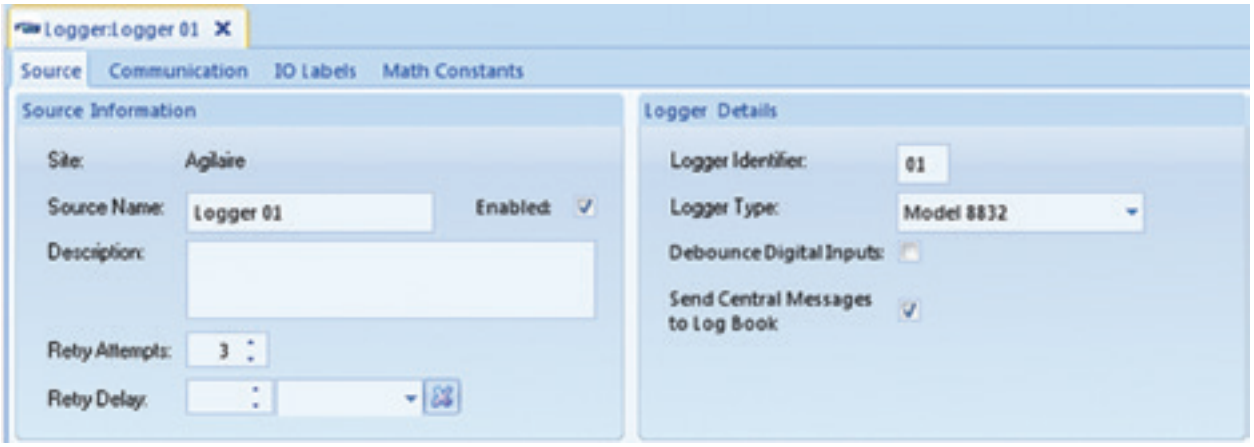
Adding Loggers to Sites in Data Source Details

The next step, after configuring sites and parameters, is to add **Loggers** to sites.

▶ **Note**: Data loggers must be added to sites **BEFORE** channels are configured. Channels are added to loggers after the loggers are set up.

Still in the **Configuration Editor**,

- select **Data Source Details**,
- select a **Site**,
- then click the **Add** button and
- select **Logger**.
- enter a **Source Name**, e.g., 01Logger,
- enter the **Logger ID**, e.g., 01,
- select a **Logger Type** from the drop down list, e.g., 8832,
- click **Enabled**.
- optionally, you can enter a **Description** and select **Debounce Digital Inputs**
- check **Send Central Messages to LogBook** to automatically put polled **Central Messages** into the Logbook as Logbook entries **(Reports>Logger Reports>Central Messages**
- click the **Save** button.

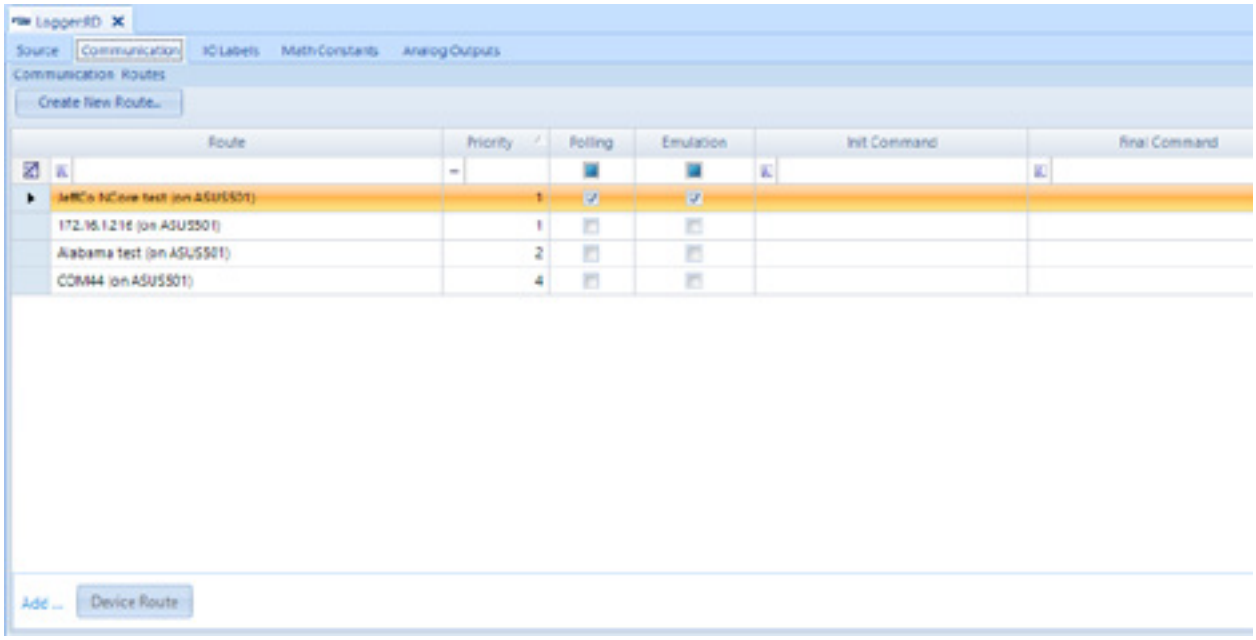


Logger Configuration from Data Source Details in Configuration Editors

Text Strings in Digital I/O

Logger Properties Tabs

Communications - This tab is used in AirVision and AV-Trend to set the method by which the software communications with an external logger (see “Adding Communication Routes”). It is not used in an 8872 for the base logger properties, and should remain blank.



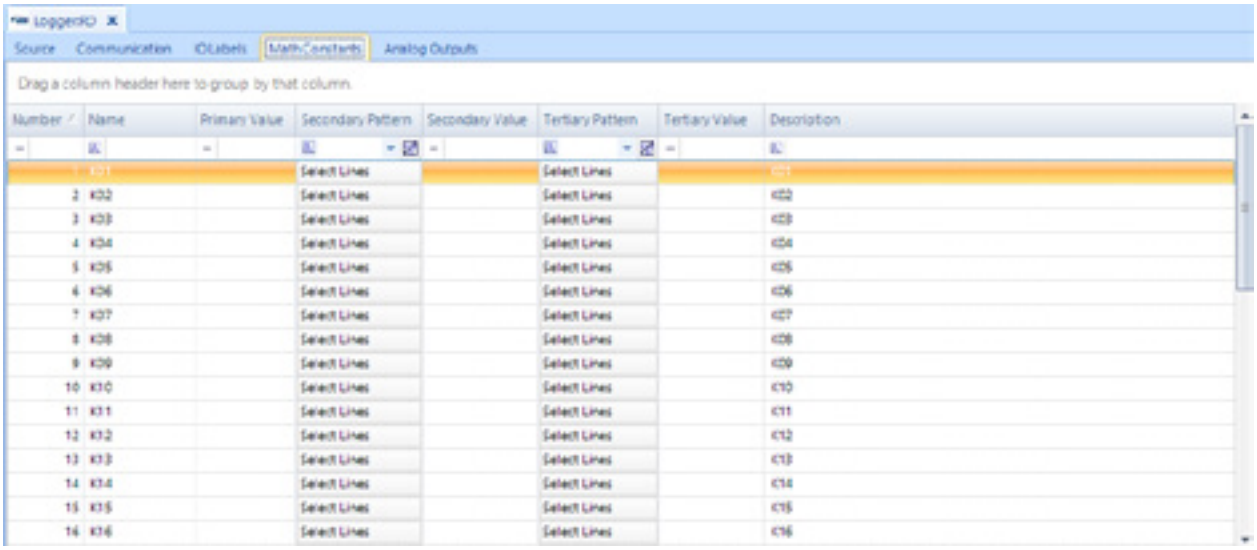
IO Labels - This tab is used in to set the properties of the digital inputs and output lines in the data logger, and how they relate to other elements of the software. Properties include.

- **Physical Inputs / Physical Outputs:** This is only used in AirVision and AV-Trend in association with ESC 8816/8832/8864 loggers, and can help avoid download errors associated with pseudo inputs and outputs when the number of input and output cards do not match. They can be blank in most cases, and is not used with the Model 8872.
- **Name:** 20-character label downloaded to the data logger.
- **Description:** Optional, allows for a longer description.
- **Name:** 20-character label downloaded to the data logger.
- **Modbus Instrument / Coil:** Leave blank for physical inputs/outputs in ESC loggers. Set for internal modules on the 8872 and for any external Modbus-capable instrument or calibrator to map pseudo-inputs and pseudo-outputs to analyzer/calibrator control or status monitoring functions. See tutorial videos under “Training” at Agilaire.com for more details on connecting to commonly used calibrators.

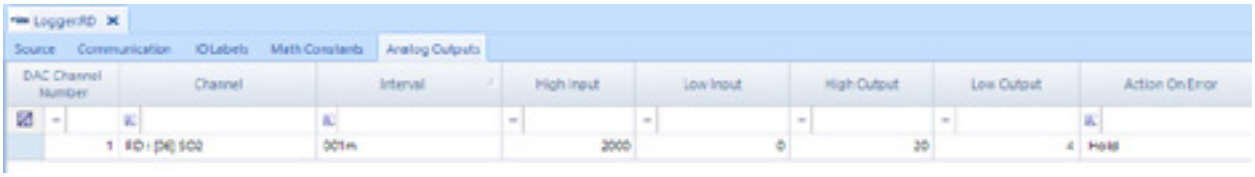
  ▶ **Note**: When mapping pseudo-outputs in ESC loggers to analyzers/calibrators, the corresponding psudo-input must be unused (and vice-versa for mapped pseudo-inputs).

- **Alarm Definition / Line State Triggering Alarm:** Used for the Advanced Alarm Feature in AirVision/CEM. See AirVision/CEM manual, Digital Alarm Trigger for details. Not used in regular ambient applications.
- **Open State Text:** Allows user to define an alternate text for the Site Node Logger Toolbox display of inputs/outputs in the Model 8872 data logger for the open (normal) state condition. Not applicable for ESC loggers.
- **Open State Text:** Allows user to define an alternate text for the Site Node Logger Toolbox display of inputs/outputs in the Model 8872 data logger for the closed (active) state condition. Not applicable for ESC loggers.

Math Constants - This tab is used to set primary values and, optionally, secondary or tertiary values (switched by physical or pseudo digital inputs) of math constants (K01-K32) used by the data loggers in math equations. The math equation will use the primary value, unless the status input pattern matches that set for either the secondary or tertiary value, and a secondary/tertiary value has been set. This feature is used commonly in CEM applications for fuel factor / GCV value switching, but can also be used in ambient applications as holding registers for values updated by channel averages (e.g., holding end of hour BAM values) or values written during the calibration process (e.g., expected values read back from calibrators). See the "write to math constant" functions in the Channel Configuration->Validation and in the Calibration configuration sections.



Analog Outputs - This tab is used to set analog output settings for the Model 8816, 8832, 8864, or 8872 loggers. Consult the Analog Outputs section/appendix in the relevant logger manuals for more details on usage.



Adding Channels to Data Loggers

Still in the **Configuration Editor**, **Data Source Details**,

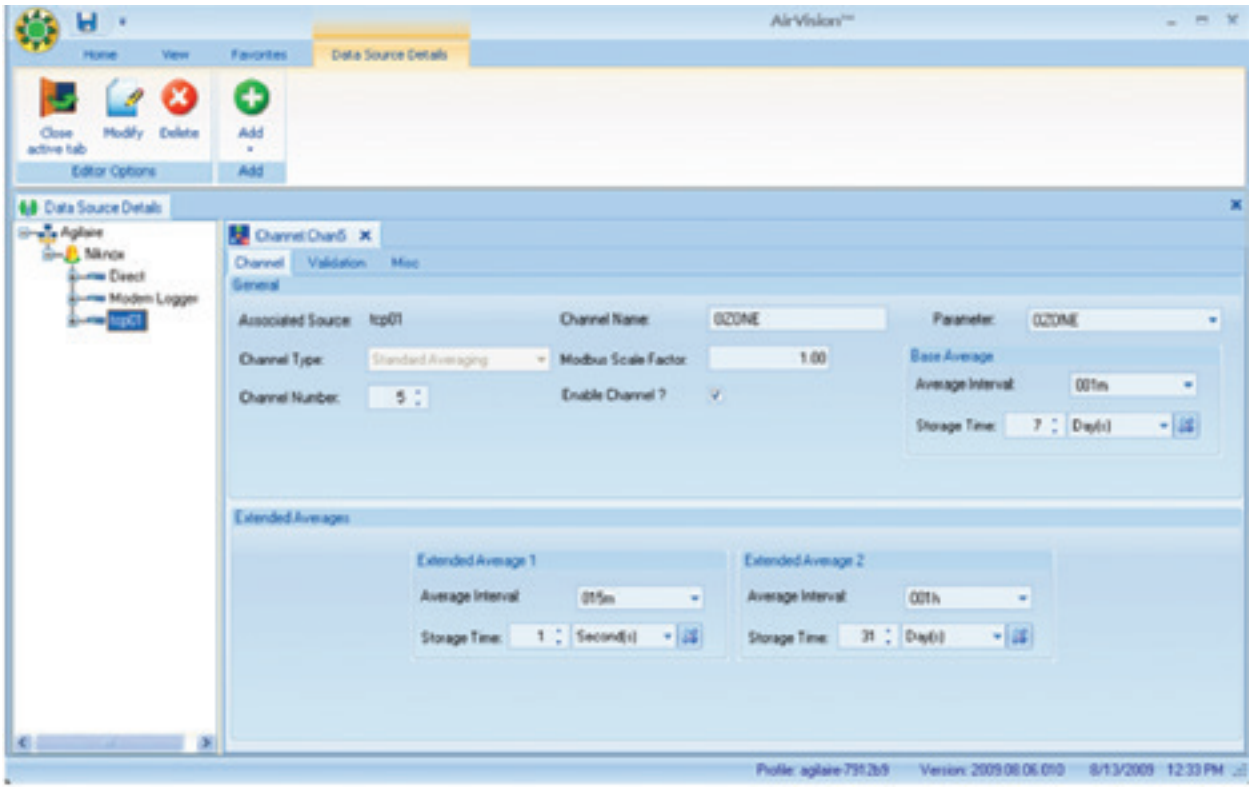
- select a **Logger** that has already been added to a **Site** (see “Adding Loggers to Sites”)
- click the **Add** button.
- select **Add Channels** and
- select a **Channel Type**, e.g., Standard Averaging, GSI, VWS, etc.
- select a **Channel Number** (a channel number will automatically be added in order)
- select a **Parameter.** When you select a parameter, the Channel Name will automatically be changed to match the Parameter name.

For the remainder of the prompts on the form, consult the ESC Model 8816/8832 User Manual.

▶ **Note:** When you first open the Channel editor the **Channel Name** will be displayed as Chan1, Chan2, etc. When you select a Parameter, the Channel Name will automatically be changed to match the Parameter name; however, you can edit the Channel Name if you choose. After the channel is downloaded to the data logger, the Channel Name will be displayed as the **Instrument Name** in the logger.

- select an **Average Interval** and **Storage** for the **Base Average**, **Extended Average 1**, and **Extended Average 2**.
- Click the **Save** button

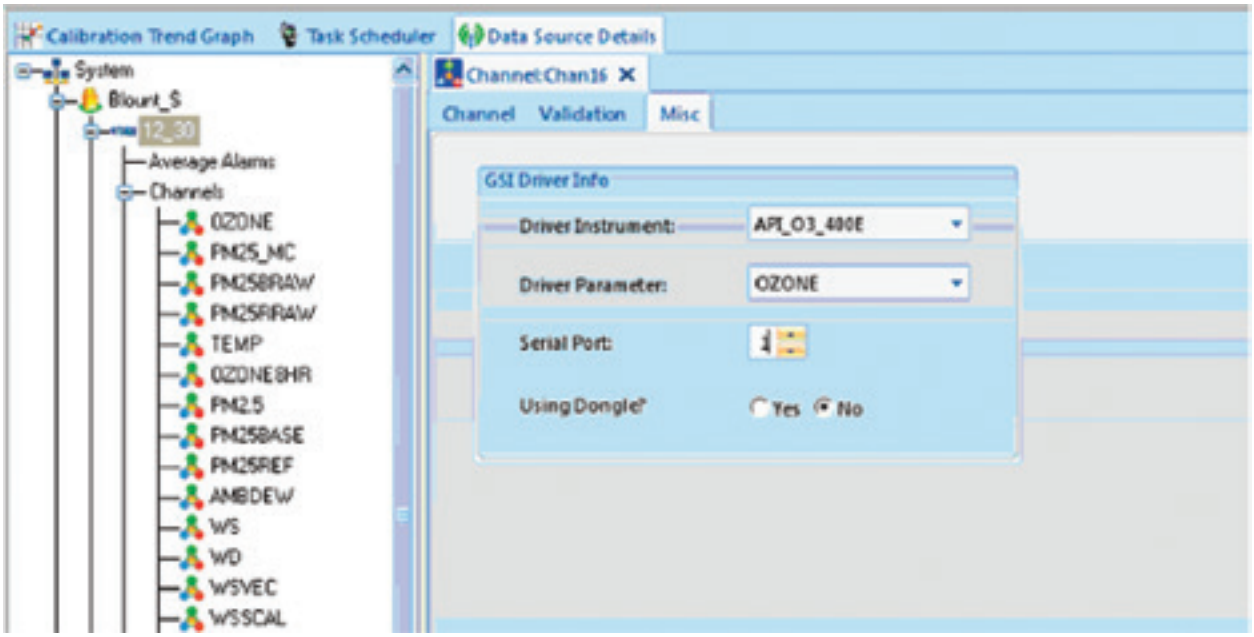
Follow the same procedure to add calibrations, average alarms, and digital event triggers, as explained later.



Adding channels to loggers in the Data Source Configuration from Configuration Editors

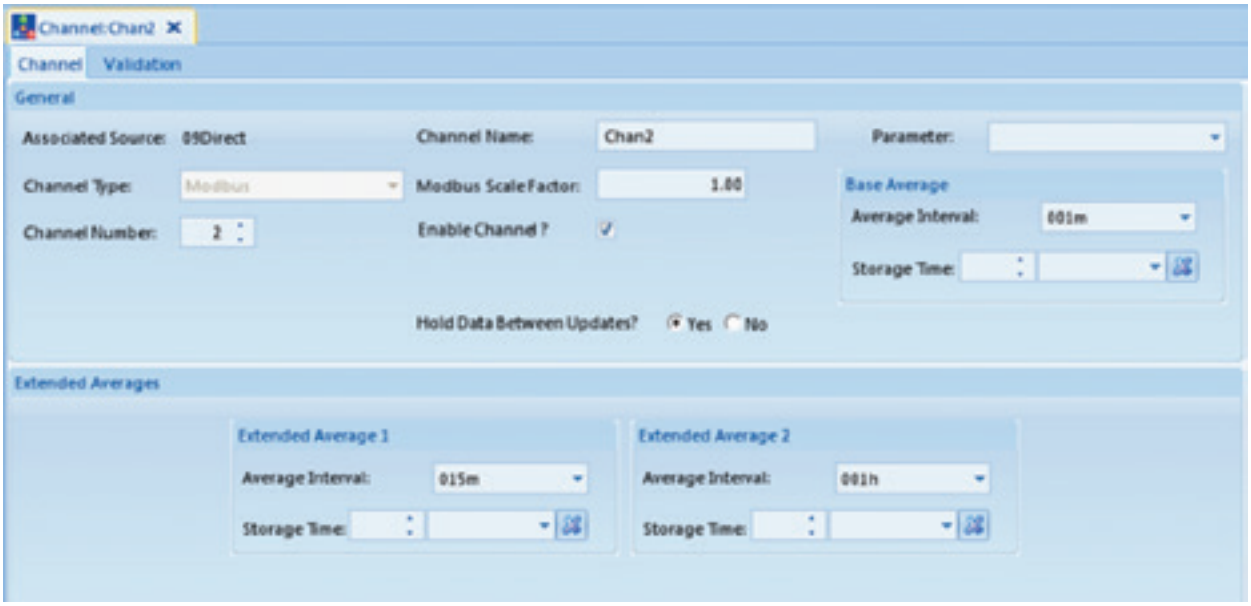
Two channel types are handled differently in AirVision than in previous systems; both improve on digital data acquisition integration.

- The first channel type, the GSI (Generic Serial Interface,) channel, is used for RS-232 based instruments. AirVision includes a library of GSI drivers for a wide variety of instruments. Choose the instrument, the parameter, and designate which serial port is connected. Using a dongle can be designated if the instrument connection requires a hardware dongle (e.g., C-Series Analyzers in a daisy-chain configuration, or Ecotech analyzers.



GSI channel configuration

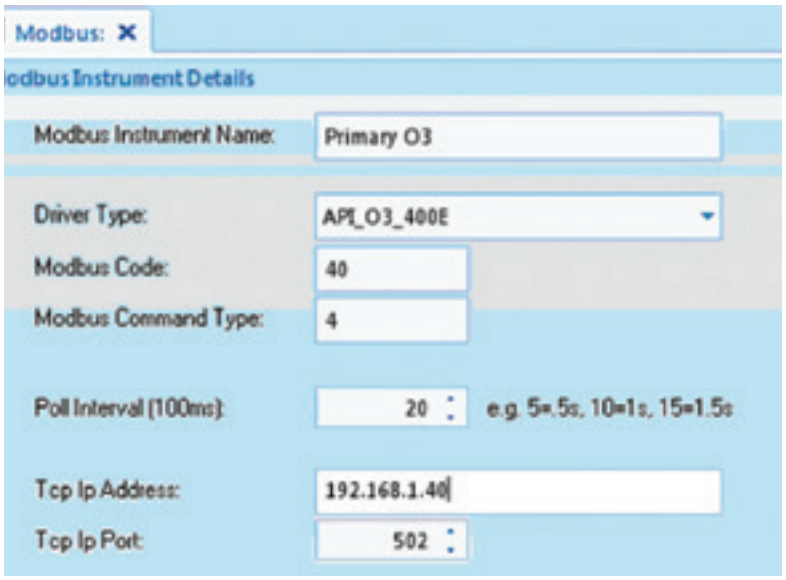
- The second channel type (and a better approach for digital data acquisition) is the Modbus channel. Designate an Instrument that has been previously configured in the Data Source Details editor, and select a parameter.



Modbus channel configuration

Like the GSI channel, AirVision simplifies the configuration process by automatically creating and downloading the data logger's server configuration file in the background. Since Modbus instruments have additional networking information that needs to be known, you must create an instance of the Modbus instrument in the Data Source Details editor before creating the Modbus channels for that instrument (this prevents the need to repeat entry of the networking information for each channel).

To create the instrument, go to the Data Source Details editor, select the appropriate data logger object in the tree, and select **Add** > **Logger Modbus Instrument** on the ribbon.

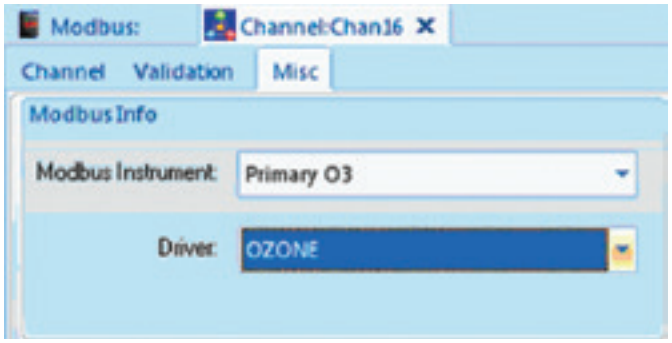


Modbus Instrument Details in Data Source Details

You must then enter the following fields:

- Instrument Name--a user-defined label for the instrument
- Driver Type--select from picklist of known analyzers
- Modbus Code--also known as the Modbus Device ID, this is set in the analyzer, and is some value from 1-255
- Modbus Command Type--defines which Modbus command is used to read data from the analyzer (3 for TECO, 4 for API, consult instrument documentation for other brands)
- Poll Interval- how often data should be requested from the instrument, in tenth of a second increments
- TCP Address--IP address of the instrument, as viewed from the logger's perspective
- TCP Port--Port used by the instrument for Modbus requests, usually "502".
- Timeout (MS)--Designates the time the logger will wait on an instrument for a Modbus response. Typical values are 250-750 MS

Once the instrument is configured and saved, you can then use the **Add Channel** > **Modbus** in the **Data Source Details** editor. Under the **Misc** tab, select the defined analyzer and the parameter in the instrument from a picklist. If you need a parameter does not exist in the picklist, contact Agilaire Support (support@agilaire.com) and we will add it to your system.



Misc tab in Add Modbus

Adding Communication Routes

The next step is to identify to the AirVision Server how to communicate with each logger by setting up Communication Routes. After you configure the **Source** in **Data Source Details** from **Configuration Editors**, click **Server Configuration** to configure a Communication Route for each logger.

TCP/IP Routes

Highlight the **Server** and click the **Add TCP** button to establish the communication route described below:

▶ **Note:** TCP/IP connections are easier and faster than modems.

For sites with a TCP/IP connection,

- Click the **Add TCP Route** button
- Enter a **Route Name**, e.g., Agilaire,
- Enter a **Network Address**, e.g., 172.16.1.240

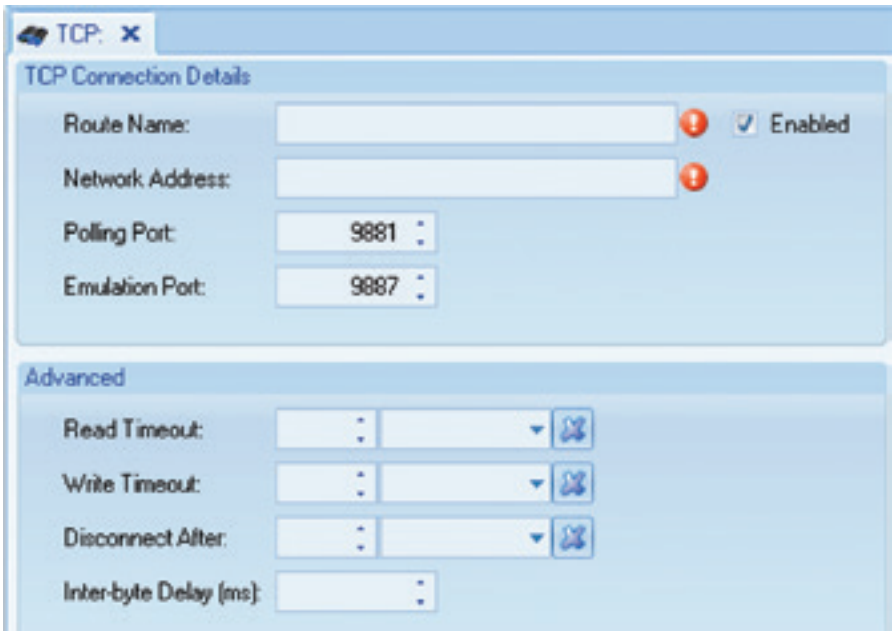
The defaults are set for 8832 defaults, but can be changed based on your network/route definitions:

- **Polling Port** at 9881
- **Emulation Port** at 9887.

▶ **Note: Advanced Settings** should **ONLY** be modified when recommended by Agilaire support (865-927-9440 press 2 for support or email support@agilaire.com). AirVision is designed with defaults that are best for most applications.

- **Read Timeout**- This setting overrides the default timeout period for a TCP data read.
- **Write Timeout**- This setting overrides the default timeout period for a TCP data transmission.
- **Disconnect After**- This setting controls the closing of a TCP connection after a period of inactivity. Normally, AirVision assumes the TCP connection should remain open for optimum polling efficiency; however, some wireless IP modems will close the connection from their end, and TCP does not allow the server to automatically detect this drop. In these cases, AirVision can be set to forcibly close and re-open the connection.
- **Inter-byte Delay (ms)**- This feature can be used to slow the inter character transmission speed.

Click the **Save** button.



Adding a TCP Route in Configuration Editors > Data Source Details or Configuration>Server Configuration

Adding Serial Routes for Direct Communication

For sites with a serial route for a direct connection,

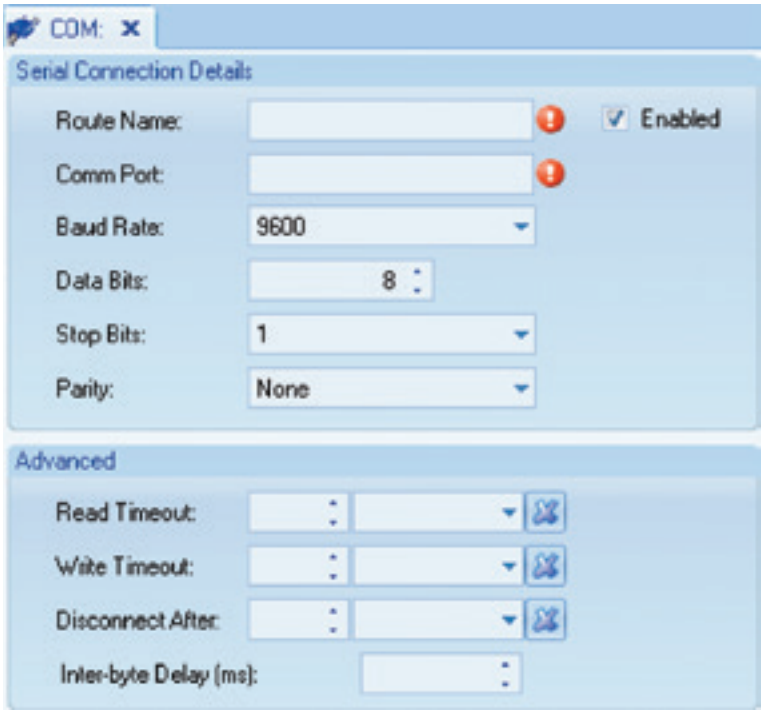
- Highlight the **Server** and click the **Add Serial** button in **Server Configuration**
- Enter a **Route Name**, e.g., Direct,
- Enter a **Comm Port**, e.g., COM4
- Enter a **Baud Rate** or accept the default 9600
- **Data Bits** should be 8
- **Stop Bits** should be 1
- **Parity** should be None.

▶ **Note: Advanced Settings** should **ONLY** be modified when recommended by Agilaire support (865-927-9440 press 2 for support or email support@agilaire.com). AirVision is designed with defaults that are best for most applications.

- **Read Timeout** overrides the default timeout period for data read.
- **Write Timeout** overrides the default timeout period for a data transmission.
- **Disconnect After** controls the closing of a connection after a period of inactivity. Normally, AirVision assumes the direct connection should remain open for optimum polling efficiency; however, AirVision can be set to forcibly close and re-open the connection.
- **Inter-byte Delay (ms)** can be used to slow the inter character transmission speed.

Click the **Save** button.

▶ **Note:** Communication Routes can also be added in **Configuration Editors** > **PC Configuration** by highlighting the **Server** icon and clicking one of the **Add** buttons.



Adding a Serial (Direct) Route in Configuration Editors > Data Source Details or Configuration> Server Configuration

Associating an Existing Route to a Logger

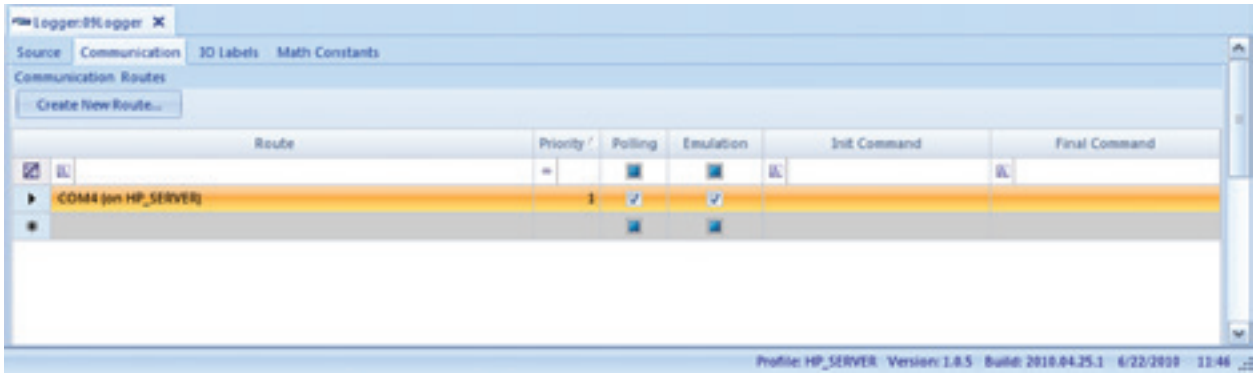
Each **logger** must be associated with a **Logger Driver**. Open **Configuration Editors** > **Data Source Details** > **Logger** and select the **Communication tab**:

- Highlight the **Route** row
- Assign a **Priority** number
- Select **Polling** and/or **Emulation** if applicable (Emulation is for linking to the logger.)
- Optionally, enter an **Initialization Command and** and a **Final Command**
- Click the **Save** button.
- Click the **Save** button.

To add a new Route, click the **Create New Route** button.

⇨ **Important::** Some configuration changes require you to restart the the AirVision Server . If a **System Restart** is necessary, you will be prompted by AirVision when you click **Save**. If you click **Yes** at the prompt, AirVision will restart the system automatically. If a required server restart is not done, you will not be able to link to logger. (Two server restarts may be necessary to synchronize the network for IP-based connections.)

▶ **Note:** If you need to restart the system manually, open the **Utilities** menu and select **Server Restart**. Select an **Executive** in the **Server Restart** screen, then click the **Restart Executive Service** icon in the upper left corner.

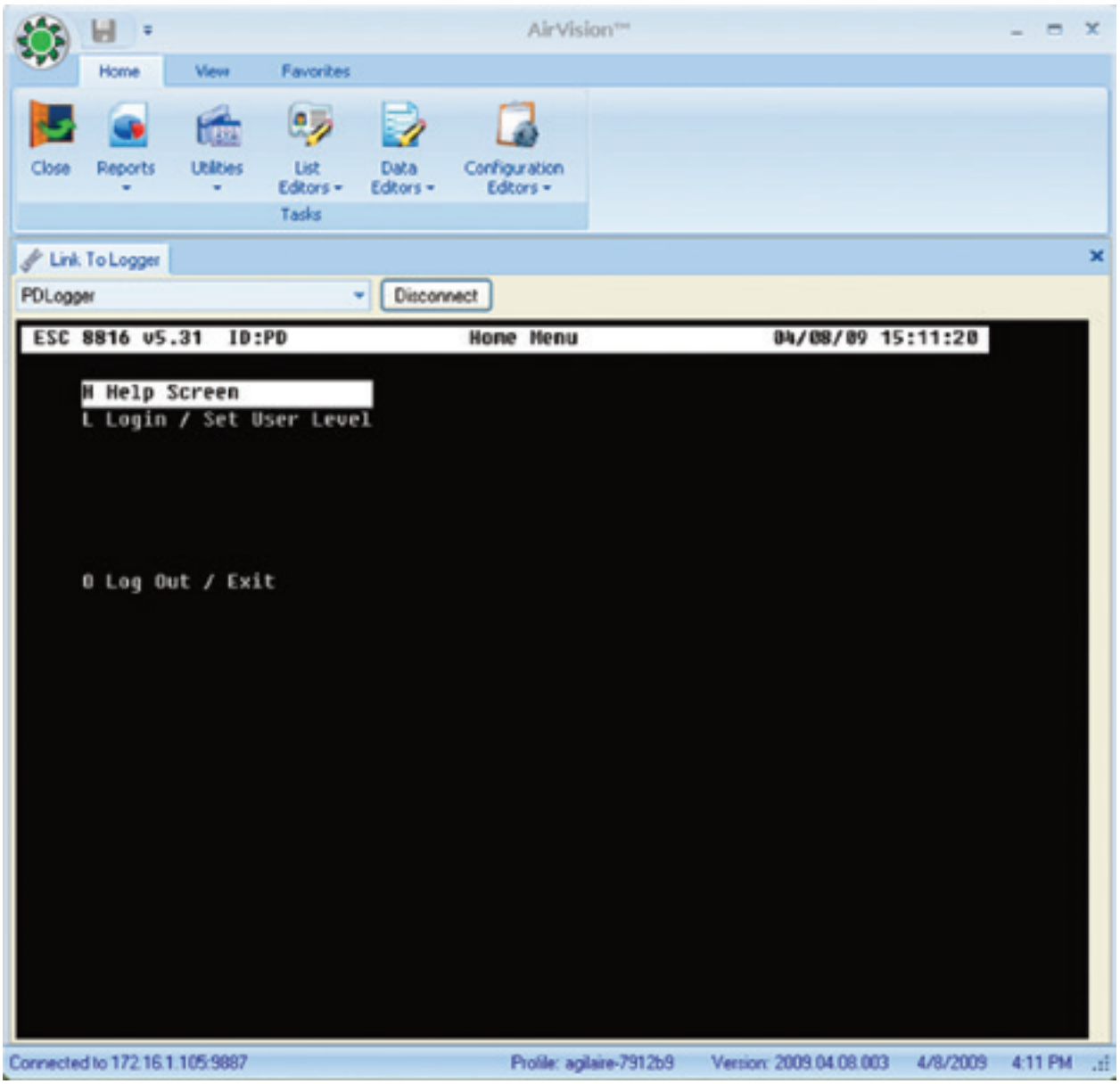


Associating Data Logger with TCP/IP connection to Driver in Configuration Editors > Data Source Details > Communication tab

Testing Your Connection (Model 8832 or 8864)

To test your connection, select **Link to Logger** from the **Utilities** menu. Select a logger from the drop-down list and click **Connect**. Linking to the logger means that you connection is good but does not ensure that you will be able to download or poll.

- **Important:** If you have not restarted the AirVision service after making configuration changes, you must restart the AirVision service before you can link to logger. Open **Utilities** > **Restart**. Be sure the Executive is selected and click **Restart Executive Service** in the upper left corner. Sometimes two server restarts are required to synchronize the network for IP-based connections.



Testing your connection from Utilities > Link to Logger

Logger Download (Model 8832 or 8864)

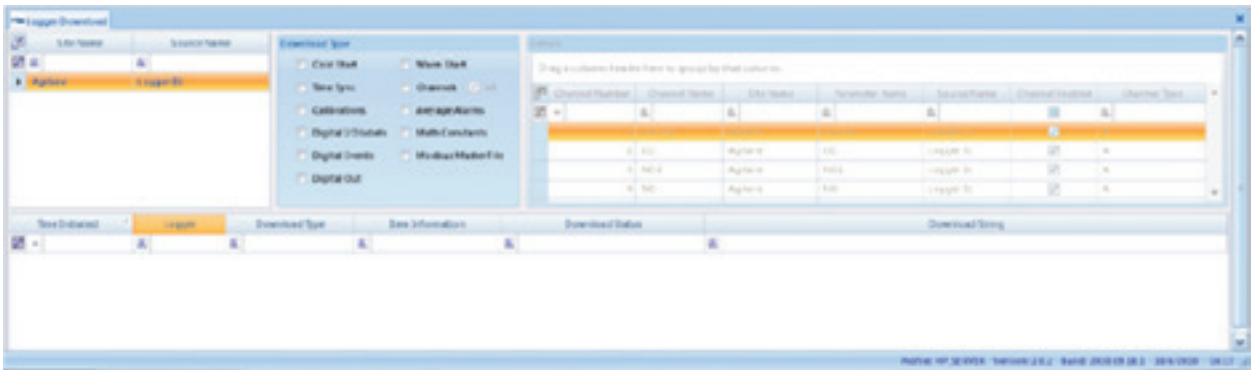
To download channel configurations:

- Open **Utilities** > **Logger Download**. Configuring channels was explained in the section "Adding Channels to Data Loggers."
- Select the **Site**/**Source Name**
- Select the **Download Type(s)** from the following check list:
  Cold Start
  Time Sync
  Calibrations
  Digital I/O Labels
  Digital Events
  Digital Out
  Warm Start
  Channels. If you select Channels, the option to select All will be activated.
  Average Alarms
  Math Constants
  Modbus Master File
- In the Details section, select rows from a table with the following columns: Channel Number, Channel Name, Site Name, Parameter Name, Source Name, Channel Enabled, and Channel Type.
- click **Download**.

The **Log Viewer** will display details of the download in the bottom section of the screen.

▶ **Note:** The **Log Viewer** can also be accessed directly from the **Utilities** menu.

▶ **Note:** Multiple loggers can be downloaded at the same time without a cold start.



Logger Download in Utilities > Logger Download

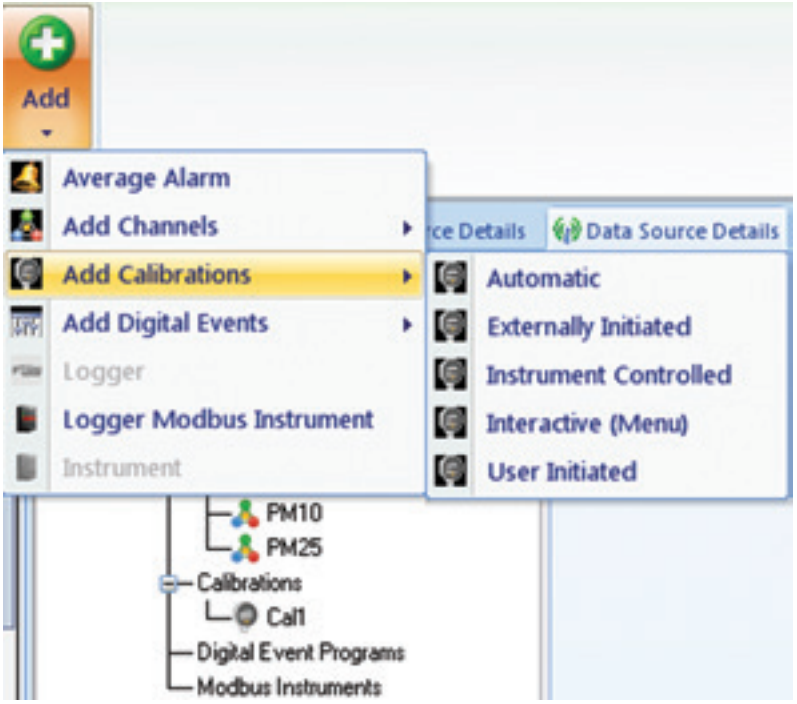
Setting Up Calibrations

To configure calibrations:

- open **Configuration Editors** > **Data Source Details**
- highlight the **Logger** in the tree menu
- click the small arrow under the **Add** button
- select **Calibrations** from the drop-down list
- select one of the following calibration types:
  Automatic
  Externally Initiated
  Instrument Controlled
  Interactive (Menu)
  User Initiated

For details about the remaining prompts, Consult the ESC Model 8816/8832 Data Logger Manual.

▶ **Note:** Configuration information must be downloaded to the data logger before a new sequence can be initiated.

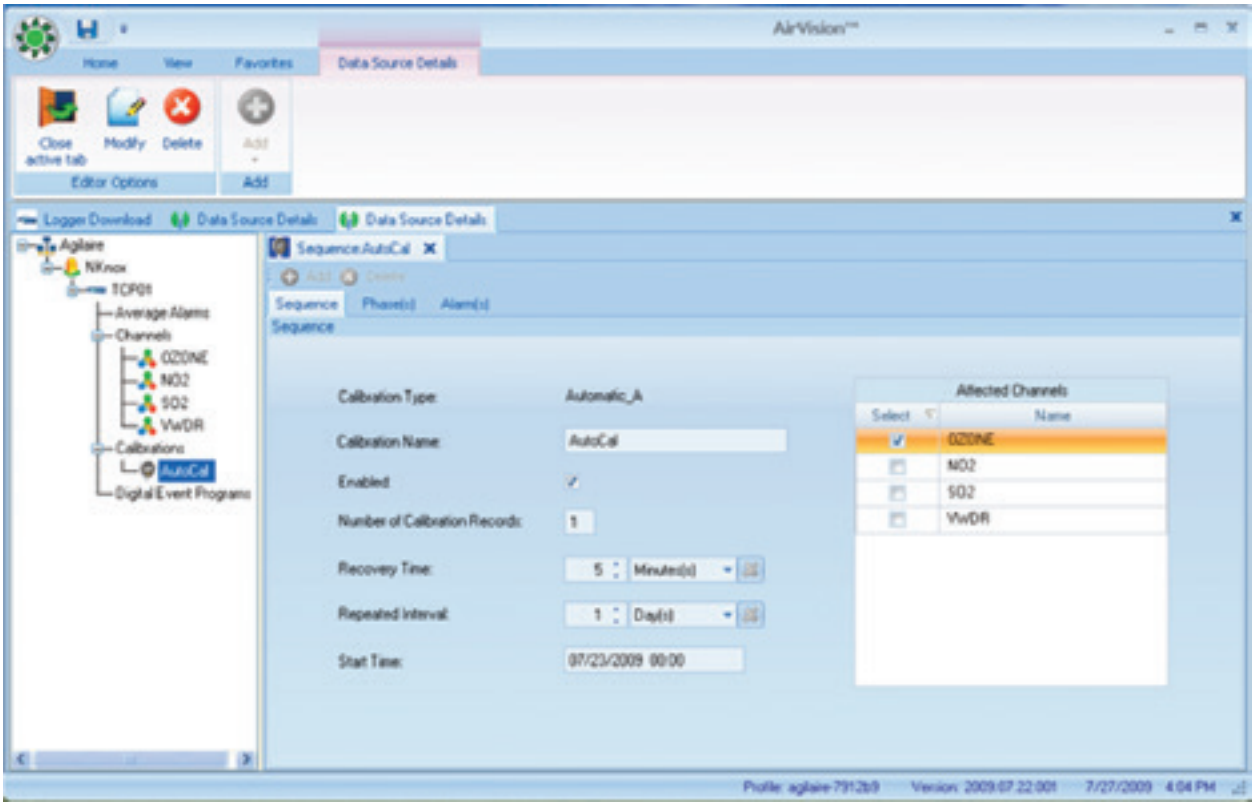


Adding calibrations in Configuration Editors > Data Source Details

Configuring Automatic Calibrations

If you configure **Automatic** Calibrations, the cal you enable will be automatically initiated by the data logger's internal clock. The Automatic Cal Sequence configuration screen has the following fields:

- **Calibration Type** will be already filled in (Automatic_A).
- **Calibration Name** is required to identify the cal program.
- Check **Enabled** if the calibration is to run.
- **Number of Calibration Records** determines how many cals the data logger will store before overwriting.
- **Recovery Time** specifies the time required to purge cal gas after phases.
- **Repeated Interval** determines how often cal sequence will repeat.
- **Start Time** determines what time cal sequence will start.
- **Affected Channels** determines which channels will be taken off-line during cal. Select from a list of previously configured parameters.

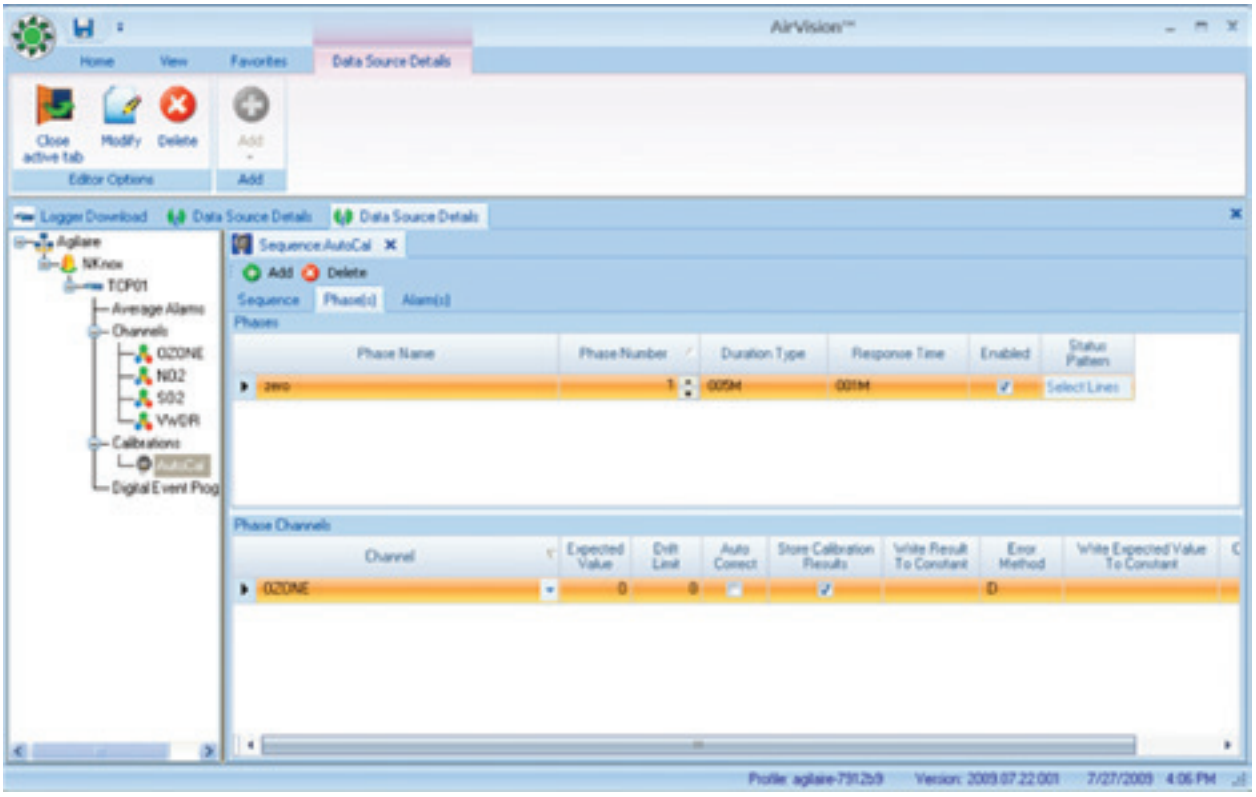


Automatic Calibration configuration in Configuration Editors > Data Source Details

Configuring Phases

To set up Phases:

- click the **Phase(s)** tab behind the Sequence Cal tab.
- To enter a phase name, click the click the green **Add** button above the tabs and select **Phase** from the drop-down list. .
- Enter a **Phase Name**, **Phase Number**, **Duration Type**, **Recovery Time**, and click to **Enable**.
- To configure a Status Pattern, click the row in **Status Pattern** column and a check list of **Output Control Patterns** will come up.
- After the Phase table is configured, click the green **Add** button again and select **Phase Channels**.
- Select a **Channel** from a drop-down list, and optionally enter an **Expected Value**, **Drift Limit**, **Auto Correct** (click to enable), **Store Cal Results** (click to enable), **Write Result to Constant**, **Error Method**, **Write Expected Value to Constant**, and **Out of Control Limit**.

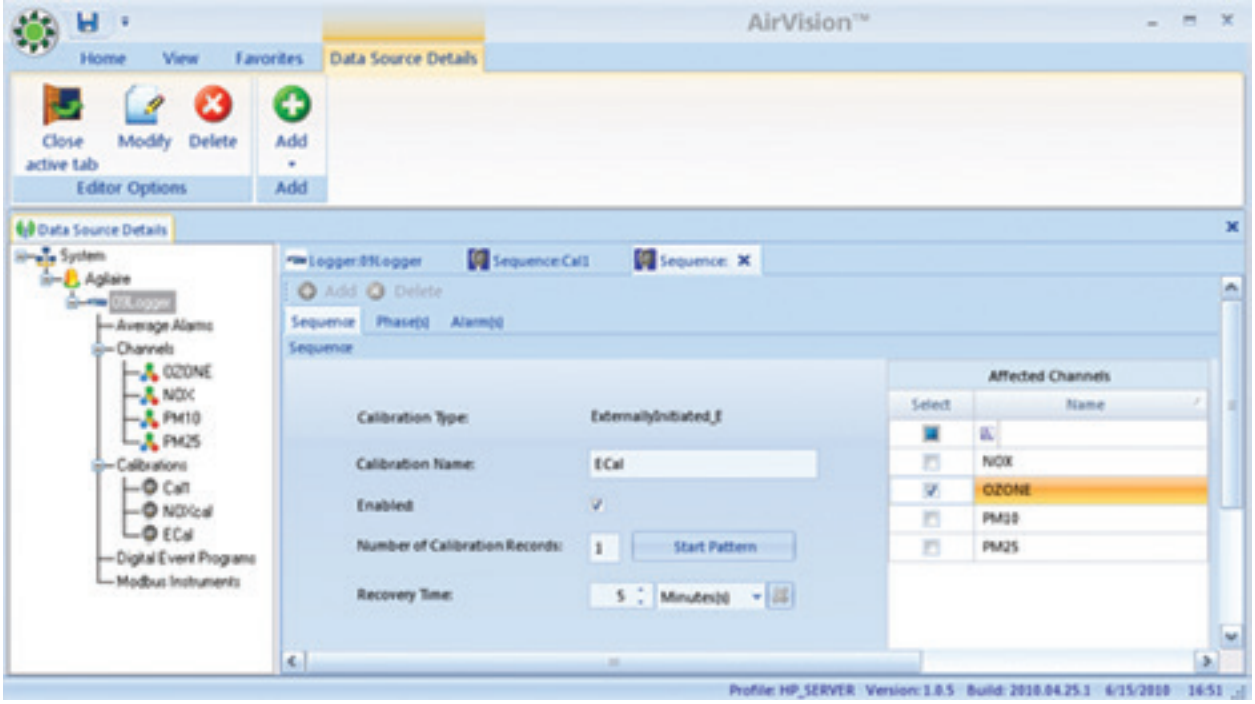


Configuring calibration phases in Configuration Editors > Data Source Details

Externally Initiated Calibration

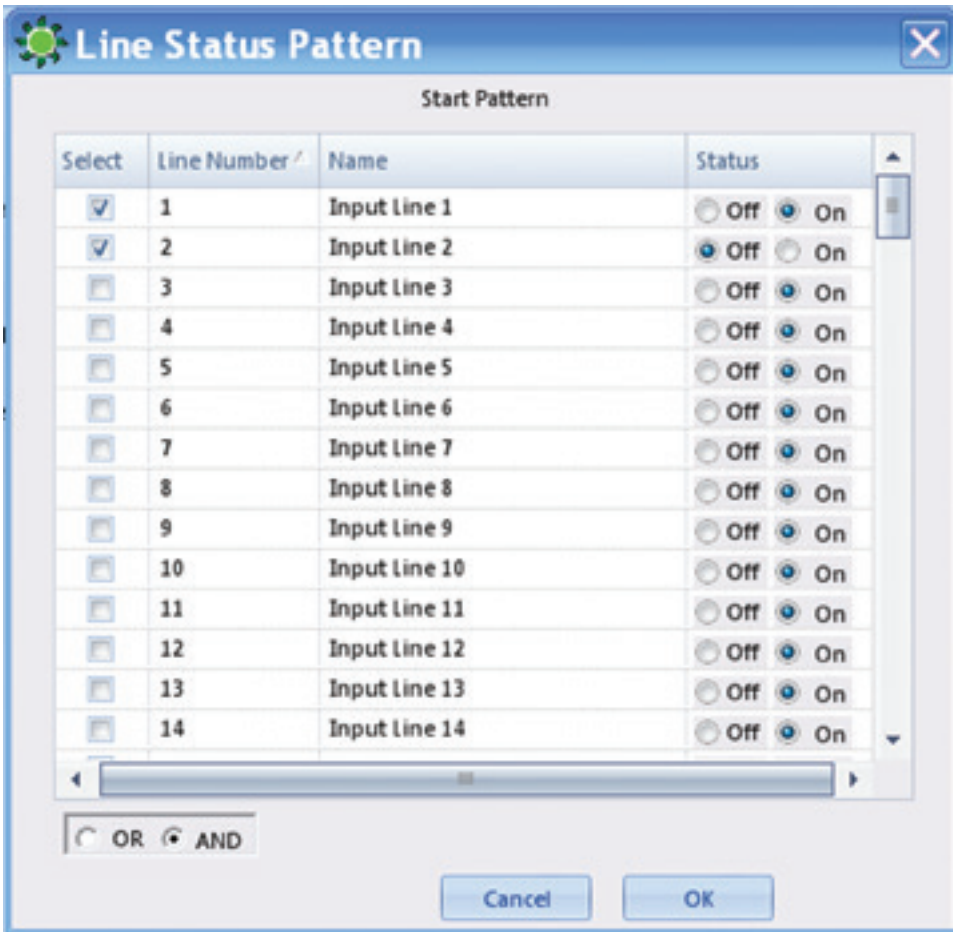
Externally initiated calibration is identical to an automatic calibration except for the way it is initiated. The sequence is started when a specified pattern of input control lines is met. To configure the **Start Pattern** (Line Status Pattern), click the **Start Pattern button**.

Individual phases are then initiated sequentially. As with an automatic calibration, the duration of each phase in the sequence can be specified.



Configuring Externally Initiated Calibrations in Configuration Editors > Data Source Details

When you click the **Start Patter**n button in the **Externally Initiation Calibration** screen, you **will see a Line Status Pattern** screen. Check the **Select** box to select an **Input Line** and select a **Status** of **On** or **Off**.

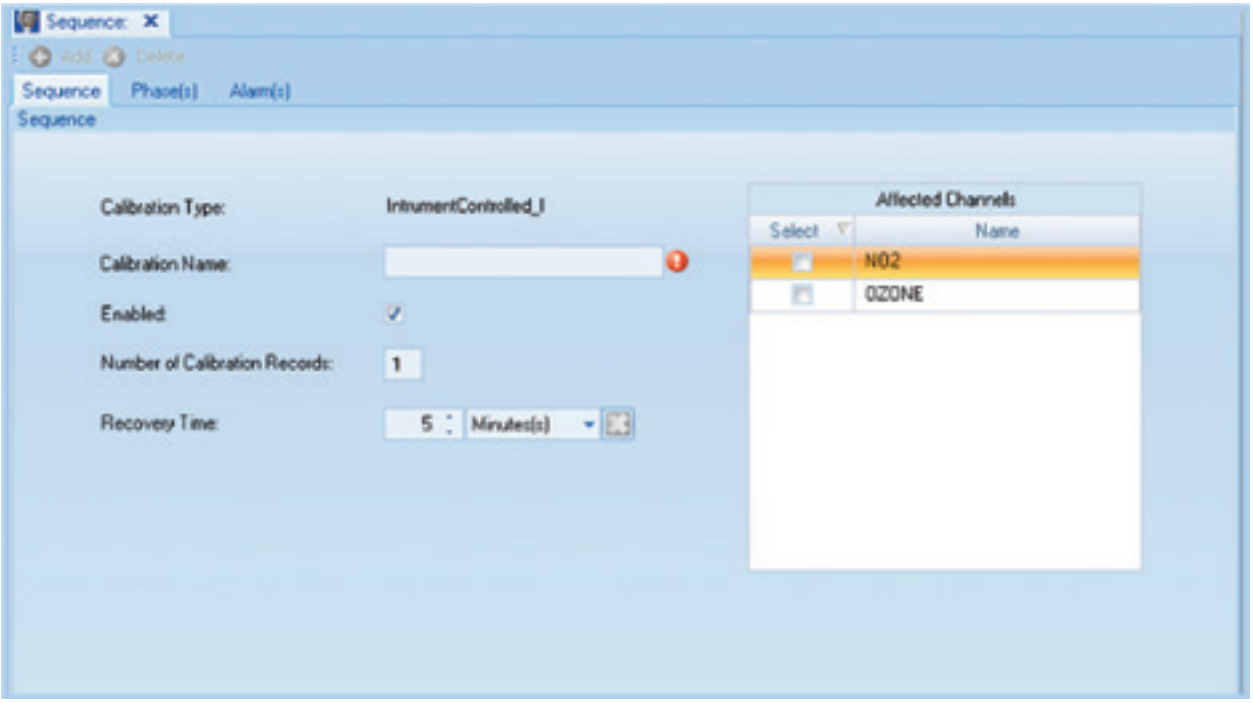


Configuring Start Pattern (Line Status Pattern) in Externally Initiated Calibrations in Configuration Editors > Data Source Details

Configuring Instrument Controlled Calibrations

If you configure **Instrument Controlled** Calibrations, enabled calibrations will be initiated by the data logger when it detects a specified digital input pattern. Each phase will continue until the input line pattern changes. The Instrument Controlled Cal screen has the following fields:

- **Calibration Type** will be already filled in (InstrumentControlled_I).
- **Calibration Name** is required to identify the cal program.
- Check **Enabled** if the calibration is to run.
- **Number of Calibration Records** determines how many cals the data logger will store before overwriting.
- **Recovery Time** specifies the time required to purge cal gas after phases
- **Affected Channels** determines which channels will be taken off-line during cal. Select from a list of previously configured parameters.

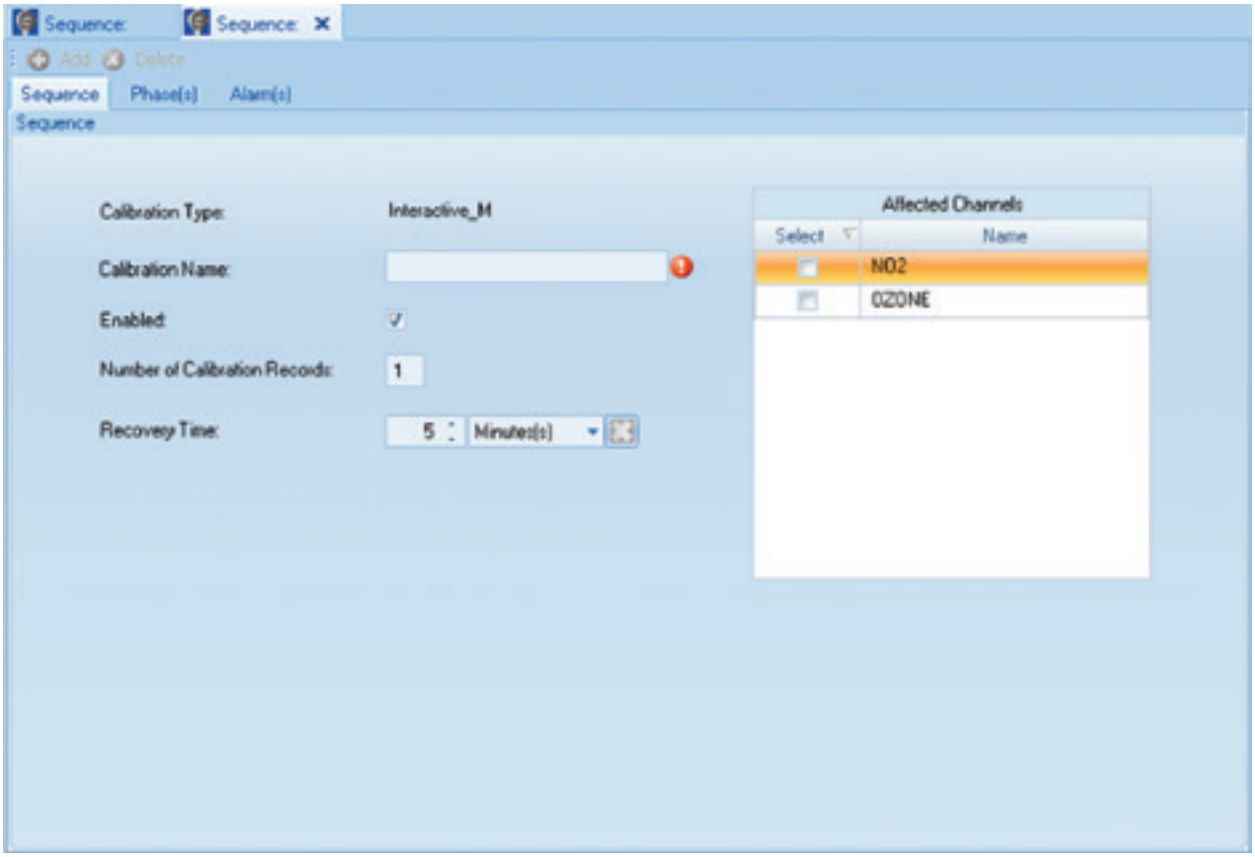


Configuring Instrument Controlled Calibrations from Configuration Editors > Data Source Details

Configuring Interactive (Menu) Calibrations

If you configure **Interactive** Calibrations, enabled cals will be controlled by a user via a menu interface. Interactive cals are often used for highly manual procedures, such as testing opacity instruments against standard filter. Interactive Cal configuration screen has the following fields:

- **Calibration Type** will be already filled in (Interactive_M)
- **Calibration Name** is required to identify the cal program.
- Check **Enabled** if the calibration is to run
- **Number of Calibration Records** determines how many cals the data logger will store before overwriting.
- **Recovery Time** specifies the time required to purge cal gas after phases
- **Affected Channels** determines which channels will be taken off-line during cal. Select from a list of previously configured parameters.



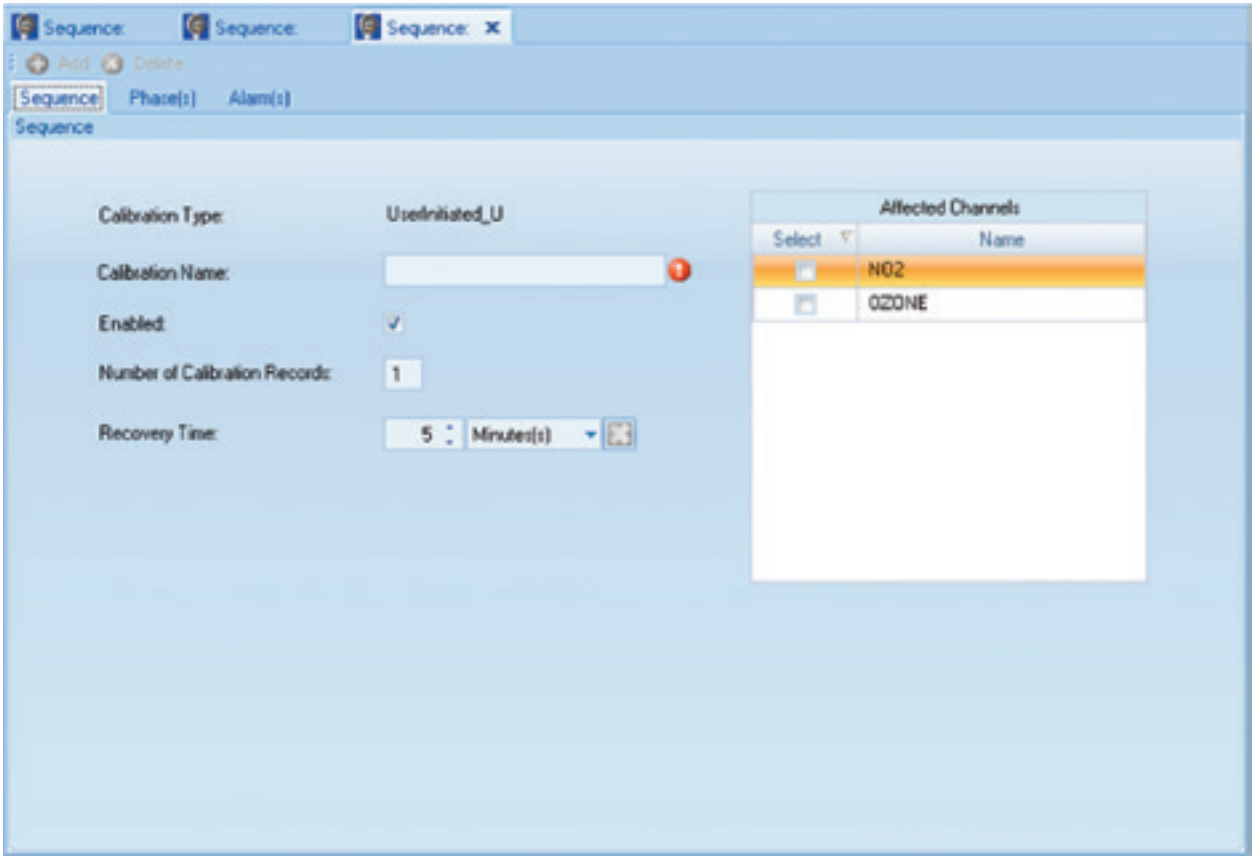
Configuring Interactive (Menu) Calibrations

Configuring User-Initiated Calibrations

Suer-initiated calibrations are started manually by linking to the data logger. When the cal sequence is started, each phase will be initiated in order. The duration of each phase is configured with the same fields as automatic cals.

The User-Initiated Cal configuration screen has the following fields:

- **Calibration Type** will be already filled in (UserInitiated_U).
- **Calibration Name** is required to identify the cal program.
- Check **Enabled** if the calibration is to run.
- **Number of Calibration Records** determines how many cals the data logger will store before overwriting.
- **Recovery Time** specifies the time required to purge cal gas after phases.
- **Affected Channels** determines which channels will be taken off-line during cal. Select from a list of previously configured parameters.



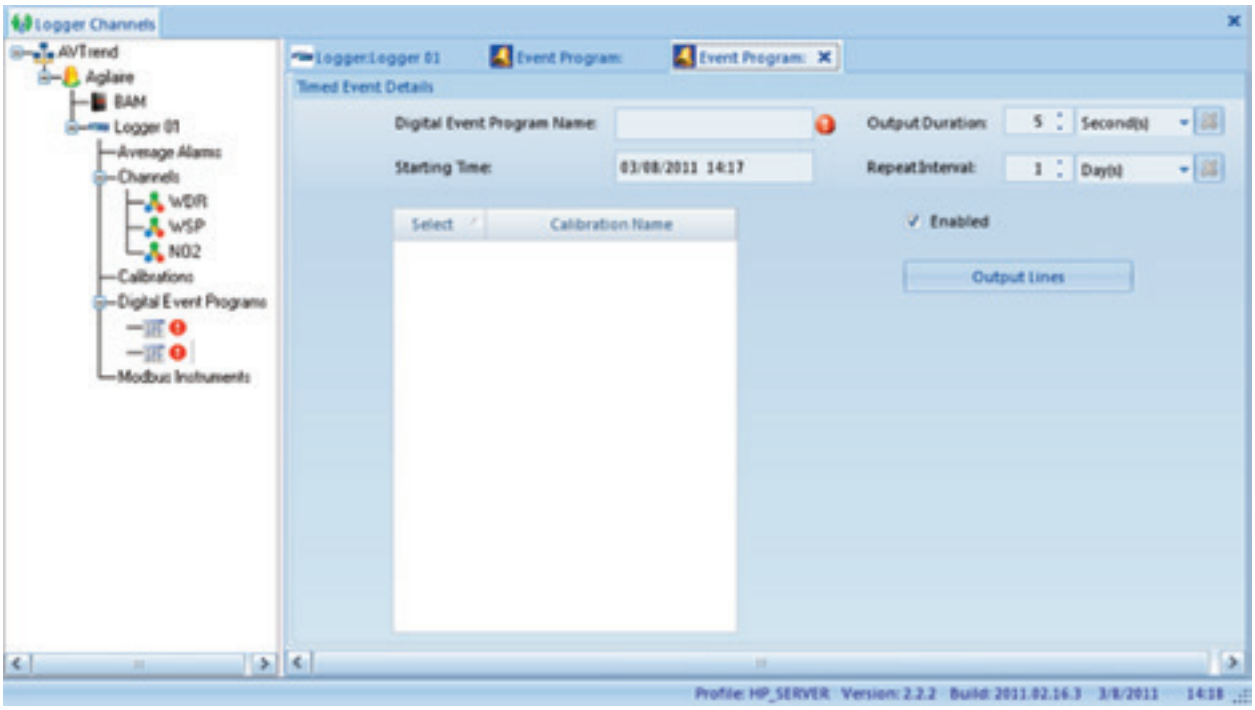
Configuring User-Initiated Calibrations

Configuring Input/Output Lines for Digital Events

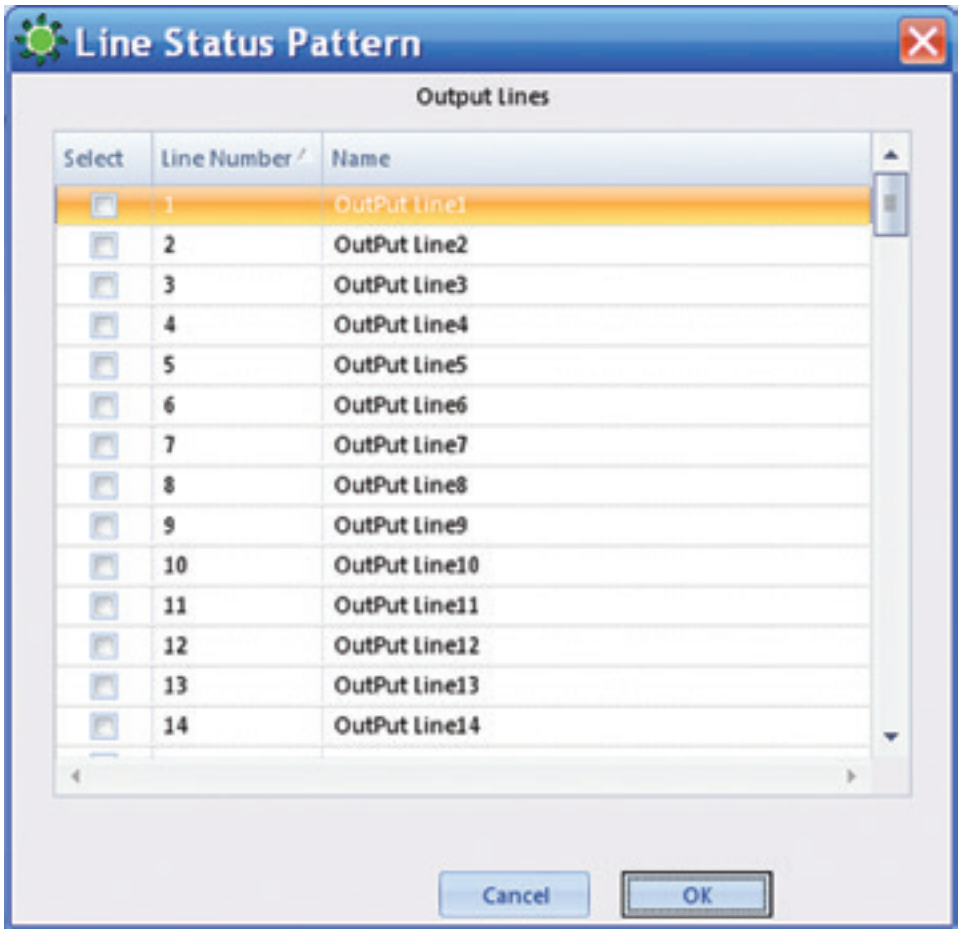
The purpose of digital event programs is to control processes from Data Loggers. **Digitally Timed Events** will turn on specified **Output Lines** for the configured **Starting Time**, **Duration**, and **Repeat Interval**. **Digitally Triggered Events** are initiated by a digital input pattern that will turn on one or more digital output lines. The output lines will remain active for the specified duration; at the end of this time, the output lines will be turned off unless the triggering digital input pattern still matches.

Configuring Digital Timed Events

1. Highlight the **Data Logger** in **Configuration Editors > Logger Channels** tree menu.
2. Click the green **Add** button in the ribbon and select **Add Digital Events > Timed Event** .
3. Enter a **Digital Event Program Name**, a **Starting Time**, **Output Durations**, **Repeat Interval**, and check **Enabled**.
4. If the Digitally Timed Even is for a calibration, select a **Calibration Name** from the drop-down list.
5. Click the **Output Lines** button to bring up the **Line Status Pattern** screen and select a **Line Number**. Click **OK**.



Configuring Digitally Timed Events



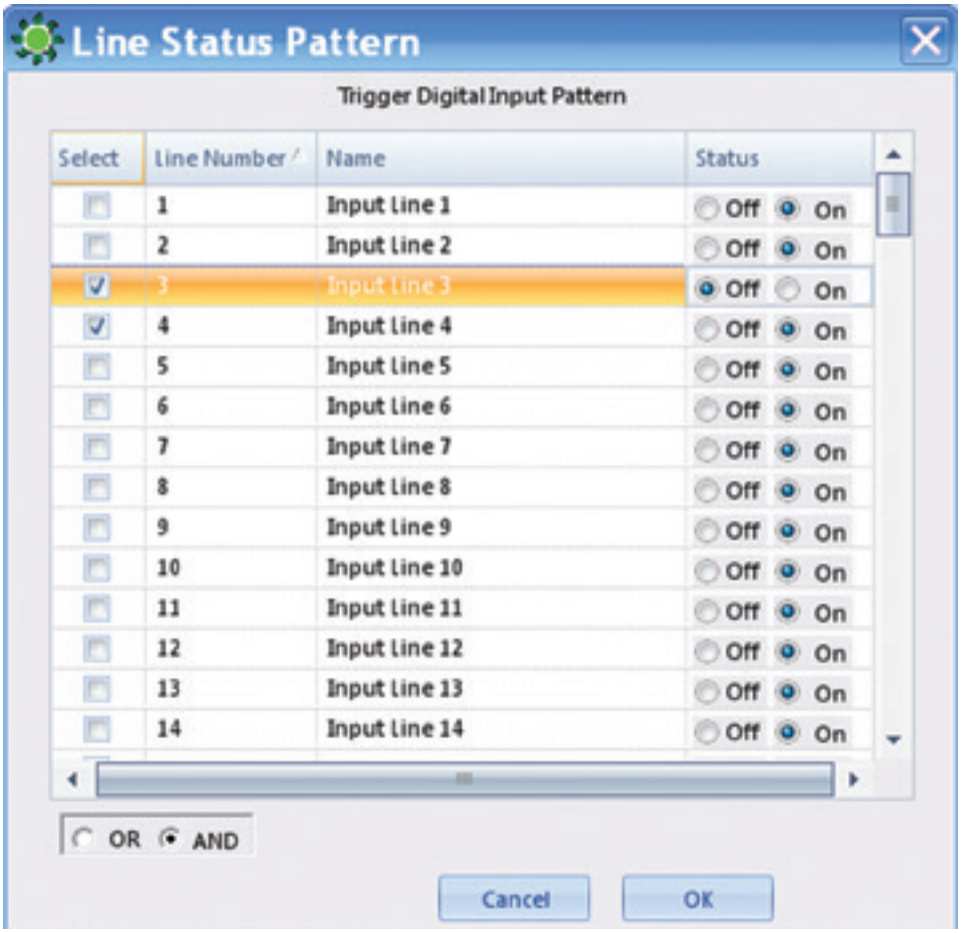
Line Status Pattern for Output Lines

Configuring Digital Triggered Events

1. Highlight the **Data Logger** in **Configuration Editors > Logger Channels** tree menu.
2. Click the green **Add** button in the ribbon and select **Add Digital Events > Triggered Event**.
3. Enter a Triggered **Digital Event Program Name**, an **Output Duration** and check **Enabled**. After the output duration time period, the program will check the digital input pattern to see if it still matches. If not, the output control lines will be switched off. If the pattern still matches, the output relays will remain on, and the duration time will begin again.
4. If the Digitally Triggered Event is for a calibration, select a **Calibration Name** from the drop-down list.
5. Click the **Output Lines** button to bring up the output **Line Status Pattern** screen and select which **Output Line or Lines** will be switched on when the triggered digital input pattern occurs. Click **OK**.

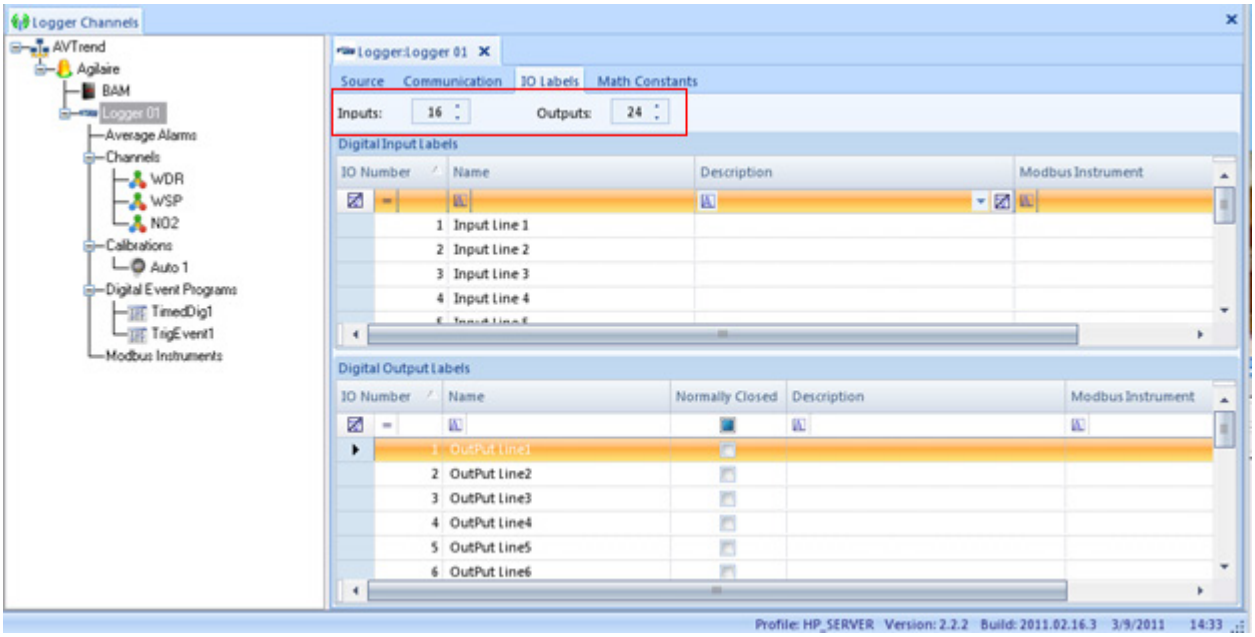
6. Click the **Trigger Digital Event Pattern button** to bring up the **Line Status Pattern** screen for Trigger Digital Input Pattern and select which **Input Line**.or **Lines** turned **On** or **Off** will trigger the event and switch on the specified **Output Line(s)**.

7. In the lower left corner of the screen, select **And** or **Or**. If you select **And** (the default), the digital event program will be triggered **only if ALL** the specified conditions occur. If you select **Or**, the digital event program will be triggered if **ANY** of the specified conditions occur. Click **OK**.



Trigger Digital Input Line Status Pattern with OR/AND selection

▶ **Note:** AirVision supports download of logger I/O labels with a different number of inputs and of outputs. If the number of input and output cards on your data logger are not equal, you may encounter some download errors when downloading the labels. If this happens, define the actual number of physical inputs and outputs using the **IO Labels** tab. If you are using pseudo inputs/outputs, do NOT accept allowing the system to change the number of labels.



Different number of Inputs and Outputs Configuration Editors > Logger Channels > double-click Logger in tree menu > I/O Labels tab

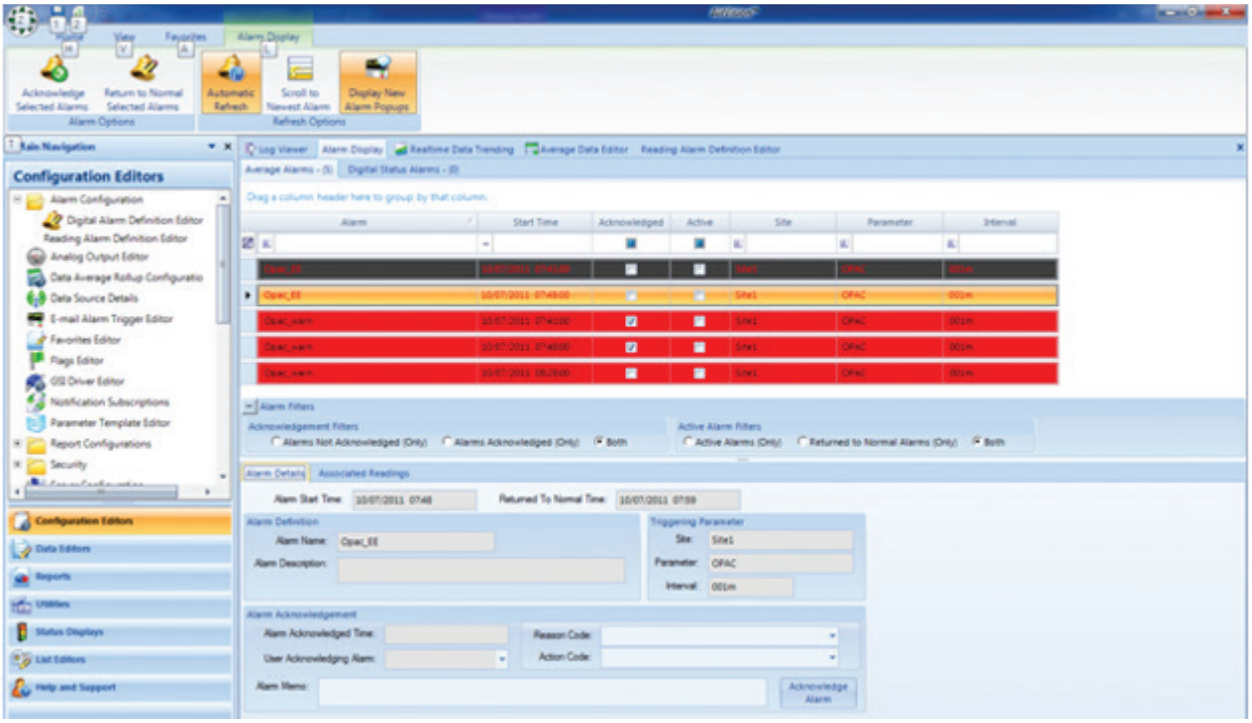
Advanced Alarm System

The AirVision system supports two major alarm categories:

- Average / Flag Alarms (readings triggered by flags on average data values, such as high alarm flags on a minute or hourly average)
- Digital Status Alarms (alarms caused by the transition of a digital point from high to low, or low to high, such as a CEM or instrument fault alarm).

The Average/Flag alarms can be associated with Reason Codes and Action Codes, and reported in the Excess Emissions reports. The Digital Status alarms are information only, and are not considered in regulatory reports. Monitor downtime information is taken from invalid flags on averages (and not taken from any digital status information), so fault flags may need to be associated with a flag ("B") in the Channel Validation settings (see section XX).

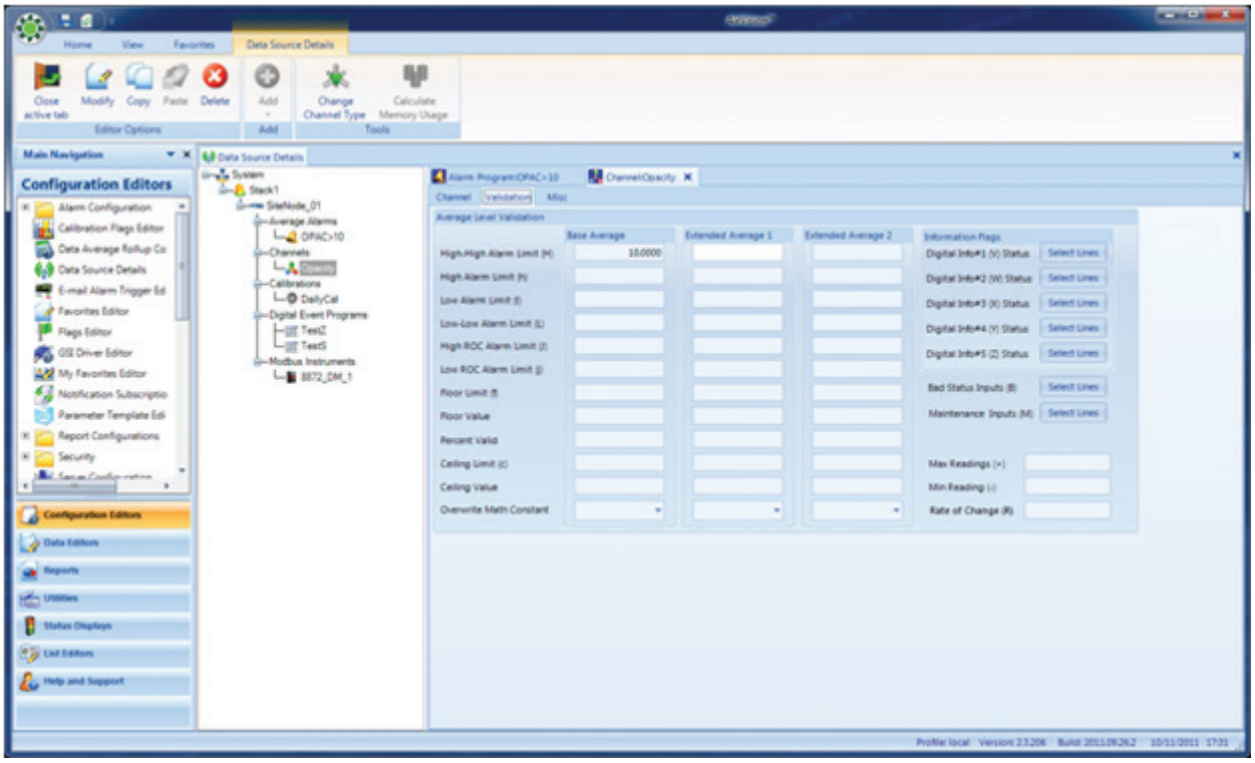
Both types of alarms can be seen in the Alarm Display panel.



AirVision/CEM Alarm Display Panel

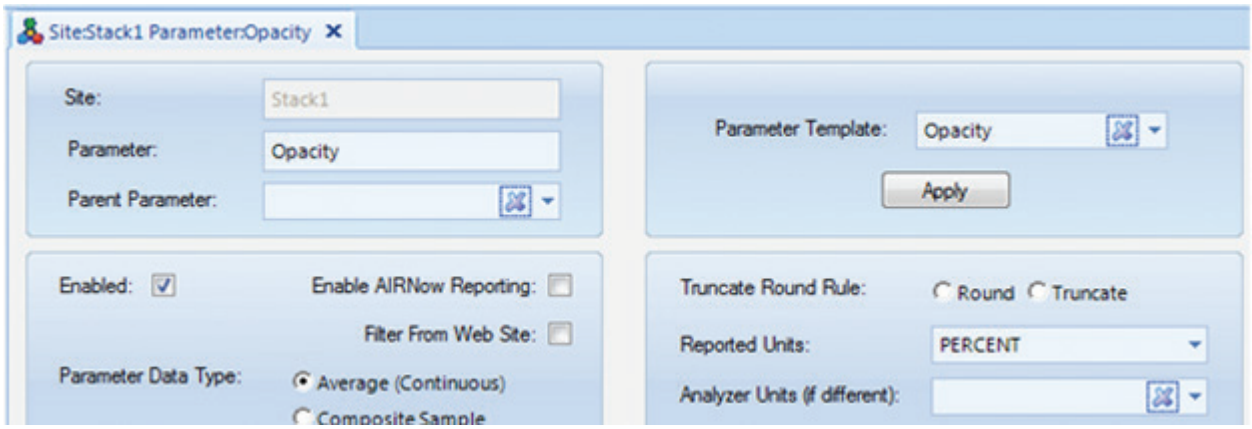
Configuring Alarms

For average Alarms, make sure to first associate the numeric alarm limits with an appropriate channel. This is done in the Data Source Details editor, by opening a channel configuration and selecting the validation tab.



Configuring alarms

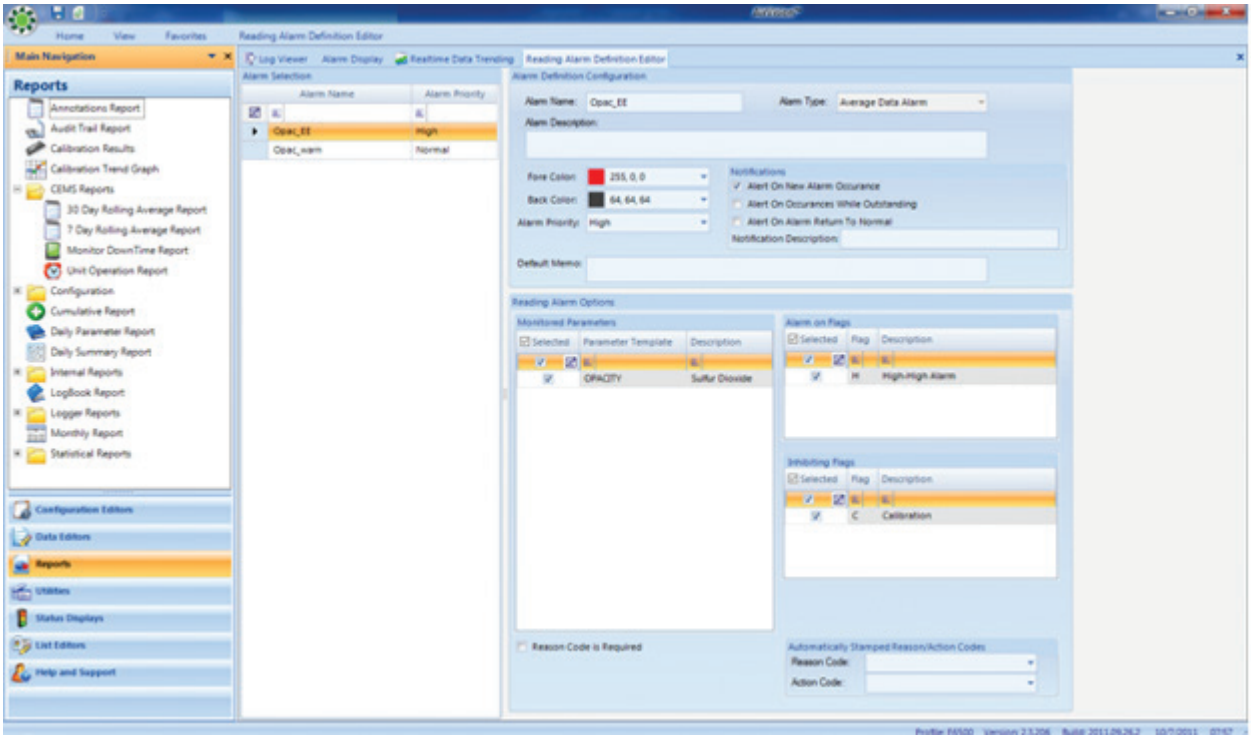
Make sure the Parameter has a Parameter Template associated with it (via **Configuration >Source Parameter editor**).



Parameter Template

(Agilaire also recommended that a site have an OPHOUR parameter for other reporting).

Once these are set up, open the **Alarm Configuration>Reading Alarm Definition Editor**:



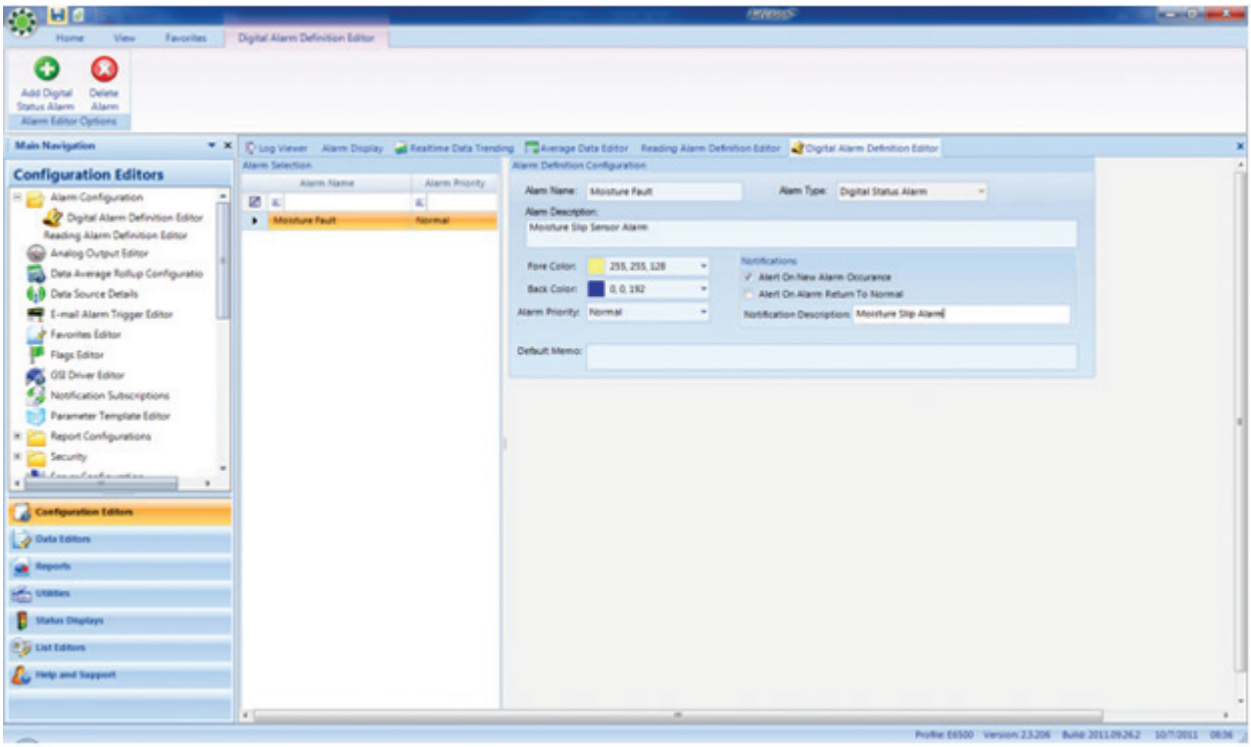
Alarm Configuration>Reading Alarm Definition Editor

Here, you can create any number of programs, each program linking a parameter template, a triggering flag, and optionally, an inhibiting flag (that will prevent any alarm on/off transitions during that condition, such as during a calibration or maintenance).

Other options include:

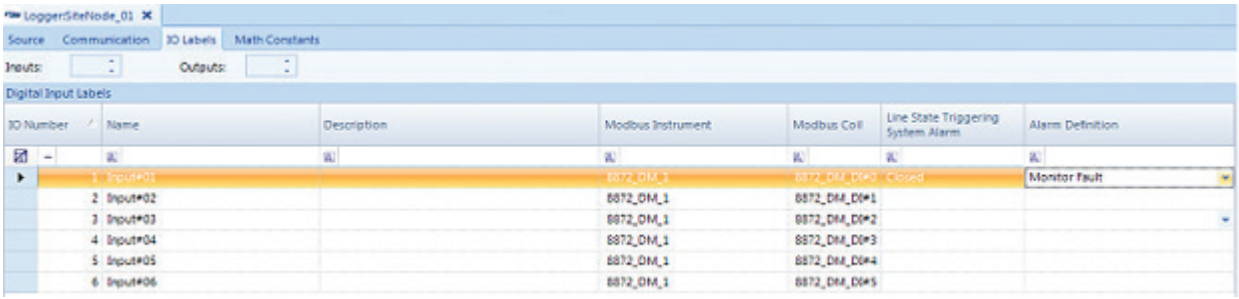
- **Alert on Occurrences While Outstanding**- Normally, the alarm will only send a notification when the alarm starts. By selecting this, you are asking the system to:
  - **Send a new notification** for each average the alarm condition persists.
  - **Alert on Alarm Return to Normal**- By selecting this, you are asking the system to send a notification when the alarm condition ends.
  - **Notification Description**- Adds additional information to alarm email.
  - **Default Memo**- Adds a default memo to the data.
  - **Alarm Priority**- Used for sorting in the alarm display.
  - **Reason Code Is Required**- If selected, an alarm cannot be acknowledged without setting a reason code.
  - **Automatically Stamped Reason/Action Codes**- Default codes for reporting, can be changed by the user when alarm is acknowledged.

Digital alarms are similar, but do not have triggering flags, inhibiting flags, or connections to Reason/Action Codes.



Digital Alarms

This editor defines the instance of digital alarms- they are connected to the specific controller and input line in **Data Source Details**. Open the controller properties, click **I/O Labels** and select the appropriate alarm program and triggering state (on or off) to associate with the alarm:

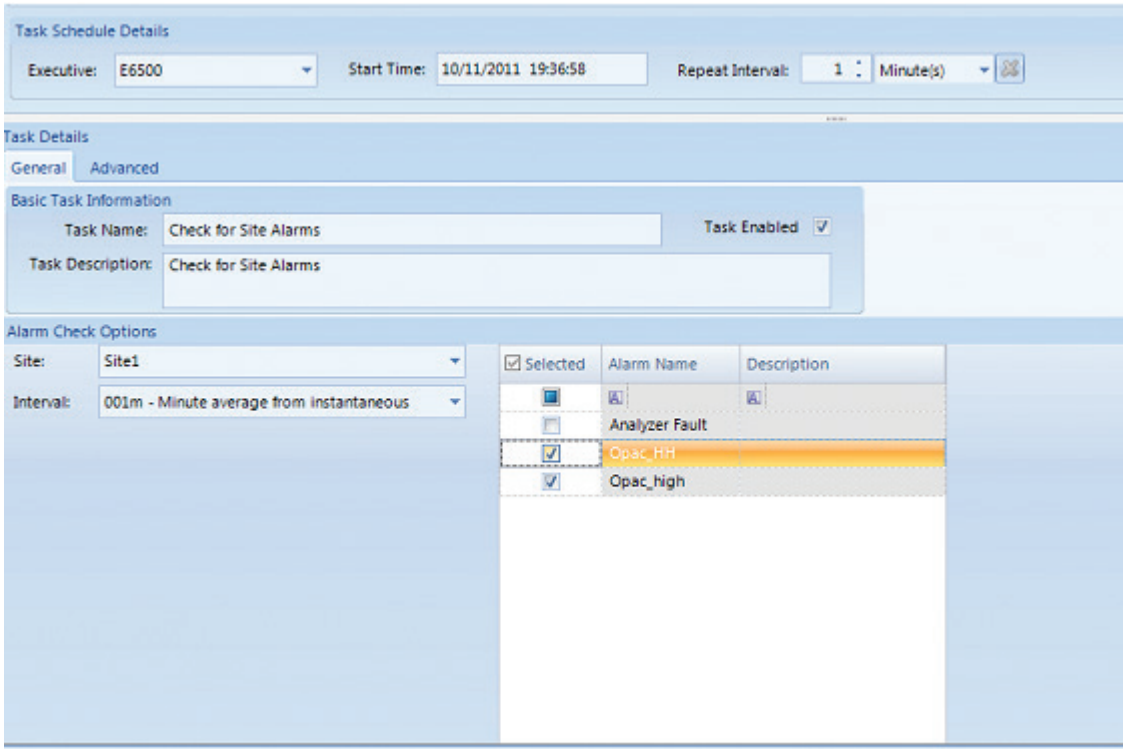


I/O Labels

Configuring Alarm Checks

Once the alarms are defined, the Task Scheduler should be set for when to check for these alarms. They may be set after a logger poll (for a polled system), or on a particular clock moment (typical for a 8872 / Site Node system).

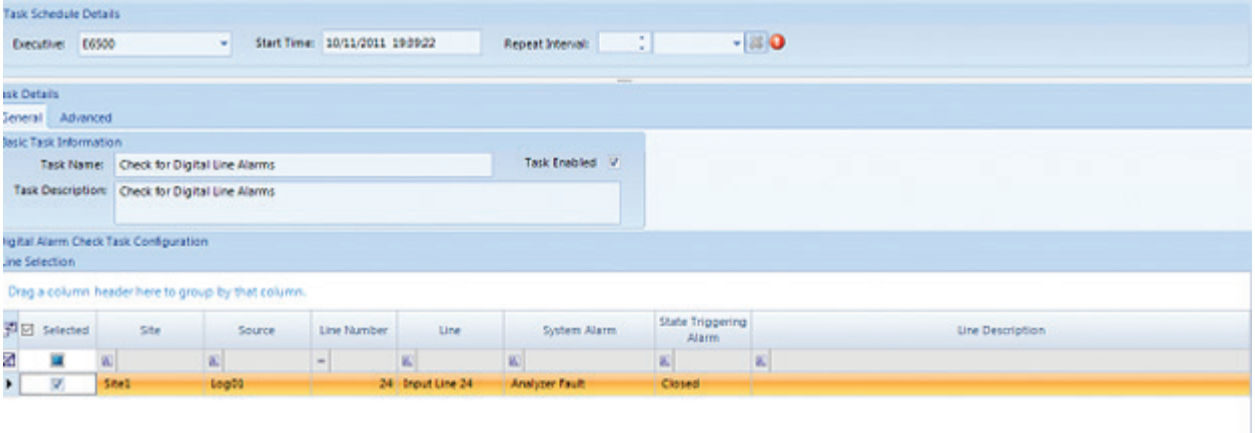
For Average alarms, select **New Task > Site Alarm Check**:



New Task > Site Alarm Check

Select the Site (stack/process) to check, the alarm program(s) to check, and which average interval should be checked. As per any scheduled task, set the start time and repeat interval. These checks can be placed in a Task Group to group them together, or to run after a logger poll.

For digital alarms, select **New Task>Digital Line Alarm Check**. For this task, one task can be used to check multiple sites/stacks and lines. For 8832 systems, it is recommended that this task be grouped with the task that polls for the Input Status Line Changes for best performance.

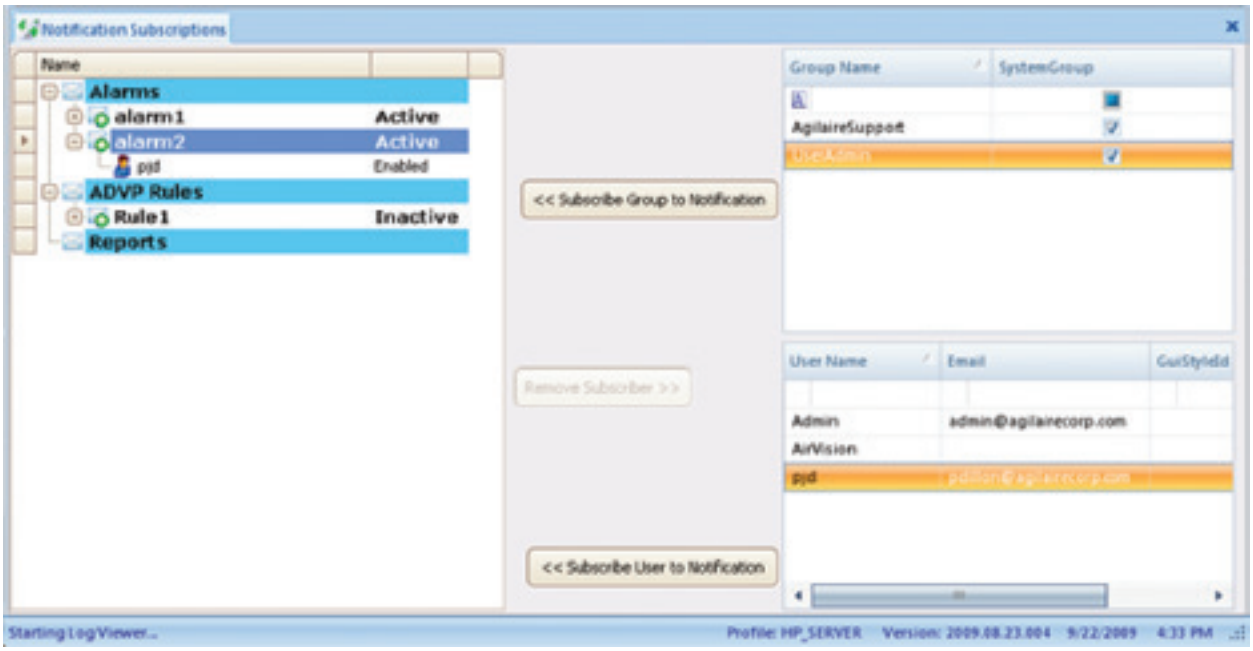


System Administration (purging)

Adding Notifications to Users to Receive Alarms

Add Recipients to Notification Subscriptions: (**Configuration Editors** > **Notification Subscriptions**. Either entire User Groups, Individual Users, or a combination can be defined for each alarm.

Click the **Save** icon.



Adding recipients for email alarm notification from Configuration Editors > Notification Subscriptions

CEM Regulatory Reports

Excess Emissions Report

This report summarizes excess emissions, as defined by Average Alarms that have the **Reason Code Required** field checked (average alarms without this checked are assumed to be warning alarms). The report breaks down total alarm periods by each **Reason Code Category**, as a total # of hours (with fractions for sub-hourly events) and as a % of total operating time. Operating time is defined as similar average periods where the Parameter Template OPHOUR > 0.

For Parameter Template OPACITY, the report will use OPACOPHR if it exists.

Excess Emissions where Reason codes which have been marked as "Exempt" are separated and not counted as the total excess emission time. Exempt reason codes are marked with a "*"

For the header information, you can use the Meta Information fields in the Site/Parameter tables to define the following keys:

- Address
- Manufacturer
- EELimit (Excess Emission Limit).
- CertDate (Certification Date)

The plant name is derived from the **System** entity name.

▶ **Note:** When running this report, you must select the reported parameter(s) as well as the OPHOUR parameter in the report parameter list.

Summary Report

PART I. FACILITY INFORMATION

Name of Company:	Random University Power Plant	Report Period:	11/1/2012 - 1/31/2013
Address:	312 North Street Knoxville Tennessee	Cert. Date: Emission Limit: Operating Time:	1665.93 (hrs)
Manufacturer/Model Number:		Pollutant:	Opacity
Stack/Process:	Stack1		

PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	Percent of Operating Time
Normal Exceedence	0.02	0.00
Undefined	0.00	0.00
Total	0.02	0.00
Total - Exempt	0.00	0.00

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	Percent of Operating Time
Quarterly MAintenance- not a real excess*	1.40	0.08
Undefined	0.17	0.01
Total	1.57	0.09
Total Exempt	1.40	0.08

Note: Percent Operating Time = [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100
* = Exempt

Monitor Downtime Report

This report summarizes periods where the unit was operating (OPHOUR > 0) and the reporting monitor was invalid or the data is missing from the database. If an average alarm is configured for invalid data and reason codes have been entered, then the downtime will be reported with the appropriate reason codes as well, similar to the **Excess Emissions Report**.

▶ **Note:** When running this report, you must select the reported parameter(s) as well as the OPHOUR parameter in the report parameter list.

Current Date: 10/12/2011 9:53 AM

Downtime Duration Report

10/9/2011 - 10/9/2011

Facility: System
Site: Site1
Parameter: Opacity
Interval: 001m

Start Date/Time		End Date/Time		Duration D - H - M	Value	Reason/Action
10/09/11 00:00	-	10/09/11 00:16		00 - 00 - 16		
10/09/11 01:07	-	10/09/11 01:18		00 - 00 - 11		

Downtime Duration Report

Unit Operation Report

This report summarizes periods where OPHOUR = 0, and showing the date/times of transition (off to on, on to off).

Current Date: 10/12/2011 9:46 AM

Unit Operation Report

10/9/2011 - 10/9/2011

Facility: System
Site: Site1
Interval: 1 Minute

Start Date	Start Time	End Date	End Time	Operating Time (hh:mm)
09-Oct-11	00:16	09-Oct-11	07:43	7 : 27

Unit Operation Report

30-Day Rolling Average Report

For this report, an operating day is defined as the daily averages for UNITOPHR > 0 and STARTUP (if exists) = 0 and SHUTDOWN (if exists) = 0 and UPSET (if exists) = 0 and SU_SD_UPSET (if exists) = 0.

This report forms a 30-day rolling average from the daily averages of the requested parameter, for days that meet the above qualifications. If the unit was not operating that particular day, it will show "NO OP".

▶ **Note:** When running this report, you must select the reported parameter(s) as well as the OPHOUR parameter in the report parameter list.

Current Date: 10/12/2011 10:29 AM

30-Day Rolling Average Report

Site : Site1 July 2011 Parameter : Hg_Total

Date	Average	# of Valid Days	% of Valid Days
01-Jul-2011	13.32	30	100%
02-Jul-2011	12.96	30	100%
03-Jul-2011	NO OP	30	100%
04-Jul-2011	NO OP	30	100%
05-Jul-2011	NO OP	30	100%
06-Jul-2011	13.63	30	100%
07-Jul-2011	13.82	30	100%
08-Jul-2011	13.4	30	100%
09-Jul-2011	12.98	30	100%
10-Jul-2011	12.55	30	100%
11-Jul-2011	12.15	30	100%
12-Jul-2011	11.81	30	100%
13-Jul-2011	11.83	30	100%
14-Jul-2011	12.03	30	100%
15-Jul-2011	13.44	30	100%
16-Jul-2011	13.73	30	100%
17-Jul-2011	13.37	30	100%
18-Jul-2011	13.05	30	100%
19-Jul-2011	12.59	30	100%
20-Jul-2011	12.15	30	100%
21-Jul-2011	11.71	30	100%
22-Jul-2011	11.29	30	100%
23-Jul-2011	11.2	30	100%
24-Jul-2011	10.91	30	100%
25-Jul-2011	10.66	30	100%
26-Jul-2011	10.28	30	100%
27-Jul-2011	9.87	30	100%
28-Jul-2011	9.48	30	100%
29-Jul-2011	9.09	30	100%
30-Jul-2011	8.71	30	100%
31-Jul-2011	8.33	30	100%

7-Day Rolling Average Report

For this report, an operating day is defined as the daily averages for UNITOPHR > 0 and any of the following > 0: STARTUP, SHUTDOWN, UPSET, or SU_SD_UPSET

This report forms a 7-day rolling average from the daily averages of the requested parameter, for days that meet the above qualifications.

▶ **Note:** When running this report, you must select the reported parameter(s) as well as the OPHOUR parameter in the report parameter list.

Current Date: 10/12/2011 10:31 AM

7-Day Rolling Average Report

Site : Site1 May 2011 Parameter : Hg_Total

Date	Average
01-May-2011	NO OP
02-May-2011	NO OP
03-May-2011	NO OP
04-May-2011	NO OP
05-May-2011	NO OP
06-May-2011	NO OP
07-May-2011	NO OP
08-May-2011	NO OP
09-May-2011	44
10-May-2011	55
11-May-2011	62.33
12-May-2011	79.5
13-May-2011	88
14-May-2011	93.17
15-May-2011	NO OP
16-May-2011	NO OP
17-May-2011	NO OP
18-May-2011	NO OP
19-May-2011	NO OP
20-May-2011	NO OP
21-May-2011	NO OP
22-May-2011	NO OP
23-May-2011	NO OP
24-May-2011	NO OP
25-May-2011	NO OP
26-May-2011	NO OP
27-May-2011	NO OP
28-May-2011	86.14
29-May-2011	94
30-May-2011	95.57
31-May-2011	91

7-Day Rolling Average Report

Cumulative Emissions Report

This report takes any parameter and forms a summation of the averages for the desired report period, typically used to create daily, weekly, monthly, and annual totals of emissions. If the OPHOUR parameter exists, the values will be weighted against the hourly value of 0..60 (e.g., 60 = 100%, 30 = 50%, etc).

▶ **Note:** When running this report, you must select the reported parameter(s) as well as the OPHOUR parameter in the report parameter list

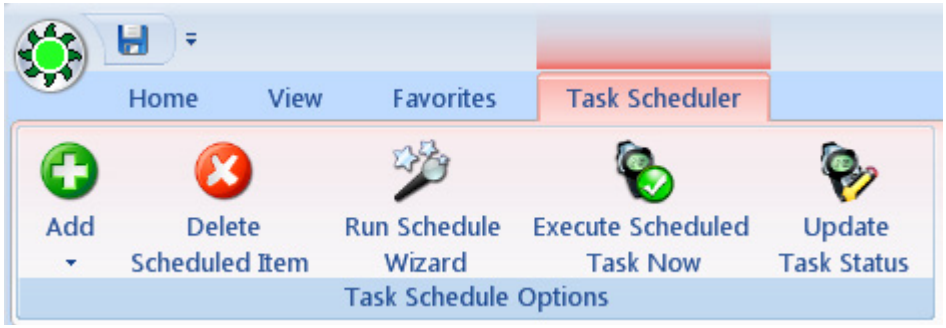
Scheduling Tasks

All automatic actions in AirVision are managed by the **Task Scheduler** (**Configuration Editors** > **Task Scheduler**), which runs as part of the background AirVision service. The following tasks can be configured in the Task Scheduler, depending on your licensed options:

- ADVP Processing Task
- Alarm Processing Task
- Average Data Purge Task
- Average Rollup Task
- Database Sync Task
- Fill Average Data Gaps Task
- Instrument Poll Task
- Journal Message Purge Task
- Logger Poll Task
- Scheduled Command Line Task
- Scheduled Report Task
- SQL Execution Task
- New Task Group

The Task Scheduler has five **Task Schedule Options**:

- Click the **Add** button to add a scheduled task from the list above.
- Click the **Delete Scheduled Item** button to delete a selected scheduled task.



Task Schedule Options (Configuration Editors > Task Scheduler

- Click **Run Schedule Wizard** button to bring up the **Task Wizard**, which guides you through scheduling new tasks.
- Click **Execute Scheduled Task Now** if you don't want to wait until the next time a selected task is scheduled to run.
- Click **Update Task Status** to bring up a utility screen that allows you to to update the last polled data time for polling tasks, which determines what the start time of the next poll will be. This utility has no effect on non-polling based tasks.

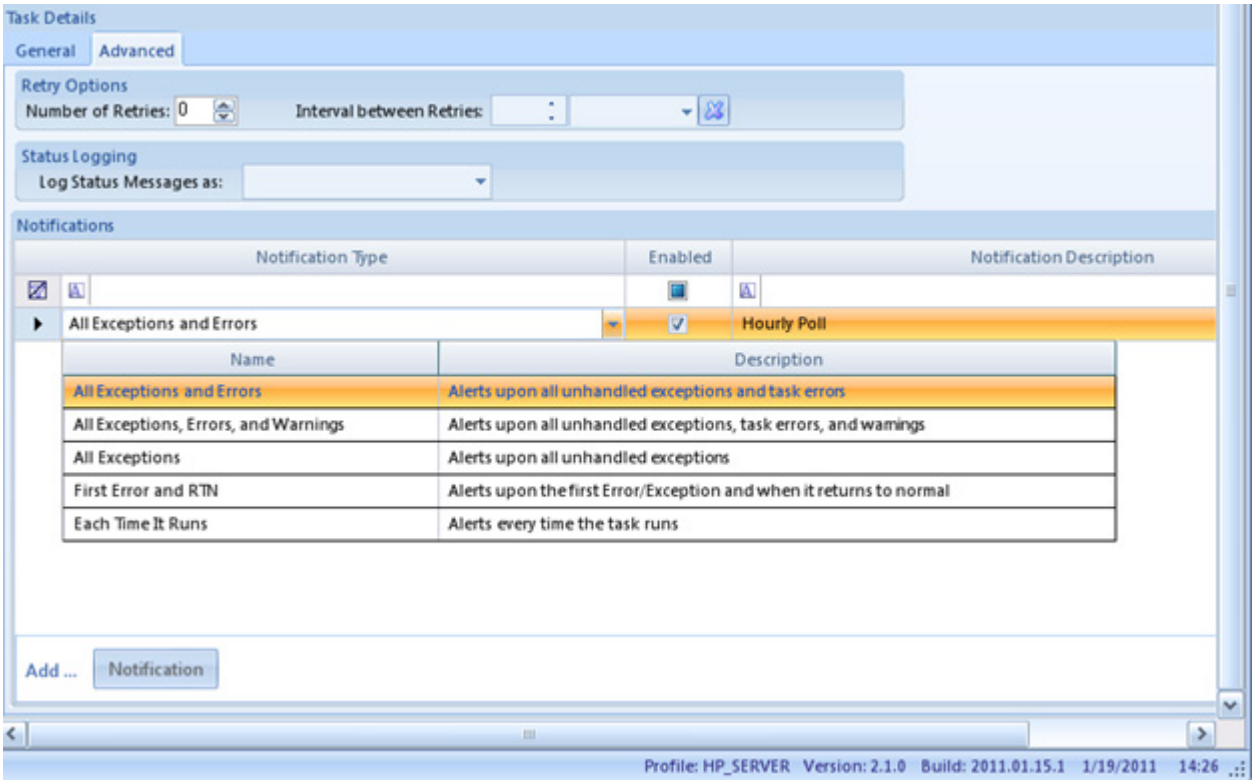
Task Scheduler

The number of sections in the **Task Scheduler** varies according to the displayed task. The following sections are displayed when a **Logger Poll Task** is selected:

- **Task Schedule** displays all scheduled tasks and cannot be edited.
- **Task Schedule Details** section is where **Executive**, **Start Time**, and a **Repeat Interval** are selected.
- The **General Tab** in the **Task Details** section is where you enter a **Task Name** and a **Task Description**. **Task Enabled** must be checked in this section before you can select **Enabled** in the **Scheduled Task Selection** section.

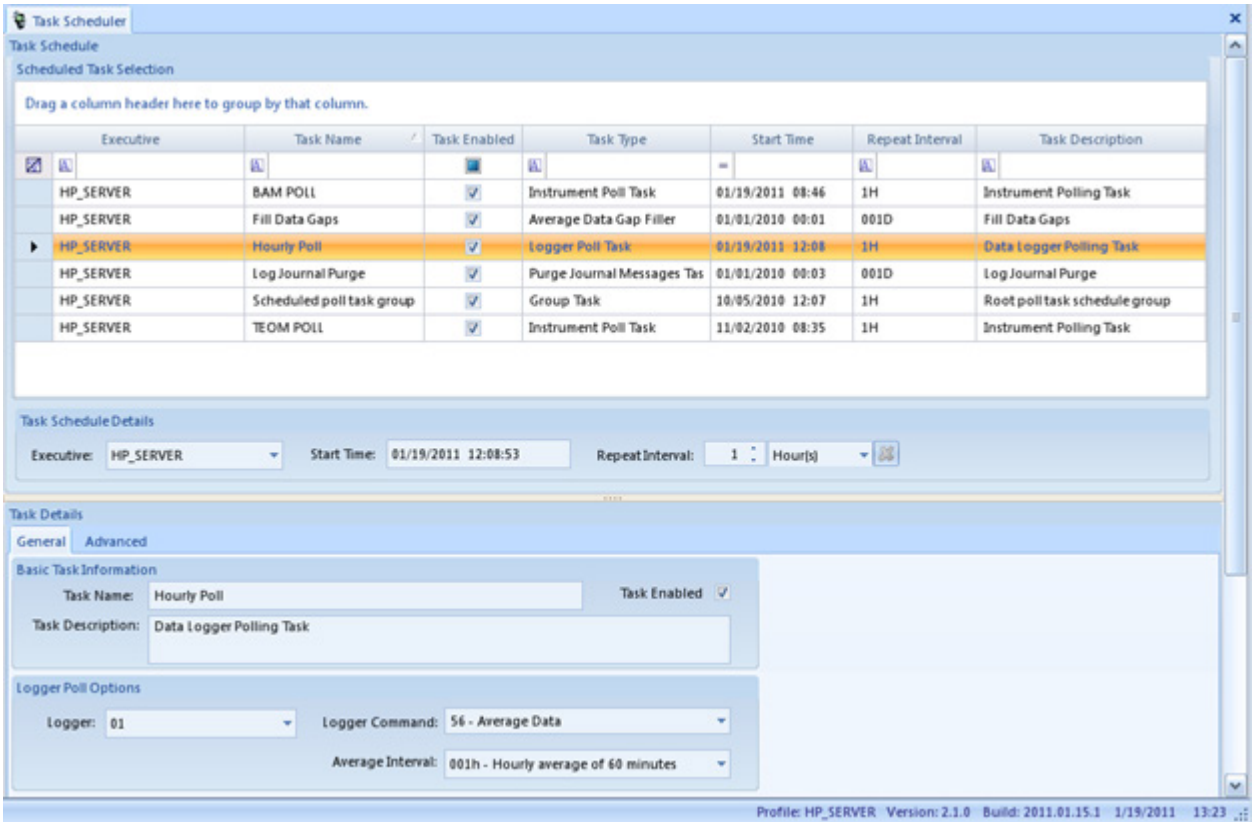
  The **Advanced Options** tab in the **Task Details** section defines the **Number of Retries**, the **Interval between Retries**, and whether to **Log Status Messages** as **Off**, **Information**, **Verbose** (for a problematic task), or **Debug**.

  The **Notifications** part of the **Advanced** tab allows configuration of **Notification Type** (All Exceptions and Errors; All Exceptions, Errors, and Warnings; All Exceptions; First Error and RTN (Return to Normal); or Each Time it Runs) followed by a **Description** of each Notification Type.



Task Details section of Task Scheduler showing Notification selections (Configuration Editors > Task Scheduler)

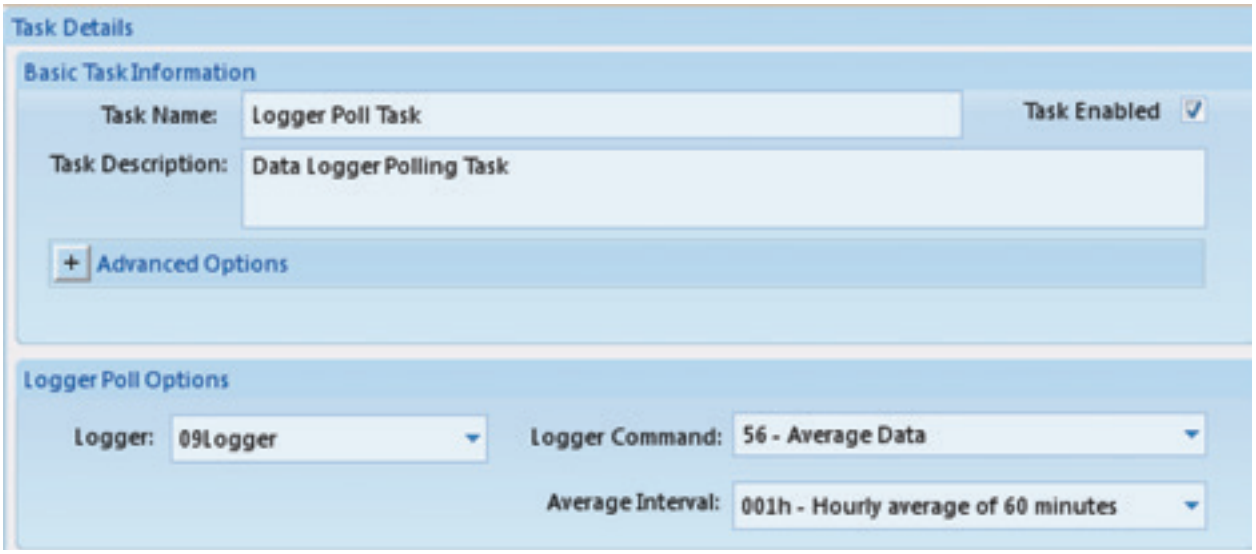
- The **Logger Poll Options** section defines the **Logger**, the **Logger Command** (e.g., Average Data), and the **Average Interval**.



Task Scheduler showing a Logger Poll Task (Configuration Editors > Task Scheduler)

To configure an individual task in the **Task Scheduler** (**Configuration Editors** > **Task Scheduler**), click the **Add** button in the ribbon at the top of the screen and select one of the following categories:

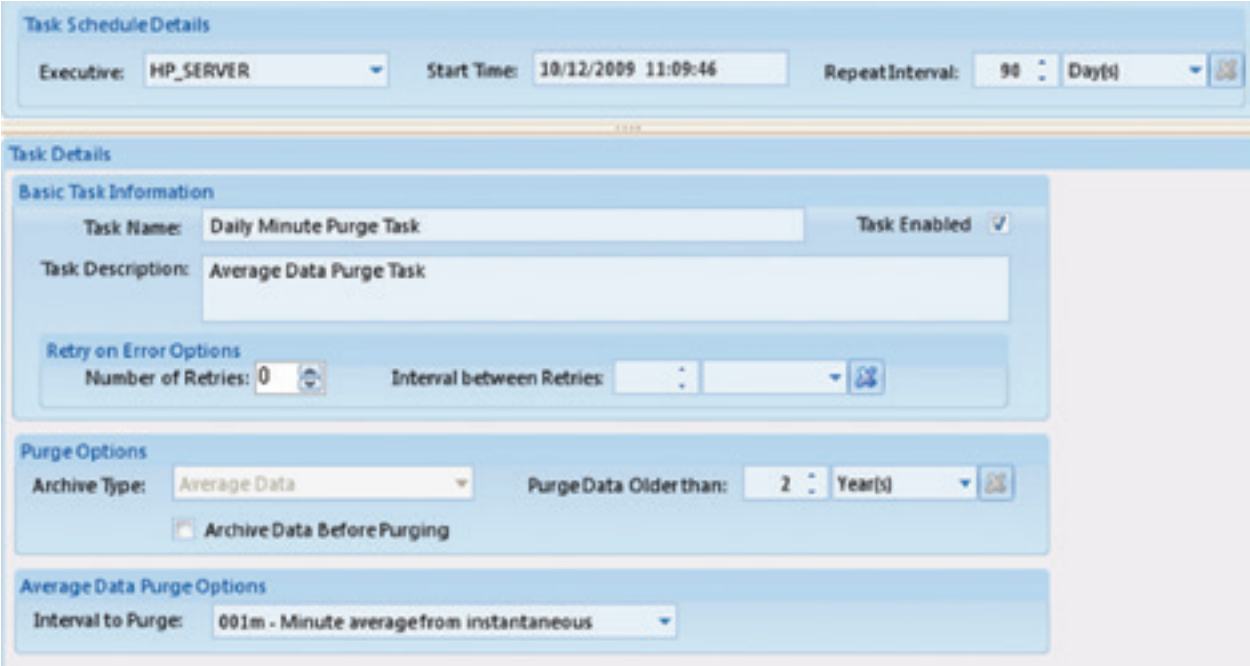
- **ADVP Processing Task** handles tasks according to ADVP rules. ADVP reviews data against configured ADVP rules for matches, and runs configured Actions.
- **Alarm Processing Task** reviews alarm Triggers for matches, creates email alerts, and tells AirVision when to process a particular alarm rule. If you use task groups and designate tasks to run in sequence, you can designate alarms to processed immediately after a data poll.



Logger Poll Task in Configuration Editors > Task Scheduler

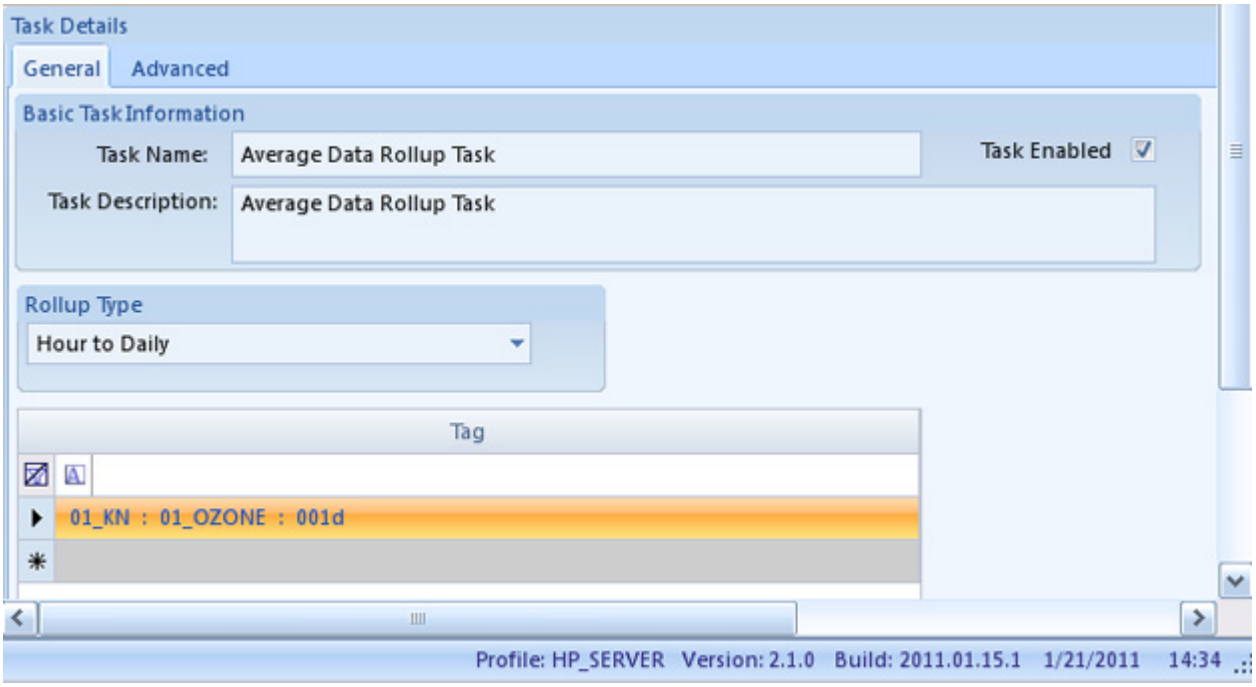
- **Average Data Purge Task** purges or archives old data from the database. Eventually, the AirVision database will become so big that it takes a long time to back it up, so it is helpful to remove and/or save old data, in particular minute data. You can choose any average interval to be scheduled for Purge or Archive. Purged data will be permanently deleted from the database. Archived data is copied to an external file before purging. Archived data is stored with all flags and annotations and can be re-imported later. AirVision uses specialized data keys so sites and channels can be renamed or renumbered and archived data can still be correctly imported. Select the age of the data to purge: **Purge Data Older Than** a specified number of seconds, minutes, hours, days, weeks, or years. We recommend purging 1-minute data older than 1 year to keep the database within allowable size.

▶ **Note:** Average Data can be purged manually via the **Utilities menu>Purge Average Data**.



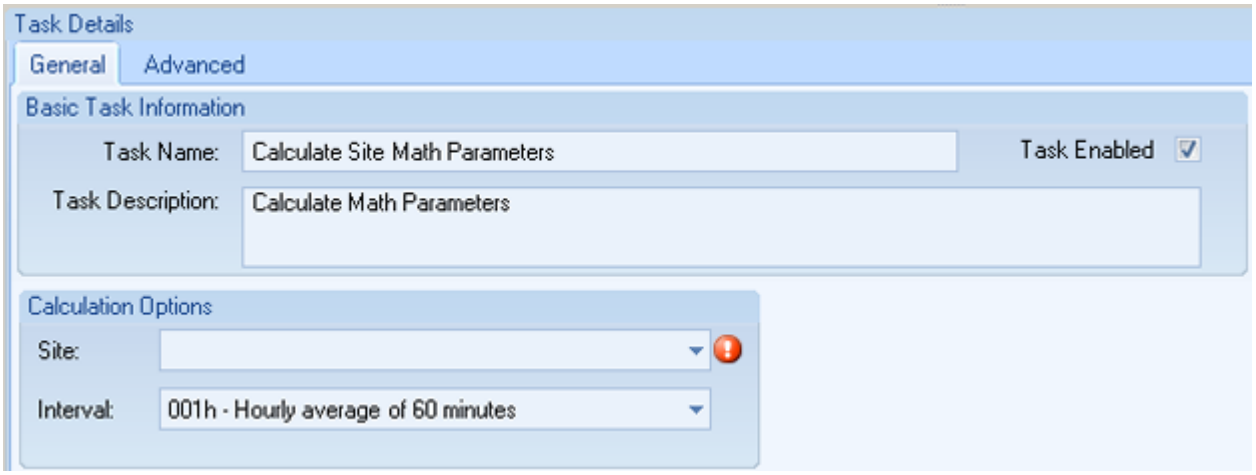
Purge or archive data in Configuration Editors > Task Scheduler

- **Average Data Rollup Task** allows shorter term averages to be rolled up into larger block or rolling averages.



Automatic Rollup Task in Configuration Editors>Task Scheduler>Add Average Rollup Task

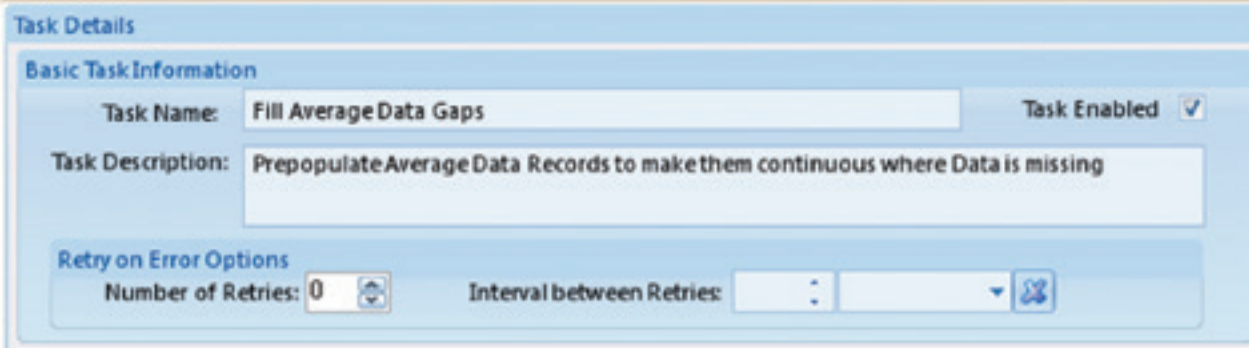
- **Math Task Scheduler**
  The task scheduler can execute equations automatically using the **Calculate Math Parameters Type** task. This task operates on a particular site and interval combination, and seeks out all equations for which there are fully matching parameter templates. If an equation in the table can't be executed on that site for lack of parameter templates or available data, the equation is skipped.



Math Task Scheduler Details

- **Fill Average Data Gaps Task** prepopulates Average Data Records to make them continuous where data is missing. This task inserts top of the day blank records in the database to improve reporting and data query performance. Filling average data gaps is critical for optimizing the performance of AirVision reporting, and should be configured to run every day after midnight in every system. Each system needs only one of these tasks. The screen defaults to a repeat interval of one day and a time to run of 00:00:00 (midnight).

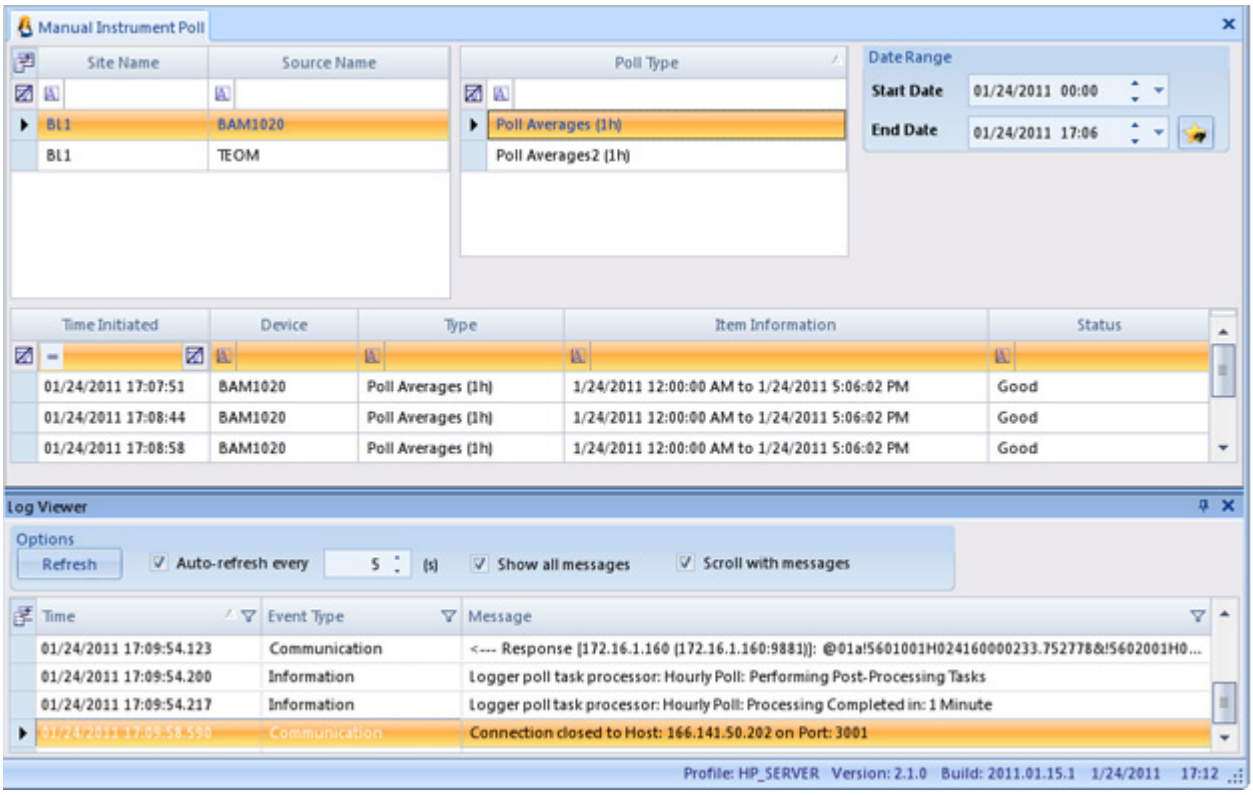
▶ **Note:** Fill Data Gaps can be run manually from the **Utilities** menu.



Fill Average Data Gaps Task from Configuration Editors > Task Scheduler

- **Instrument Poll Task** directly polls PM Samplers and Instruments such as BAMs without using data loggers.

▶ **Note:** Instruments can be polled manually by selecting **Manual Instrument Poll** from the **Utilities Menu**.



Manual Instrument Poll from Utilities Menu

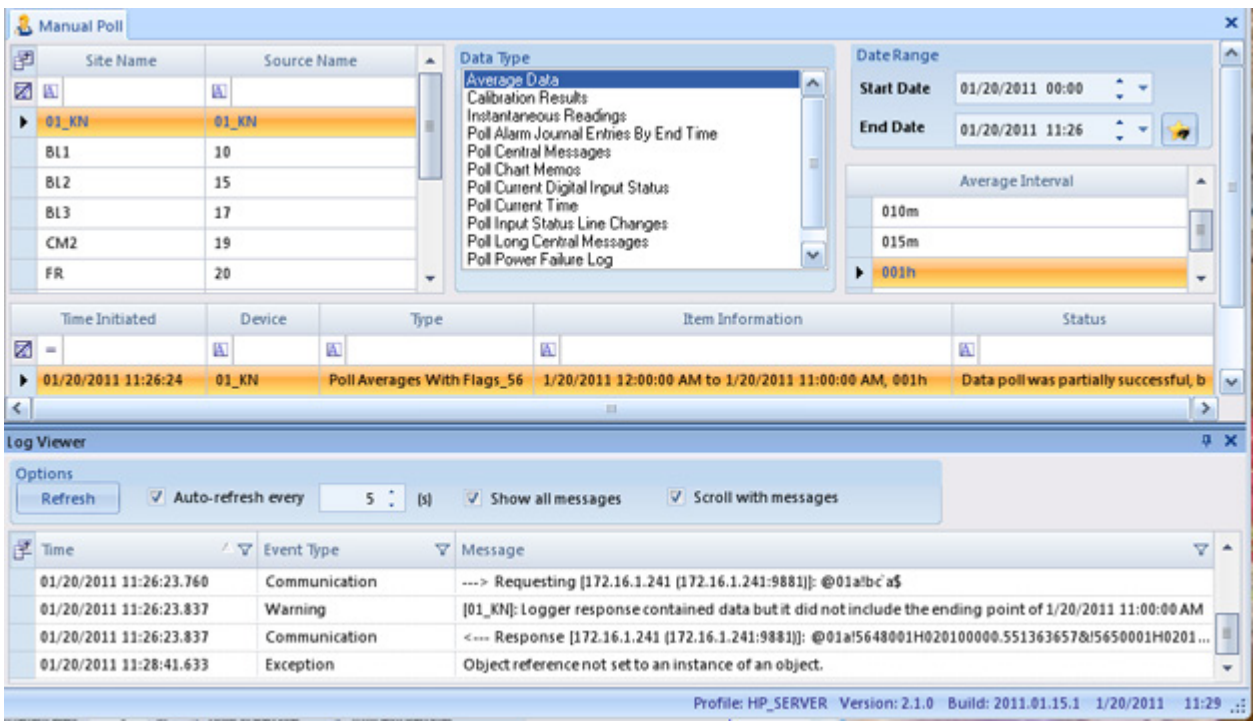
- **Journal Message Purge Task** removes Event Log journal messages (internal error logs) that are older than a specified age in seconds, minutes, hours, days, weeks, or years. The purge occurs at a specified **Repeat Interval**. An option is available to **Archive Data Before Purging**.

▶ **Note:** Journal messages can be purged manually via the **Utilities menu>Purge Journal Messages**.

- **Logger Poll Task** polls a data logger at a specified Repeat Interval in seconds, minutes, hours, or days. The Task must be named and a data logger must be selected. Select a Logger Command from the following drop-down list:

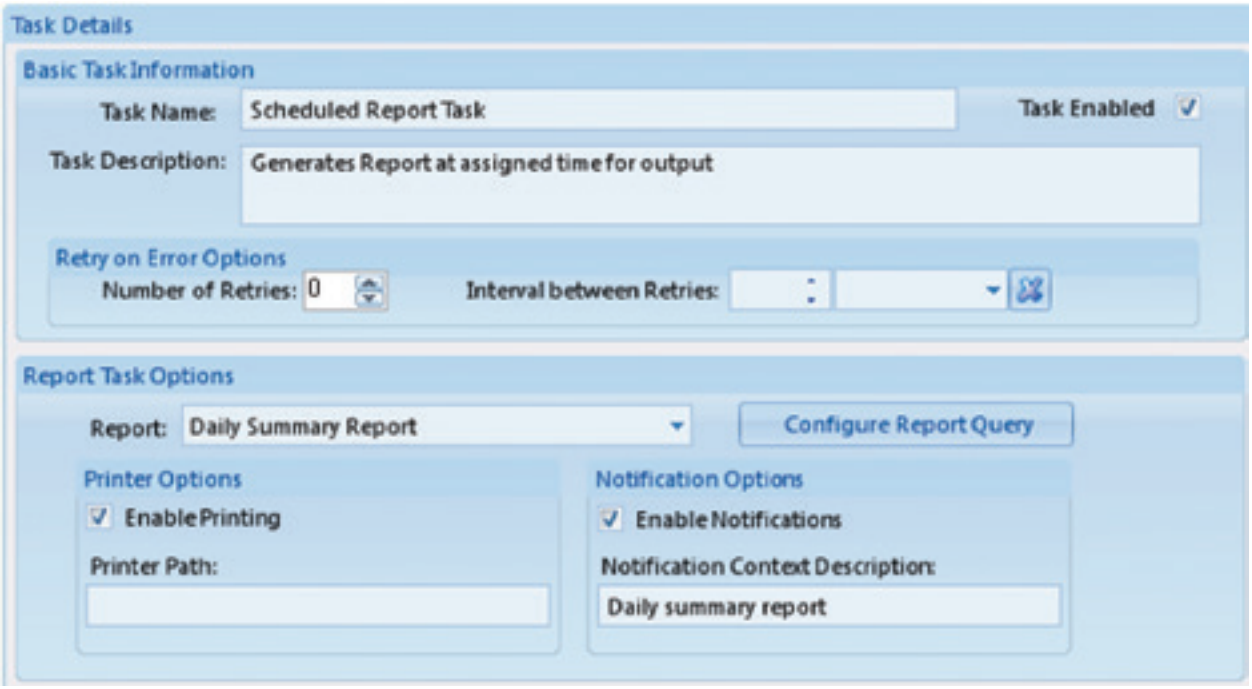
56	Average Data
46	Calibration Results
IJ	Instantaneous Readings
LL	Poll Current Time
DD	Poll Input Status Lind
23	Poll Current Digital Input
NP	Poll Alarm Journal Entries
BB	Synchronize Logger Time
JK	Poll Long Central Messages
KK	Poll Chart Memos
EF	Power Failure Log

▶ **Note:** The logger also can be polled manually via **Utilities>Manual Poll**. Results are displayed in the **Log Viewer** below the query screen.



Manual Poll in Utilities Menu

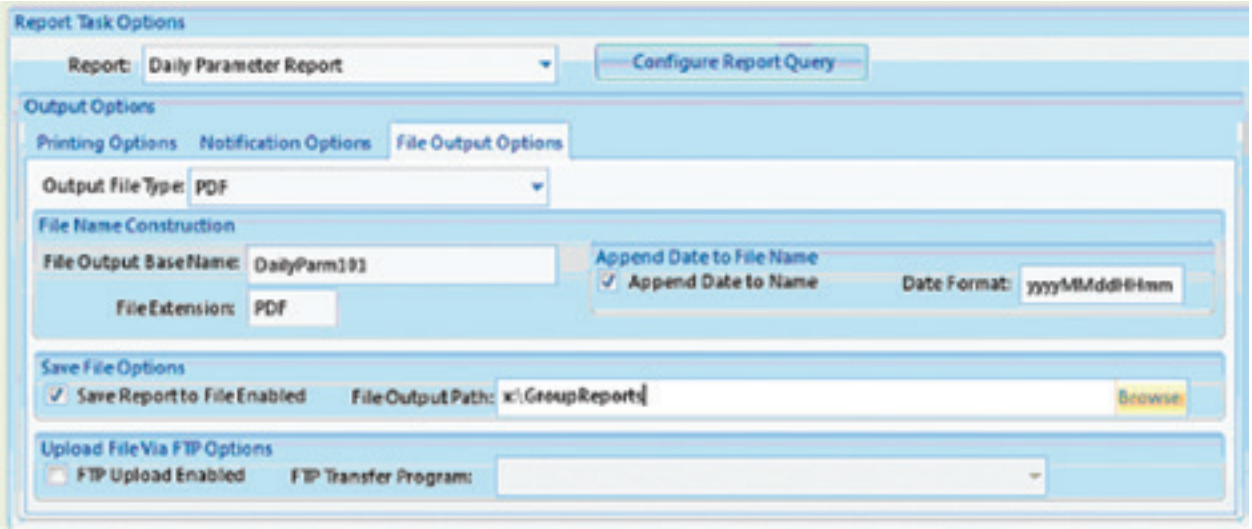
- **Scheduled Command Line Task** can be used to automate any Windows command line function, such as NTBackup.
- **Scheduled Report Task** handles automatically printed or emailed reports. Any system can be scheduled for distribution to a designated printer and/or email recipients.
  1. Select a **Report** from the list of available reports
  2. Configure a Report Query (select average interval, sites, parameters, and time range. (This feature functions like the Favorites Editor.)
  3. If the report will be printed, **Enable Printing** and designate the **Printer Path**.
  4. If the report will be emailed, **Enable Email Notification** and give the report a name that will appear in the Notification Subscriptions Editor. (Users and/or User Groups must be designated in **Configuration** > **Notification Subscriptions Editor**.)



Scheduling printing and email notification of scheduled report in Configuration Editors > Task Scheduler

The third tab in the output option section for scheduled reports is **File Output Options** This option can be used to write the scheduled report to a local or network drive.

You must select the output file type (CSV, HTML, PDF, etc), and the base file name:



File Output Options tab in Scheduled Reports

You can optionally have the scheduled task append the current date/time to the file name (e.g., DailyParm200906271900). Note that Windows does not allow "/" or ":" characters in file names. This option ensures that new files do not overwrite existing files in the directory. If this option is left off, the task will overwrite the file each time the tasks runs.

You can then select either of two options:

Write to File Enabled-- select/browse to a directory folder for the destination file

- **SQL Execution Task**

  To add a **SQL Execution Task,** click the green **Add** button and select **SQL Execution Task.**

  Select the Executive, Start Time, and Repeat Interval.

  Name the SQL task or use the default name.

  Enter the **SQL Command Text**.

  Click the **Save** button.

▶ **Note:** SQL commands can be executed manually via **Utilities>SQL Execution Tool**.

- **New Task Group**

  Task Groups allow multiple tasks to be grouped together in one polling process instead of multiple individual tasks. Tasks can be defined to run groups in parallel, sequentially, or as sub-tasks of other task groups to allow mixing of parallel and sequential operations.

  To add a new sub task to the Task Group click **Add Sub Task** button and select the task from the drop-down list. The Sub Task drop-down list has the same options as the Add task button at the top of the Task Scheduler. When you select a Sub Task, a screen will pop up asking for the following information:

  Task Name displays the name of the sub task that was selected. The Task Name can be modified.

  Task Description is automatically filled in.

  Task Enabled must be selected if the sub task is to run under the Group Task.

  Advanced Options (not required) allows the configuration of **Number of Retries** and the **Interval between Retries**.

  Other fields vary according to which sub task is selected.

  When you click **OK** in the pop-up screen the new sub task will be added in the **Sub Tasks** section.

  Select **Execute Tasks In Parallel** in the **Group Options** section if all sub tasks are to run at the same time.

  If the sub tasks are to be run sequentially, enter a number in the **Execution Order** column in the **Sub Tasks** section.

Select the **Fail Group on Error** column if you want the whole Task Group to stop running if an error occurs.

Task Type indicates the sub tasks that are part of one group task.

Edit Task allows you to make changes in the same pop-up window that came up when the **Add Sub Task** button was clicked.

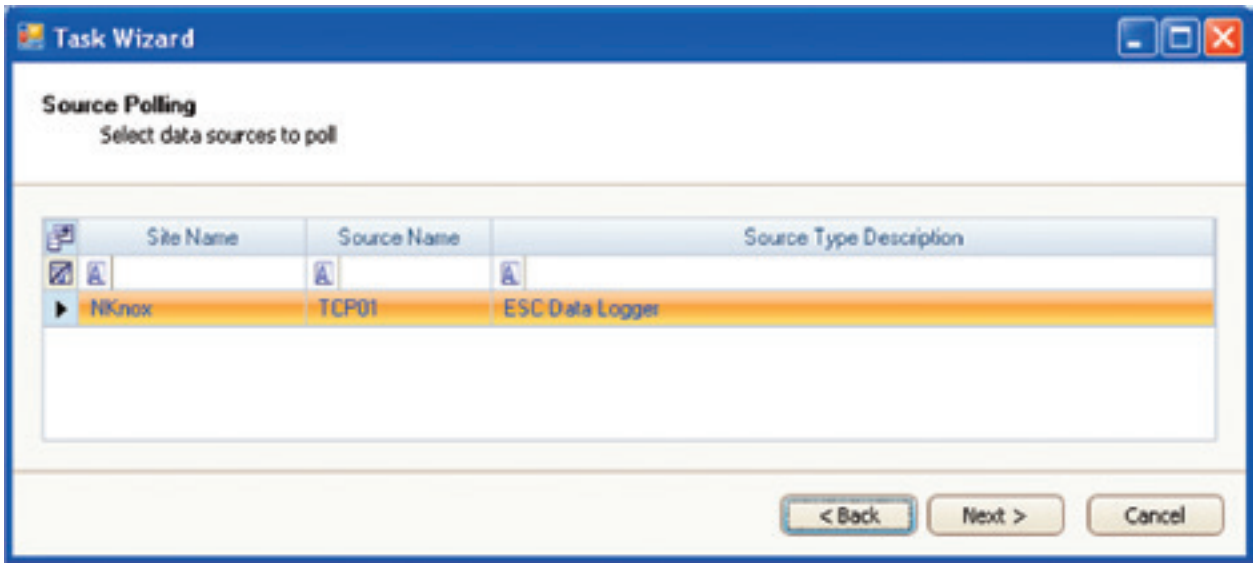
To remove a task from the Task Group select the task in the **Sub Task** section and click the **Delete Selected Sub Task** button.

Schedule Task Wizard

The Task Wizard can be used to manage dozens of polling tasks running in a single system. To set up task groups:

Open the **Task Wizard** (**Configuration Editors** > **Task Scheduler** > **Run Schedule Wizard** button on ribbon at top of screen) and click **Next**

Select **Site** and **Source** (including **Source Type Description**) and click **Next**.

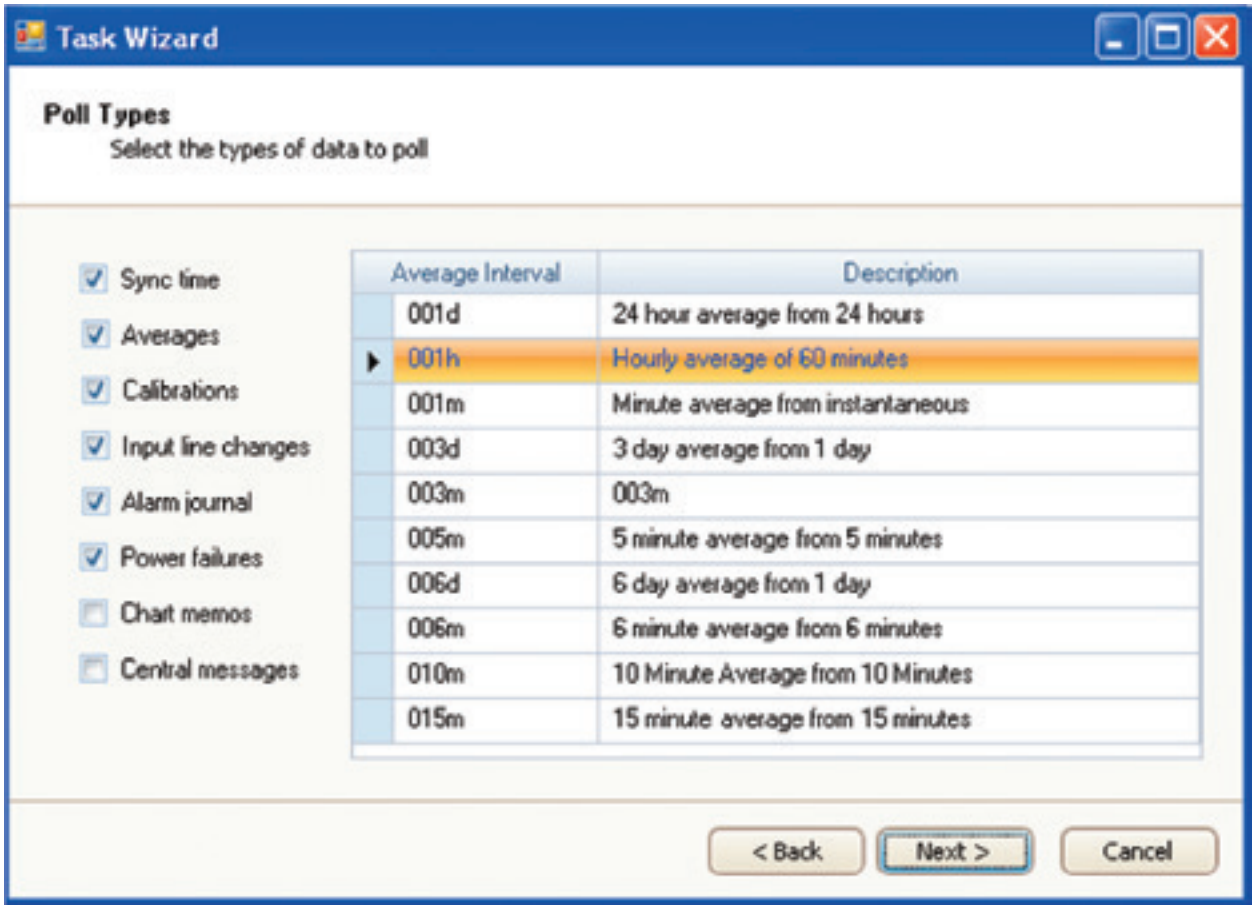


Selecting Site and Source Name in Task Scheduler Wizard (Configuration Editors > Task Scheduler > Run Schedule Wizard)

Select **Poll Types**, or types of data to poll from the following checklist:

Sync time,
Averages,
Calibrations,
Input line changes,
Alarm journal,
Power failures,
Chart memos,
Central messages.

Click **Next**.



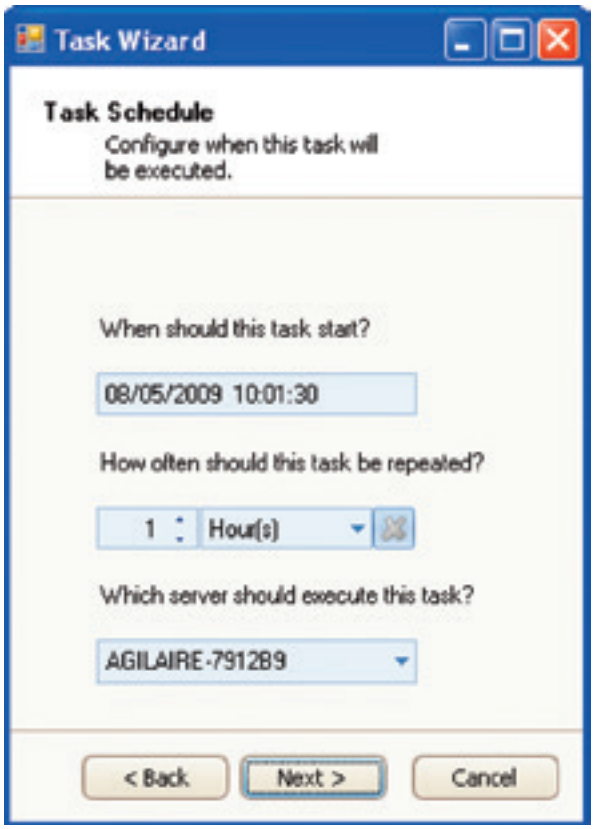
Poll Types in Task Scheduler Wizard (Configuration Editors > Task Scheduler > Run Schedule Wizard)

Select the following configurations from drop-down lists:
when the task should start,
how often it should be repeated,
and which server should execute the task.

The next screen will ask you to **Confirm Task Creation**. Click **Next** to save new task to database.

The last screen will say you have successfully completed the wizard. Click **Finish** .

▶ **Note:** The **Task Wizard** can also be accessed directly from the **Utilities** menu.

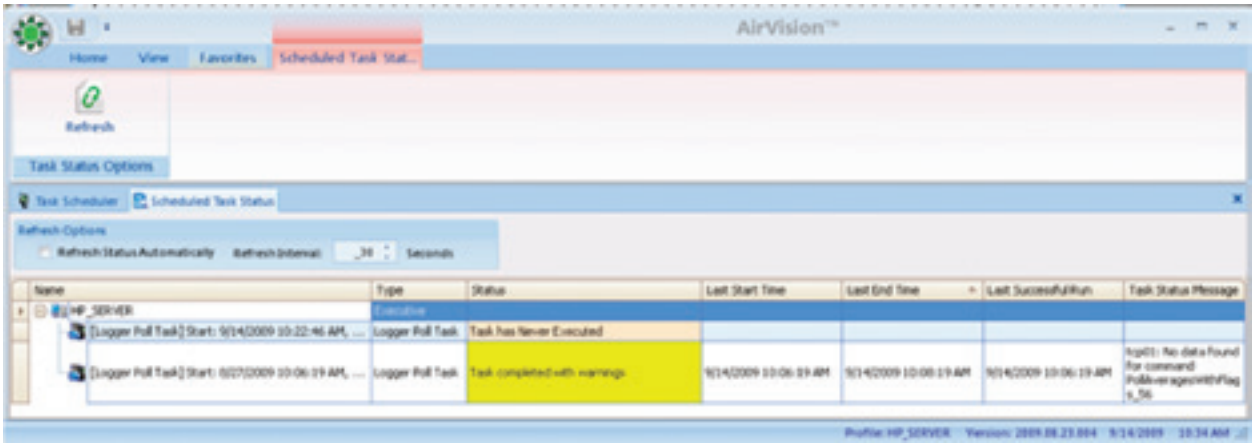


Task Schedule in Task Scheduler Wizard (Configuration Editors > Task Scheduler > Run Schedule Wizard)

Task Display

Task Display (Utilities > **Scheduled Task Status**) is a constantly updating display of all tasks within the system, including the last time run, next execution time, and errors experienced during the last run.

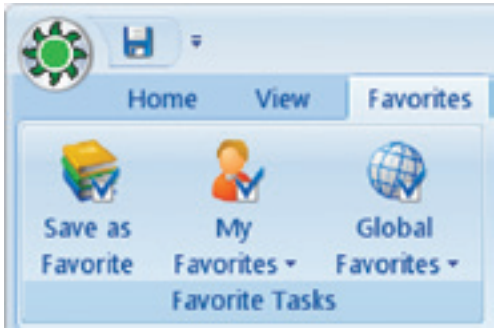
By default, the display will not refresh, but **Refresh Status Automatically** can be selected at the top of the screen.



Task Display from Utilities > Scheduled Task Status

Favorites Editor

AirVision simplifies regular tasks with a list of user-defined **Favorites**, which function like Favorites in Internet browsers. Favorites can be created for most menu items, including reports, editors, configurations, journals, calibration functions, file import, security settings, logger functions, emails, and task scheduling. Favorites can be saved for different sites, parameters, average intervals, and date ranges. They can be saved for all users or for one user.



Favorites menu

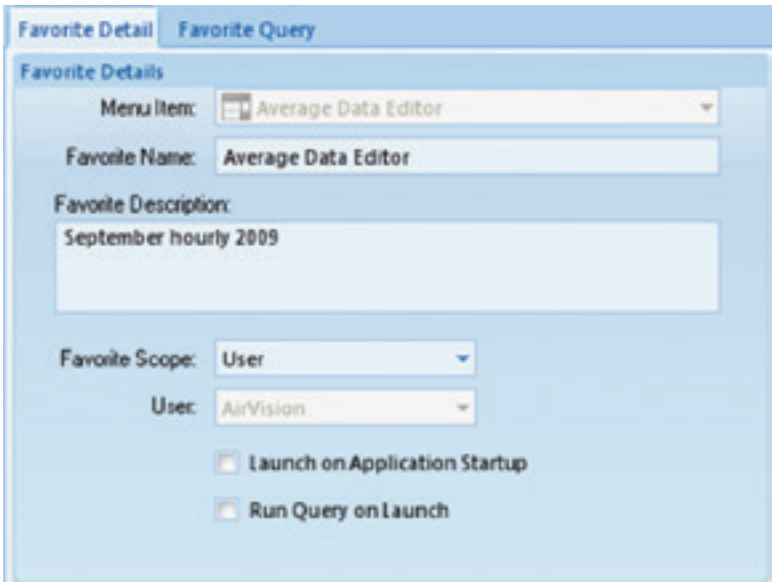
Creating a Favorite

To create a favorite, open **Configuration Editors > Favorites Editors**. Click the red **Add Favorite button** on the left side of the ribbon.

Favorite Detail Tab

Under the **Favorite Detail** tab of the Favorites Editor: select a **Menu Item** from the drop-down list, enter a **Favorite Name**, enter a **Favorite Description** (optional), select a **Favorite Scope** from the drop-down list (**User** or **All Users**) and select from the following options:

- **Launch on Application Startup** to run the Favorite upon logging in to AirVision
- **Run Query on Launch** to execute data retrieval when the Favorite is selected.



Add a Favorite screen

Favorite Query Tab

Next, open the **Favorite Query** tab if it is available.

▶ **Note:** The Favorite Query tab will only be in the Favorites Editor after a Menu Item is selected that requires a time range, interval, and parameter(s), such as the Average Data Report and the Average Data Editor.

Select a **Date Range**, choose an **Average Interval** and select a **Parameter**. To select more than one parameter, drag the arrow in the blue left column or hold down the **Ctrl** key while you select parameters.

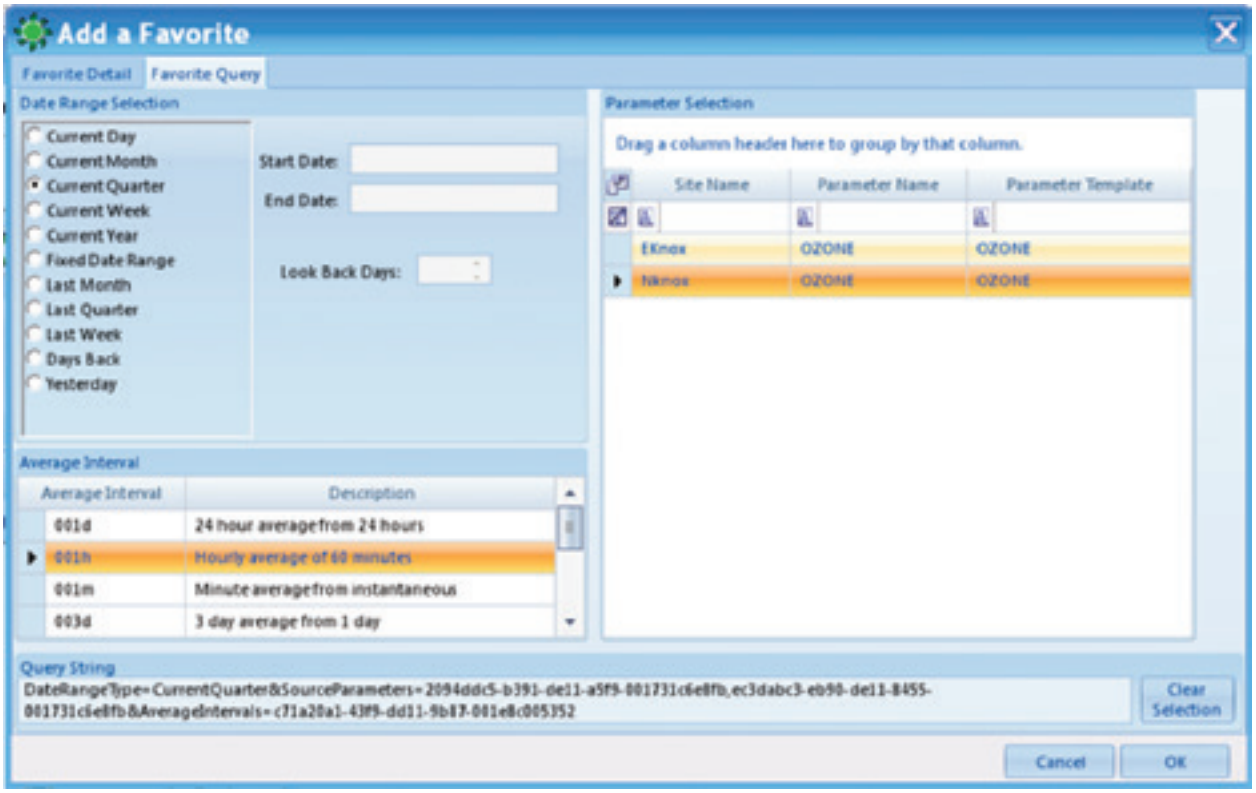
To save a favorite when you're in any data editor or report, complete a query, and select **Favorites** from the top menu. The ribbon bar will change to show the favorites menu.

Select **Save as Favorite** to bring up the **Add a Favorite** screen.

You can also configure the **Favorite** by selecting the **Favorite Query** tab after you select **Save as Favorite**. From this screen you can adjust the site/parameter list, date range, or average interval. These values can also be adjusted later in the **Favorites Editor** in the **Configuration menu**.

To return to the ribbon controlling the current application, select the top menu function (above the ribbon), for example, Average Data Editor.

To use an existing Favorite, select **Favorites** from the top menu (above the ribbon bar), select **User Favorite** or **Global Favorites**, and the saved **Favorite**.



Favorite Query tab from Add a Favorite

Configuring Security

User security in AirVision is set up by administrative personnel and is similar to Microsoft Windows:

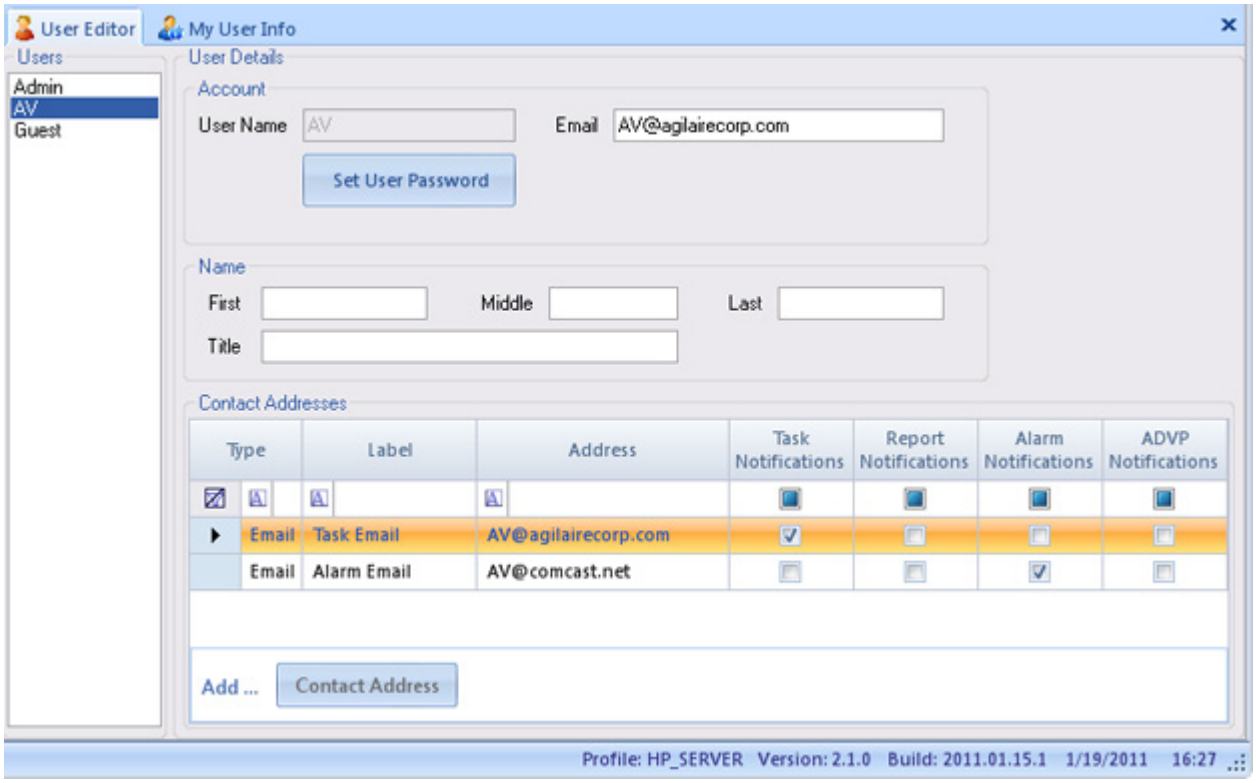
- Each system user has an identity, including a username and password
- A User may be a member of one or more User Groups
- Access and rights are assigned to User Groups

User Groups in AirVision are usually assigned by job responsibility (e.g., Data QA, Site Technicians, System Administrators). A group can optionally have its access limited to only certain monitoring sites. Users can be members of more than one **Group**, and each site can have a different access group.

User Editor

Administrators can add or delete users: open **Configuration Editors** > **Security** > **User Editor** and click **Add User** or **Delete User** button. Enter a **User Name** and **Set User Password**. Enter an **Email** address for the user .

In the **Contact Addresses** section of the screen you can click **Add Contact Addresses** and enter multiple email addresses for the same user to receive different notifications at different email addresses. Check the notifications to be emailed to each email address: Task, Report, Alarm, or ADVP. Each **Label** must have a different name or the database will not accept it.

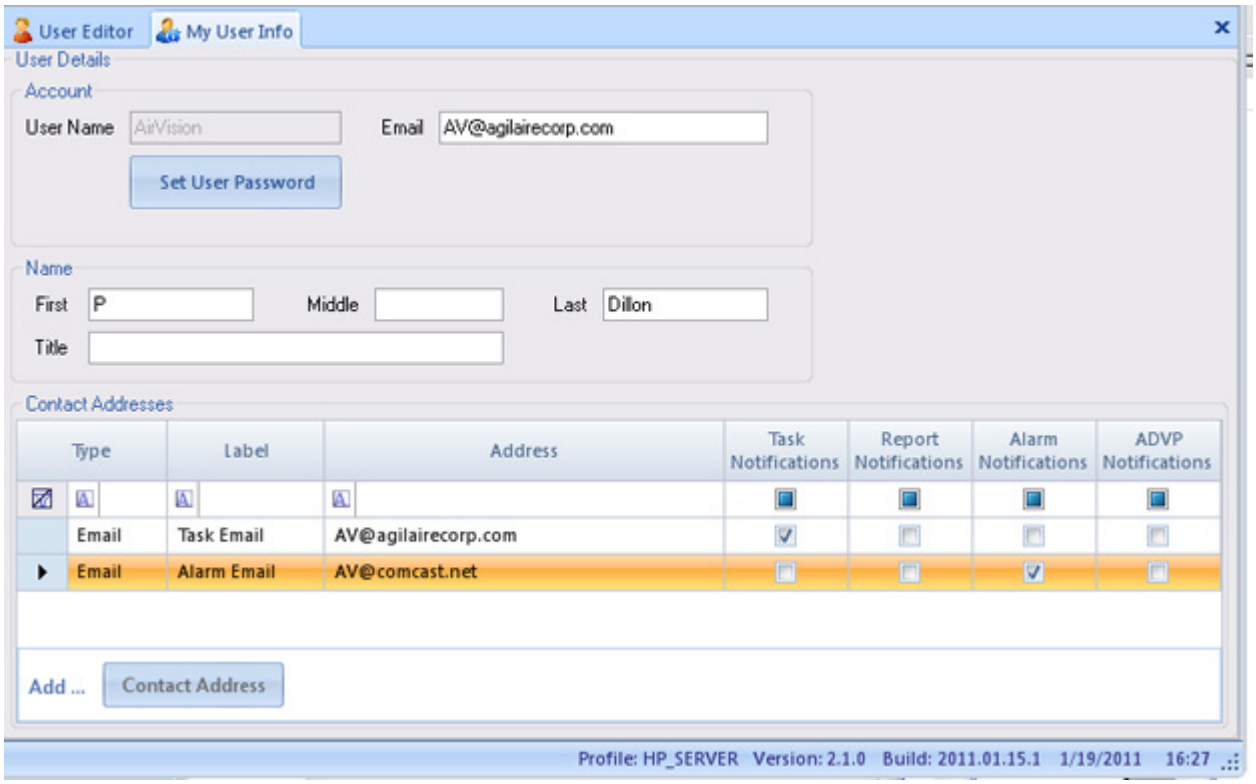


User Editor from Configuration Editors > Security > User Editor

My User Settings

Non-administrative personnel can change their own Password, Email, and Name, but not their User Name in the **My User Settings** screen in **Configuration Editors** > **Security**. If a User Name needs to be changed (for example, if a name is misspelled), an Administrator would have to delete the original User Name and add a new one.

In the **Contact Addresses** section of the screen you can click **Add Contact Addresses** and enter multiple email addresses for the same user to receive different notifications at different email addresses. Check the notifications to be emailed to each email address: Task, Report, Alarm, or ADVP. Each **Label** must have a different name or the database will not accept it. Click **Save**.

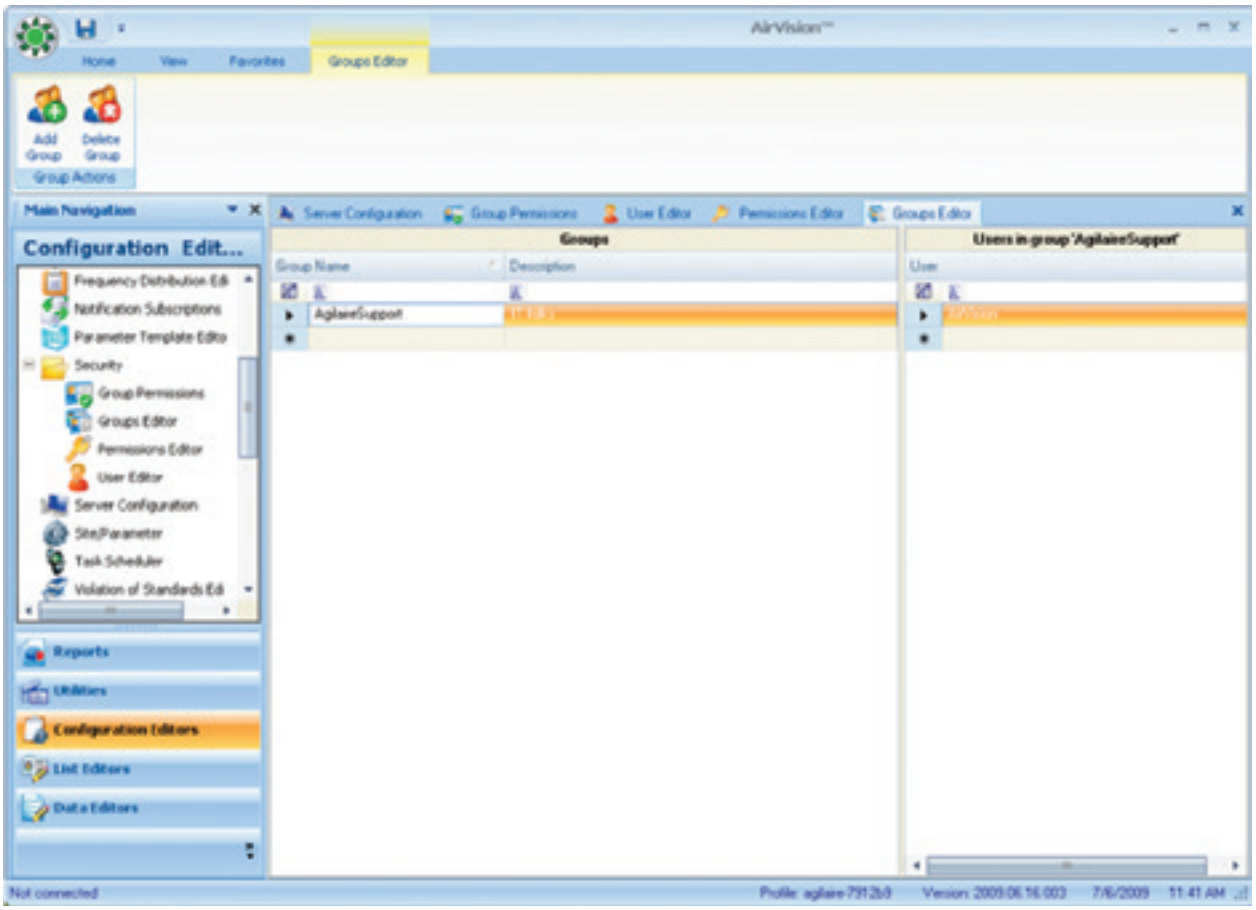


My User Settings screen in Configuration Editors > Security

Groups Editor

Next, create or modify groups with the **Groups Editor**. To add or delete groups, click the **Add Group** or **Delete Group** button. Select a group and add Users to that group as members of an existing or newly created group. To add a user, click on the asterisk (*) line in the right (gray) area to get a pick list of currently created users.

Click **Save**.



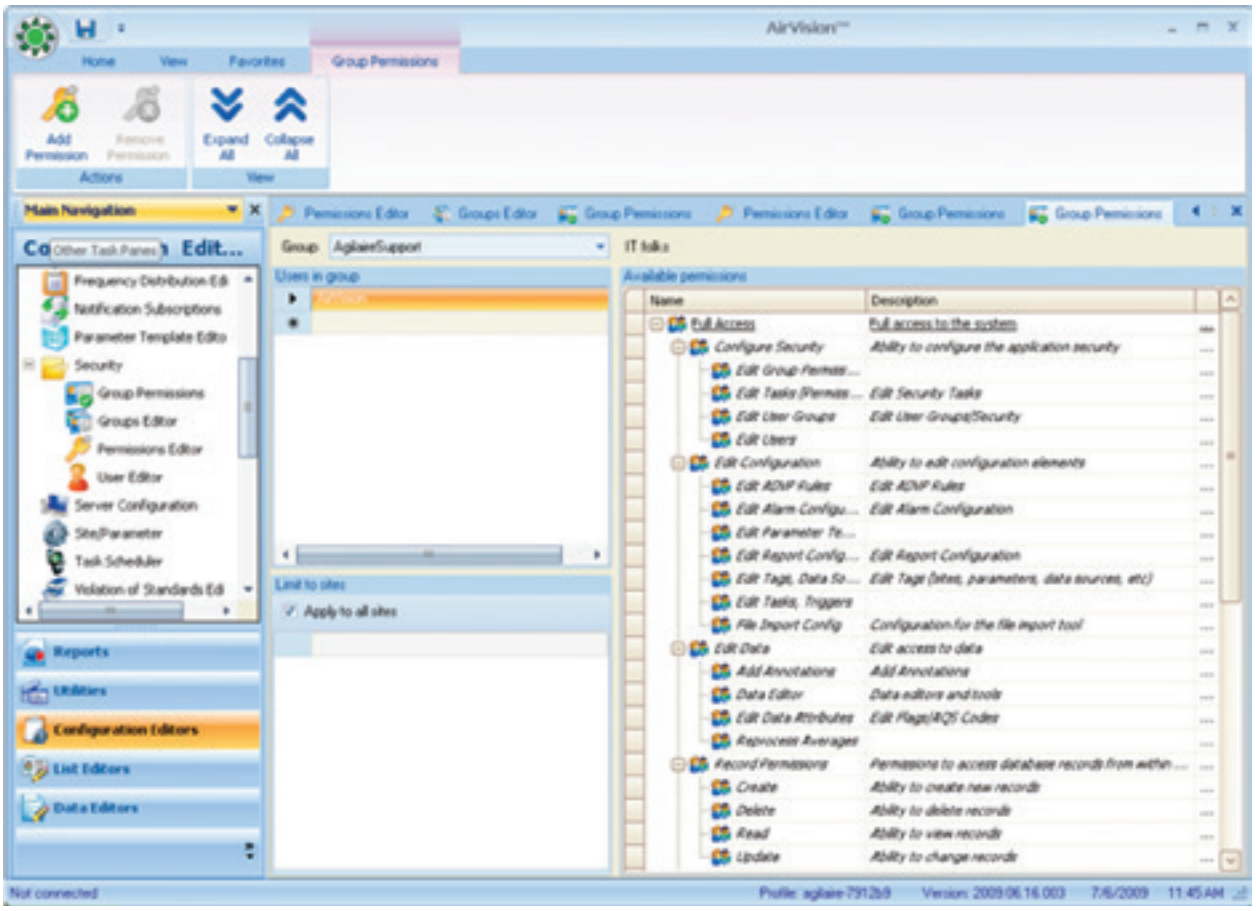
Groups Editor from Configuration Editors > Security > User Editor

Group Permissions

Finally, define the permissions for each **User Group** using the **Configuration Editors** > **Security** > **Group Permissions Editor**. Select a Group in the drop-down list. The list of configured users is displayed (and users can be added here as well). The right panel shows the various rights available in the system, and the status for the current group:

- Grayed = access disabled
- Black, underlined = access enabled
- Black, italic = access enabled by inheriting from another granted access.

In this example, access has been granted to certain Security permissions (Groups, Users, and User Groups, but not Edit Tasks). Access is granted to all configuration items at the topmost level, and all sub-tasks are permitted by inheritance. For example, to turn off Edit ADVP Rules, first remove the overall Edit Configurations permission and then add the individual permissions that we need. Expand and Collapse the tree using the buttons on the ribbon. To define a group as having site-specific access, uncheck the **Apply to All Sites** in the lower left panel, and then add sites using the list form below.



Group Permissions from Configuration Editors > Security > Group Permissions Editor

GSI Driver Editor

The purpose of the GSI Driver Editor (**Editors>GSI Driver Editor**)is to provide a way to add, delete, or modify GSI driver entries in an editor similar to the Parameter Template editor for GSI entries and GSI instruments.

The GSI Driver Editor consists of an alphabetized pick-list of existing GSI entries for modification. Two editors may be required, one for instruments and one for entries, or two sections/tabs of the forms.

Fields in the GSI Driver Entry tab include:

- GSI Entry
  - Associated GSI Instrument and GSI Entry (pick-list of configured instruments)
  - Send Name (string)
  - Parse Name (string, up to 8 char)
  - AutoSend String (string up to 8 char)
  - Autosend Repeat Interval (1.60 seconds)
  - Parse Sync String
  - Modbus Register
  - Fixed or Delimited Parsing
    - Fixed:
      - Number of Chars to Data (int, up to 3 digits)
      - Data Field Width (int, up to 2 digits)
      - Number of Chars in string (int, up to 3 digits)
    - Delimited:
      - Number of Delimiter Chars (string)
      - Number of Delimiters of Delimiters to Data (int, up to 3 digits)
      - Number of Delimiters In String (int, up to 3 digits)
      - Data Field Type (pick-list- Hex, Binary, Float)
- In the GSI Driver Instrument tab:
  - GSI Instrument Name
  - Default TCP Port (integer, up to 6 digits)
  - Default Modbus Code (integer, 0-255)
  - Default Modbus Command Type.(3 or 4)

Please refer to the ESC Model 8832 Data Logger Manual for more information about GSI drivers and the definitions of these fields.

Data Rollup Processor

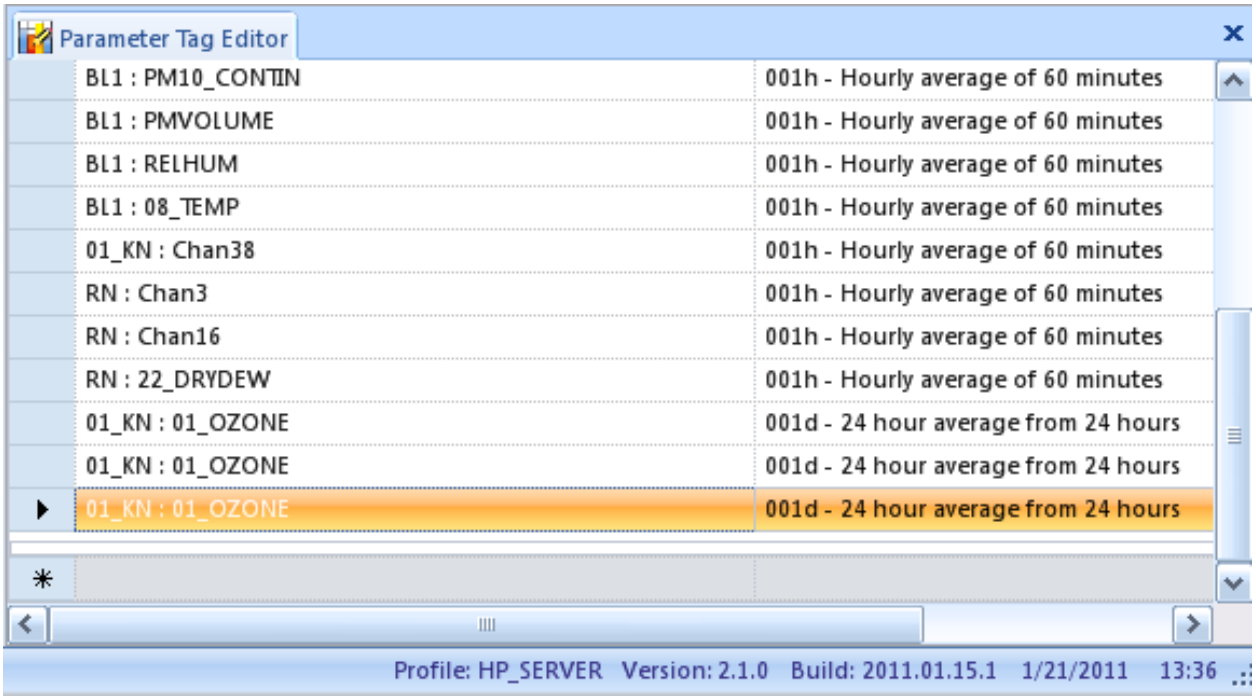
The Data Rollup Processor is an optional module, usually included as part of an Instrument Polling license. The Data Rollup Processor allows shorter-term averages to be rolled up into larger block or rolling averages. Examples of this would include:

Re-creating hourly data from 1-minute data
Rolling up 5-minute or other odd intervals from a directly polled instrument to hourly data
Rolling up hourly averages to daily averages
Creating a new parameter with an 8-hour rolling average (e.g., ozone) calculated within AirVision.

The calculation can be done both manually (**Utilities->Manual Average Data Rollup**) or it can be scheduled in **Configuration Editors>Task Scheduler**.

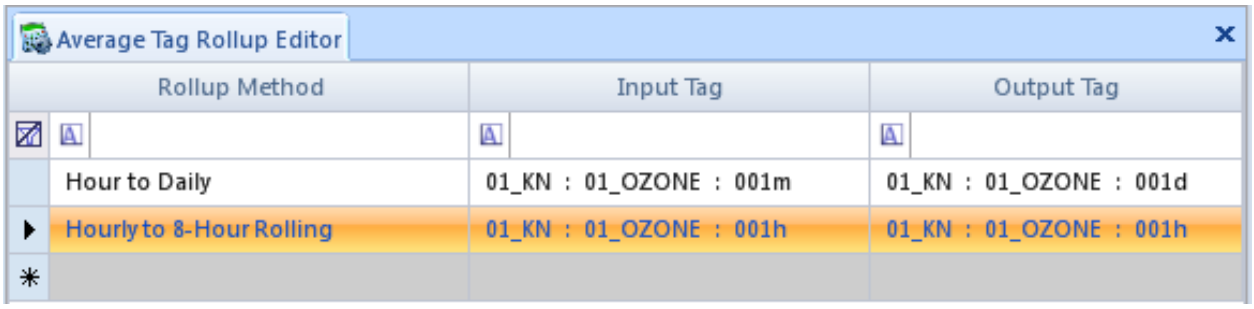
Before doing the calculation, set up the rollup programs and tie them to specific **Parameter Tags**. A **Tag** is a term for a combination of a parameter and an average interval (e.g., hourly ozone, 1-minute CO). The intervals are specific to the frequency at which data is inserted into the database, so the system can't distinguish between OZONE:1h that comes from a block average of minute data and OZONE:1h that is an 8-hour rolling average, updated on the hour. For rolling averages, create a new parameter in the Site/Parameter editor to store the rolling average data.

If you need to create new tags (e.g., create an daily average tag, or create the 1-hour tag for your new OZONE_8HR parameter), open **List Editors->Parameter Tag Editor**.



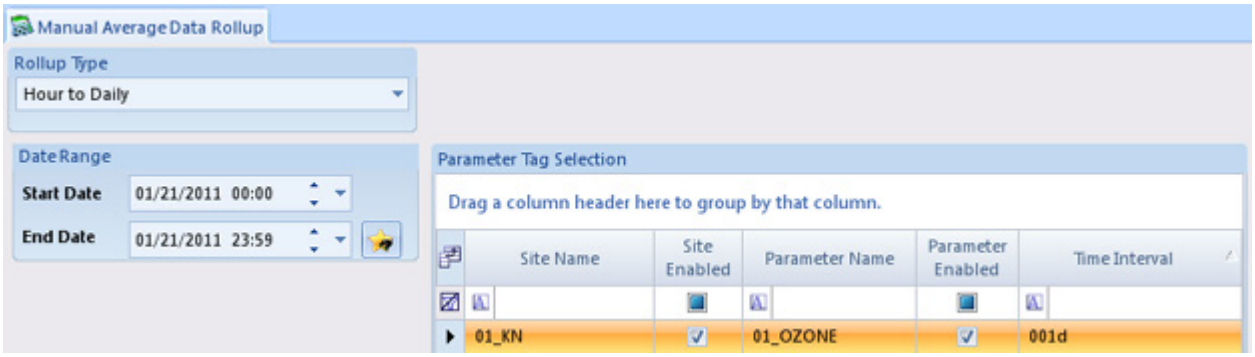
Create new tags in List Editors>Parameter Tag Editor

Once all the tags you need exist, use the **Configuration->Average Tag Rollup Editor** to create your new rollup programs:



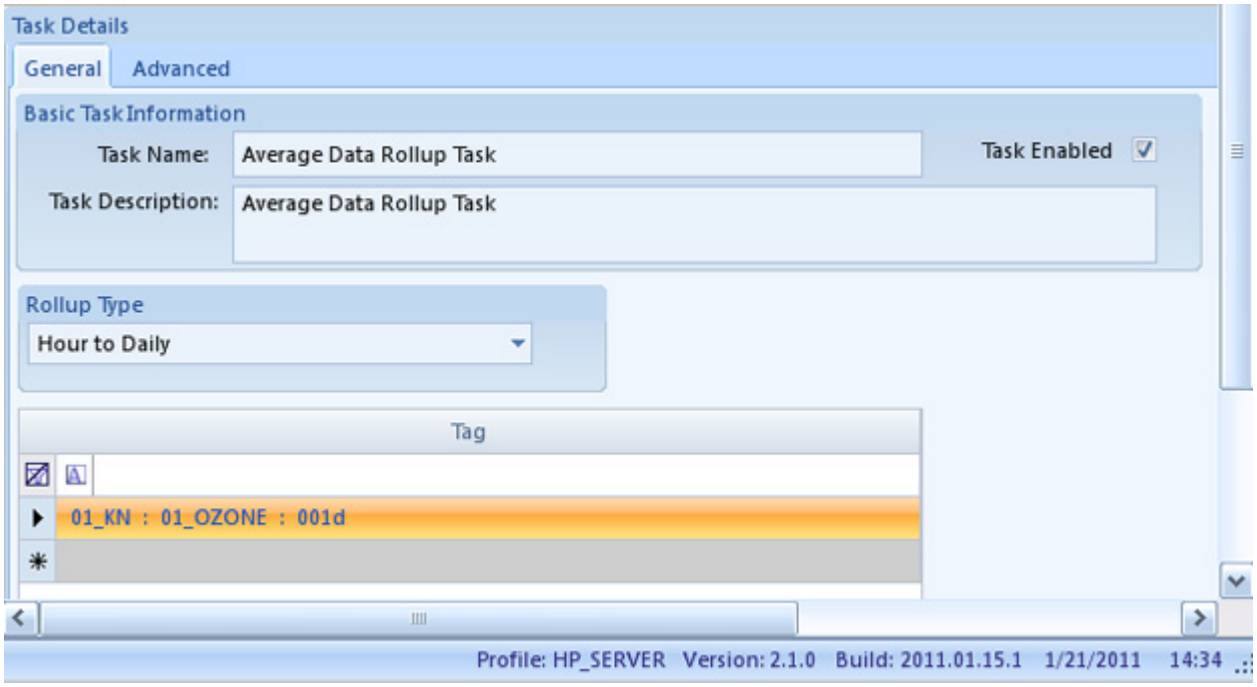
Utilities>Manual Average Data Rollup

To run a program manually, go to **Utilities>Manual Average Data Rollup**, select the **Rollup Type**, **Date Range**, and **Parameter Tag Selection**. Click the **Process Rollup** button.



To run a program manually, Utilities>Manual Average Data Rollup

To run a **Rollup Task** automatically, create a new **Average RollupTask** in **Configuration Editors>Task Scheduler>Average Rollup Task**, and select an **Average Data Rollup Task**. Then select the specific **Task Type**, **Start Time**, **Repeat Interval**, and **Task Description**.



Automatic Rollup Task in Configuration Editors>Task Scheduler>Add Average Rollup Task

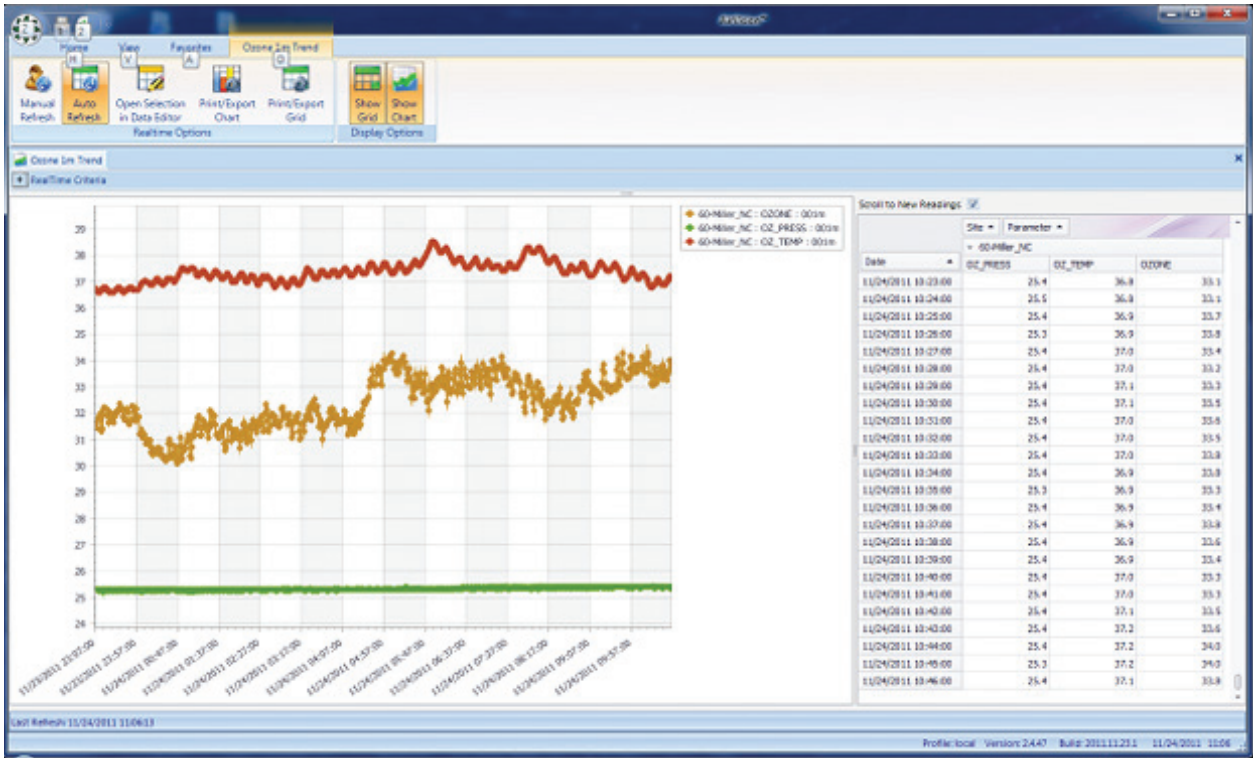
Chapter 3

Realtime Trend Display

The Model 8872 has three main realtime display programs to keep you informed of the realtime status of the readings, calibrations, I/O status, and averages:

- **Realtime Trend** is the same display used by AV-Trend to provide strip-chart likes trends and basic tabular displays.
- **Tabular Display** provides a series of LED-like displays, which can be zoomed in to time-series charts. This display is very useful for mixing of multiple display averages (instantaneous, minute, hourly, etc) on the same page.
- **Site Node Logger Tool Box** is a blend of three tools:
  - **Readings** – current readings, and buttons to control / display maintenance or offline status of the channels; used to mark channels online/offline, or in/out of maintenance.
  - **Calibration** – shows the current status of calibrations, and allows you to start or abort a calibration program.
  - **Digital I/O** – show the current status of all physical or remote (Modbus) digital input / output points.

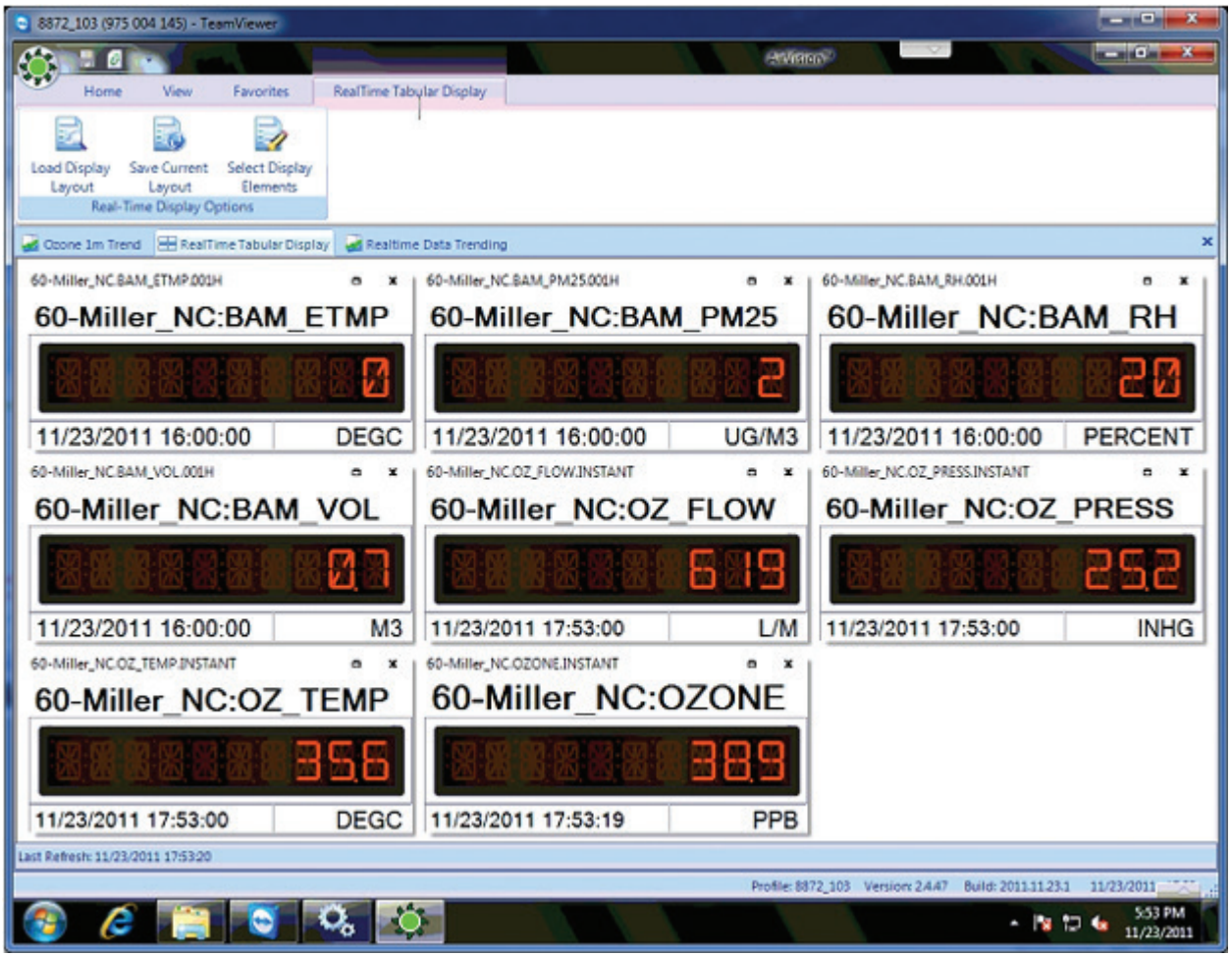
Realtime Display



Realtime Graph in Status Displays>RealTime DataTrending Graph, showing both Chart and Grid

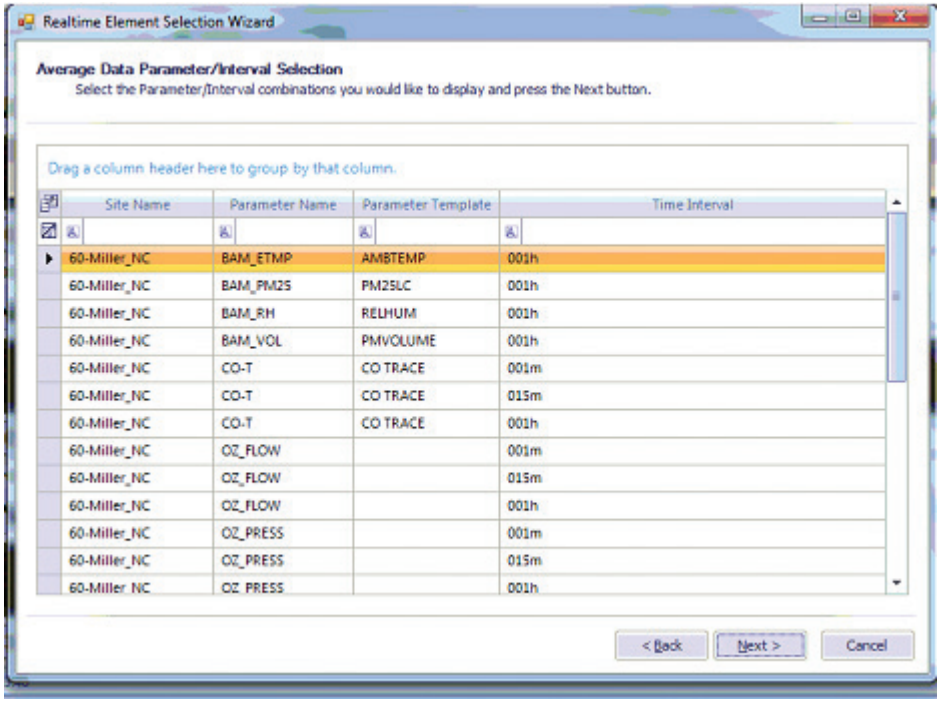
Tabular Display

The **Tabular Display** provides a series of LED-like displays, which can be zoomed in to time-series charts. The chart display is very useful for mixing multiple display averages (instantaneous, minute, hourly, etc) on the same page. Boxes can be dragged to create a custom layout, and the layout can be saved for future recall. Because of the complexity of the elements in the layout, they are stored separately than the regular Favorites system.

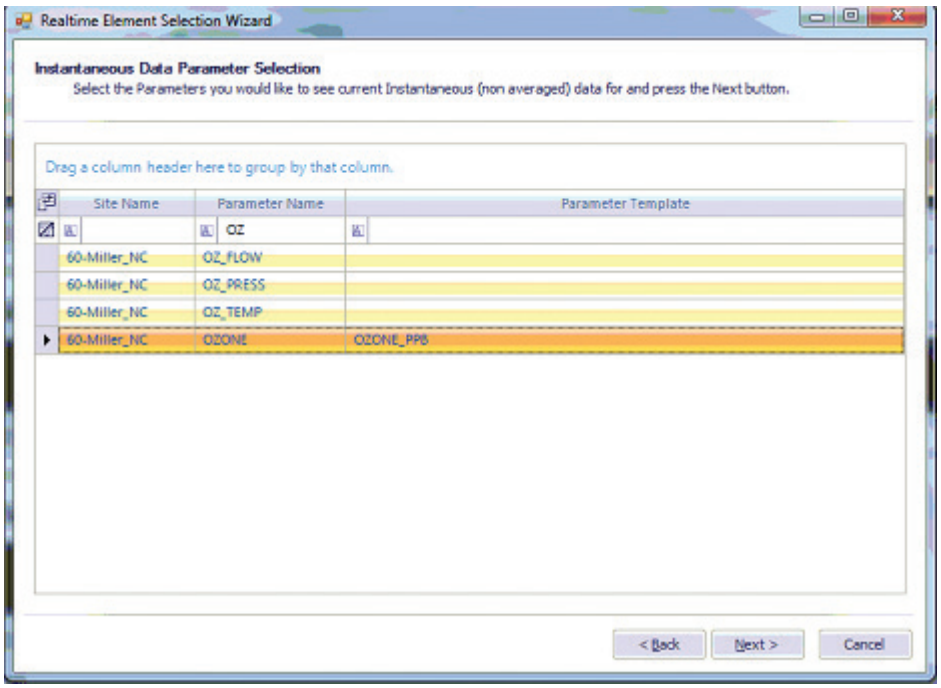


Create a new layout by clicking the Select Display Elements icon from the ribbon

You can use the filter fields to narrow parameter names and, more importantly, average intervals, if needed. The form supports standard Windows drag-select, shift-select, and CTRL-select actions. Note that the display will support multiple average intervals, so it is possible to mix minute and hourly data (e.g., analyzers and BAMs) on the same screen. Instantaneous data panels are selected on the next page.

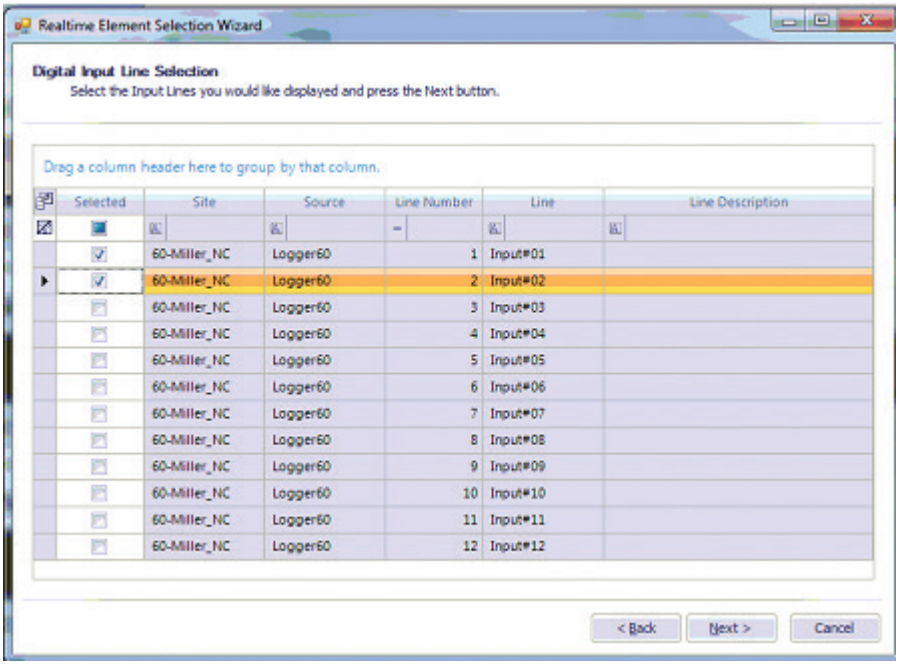


Realtime Element Selection Wizard--Average Data Parameter / Interval Selection



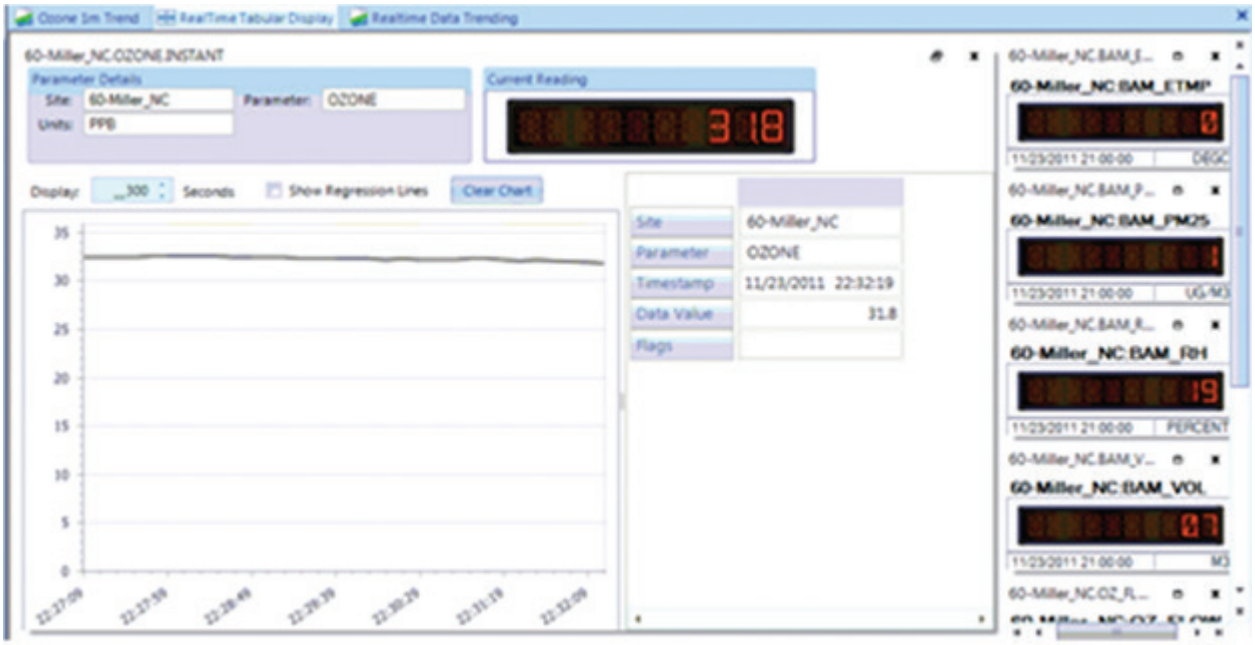
Realtime Element Selection Wizard--Instantaneous Data Parameter Selection

Finally, the Wizard asks if you want to view the realtime status of any digital input status lines. Select lines by clicking the left-side check boxes.



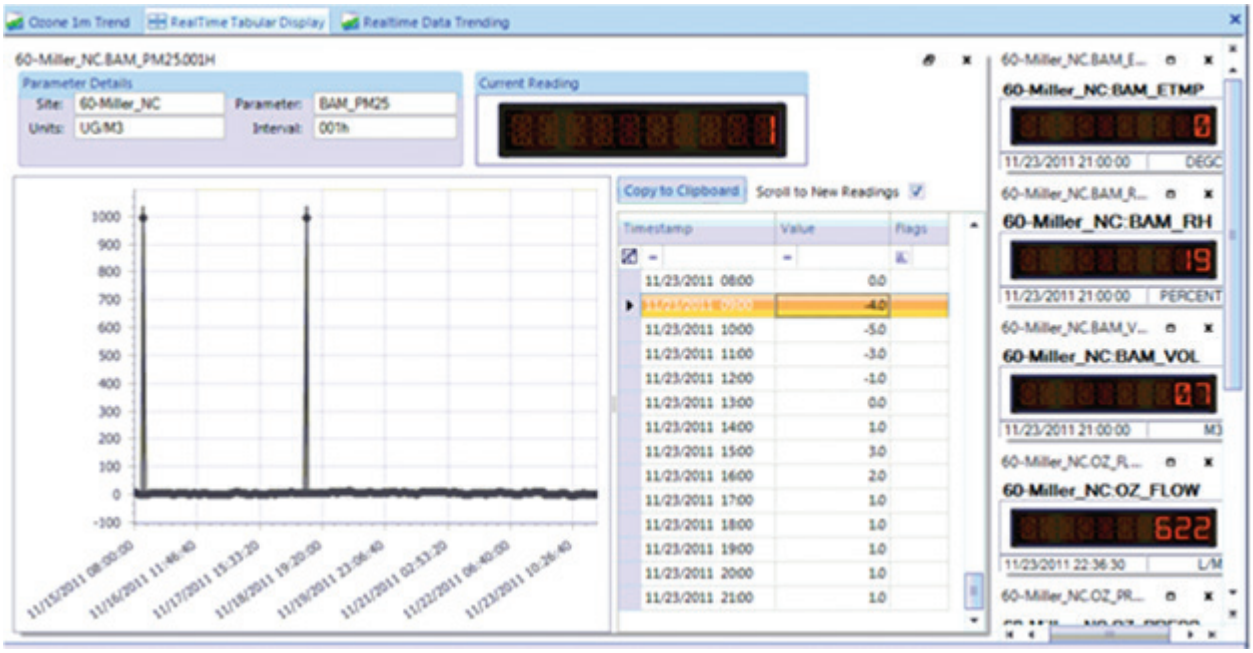
Realtime Element Selection Wizard--Digital Input Line Selection

Once the wizard is finished, the display will start and begin updating. Panels can be dragged into any desired order/arrangement by click-drag (click and drag from the **title bar** area at the top, above the large-font name). Panels can be eliminated by clicking the **X** box in the upper right. To zoom into a particular reading, click the expand box to the left of the **X**.



Updating Display with movable Panels

The other panels will minimize, and the selected parameters will expand into a trend chart, with an LED panel, still updating the current reading / average. For instantaneous data, the duration of the display can be modified if needed. Instantaneous readings default to show the previous 5 minutes, while charts of averages are longer. Instantaneous readings also have an option to show a trendline of the general direction of the newest readings.



A grid of previous averages for averaged data.

To return the display to its previous mode, click the resize button (two stacked windows) next to the **X** close box.

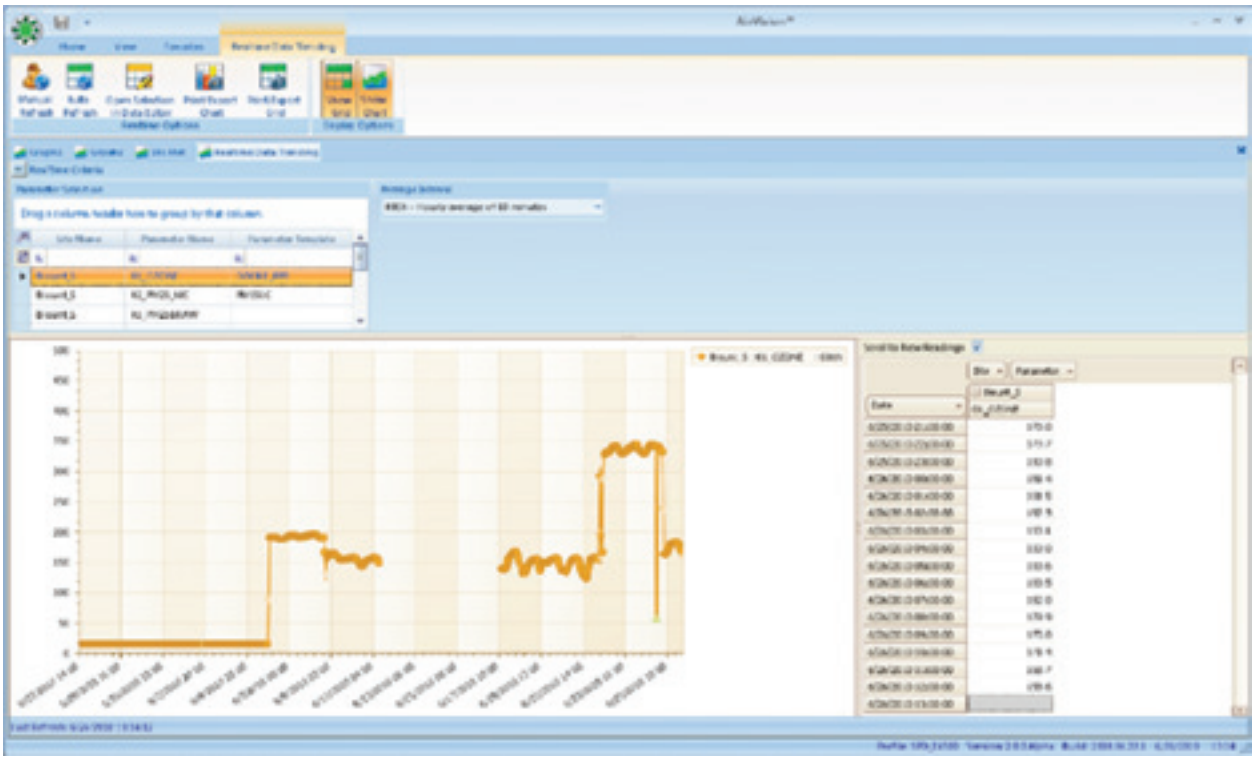
Realtime Trend

The Realtime Trend provides a time-series view of data that continuously updates. Any number of Realtime Trend tabs may be opened, and they can graph any average interval available in the system (most commonly 10 second and 1-minute trends).

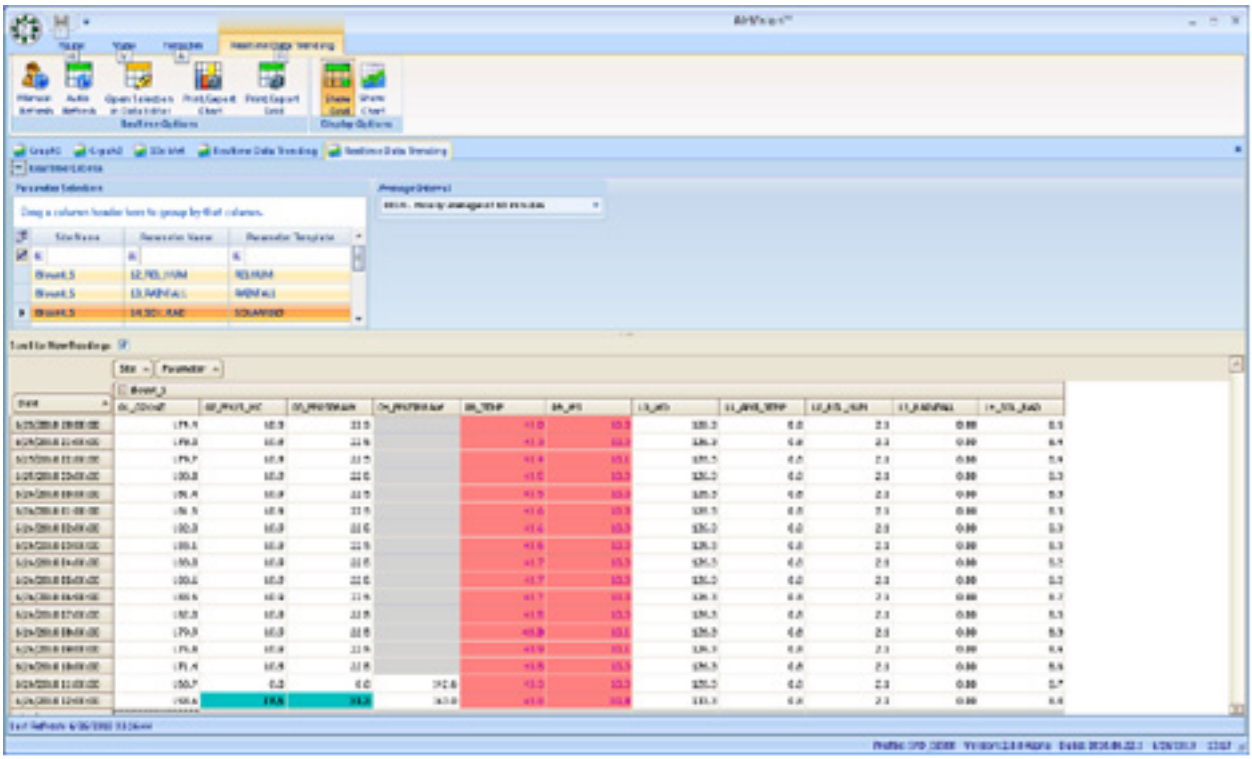
▶ **Note:** Because Favorites can be used to store Realtime Trend settings, and can be set to automatically open on startup, it is simple to define some screens to open automatically on the client launch (and by putting the Client in the startup folder and storing the login username and password), the PC can be set to start up the client and the default trends on PC reboot.

To create a new trend, select **Status Displays>Real Time Trending** in the menu. To query a report, select parameters and averaging interval. Select **Automatic Refresh** from the menu for a continuously updating trend.

By default, the screen will show both a time-series plot and a grid list of data points on the right side. By using the **Show Grid** and **Show Chart** ribbon buttons, you can define whether you want a chart (a list of numeric readings, good for a large number of parameters), or both a chart and grid.

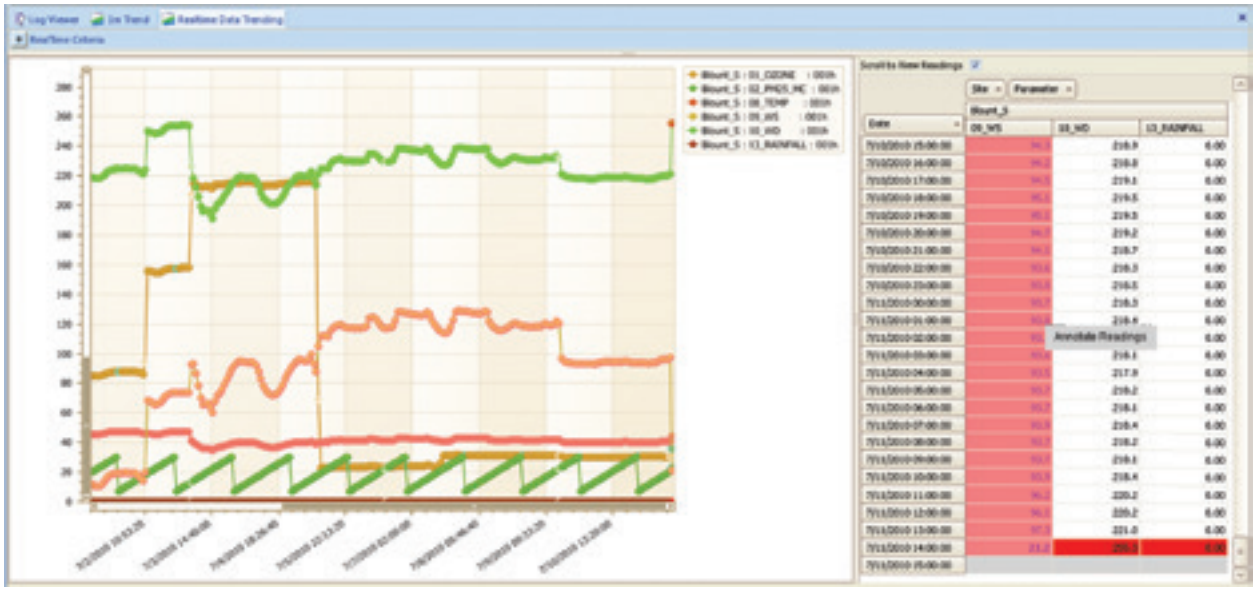


Realtime Graph in Status Displays>Real Time Trending Graph showing both Chart and Grid



Realtime Graph in Status Displays>Real Time Trending Graph showing Chart only

Hover the mouse pointer over a data point on the graph to see details of exact time and value.



Realtime Graph in Status Displays>Real Time Trending Graph with mouse hover on data point

Additional Ribbon functions:

Print or Export the Chart or the Grid (HTML, CSV, XLS, BMP, JPG, etc)

Select a range of data in the grid and open that data in the Data Editor.

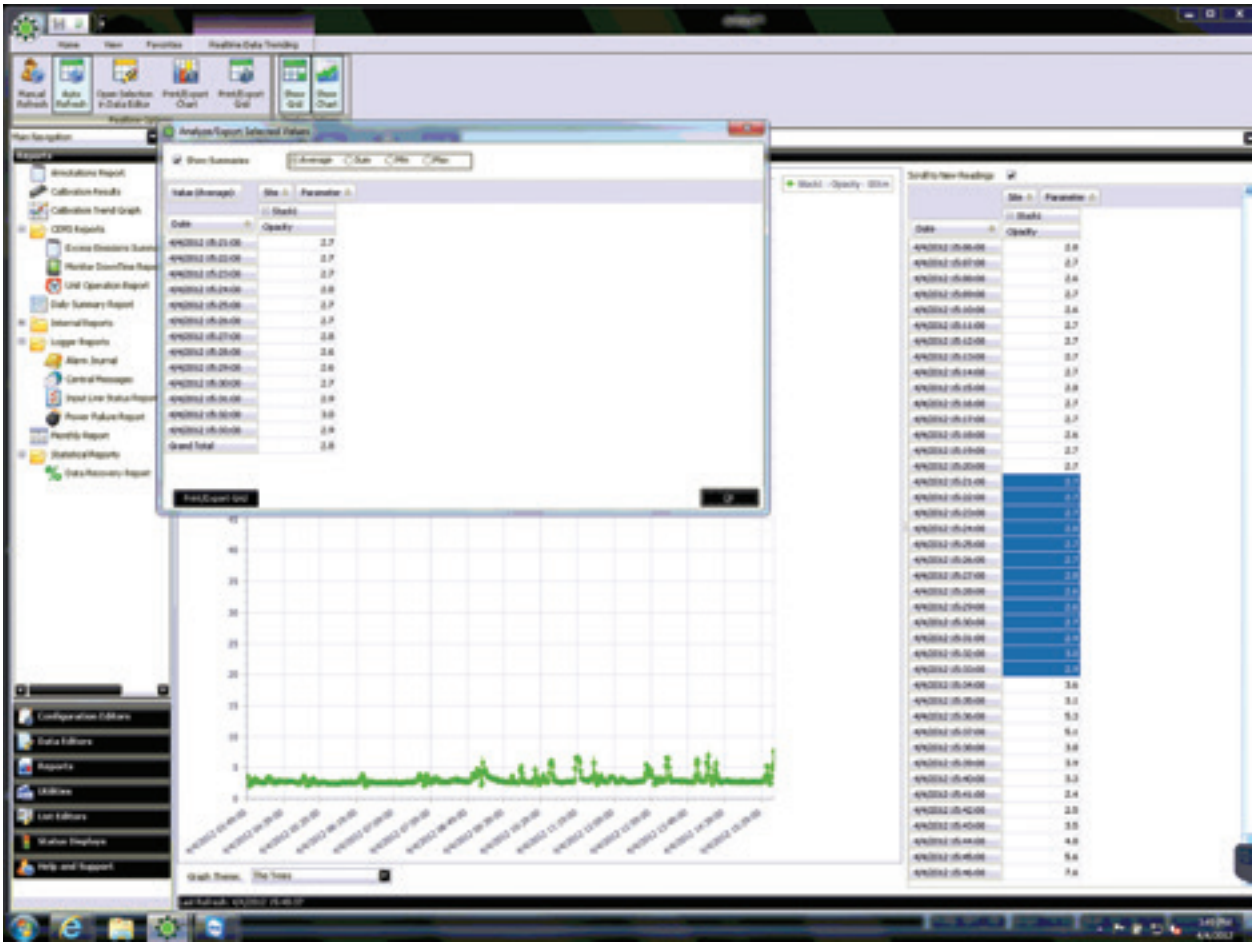
Adding Annotations

To add an annotation to the realitme graph, first make sure **Show Grid** is enabled, then right-click to select a range of data and add your comment.

Right-Click Data

Within the Real-Time Trend, the user may drag-select and right-click a list of data points. The user is then presented with two options:

- **Annotate Selected** - this will allow the user to add a text annotation to the data, which will appear in future use of the Data Editor, or can be recalled in the Annotations Report.
- **Analyze Selected** - this will bring up a box, allowing the user to see an average, or other statistics of only the selected data points. This is commonly used to average calibration or test "runs" of data. The results can also be printed or saved using the "Print/Export Grid" button.



Right-Click

Chapter 4

Reports

After data has been polled, either by a scheduled task (**Configuration Editor>Task Scheduler**) or manually (**Utilities>Manual Poll** or **Utilities >Manual Instrument Poll**) AirVision can be run by selecting a report from the **Reports** menu.

▶ **Note:** You can now add your logo to the top of Daily Summary and Monthly reports. Open the **Server directory** in the **Program directory** where AirVision is installed (typically C:\Program Files\Agilaire LLC\AirVision Server) and paste **logo.jpg** into the Server Directory (C:\Program Files\Agilaire LLC\AirVision Server\logo.jpg).

The **Reports** menu lists reports in alphabetical order with related reports grouped in folders.

Criteria Pane

Favorites

Basic Reports

- Daily Summary Report
- Daily Parameter Report
- Monthly Report

Calibration Reports

- Calibration Results
- Calibration Trend Graph

Statistical Reports

- Data Recovery Report
- Statistical Report

Configuration Reports

- Calibration Configuration Report
- Channel Configuration Report
- Parameter Configuration Report
- Scheduled Tasks Report
- Site Configuration Report

Chapter 4

Reports

Logger Reports

- Alarm Journal
- Central Messages
- Input Line Status Report
- Power Failure Report

Sample Data Reports

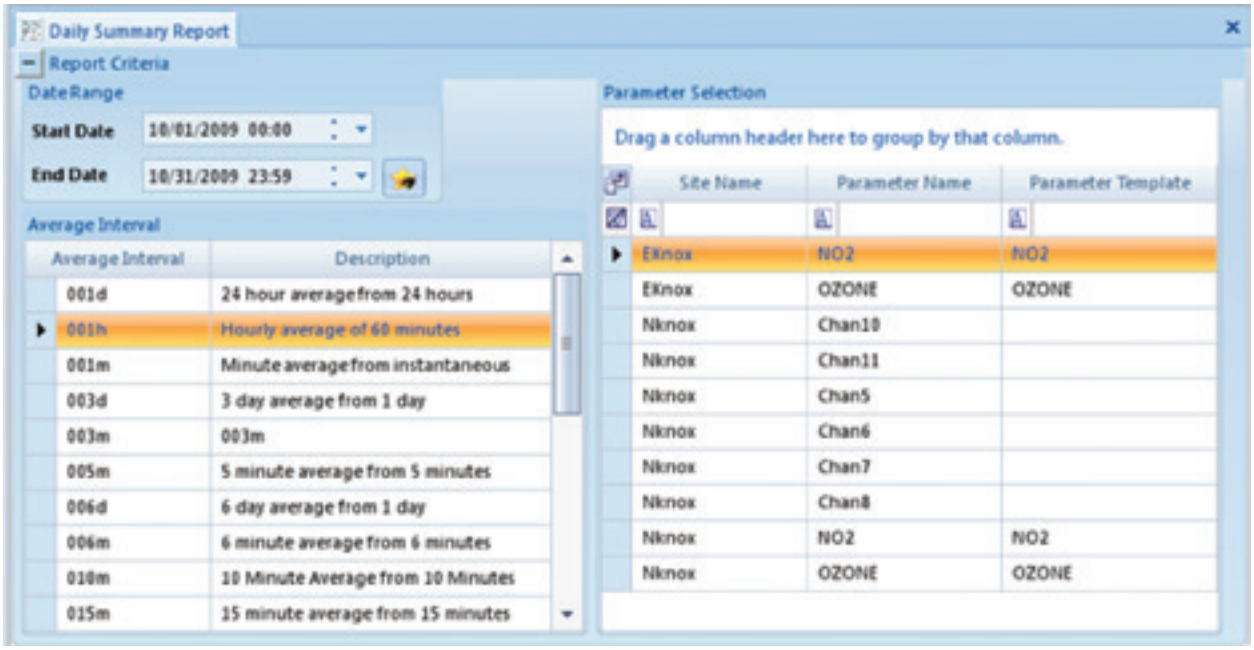
- Monthly Sample Data Report

Other Reports

- Annotations Report
- Audit Trail Report
- LogBook Report

Criteria Pane

All reports use a Criteria Pane to select a time range and list of pollutants for the report.



Report Criteria pane in Reports > Daily Summary Report

You can select the Date Range any of the following ways:

- Manually type in a month, day, year, and time.
- Click in a date field (the month, date, year, hour, minute) and click the small up or down arrow keys to raise or lower that field (month, day, year, hour, minute). (It isn't necessary to highlight the field, just put the cursor in it.)
- Use the bigger down arrow control to bring up a **Calendar.** You can click the arrows to change the month, or click the name of the month or year to bring up a list.
- Use the **Star** button to select from a pre-defined date range:

  Current Day
  Yesterday
  Current Week
  Last Week
  Current Month
  Last Month
  Current Quarter
  Last Quarter
  Current Year
  Number of days back from current day

Scroll to select an **Average Interval** (most reports only support one average interval at a time).

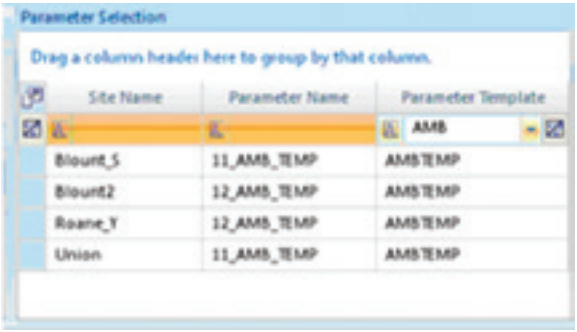
Click to select a site and parameter; use standard Windows Shift-Click and Control-Click conventions to select multiple parameters.

Filters

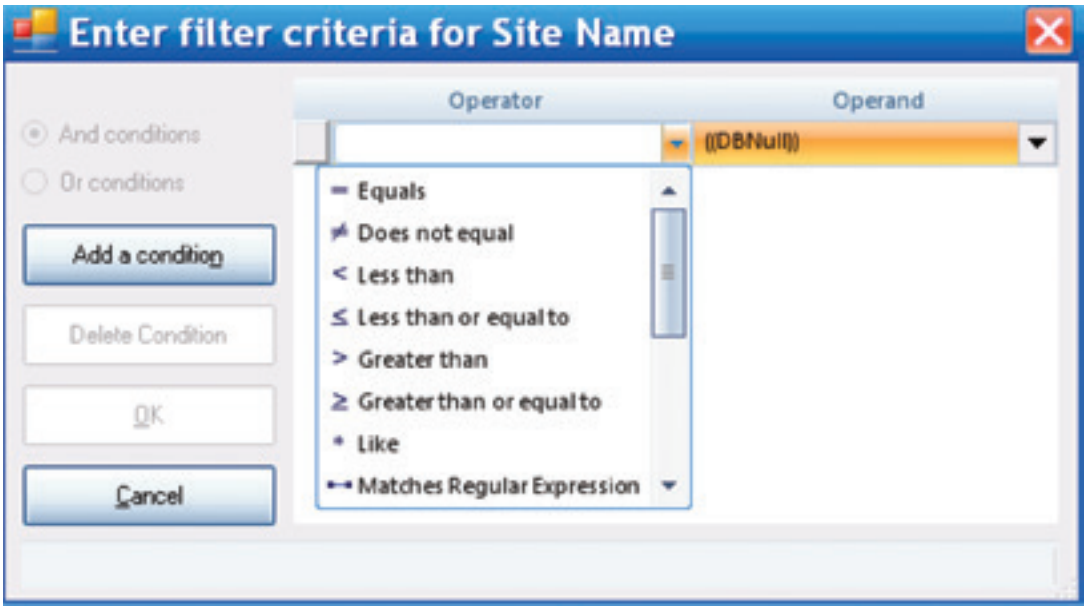
Filter fields are available in the top row of each column. Click in the row to use the filter to list a single site, parameter, or parameter template.

Click the down-arrow to the right of each filter field to select a particular entry in the column. Choices in the drop-down list will be Custom, Blanks, Non-blanks, plus each entry in the column (site name, parameter names, or parameter templates)

To write your own criteria, select **Custom** and .configure the screen that pops up.



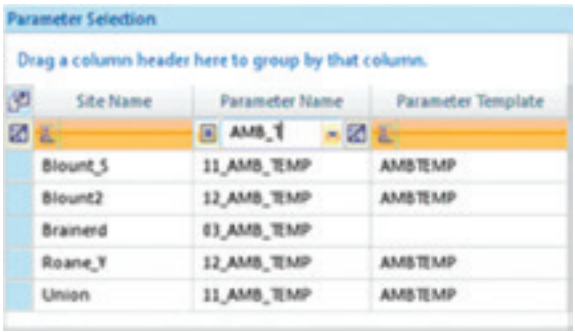
Filter fields in Reports criteria pane



Custom filter criteria screen

Click the box with the letter **A** in the left side of each filter field to change the filter field from the default of **Starts With** to one of the following:

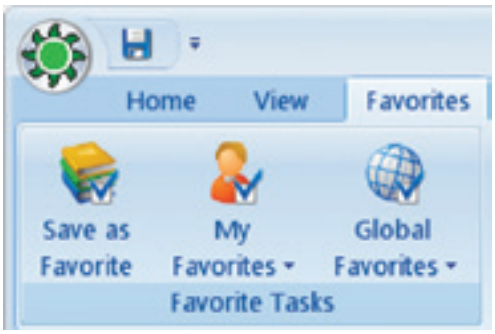
Equals
Does not equal
Less than
Less than or equal to
Greater than or equal to
Like
Matches Regular Expression
Starts with
Contains
Ends with
Does not start with
Does not contain
Does not end with
Does not match
Not like



Using a filter to determine which parameters don't have a template

Favorites

AirVision simplifies regular tasks with a list of user-defined **Favorites**, which function like Favorites in Internet browsers, such as Internet Explorer. You can save a selection of sites, parameters, average intervals, and date ranges for the **Average Data Editor** or any **Data Report**.



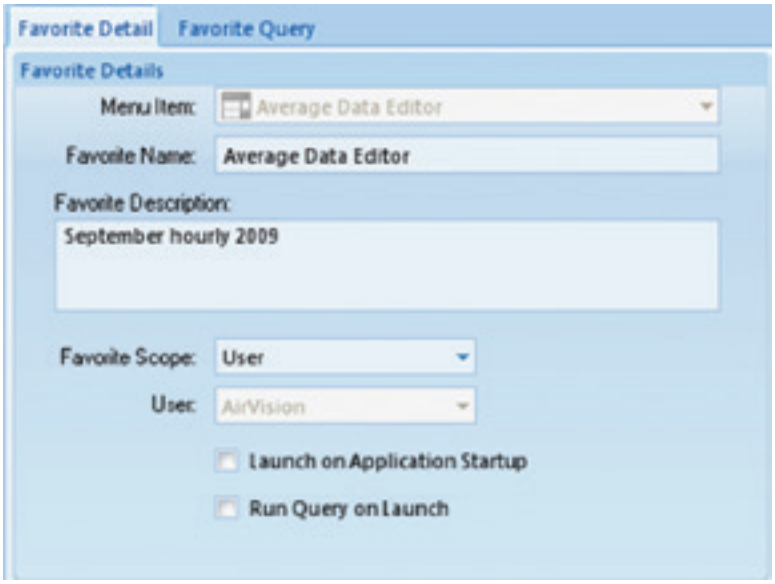
Favorites menu

Favorites can be saved as a global favorite for all users, or as a favorite for an individual user. To create a favorite, go into any data editor or report, complete a query, and select **Favorites** from the top menu. The ribbon bar will change to show the favorites menu.

Select **Save as Favorite** to bring up the **Add a Favorite** screen.

Give the favorite a name, a description (optional), and select **User** or **All Users** (global) and select from the following options:

- **Launch on Application Startup** to run the Favorite upon logging in to AirVision.
- **Run Query on Launch** to execute data retrieval when the Favorite is selected.



Add a Favorite screen

Basic Reports

Daily Summary Report

The Daily Summary Report is usually used for the daily summary of hourly data for all parameters at a site or sites, but it can also be used to report any time range or average interval. Statistics (average, maximum, minimum, and count) are at the bottom of each column.

Current Time: 3/9/2009 2:18:57 PM

Daily Summary Report

Site: SITEONE 9/1/2007 Interval 001h

Hour	AMBTEMI	OZONE	RAINFALL	RELHUM	RWDR	RWSP	SIGTHET/	SOLARRA	SWSP
00:00	13.5	78	0	99	126	4.4	9	0	4.4
01:00	13.6	78	0	99	122	4.5	10	0	4.5
02:00	13.5	83	0	98	136	4.5	8	0	4.5
03:00	13.8	88	0	100	143	3.9	8	0	3.9
04:00	13.8	87	0	100	125	3.6	10	0	3.6
05:00	13.5	86	0	100	110	3.2	10	0	3.2
06:00	13.4	83	0	100	110	3	9	36	3
07:00	14	79	0	100	103	2.7	13	193	2.7
08:00	14	78	0	98	101	2.9	12	259	2.9
09:00	14	73	0	98	102	2.2	16	157	2.2
10:00	14.9	68	0	94	110	2.5	18	345	2.5
11:00	15.5	64	0	91	121	2.2	22	357	2.2
Average	13.958	78.75		98.083	117.417	3.3	12.083	112.25	3.3
Max	15.5	88	0	100	143	4.5	22	357	4.5
Min	13.4	64	0	91	101	2.2	8	0	2.2
Count	12	12	12	12	12	12	12	12	12

Daily Summary Report

Daily Parameter Report

The Daily Parameter Report shows a single day summary for the entire monitoring network, grouping parameters together by the Parameter Template, but showing all sites sharing that parameter template.

Parameters that do not have a parameter template designated are not reported.

Daily Parameter Report

3/1/2006

Parameter	SiteName	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Summary		
																										Avg	Max	RD1
AMBTEMP	11_Rosine	-9.1	-9.7	-10.0	-11.0	-12.7	-11.9	-11.9	-11.9	-10.9	-9.9	-8.6	-7.4	-5.6	-4	-3	-2	-1.5	-2.1	-3.5	-4.3	-4.8	-5.3	-5.2	-5.5	-7.2	-1.5	24
	12_Blaine	-8.4	-8.7	-9.8	-10.4	-10.4	-10.7	-11.6	-10.3	-8.9	-7.9	-6.8	-5.8	-4.6	-4.6	-4.2	-4	-4.2	-5.3	-6	-6.2	-6.2	-6.6	-7.1	-7.5	-7.3	-4	24
	Blount	-11.1	-10.4	-11	-11.8	-12.9	-13.9	-14.6	-14.1	-13	-12.2	-10.7	-8.7	-6.7	-6.2	-5.5	-4.5	-4.4	-4.4	-3.8	-3.5	-3	-3	-3.4	-3.8	-8.2	-3	24
CO	11_Rosine		.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.5	.5	.5	.4	.5	.5	.5	.4	.4	.5	.9	23
NO	11_Rosine		1.8	.6	3	5.4	1.5	2.2	7.1	5.6	4.6	11.8	5	8	4.4	6.4	11.3	5.8	9.1	5.9	7.9	8.2	16.5	11.6	8.3	6.8	16.5	23
NO2	11_Rosine		5.3	7.3	19.2	21	4.2	4.9	8.7	5.1	4.2	7.8	4.4	4.2	4.3	5.6	8.8	8	13.3	8.9	14.8	21.5	23.5	13.3	21.2	10.6	23.6	23
NOX	11_Rosine		5.2	9.1	23.3	27.5	6.7	7.9	16.6	11.5	9.7	17.6	10.2	12.9	9.6	12.9	22.1	14.7	23.3	15.6	23.8	31.2	40.8	26	39.6	17.9	40.8	23
OZONE_PPB	12_Blaine		35.9	37.3	41.4	41.4	40.6	38.6	39.1	40.6	40.6	42.8	40.4	40.6	40.6	41.1	45.8	42	42.1	41.4	42	42	41.2	39.4	36.8	40.3	42.1	23
PM25LC	11_Rosine	5.6	5.3	4.3	7.4	11.6	5.5	1.4	5.4	4	5.2	4.8	4.1	2.8	3.2	3.8	3.4	5.2	6	6	5.5	4.3	6.9	7.6	8.6	5.4	11.6	24
	12_Blaine	7	10.2	5.8	2.8	2.6	2.9	6	4.3	6.7	7.2	3	3.3	4.7	3.4	3	3.2	3.2	3.2	5.4	4.5	3.4	3.3	5.2	7.1	4.5	10.2	24
RAINFALL	Blount	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
RELHUM	11_Rosine	56.8	60.2	67.5	71.4	75.1	69.7	64.8	62.9	57.4	48.6	46.3	42.3	38.6	30.8	29.2	27.7	26.5	28	30.8	43.8	44	44.9	45	49.1	48.6	75.1	24
	12_Blaine	68.8	72.1	68.2	65.1	62.8	58.1	60.6	57.6	49.7	44.3	38.5	34.9	33.9	36.2	35.8	32.8	40	45.9	46.8	61.8	62.7	66.7	61.1	65.6	51.7	88.8	24
	Blount	67.9	55	58.3	66.8	58	54.4	62.2	61.7	51.2	45.6	46.3	39.7	38.5	36.6	36.7	37	37	38.9	38.3	36	34.8	36.8	35	37	46.8	67.9	24
SO2	11_Rosine		4.4	5.9	16.7	16.3	3.6	3.4	3.8	3.1	4.2	2.3	3.8	7.2	4.3	5.5	1.3	1.5	1.8	3.3	4.5	4.6	5.7	4.4	4.7	4.7	16.7	23
WSR	11_Rosine	289.8	277	214.8	159.1	228.8	303.4	301.1	290.6	249	270.1	211.1	289	279.6	261.1	227.3	289.2	214.4	217.8	195	160.7	158.5	158.2	170.6	152.6	228.2	303.4	24
	12_Blaine	256.4	262.7	259.9	232.6	236	227.4	250.6	243.5	236.4	265	272.3	271.2	248.1	234.6	231.8	235.4	232.5	240	230.5	229.2	216.2	216.8	211.2	207.6	244	265.4	24
	Blount	196.4	270.4	237.1	226.6	189.1	189	152.6	121.6	125.8	140.6	84.5	110.9	170.1	165.2	161.4	164.7	151.5	144.2	140.4	147.9	195.9	161.2	131.4	144.2	165.9	270.4	24
WSP	11_Rosine	1.8	1.9	1.4	1	1.6	2.5	2.3	2.1	2.6	2	1.5	2.4	2.2	2.3	2.4	2.3	2.4	1.8	2.7	2.2	1.5	1.5	1.9	1.4	2	2.7	24
	12_Blaine	1.9	2.1	1.9	2.2	2.1	2.6	1.4	1.7	2.6	3	2.2	2.1	2.3	4.1	2.7	4.1	2.5	3	2.3	2.8	2.4	1.8	1.3	1.2	2.8	4.1	24
	Blount	1.8	4.3	2.5	2.1	1.8	2.1	1.8	1.9	1.8	1.8	1.7	1.1	1.4	2	2.3	1.9	1.8	1.8	1.1	.7	.9	1	1.6	1.6	1.8	4.3	24

Daily Parameter Report

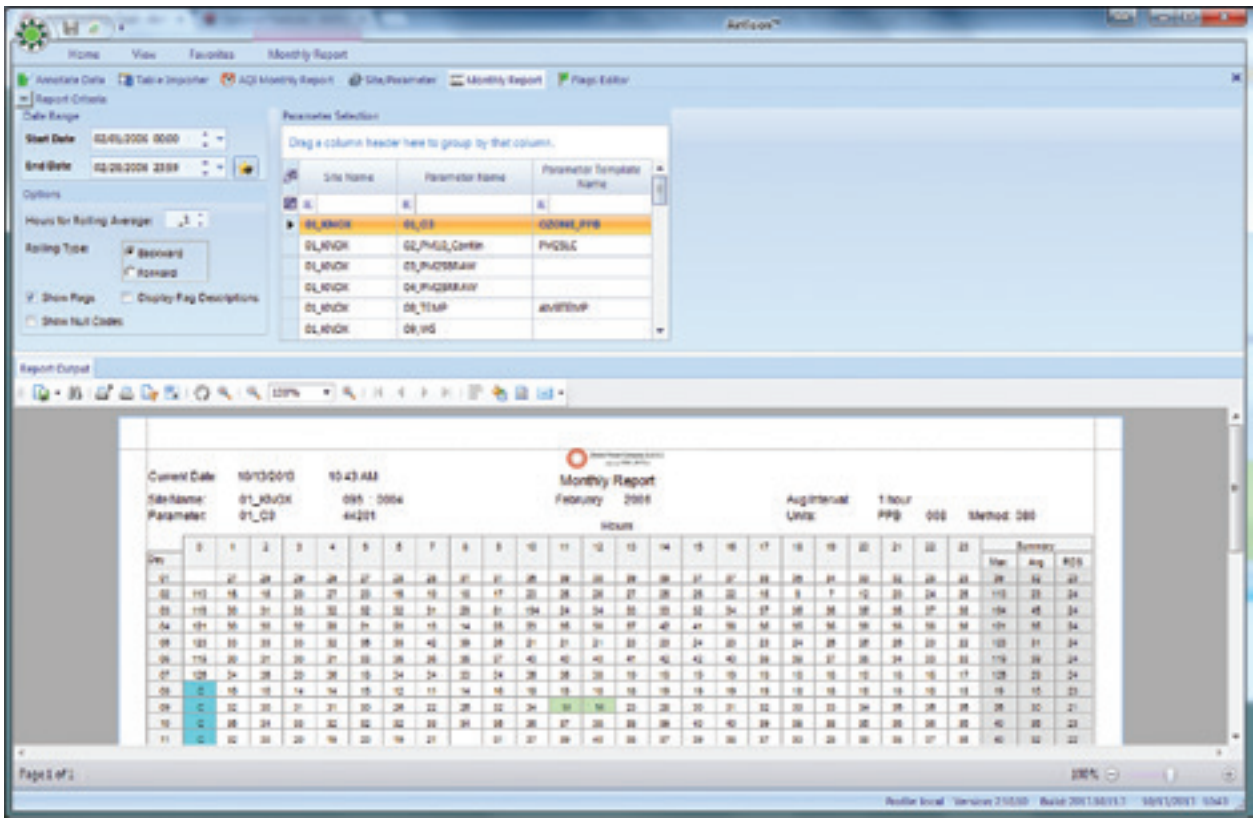
Monthly Report

Monthly reports provide a matrix view of a single parameter, showing values for the entire month. Invalid or flagged data is shown with a color background or font change defining the data condition. Statistics are provided for each row (day) and column (hour).

To run a **Monthly Report:**

1. Select **Reports > Monthly Report.**
2. Select a **Start** and **End** date
3. Select number of **Hours for Rolling Average**
4. Select a **Rolling Type** (**Backward or Forward**)
5. Select the **Parameters** that will be displayed in the report
6. If you want the **Flags Legend** to be shown in the report, click to select **Flags**. (You may have to scroll down to see the Flags option.
7. Click the **Generate Report** button on the Ribbon.

▶ **Note:** If **Totalize in Reports** was selected in **Configuration Editors > Parameter Settings**, Monthly Reports will show a total of data rather than an average.
If **Minimum in Reports** was this option was selected in **Configuration Editors > Parameter Settings**, Monthly Reports will show a minimum of data rather than an average or a total. Totalize in Reports and Minimum in Reports are most commonly used for rainfall.



Monthly Report with Parameter Code

If **AQS Null Code**s have been set for invalidated data, they are displayed in the **Monthly Repor**t. If Site Codes, and/or Parameter codes have been selected in the Configuration Menu they will be included in the Header. Options are provided to show null codes or flags when an invalid hour is shown on the report. These options are also available in the Scheduled Task (options).

Calibration Reports

Calibration Results

Calibration reports show the calibration event and results for any zero/span, precision check, or other calibration program.

Current Date : 3/9/2009
Current Time : 3:47 PM

Calibration Report

Site: SITEONE
Source: Logger01
Date: 02-Jul-2008

Parameter	Sequence	Phase	Start Time	End Time	Value	Expected Value	% Error
test1	TESTCAL	PHASE1	00:00:00	00:01:00	1.123	1	12.35

Calibration Report

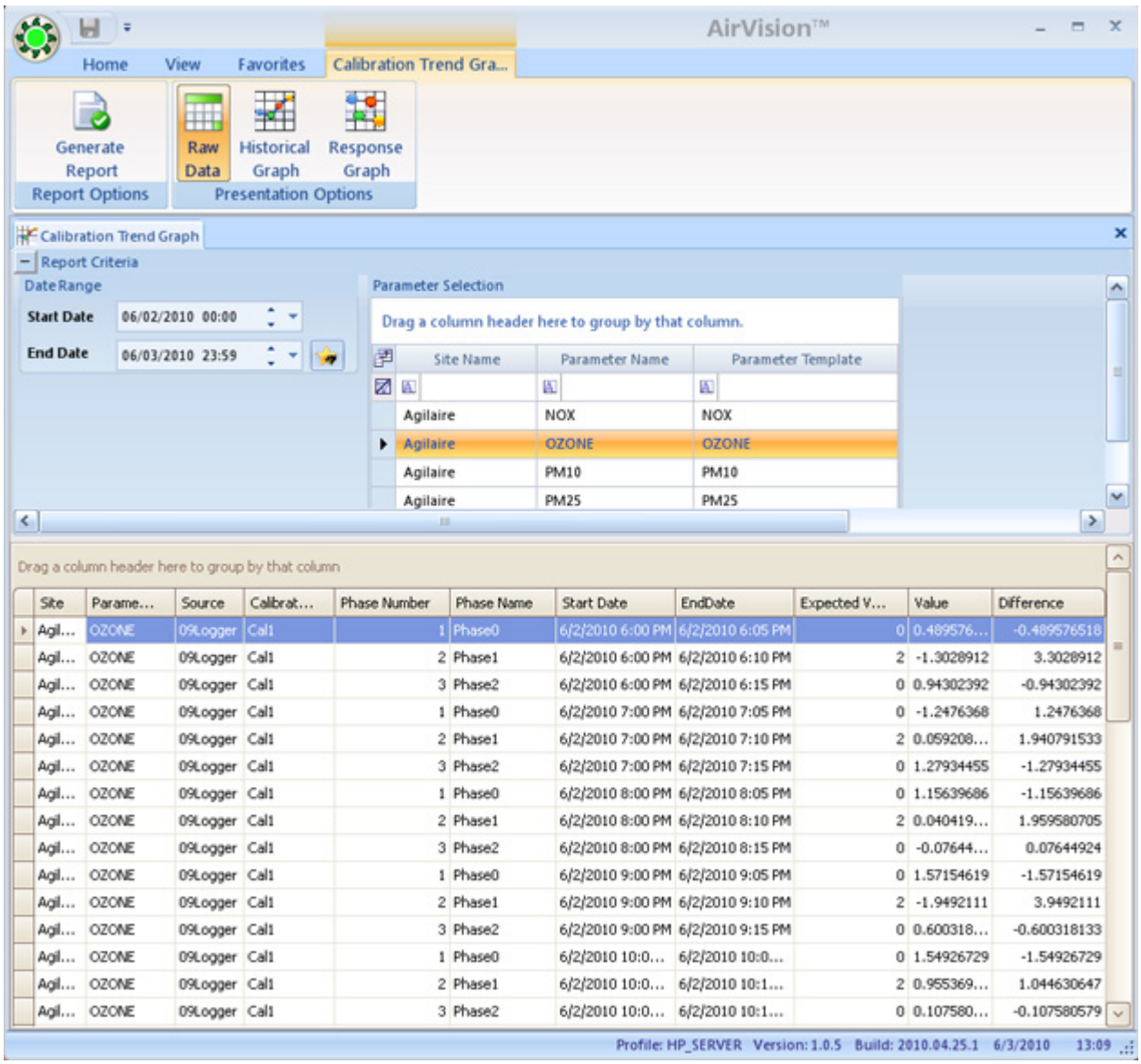
The percentage of error is calculated as follows:

- If the **Cal Span** has not been set in the **Parameter Editor**, zero error is shown as an absolute difference, while span precision errors are shown as a % of the expected value.
- If the Cal Span has been set in the **Parameter Editor** the errors are all shown as a % of the **Cal Span** value.

Calibration Trend Graph

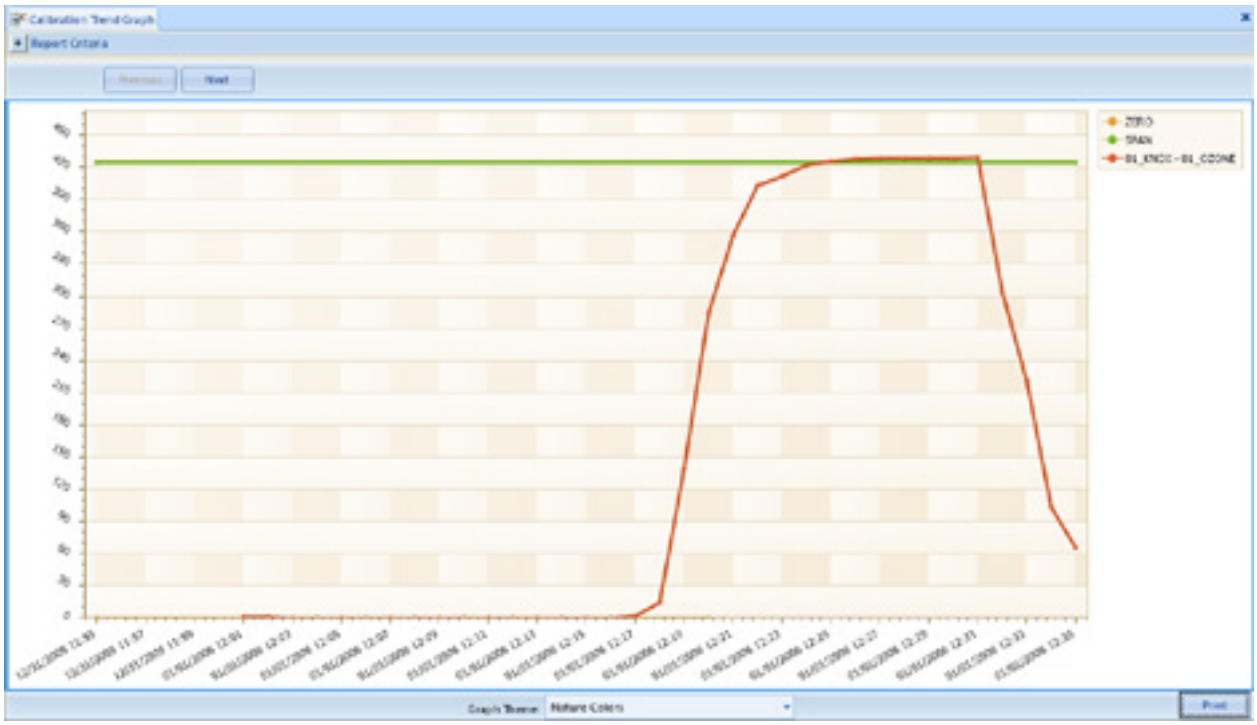
Calibration Trend Graphs provide a long-term view of calibration zero/span results over a user-defined period of time (month, quarter, etc). Select a Start and End Date and a Parameter. Click the Generate Report icon on the ribbon.

If you select **Raw Data Graph** from the ribbon at the top of the screen, you can view calibration data in a text table.



Historical Calibration Trend Graph

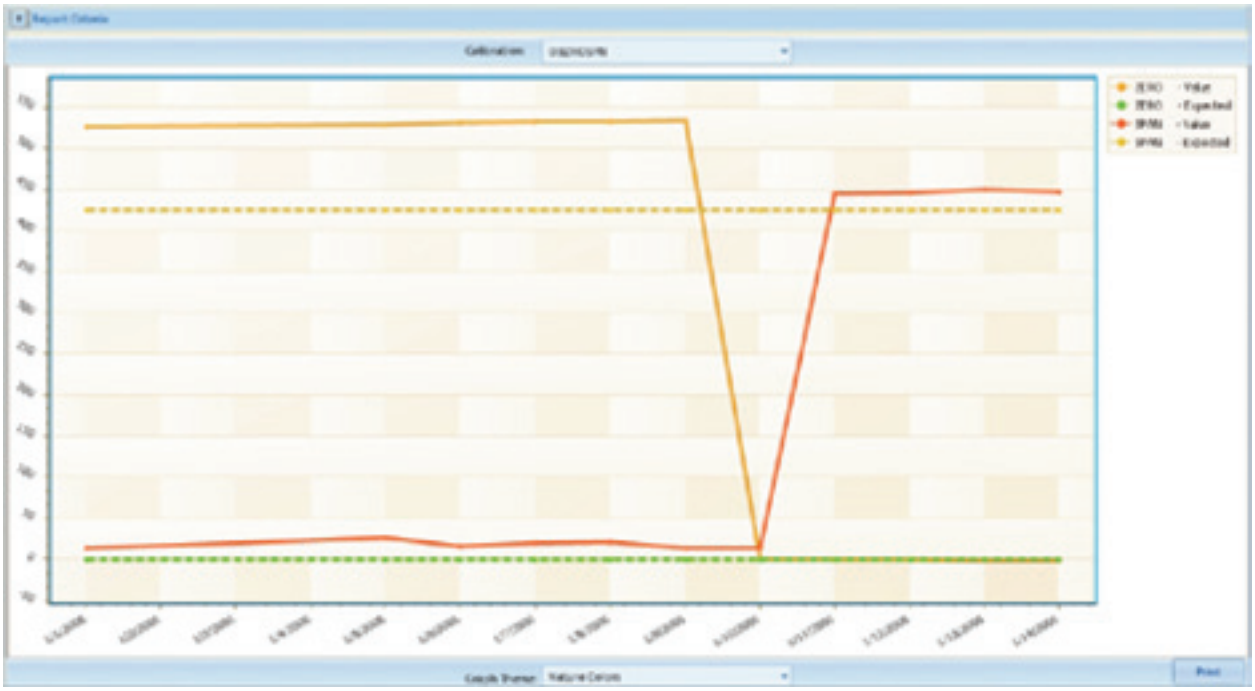
If you select Historical Graph you can view data in a graph. Each color represents a different phase, as shown in the legend. You can change the color scheme by selecting a Graph Scheme from the drop down list at the bottom of the screen.



Historical Calibration Trend Graph

If you select **Response Graph** from the ribbon at the top of the screen, you can review fine-resolution data during each calibration cycle to see instrument response. Each cal can be cycled through using the **Forward**/**Back** button. You can change the color scheme by selecting a Graph Scheme from the drop down list at the bottom of the screen.

The graph has a filter at the top to define the specific calibration program to be graphed, in the event that a parameter has more than one calibration program associated with it.



Calibration Trend Response Graph

Statistical Reports

Data Recovery Report

The Data Recovery report provides a summary, by site, of each parameter and its rate of successful data capture, which allows you to summarize the reliability of the monitoring network. The Percent Recovery is a calculated by the number of valid averages divided by the number of possible averages in the reporting period.

Current Time: 8/12/2009 4:24:19 PM Average Interval: 001h

Data Recovery Report

Site Name: SITEONE

Parameter Name	Valid Average Scans	Valid Calibration Scans	Total Valid Scans	Total Scans In Period	Percent Recovery	
OZONE	1833	0	1833	8784	20.87	
Total:	1833	0	1833	8784	20.87	%

Data Recovery Report

Current Time: 9:00 AM

Network Data Recovery Report

01-Feb-2006 - 28-Feb-2006

Site		AMBTEMP	BARPRESS	CO	NO	NO2	NOX	OZONE_PPB	PM25	PM25LC	RAINFALL	RELHUM
01_KNOX	87.72 %	98.36 %	93.38 %					93.30 %	84.08 %	83.18 %	96.47 %	96.47 %
BLOUNT2	99.11 %	99.11 %	99.11 %								99.11 %	99.11 %
BLOUNT3	97.17 %	100.00 %	99.40 %	77.23 %	91.07 %	91.07 %	91.07 %			88.24 %	88.39 %	
CUMBERLAND	96.88 %	96.88 %	96.88 %								96.88 %	96.88 %
OAKRIDGE	80.39 %	100.00 %	50.00 %	94.94 %	94.94 %	94.94 %	94.94 %		100.00 %	100.00 %	100.00 %	100.00 %
ROANE	79.70 %	99.55 %	99.40 %					93.30 %			99.40 %	99.40 %
AVERAGE	85.46 %	99.27 %	85.75 %	86.09 %	93.01 %	93.01 %	93.01 %	93.30 %	92.04 %	90.48 %	96.70 %	98.49 %

Current Time: 9:00 AM

Network Data Recovery Report

01-Feb-2006 - 28-Feb-2006

Site	SIGTHETA	SO2	SOLARRAD	SWDR	SWSP	VWDR	VWSP
01_KNOX	96.63 %	0.00 %	96.47 %	88.54 %	88.54 %	88.54 %	88.54 %
BLOUNT2	99.26 %		99.11 %	99.11 %	99.11 %	99.11 %	99.11 %
BLOUNT3			99.40 %				
CUMBERLAND	97.06 %		96.88 %	96.88 %	96.88 %	96.88 %	96.88 %
OAKRIDGE	100.00 %	94.94 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
ROANE	99.70 %		99.40 %	99.26 %	99.26 %	99.26 %	99.26 %
AVERAGE	98.66 %	91.67 %	98.66 %	96.75 %	96.75 %	96.75 %	96.75 %

Statistical Report

Statistical reports provide statistics for any defined time range, as well as a comparison against previous years of the same parameter and date/time range, with calculated ratios. This report is similar to the Statistical functions in the Data Editor and used to identify data that lies outside the norm.

Current Time: 5/7/2009 5:07:27 PM

Statistical Report

Site: SITEONE **Parameter:** OZONE **Interval:** 001h

Statistics	Minimum	Maximum	Average	Mean	Count	Valid
Period	0	0	0	0	0	0
History	43	77	58.5833	51.6155	72	72
Ratio	0	0	0	0	0%	0%

Statistical Report

Configuration Reports

Configuration reports consist of the following:

- Calibration Configuration Report
- Channel Configuration Report
- Parameter Configuration Report
- Scheduled Tasks Reports
- Calibration Report
- Site Configuration Report

Calibration Configuration Report

To run a Calibration **Configuration Report** (**Reports > Configuration folder > Calibration Configuration Report**), select a site or sites and click the **Generate Report icon** on the Ribbon.

Calibration Configuration Report

Agilaire

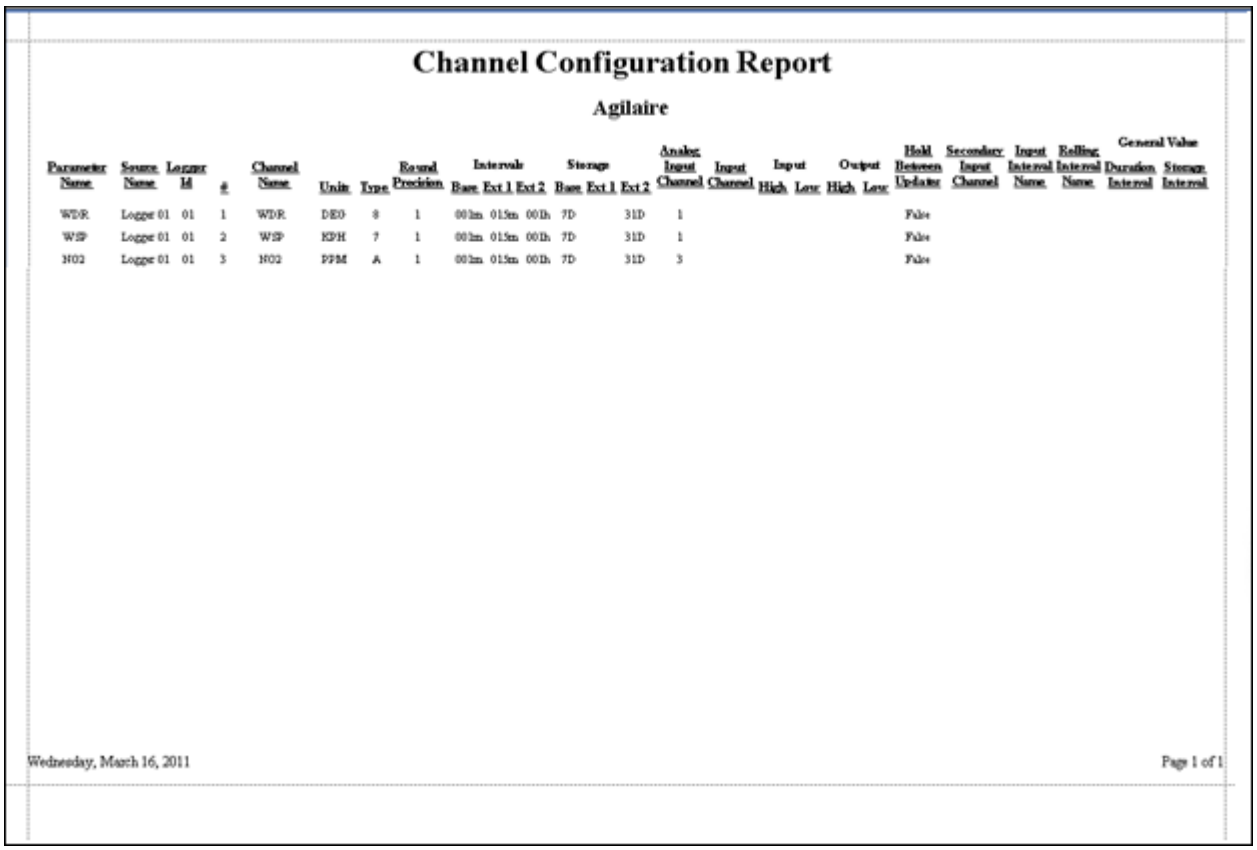
Calibration Name	Start Time	Repeat Interval	Recovery Time	Phase Name	Phase Number	Duration	Response Time	Status Pattern	Affected Channel
Auto 1	03/10/11 00:00	001D	005M	Zero	1	005M	001M	1	NO2

Wednesday, March 16, 2011 Page 1 of 1

Calibration Configuration Report (Reports > Configuration folder > Calibration Configuration Report)

Channel Configuration Report

To run a Channel Configuration Report (**Reports > Configuration folder > Channel Configuration Report**), select a **Site** or Sites and a **Parameter Name** or Parameter Names. Click the **Generate Report icon** on the Ribbon.



Channel Configuration Report

Agilaire

Parameter Name	Source Name	Logger Id	#	Channel Name	Unit	Type	Round Precision	Intervals Base	Intervals Ext 1	Intervals Ext 2	Storage Base	Storage Ext 1	Storage Ext 2	Analog Input Channel	Input Channel	Input High	Input Low	Output High	Output Low	Hold Between Updates	Secondary Input Channel	Input Interval Name	Rolling Interval Name	General Value Duration Interval	General Value Storage Interval
WDR	Logger 01	01	1	WDR	DEG	8	1	00:1m	01:5m	00:1h	7D		31D	1						False					
WSP	Logger 01	01	2	WSP	KPH	7	1	00:1m	01:5m	00:1h	7D		31D	1						False					
NO2	Logger 01	01	3	NO2	PPM	A	1	00:1m	01:5m	00:1h	7D		31D	3						False					

Wednesday, March 16, 2011 Page 1 of 1

Channel Configuration Report (Reports > Configuration folder > Channel Configuration Report)

Parameter Configuration Report

To run a **Parameter Configuration Report**, (**Reports > Configuration folder > Parameter Configuration Report**), select a **Site** or Sites and a **Parameter Name** or Parameters Names. Click the **Generate Report icon** on the Ribbon.

Parameter Configuration Report

Agilaire

Name	Description	Template	Reported Digits	Precision	Units	Graph Minimum	Graph Maximum	Instrument Detection Limit	Totalize In Reports	Minimum In Reports	Report in AirNow	Enabled	POC	AQS Codes Method	AQS Codes Units	AQS Codes Parameter
WDR	Wind Direction, High Level	WDR_HIGH	4	1	DEG	0	360		False	False	True	True			007	61102
WSP	Wind Speed, High Level	WSP_HIGH	4	1	KPH	0	100		False	False	True	True				61101
NO2	Nitric Oxide	NO2	4	3	PPM	0	500		False	False	True	True	1		007	42602
NO	Nitrous Oxide	NO	4	3	PPM	0	500		False	False	True	True	1		007	42601
NOX	Oxides of Nitrogen	NOX	4	3	PPM	0	500		False	False	True	True	1		007	42603

Thursday, March 17, 2011 Page 1 of 1

Parameter Configuration Report, (Reports > Configuration folder > Parameter Configuration Report)

Scheduled Tasks Report

To run a **Scheduled Tasks Report**, open **Reports > Configuration folder > Scheduled Tasks Report** and the report will be displayed automatically. No query is necessary.

Scheduled Task Report

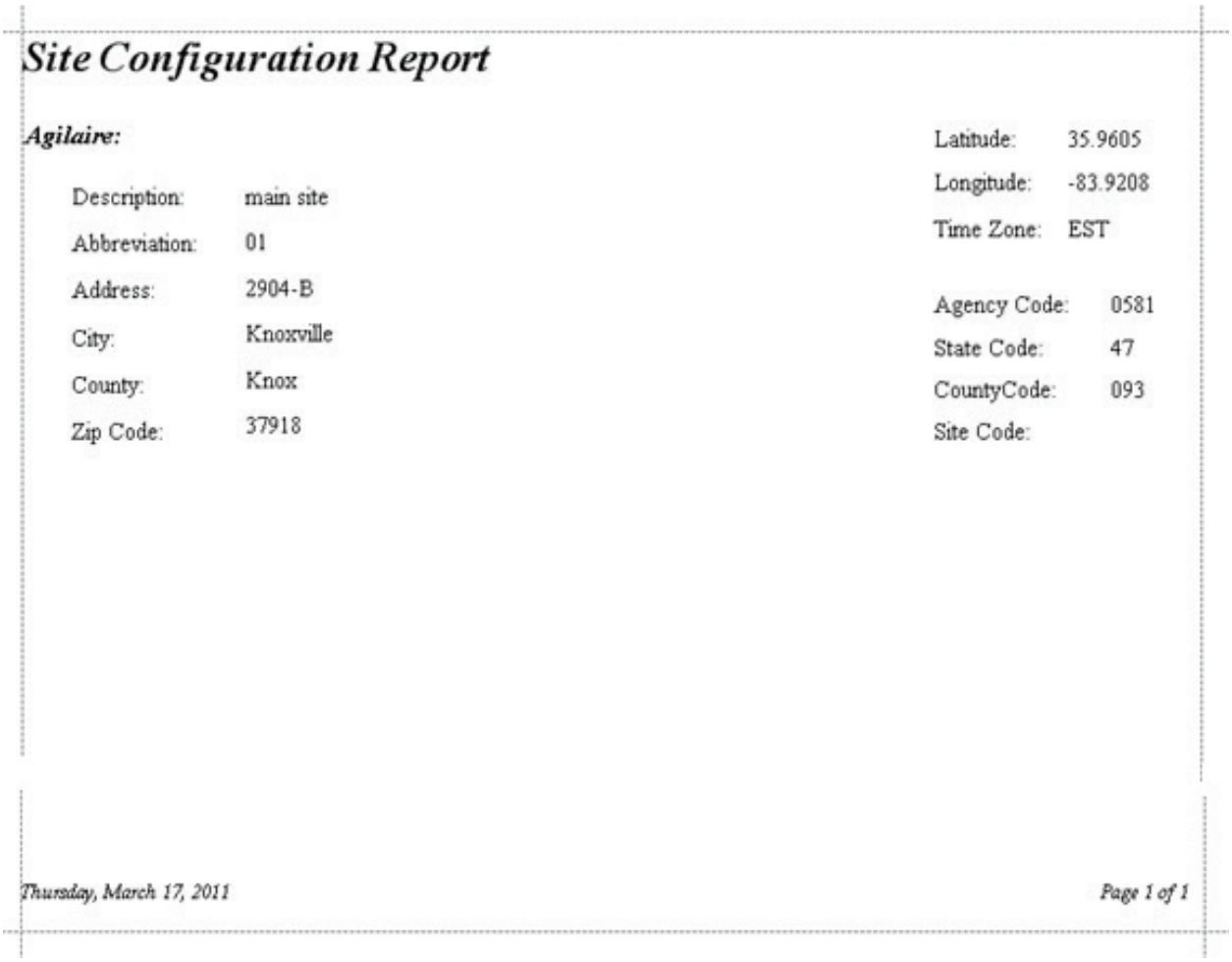
Task Name	Description	Enabled	Start Time	Repeat Interval
Scheduled Report Task	Generates Report at assigned time for output	True	3/2/2011 11:54:02 AM	1D
Logger Poll Task	Data Logger Polling Task	True	3/3/2011 12:34:32 PM	1D

Thursday, March 17, 2011 *Page 1 of 1*

Scheduled Task Report (Reports > Configuration folder > Scheduled Tasks Report)

Site Configuration Report

To run a **Site Configuration Report**, (**Reports > Configuration folder > Site Configuration Report**), select a **Site** or Sites and click the **Generate Report icon** on the Ribbon.



Site Configuration Report

Agilaire:

Description:	main site	Latitude:	35.9605
Abbreviation:	01	Longitude:	-83.9208
Address:	2904-B	Time Zone:	EST
City:	Knoxville	Agency Code:	0581
County:	Knox	State Code:	47
Zip Code:	37918	CountyCode:	093
		Site Code:	

Thursday, March 17, 2011 *Page 1 of 1*

Site Configuration Report, (Reports > Configuration folder > Site Configuration Report)

Logger Reports

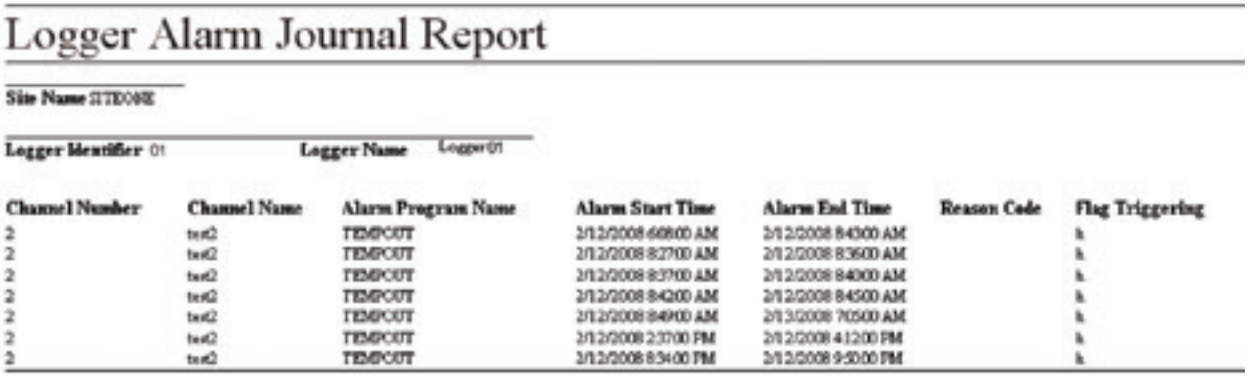
The **Logger Reports** folder in the **Reports** menu contains the following reports:

- **Alarm Journal**
- **Central Messages**
- **Input Line Status Report**
- **Power Failure Report**

Alarm Journal

The **Alarm Journal** displays the Site Name, Channel Number, Channel Name, Alarm Program Name, Alarm Start/End Time, Reason Code, and Triggering Flag.

To run an **Alarm Journal**, select **Reports** > **Logger Reports** > **Alarm Journal**. In the **Report Criteria** screen, select a **Start/End Date** and a **Site/ Source Name**. Click the **Generate Report** icon. A Logger Alarm Journal Report will be displayed in the bottom section of the screen.



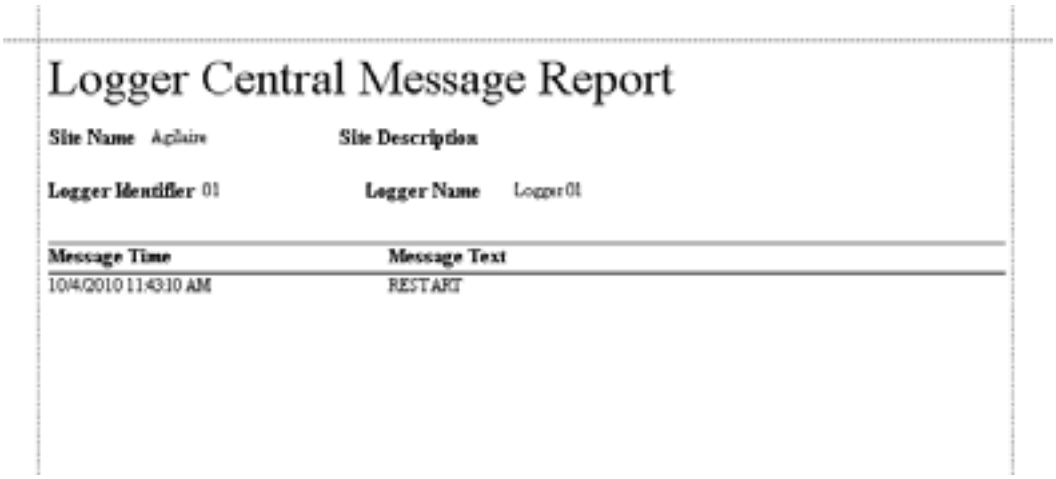
Logger Alarm Journal Report
Site Name SITEONE
Logger Identifier 01 Logger Name Logger01

Channel Number	Channel Name	Alarm Program Name	Alarm Start Time	Alarm End Time	Reason Code	Flag Triggering
2	test2	TEMPOUT	2/12/2008 6:08:00 AM	2/12/2008 8:43:00 AM		h
2	test2	TEMPOUT	2/12/2008 8:27:00 AM	2/12/2008 8:36:00 AM		h
2	test2	TEMPOUT	2/12/2008 8:37:00 AM	2/12/2008 8:40:00 AM		h
2	test2	TEMPOUT	2/12/2008 8:42:00 AM	2/12/2008 8:45:00 AM		h
2	test2	TEMPOUT	2/12/2008 8:49:00 AM	2/13/2008 7:05:00 AM		h
2	test2	TEMPOUT	2/12/2008 2:37:00 PM	2/12/2008 4:12:00 PM		h
2	test2	TEMPOUT	2/12/2008 8:34:00 PM	2/12/2008 9:50:00 PM		h

Logger Alarm Journal Report

Central Messages

To run the **Central Messages Report**, **Poll Central Messages** must be selected in the **Task Scheduler** in one of the polling tasks. If you're polling manually, select **Central Message** as a **Data Type**. To run the report, select **Reports>Logger Reports>Central Messages**, select a date range and Source then click **Generate Report**.



Logger Central Message Report

Site Name Agilaire Site Description

Logger Identifier 01 Logger Name Logger01

Message Time	Message Text
10/4/2010 11:43:10 AM	RESTART

Logger Central Message Report

Input Line Status Report

The **Input Line Status Report** displays Site and Logger Name, Logger ID, Line Number, Line Name, Line State, Time of Change, and Line Description.

To run an **Input Line Status Report**, select **Reports** > **Logger Reports** > **Input Line Status Report**. In the **Report Criteria** screen, select a **Start/End Date** and a **Site/ Source Name**. Click the **Generate Report** icon. An **Input Line Status Report** will be displayed in the bottom section of the screen.Each site/logger is shown in a separate page.

Input Line Report

Site Name SITEONE

Logger Name Logger01 Logger Identifier 01

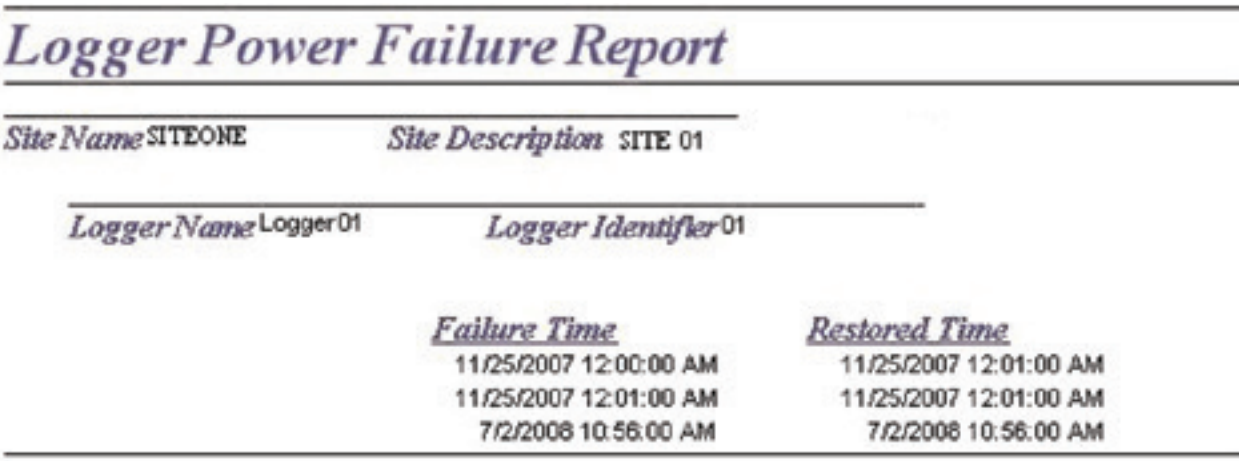
Line Number	Line Name	Line State	Time Of Change	Line Description
4	OutPut Line4	☑	2/5/2009 1:38:45 PM	
4	OutPut Line4	☐	2/5/2009 1:38:46 PM	
37	OutPut Line37	☑	5/5/2009 12:00:02 AM	
37	OutPut Line37	☐	5/5/2009 12:05:01 AM	
37	OutPut Line37	☑	5/6/2009 12:00:02 AM	
2	DIG002	☑	5/6/2009 12:00:02 AM	
2	DIG002	☐	5/6/2009 12:05:01 AM	
37	OutPut Line37	☐	5/6/2009 12:05:01 AM	
37	OutPut Line37	☑	5/7/2009 12:00:02 AM	
2	DIG002	☑	5/7/2009 12:00:02 AM	
2	DIG002	☐	5/7/2009 12:05:01 AM	
37	OutPut Line37	☐	5/7/2009 12:05:01 AM	
37	OutPut Line37	☑	5/8/2009 12:00:02 AM	
2	DIG002	☑	5/8/2009 12:00:02 AM	
2	DIG002	☐	5/8/2009 12:05:01 AM	
37	OutPut Line37	☐	5/8/2009 12:05:01 AM	

Input Line Report

Power Failure Report

The **Power Failure Report** displays Site and Logger Name, Logger ID, Failure Time and Restored Time.

To run a **Power Failure Report**, select **Reports** > **Logger Reports** > **Power Failure Report**. In the **Report Criteria** screen, select a **Start/End Date** and a **Site/ Source Name**. Click the **Generate Report** icon. A **Power Failure Report** will be displayed in the bottom section of the screen.Each site/logger is shown in a separate page.



Logger Power Failure Report

Site Name SITEONE Site Description SITE 01

Logger Name Logger 01 Logger Identifier 01

Failure Time	Restored Time
11/25/2007 12:00:00 AM	11/25/2007 12:01:00 AM
11/25/2007 12:01:00 AM	11/25/2007 12:01:00 AM
7/2/2008 10:56:00 AM	7/2/2008 10:56:00 AM

Power Failure Report

Sample Data Reports

Monthly Sample Data Report

The Monthly Sample Data Report shows the value of the non-continuous values for each day (showing a blank for days where there is no sample).

Data in this report is only shown for parameters with Sample or Composite type, and which have a certain Parameter Template (either "PM25" or "PM10") defined.

Current Time: 8:13 PM

Monthly Sample Report

PM10

July 2011

	01_KNOX	BLOUNT	BLOUNT2	BLOUNT3	Summary		
Day					Average	Max	Count
1	14.1	14.1	14.1	14.1	14.1	14.1	4
4	12.3	12.3	12.3	12.3	12.3	12.3	4
7	19.4	19.4	19.4	19.4	19.4	19.4	4
10	27.2	27.2	27.2	27.2	27.2	27.2	4
13	21.1	21.1	21.1	21.1	21.1	21.1	4
16	18.3	18.3	18.3	18.3	18.3	18.3	4
17	17.7	17.7	17.7	17.7	17.7	17.7	4
19	11.9	11.9	11.9	11.9	11.9	11.9	4
22	14.4	14.4	14.4	14.4	14.4	14.4	4
25	14.6	14.6	14.6	14.6	14.6	14.6	4
28	13.5	13.5	13.5	13.5	13.5	13.5	4
Max	27.2	27.2	27.2	27.2	27.2	27.2	27.2
Average	16.8	16.8	16.8	16.8	16.8	16.8	16.8
Count	11	11	11	11	44	44	44

Monthly Sample Report for PM 2.5 from the Reports Menu

Other Reports

Annotations Report

The Annotations report may be run on any list of parameters, for any time range. It provides a summary of all annotations it finds.

To see a report of annotations made in the **Average Data Editor**, open the **Reports** menu and select **Annotations Report**. Make the usual query selections of **Start/End Date**, **Average Interval**, and **Parameter(s)**. Click the **Generate Report** icon on the ribbon.

Current Date : 9/28/2010
Current Time : 9:10 PM

Annotation Report

01-Mar-2006 00:00 to 06-Mar-2006 00:00

Site: Roane_Y
Parameter: O2_SO2

Category	User Name	Annotation Date	Date	Annotation
Instrument Failure	Admin	28-Sep-10 21:10	01-Mar-06 20:00	Lightning strike
Maintenance	New User	28-Sep-10 21:09	01-Mar-06 05:00	Replaced pump seal
Maintenance	New User	28-Sep-10 21:09	01-Mar-06 06:00	Replaced pump seal
QA Note	Fred5	28-Sep-10 21:09	01-Mar-06 09:00	Quarterly Audit
QA Note	Fred5	28-Sep-10 21:09	01-Mar-06 10:00	Quarterly Audit
QA Note	Fred5	28-Sep-10 21:09	01-Mar-06 11:00	Quarterly Audit

Annotations Report

Audit Trail Report

The **Audit Trail Report** provides a record of modified data.

Current Date : 10/19/2010
Current Time : 10:11 AM

Data Audit Trail

Site: Agilaire 01-Sep-2010 - 19-Oct-2010
Parameter: NOX Interval: 001h

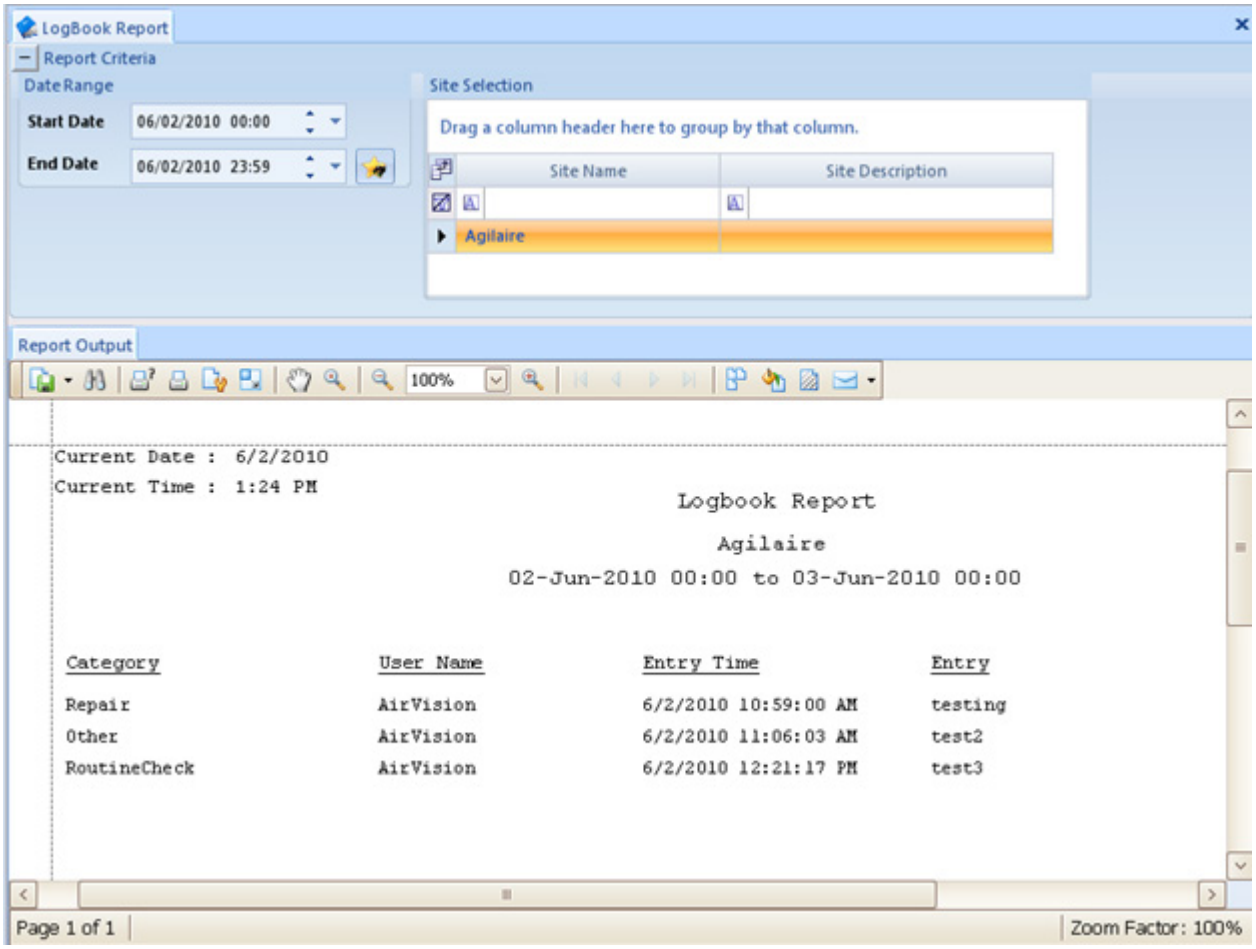
TimeStamp	Raw Value	Final Value	Flags	Time Modified	Modified By
10/04/2010 18:00	3	3		10/08/2010 11:03	AirVision
10/04/2010 19:00	3	3		10/08/2010 11:03	AirVision
10/04/2010 20:00	3	3		10/08/2010 11:03	AirVision
10/04/2010 21:00	3	3		10/08/2010 11:03	AirVision
10/04/2010 22:00	4	4		10/08/2010 11:03	AirVision
10/04/2010 23:00	4	4		10/08/2010 11:03	AirVision
10/05/2010 00:00	4	4		10/08/2010 11:03	AirVision
10/05/2010 01:00	4	4		10/08/2010 11:03	AirVision
10/05/2010 02:00	4	4		10/08/2010 11:03	AirVision
10/05/2010 03:00	4	4		10/08/2010 11:03	AirVision

Audit Trail Report

LogBook Report

The **LogBook Report** generates reports of logbook entries that were made in the **LogBook Entries Editor**. To query a LogBook Report select LogBook Report from the **Reports** menu. Select **Start** and **End Dates** and a **Site Name** from the top section of the screen and click the **Generate Report icon** in the upper left section of the screen.

The logbook report will be displayed in the lower section of the screen.



LogBook Report

Chapter 5

Data Editors

Air Vision provides the following Data Editors:

- Average Data Editor
- Calculation Data Editor
- Logbook Entry Editor

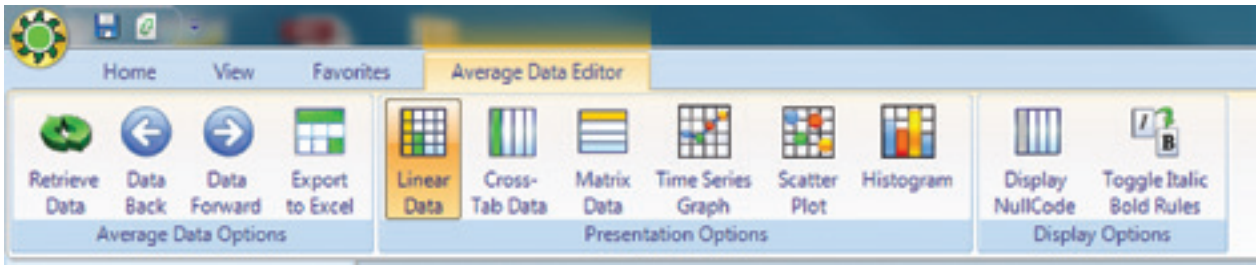
Average Data Editor

The AirVision **Average Data Editor** (**Data Editors** > **Average Data Editor**) combines multiple functions into a single tool:

- Editing details of data points
- Batch editing
- Comparison of current data with historical minimum, maximum, and mean
- Analyze/Exported

In addition, you can toggle between the following six formats by clicking buttons in the ribbon at the top of the screen:

- Linear Table (the default display)
- Cross Tab Table
- Matrix Table
- Time Series Graph (can be used for single or multiple parameters, but the historical comparison tools in this X-Y scatter plot only appear in single-parameter queries)
- Scatter Plot graph (requires queries of two or more parameters)
- Histogram (for single parameter queries)



Ribbon bar to toggle between Data Editor displays; arrows to scroll backward and forward through data

Control-Keys can also be helpful for navigating when using the editor:

- **CTRL-N** for Next (Data Forward)
- **CTRL-P** for Previous (Data Back)
- **CTRL-L** to Reload data set.

To edit data in the **Average Data Editor** (**Data Editors** > **Average Data Editor**), enter

- **Start** and **End Date** (type dates or use arrow keys to select)
- **Average Interval** (for example, 001h Hourly average of 60 minutes)
- **Parameter Selection** (for example, **Site Name** NKNOX, **Parameter Name** NO2, **Parameter Template** NO2)
- Click the **Retrieve Data** button in the ribbon at the top of the screen

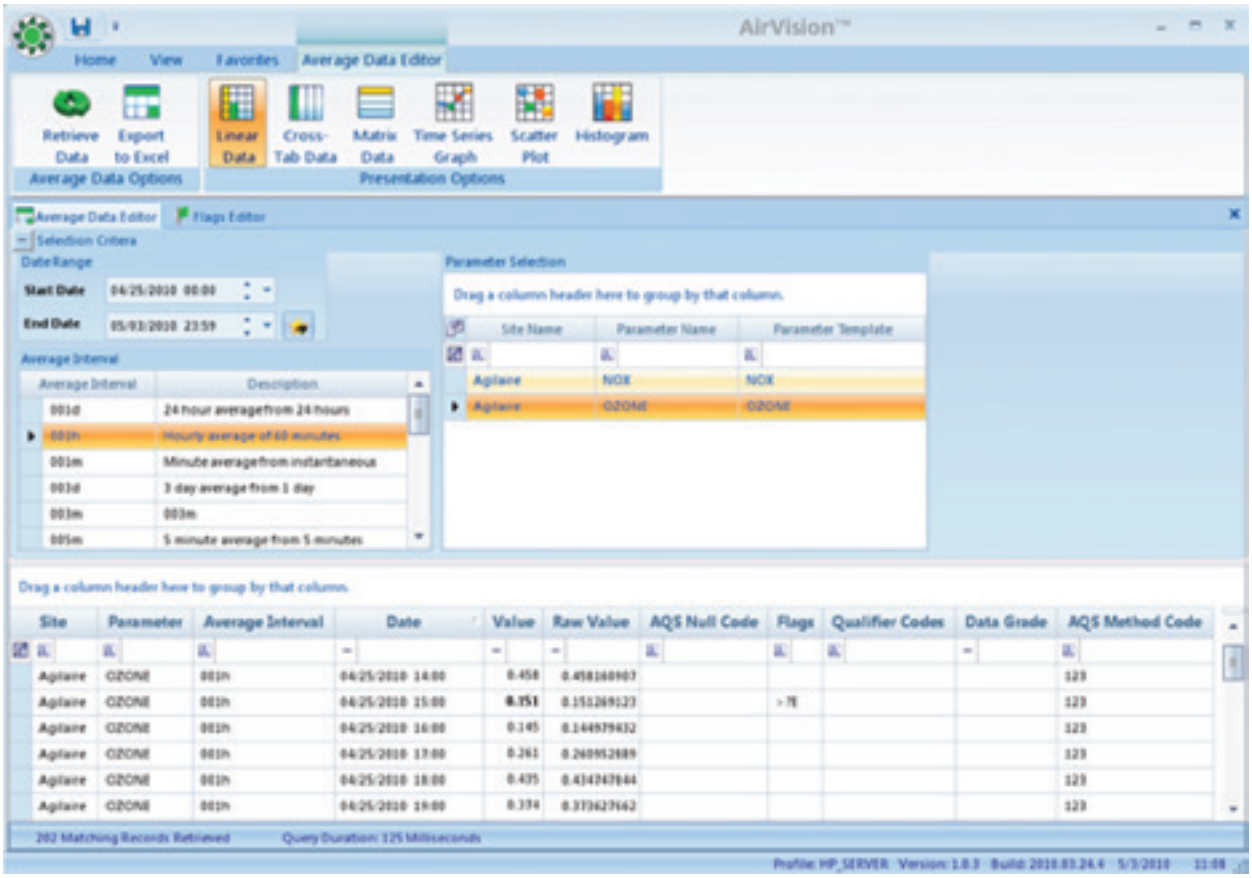
The Average Data Editor will open the **Linear Data Editor** by default. Click buttons in the ribbon to change formats. .Click the **Data Back** or **Data Forward** button to jump scroll to either the previous or following data set. For example, if your initial query was for a week of data, the scroll buttons will take you backward or forward to a week of data.

Linear Data Editor

The Linear Data Editor allows access to all major database fields, displaying :

- Site Name, Parameter Name, Parameter Template Name
- Average Interval
- Start and End Dates
- Value (Hover the mouse pointer over data values to see any annotations.)
- Raw Value (can't be edited)
- Set AQS Code (not used in AirVision/CEM)
- Data Logger Flags
- Qualifier Codes
- AirVision Data Grade (used by ADVP).

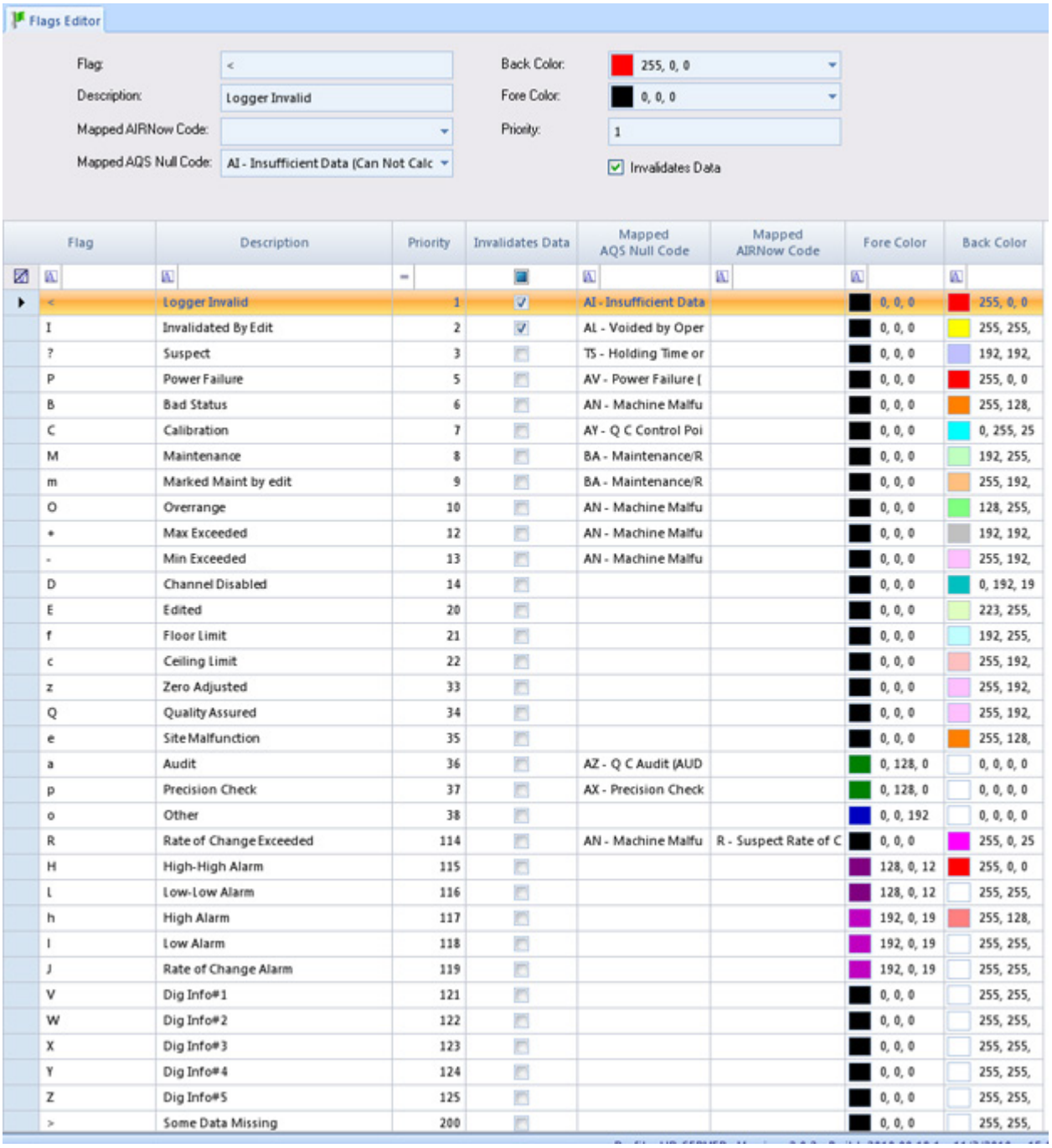
To edit data values, double-click in the Value cell or right-click to bring up a pop-up menu.



Average Data Editor from Data Editors menu

Cell Color Codes in Flags Editor

All data is color-coded based on the flag-to-color mappings listed in the **Flags Editor**. AirVision is loaded with some default mappings, but you can customize this for your system. The color mappings are global to all users for consistency.



Flag	Description	Priority	Invalidates Data	Mapped AQS Null Code	Mapped AIRNow Code	Fore Color	Back Color
<	Logger Invalid	1	✓	AI - Insufficient Data		0, 0, 0	255, 0, 0
I	Invalidated By Edit	2	✓	AL - Voided by Oper		0, 0, 0	255, 255,
?	Suspect	3		TS - Holding Time or		0, 0, 0	192, 192,
P	Power Failure	5		AV - Power Failure (		0, 0, 0	255, 0, 0
B	Bad Status	6		AN - Machine Malfu		0, 0, 0	255, 128,
C	Calibration	7		AY - Q C Control Poi		0, 0, 0	0, 255, 25
M	Maintenance	8		BA - Maintenance/R		0, 0, 0	192, 255,
m	Marked Maint by edit	9		BA - Maintenance/R		0, 0, 0	255, 192,
O	Overrange	10		AN - Machine Malfu		0, 0, 0	128, 255,
*	Max Exceeded	12		AN - Machine Malfu		0, 0, 0	192, 192,
-	Min Exceeded	13		AN - Machine Malfu		0, 0, 0	255, 192,
D	Channel Disabled	14				0, 0, 0	0, 192, 19
E	Edited	20				0, 0, 0	223, 255,
f	Floor Limit	21				0, 0, 0	192, 255,
c	Ceiling Limit	22				0, 0, 0	255, 192,
z	Zero Adjusted	33				0, 0, 0	255, 192,
Q	Quality Assured	34				0, 0, 0	255, 192,
e	Site Malfunction	35				0, 0, 0	255, 128,
a	Audit	36		AZ - Q C Audit (AUD		0, 128, 0	0, 0, 0, 0
p	Precision Check	37		AX - Precision Check		0, 128, 0	0, 0, 0, 0
o	Other	38				0, 0, 192	0, 0, 0, 0
R	Rate of Change Exceeded	114		AN - Machine Malfu	R - Suspect Rate of C	0, 0, 0	255, 0, 25
H	High-High Alarm	115				128, 0, 12	255, 0, 0
L	Low-Low Alarm	116				128, 0, 12	255, 255,
h	High Alarm	117				192, 0, 19	255, 128,
l	Low Alarm	118				192, 0, 19	255, 255,
J	Rate of Change Alarm	119				192, 0, 19	255, 255,
V	Dig Info#1	121				0, 0, 0	255, 255,
W	Dig Info#2	122				0, 0, 0	255, 255,
X	Dig Info#3	123				0, 0, 0	255, 255,
Y	Dig Info#4	124				0, 0, 0	255, 255,
Z	Dig Info#5	125				0, 0, 0	255, 255,
>	Some Data Missing	200				0, 0, 0	255, 255,

Flags Editor in Configuration Editors

In addition, AirVision uses two font changes to represent data in the data editor:

- **Bold** values represent data that does not match the raw database (edited values)
- Italics values represent data that has an annotation. Hover the mouse pointer over data values to see details of annotations.

Right-Click Options

Each of the three non-graphical data editors support select, shift-select, CTRL-select, click-drag selection capabilities, and a right-click menu options. Right-click a data point in the **Value** column to bring up the following menu:

- **Restore from Raw** copies value from the raw database to the final **Value** and resets flags
- **Set to Minimum Detectable Limit** sets data value to MDL configured in Parameter Editor
- **Set AQS Code** brings up a pick list to apply new AQS null codes
- **Set Qualifier Code** brings up a selection box for AQS qualifier (exception) codes
- **View All Flags** (for single data points only) shows all data logger and system flags and allows you to change or clear flags. Multiple flags can be displayed in each cell.
- **Set Annotations** brings up an annotation screen so you can add an annotation
- Before you can use the **Batch Editor**, two or more data **Values** must be selected. In the **Batch Edit** screen. **Enabled** must be selected for each option to activate that option. **Batch Edit** provides the following functions:

  Update Values

  Scale two or more selected data values as **mX+b** (Original Value times a Multiplier plus a Constant Value), for example, divide by 10 and clear the suspect flag.

  Set Annotations

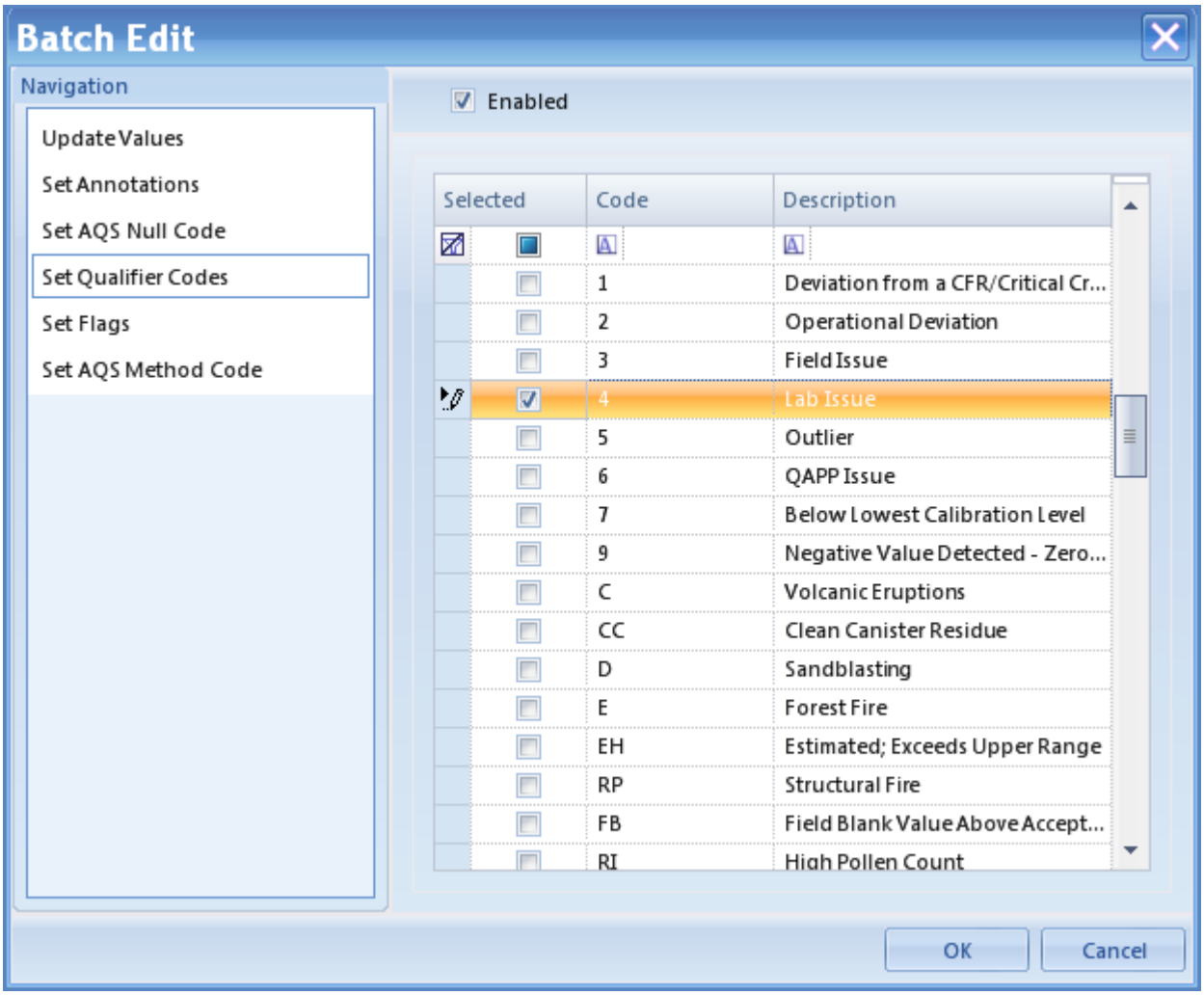
  Set AQS Null Code

  Set Qualifier Codes

  Set Flags

  If you select **Set Flags**, you have the option to **Update Children Flags**.

  Set AQS Method Code



Batch Edit with Set Qualifier Codes Enabled

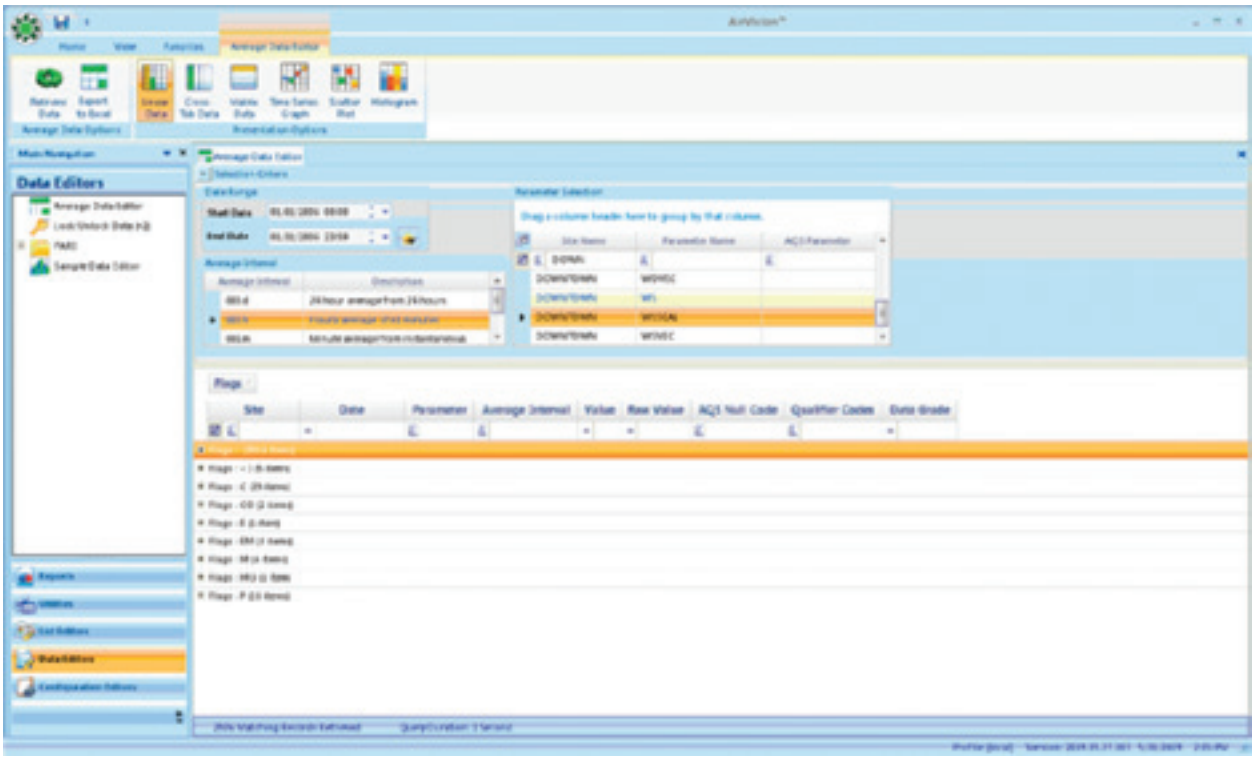
- **Show Children** brings up another instance of the Data Editor with the selected parameters and time range for the **Child** parameter(s) of the selected parameter. This function requires that **Parent-Child Parameter** relationships are configured in **Configuration Editors** > **Site/Parameter**.
- **Drill Down Interval** allows you to drill down to minute averages from hourly averages.
- **Export to Excel** exports the selected data range to an Excel document, including color, font, and layout details. This right-click option is different from the Export to Excel button in the ribbon at the top of the screen because the button on the ribbon exports the entire data set in the data editor and the right-click option exports only selected data.

Click a column heading to sort data by a different heading, for example to group data according to flags. Default is to sort by date.

Click-hold-drag columns to change the order of columns or to drag a column heading to the **Drag a column header here to group by that column** area.

Cross-Tab Data Editor

The **Cross-Tab Data Editor** shows Parameters as columns and sequences rows by date/time in ascending order and provides the same right-click menu as the Linear Data Editor.

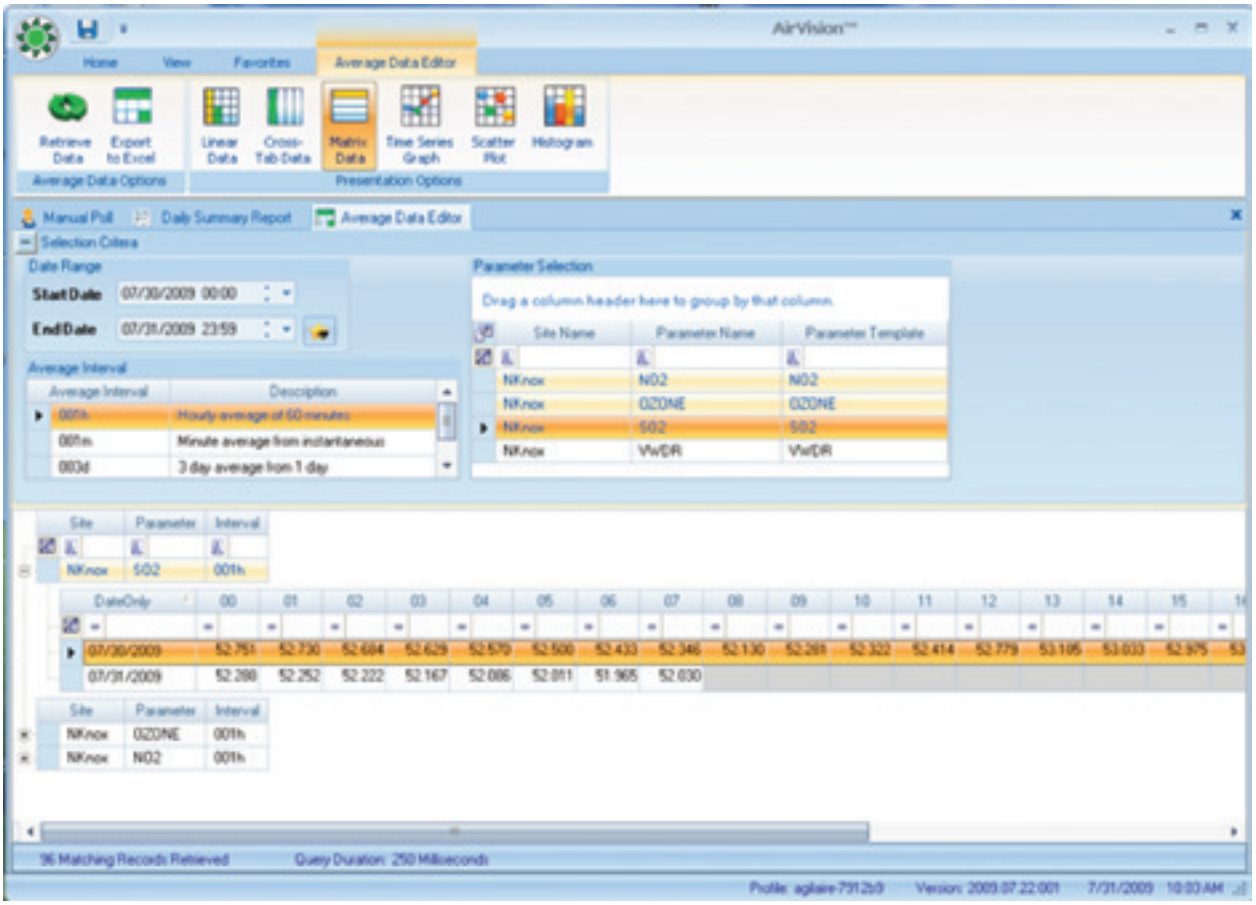


Cross-Tab Data Editor from Data Editors menu

▶ **Note:** You can sort data by any column by clicking on a column header. You can find all flagged data easily. Each group can then be expanded and individually sorted. When you change editor modes, the groupings are not kept.
Also, you can click-hold-and-drag columns to change the order, and click-drag columns to the **Drag a column header here to group** area to group data.
If you do this accidentally or change your mind, you can drag it back.

Matrix Data Editor

The Matrix Data Editor presents data in a format similar to the monthly report. If you select multiple parameters, they are grouped with a plus (+) symbol for expansion.

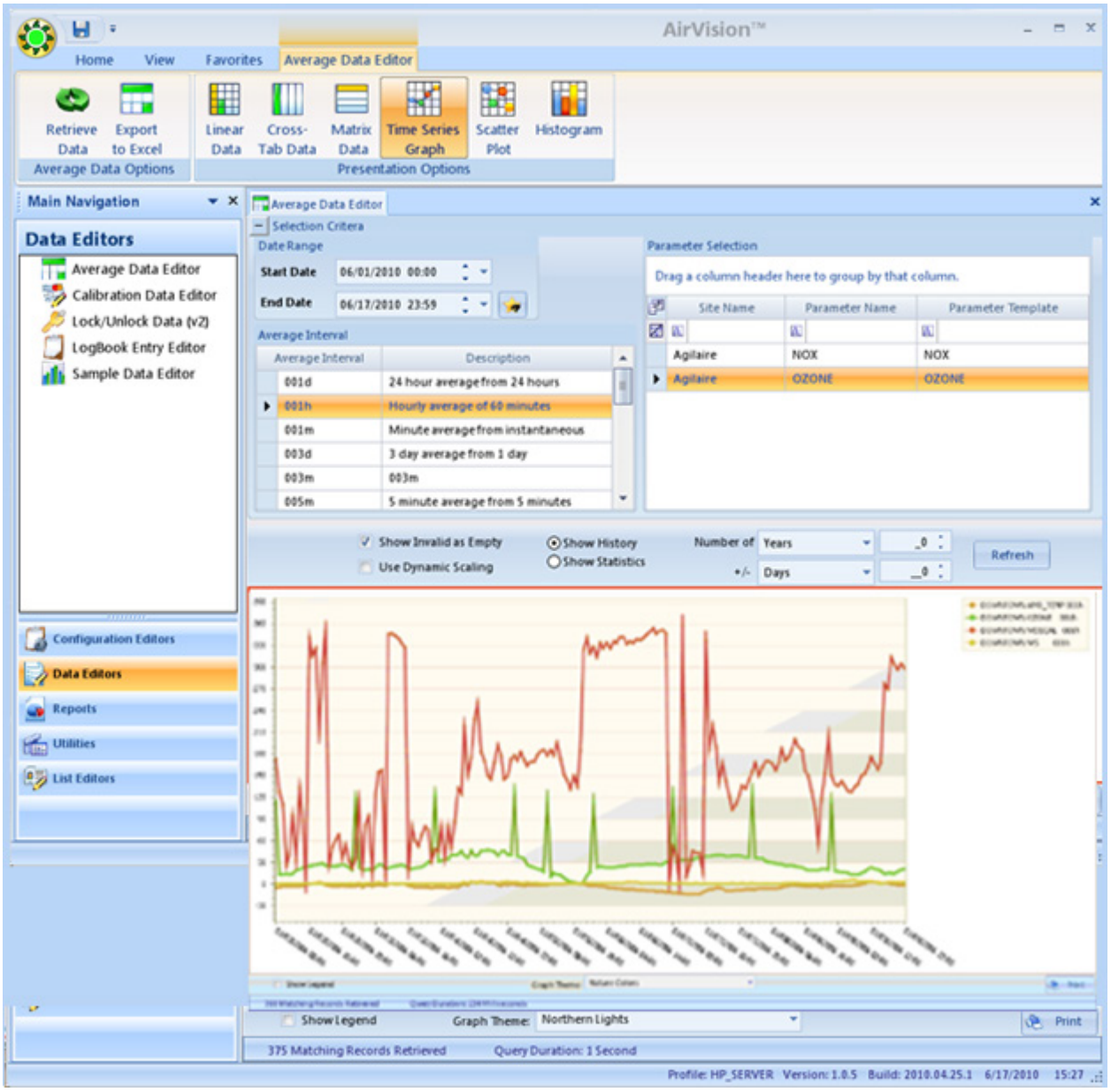


Matrix Data Editor from Data Editors menu

Time Series Graph

You can generate the Time Series Graph in two modes, for one or more parameters. In multi-parameter mode, you can group different parameters together for any time period. With the tools at the bottom or the screen, you can change the color scheme, remove or restore the legend, and print the graph.

The minus (-) sign in the upper left corner of the screen minimizes the selection criteria to make more room for the graph.



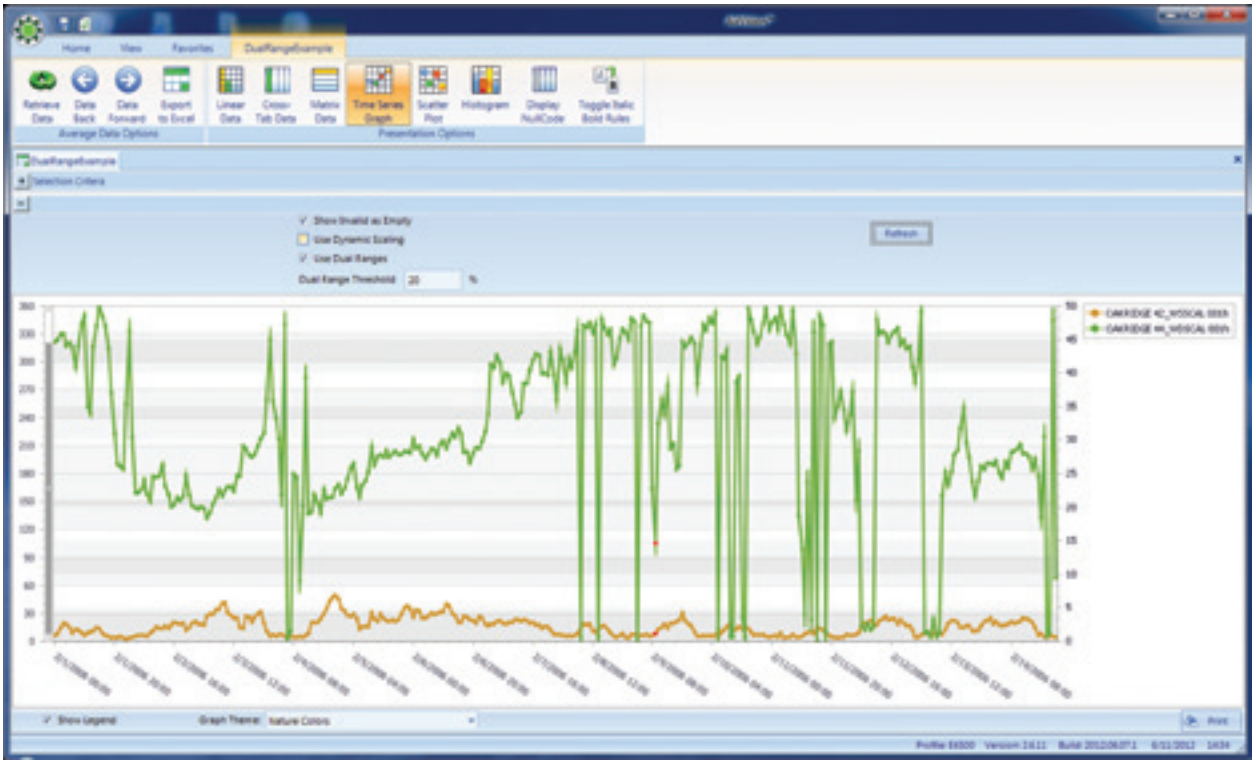
Time Series from Data Editors menu with multiple parameters selected

Use the mouse scroll wheel to zoom in or out; right-click and hold to drag the zoomed graph to a different data area.

Hover the cursor over a data point to see the specific date, time, and data value. If there is a flag on the data point the flag will also be displayed.

You can toggle between hiding or showing invalid data (e.g., data during calibration, maintenance, or analyzer failures).

When graphing parameters with two dramatically different full scale ranges, you may choose to use the "Dual Y-Axis Scale" option. When choosing this option, you must also choose the percentage (e.g., 10%, 20%) of the full scale range that is used as the 'breakpoint' for the secondary Y-axis. A value of 20% is common. Note that this function requires that Graph Maximum and Graph Minimum be set in the Parameter configuration. Graphs that have any parameters without limits configured cannot use the Dual Y-Axis function.



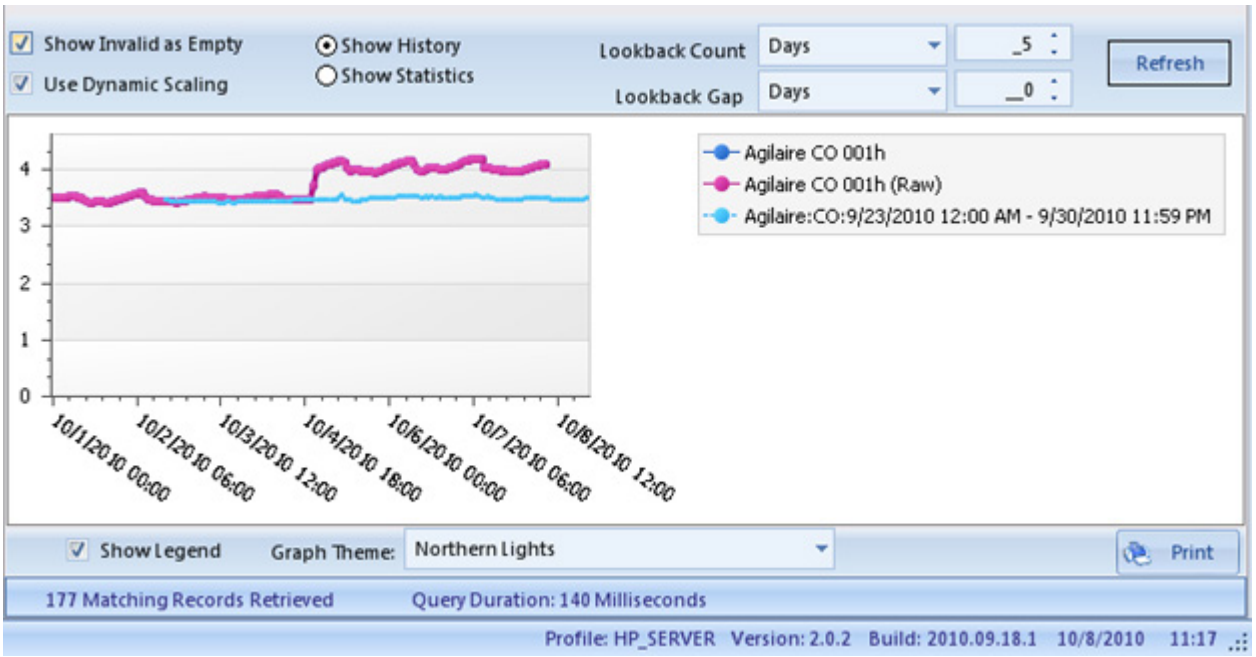
Dual Y-Axis function

Use the mouse scroll wheel to zoom in or out; right-click and hold to drag the zoomed graph to a different data area.

Hover the cursor over a data point to see the specific date, time, and data value. If there is a flag on the data point the flag will also be displayed.
You can toggle between hiding or showing invalid data (e.g., data during calibration, maintenance, or analyzer failures).

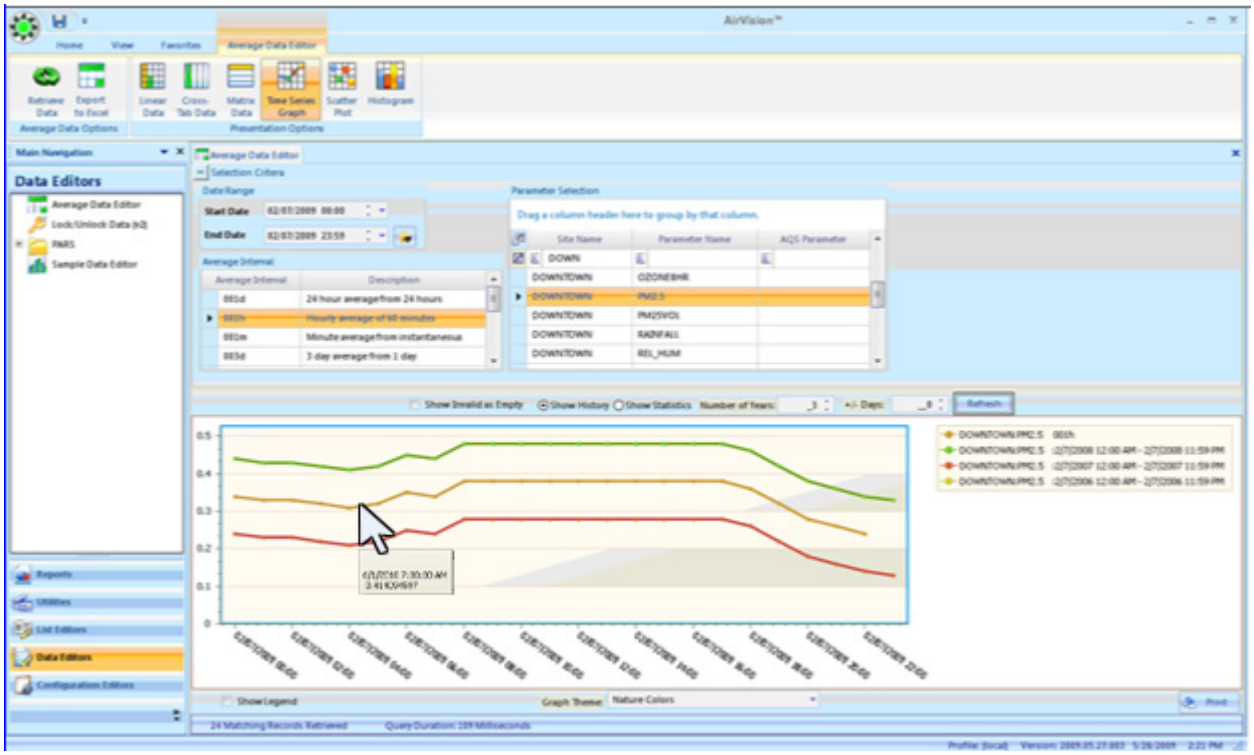
For one parameter, you can choose previous intervals to be other than one year by selecting **Show History** from the options above the graph.If you bring up the Time Series Graph in single parameter mode, you get additional options at the top of the graph:

- **Show Invalid as Empty**
- **Use Dynamic Scaling**
- **Show History** displays N previous years of data alongside main graph
- **Show Statistics** displays cumulative statistics of N previous years--min, max, avg
- **Lookback Count** select number of years, months, or days from the drop-down list
- **Lookback Gap** select number of years, months, or days from the drop-down list
- **Refresh** button must be clicked to show any changes to selections.



Time Series Graph with a single parameter selected

If the database contains data from previous years for the same parameter, those previous years can be graphed in the Time Series Graph alongside the current data by selecting **Show History** and the number of years you want to graph. Each previous year is graphed individually. Select **Refresh** to update the graph.



Time Series Graph with a single parameter and Show History option and hover over displaying date, and time data value

The "+/- Days" selector can be used to compile nearby days for the same hour into the comparison statistics. An example of how this is applied would be:

Current Data = 1/15/09,. Number of Years = 3, +/- Days = 1

1/5/09 data at hour 00 would be compared against statistics using the following points:

1/4/06, hour 00
1/5/06, hour 00
1/6/06, hour 00
1/4/07, hour 00
1/5/07, hour 00
1/6/07, hour 00
1/4/08, hour 00
1/5/08, hour 00
1/6/08, hour 00

Obviously, selection of a large data set with a long look back period and large skews can be very processor intensive for the client and the SQL server for large data sets. Agilaire recommends this tool be used for data sets of roughly a week or less.

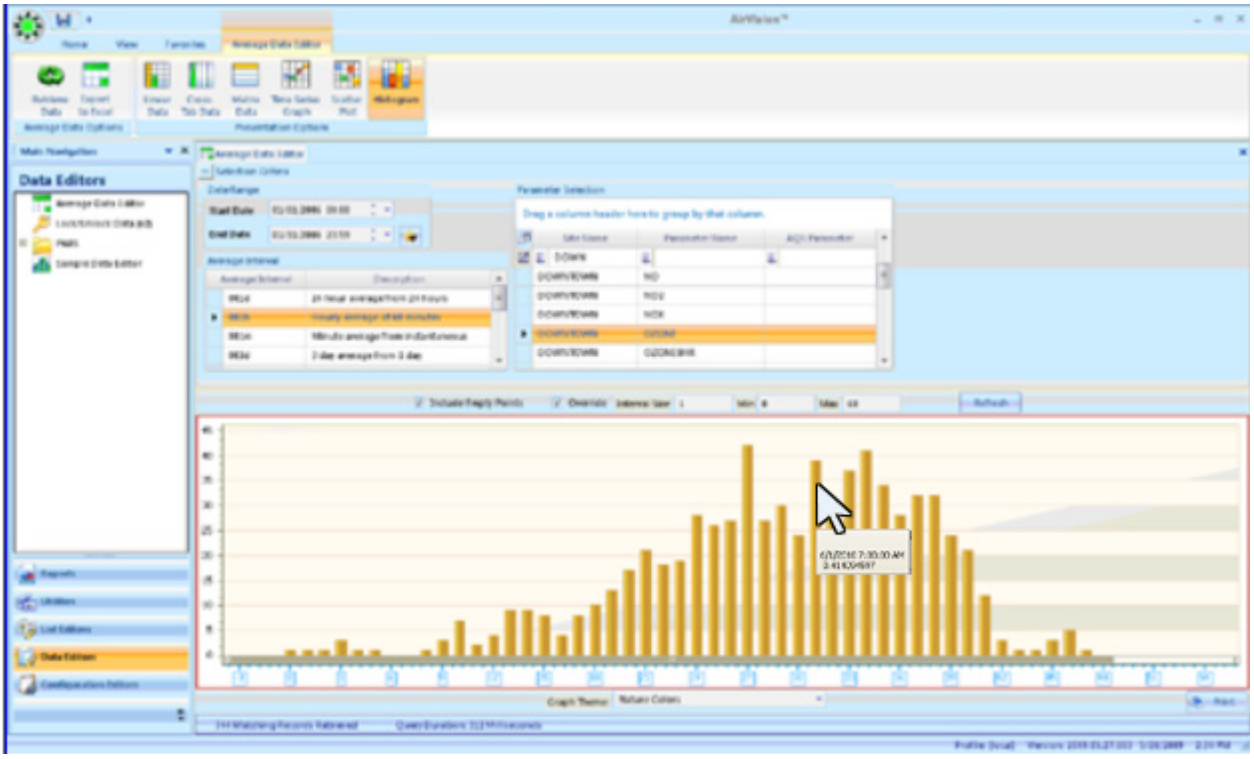
Scatter Plot Graph

The Scatter Plot Graph allows any two parameters in the existing chart to be plotted in an X-Y chart. The Y axis parameter is the primary parameter and all data points are color coded according to the Data Flags color mappings to help distinguish outliers that have already been flagged.

Scatter Plot Graph from Data Editors menu with hover over displaying date, time and data value

Histogram

The Histogram provides a graph of the distribution of values for the entire data set, but it is designed to display only one parameter at a time, so be careful not to use multiple parameters. The default graph uses the graph maximum/minimum from **Configuration Editors** > **Site/Parameter**, but you can check **Override** to set a custom max/min specifically for the X axis of this graph.



Histogram from Data Editors menu with hover over displaying date, time and data value

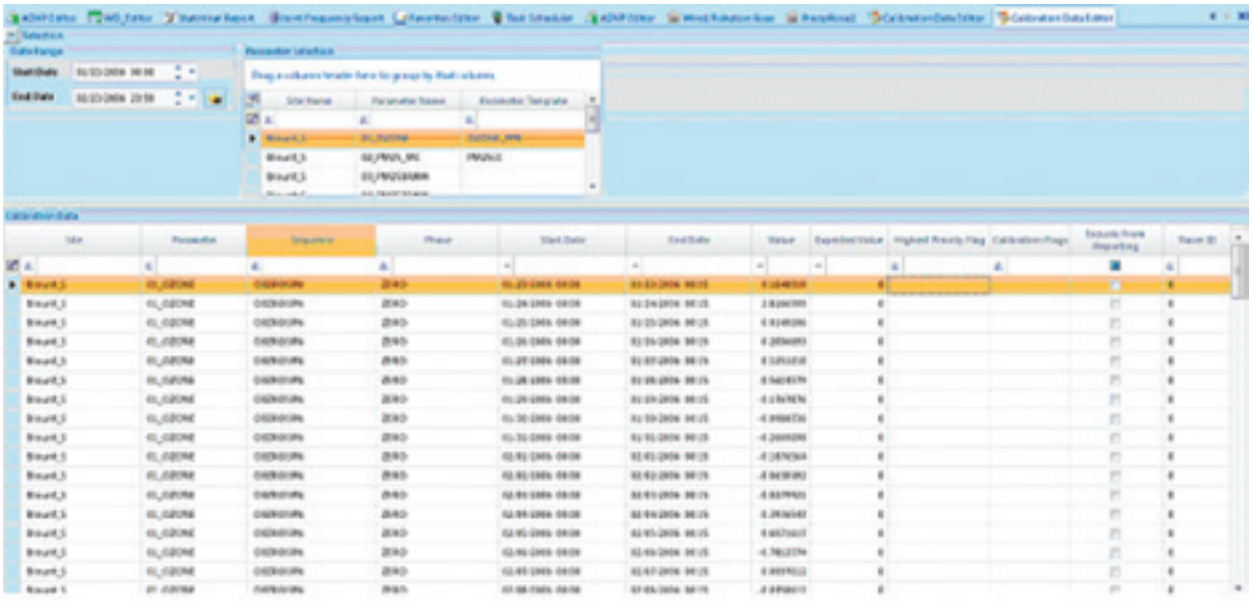
Calibration Data Editor

The Calibration Data Editor can be used to correct errors in calibration records collected from the data logger, or to add new records (e.g., to reflect a manually collected calibration).

To edit existing records, select the appropriate site/parameter and date range, and use the **Retrieve Data** ribbon icon.

You can edit dates, times, values, expected values, bottle/tracer IDs, or mark the record as non-reportable. However, there is no provision to delete a record.

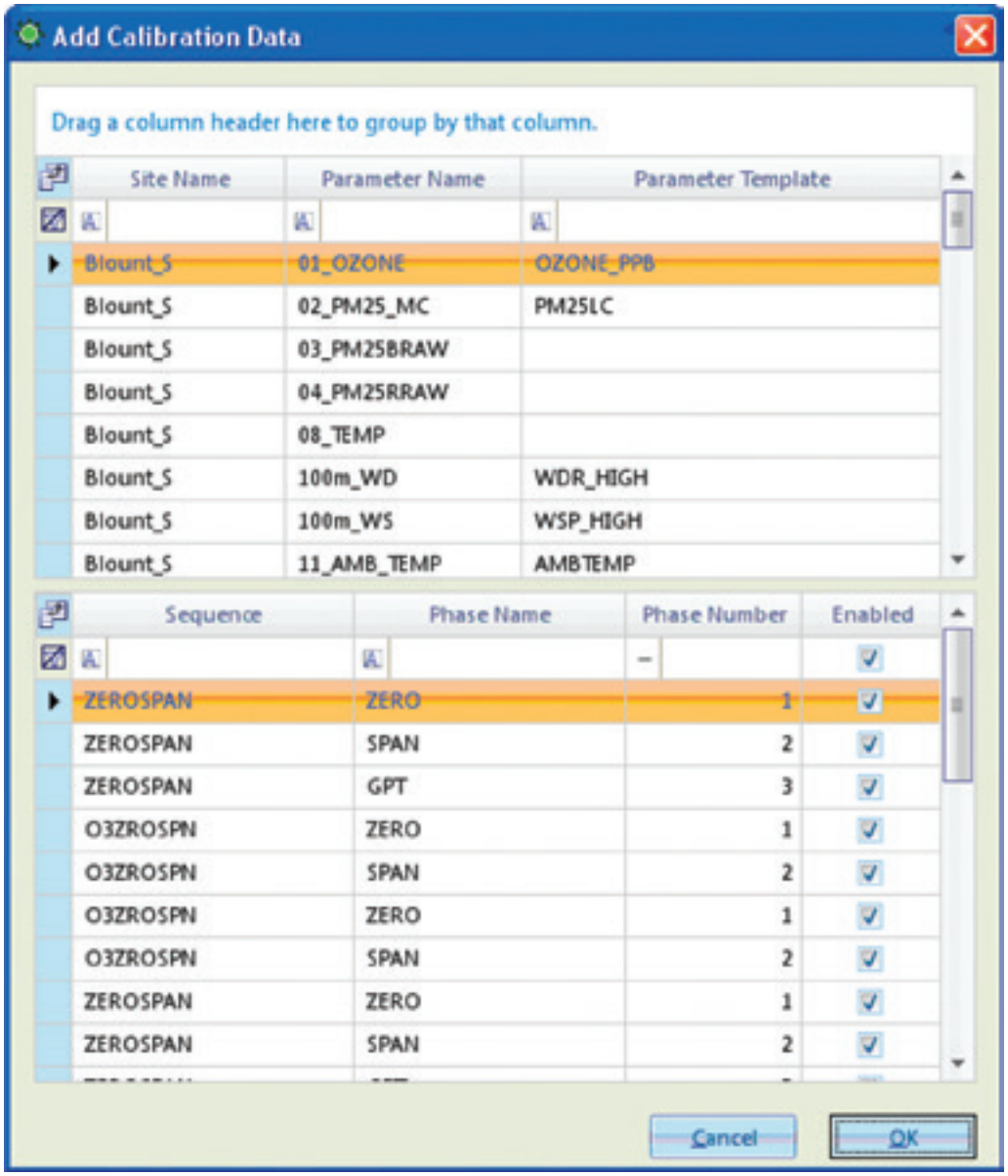
To add a new record, press the **Add** icon on the ribbon. You will be prompted for the site, parameter, calibration program and phase:The record will be created in the editor, and the remaining record characteristics can be entered.



Calibration Data Editor

To add a new calibration record, press the **Add** icon on the ribbon. You will be prompted for the site, parameter, calibration program and phase:

The record will be created in the editor, and the remaining record characteristics can be entered.

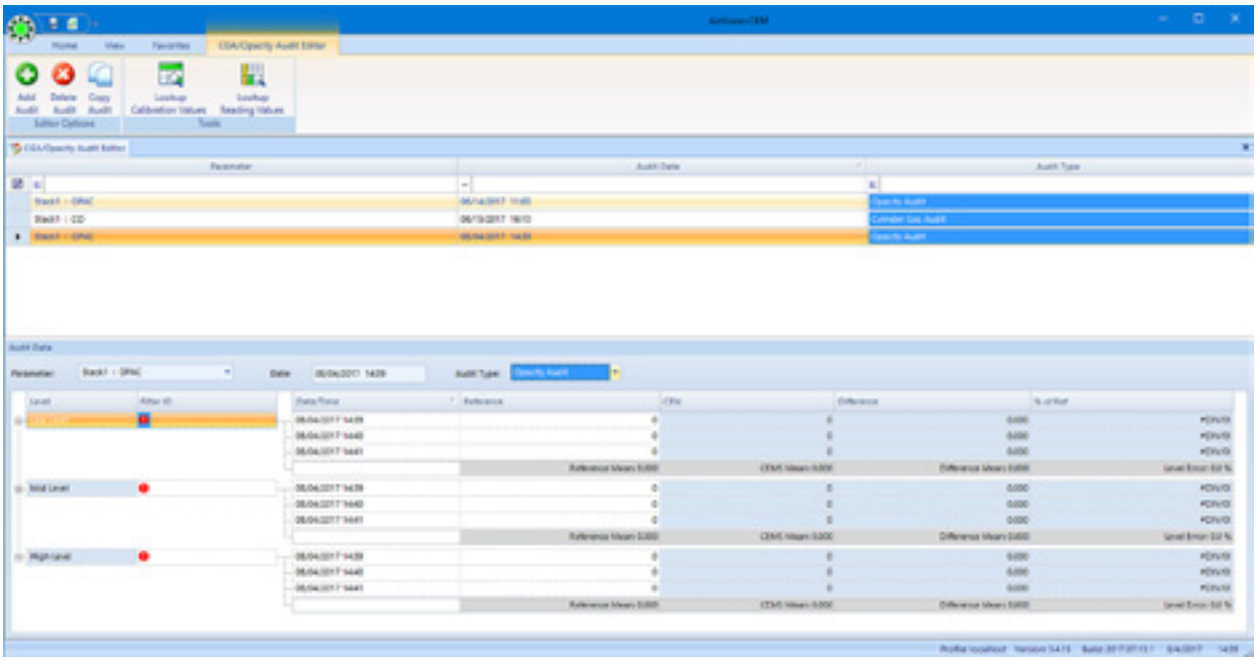


Adding Calibration Data in the Calibration Data Editor via the Add button on the ribbon

Using the CGA / Opacity Audit Utility

This utility serves a dual purpose- for creating both cylinder gas audit (CGA) and opacity audit data records for the CGA / Opacity audit reports.

To create a new audit record, select “Add Audit” from the top left of the toolbar. Then, in the lower panel, select the corresponding parameter and the audit type (CGA or Opacity).

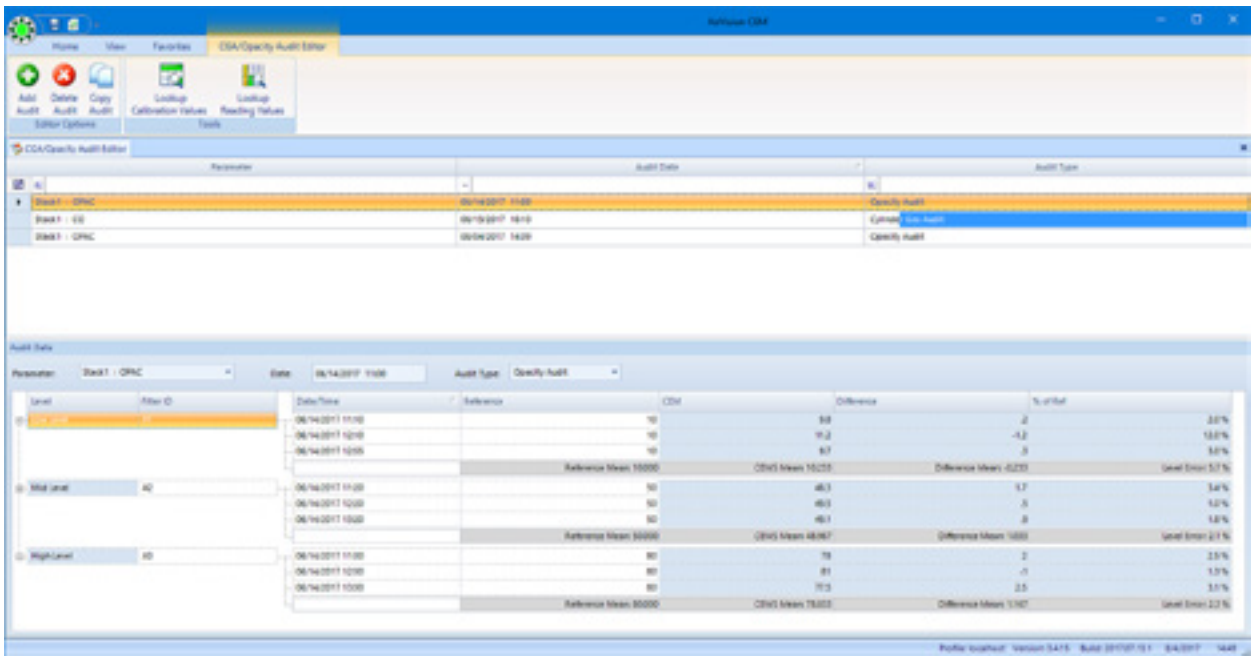


The dates and times will be filled in with minutes near current time as a default, but you can type into these fields. You can (and should) also fill in the “Filter ID” (if Opacity Audit) or “Cylinder ID” (if CGA) fields for each of the levels.

For each of the runs, enter the times and the “Reference” value from the filters or gas cylinders. For the “CEM” data, there are two methods to get data into the field:

1. Use the **Lookup Calibration Data** to retrieve calibration records in the database. The cal phases must be called LOW, MID, and HIGH, or the Low/Mid/High “Level” must be configured for the phase.
2. Enter the exact time of the desired gas / opacity value for each level and run, and choose **Lookup Reading Values** from the ribbon. AirVision/CEM will then retrieve the minute average for that minute (starting time, 14:39 is 14:39:00 to 14:39:59) and put that value into the field.

Once the values are filled in, the form will calculate the differences, average differences, and % error for each level for display. Save the results.



The results can then be reported in the Cylinder Gas/Opacity Audit Report:

Date Printed: 08/04/2017 02:51

Opacity Audit

Parameter: OPAC
Test Type: Opacity Audit
Test Date: 6/14/2017 11:00

Filter Id (Low): A1
Filter Id (Mid): A2
Filter Id (High): A3

Low Level

Date	Time	Reference	CEM	Difference	% of Ref
06/14/2017	11:10	10.000	9.8	0.20	2.0
06/14/2017	12:10	10.000	11.2	-1.2	12.0
06/14/2017	12:55	10.000	9.7	0.30	3.0

Reference Mean: 10
CEMS Mean: 10.233
Level Error: 2.3

Mid Level

Date	Time	Reference	CEM	Difference	% of Ref
06/14/2017	11:20	50.000	48.3	1.7	3.4
06/14/2017	12:20	50.000	49.5	0.5	1.0
06/14/2017	13:20	50.000	49.1	0.90	1.8

Reference Mean: 50
CEMS Mean: 48.967
Level Error: 2.1

High Level

Date	Time	Reference	CEM	Difference	% of Ref
06/14/2017	11:30	80.000	78	2	2.5
06/14/2017	12:30	80.000	81	-1	1.3
06/14/2017	13:30	80.000	77.5	2.5	3.1

Reference Mean: 80
CEMS Mean: 78.833
Level Error: 1.5

LogBook Entry Editor

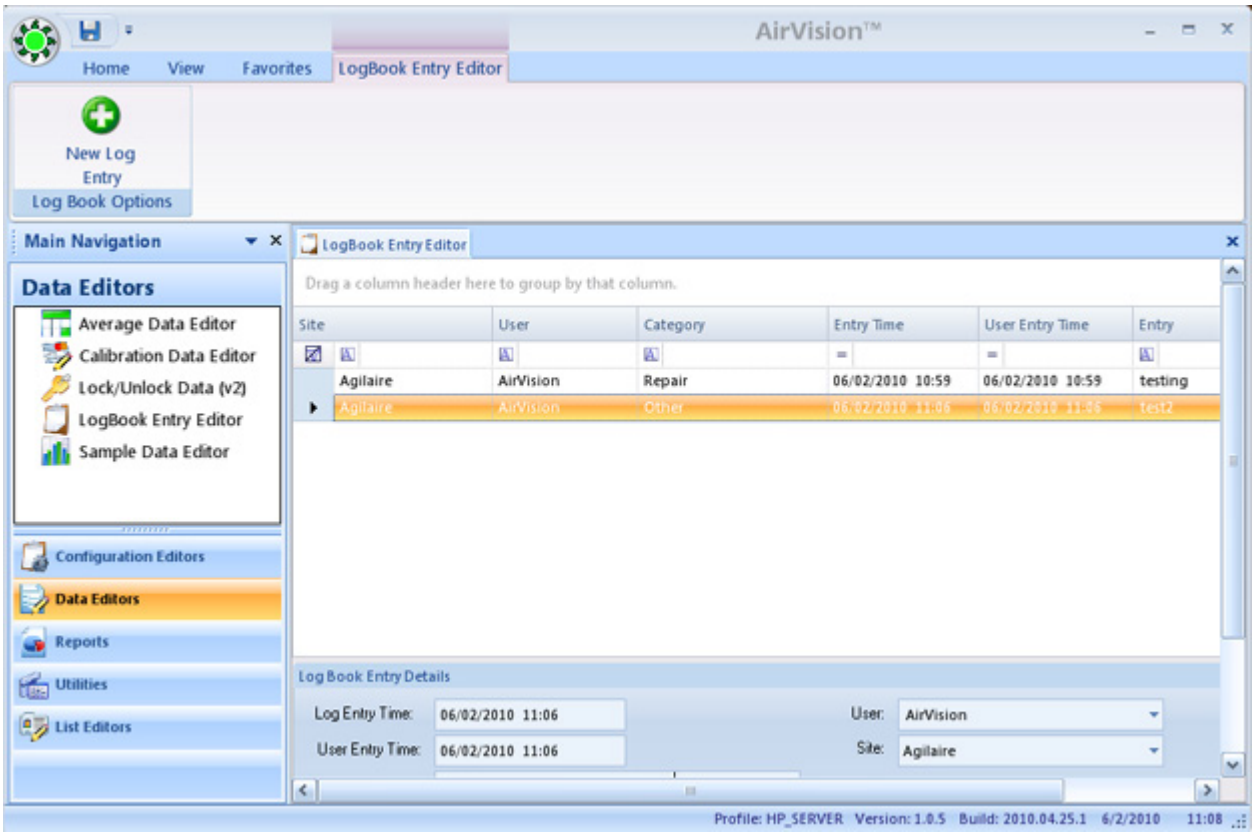
The LogBook Entry Editor allows you to make entries in a logbook that can then be seen in LogBook Reports. To make a logbook entry, open **LogBook Entry Editor** from the Editors menu.

Click the **New Log Entry** button in the upper left corner of the screen

In the bottom section of the screen enter a **Log Entry Time**, **User Entry Time**, select a **Category** from the drop-down list or select **New Category** and enter a different category, select a **User** and a **Site** from the drop-down lists

Enter the LogBook message in the **Entry Text** box and click **Save**.

The new entry information will be displayed in a row in the top section of the screen.



Adding LogBook entries in the LogBook Entry Editor from the Editors menu

Chapter 6

Help & Support

Agilaire's Help and Support menu offers four options:

- Agilaire Support
- AirVision Manual
- AirVision Wiki
- How-to Step by Step

Agilaire Help and Support menu

Agilaire Support

Agilaire Support is a link to the Agilaire website, www.agilaire.com. You can reach our support staff at:

email: support@agilaire.com

phone: 865-927-9440, press 2

AirVision Manual

If you select AirVision Manual, you will see a pdf of the latest User's Manual. You can also download the manual from our website, www.agilaire.com.

AirVision Wiki

The AirVision Wiki is a link to Agilaire's ongoing website that allows adding and editing of AirVision's latest developments. The Wiki includes FAQs, AirVision Documentation, Training information, Release Notes, Technical Notes/Workarounds, Design Notes for Upcoming Features, Tricks and Tips, ADVP Rule Suggestions, EPA Conference Notes, and Step by Step Procedures. Customers who apply to be a writer add comments and suggestions.

How To--Step by Step

This options takes you to a section of the Agilaire Wiki that provides an overview of the full steps necessary for common activities in AirVision such as Data Logger configuration, Modbus Instrument and Channels, Internet Polling, Modem Connections, TCP/IP Connection to a logger, Database Backup, and Restoring a Database.

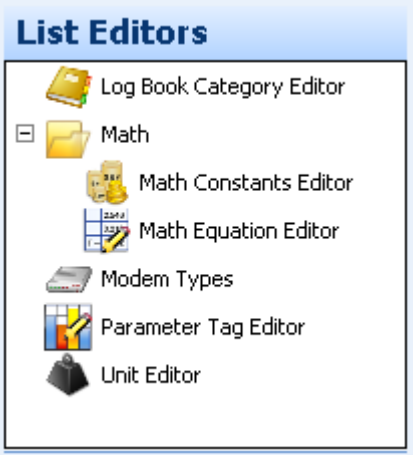
Chapter 7

List Editors

The AirVision List Editors Menu consists of four items:

- Log Book Category Editor
- Math
  - Math Constants Editor
  - Math Equation Editor
- Modem Types
- Parameter Tag Editor
- Unit Editor
- Journal Controller

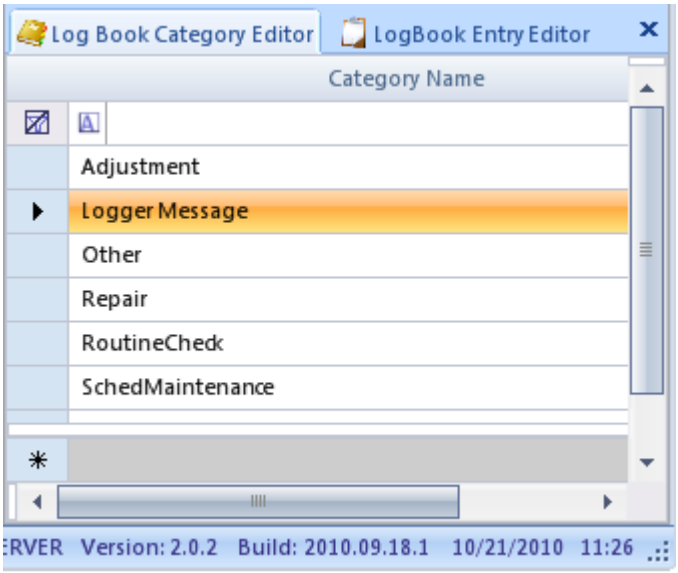
List Editors display items in these categories. Access to the List Editors is controlled by Administrative personnel in the Securities Menu



List Editors Menu

Log Book Category Editor

Selection of a Log Book Category is required when you make an entry in the **LogBook Entry Editor** (**Data Editors>LogBook Entry Editor**). When you make an entry in the LogBook Entry Editor, you can either click in the category line and select from the drop-down list, or you can select New Category and write your own category. New categories will be saved in the list when you click the **Save** button. The default Log Book Categories are: Adjustment, Logger Message, Other, Repair, Routine Check, and Scheduled Maintenance.



Logbook Category Editor

New Categories can also be added in the **LogBook Category Editor** from the **List Menu**, which displays all **Category Names**. To add a **Log Book Category**, click on the **asterisk** on the bottom line and enter the category, then click the **Save** icon.

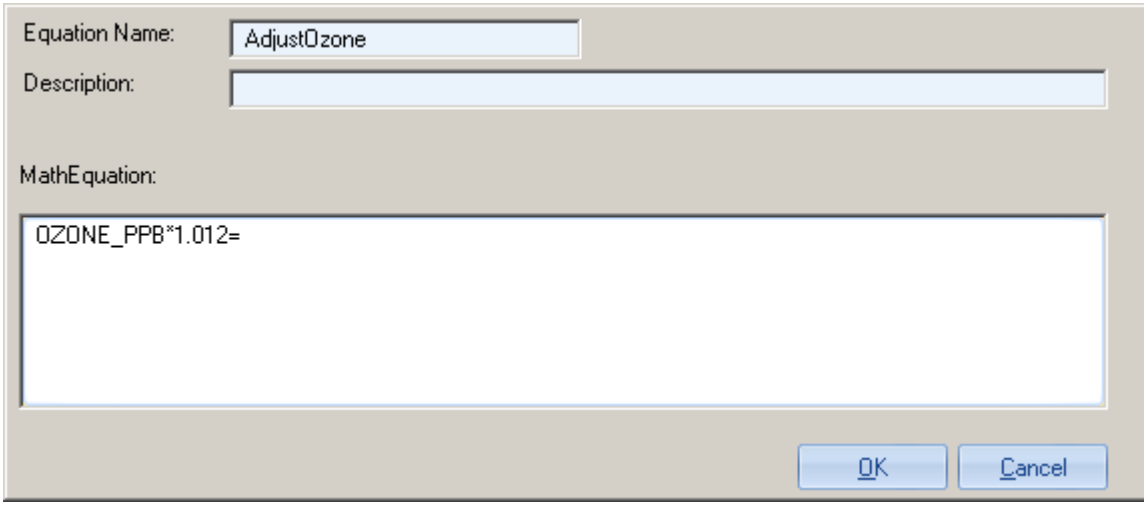
Math Editors

Central Math Processor

AirVision includes the capability to perform mathematical calculations at the server, either on a manual basis, or as a scheduled task. To perform these calculations, you will need to define the mathematical calculation to be made in the Math Equation Editor (**List Editors > Math > Math Equation Editor)**. Each equation is given a name to reference (e.g., "SO2_Adjustment") which is then referenced in the math utility or the Task Scheduler.

Equations may act on any defined average interval, and must reference Parameter Templates, rather than specific site/parameter combinations. This allows a general equation to be configured once, and used for multiple sites without having to repeat the same equation.

To create a new equation, open **List Editors > Math > Math Equation Editor** and click the **Add Equation button.** Enter the **Equation Name** (required), and optional **Description**, and then the **equation**. The equation takes the form of parameter template names, operators, and functions. Parenthesis are supported.



Math Equation Editor from List Editors

Binary operators (operators on two variables) include:

- * Multiply
- / Divide
- + Add
- - Subtract
- % Modulo (remainder)

Other binary and Uniary functions (functions that operate on one variable or one result of another embedded equation) include:

NAME	DESCRIPTION	USAGE
Abs	Returns the absolute value of a specified number.	Abs(-1)
Acos	Returns the angle whose cosine is the specified number.	Acos(1)
Asin	Returns the angle whose sine is the specified number.	Asin(0)
Atan	Returns the angle whose tangent is the specified number.	Atan(0)
Cos	Returns the cosine of the specified angle.	Cos(0)
Exp	Returns e raised to the specified power.	Exp(0)
Log	Returns the logarithm of a specified number.	Log(1, 10)
Log10	Returns the base 10 logarithm of a specified number.	Log10(1)
Max	Returns the larger of two specified numbers.	Max(1, 2)
Min	Returns the smaller of two numbers.	Min(1, 2)
Pow	Returns a specified number raised to the specified power.	Pow(3, 2)
Round	Rounds a value to the nearest integer or specified number of decimal places. The mid number behaviour can be changed by using Evaluate Option. RoundAwayFromZero during construction of the Expression object.	Round(3.222, 2)
Sign	Returns a value indicating the sign of a number.	Sign(-10)
Sin	Returns the sine of the specified angle.	Sin(0)
Sqrt	Returns the square root of a specified number.	Sqrt(4)
Tan	Returns the tangent of the specified angle.	Tan(0)
Truncate	Calculates the integral part of a number.	Truncate(1.7)

⇨ **Important!** These equations MUST be referred to by the case-specific version of the equation. You must use “Max(x,y)”, not “MAX(x,y).”

For equations, Information flags are not propogated, while Validity flags are propagated from constituent channels. Consult the Flags Editor for details on which flags are considered Informational and Validation flags.

Modem Types

Modem Types in the **List Editors Menu** lists all the modem types that are available in the drop-down list when you add a **Modem** and select a **Modem Type** in **Configuration Menu>Server Configuration**. New **Modem Types** can be added in the **List Editors Menu** by clicking on the **asterisk** on the bottom line of the list.

Modem Types

Modem Description	BPS	Command Mode String	Guard Time (ms)	Dial Command String	Hangup Command String	Online Mode String	Initialization String
Hayes Std 9600	9600				ATH0		ATV1Q0E0M1S2=43S7=80S0=1
Multitech MT2834	33600				ATH0		AT&F&C1&D0&E0&E4&E11&E14&Q1E0Q0V1X4%E5$BA1
Practical Periph 14.4	14400				ATH0		AT&F&WV1Q0E0M1S2=43S7=80S0=1
US Robotics 1200 baud only	1200				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0&N2
US Robotics 14.4	14400				ATH0		AT&F0&W0V1Q0E0M1S2=43S7=80S0=1
US Robotics 2400 baud only	2400				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0&N2
US Robotics 28.8/33.6	33600				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0
US Robotics 4800 baud only	4800				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0&N4
US Robotics 9600 baud only	9600				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0&N6
US Robotics V.92	57600				ATH0		AT&C1&D0&H1&I0&K0M1Q0E0V1S0=0
Zoom 14.4	14400				ATH0		ATV1Q0E0M1S2=43S7=80S0=1
ZoomFax V.34 Plus	33600				ATH0		AT&C1&D0&K0Q0E0V1S0=0

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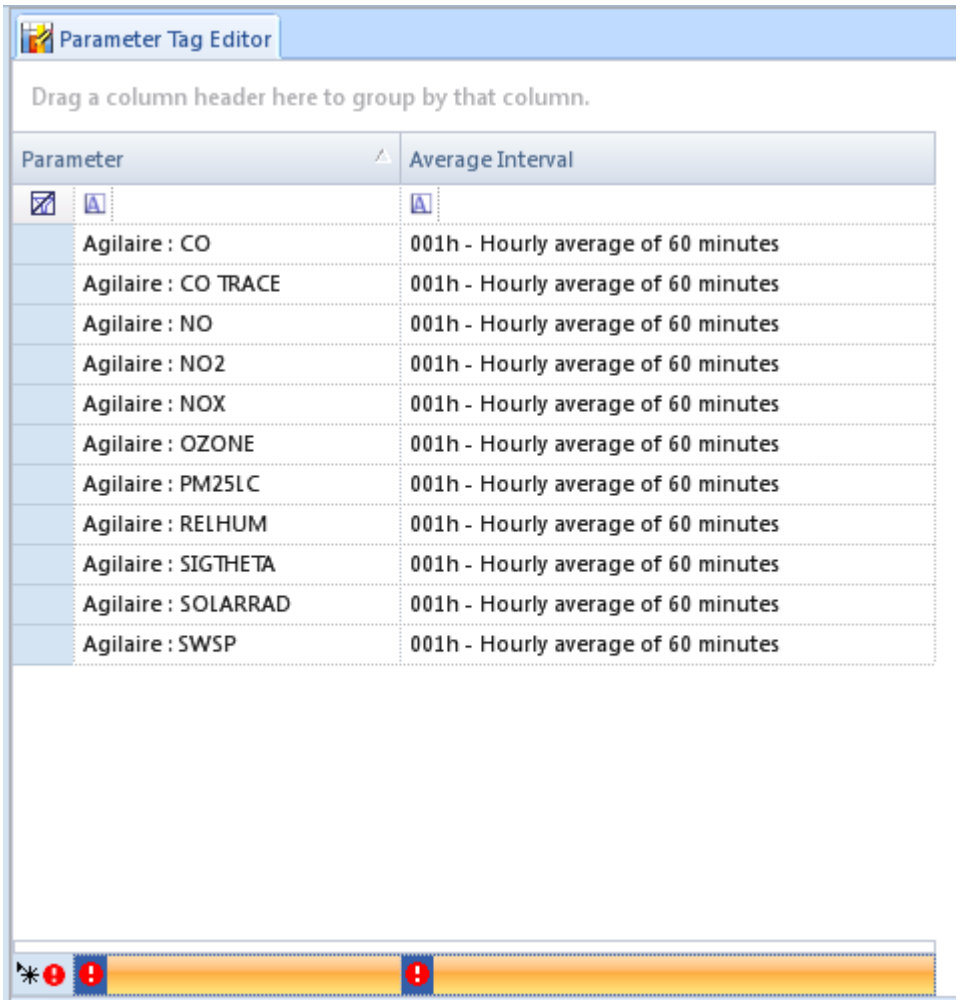
Modem Types in the List Editors Menu

Parameter Tag Editor

The Parameter Tag Editor in the List Editors Menu lists all the parameter tags in AirVision.
To add another Parameter Tag, click on the asterisk in the bottom line of the menu and add a tag.



Parameter Tag Editor in the List Editors Menu

Unit Editor

The **Unit Editor** in the **List Editors Menu** lists **Units** used in AirVision, the **Unit Type**, **Slope**, **Intercept**, and **Description**. To add a Unit, click on the asterisk on the bottom line.

Unit Editor

Unit Name	Unit Type	Slope	Intercept	Description
LPM	Unknown	1	0	Liters per minute
L/M	Unknown	1	0	Liters per minute
MVOLTS	Unknown	1	0	Millivolts
Langleys	Solar Radiation	0.001434	0	Langleys per hour
M/SEC	Speed	3.6	0	meters per second
MG/M3	Mass Concentration	1000	0	milligrams per cubic meter
INHG	Pressure	25.4	0	inches mercury
%FS	Unknown	1	0	Percent Full Scale
None	Unknown	1	0	Alternate One Description
COUNT	Unknown	1	0	Count
DEG	Temperature	1	0	Degrees
DEGC	Temperature	1.8	0	Degrees Celsius
DEGF	Temperature	1	32	Degrees Farenheit
Hz	Unknown	1	0	Hertz
INCHES	Distance	1	0	Inches
INH2O	Pressure	1.868	0	Inches Water
KPH	Speed	1	0	Kilometers per hour
KW/M2	Solar Radiation	1	0	1000 watts per square meter
M3	Unknown	1	0	Cubic Meters
		0	0	

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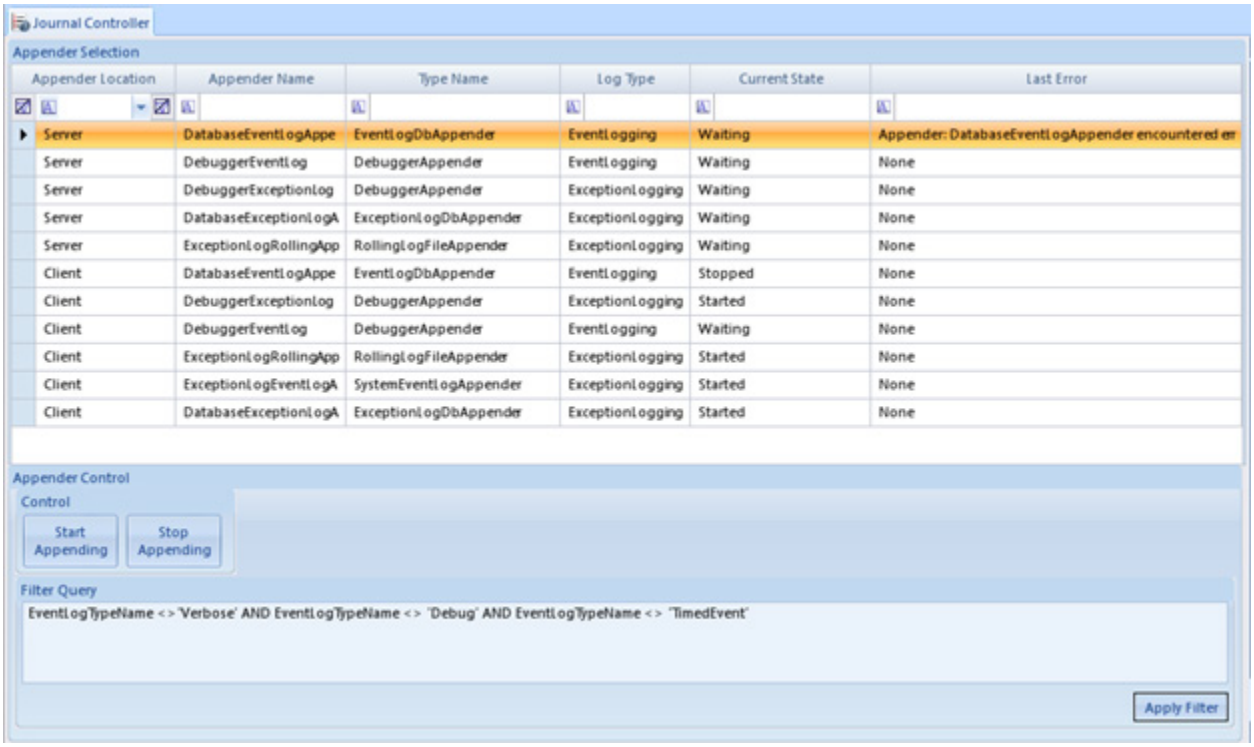
Unit Editor in List Editors Menu

Journal Controller

The Journal Controller is for use by Agilaire support only.



Journal Controller in Utilities menu

Chapter 8

Additional Features

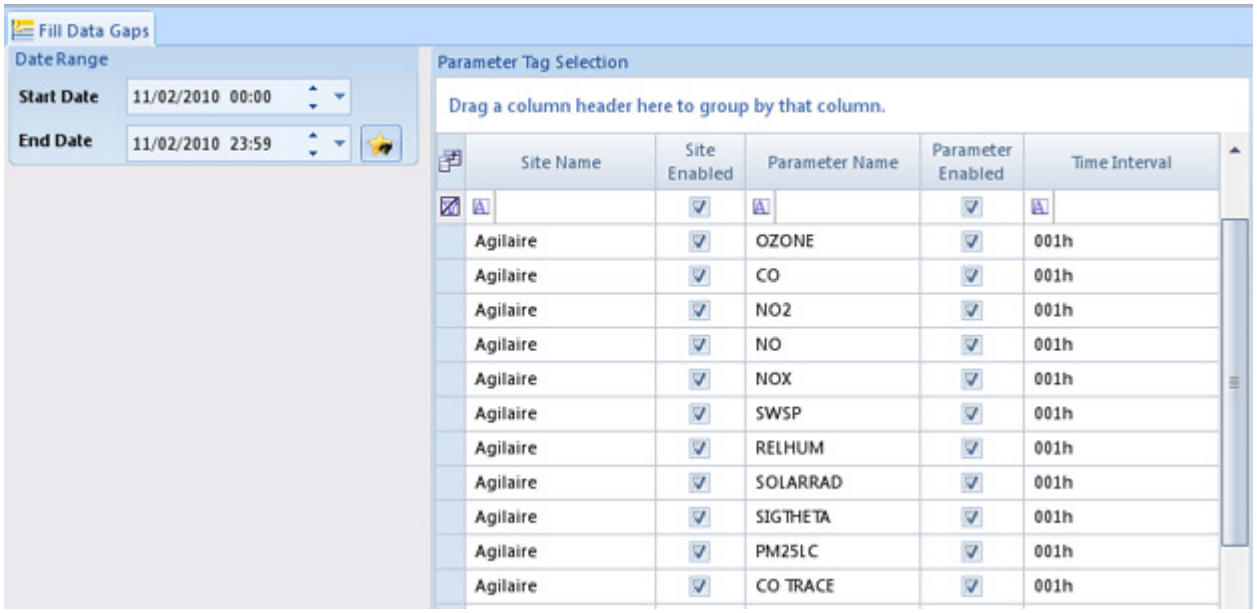
The following additional features are available in the **Utilities** menu:

- Fill Data Gaps
- Table Import/Export

Fill Data Gaps

The **Fill Data Gaps** utility from the **Utilities** menu generates empty data records that are placeholders to ensure data is continuous in reports even where data is missing. To make sure there are no gaps in reports, **Fill Data Gaps** should be set in the **Task Scheduler** to run daily, especially on the first day of polling.

In the Fill Data Gaps screen, select the Start and End Dates, select the sites and parameters to be enabled, and click the **Create Data** button on the Ribbon above the Main Navigation menu. The range of the query will determine how long the process requires. When it is finished the progress bar will disappear.



Fill Data Gaps from the Utilities menu

Table Export

Important! Table Export/Import should be used only when advised by Agilaire support staff.

The **Table Export** tool allows any table in the AirVision database to be exported in XML format. .It can be useful for copying system configuration settings for archive purposes or for transmission to Agilaire support staff for troubleshooting.

Select a table or tables, designate a destination folder, and click the **Process Export** button to export. One file is created for each table, so an export of multiple tables is best contained in a designated folder.

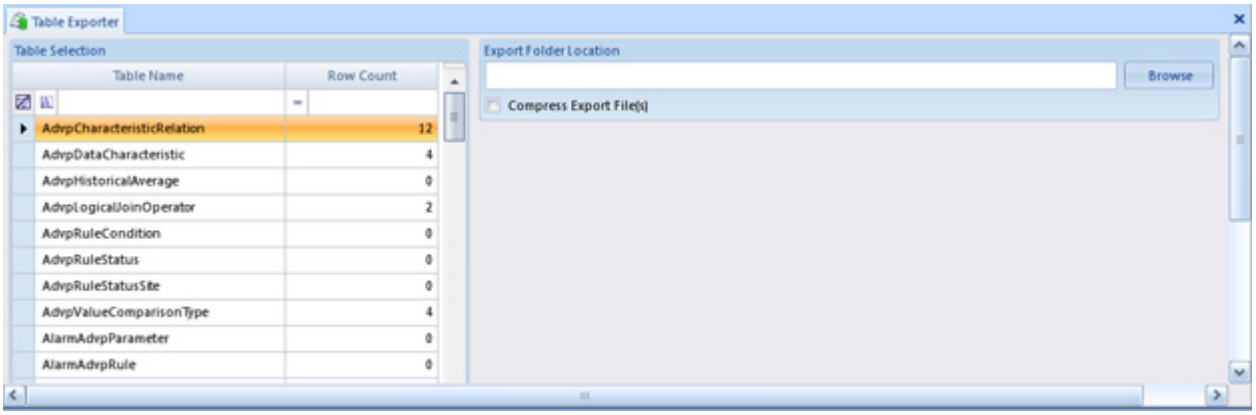


Table Export from Utilities menu

Table Import

➪ **Important!** Table Export/Import should be used only when advised by Agilaire support staff.

The **Table Import** tool allows any table that has been exported from the AirVision database to be imported in XML format. It is useful for importing previously exported system configuration settings to archive or for Agilaire support staff to troubleshoot.

Browse to select a table and the path will be displayed in the **Location of Table Export File to Import** field. Click the **Process Import** button to import the file. One file is created for each exported table, so tables must be imported one at a time.

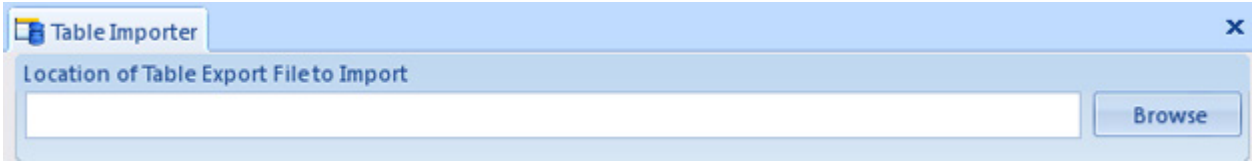


Table Import from Utilities menu

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