Airodis

User Manual

Version 1.7.0
January 2015

www.airodis.com

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Introduction

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I

1 Introduction

Airodis is an environmental data management software package, designed as a powerful tool for retrieving, validating, auditing and presenting data collected from a variety of environmental monitoring systems.

Airodis provides the user with the ability to automatically retrieve data from a wide variety of instruments and data loggers, perform audited automatic and manual data validation and generate a wide range of graphical and tabular reports.

Airodis operates on Windows XP, Server 2003, Server 2008 and Windows 7 and uses a Microsoft SQL Server database. Supporting single or multi user installations Airodis provides the user with the most stable, streamlined and easy to use package available.

Multiple users can interrogate data contained within the SQL database and data can be pushed directly to websites for public or internal display.

The Airodis design encapsulates Ecotech's 35 years experience in the development of software and experience that Ecotech has operating one of the world's largest networks of ISO17025 accredited monitoring systems.

End User License Agreement

Part

II
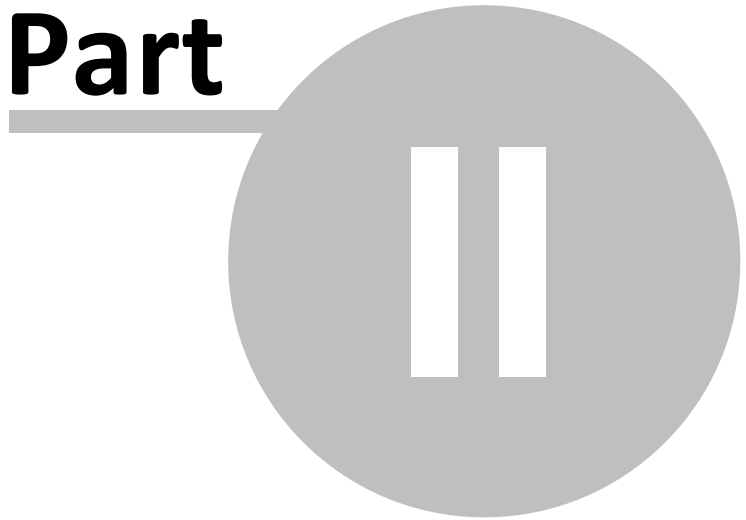
2 End User License Agreement

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Manual Revision History

Part

III
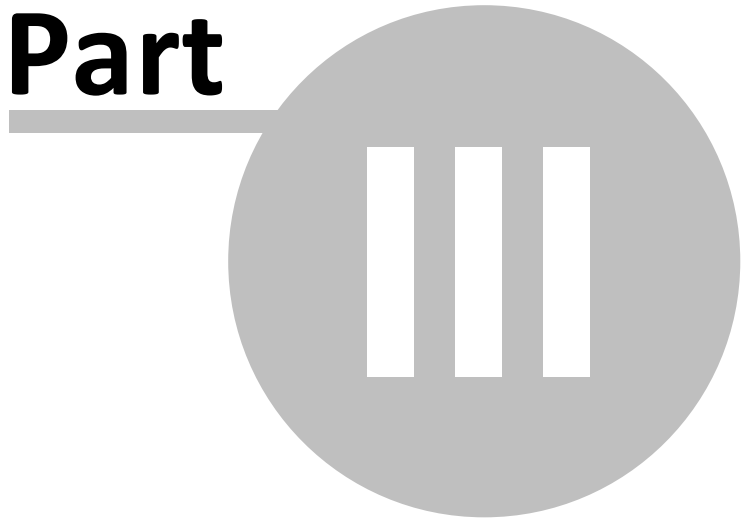
3   Manual Revision History

Ecotech Manual ID   M010043

Current Revision   1.7.0
Date Released   January 2015
Description   User Manual for the Airodis Environmental Data Management
Software Package

Edition	Date	Summary	Affected Sections
1.0	June 2012	First Edition	N/A
1.1	June 2012	Formatting and content changes	All
1.1.1	August 2012	Expanded, links to videos, formatting	All
1.5	July 2013	Workspace Manager Changes, general updates and inclusions	All
1.6	Jan 2014	New screenshots, general updates	Client
1.7	Jan 2015	Added Modbus Appendix, updated installation notes	Client, Installation

Got a comment or suggestion for this manual?
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# Demonstration Version Limitations
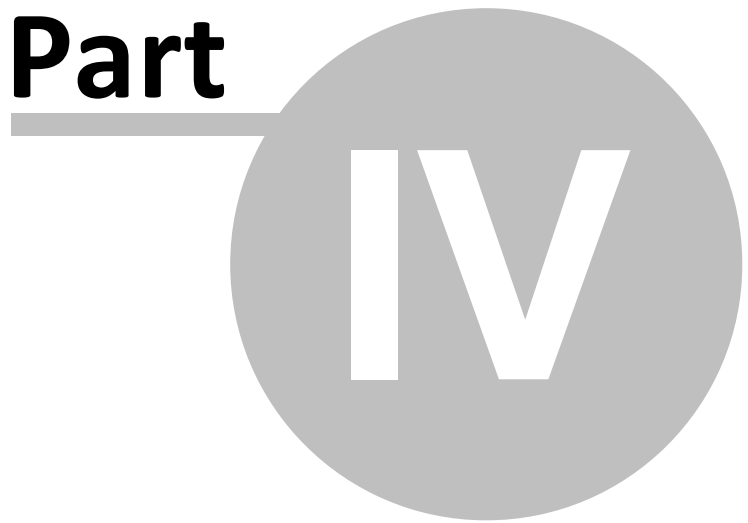
Part IV

4   Demonstration Version Limitations

The Airodis Demonstration version software has the following limitations:

- Station downloads are fully functional but can't be scheduled
- Report schedules can be set but can't be saved
- Report schedules will be cleared once per day
- Report output types are limited to
  - PNG (Portable Network Graphic) images
  - BMP (Bitmap) images
  - JPG (Joint Photographic Experts Group) images
  - GIF (Graphics Interchange Format) images
  - TIFF (Tagged Image File Format) images
- Report output is watermarked
- A limit of three stations is imposed for a workspace
- Data can be validated but changes can not be committed to the database
- The services are confined to the local host machine i.e. you can not run a Distributed Client install with a Demo Server

Demonstration Material

Part

V
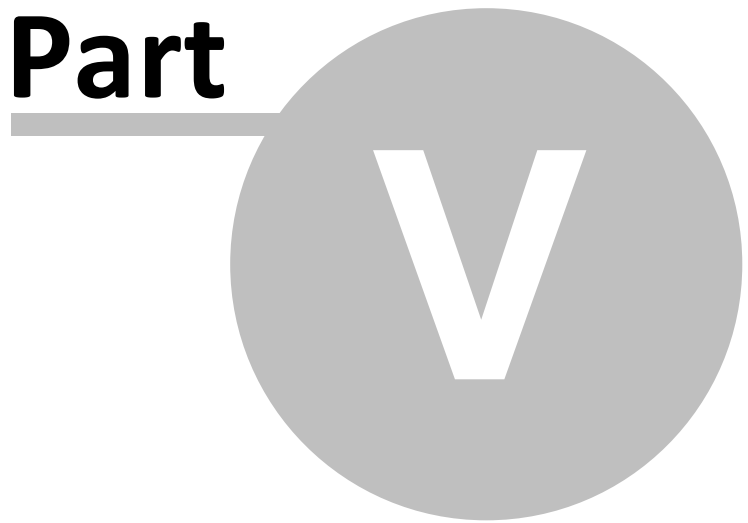
5 Demonstration Material

Airodis comes with data for a couple of demonstration stations and a number of example reports. Along with the bundled demonstration data a number of tutorial videos are available online.

> This video information box will contain a link to a video relevant to the section of the help file it appears in.

Downloading Videos

The videos linked to in this help file can also be downloaded and referred to offline. The video bundle is a zip file containing the training videos and an index document which acts as a menu.

See the Airodis web site (www.airodis.com) for download details.

Using the Demonstration Material

The following instructions assume that the option to install the Demonstration Database was selected when Airodis was installed.
If this option was not selected then rerun the Airodis installer with just this option selected.

1. First import the demonstration database data as detailed here: Client->File Tab->Import Station->Demonstration Stations
2. This should result in a workspace with two stations: Ooze Lake and Mount Hazelton
3. The example *Report* files would have been copied in place when Airodis was installed
4. You should be able to see all of the *Reports* in the *Airodis Example Reports* folder when viewing the files in the *Report Manager*.
5. The *Station ID's* are important here, they are used to link the *Station* to a *Report*, when loading an example report you may get this error if the *Station ID's* don't match: Report Manager->File Tab->Open File
6. Simply follow the instructions and renumber the *Stations* in the *Report* to match the *Station ID* in the *Client* application

> Throughout the manual you will see this icon detailing an example report which is relevant to that particular part of the manual.

Remember when running the example *Reports* that the demonstration data will end at the end of the month preceding that in which the data was imported. Check in the *Client* application if there is data for the required report period and run the *Report* at a specified date if required.

For details on using the demonstration material see this short video : Demonstration Stations

Installation and Setup

Part VI

6 Installation and Setup

6.1 System Requirements

Airodis can be used in a wide range of configurations, from single user and single station setups to multiple stations with multiple Distributed Client installations.

Operating System	Service Pack	32 bit	64bit
Windows XP†	SP3	Y	N
Windows Server 2008	SP2	Y	Y
Windows Server 2008 R2	SP1	N	Y
Windows 7 ‡[1]	SP1	Y	Y
Windows 8.1 ‡[2]	--	Y	Y
Windows Server 2012 R2 ‡[3]	--	N	Y

Processor: Recommended 2.0 GHz or faster

RAM: 1GB or more

Hard Drive Space: Airodis < 100MB

SQL Server Support: Airodis is designed for use with Microsoft SQL Server 2008 R2 but will run with SQL Server 2005

Please see the web site (www.airodis.com) for more detailed system requirements, these may change depending on how Airodis is used.

> Note that although not directly supported by the Airodis installer files this software will also run on Windows Server 2003 and Windows Server 2003 R2. Please contact Ecotech Pty Ltd for assistance.

† Windows XP is no longer supported after Airodis version 5.0.9
‡[1] Windows 7 Professional as a minimum
‡[2] Windows 8.1 Professional only
‡[3] Windows Server 2012 R2 - only *Standard* version tested although all versions (*Foundation*, *Essentials*, *Datacenter*) should be acceptable

6.2 Installing Airodis

Using the Airodis Setup Utility

As of version 5.0.6 Airodis now comes with an easy installer. If installing from a DVD the installation index page should be displayed when the DVD is inserted.
If the autorun feature is turned off on the host computer this page can be invoked by double clicking the 'index.html' file in the *Web* directory on the DVD.
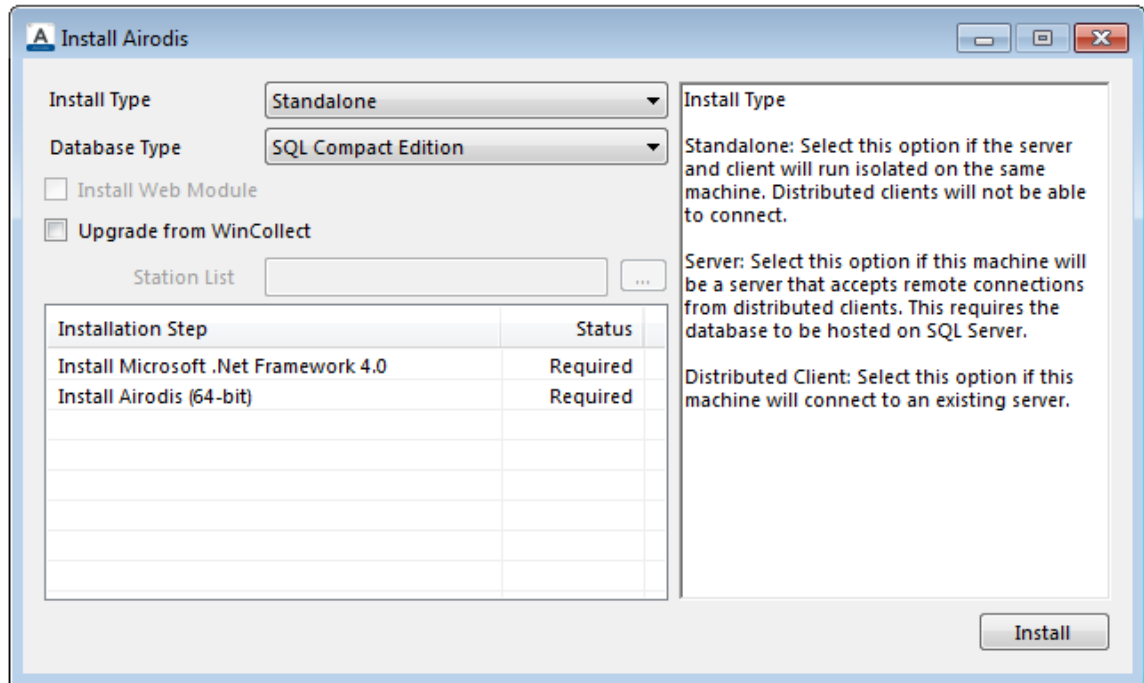

Installation Index Page

Click on the *Install Airodis* option to start the installer.

To bypass the installer index page and start the setup utility directly simply double click on the *'Setup.exe'* file in the *Install* directory on the DVD.

Note that all of the Ecotech Pty Ltd installers and utilities are digitally signed for security.

Airodis Installer

The installer presents the user with a number of installation types which are explained on the right-hand-side of the dialog.

The *Database Type* will change to reflect the default option depending on the *Install Type* but is also user configurable (See also Which Database Should I Install?).

Every time the *Install Type* or *Database Type* is changed the list of *Installation Steps* will be updated.

Clicking the *Install* button starts the installation, progress can be followed by checking the *Status* column in the *Installation Steps* list.

The host machine may be required to be rebooted after certain installation steps, after the reboot the Airodis setup will run and the user can select the *Install* button to proceed to the next installation step or *Start Airodis* to start the Airodis application.

There are further options to install the *Airodis Web Module* component (this requires an additional licence) and to upgrade from an existing WinCollect installation.

Note that the Airodis setup utility will determine the host operating system and install the correct files, either 32 bit or 64 bit, as appropriate for the platform.

Which Database Should I Install?

Airodis can be installed with a Microsoft SQL Compact edition database or optionally a Microsoft SQL Server 2008 R2 Express edition database. The type of database to be installed should be determined by the user according to how they are going to use Airodis. This choice also determines which installation packages are required.

The Microsoft SQL Compact is a 'single file' database so this type of database is recommended for single users on a single host machine. It could be used by multiple users on the same machine, although not concurrently. For auditing, the name of the user currently logged on to the machine will be used.
Microsoft SQL Compact can not be used for systems that have Distributed Clients, all Airodis components must run on the same host machine.
The Microsoft SQL Compact database files have a maximum size limit of 4 GB.

For installations where there may be multiple users, *Distributed Client* installations and concurrent users the Microsoft SQL Server 2008 R2 Express database would be a better option. The audit log would then use either the users Windows logon or a SQL logon.

Manual Installation using the Airodis Installation Packages

This section is aimed at the user who is not installing Airodis from the installation media but have obtained the separate installation packages.
If not installing manually then skip to Configuring Services.

Packages and Version Numbers

The Airodis install consists of two installation packages:
- Airodis Dependencies xxx.exe
- Airodis 5.yyy.zzz (xxx).exe

Where:
- xxx is the target platform, x86 (32 bit) or x64 (64 bit)
- yyy and zzz are the Airodis release numbers

Installation with Microsoft SQL Compact

In order to install the Microsoft SQL Compact edition and Airodis, only the Airodis installation package is needed. During the installation of Airodis if Microsoft .Net Framework 4.0 is not installed on the host machine it will be downloaded and installed as part of the installation process, an internet connection is required for this.
This is the only dependency for this type of installation.
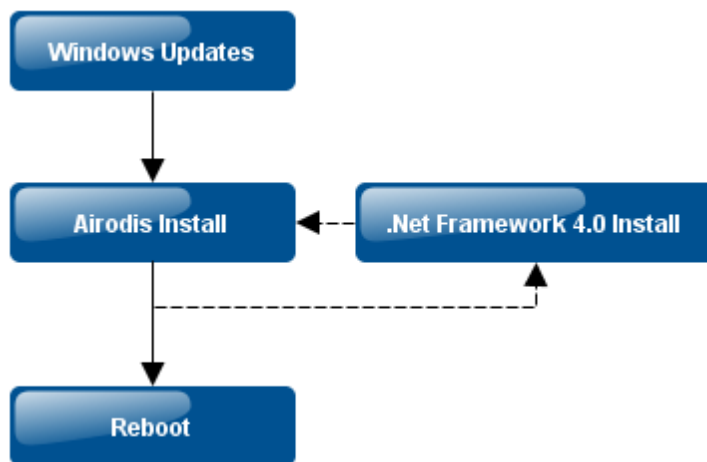
Installation order with Microsoft SQL Compact

Installation order should be performed as follows:

1. Ensure that the host computer operating system has the latest updates and security patches installed.
2. Run the Airodis installer package, download and install Microsoft .Net Framework 4.0 if required.
3. Reboot the computer once installation is complete.

> Microsoft SQL Compact database files are stored in the *% PROGRAMDATA%/Ecotech/Airodis/Database* folder and have the same name as the workspace they are associated with.

Installation with Microsoft SQL Server 2008 R2 and Dependencies

To install Microsoft SQL Server 2008 R2 Express and Airodis both the Airodis Dependencies and Airodis installation packages are needed.
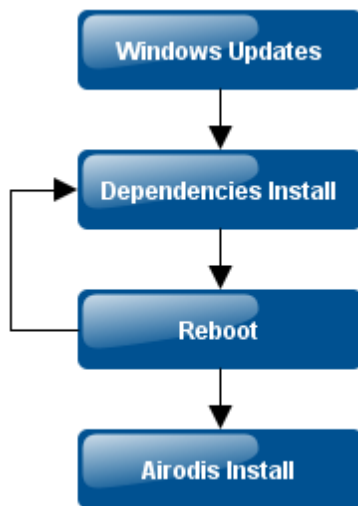
Installation Order with Microsoft SQL Server 2008 R2 Express and Dependencies

Installation order should be performed as follows:

1. Ensure that the host computer operating system has the latest updates and security patches installed.
2. Run the Dependencies installer package and reboot the computer as required until the installer states that installation is complete.
3. Reboot the computer after Dependencies installation is complete and then run the Airodis installer package.

> The installation of the Airodis Dependencies typically takes around 20 minutes on a fast machine, during which time the computer will be unavailable for use.

Airodis Dependencies Installation

The Airodis Dependencies installation package contains all of the software needed to get Airodis up and running.
It contains:

- Microsoft .Net Framework 4.0
- Microsoft Installer 4.5
- Microsoft SQL Server 2008 R2 Express (and its dependencies)
  - Microsoft .Net Framework 3.5 SP1
  - Microsoft Powershell 2.0

If you have an existing Microsoft SQL Server database that can be used by Airodis then you do not need to install SQL Server 2008 R2 Express.
If you do not have Microsoft .Net Framework 4.0 installed on the target computer then this option will not be optional in the installer. It must be installed.

For a 'normal' install, all of the components in the Airodis Dependencies installer package are selected to be installed by default. The installer will install the SQL Server 2008 R2 detected dependencies, SQL Server 2008 R2 and Microsoft .Net Framework 4.0. Depending on which components are installed the computer may need to reboot between installations of the components. Please follow the installer prompts. When the computer has restarted and an Administrator has logged in the installer will automatically resume for the user to continue with the install.

It is generally good practice to reboot the computer after the Airodis Dependencies installer has completed, whether the user is prompted or not. This is especially true if either Microsoft .Net Framework 4.0 or Microsoft SQL Server 2008 R2 Express were installed.

It should be noted that on some platforms/configurations the Airodis Dependencies installer may fail, particularly when installing Microsoft SQL Server 2008 R2 Express. In this case the installer will attempt to inform the user of the reason for the failure or direct them to an installation log that may contain further information.

Microsoft SQL Server 2008 R2 Express

The SQL Server is installed preconfigured. The database instance name is defaulted to **Airodis** and the current user is added as a SQL Administrator with the following credentials:

- Username: **sa**
- Password: **Ecotech01**

It is important that these credentials are entered into the relevant fields on the *Workspace Manager* before attempting to connect to the database for the first time. Once the fields have been populated save the workspace using the *File->Save Workspace* menu option.
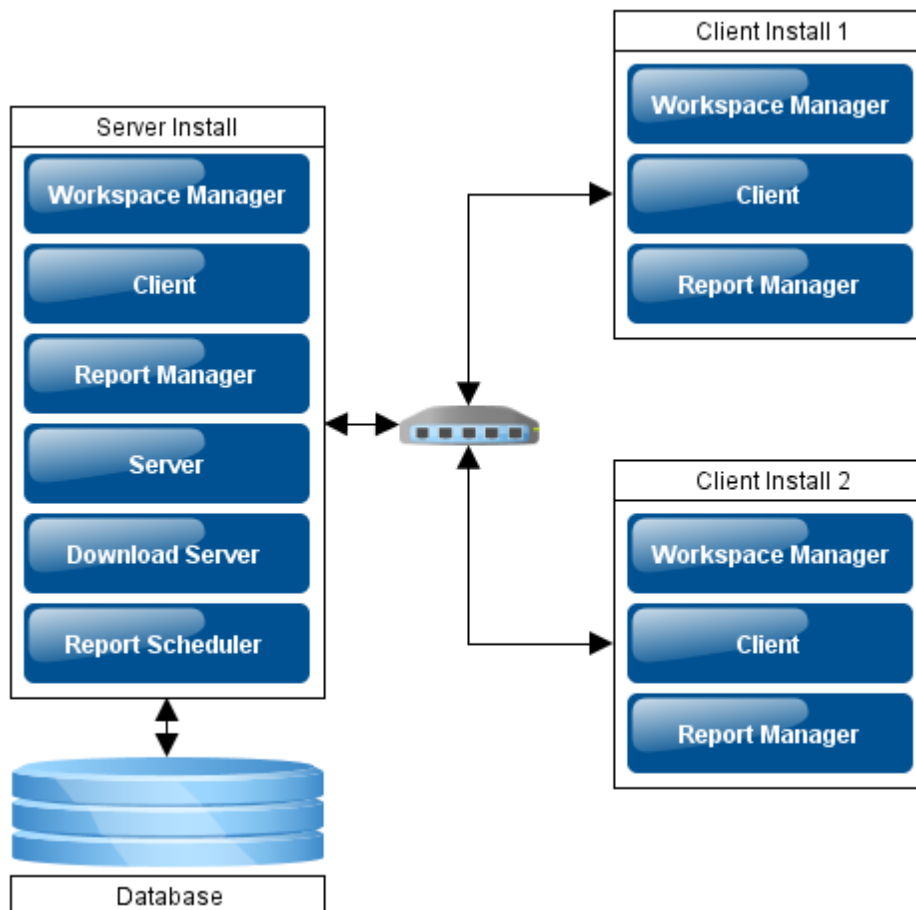
Airodis Install

> **Note before installation.**
> There is no Microsoft support for 64 bit Jet OLEDB 4.0 which is needed to import legacy WinCollect 4 databases in the WSL file format. If the user intends to import legacy databases on a 64 bit machine then they should install the 32 bit version of Airodis to perform these tasks. Once the databases have been imported the 64 bit version of Airodis can then be installed.

Airodis is dependent on Microsoft .Net Framework 4.0 and if it is not detected on the target machine then the user will have the option of downloading and installing it as part of the Airodis installation. (If the Airodis Dependencies Installer has not already been run)

Airodis can be installed as a Full installation or Distributed Client installation (commonly known as a Client install).

Installation Types

- Full installation: Installs all of the Airodis modules needed (this is the only

installation type available for the Demo release). These modules are: the Workspace Manager, Server, Download Server, Client, Report Scheduler and Report Manager. The Full installation is the typical installation on a machine that will act as a server in the system.

- Distributed Client installation: Installs only the modules needed to run Airodis as a Client. These are: the Workspace Manager, Client and Report Manager.

In addition to the two installation types the user also has the option of installing the demonstration database. This database file contains two demonstration stations and data that can be imported into Airodis.

Note after installation.
Once Airodis has been installed and the *Workspace Manager* started pressing the <**F1**> key in any of the windows will bring up the CHM help file.
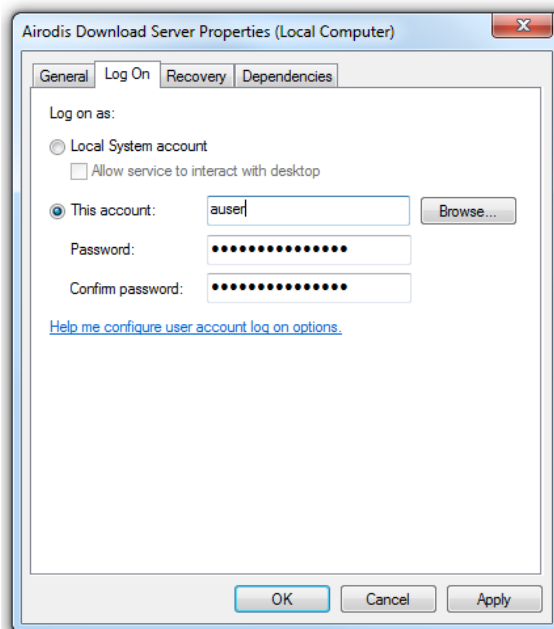
Configuring Services

The *Server, Download Server* and *Report Scheduler* can be run as Microsoft Windows services or in a console. Normally these processes would be run as Windows services and require configuring with appropriate credentials in order for them to do so.

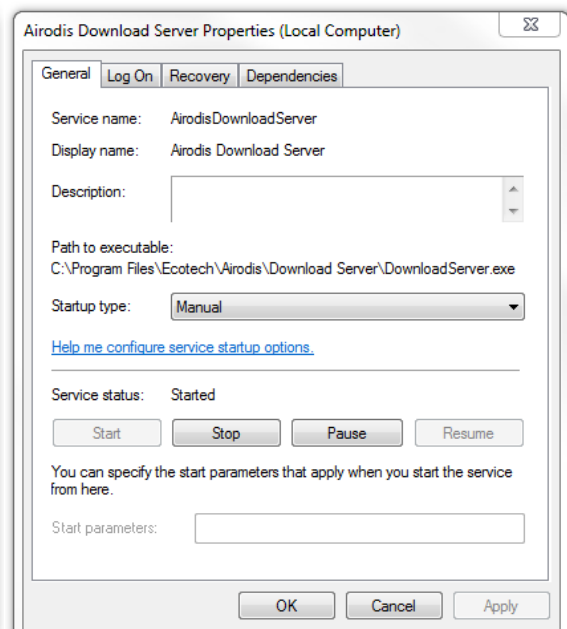In the Windows Component Services dialog the three services are named as follows:

Services

Select each service in turn and in the *Log On* tab configure the service with an account that has the appropriate credentials to run the service. See *Services: Log On Tab*
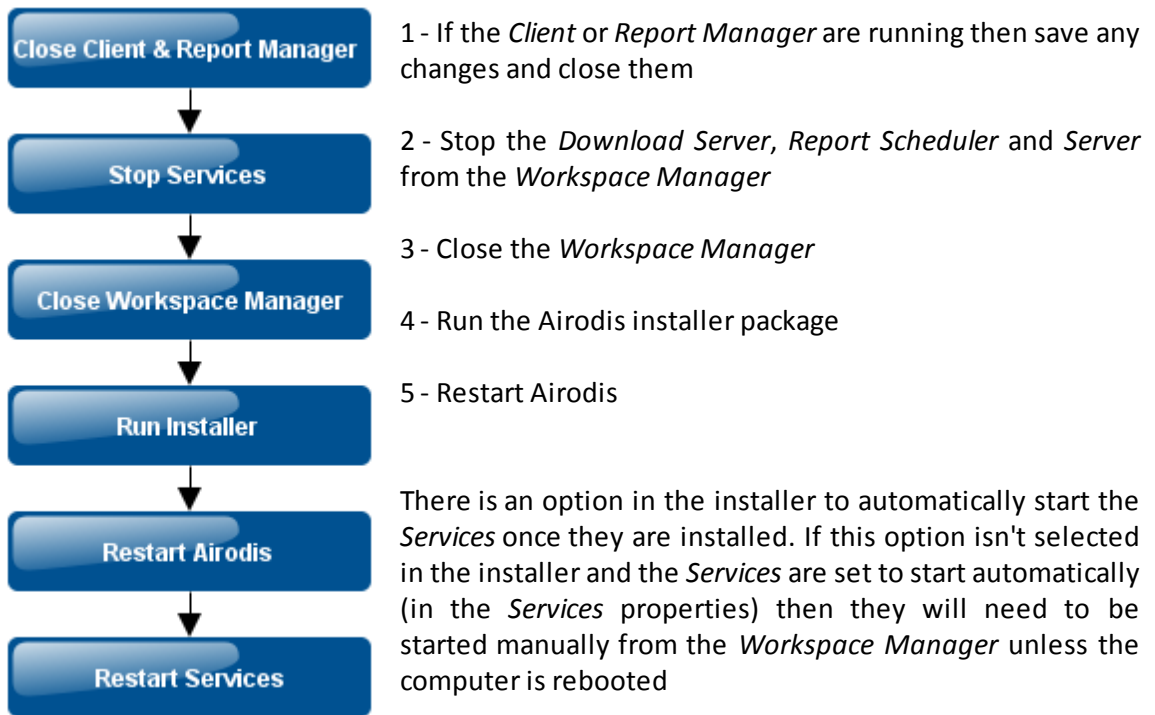

Services: Log On Tab

Services: General Tab

The services can also be configured to run automatically when the computer restarts by selecting *Automatic* in the *Startup* type box. See *Services: General Tab*.

6.3 Updating Airodis

When a new build version of Airodis is available it can be installed without having to uninstall the previous version. There is no need to run the *Dependencies Installer* again.

The install should be performed by following these steps:

1 - If the *Client* or *Report Manager* are running then save any changes and close them

2 - Stop the *Download Server*, *Report Scheduler* and *Server* from the *Workspace Manager*

3 - Close the *Workspace Manager*

4 - Run the Airodis installer package

5 - Restart Airodis

There is an option in the installer to automatically start the *Services* once they are installed. If this option isn't selected in the installer and the *Services* are set to start automatically (in the *Services* properties) then they will need to be started manually from the *Workspace Manager* unless the computer is rebooted

Updating Airodis

> ⚠ If the *Services* are not stopped prior to an install then the Airodis installer will automatically stop them before the install commences.

> 📝 As of build 4568 Airodis has the ability to check online for updates. It is advisable to keep the Airodis software up-to-date. New releases will often contain new features and improved functionality.

6.4 Software Security

> 📝 Note that this section is relevant to the full version of Airodis only.
> The Demonstration version requires no dongle in order to run.

In order for the Airodis software to run the security dongle needs to be plugged in to the host machine running the *Server* component.

The dongle is a driverless USB device that will be recognised and installed by the operating system the first time it is attached to the computer.

This dongle is used to licence both applications running locally and Distributed Client installations.

Licencing
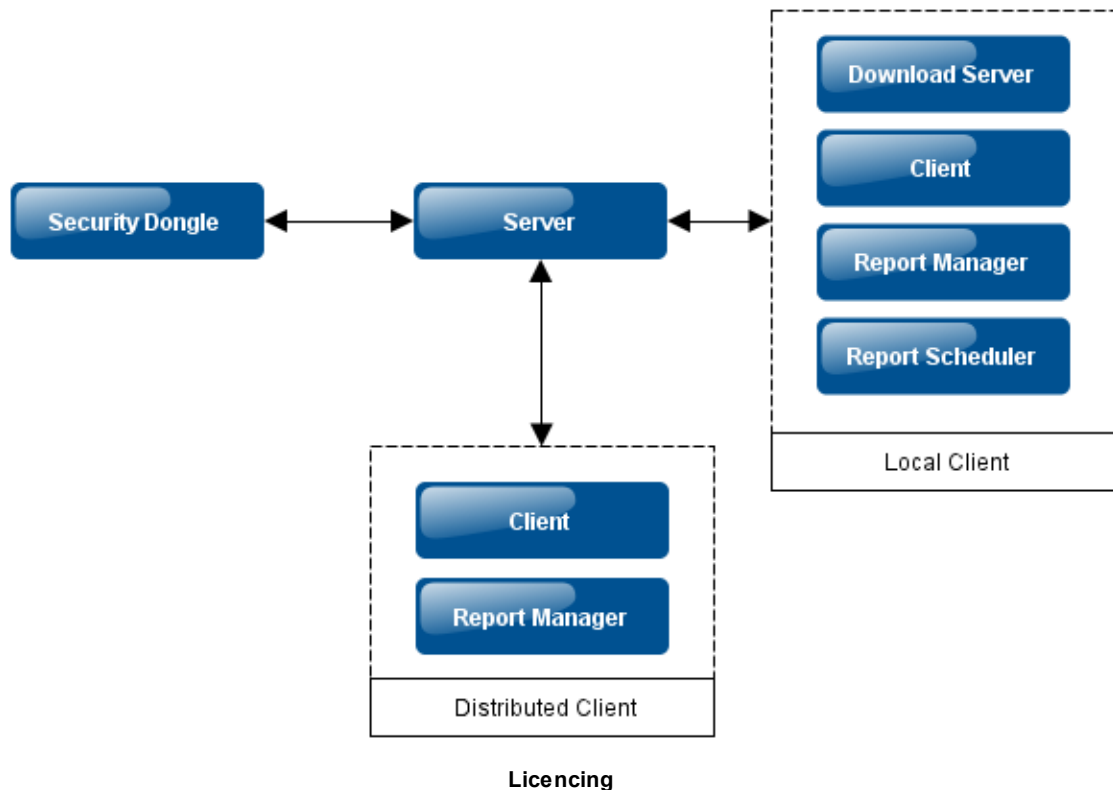
Licencing on Virtual Machines

On Virtual Machines where there may be no physical USB port available to host the dongle there are a couple of solutions that can be used.

Digi.com - AnywhereUSB

This is a USB over TCP/IP solution, and allows a USB hub to be given a network address that can then be accessed from the virtual machines.
See www.digi.com for more details of this product.

Ecotech Pty Ltd have tested the *AnywhereUSB/5 G2* device, accessing it successfully from the following virtual platforms:

- Microsoft Windows XP x86
- Microsoft Windows 7 x86 and x64
- Microsoft Windows Server 2008 x86 and x64
- Microsoft Windows Server 2008 R2 x64

Note that the above were all Virtual Machines running on VMWare vSphere 4.1.0. Additional testing was completed successfully with the same machines running on VMWare Workstation 7.1.3.

FabulaTech.com - USB over Network

The 'USB over Network' software package from FabulaTech (www.fabulatech.com) has also been successfully tested with the platforms detailed above.
This is a software only solution and a free 15 day trial is available.

This product allow the accessing of a USB device, plugged into a host computer, via the network.

6.5   Database Roles

Airodis uses the SQL database to implement security roles in the system.

There are four roles available in the SQL Server:

Role	Description
Administrator	Airodis Administrator can Create tables and Procedures, Delete, Execute, Insert, References, Update, Select and Alter data in the database
Editor	Airodis Editor can Insert, Select and Update data in the database
Reporter	Airodis Reporter can Select data from the database
Viewer	Airodis Viewer can Select data from the database

The *Client* and *Report Manager* use these roles to determine what the user can access in their respective windows.

Client

Function	Minimum Role Required
Add New Station / Remove Station	Administrator
Save Station List	Administrator
Download Data / Cancel Download	Editor

Schedule Download	Editor
Manage Reasons	Editor
Import Stations	Administrator
Add Database	Administrator
Set Clock on Logger	Editor
Add / Remove Channel	Administrator
Add / Remove Vector Pair	Administrator
Delete Data	Editor
Apply Time Offset	Editor
Commit Data	Editor
Import Data from File	Editor
Add Rule	Administrator
Add Rule Condition	Administrator
Add Rule Email	Administrator

Report Manager

As the *Report Manager* doesn't write or alter data in the database there is no difference between the *Editor* and *Reporter* roles but the *Viewer* role is restricted.

As a *Viewer* the user is able to open *Reports* and *Schedules* and make changes to them but these changes can not be saved.

Database Management

Part VII
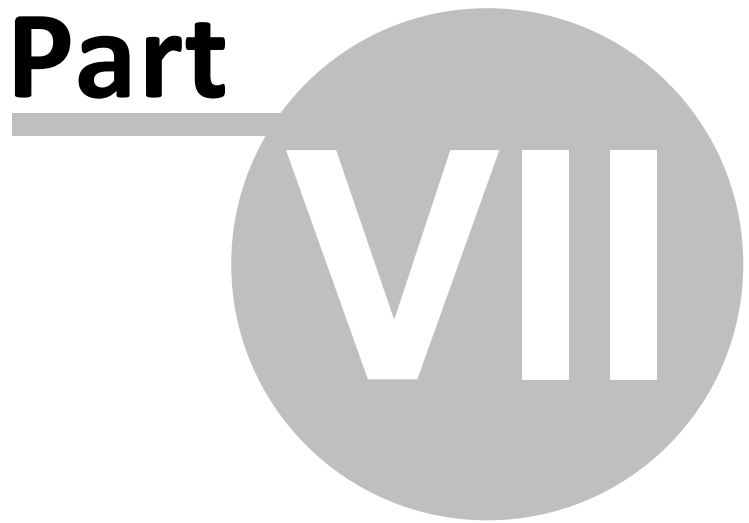
7   Database Management

Microsoft SQL Server 2008 R2 Express is limited in terms of automated database backups which are present in the fully licenced versions.

To get around this limitation Ecotech Pty Ltd recommend the use of a free tool called **SQLBackupAndFTP** which can be downloaded from here: http://sqlbackupandftp.com.

This software is recommended for any users running the Express version of SQL Server. Users running the fully licenced version of SQL Server should have their own database backup and restoration processes in place.

Features

Note that some of these features are only available in the paid version of the software. SQLBackupAndFTP enables the user to run scheduled backups (full, differential or transaction log) of their SQL Server Express databases. The free version is limited to scheduled backups of two databases although an unlimited amount of databases can be manually backed up.

The software can also run file and folder backups, it can zip and encrypt backups and store them locally, in a network folder, on a FTP server or in the cloud.
In addition it can also remove old backups and send email notification confirmation when a scheduled job is finished.

Databases can be restored from backup using the one click restoration tool.

Installation and Setup

Installing SQLBackupAndFTP is easy. Just download the installer from the link shown above, run it and follow the prompts.

Setting Up Backups

See the tutorial shown here: http://sqlbackupandftp.com/tutorial/ to get up-and-running.

Airodis File/Folder Backups

There are specific Airodis files and folders that should be backed up as well as the database.

1. Workstation files: Found in the *%APPDATA%/Ecotech/Airodis/Workspace Manager* directory
2. Station and Reason Lists: Found in the *%PROGRAMDATA%/Ecotech/Airodis/Server* directory
3. Report Files and Templates: Found in the *%PROGRAMDATA%/Ecotech/Airodis/Server/ Reports* directory
4. Report Template Files: Found in the *%PROGRAMDATA%/Ecotech/Airodis/Server/Templates* directory
5. Report Schedules: Found in the *%PROGRAMDATA%/Ecotech/Airodis/Report Scheduler* directory
6. Downloaded Data Files: The directory for which is specified in the *Client* application

> If using Microsoft SQL Compact database then these database files can be found in the *%PROGRAMDATA%/ Ecotech/Airodis/Database* directory. They can be backed up and moved like any other file once Airodis has been closed down.

> The system *%APPDATA%* and *%PROGRAMDATA%* folders are platform specific and differ between different versions of the operating system. To find out where the folder is on your system just type *%APPDATA%* or *%PROGRAMDATA%* into the address bar in Windows Explorer. Note too that these folders may be hidden by default, you may also need to change the Windows File/Folder 'Show Hidden Folders' setting.

Workspace Manager

Part

VIII
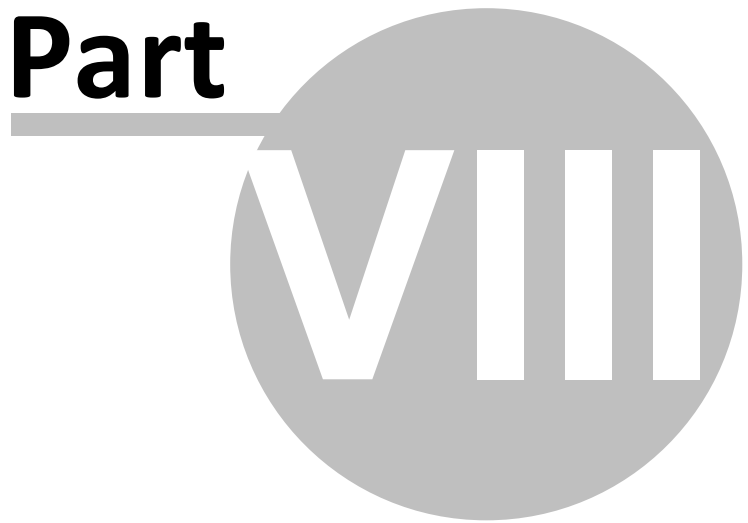
8 Workspace Manager

The *Workspace Manager* is the control panel for all of the Airodis components.

There is a dropdown list on the bottom left-hand-side of the *Workspace Manager* window that allows the user to switch between different languages.
Note that on changing the language selection the *Workspace Manager* will be restarted but the *Client* and *Report Manager*, if running, will need to be restarted manually.
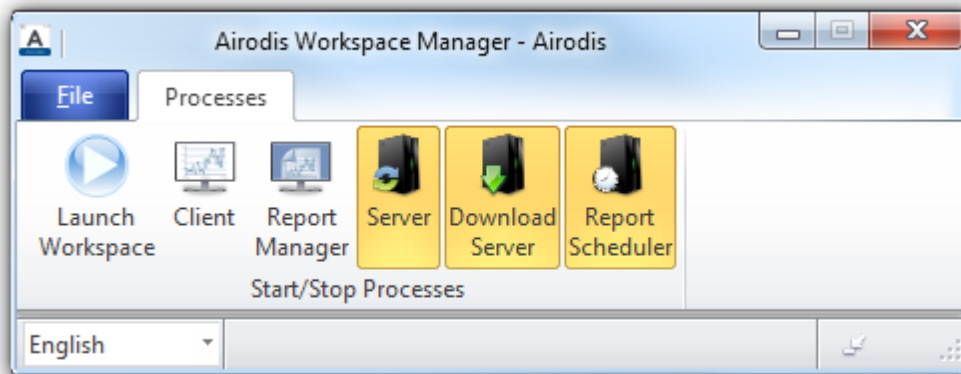
Workspace Manager (Collapsed)

Processes Tab

The *Processes* tab displays the current status of each component. When a process icon is highlighted it signifies that the process is running.
The user may click on a process icon to start or stop that process.

The *Launch Workspace* icon will start all of the components if they are not already running.

> ⚠️ Using the *Workspace Manager* to stop the *Client* or *Report Manager* components will result in those components closing immediately and unsaved changes may be lost. It is better to close these components from within their respective windows.

File Tab

The *File* tab is used to create *New* workspaces, *Open* existing workspaces and *Save* workspace changes.
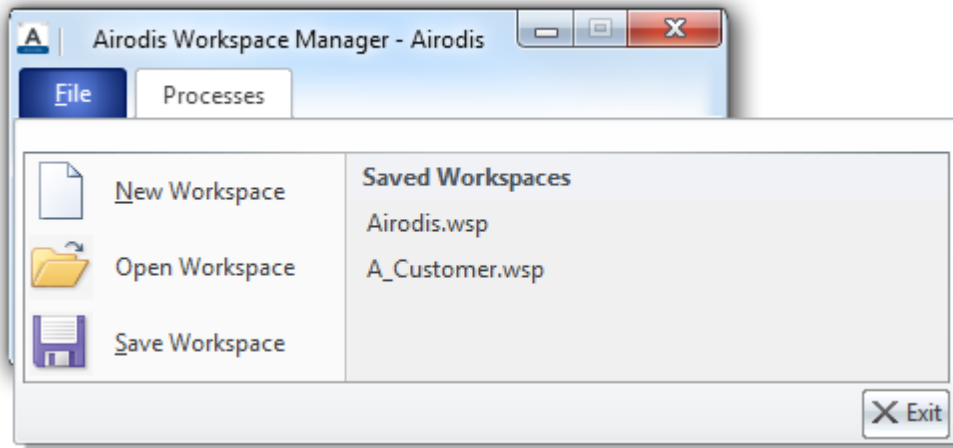
Workspace Manager File Tab

When selecting *New Workspace* the view will change to the *Processes* tab and the *Workspace Name* field will be highlighted.

By default the new workspace name is set to Airodis but can be changed, when the workspace details are filled in the new workspace can be saved by using the *Save Workspace* menu item.
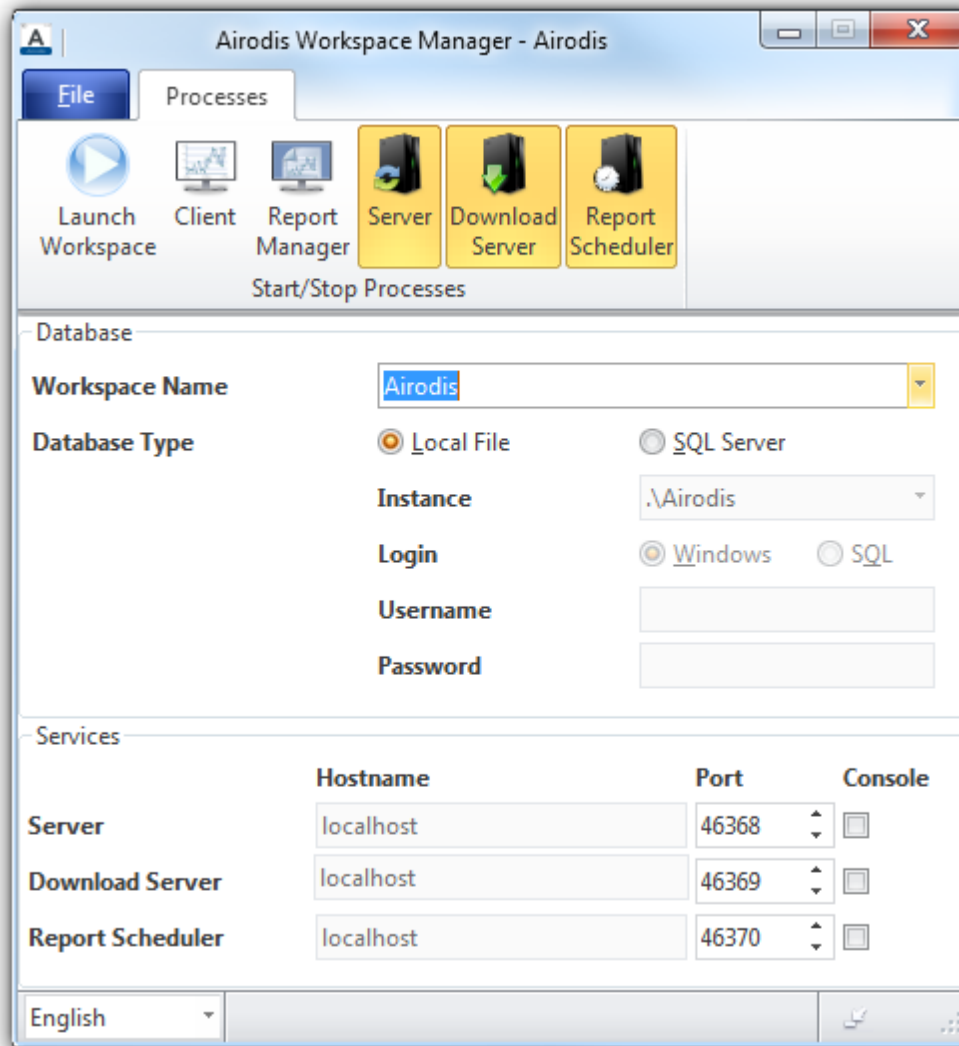
It is advisable to have unique workspace names on the network to avoid confusion.

The Workspace Manager gives an overview of the Workspace Manager functionality.

8.1   Extended Functionality

The Workspace Manager window can be expanded to display a number of additional configuration items.

Workspace Manager (Expanded)

Item	Functionality
Workspace Name	This is the name of the currently loaded workspace. Use the dropdown box to select another workspace that may have been discovered on the network. See *Workspace Discovery*.
Database Type	Select *Local File* for Microsoft SQL Compact (single database file) or *SQL Server* for a Microsoft SQL Server database
SQL Instance	This is the name of the Microsoft SQL Server instance to connect to (unavailable when using *Local File*)
Database Authentication	Authentication for logging onto the database, either SQL or Windows (unavailable when using *Local File*)
Server Hostname	The host name of the machine that the Server component is running on. In this case the Server is running on the same

	machine as the Workspace Manager. If the user selected a workspace detected on the network then this box will show the name of that machine instead.
Server Port	The port number that the Server component is communicating on.
Run in console	If ticked the Server component will run in a console and the user will be able to view diagnostic messages that are produced. If unticked the Server will run as a service. See *Configuring Services*.
NOTE: The *Hostname*, *Port* and '*Run in console*' items above also apply to the *Download Server* and *Report Scheduler*. These items should not be changed unless advised by an Ecotech Pty Ltd employee.	

> Database authentication is unnecessary when using Microsoft SQL Compact Edition (Local File), the user name of the person currently logged into Windows will automatically be used for all auditing purposes within the database.

8.2   Workspace Discovery

An Airodis workspace will broadcast its presence over the network. In this way a *Client* may connect to another workspace on the network without the user having to manually configure the settings.

Use the *Workspace Name* dropdown box to select another workspace that has been detected on the network.

Workspace Discovery
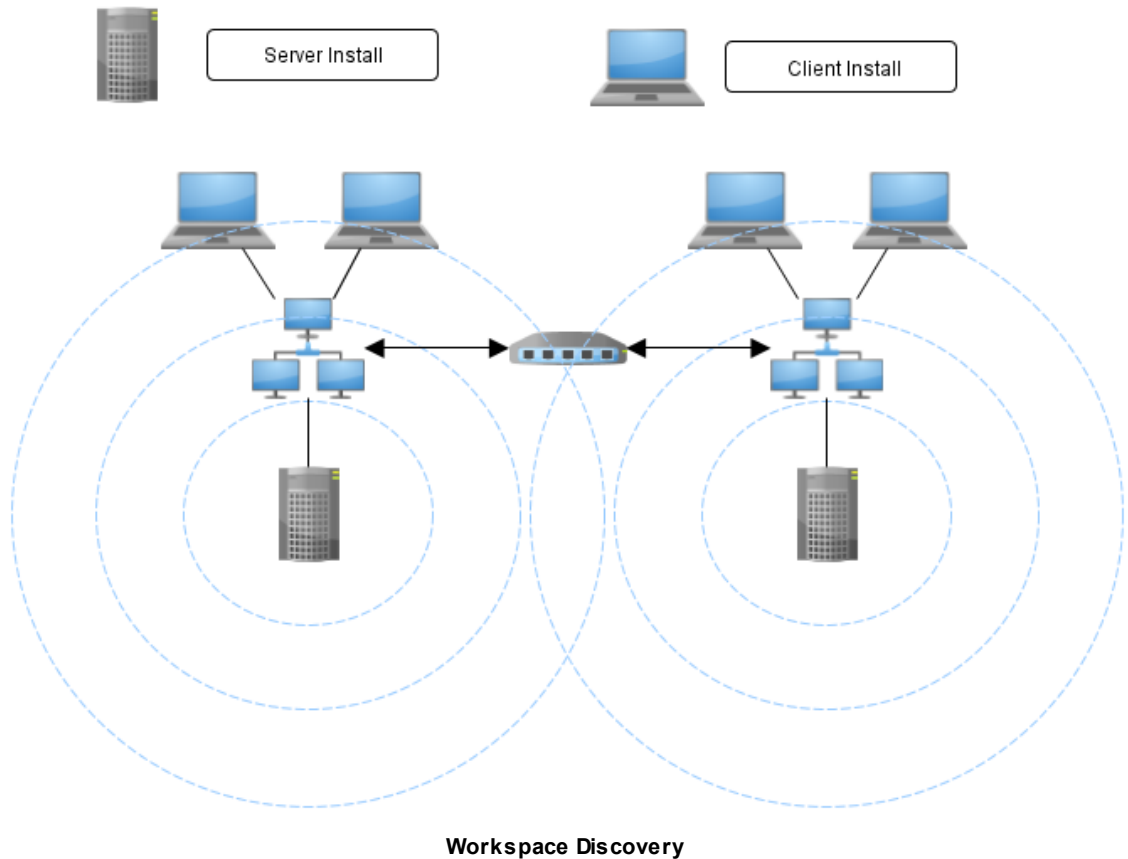
In order to turn off this discovery mechanism launch Airodis with a **/nodiscovery** command line argument. This can be achieved by editing the *Target* field of the Airodis desktop icon.

Client

Part IX

9   Client

9.1   Overview

The *Client* component is used to manage *Stations* and data.

Follow these steps to add a new *Station, Acquire* its configuration and *Download* data:

Add New station	*File->Add Station* in the *File* tab or *Home->Add Station* menu item in the *Home* tab
Configure Station Parameters	Set the station parameters in the *Station* tab
Save Station List	Save the station details using the *Home->Save Changes* menu item or the Quick Access toolbar
Acquire Config	Acquire the logger configuration using the *Station->Acquire Configuration* menu item
Check Reports and Channels	Check report intervals in the *Station* tab and channels in the *Channels* tab
Save Station List	
Download Data	Save the station details using the *Home->Save Changes* menu item or the Quick Access toolbar

Add New Station Workflow

Download data using the *Home->Download* menu item or the right-click menu item on the station

9.2   File Tab

The File tab offers access to the following functionality:

Item	Description
Add Station	Adds a new *Physical* or *Virtual Station.* The view will then change to the *Station* tab where the station details can be entered.
Save Changes	Saves any changes made e.g. Stations added

Dismiss Changes	Dismisses any changes made since the last *Save* operation or the application was started
Reason List	Opens the *Reason List* dialog
Import Stations	Opens the *Station Import* dialog
Options	Opens the *Options* dialog
Exit	Closes the *Client* application

Adding a Station details the process of adding a new physical station.

9.2.1 Import Station

WinCollect 3/4 stations can be imported into Airodis using this tab.
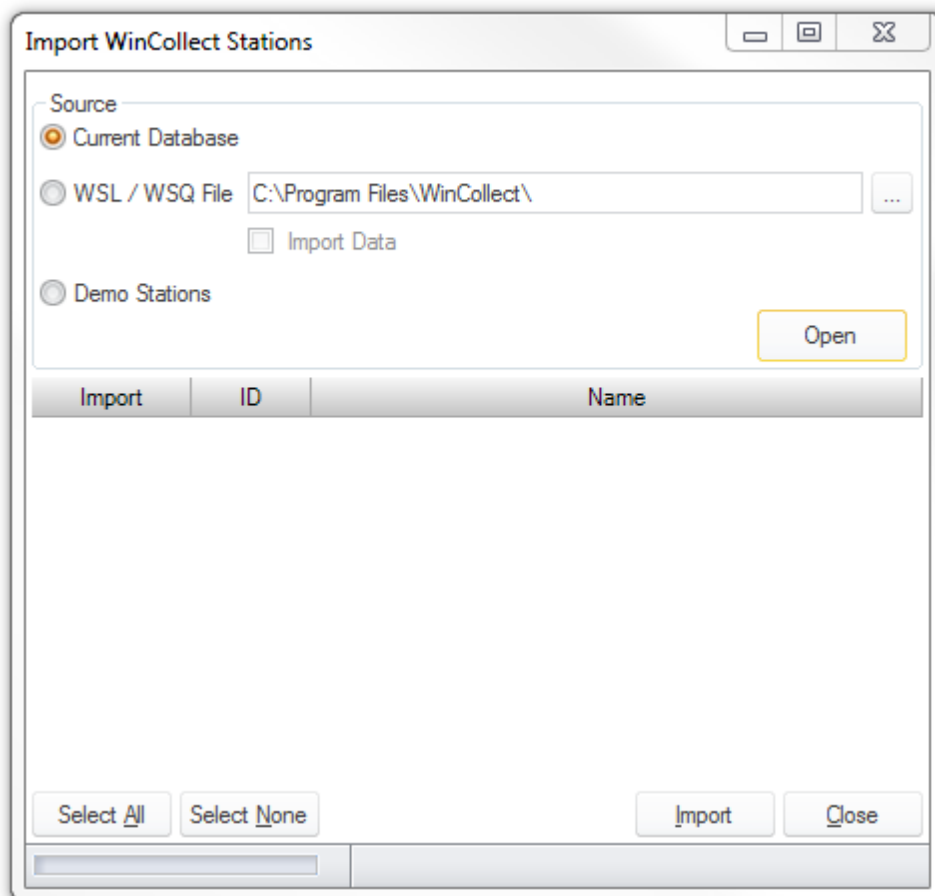
Import Stations Dialog

Source

Current Database

Select this option if you have an existing WinCollect 3/4 SQL Server database that you want to use with Airodis. The stations will be imported into Airodis giving the user full access to all of the functionality with the existing stations and data.

WSL/WSQ File

If the user has an existing WinCollect format WSL or WSQ file then the stations and data can be imported from this file into the new Airodis database.
1. Select the file that you would like to import from
2. Tick the *Import Data* box if data import is required
3. Select the *Open* button, a list of stations in the file will be shown
4. Select the stations to be imported
5. Select *Import*
6. The stations are imported, when a station has been imported it is greyed out in the list
7. When all stations are imported select the *Close* button to dismiss the dialog
8. Select the *Stations* tab to check the stations and *Save* or *Dismiss* the changes as required

> When importing stations from a 'live' database, i.e. one still being used by WinCollect 3/4, ensure that WinCollect has been closed before proceeding otherwise the database file may be locked and inaccessible.

> Once a station has been imported and the station list saved the user may at some point delete that station and wish to import it again. When a station is deleted its database tables remain so the database administrator will be required to manually delete those tables before the station can be imported again.

> There is no Microsoft support for 64 bit JET OLEDB 4.0 drivers.
> See Troubleshooting Tips -> Client -> Station Import.

Demonstration Stations

Airodis ships with a demonstration database from which two stations and their data may be imported. This is a useful exercise if the user would like to play with Airodis and explore its functionality but do not have any instruments or data of their own. The demonstration data is imported automatically.
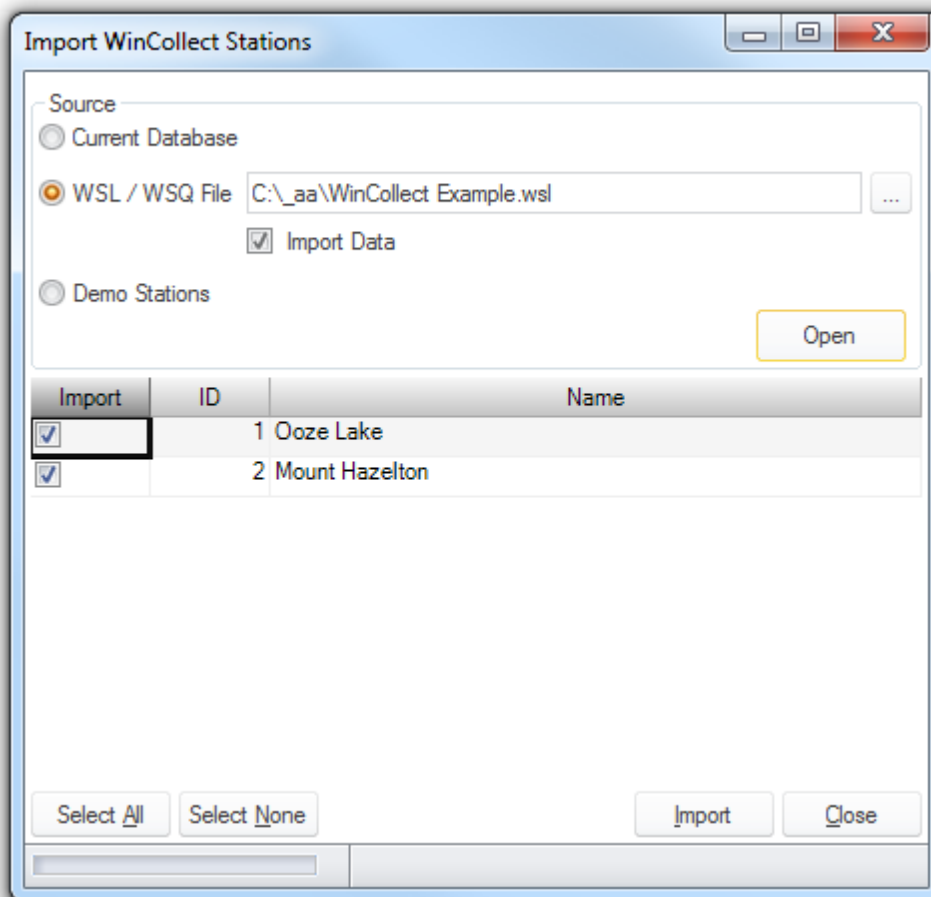
Import Stations Dialog - WinCollect 3/4 Database File

Follow the steps detailed above to import the demonstration stations as you would for a WSL/ WSQ file.

Create a new 'demonstration' workspace to import the stations into, by doing this the demonstration stations are not mixed with production stations.

On import the demonstration data date range is altered so that the data ends at the end of the month preceding the import (current) date.

Demonstration Stations shows you how to import the demonstration stations and data and view that data.

9.2.2 Options

The *Options* dialog contains a number of tabs enabling the user to set global options, view information about the installed version of Airodis and send *Support Requests*.

Global Options

The *Global Options* tab is where the user can set up email settings for sending *Support Requests*, *Alarms* or *Reports*.
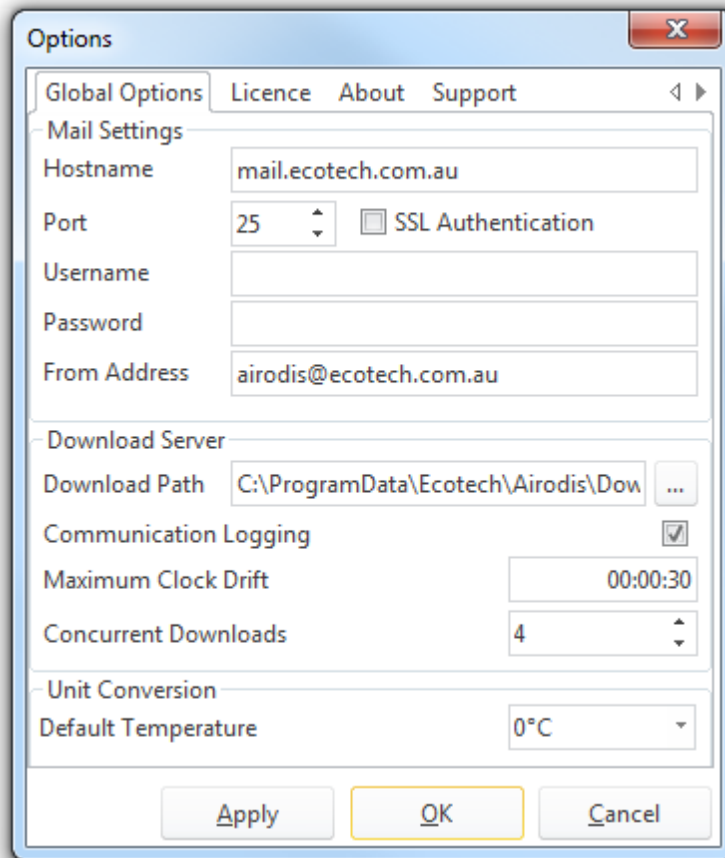
Global Options Tab

Mail Settings

See Setting up email for using this feature.

Download Server

Item	Description
Download Path	This is the top-level path to where the downloaded data will be stored. A directory is created for every station and its data stored within.
Communication	Select this box if communication logging is to be enabled.

Logging	
Maximum Clock Drift	When automatic time synchronisation is enabled the logger clock will be synchronised only when it drifts by this amount. Specifying a low number in the order of a couple of seconds can be detrimental to the performance of Airodis.
Concurrent Downloads	The maximum number of concurrent downloads allowed. This can be configured by the user depending on their hardware specification.

> Communication logging is the logging of all communication between Airodis and the equipment it is communicating with. This logging is turned off by default and should only be turned on if advised to do so by an Ecotech Pty Ltd employee, as it has the potential to slow down the system.
> Communication logging is usually only turned on when troubleshooting a download problem.

> The *Maximum Clock Drift* time should be set between 15 seconds and 15 minutes. A 'drift' of over 15 minutes may indicate a more serious problem and Airodis will not correct it.

Unit Conversion

The default temperature used in the unit conversion process can be specified here. Options are 0, 20 and 25 degrees Centigrade and should be changed according the the users requirement.

Licence Tab

This tab shows the licence details for the registered user.
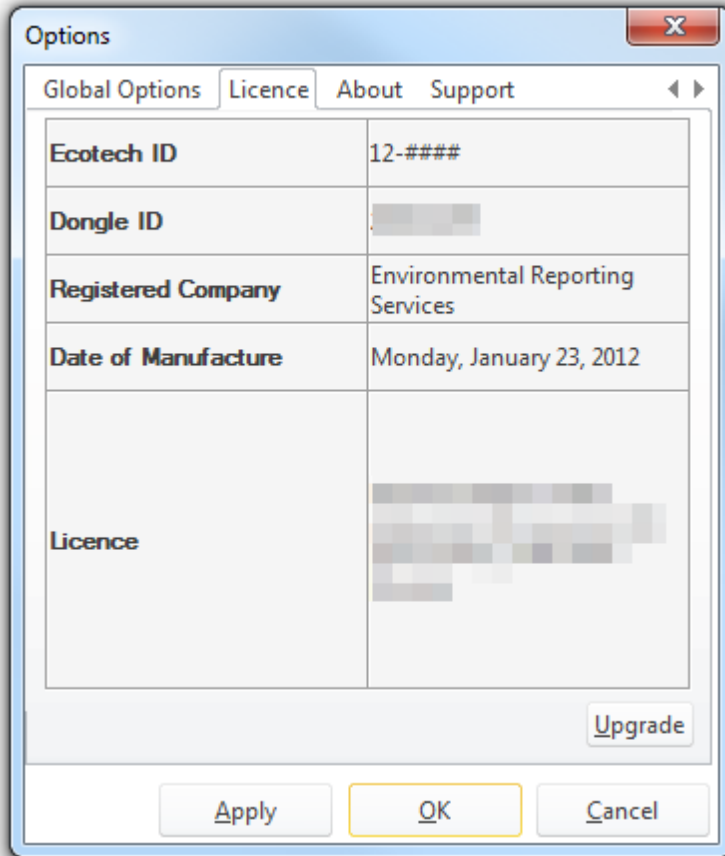
Licence Tab

Item	Description
Ecotech ID	The ID of the Ecotech order number in the form of xx-xxxx
Dongle ID	The ID of the software security dongle used with this system
Registered Company	Name of the company/individual that the licence is registered to
Date of Manufacture	The date that the software security dongle was programmed
Licence	Licence details of the edition of Airodis that can be run, the number of *Stations* that can be added, the number of *Servers* and *Client* seats

Upgrading a Licence

In order to upgrade a licence first a licence file must be obtained from Ecotech Pty Ltd, this will normally be delivered via email. Each licence file is specific to the dongle ID that it has been programmed for. The licence file is simply a XML file that must not be altered or edited in any way, this will render the file useless.

Follow the following steps to update a dongle using the licence file:

1. Obtain a licence update file from Ecotech Pty Ltd
2. Ensure that you have the latest version of Airodis running. See *Checking For Updates*.
3. Save the licence file on the host computer that the *Airodis Server* is running on
4. Open the *Client* application on that same machine and navigate to the *Options -> Licence* tab
5. Select the *Upgrade* button on the tab and navigate to where the licence file has been saved.
6. Select the licence file and click on the *Open* button
7. The dongle will automatically be updated with the new licence details
8. Once the update is applied restart the Airodis components to ensure that the licence changes are propagated throughout the system

> Should an error occur while updating the dongle details with the new licence file, please contact the Ecotech Pty Ltd Technical Support team.

About Tab

Details the version of Airodis that is running, its build number and build date. This is useful information when contacting Ecotech Pty Ltd with any feedback.

Support

This tab enables the user to file a *Support Request* if they encounter difficulties when using the software. Click on the *File Support Request* button to do so.
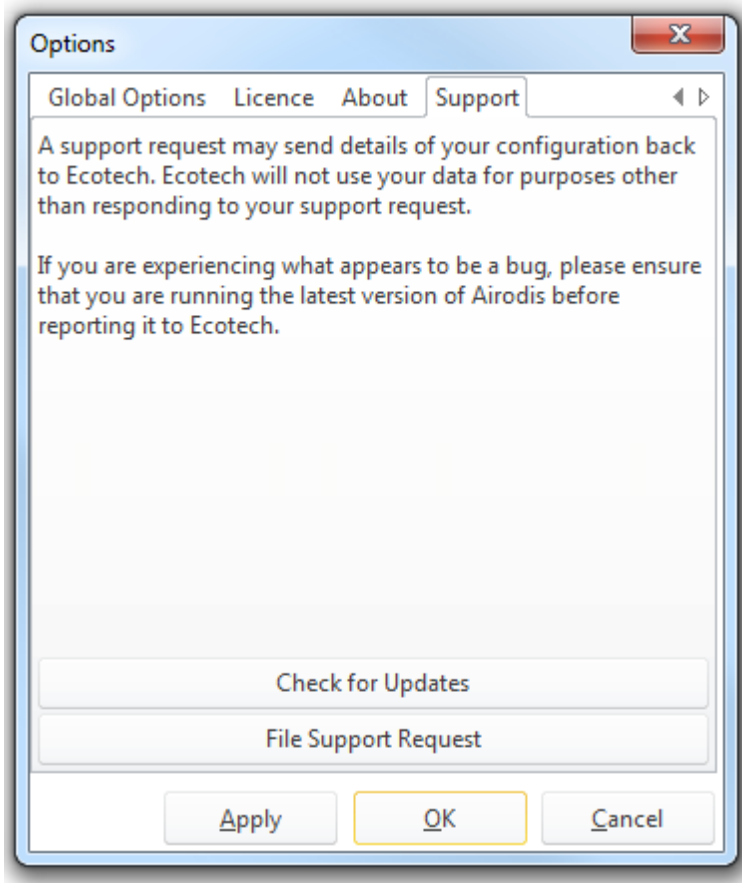
Support Tab
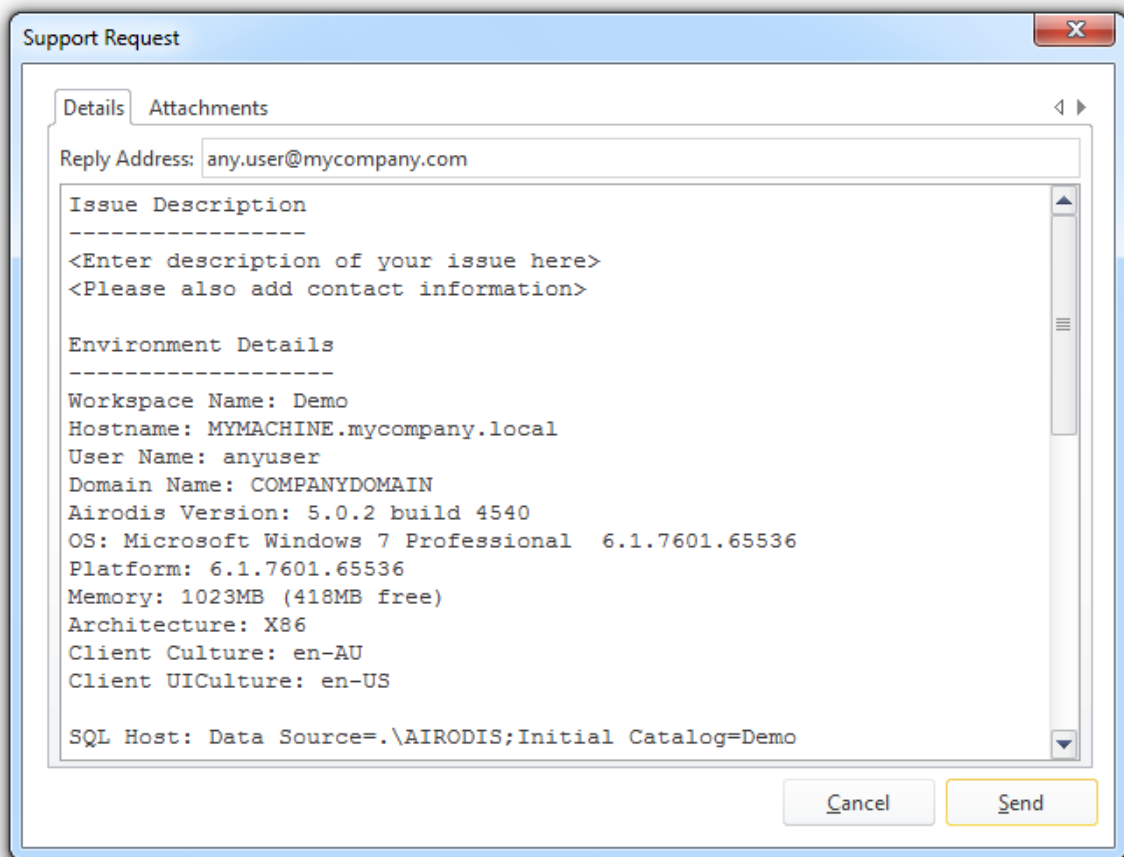
To determine if there is a newer version of Airodis available the user can click on the *Check For Updates* button. Note that the host computer must be connected to the internet in order to do this.

9.2.2.1   Filing a Support Request

The *File Support Request* button enables the user to send details of the system and software to Ecotech Pty Ltd when there is a problem.
The Airodis *Support Request* functionality can use a local SMTP server to send emails, see Setting up email, or it will attempt to use
the Ecotech Pty Ltd SMTP server.

Details Tab

Support Request Details Tab

The *Details* tab shows the details that Airodis has collected about the system. These include:
- Environment Details
  - General machine and platform details
  - SQL connection status, security and user details
  - The Server connection status, its host name and port details
  - The Download Server connection status, its host name and port details
  - The Report Scheduler connection status, its host name and port details
- Licence Details as shown in the Licence Details tab

These is also space at the top of the tab under *Issue Description* where the user may include additional details about the problem.

Attachments Tab
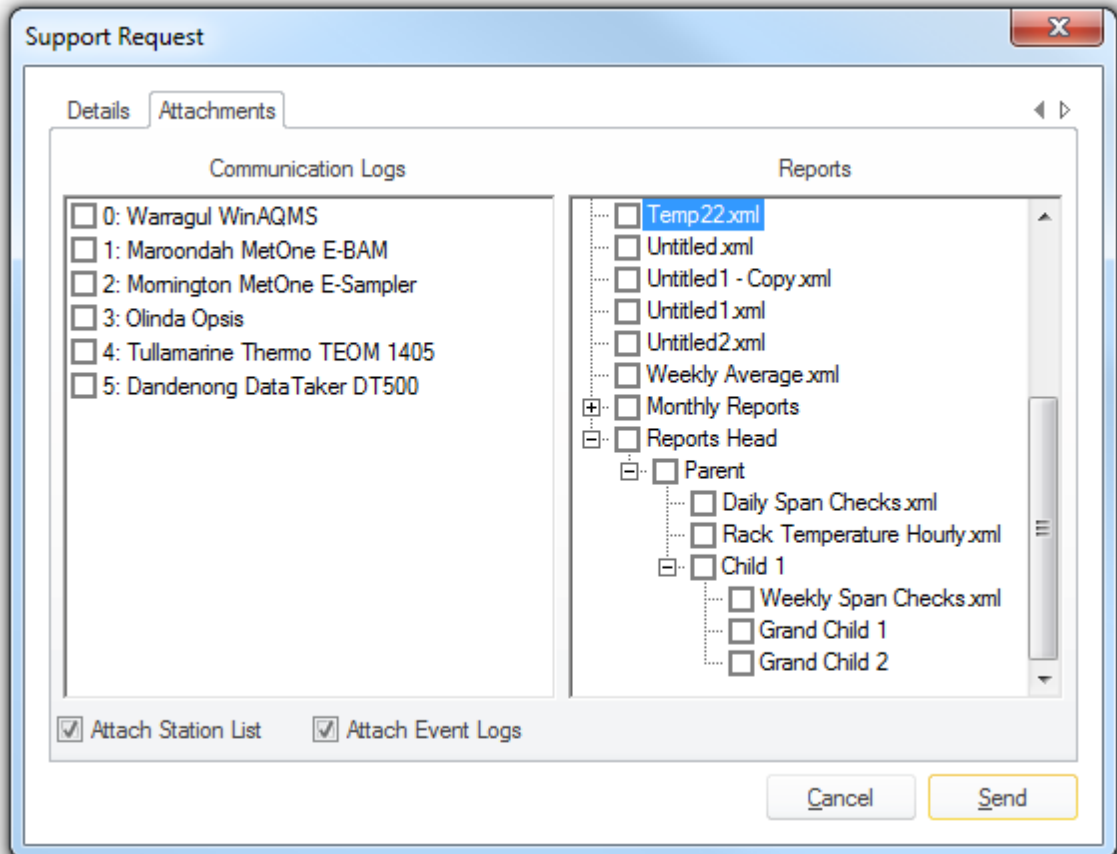
Support Request Attachments Tab

On the *Attachments* tab the user is able to select which *Communication Logs* and/or *Reports* need to be sent with the support request. In order for *Communication Logs* to be sent communication logging needs to be enabled (See Enabling Communication Logging)

By default the *Attach Station List* and *Attach Event Logs* are selected and should always be sent with any support request.

Clicking on the *Send* button will attempt to send the email and attachments via a SMTP server.

9.3 Home Tab

The *Home* tab offers some of the functionality of the *File* tab but also has functionality specific to the selected *Station*.
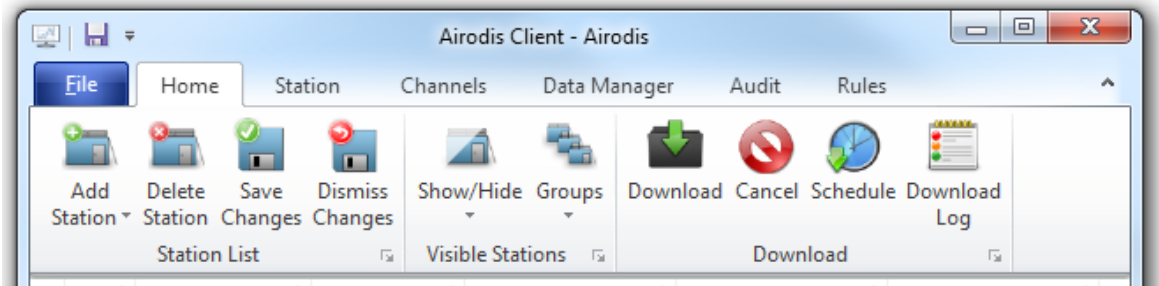
Home Tab

Item	Description
Add Station	Adds a new *Physical* or *Virtual Station.* The view will then change to the *Station* tab where the station details can be entered.
Delete Station	Deletes the selected *Station* from the station list. This function will not delete the *Stations* tables from the database.
Save Changes	Saves any changes made e.g. Stations added
Dismiss Changes	Dismisses any changes made since the last *Save* operation or the application was started
Show/Hide	*Shows* or *Hides* the selected *Station(s)*. Hidden stations can be viewed by selecting *Show Hidden Stations* menu item
Groups	Enables the user to show a *Group*, add the selection to a new *Group* or remove the selection from a *Group*
Download	Shows the *Download Data* dialog
Cancel	Cancels the download for a selected *Station* or *Stations*
Schedule	Shows the *Download Scheduler* dialog for the selected *Station*
Download Log	Shows the *Download Log* dialog for the selected *Station*

Download Data
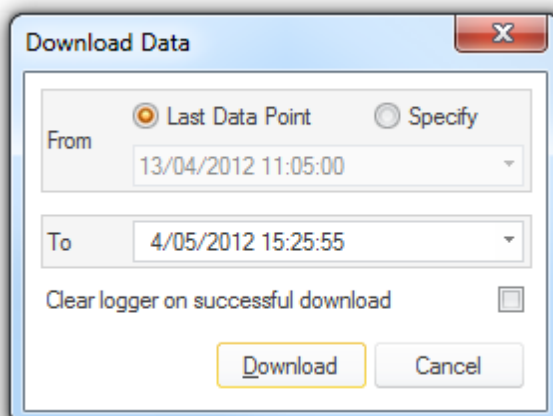
Download Data Dialog

This dialog enables the user to specify the data range that is required for downloading. Downloads will either commence from the *Last Data Point* to the present time or a date range specified by the user.

The *Last Data Point* is the date of the last data found in the database.
Some instruments have a finite memory so the user may wish to clear the logger memory when the download has finished. This should be used with extreme care as data deleted from the logger can not be recovered.
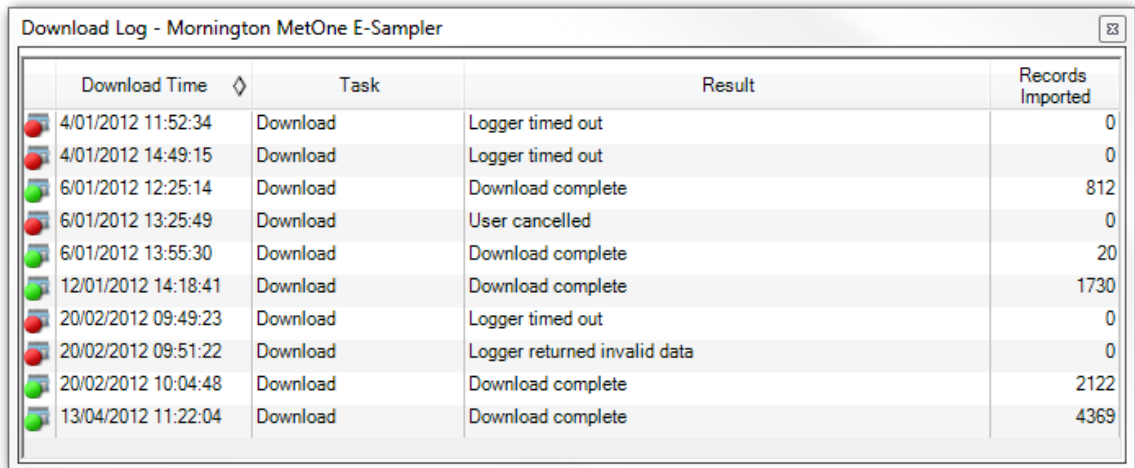
Schedule
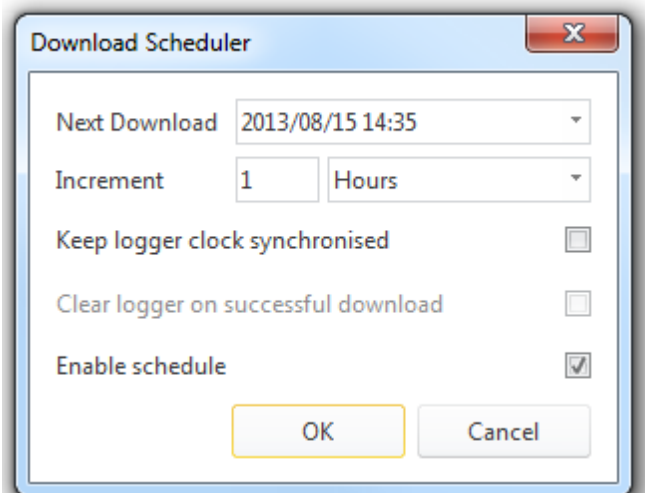
Download Scheduler Dialog

The *Download Scheduler* enables the user to schedule downloads for the selected *Station*.

Item	Description
Next Download	The date and time when the next download is scheduled for
Increment	The time between downloads in weeks, days, hours or minutes
Keep Logger Clock Synchronised	Set the logger clock to the same date and time as the system clock. This will be applied if the logger clock drifts by an amount greater than or equal to the time set in the Global Options Maximum Clock Drift settings.
Clear logger on successful download	Clear the logger memory once a download is finished (use with extreme care)
Enable schedule	Enable the schedule once OK is selected

Download Log

The *Download Log* dialog displays a summary of the last 10 download tasks and their results. Download tasks include:

- Download
- Acquire Config
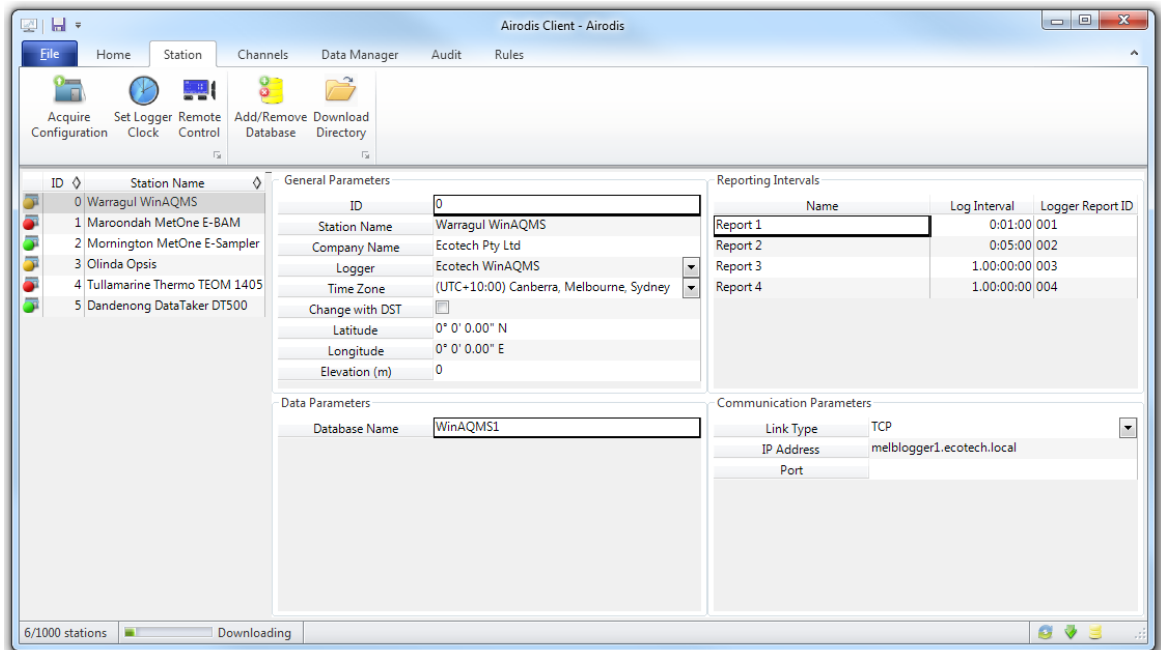- Get Logger Clock
- Set Logger Clock

The *Result* field will detail the outcome of the task while the *Records Imported* field displays that number of records.

The status icon colours denote the following:

No download from the logger or there was an error while downloading
The logger responded correctly but there were no records to download
All available records for the selected download range were downloaded without incident
An alarm was raised during the download

> Hover the mouse cursor over the status icon in the *Home* tab to see details of the last download.

9.4   Station Tab

Station Tab

Menu Items

Item	Description
Acquire Configuration	Acquires the configuration of the logger for the selected station. The Channels tab and Reporting Intervals will be populated if the configuration is acquired successfully. If the *Station* already has configuration settings the user will be given the option of overwriting or merging the existing settings.
Set Logger Clock	Opens the *Set Logger Clock* dialog. The user may then synchronise the logger clock with the system clock or set the clock manually
Remote Control	Opens the *Remote Control* dialog for the selected *Station*
Add/Remove Database	Opens the *Add/Remove Database* dialog
Download Directory	Opens a Windows Explorer dialog showing the download directory for the selected *Station.* The download directory is where the download files are kept as well as communication logs if logging is enabled

Set Logger Clock
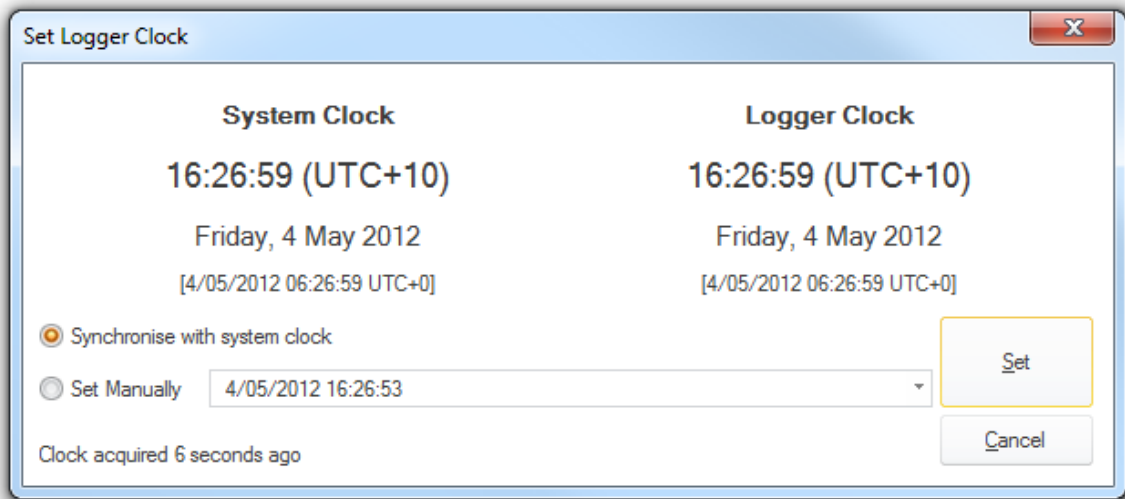
Remote Control
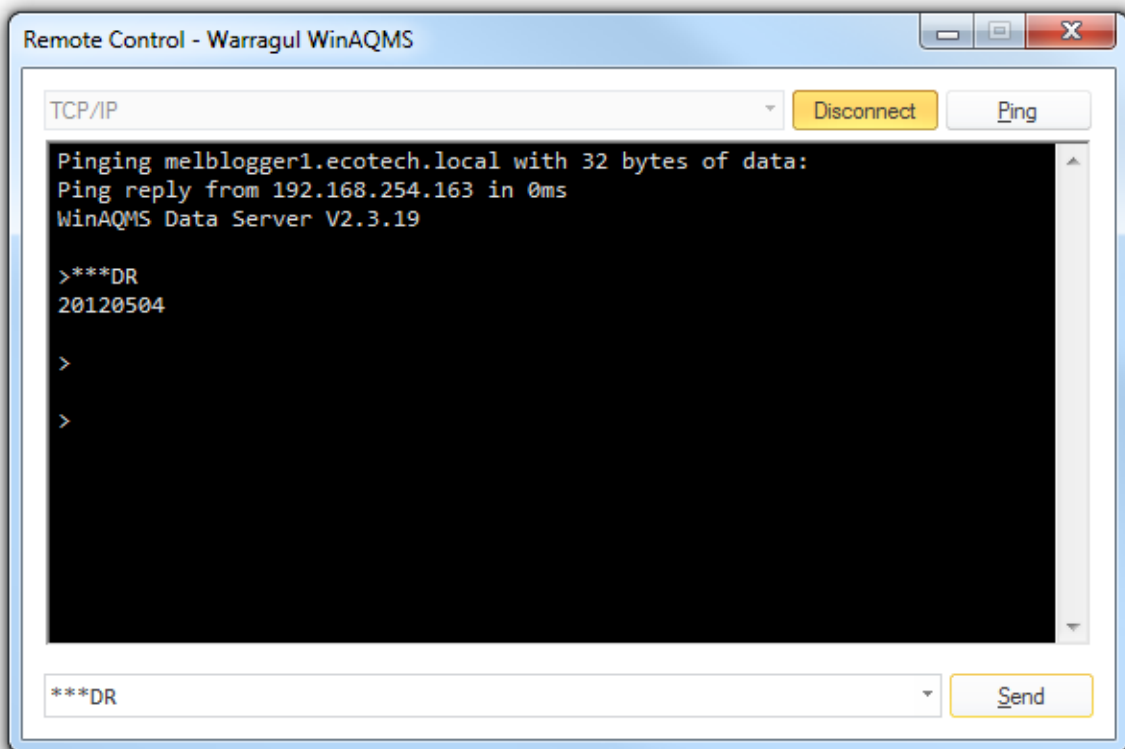
Remote Control Dialog

The *Remote Control* dialog allows the user to send commands to the logger and test connectivity. Not all options are available for all loggers.
Use the *Ping* button to send a ping command if the logger has a TCP/IP connection.

Commands can be typed into the command box at the bottom of the dialog and sent using the

Send button.

Where supported the command box will supply a list of common commands for that logger type.

Add/Remove Database

When talking about data storage the terms 'database' and 'tables' are used interchangeably for legacy reasons. In Airodis we are actually adding *Tables* associated with a *Station* to a database, not a new database per *Station*.
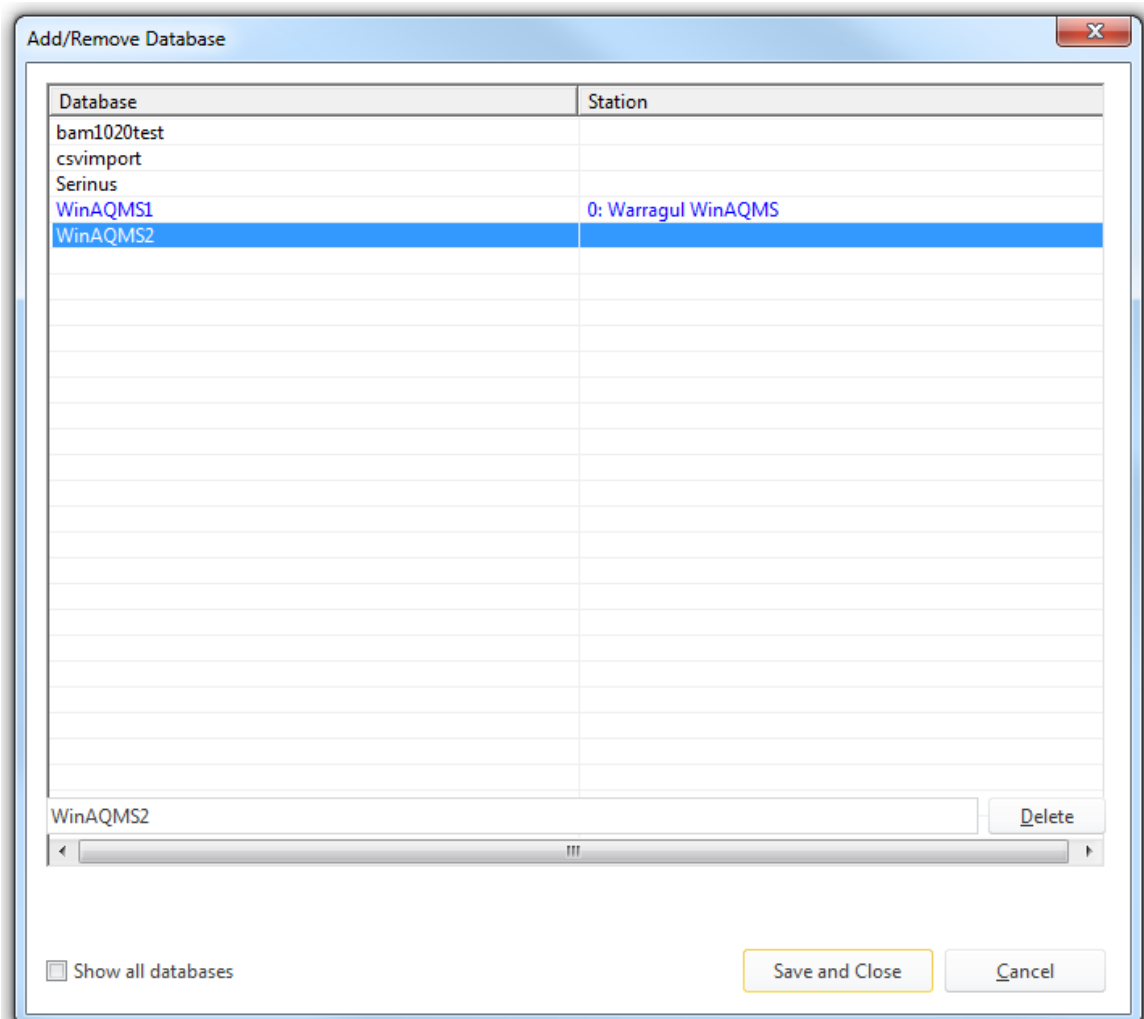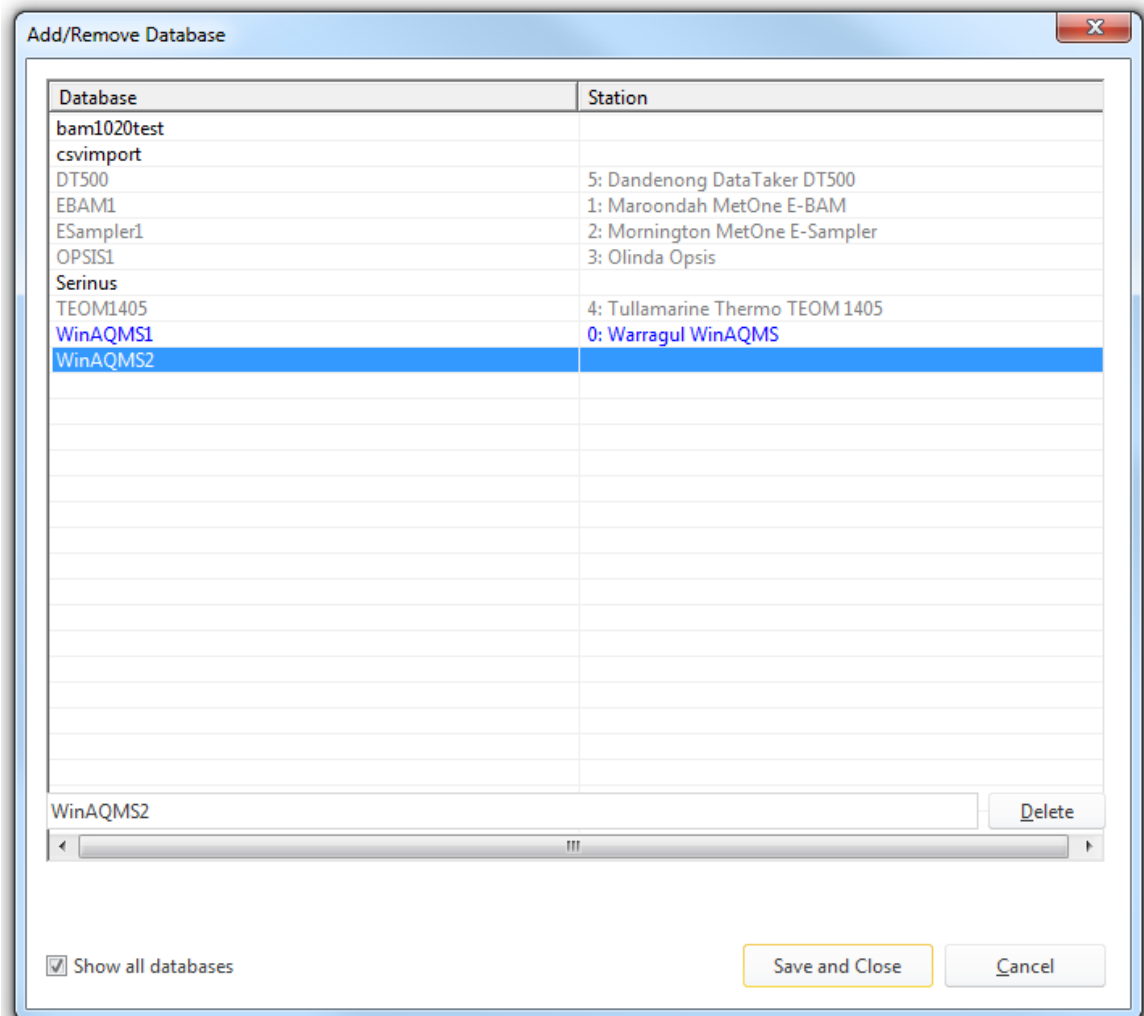

Add/Remove Database Dialog

To add a new database for the selected station select the *Add/Remove Database* menu item to display the *Add/Remove Database* dialog.

The dialog shows the currently selected *Station* and its associated database in blue text, it also

displays the other tables in the database that are not currently associated with a *Station*. To associate the current *Station* with a new database simply enter the new database name in the text box and select *Save and Close*.

To see which databases are associated with other *Stations* tick the *Show All Databases* box, the dialog will change as follows:

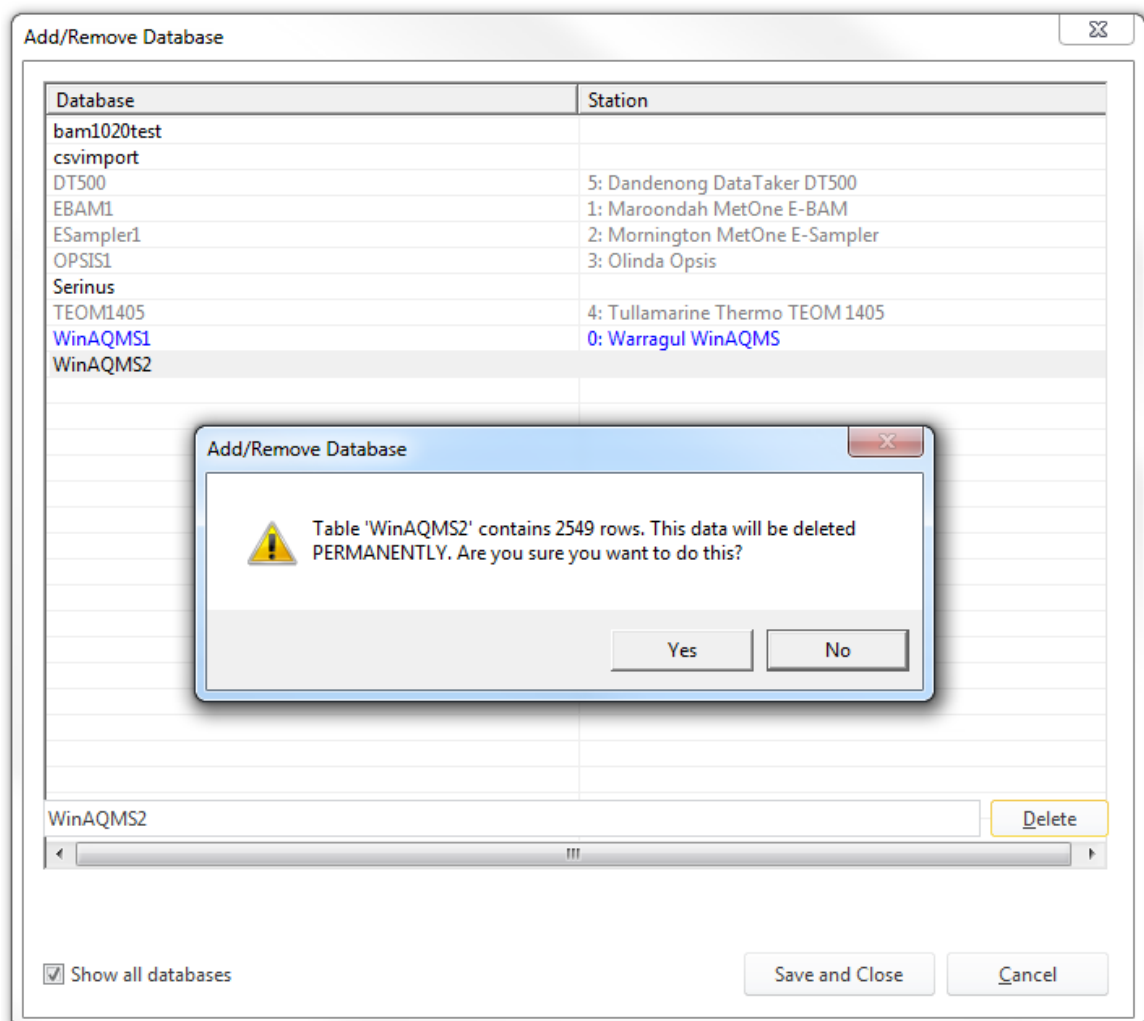**Add/Remove Database Dialog showing all databases**

If the user attempts to associate the current *Station* with a database that is already in use with another *Station* the following warning will be given:
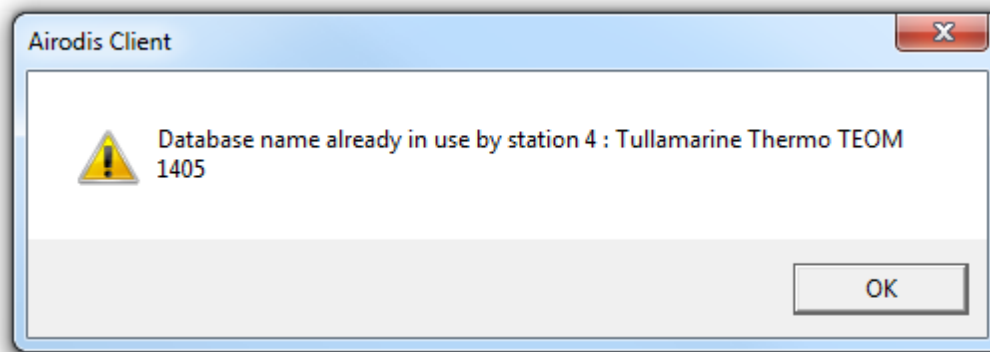
Warning - Database Already In Use

To delete a database select a database from the list and select the *Delete* button. The following warning will be given:

Delete Database Warning

> ⚠️ Deleting a database will PERMANENTLY remove the database tables and data. There is no way to get the tables or data back once they have been deleted. This feature is restricted to users with Administrator privileges and should be used with extreme caution.

> 💡 Allowing a *Station* to move between databases is helpful if the instrument moves location, in this way the user could have a database per location for that instrument.
> Other users may want to have a database per time period so a new database could be created and used every month or year.

> [Database Manipulation](#) demonstrates advanced database use.

9.4.1   Station Parameters

The *Station Parameters* are split into four distinct sections:

General Parameters

General parameters for this station, some parameters are optional.

Item	Description
ID	Some loggers require/support a logger ID. If the logger does not support or require an ID this field will be disabled
Station Name	(Optional) A meaningful name for this *Station*
Company Name	(Optional) The company name that this station belongs to
Logger	Select the logger type from the dropdown list
Time Zone	Select the required time zone that the logger is in from the dropdown list
Change with DST	Tick this box if the logger clock changes with Daylight Savings Time
Latitude	(Optional) The latitude of the station
Longitude	(Optional) The longitude of the station
Elevation	(Optional) The elevation of the station

Reporting Intervals

This window shows the report periods set on the logger. These values are obtained when the configuration is acquired from the logger.

> For a WinAQMS logger the report periods can not be obtained automatically and the Reporting Intervals will be populated with default values. These should always be checked manually to ensure that they are correct and changes made if they are not.

Data Parameters

This window shows the current database name that the station is using. The *Add/Remove Database* menu item must be used to add a database.

Communication Parameters

The *Communication Parameters* window defines the connection between Airodis and the logger. The fields available will change depending on the *Link* type.

Item	Description
Device Password	Some loggers support a password. If the logger supports a password then the default one will be used unless this field is populated.
Link Type	The connection to the logger: TCP/IP, Serial, Modem, File

TCP/IP Link:

Item	Description
IP Address	The *IP* address of the logger
Port	The port number that the logger is using. Some loggers (e.g. WinAQMS) use default ports, if this field is not populated then the default will be used

Serial Link:

Item	Description
COM Port	The *COM Port* that the logger is connected on
Baud Rate	The *Baud Rate*, 1200 to 115200
Data Bits	The number of *Data Bits* used, 5 to 8
Parity	*Parity* used, Even, Odd, Mark, Space or None
Stop Bits	The number of *Stop Bits* used, one, one point five or two

Modem Link:

| Item	Description
Device	Select *Any* or a specific modem installed on the system
Phone Number	The telephone number to be dialed. This field also supports commands from the Hayes AT command set such as 'W' for Wait and ',' for Pause if they are supported by the modem.
Dialup Type	*Direct Modem* or *Dialup Networking*. The following fields are for *Dialup Networking* only
Username	Networking user name
Password	Networking password
Logger IP Address	The *IP* address of the logger to connect to
Logger Port	The port number the logger is using

File Link:

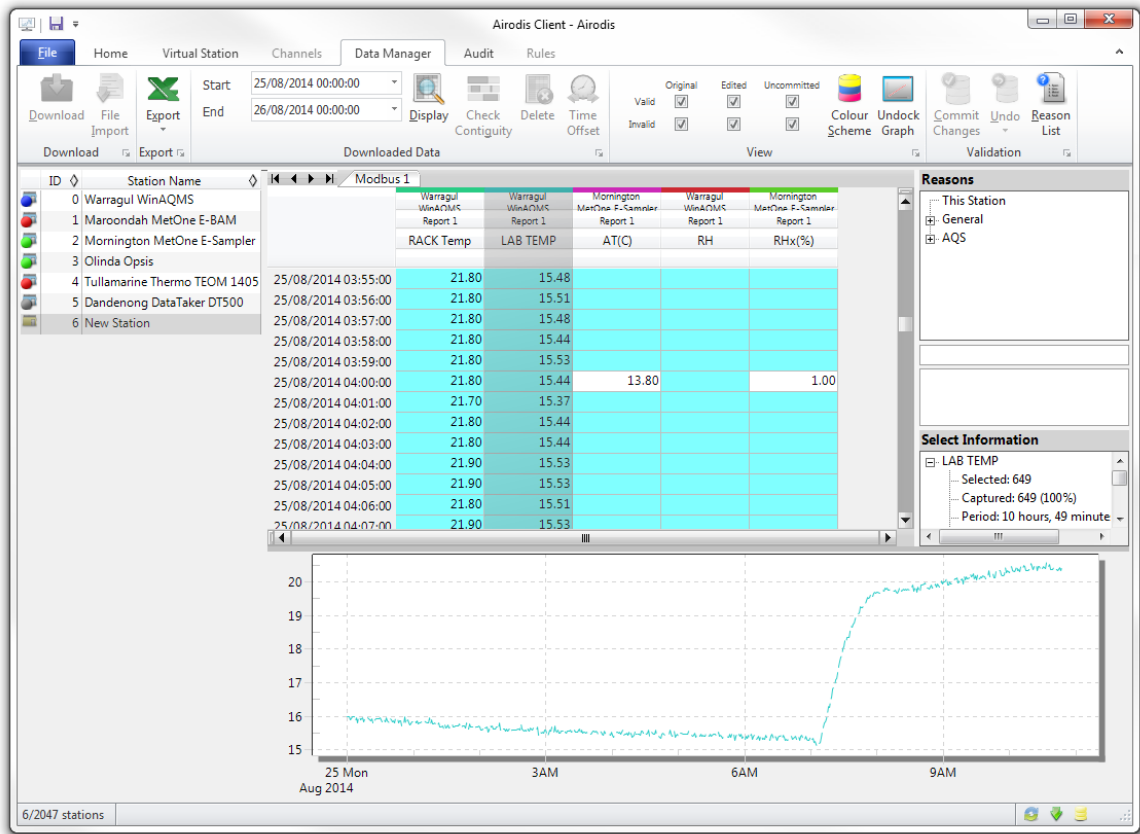| Item	Description
Import Source Directory	The directory containing the source files. If this is a network drive the address will be converted to a UNC address.
Filename Filter	Use this field to filter the data files from any others that may be in that directory

9.5   Virtual Station Tab

Virtual Stations allow the user to manage channels from multiple stations as if they were on the same station. This tab is only visible for stations added to the list as a *Virtual Station*. A Virtual Station can also have its reports published over the Modbus protocol.
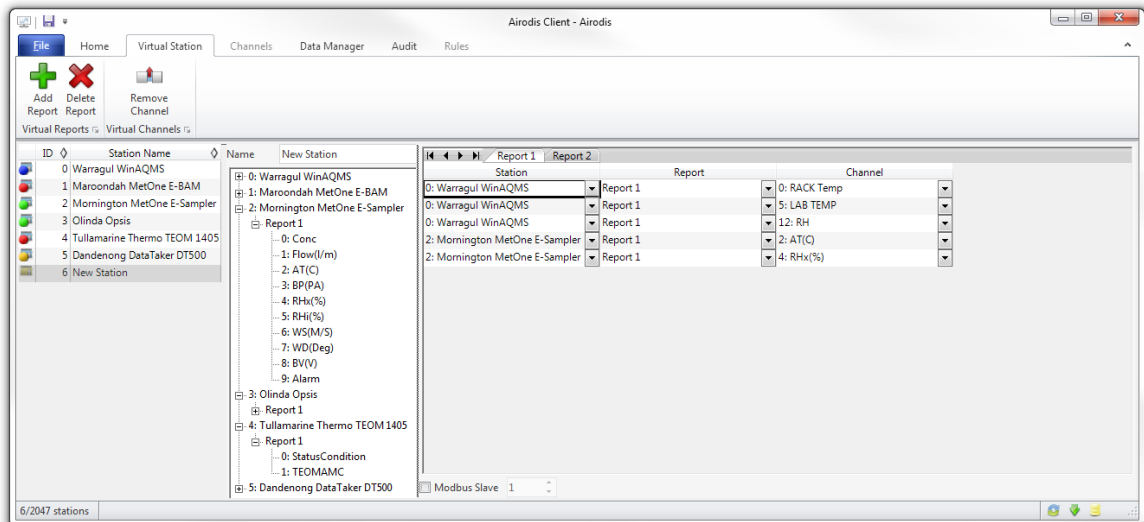
Expand the *Stations* list to select the *Reports* or *Channels* from each *Station* that will make up the *Virtual Station*.

Drag the selected *Reports* or *Channels* across to the *Virtual Reports* window to populate the list. Unwanted *Reports* or Channels can be removed by using the *Remove Channel* menu item. Additional *Report* tabs can be added using the *Add Report* menu item. Unwanted *Report* tabs can be removed using the *Delete Report* menu item.

When viewing a Virtual Station from the Data Manager tab, channels from different reports or stations can be graphed and edited side-by-side. This makes it easier to perform comparisons while validating and editing data. Extra column headers are added to show the station and report for each included channel.

9.6 Channels Tab

Channels Tab

Channels

The *Channels* tab details all of the channels associated with the selected *Station*.

Channels can either be manually created and deleted using the *Add Channel* and *Delete Channel* menu items or acquired from the logger directly.

Item	Description
No	Channel number
Label	The channel label that is used in Airodis
Logger Channel ID	The channel identifier on the logger, this may be a number or a label
Units	The channel units
Molecular Formula	The molecular formula used to convert between units
Decimal Places	The number of decimal places required for this channel
Description	A free text description of the channel
Colour	The colour associated with this channel. This colour will be used in the *Data Manager* as well as in the *Report Manager*
Show	Show or hide this channel

Vector Pairs

In the *Vector Pairs* tab the pairing is achieved by selecting the *Wind Speed* and *Wind Direction* from the list of *Channels* available on the *Station*.

Pairs can be created and deleted using the *Add Vector Pair* and *Delete Vector Pair* menu items.

9.7 Data Manager Tab

Overview

The *Data Manager* tab allows data to be viewed instantly without the need to configure reports. Simply by selecting a station, choosing a period and pressing display, the Airodis client will load data from the database to provide a tabular and graphical display of the selected data.

From this tab, the user can download or import data, export data , invalidate, change and delete data.
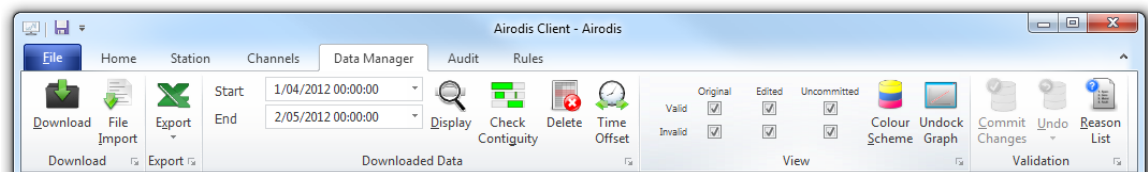
Data Manager Ribbon Controls

Download

Data can be downloaded from here making it convenient to look at the latest data without having to change the view to the *Home* tab.

File Import

By selecting *File Import* the user can access the import wizard. This works in the following way:
1. Select a *Filename* and *Format Type*
2. Enter the *Date Range*, either downloading from the *Last Data Point* or *Specify* a date range
3. Select *Acquire* to retrieve the detected channels from the file, these can be compared to those set in the *Station*
4. It is not necessary for the file to match the expected column order, or for all parameters to be present, as only those matched to a defined channel will be imported.
5. The *Report* dropdown box enables the user to select the report data that they want to import. In file types in which there is no report information the data is imported into the report shown in this box

Import Data Dialog

Note that on clicking the *Import* button that the actual file(s) to be imported are sent to the *Download Server*. A dialog will be displayed indicating the status of the actions performed, this does not indicate the number of records imported! To see the result of the import function check the *Download Log* for the *Station* in question.

Export

The *Export* function allows quick export of data from the database to a number of file formats. By following the prompts the user can define any given period from the selected report, or highlight a section of data which will configure the exporter automatically.
Export formats include: CSV, XML and EPA Text files.

The EPA file format is that of the Victorian Environmental Protection Agency

Display Data

Clicking *Display* will load data from the selected station. The period required should first be selected in the date and time selector to the left of the icon.

Check Contiguity

This feature allows a quick visual check of the data to look for gaps or non contiguous data. Contiguous data is shown as green whilst missing values are shown in white. The table on the right shows the periods of missing data for reporting purposes.
By default, the period selected in the *Data Manager* is scanned but the dialog allows for the period to be changed and the scan run again.
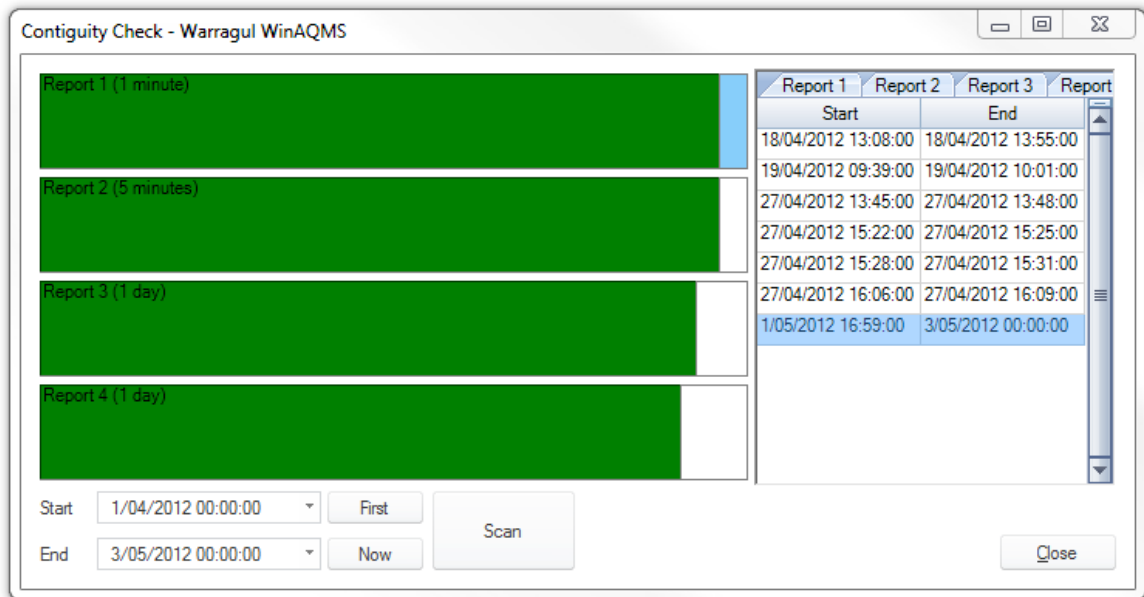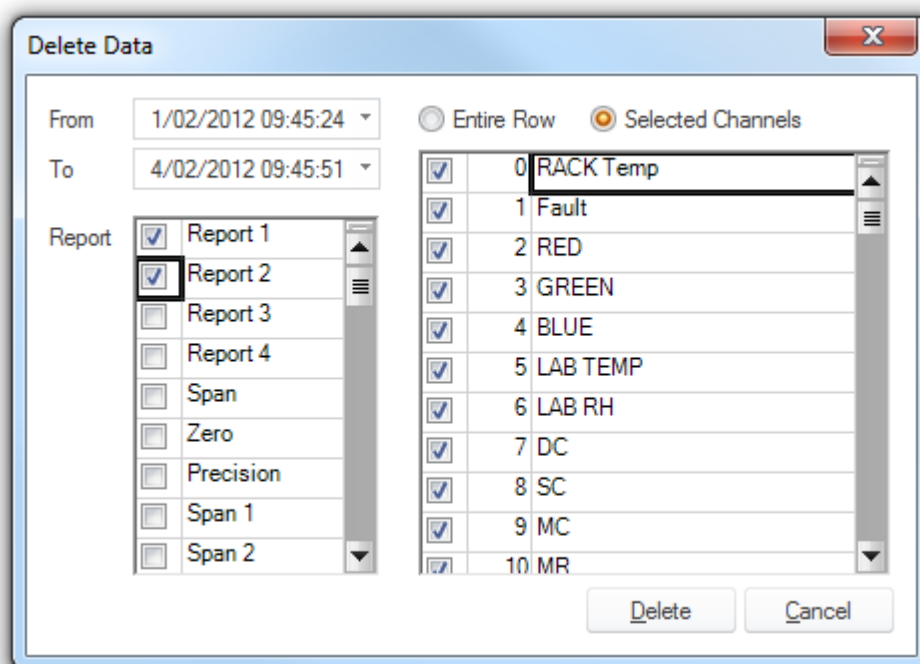
Contiguity Check Dialog

Delete

The *Delete* function allows the user to select a period of data to be deleted by selecting data in the *Data Manager* or by defining a period manually.

From the *Delete Data* dialog the user can choose to delete all or just certain parameters.
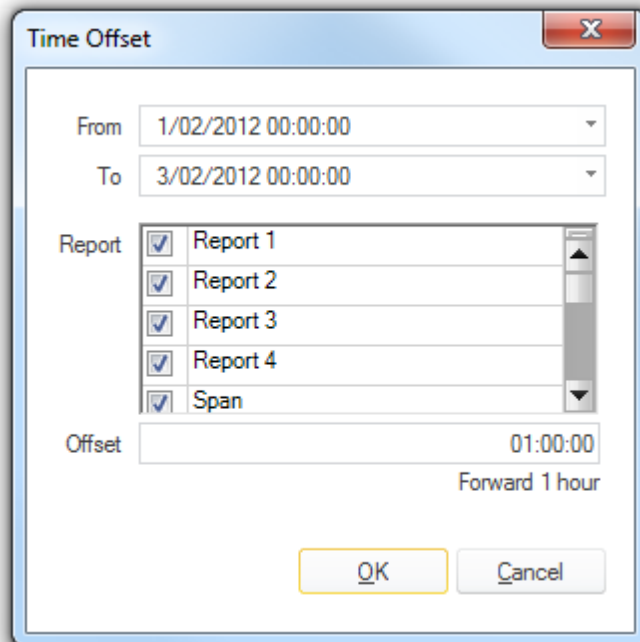

Delete Data Dialog

Time Offset

Occasionally equipment may be set to the wrong time (often due to daylight savings) but this is no longer a problem as Airodis comes with the *Time Offset* feature.
The data between the *From* and *To* date for the selected *Report* will have its timestamp altered by the value in the *Offset* box.

Time Offset Dialog

View Options

View Options provides a set of filters for viewing the data. For example a data set with a very high value due to a fault would be difficult to graph as the graph would auto scale to the very high value. Provided the value has been invalidated, by deselecting the invalid filters, the graph will show only good data and therefore apply more realistic axes.
As changes may have been made to the data but not yet committed there are a range of filters to cover all possible scenarios.

Colour Scheme

The colour scheme dialog allows the user to change the way that data is displayed in the *Data Manager* with respect to the font and cell colours.

Dock/Undock Graph

The *Dock/Undock Graph* menu item detaches the graph window from the Data Manager and enables the user to position that graph window elsewhere on their screen. This menu item is a toggle so once undocked a click on the menu will dock the graph back in its original position.

Validation Options

One of the main features of the *Data Management* tab is to allow the user to validate data.

[Data Validation](#) explains the validation process.

Validation might involve editing data or simply marking certain points as invalid or even revalidating data previously thought bad due to an error. All of this can be done in the Data Manager and is achieved through the use of the *Reasons List*.

Reason List

Airodis is supplied with a basic reason list containing common validation issues for different site and instrument types. This list can be added to by the user to either the site specific list, general or instrument specific sub sets. The *Reason List* can be found on the right-hand-side of the *Data Manager* tab. Different reasons have different actions and these actions are applied to the loaded data in the following way.

Reason - Drag and Drop

When a selection is made in the graph or table view, the data will be highlighted light grey. By selecting a reason and dragging it onto the highlighted data, the user can perform a number of functions depending on the reason selected. To apply a selection to multiple columns, the **<CTRL><SHIFT>** key combo can be used.
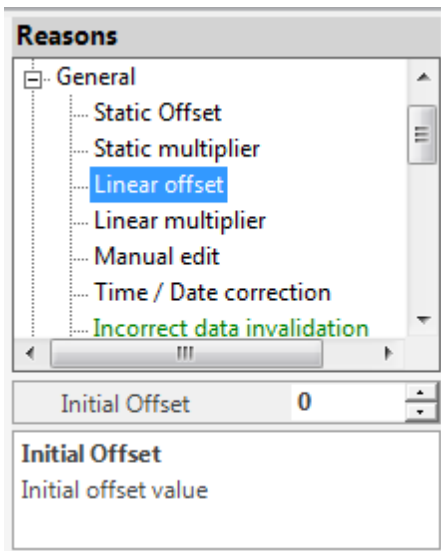
Reasons List and Parameters

The *Reasons List* will also show additional information depending on the reason that has been selected. For reasons that change the data there may be a subset of values which can be configured such as the size and direction of an offset. The user must change the parameter field before the reason is applied.
Some reasons will invalidate data, some that apply offsets or multipliers will change the value displayed.

To add a new reason item click on the *Reason List* icon that can be found in the *Validation* menu group at the top of the *Data Manager* tab.
Reasons can be added as either an *Instrument* or *Station* type. Once a *Reason* has been added it can not be deleted as it may appear in the audit history.
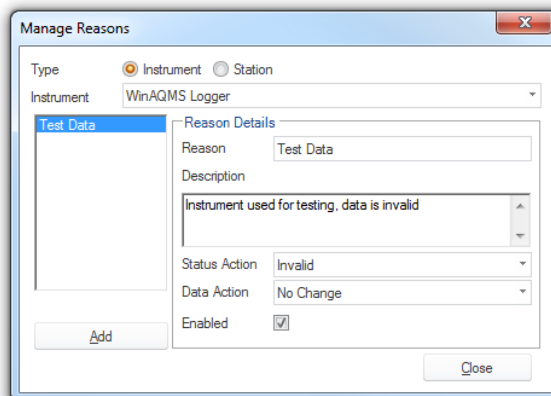
Reason Dialog - Instrument Reason
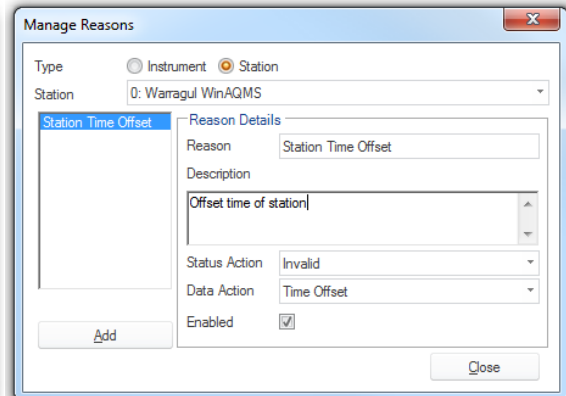
Reason Dialog - Station Reason

All changes made to the data will be logged in the *Audit* tab and can be discarded or undone until committed.

Commit Changes

As the Client loads data from the database, no changes made will be applied to the database until they are committed.

Undo

The *Undo* feature allows uncommitted changes to be reversed and can support multiple successive undo actions.
Select the *Undo* icon to undo the last change or use the dropdown arrow below the icon to choose an change that was not the last change made.

9.7.1   Data Graph

The *Data Graph* displays the data selected in the *Data Manager* cells.
Selecting a column or multiple columns by clicking on the column header will display all the data in the column(s) for the defined period.

The *Data Graph* can also be undocked by using the *Data Manager Undock Graph* menu item and freely positioned and resized anywhere on the the screen.
To re-dock the graph again just close the graph window and it will resume its original position.
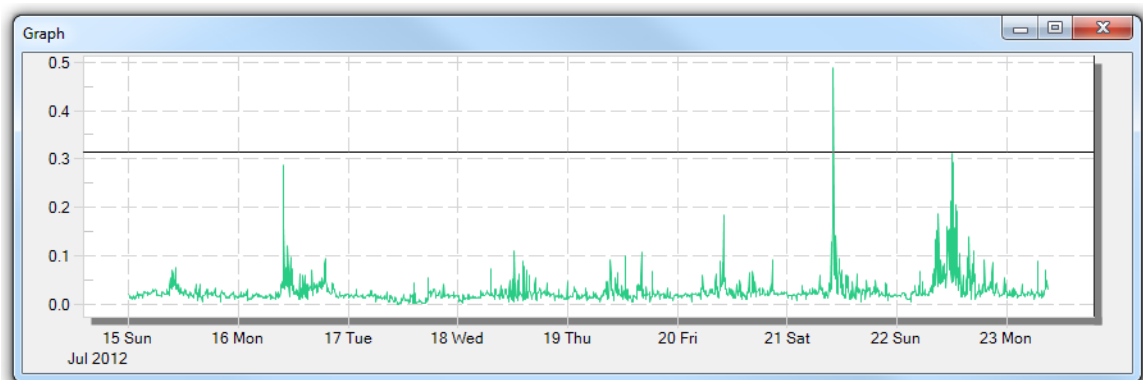
Data Graph Undocked

Use the cross hairs to zoom into a particular region of the graph.
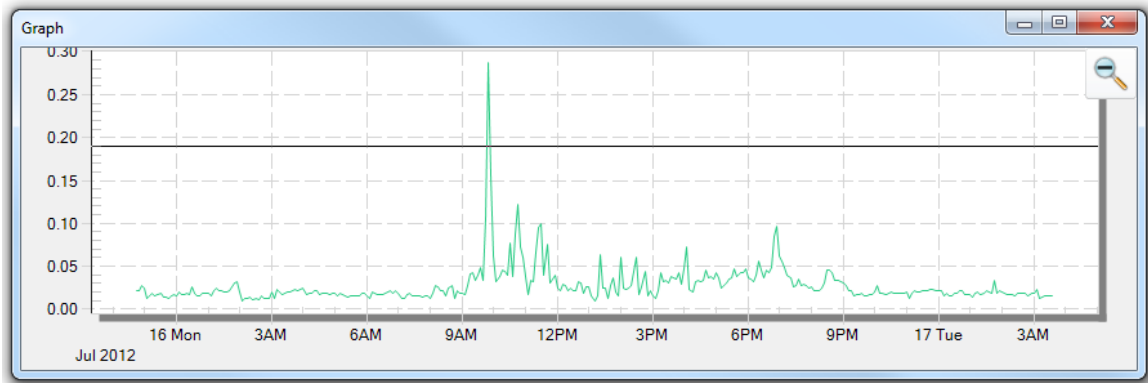
Data Graph Zoomed

An 'unzoom' operation can be performed by either selecting the magnifying glass menu item that appears in the top right-hand side of the dialog or using the "-" minus key on the keyboard. Multiple "unzoom' operations can be performed until the graph is displaying its original data.

The *Data Graph* also has an extensive right-mouse click menu that gives a number of user configurable options.
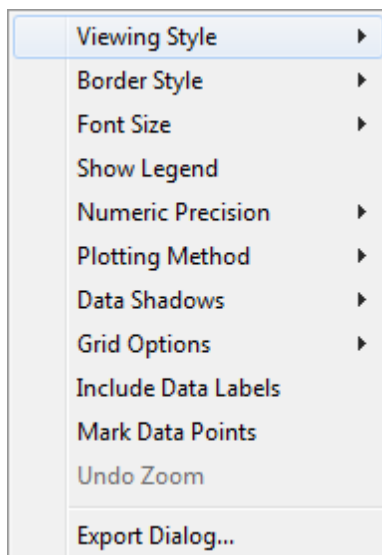
Right Mouse Click Menu

The *Data Graph* can be exported in a variety of formats via the *Export Dialog* menu item.
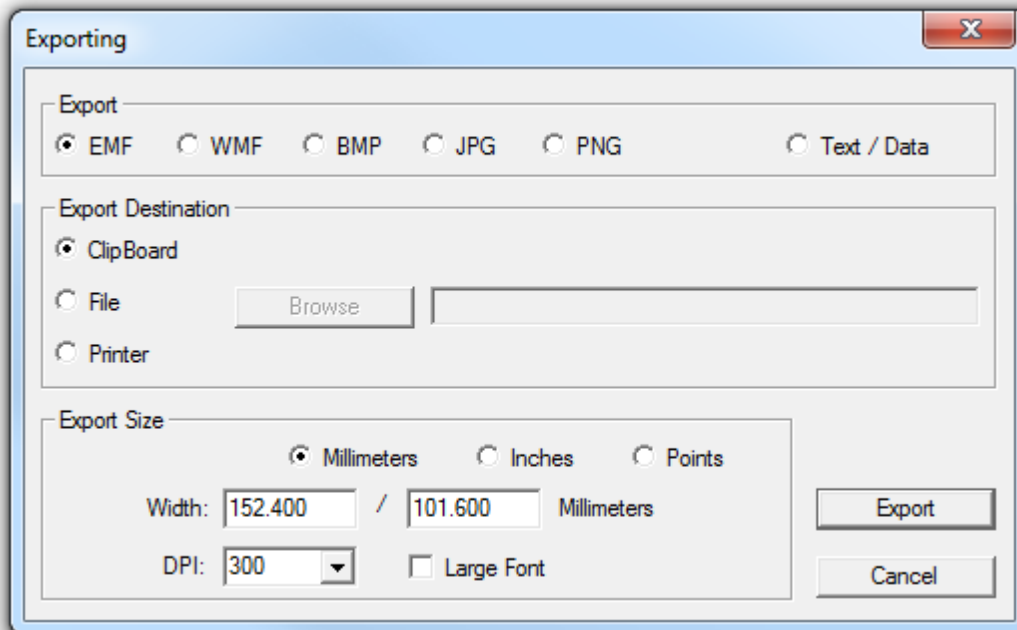
Data Graph Export Dialog

9.8 Audit Tab

Airodis tracks all changes made to data by the user. To view the change history, select the station in the *Home* view and select the *Audit* tab.
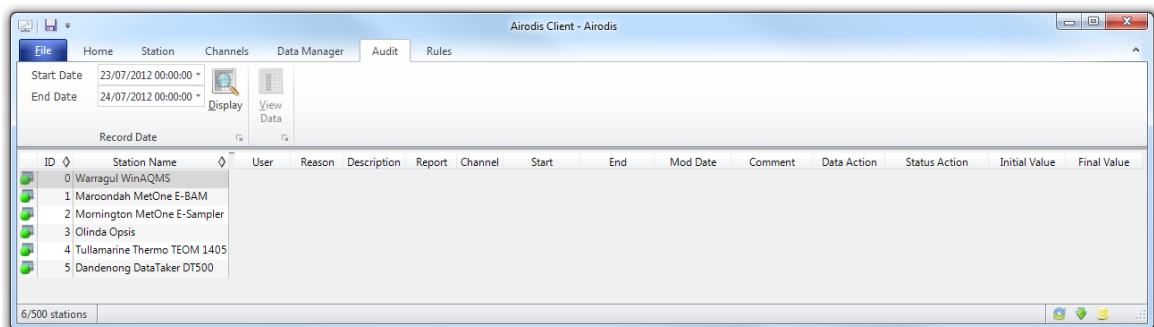
Audit Tab - Select Audit Report Date Range

From here, you can search by date to produce a list of all changes made including the user, the reason, channels affected etc.

Selecting an audit entry in the list displays a list of modified cells and their previous values and status values.

Audit Tab - With Audit Entry Selected

Selecting the *View Data* menu item will take the user to the *Data Manager* tab which will display the corresponding audited data for the row selected.

9.9   Rules Tab

Conditional Rules Tab

This section allows rules to be configured to auto invalidate data and/or send messages by e-mail., e.g. in the event of a pollution episode or instrument fault.
The first step is to create a new rule using the "Add Rule" button

> With a suitable mail to SMS provider, SMS alarms can be generated to quickly notify individuals who may not have access to e-mail.

Conditions

Conditions

Conditions can then be added to the rule based on single or multiple channels by selecting preconfigured options from a dropdown list. The user must also set the time interval the condition will be applied to which need not be the same as the downloaded data (but should be a multiple)

Rules can be enabled and disabled as well as being able to set options for the maximum number of alarms and whether an all clear message is sent.

Multiple conditions can be added to build more complex scenarios.

Invalidate Channels

Invalidate Channels

Once set, the user can choose what action is to be taken when the conditions in the rule is met. This can include invalidation of selected parameters and or, sending messages to multiple recipients.

Send Email

Send Email

The messages themselves can be in detailed or short form depending on whether e-mail or SMS is being used.
Rules and recipients can be enabled and disabled independently for greater flexibility.

Options

Options

For each rule, the subject line of the message can be edited as required. The report and data options can also be set here.

Calibration Rules Tab

The *Calibration Rules* follow the same format as the *Conditional Rules* detailed above, the difference lies in the *Options* tab.

Options

Options

The *Options* tab allows the user to set the thresholds for invalidation and alarms. The calibration type, report and channel associated with this rule are also selected here.

Server

Part X
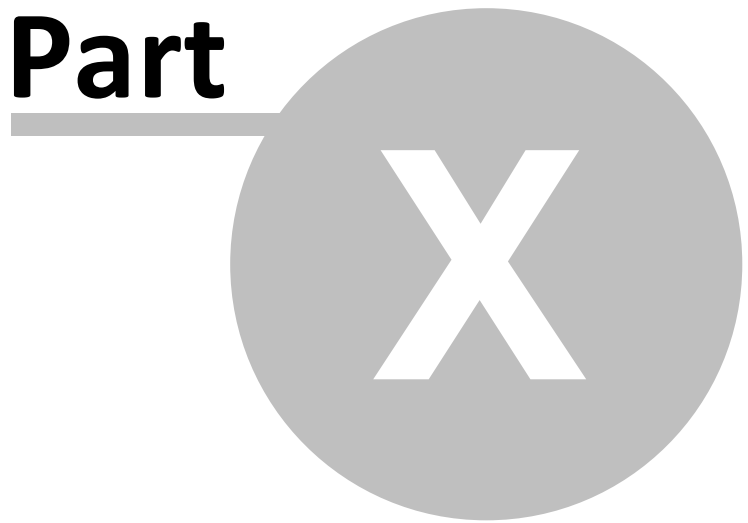
10 Server

The *Server* component is usually run as a Windows service. See here for details on how to set the service up.

Server Connectivity

The *Server* connects to and communicates with other components as shown below:
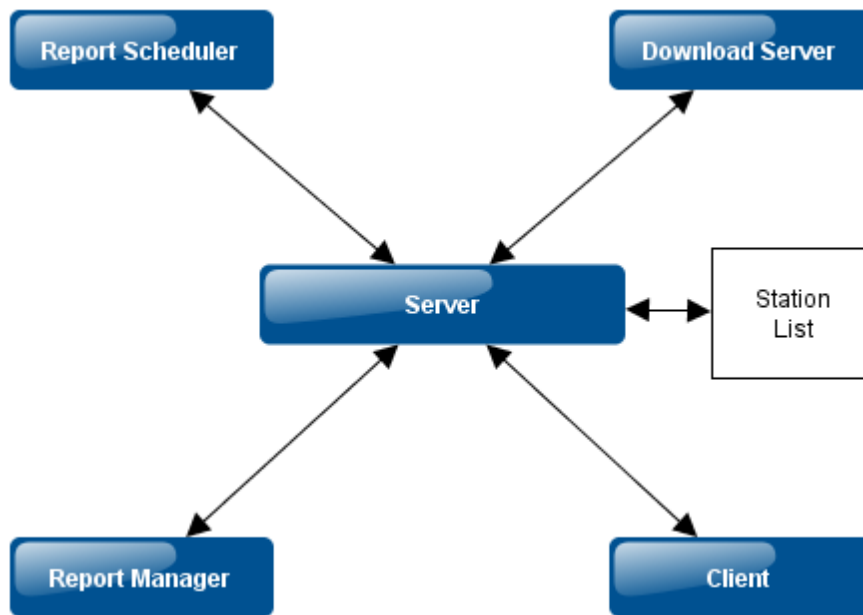
Server Connectivity

Download Server

Part XI
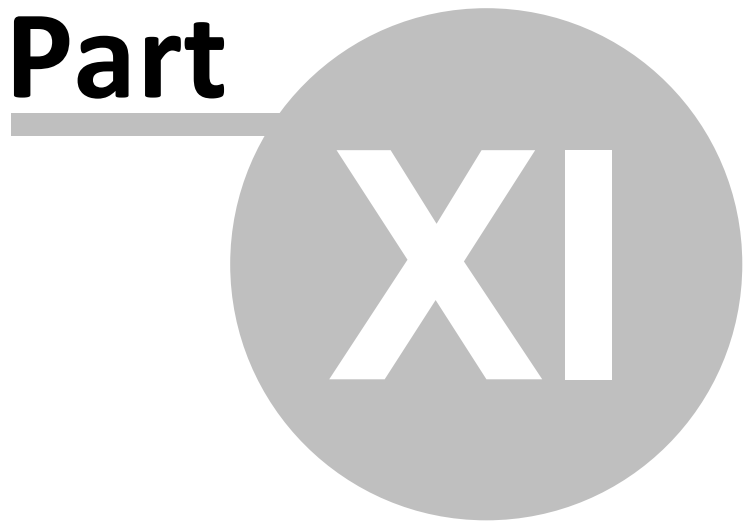
11   Download Server

The *Download Server* component is usually run as a Windows service. See here for details on how to set the service up.

It's main function is to schedule downloads and download data.

Download Server Connectivity

The *Download Server* connects to and communicates with other components as shown below:
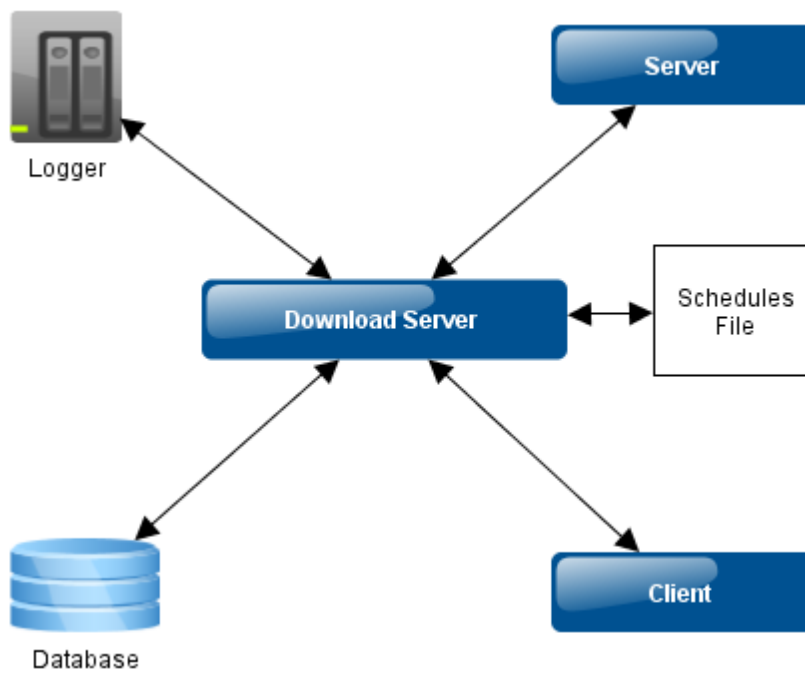
Download Server Connectivity

Report Scheduler

Part

XII
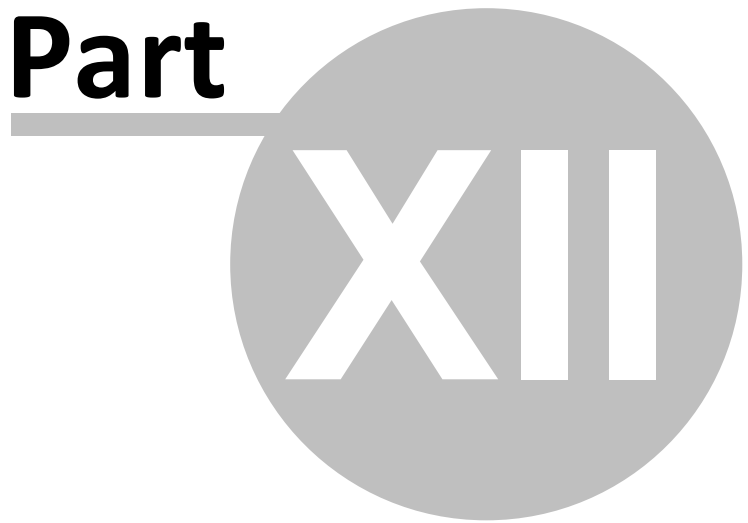
12   Report Scheduler

The *Report Scheduler* component is usually run as a Windows service. See here for details on how to set the service up.

Its main functionality is to schedule reports.

Report Scheduler Connectivity

The *Report Scheduler* connects to and communicates with other components as shown below:
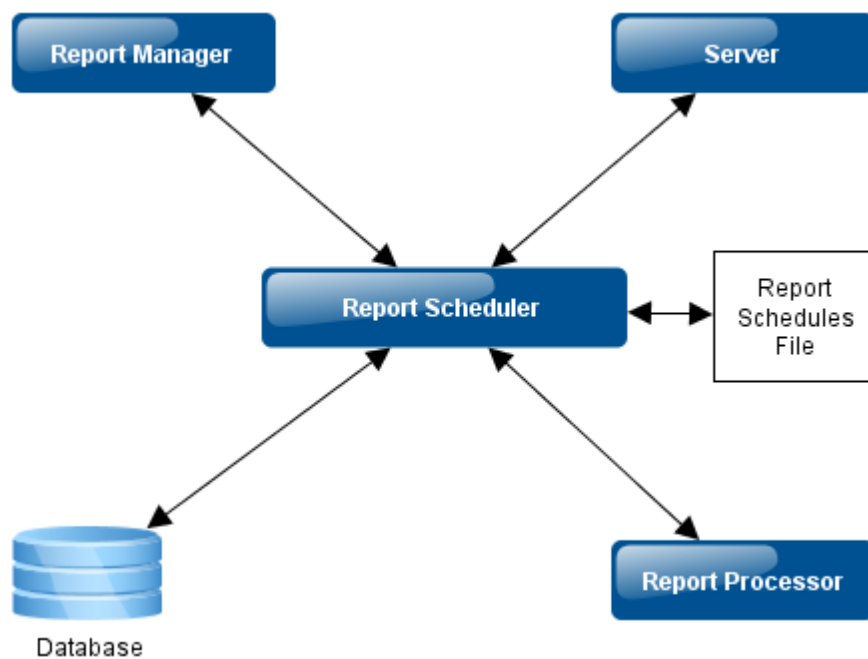
Report Scheduler Connectivity

Report Manager

Part XIII
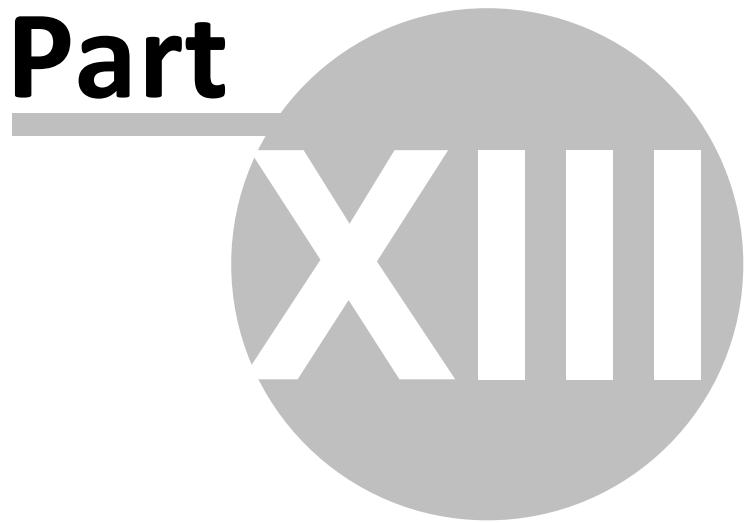
13 Report Manager

13.1 Overview

The *Report Manager* is used to edit and schedule new or existing reports.
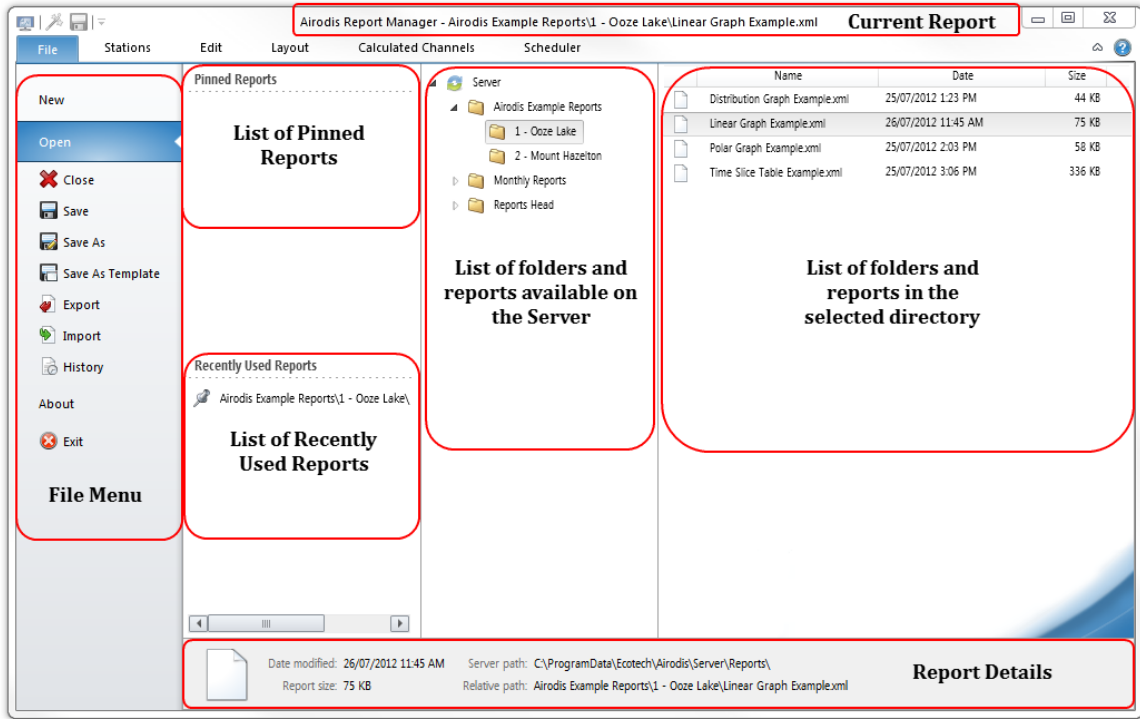
Report Manager Overview

The Report Manager Overview video gives a brief tutorial on aspects of the Report Manager functionality.

Work Flow

Quick Start for New Reports

The *New Report Wizard* can be used to quickly create a new report.

Double clicking with the mouse on an existing report object opens it for editing.

For New Reports

1. Create a new report in the *File* tab
2. Select the *Stations*, *Reports* and *Channels* to be used in the new report from the *Stations* tab
3. Edit the report by adding report objects from the *Edit* and *Calculated Channels* tabs and define report layout options in the *Layout* tab
4. Save the new report as a report or a template in the *File* tab
5. Schedule the report in the *Scheduler* tab

For Existing Reports

1. Select the report to open in the *File* tab
2. Edit the report objects in the *Edit*, *Layout* and *Calculated Channels* tabs
3. Save the results
4. Schedule or change the scheduling settings in the *Schedule* tab

Report Manager Interaction

This message trace diagram shows how the Report Manager interacts with other components.

Messages
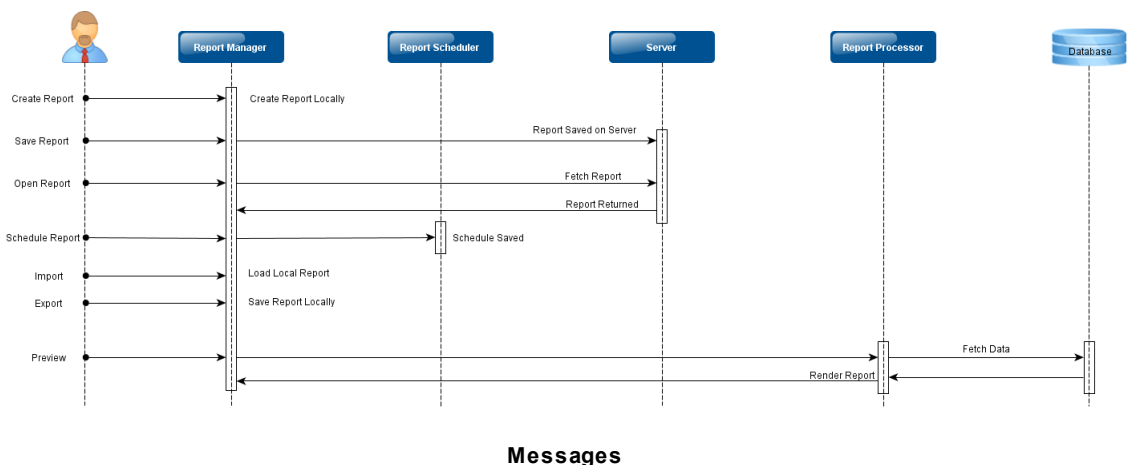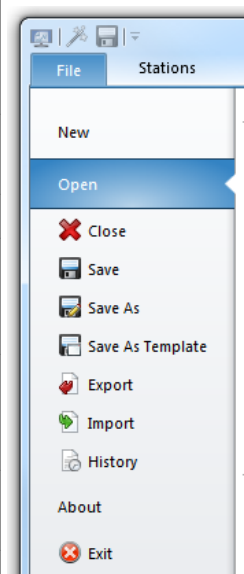
13.2 File Tab

The *File* tab is used to Create new files, Open existing files or templates, Save existing files or templates and Import or Export a report file.

The available menu items are as follows:

Menu Item	Functionality	

New	This menu item allows you to create a new report. The report can be create from as a *Blank Report*, via the *New Report Wizard* or from a *Saved Template*.
Open	Allows the user to select an existing report to open for editing
Close	Closes the currently open report
Save	Saves the currently open report, if the report is new the user will be prompted for a filename and the location to save the report to
Save As	Saves the currently open report with a new filename and/or file location which the user will be prompted for
Save As Template	Saves the currently open report as a Template, see the Templates section for more information
Export	Exports the currently open report to a location chosen by the user. The report is stored as an XML file. This feature is useful if the connection between the *Report Manager* and the *Server* has been lost or the user wishes to move reports between servers.
Import	Imports a report file as an XML file and sends it to the *Server*
History	Opens the *Report History* dialog which shows details of the last 15 saves of the report.
About	Displays build and product information about the *Report Manager*
Exit	Closes the *Report Manager* dialog

Templates are read-only report types. A new template can be created and saved or a report can be saved as a template. Create templates for reports that are used frequently.

Use the *History* menu item to find out when a report was last saved and details of the user who saved it.

13.2.1 New Menu

From within the *New File* menu option the user has the choice of creating a new blank file, a new file via the *Wizard* or a new file from an existing *Template*.

Click on any of the icons to create a new file from that source template.

New File Tab
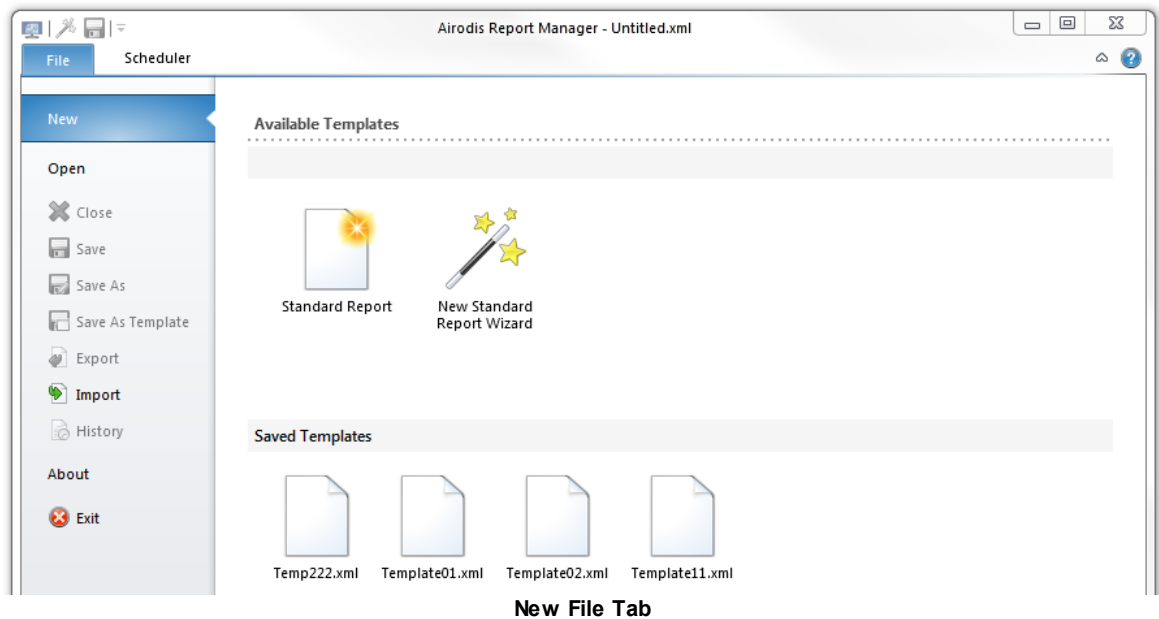
>
>
> [Creating a New Report](#) walks you through the report creation process.

13.2.1.1 Special Report Types

AQS Reports

The AQS Report type is used to define a set of output channels that are used to generate standards compliant output for either AQS or AirNow-International systems. The same AQS Report can be used to generate one or both of the possible AQS and AirNow- International output types.

The Air Quality System (AQS) is the United States EPA's repository of ambient air quality data. Airodis generates version 2.2 of the XML standard for AQS. AirNow-International (AirNow-I) is a real-time air quality data reporting system. Airodis generates version 3.0 of the AQCSV standard for AirNow-I.

To create an AQS Report use the File -> New menu option and then select the AQS Report type as shown in the following screenshot.
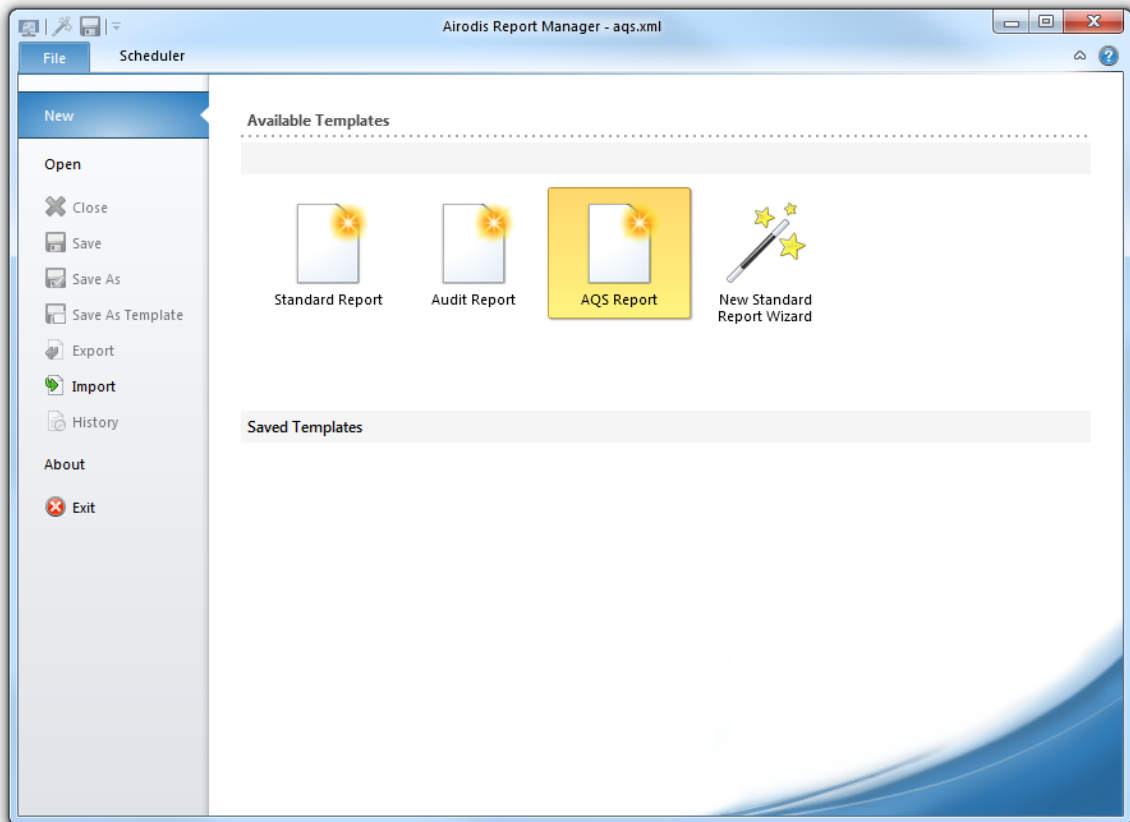
AQS Report Type

AQS Report Definition

When the report is run by the *Report Scheduler* the *Date Range* is used to determine the period of time for which values are extracted from the database and output. By default the previous day's values are output which is appropriate if you were to schedule the report to run once per day.

Site Parameters define the site location associated with all the output channels. You can enter values manually into the edit boxes or use the drop down lists to select predefined values. If the selected country is code 842 (United States) then the state and county fields have drop down lists for the selection of well-known values.

Selection of a different country will not provide any drop down lists for the state or county and so manual entry of those values becomes necessary.

Checking the *IsTribal* field will replace the state and county fields with a tribe entry field. Note that this setting is only appropriate for output to the AQS format because the AirNow-I format does not support the selection of a tribal code.

Output Channels is a list of the channels for output. To populate this list you can drag channels from the *All Available Channels* list and drop them onto the *Output Channels* list. When possible the unit and duration values of the dropped channel are automatically populated.

However, this is not always possible and so the user should always double check all settings. The purpose of each column is as follows:-

Item	Description
Station	*Station* the channel belongs to.
Report	*Report* the channel belongs to.
Channel	*Channel* for output.
Parameter	5 digit code that defines the contents of the channel. You can modify the 5 digit code directly using the number field or by using the second field which is a description of each code. This field is used for AQS and AirNow-I output types.
Unit	3 digit code that defines the unit of measurement. You can modify the 3 digit code directly using the first number field or by using the second field that is a description of each code. This field is used for AQS and AirNow-I output types.
AQS Duration	1 character code specifying the duration used for taking the measurement that is only output for the AQS output type.
ANI Duration	Duration in minutes used for taking the measurement that is only output for the AirNow-I output type.
POC	Parameter occurrence code used when the same parameter code is used on multiple channels. In that case each output channel should have a unique parameter occurrence code to disambiguate them. This field is used for AQS and AirNow-I output types.
Method	3 digit code that identifies the method used to perform the measurement. This field is used for AQS and AirNow-I output types.
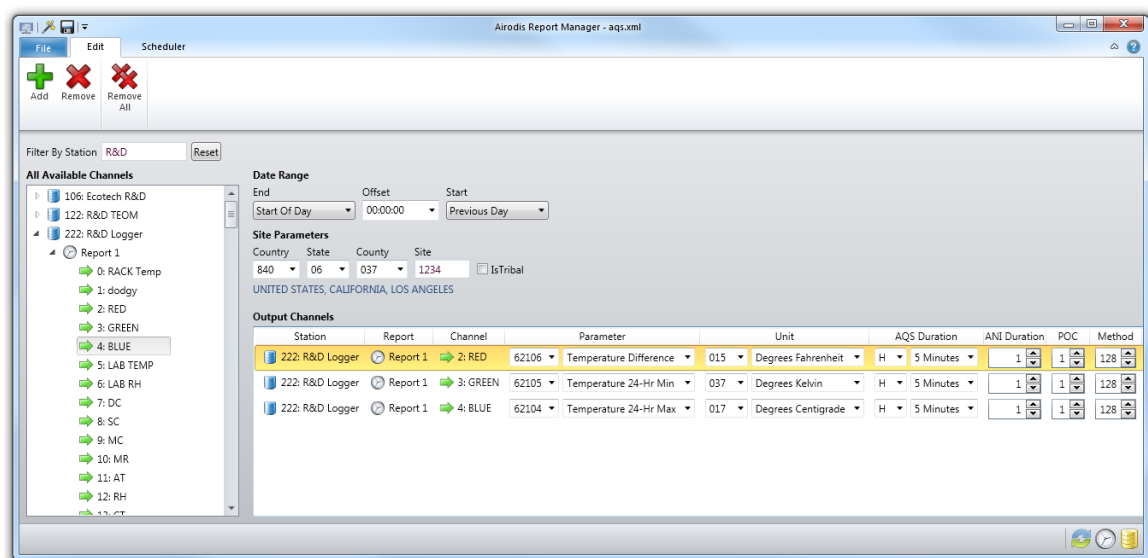
AQS Report Tab

AQS Report Scheduling

To generate output for an AQS Report you must create a schedule. Use the *Scheduler* tab and then the *Add* ribbon button to create a new schedule instance. Select the AQS Report by using the *Browse* button at the top right of the dialog.

The *Schedule* tab settings are the same as for scheduling standard reports except the *Destinations* tab has a restricted set of options. You can not add a *Screen* or *Serial* destination as they are not compatible with an AQS Report type.

The remaining destinations will only provide two Format options, AQS and AirNow-International.

The AQS format will automatically add XML as the filename extension because AQS type output is an XML file that conforms to the version 2.2 AQS standard.
Selecting the AirNow-International format will automatically set the extension to CSV and will conform to the version 3.0 AQCSV format.

Audit Reports

Airodis tracks all changes made by users to downloaded data. Use an *Audit Report* to generate an output listing all such changes to a specified set of stations. This is useful when audit records need to be printed or archived to satisfy compliance requirements.
Output can be generated to Microsoft Excel or CSV formats.

To create an Audit Report use the File -> New menu option and then select the *Audit Report* type.

Audit Report Definition

The *Date Range* is used by the *Report Scheduler* to determine the period of time for which audit values are extracted from the database and output. By default the previous day's values are output which is appropriate if you were to schedule the report to run once per day.

Audit Stations is the list of the stations for output. To populate this list you can drag stations from the *All Available Stations* list and drop them onto the *Audit Stations* list. If you have a large number of stations defined you can use the *Filter By Station* field to restrict the displayed list to just the subset of interest.
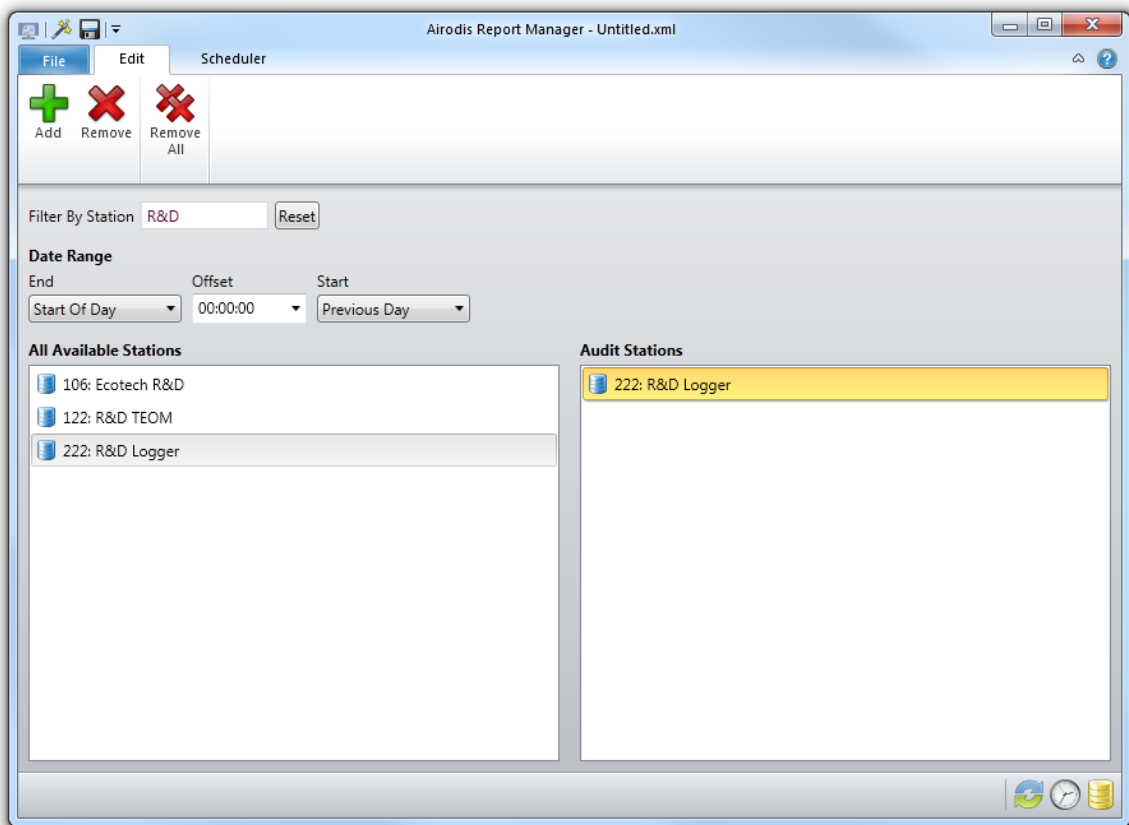
Audit Report

Audit Report Scheduling

To generate output for an *Audit Report* you must create a schedule. Select the *Scheduler* tab and then press the *Add* ribbon button to create a new schedule.
Select an existing *Audit Report* by using the *Browse* button at the top right of the dialog.

The *Schedule* tab settings are the same as for scheduling standard reports except the *Destinations* tab has a restricted set of options. You can not add a *Screen* or *Serial* destination as they are not compatible with an *Audit Report* type.

The remaining destinations only provide two Format options, Microsoft Excel and CSV.

13.2.2 Open Menu

The *Open* menu allows the user to open an existing report.

Available folders and reports on the Server are shown as a tree view. Clicking on any folder in the tree will display any reports and child folders that are contained within.
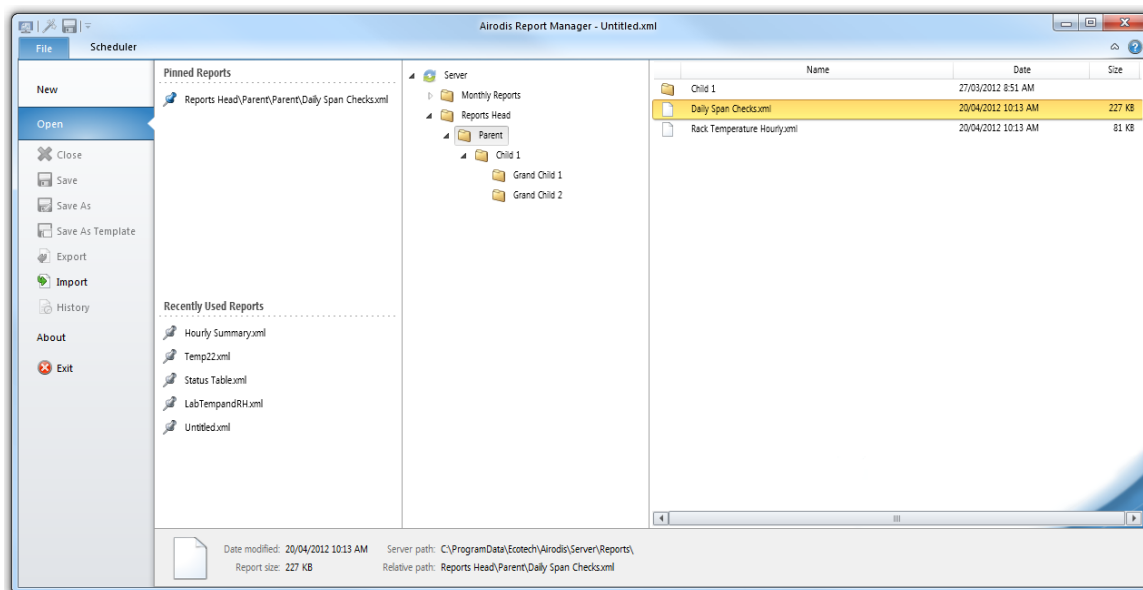
Open File Dialog

The right click menu of any of the folders in the tree gives the following actions:

Menu Item	Functionality
Expand	Expands the folder contents to show reports and child folders
Collapse	Collapses all child folders within the selected folder
Cut	Cut the folder and contents for pasting elsewhere in the tree
Copy	Copy the folder and contents for pasting elsewhere in the tree
Paste	Paste a previously cut/copied folder into the current folder
Delete	Deletes the folder and contents from the tree
Rename	Renames the folder
New Folder	Creates a new folder as the child of the currently selected folder
Refresh	Refresh the tree view

The right click menu of any of the folders or reports of a folder selected in the tree gives the following actions:

Menu Item	Functionality
Open	Opens the folder or report
Cut	Cut the folder and contents or report for pasting elsewhere in the tree
Copy	Copy the folder and contents or report for pasting elsewhere in the tree
Paste	Paste a previously cut/copied folder or report into the current folder

Delete	Deletes the folder and contents or report from the tree
Rename	Renames the folder or report
Batch Reschedule	Opens the Batch Reschedule dialog
New Folder	Creates a new folder as a sibling folder at the current level
Refresh	Refresh the tree view

Recently Used Reports

When a report is opened it is added to the *Recently Used Reports* list. Right clicking on a report in the list allows the user to perform the following actions:

Menu Item	Functionality
Open	Opens the report
Delete	Deletes the report from the list
Pin	Adds the report to the *Pinned Reports* list

Pinned Reports

When a report is added to the Pinned Reports list the following functions are available via the right click menu:

Menu Item	Functionality
Open	Opens the report
Delete	Deletes the report from the list
Unpin	Removes the report to the *Pinned Reports* list

Missing Channels

If a *Station* has been deleted from the database and then added again the *Station ID* will have changed. When opening a *Report* associated with that *Station* the following message dialog may be seen:
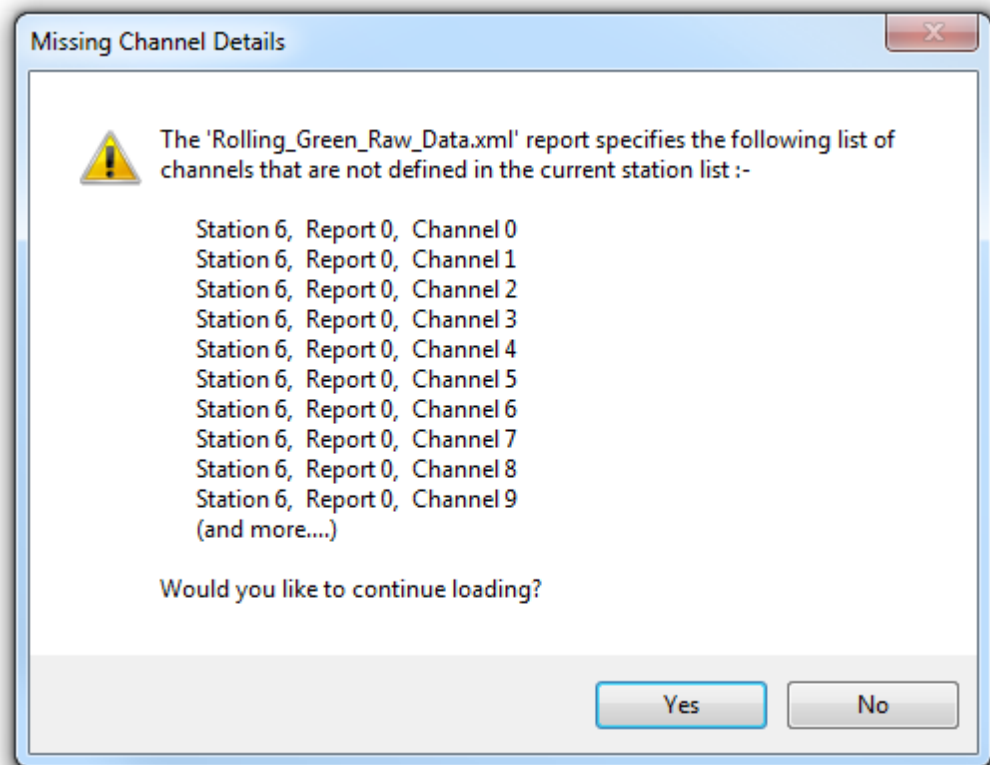
Missing Channel Details Dialog

If the user knows that the *Station* exists but has a different ID then they may choose to continue loading the file and can then renumber the *Station* as detailed here.
This dialog is likely to be seen when using *Templates* across different workspaces.

13.3 Stations Tab

The *Stations* tab allows the user to select the *Stations*, *Reports* and *Channels* that are used in the current report.

All Available Stations

Stations that have been added to the Client are shown in this list. Each station can be expanded to show its available reports and within the reports the available channels.
The user may select a *Station*, *Report* or *Channel* from the list and drag it across to the *Report Stations* list for use in the current report.

Multiple Stations, *Reports* or *Channels* can be selected from this list by holding down the **<CTRL>** key on the keyboard while making the selection with the mouse.

In addition to dragging the selected items across to the *Report Stations* list the user may also use the right click *Add* menu item or the *Add* button on the ribbon at the top of the dialog.

Report Stations

The list of *Stations*, *Reports* and *Channels* used in the current report is shown here. This list will be empty in a new report and populated in an existing report.

The user may select a *Station*, *Report* or *Channel* from the list and remove it by using the right click menu item *Remove*, additionally the ribbon item *Remove* may also be used.

Multiple Stations, *Reports* or *Channels* can be selected from this list by holding down the <CTRL> key on the keyboard while making the selection with the mouse. In this way multiple items may also be removed from the list.

The ribbon menu item *Remove All* will clear the *Report Stations* list.

An additional right click menu item is available, see the Renumber Station section for further details.

Filter By Station

The *All Available Stations* list may be filtered using this control. Simply type part of the station name into the text box and the list will automatically be filtered to only show station names containing that text.

> Note that *Virtual Stations* in the *Client* are not selectable in the *Report Manager* and will not be shown in the list of available stations. As *Virtual Stations* are created from existing physical stations these physical stations should be used in *Reports* instead.

13.3.1 Renumber Station

The *Renumber Station* functionality is used to renumber a station in a report where the station ID in the *Client* may have changed. This may be due to the station being removed and re-added to the *Station List*.

> The *Report Manager*, on opening an existing report, checks that all of the *Stations*, *Reports* and *Channels* used by the report are available. Should it find that any of these elements do not exist in the system then a warning will be given to the user and they will have the option of continuing to load the report or not.

The *Renumber Station* function also enables the user to move a report from one *Server* to another and renumber the station if it doesn't have the same ID in both systems.
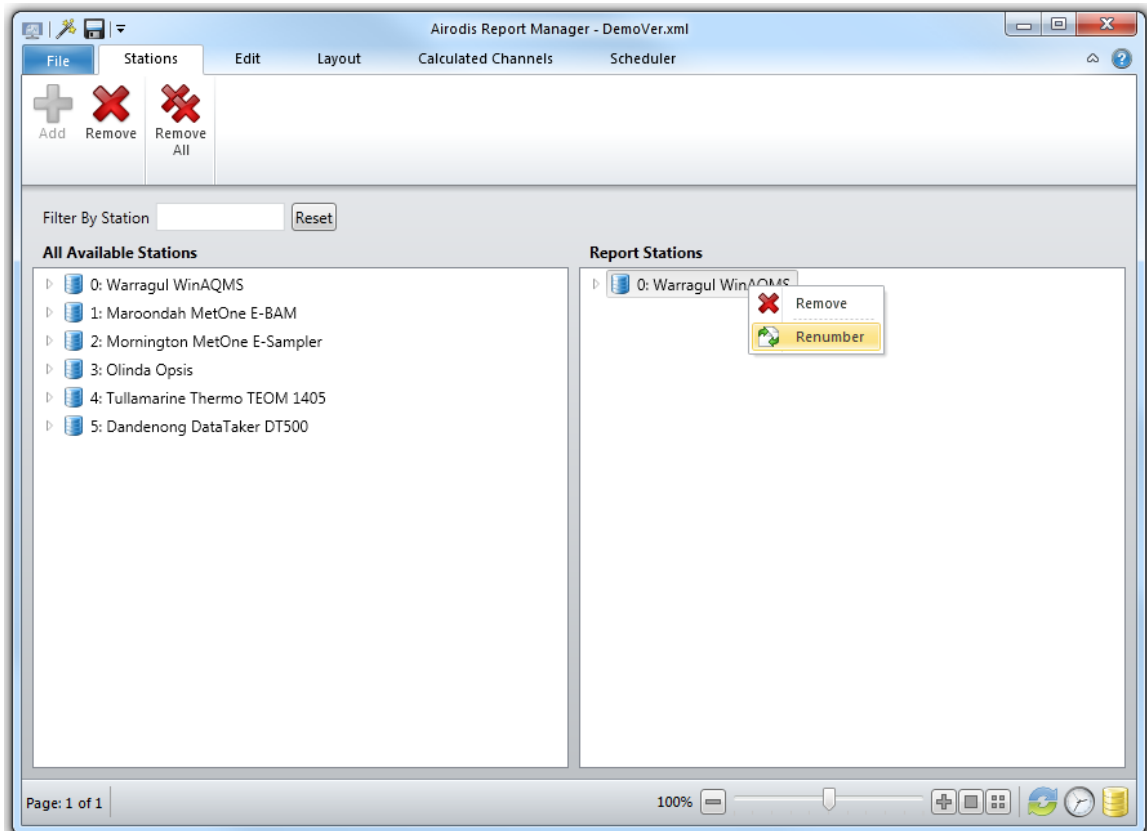
Renumber Station Menu

Use the right mouse click to access the *Station* menu and select *Renumber*.
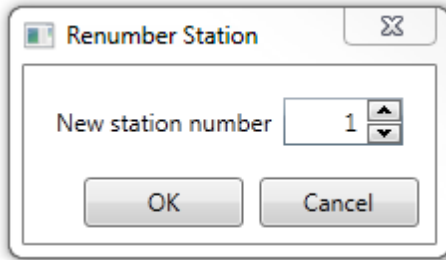
Renumber Station Dialog

13.4 Edit Tab

13.4.1 Overview

The *Edit* tab contains a ribbon control that enables the user to add, align and resize report objects as well as format text based objects.
Additionally the user may *Preview* a report from this tab and add or remove pages from the report.
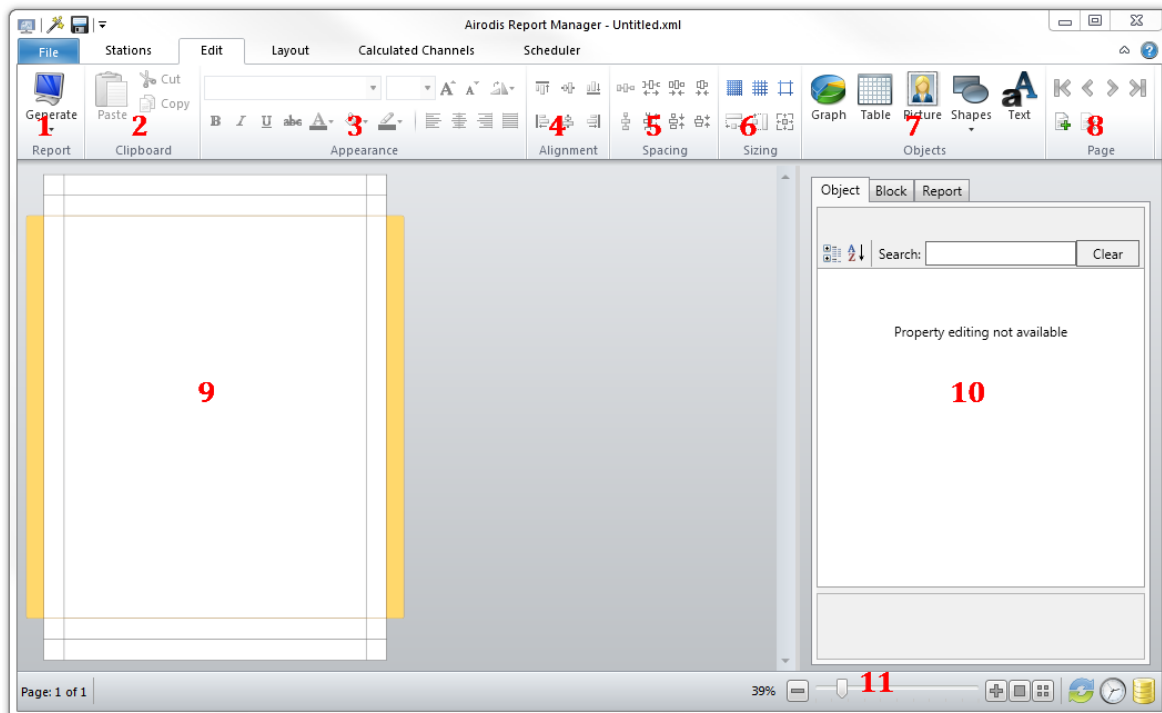
The components of the *Edit* tab are as follows:

Number	Functionality
1 - Generate	Generate the report at the current date or a specified date to preview or save the output. Additionally refresh the previews of the *Graph* and *Table* objects in the report

2 - Clipboard	*Cut*, *Copy* and *Paste* report objects
3 - Appearance	Set font styles and colouring for report *Text* objects
4 - Alignment	Use these controls to align report objects
5 - Spacing	Use these controls to space report objects
6 - Sizing	Use these controls to size report objects and show/hide the layout grid
7 - Objects	Select the report object to be created from this panel
8 - Page	Navigate through, *Add* and *Remove* pages from the report here
9 - Blank Report Page	This is the first page of a new report
10 - Property Editing Tab	When selecting a *Report*, *Object* or *Block* its properties can be changed here. Most of the properties here can also be changed via the ribbon controls.
11 - Zoom Slider	Use the slider to zoom in or out on a page or report

13.4.2   Generate

The *Generate* menu item allows the user to preview the report in two ways:

Menu Item	Functionality
Preview Now	The report is run and a preview is created using the current system date and time
Custom	The report is run using the date and time specified by the user and optionally generated in a format other than a screen preview
Refresh Previews	All of the images for the *Graph* and *Table* objects in the report are refreshed

Generate Report
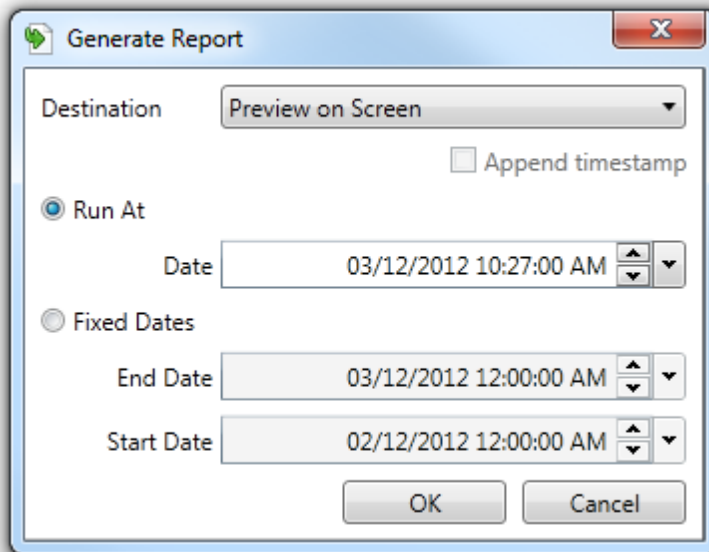
Generate Report Dialog

The *Generate Report* dialog allows the user to preview the report on screen at either a fixed end date or fixed start and end dates.

Optionally an output format can be specified and the report will be generated in that format for the specified dates and times.
The user will be asked to specify a destination for the report output and the report will be saved to that destination.

Selecting the *Append Timestamp* tick box will append the current date and time to the report so that multiple reports of the same type can be
saved to the same destination.

Use the *Generate Report* functionality to generate 'one-off' report outputs instead of scheduling a report for a single run.
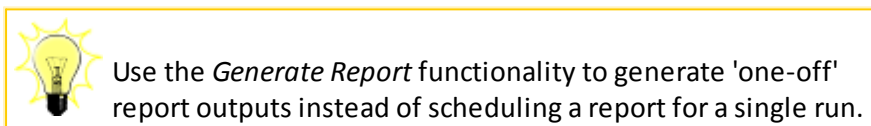
13.4.3   Report Objects

Report Objects are the components that make up a report.

In Airodis the following objects are available:

Graphs

Tables

 Pictures

 Shapes

 Text

To create a new *Report Object* click on the object menu item in the *Edit* tab. For objects requiring multiple parameters and settings, e.g. *Table* or *Graph*, a dialog specific to that object will be displayed. For other objects the, e.g. *Text*, the mouse cursor will change to allow the user to specify where on the page the object must be created.

Selecting, Moving and Editing Objects

Selected Object

When selected an object will display a thick border. The object can now be moved around the page using the mouse pointer.
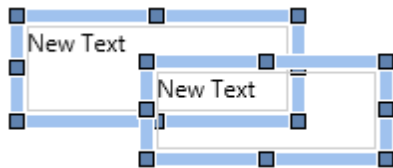
Multiple Selected Objects

Multiple objects can be selected by holding down the **<CTRL>** key while selecting with the mouse or by dragging the mouse cursor to encompass multiple objects.

Selected Object - Ready for editing

In order to edit the contents of a *Text* box just double click on the object, this will allow the text in the box to be changed. More complex objects like *Graphs* and *Tables* will display a dialog allowing the user to change their settings.

> Objects can not be dragged across *Header*, *Footer* or *Page* boundaries. In order to move an object across one of these boundaries the user must *Cut* or *Copy* and *Paste* the object into its new position.

13.4.3.1 Graphs

A graph is used to depict a relationship between two or more variables. The simplest and most common usage of graphs is to show channel data over a period of time, such as displaying a temperature reading over the span of a week. *Linear* graphs are used for this purpose.

Frequency Distribution graphs can be created that show how often a value has occurred. This will split the horizontal axis into a set of ranges and then use the vertical axis to show how often that range occurred during the time interval. For a temperature channel this would allow us to quickly see what percentage of time the temperature was above a critical threshold.

Polar charts are the final option and are used to display vector information. Vector data has both a direction and a magnitude which are combined for display on a polar chart. A common example would be combining separate wind direction and wind magnitude channels.

The graph settings are divided into several different tabs and many of the tabs operate in the same way no matter which graph type is selected.

Graph Work Flow Example

When adding a new *Graph* to a report the process will be as follows:

1. Click on the *Graph* menu item on the *Report Manager Edit* tab
2. Select graph type: *Linear*, *Distribution* or *Polar*
3. Change settings on the *Properties* tab as required.
4. Select the channels you want to graph from the available channels on the *Data Set* tab.
5. On the same tab select each chosen channel in turn and set their properties.
6. Add level markers if required on the *Level Markers* tab.
7. Add axes and change axes settings on the *Axes* tab.
8. Preview the graph output in the *Preview* tab.
9. Make any changes to the graph settings and select *OK*.
10. Click on the report page to position the *Graph* object

> Graph Objects gives an overview of this object type.

13.4.3.1.1 Properties Tab

The *Properties* tab changes when different types of graphs are selected. Most of the controls on this tab are common but some are specific to certain graph types.
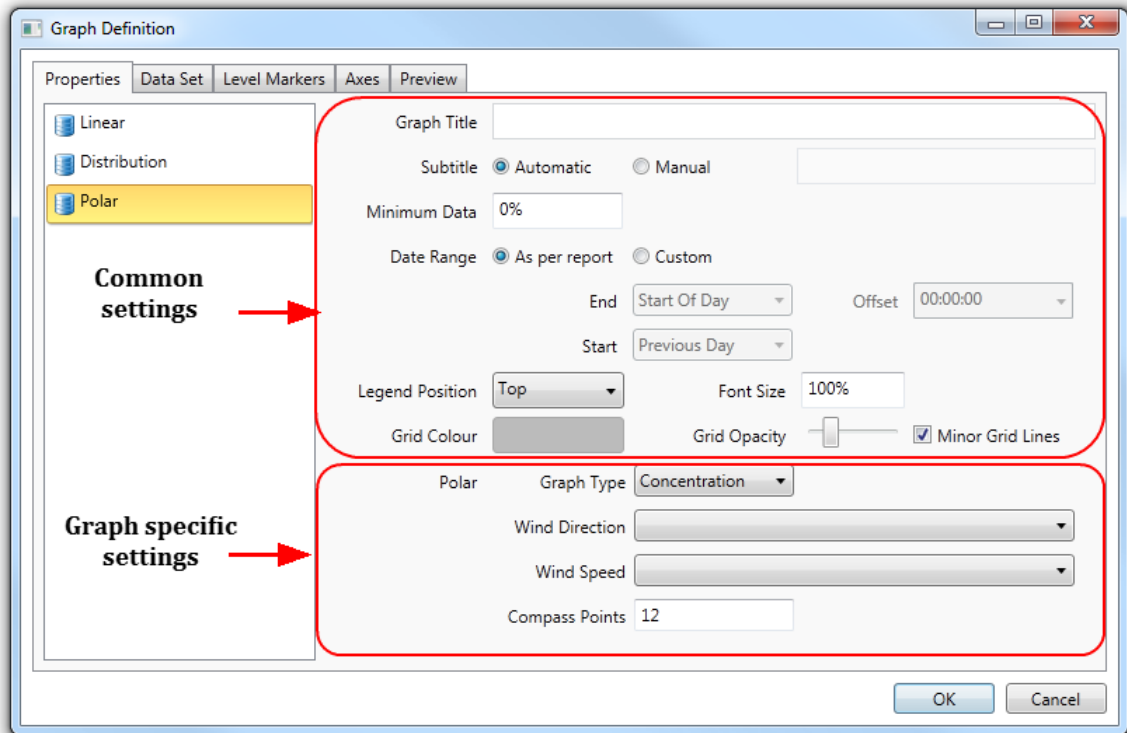
Properties Tab

The graph types are divided into the following categories:

- Linear
  - Diurnal
- Distribution
  - Frequency
  - Cumulative
- Polar
  - Concentration
  - Dose
  - Scatter
  - Wind Rose

13.4.3.1.1.1 Linear Graphs

This is the default graph type and has the following set of simple properties:

Properties Tab

Item	Description
Graph Title	Main title that will appear in a large font at the top of the output.
Subtitle	Use the *Manual* setting to enter your own text for display. The default option of *Automatic* will create a subtitle that describes the time period that the graph is outputting. The subtitle is output underneath the main title and in a smaller font.
Minimum Data %	Each data point used for the graph will need to have this percentage of channel values before it is considered valid and used. For example, consider a channel that has 1 minute data and we are displaying it as a 10 minute average. This means the graph will output a data point once per 10 minutes based on the average of the 10 records for that period of time. If the *Minimum Data* is defined as 100% then all 10 records must be present for a 10 minute period before it is output. A setting of 50% would require there be 5 or more 1 minute records present before a 10 minute average is calculated and output.
Date Range	By default the date range is inherited from the report. Use the custom settings to override this behaviour and setup graph specific settings.
X-Axis	Defaults to showing the date and time on the x-axis. To compare channels against each other you can use this option to select the channel that represents the horizontal axis. Note that this setting is ignored if the *Diurnal Slice* setting is used.
Legend Position	Dictates where the graph legend will be positioned in relation to the graph. Options are: Top, Left, Right, Bottom.
Font Size	Font size affects the size of the legend, graph title, x and y axis legends. It is restricted to between 50 and 150% of the default font size.
Grid Colour	Changes the colour of the grid lines.
Grid Opacity	Changes the opacity of the grid lines. By default the major and minor grid lines have a different opacity and minor grid lines can be turned off by deselecting the *Minor Grid Lines* tick box.
Diurnal Slice	Splits the source data into periodic ranges that allows easy comparison. For example, set the slice to be day on day and then select a date range of 1 month. Add the same temperate channel twice to the *Data Sets* tab for display. For the first data set we define that only the week days should be included and for the second data set we define only the weekend days. Now the graph will show an x-axis that represents 1 day with two lines shown. The first line showing the average weekday temperatures and the second the average weekend temperatures.

Any unexpected discrepancy can then easily be seen.
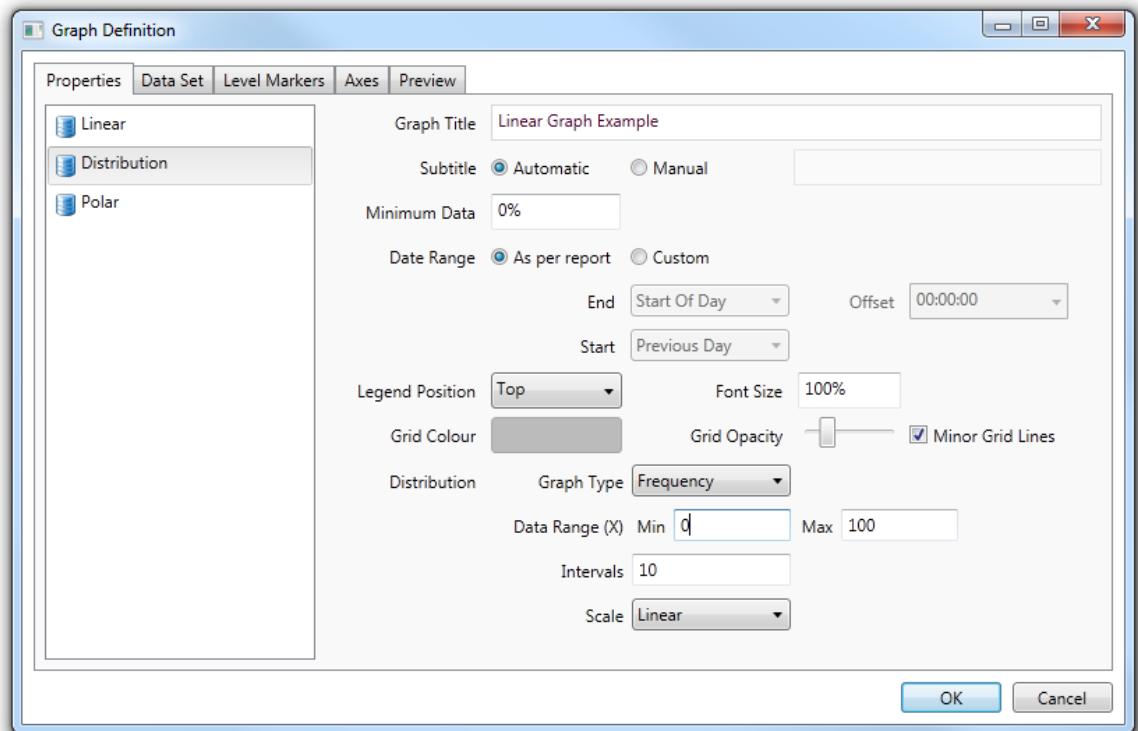
Linear Graph Definition

An example of a linear graph that makes use of multiple data sets, level markers and an axes definition follows.

The level markers are used to indicate ranges of values of special interest. In this example the range from 0 to 20 is labeled *OK*, the range from 20 to 35 as *Warning* and anything above 35 as *Danger!*

Linear Graph Example
Wednesday, 25 April 2012
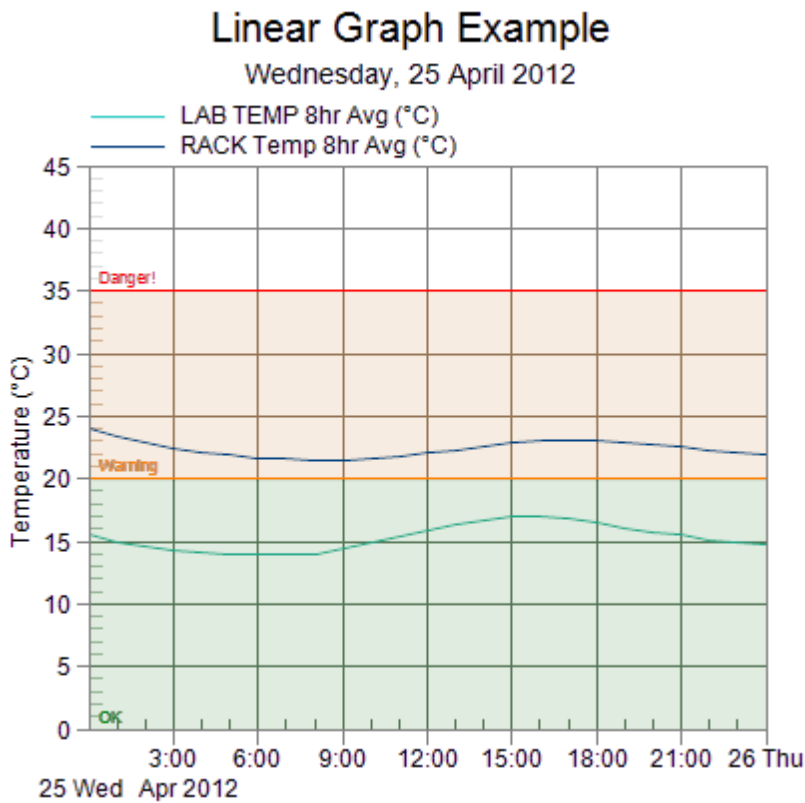
Linear Graph Example

> Linear Graph examples can be found in this file: Linear Graph Example

13.4.3.1.1.2 Distribution Graphs

Some of the graph properties are the same across all the graph types.
These common properties maintain the same meaning across all the graphs to prevent confusion.

Properties Tab

Item	Description
Graph Title	Main title that will appear in a large font at the top of the output.
Subtitle	Use the Manual setting to enter your own text for display. The default option of Automatic will create a subtitle that describes the time period that the graph is outputting. The subtitle is output underneath the main title and in a smaller font.
Minimum Data %	Each data point used for the graph will need to have this percentage of channel values before it is considered valid and used.

	For example, consider a channel that has 1 minute data and we are displaying it as a 10 minute average. This means the graph will output a data point once per 10 minutes based on the average of the 10 records for that period of time. If the Minimum Data is defined as 100% then all 10 records must be present for a 10 minute period before it is output. A setting of 50% would require there be 5 or more 1 minute records present before a 10 minute average is calculated and output.
Date Range	By default the date range is inherited from the report. Use the custom settings to override this behaviour and setup graph specific settings.
Legend Position	Dictates where the graph legend will be positioned in relation to the graph. Options are: Top, Left, Right, Bottom.
Font Size	Font size affects the size of the legend, graph title, x and y axis legends. It is restricted to between 50 and 150% of the default font size.
Grid Colour	Changes the colour of the grid lines.
Grid Opacity	Changes the opacity of the grid lines. By default the major and minor grid lines have a different opacity and minor grid lines can be turned off by deselecting the *Minor Grid Lines* tick box.
Graph Type	A setting of Frequency will calculate how often values occurred for each range and then use that percentage as the output. So if a temperature channel has an interval of 5 degrees then each graph output will be the percentage of channel values were within that particular 5 degree range. Changing this setting to Cumulative will output the percentage for the current range added to the percentage for the previous range. This therefore accumulates values across the graph until the last range which must have a value of 100% as it represents all the ranges added together.
Data Range	Set a minimum and maximum data values that define the range of values that will be used for output on the x-axis. These values must be provided by the user because they cannot be automatically calculated. This range combined with the Intervals setting is used to specify the range of each individual interval.
Intervals	Number of intervals that the data range should be split into. There will be one graph output value per interval.
Scale	Used to switch between the default of linear and logarithmic.

Distribution Graph Definition
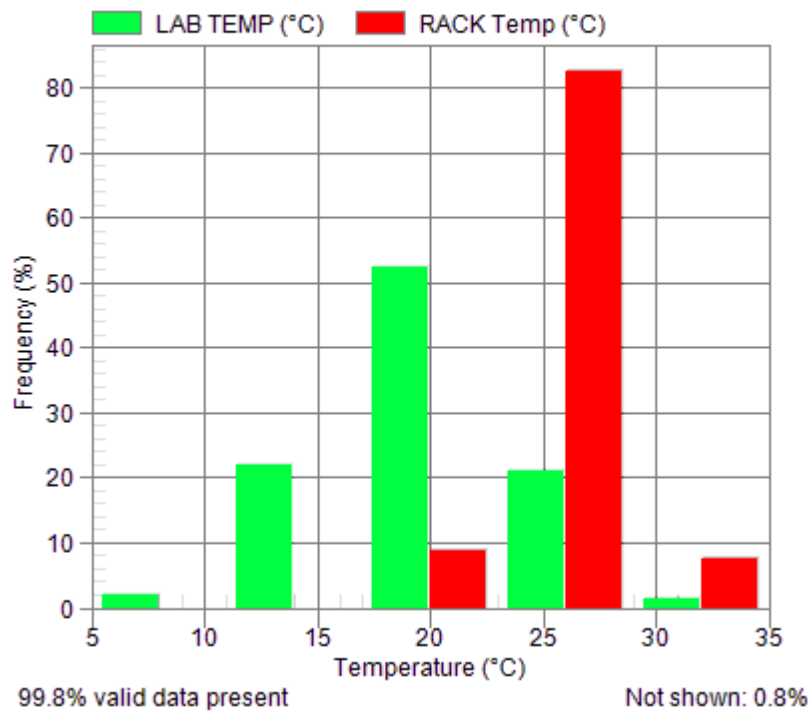
Distribution Graph Example

Distribution Graph examples can be found in this file: Distribution Graph Example

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13.4.3.1.1.3 Polar Graphs

All *Polar* graphs are used to map information related to wind direction and speed. There are four types of *Polar* graph.

Polar Concentration

A concentration polar plot displays the average value of a channel's data relative to a specific wind direction and wind speed. You should use the *Wind Direction* and *Wind Speed* setting on the *Properties* tab to specify the relative channels used in the calculation. Wind direction is shown by the direction the graphical blocks are facing on the compass. Wind speed is designated by the size of the graphical block.

Polar Dose

A dose polar plot displays the frequency distribution of a channel's data relative to a specific wind direction and wind speed. This polar plot is designed to show the percentage of data points that were recorded from different directions at different wind speeds. The magnitude

of data is not assessed.

You should use the *Wind Direction* and *Wind Speed* setting on the *Properties* tab to specify the relative channels used in the calculation. Wind direction is shown by the direction the graphical blocks are facing on the compass. Wind speed is designated by the size of the graphical block.

Polar Scatter

A scattered polar plot displays the distribution of channel data relative to a wind direction and wind speed. You should use the *Wind Direction* and *Wind Speed* setting on the *Properties* tab to specify the relative channels used in the calculation. Wind direction is shown by the direction the graphical blocks are facing on the compass. Wind speed is designated by the size of the graphical block.

Polar Wind Rose

A wind rose displays the distribution of wind speed relative to wind direction. You should use the *Wind Direction* setting on the *Properties* tab to specify the relative channel used in the calculation. Wind direction is shown by the direction the graphical blocks are facing on the compass. Wind speed is designated by the size of the graphical block.

Properties Tab

Item	Description
Graph Title	Main title that will appear in a large font at the top of the output.
Subtitle	Use the *Manual* setting to enter your own text for display. The default option of *Automatic* will create a subtitle that describes the time period that the graph is outputting. The subtitle is output underneath the main title and in a smaller font.
Minimum Data %	Each data point used for the graph will need to have this percentage of channel values before it is considered valid and used. For example, consider a channel that has 1 minute data and we are displaying it as a 10 minute average. This means the graph will output a data point once per 10 minutes based on the average of the 10 records for that period of time. If the Minimum Data is defined as 100% then all 10 records must be present for a 10 minute period before it is output. A setting of 50% would require there be 5 or more 1 minute records present before a 10 minute average is calculated and output.
Date Range	By default the date range is inherited from the report. Use the custom settings to override this behaviour and setup graph specific settings.
Legend Position	Dictates where the graph legend will be positioned in relation to the graph. Options are: Top, Left, Right, Bottom.
Font Size	Font size affects the size of the legend, graph title, x and y axis legends. It is restricted to between 50 and 150% of the default font

	size.
Grid Colour	Changes the colour of the grid lines.
Grid Opacity	Changes the opacity of the grid lines. By default the major and minor grid lines have a different opacity and minor grid lines can be turned off by deselecting the *Minor Grid Lines* tick box.
Graph Type	Determines the type of polar graph to create. Options are: Concentration, Dose, Scatter and Wind Rose.
Wind Direction	Specifies the channel to use for wind direction.
Wind Speed	Specifies the channel to use for wind speed.
Compass Points	Splits the circle into this number of intervals where one output value is calculated per interval. Note that the *Compass Points* setting is for the number of data compass points and not the number of legend compass points.
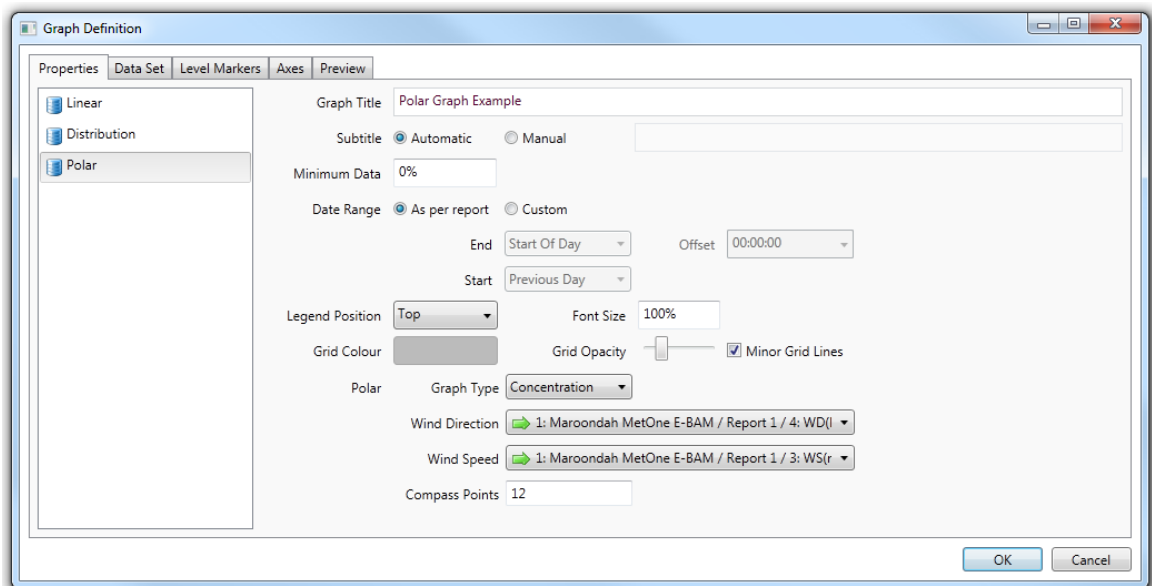
Polar Graph Definition

Polar Dose Graph Example

> Polar Graph examples can be found in this file: Polar Graph Example

13.4.3.1.2 Data Set Tab

This tab is used to construct a list of channels that are displayed in the output graph.
On the right hand side is the set of all available channels that can be chosen from. Station channels that have been setup in the applications *Stations* tab are listed first followed by the collection of *Calculated Channels* defined for this report.

Drag Channels into Data Set
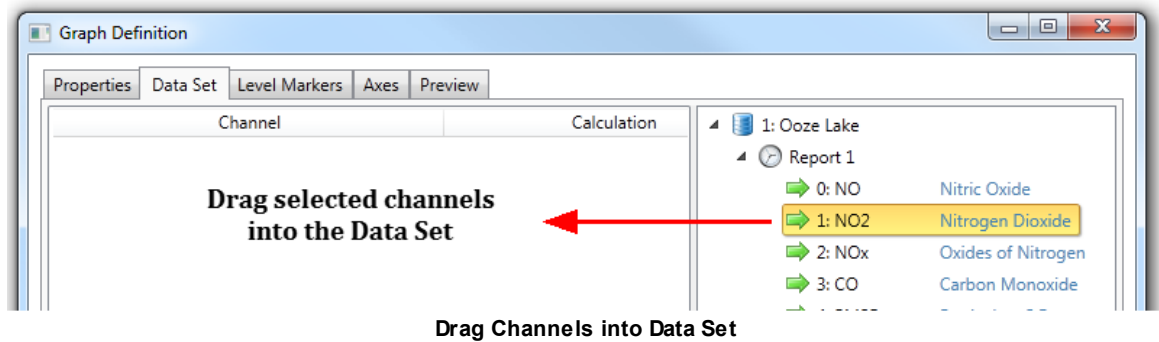
Use the mouse to drag a channel and drop it onto the left area of the tab, this will add a new entry.
Remove existing entries by selecting the entry and then using the delete key.

Selecting a channel will make further options available for that channel.

Each data set entry has the following columns:

Item	Description
Channel	Description of the channel.
Calculation	Function used to calculate the output. If the selected function requires an additional parameter, such as *Nth Minimum*, it will automatically present an additional input box below the function name. If the rolling period needs to differ from the *Display Interval* column value set the rolling check box. This will then present an additional control so that the period can be defined.
Display Interval	Specifies the interval over which each output covers. If you select 1 hour then the graph will have one data point per hour that is calculated using the function defined in the *Calculation* column. When no value is specified it will use whatever values are available for the channel.
Display Unit	If you specify a display unit that is different from the units defined in the *Client* application then an automatic conversion will occur between the two units. For example, if you channel records centigrade but you select kelvin in this field then it will automatically convert all values from centigrade to kelvin values.
Label	The label to be displayed for this channel. By default the automatic option is selected and the automatically generated label shown. This can be changed to a manual label definition if required.
Plot	Determines how the data series is drawn for linear and distribution type graphs. Different options include *Area*, *Bar*, *Line*, *Spline*, *Point* and *Step*.
Style	The style to be applied to the plot, available options will differ

	depending on the *Plot Type* selected.
Colour	Click the coloured block in order to show a dialog that allows the colour to be modified. By default the colours of different series are likely to be different but occasionally clashes can occur.
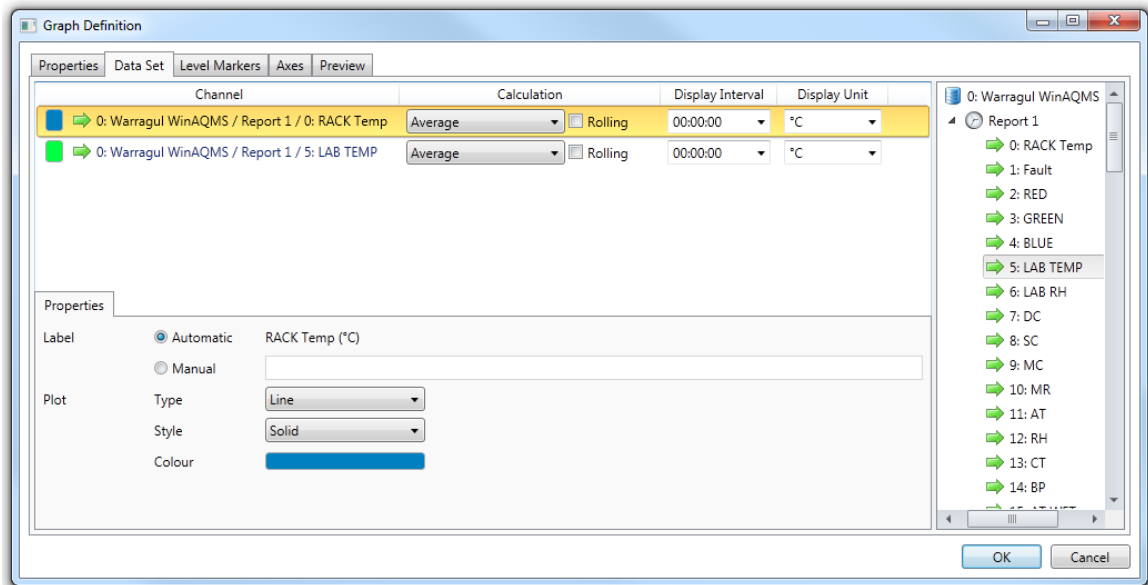
Data Set Tab

13.4.3.1.3 Level Markers Tab

A graph can be annotated to show *Lines* or *Blocks* with labels. Use a line marker to indicate a significant value such as an error level on the graph.
This makes it easy to spot values that move above or below that significant value.

A range of values can be used to mark an entire block that is then drawn with a background in the specified colour, useful when there is an upper and lower limit that needs indicating.

Item	Description
Label	Text to use on the graph for labelling the level.
Value	A single edit box is used for a *Display Type of Line* and is the value at which a line is drawn on the graph. Two edit boxes are used for a *Display Type of Block* and define the band that will be coloured.
Unit	Determines the units that the value represent.
Colour	Colour used to draw the line or band.
Display Type	Specifies if a line or block should be drawn.
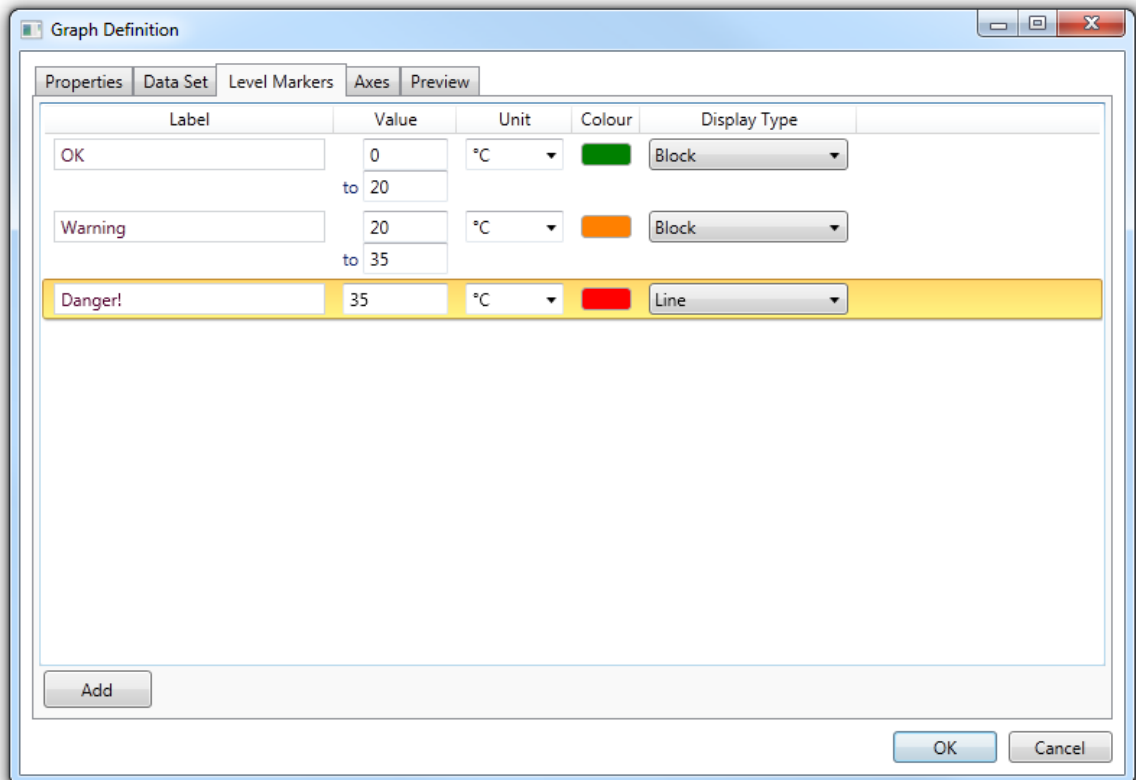
Level Markers Tab

13.4.3.1.4 Axes Tab

Use the *Axes* tab when you need to customize the display or axis details. By default the graph will automatically create a different axis for each unique unit and automatically define the range of values shown on each axis.

For example, if you have defined two data sets that are temperature channels and the first has a unit of Centigrade and the second is Kelvin then the output graph will have two axes shown, one for each of the units.

To modify the default behaviour you need to add an axis entry that has the same unit name as the one that would be produced automatically. Then the graph will use the settings from the entry you have defined.
In this example two entries would be added, the first specifying centigrade and the second kelvin. Then the minimum and maximum range values would be used from those specified instead of being automatically calculated.

Add new entries by using the appropriately marked button at the lower left of the tab.
Remove an entry by first selecting it and then pressing the delete key.

Item	Description
Unit	Unit of the axis to be customized.

Min	Lower limit of the axis range. Values below this limit will not be output on the graph.
Max	Upper limit of the axis range. Values above this limit will not be output on the graph.
Visible	Checked to hide the axis from being shown. The data values will still be drawn but the axis that describes the values will not. This is useful when the graph would normally display multiple axes and you would like to remove all but one from being shown.
Align axes at zero	Find this setting on the lower right corner of the page. Checked to ensure that the zero position of each axis is positioned at the same vertical position. This alignment makes it much easy to relate different data sets.
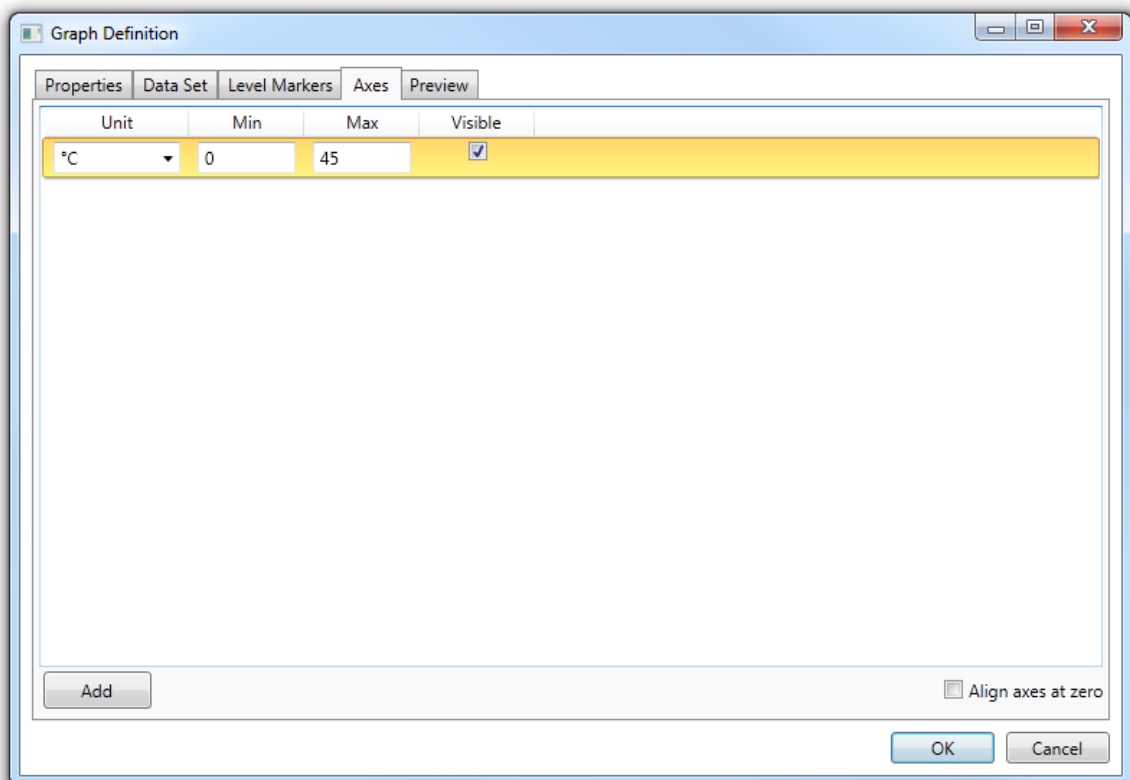
Axes Tab

13.4.3.1.5 Preview Tab

Make use of the *Preview* tab to test the configuration settings. Each time you navigate to the *Preview* tab a new image will be generated using the current settings.

If the output is not as intended then move back to a different tab, make adjustments, and then use preview again.
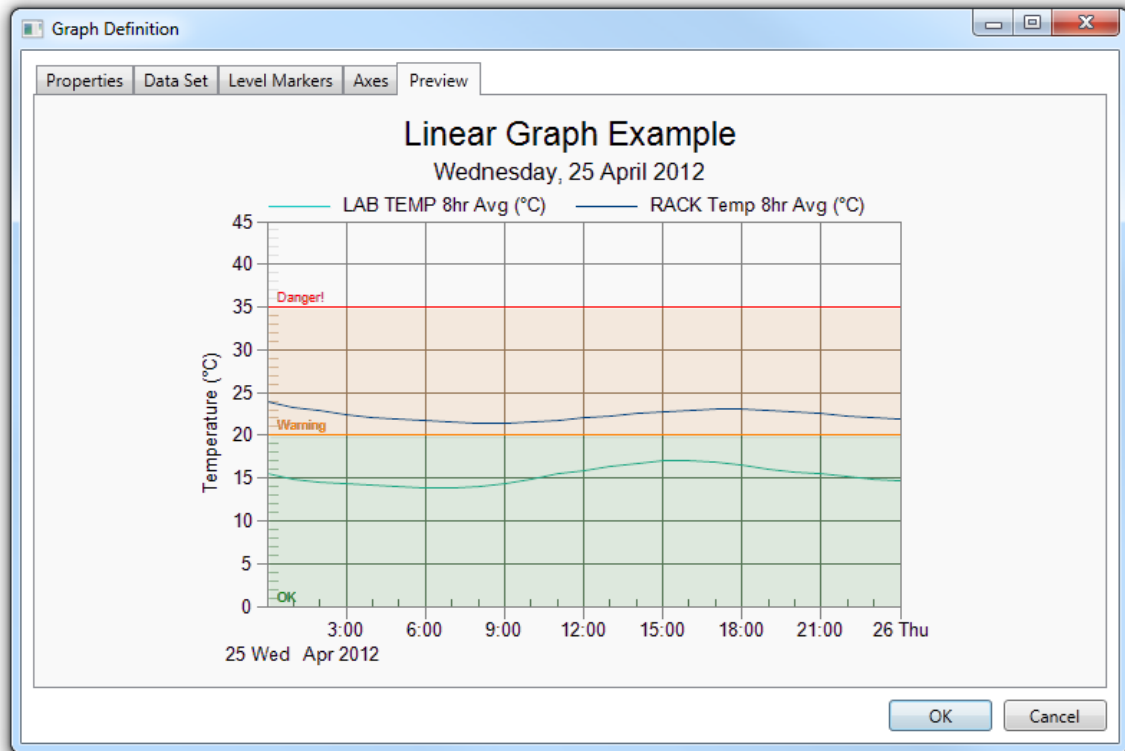
Preview Tab

13.4.3.2 Tables

Table

A table is a means of arranging data in rows and columns. Each row represents a time period and each column a data source. Data sources are either station channels or report defined calculated channels. Consider using a table when you need to view, compare or export precise values.

A wide range of settings allows all aspects of table generation to be customized. All settings have default values allowing a table to be created with a minimum of setup. Data values can be custom formatted, such as rounding to the required number of decimal places. Times and dates can be customized, such as showing the full month name. The visual appearance of cells can be modified by using the appropriate colour, font and alignment options.

Table Work Flow Example

When adding a new *Table* to a report the process will be as follows:

1. Click on the *Table* menu item on the *Report Manager Edit* tab
2. In the *Columns* tab add the *Channels* that will appear in the *Table*. Expand the *Row Descriptions* and *Station* objects in the *Channels* frame and drag selected items across to the *Display Columns* frame.

3. For each channel item in the *Display Channels* frame, select the channel and apply changes to its *Data*, *Appearance* and *Conversions* properties via the appropriate tab.

4. Select the *Footers* tab and select any footer items needed in the table by dragging a selected item from the *Predefined* frame to the *Rows* frame.

5. For each footer item in the *Rows* frame, select the item and make changes to its *Data* and *Appearance* properties via the appropriate tab.

6. Select the *Headers* tab and make any changes required to the formatting of the *Column Headers* and *Footer Row Headers*.

7. Select the *Table* tab and make any changes to the overall table definition as required.

8. Preview the table output in the *Preview* tab.

9. Make any changes to the table settings and select *OK*.

10. Click on the report page to position the *Table* object

Table Objects gives an overview of this object.

Unlike other report objects the table height will automatically expand to show all the output rows when the report is generated.

13.4.3.2.1 Table Tab
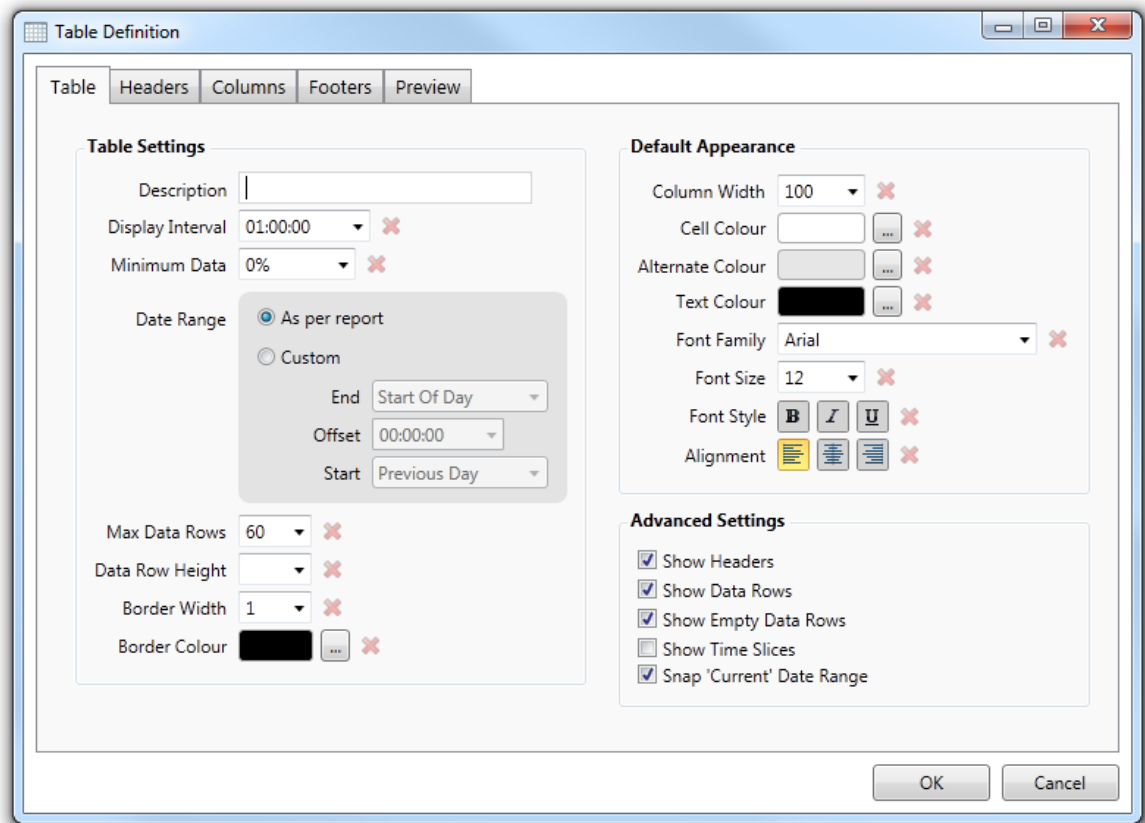
The Table Tab

Table Settings

The most common table settings are contained in this section.

Item	Description
Description	Used when a table is exported to Microsoft Excel and becomes the name of the Microsoft Excel Sheet that contains the table output. This makes it easy to find the table in an exported Microsoft Excel document.
Display Interval	The time interval that each row represents. Selecting 5 minutes will generate a row per 5 minute block of time. If the reporting period is 1 hour then this would result in 12 rows of 5 minutes each. It also adjusts the alignment of the reporting period. So selecting 5 minutes will adjust the end date of the report to be a multiple of 5 minutes. Your report would not finish at 3 minutes past an hour but instead be adjust backward to finish exactly on the hour.
Date Range	By default the date range is inherited from the report. Use the custom

	settings to override this behaviour and setup table specific settings.
Max Data Rows	Defines the maximum number of data rows to create when generating a preview. This setting is ignored when generating a full report.
Data Row Height	The pixel height of each data row. If you select a large font then you will need to increase this height so that text will fit into the output cells.
Border Width	The pixel width of the border around every table cell. Select a value of 0 (zero) to remove borders from around cells.
Border Colour	Used to define the colour of the border around each table cell.

Default Appearance

Cell appearance can be customized in several different sections of the table dialog. When a setting is not customized in another part of the dialog it will default to values defined here. For example, altering the font size to 16 in this area will cause all cells to be output at size 16. If you then use the Headers tab to alter the Column Header Appearance font size to 18 then all the cells in the table will be size 16 except for column headers that would be sized 18.

Item	Description
Column Width	Defines the pixel width of the column.
Cell Colour	Background colour of cells in the first, third, fifth row and so forth.
Alternate Colour	Background colour of cells in the second, fourth, sixth row and so forth.
Text Colour	Colour of cell text.
Font Family	Font used for cell text.
Font Size	Size of the font used for cell text.
Font Style	Optionally draws the font in bold, italic and underlined.
Alignment	Positions the text to the left, centre or right of the cell.

Advanced Settings

The advanced settings have a major impact on how the table is generated. They can be used to hide rows that should normally be output. Time slicing is an advanced feature that splits each data column into multiple output columns.

Item	Description
Show Headers	Determines if the column headers row is output
Show Data Rows	Determines if the data rows are output, does not alter the output of column headers or footer rows.
Show Empty Data Rows	Determines if rows that have no associated data should be

	output or just ignored.
Show Time Slices	Determines if each data column should be sliced into multiple columns each of which covers a fraction of the data row period.
Snap 'Current' Date Range	When this option is selected it will 'snap' the time periods in the table rows to the nearest time interval as determined by the *Display Interval*. For example a *Table* with a *Display Interval* of 1 hour is run at 25 minutes past the hour. Without this option set the table rows will have times of e.g. 14:25, 15:25, 16:25 etc. With this option set the time is 'snapped' to the nearest hour so the table row times would be 14:00, 15:00, 16:00 etc.

13.4.3.2.1.1 Table Time Slicing

By default a single display channel will result in a single output column. Time slicing splits the output column into multiple output columns based on a provided time slice interval. This is best explained by using an example.

Imagine a table that has a *Display Interval* of 5 minutes and two display columns, the first showing the time for the row and the second a temperature that has 1 minute data available. The report is run over a period of 30 minutes and produces the following output.

Time	Temp
23:30	27.80 °C
23:35	27.78 °C
23:40	27.68 °C
23:45	27.64 °C
23:50	27.58 °C
23:55	27.58 °C
Average	27.49
Count	30

Time Slicing Example 1

Each row contains a 5 minute average with the footer providing an average over the entire 30 minute reporting period. The *Count* displayed in the footer confirms that 30 records were used in the report because the temperature has 1 minute data.

To enable time slicing you select the check-box labeled *Show Time Slices* on the Table tab. This will add a new *Time Slice Interval* setting to the *Table Settings* section.

Table Time Slicing Definition

The *Time Slice Interval* must divide exactly into the *Display Interval* so that each generated column covers the same period of time and when combined covers exactly the period of the row. In our example we will use a time slice of 1 minute. Now when the table is generated we get the following more complicated output.

Time	00	01	02	03	04	Average	Count
23:30	27.80 °C	27.80 °C	27.80 °C	27.80 °C	27.80 °C	27.80	5
23:35	27.80 °C	27.80 °C	27.70 °C	27.80 °C	27.80 °C	27.78	5
23:40	27.70 °C	27.60 °C	27.70 °C	27.70 °C	27.70 °C	27.68	5
23:45	27.70 °C	27.70 °C	27.60 °C	27.60 °C	27.60 °C	27.64	5
23:50	27.70 °C	27.60 °C	27.50 °C	27.50 °C	27.60 °C	27.58	5
23:55	27.60 °C	27.60 °C	27.50 °C	27.60 °C	27.60 °C	27.58	5
Average	27.72	27.68	27.63	27.67	27.68		
Count	6	6	6	6	6		

Time Slicing Example 2

Our temperature column has been split into five output columns because the time slice interval of 1 minute divides into the display interval 5 times. On the right hand side of each row there is aggregate information for the column. We can confirm the data is correct because the per-row average is the same as shown in the original table before time slicing was used.

Additional aggregate information is shown at the end of the table for each of the time sliced columns. This provides a way to find the average, or other averaging function, over a slice of

time. In the above example the first column provides the average for temperatures at each 5 minute interval.

See an example of time slicing in this file: Time Slice Table Example

13.4.3.2.2 Headers Tab
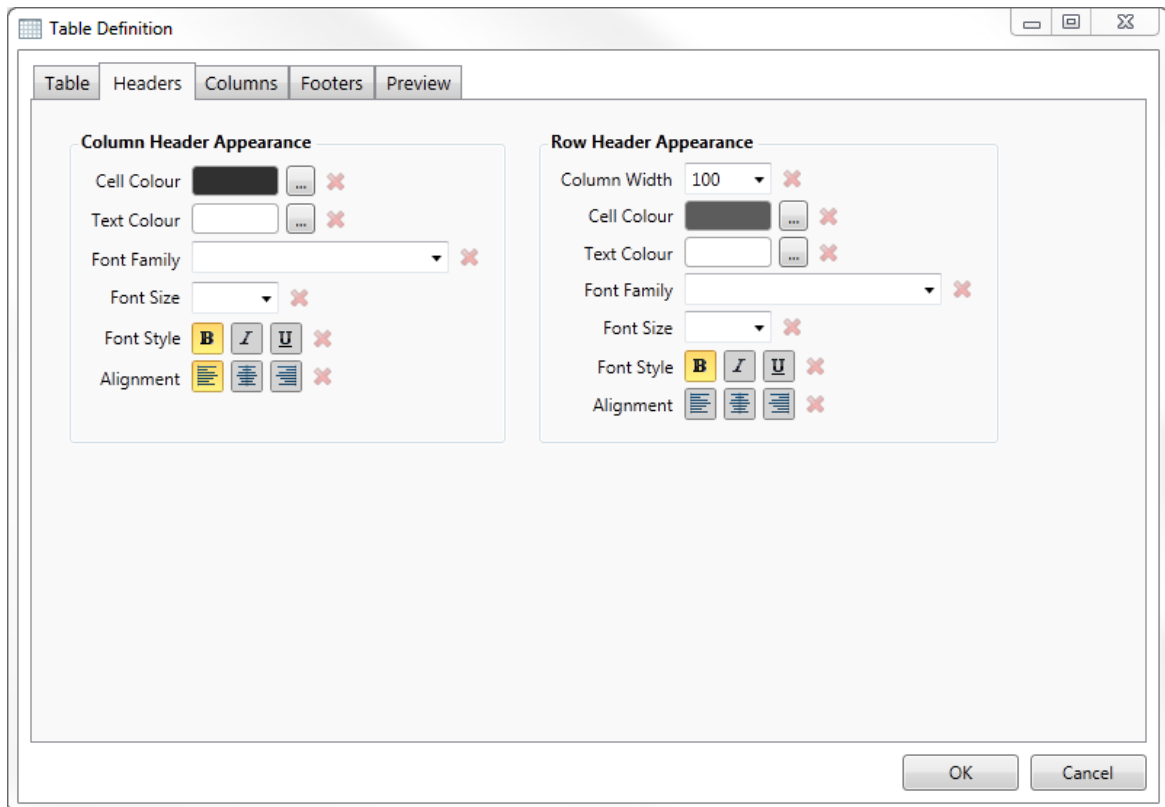
Column Header Appearance

Use these settings to modify the appearance of column headers. To the right of each setting is a red button that is used to default the setting. When defaulted, the value to use is retrieved from the *Default Appearance* section of the Table tab.

Item	Description
Cell Colour	Background colour of cells in the first, third, fifth row and so forth.
Alternate Colour	Background colour of cells in the second, fourth, sixth row and so forth.
Text Colour	Colour of cell text.
Font Family	Font used for cell text.

Font Size	Size of the font used for cell text.
Font Style	Optionally draws the font in bold, italic and underlined.
Alignment	Positions the text to the left, centre or right of the cell.

Row Header Appearance

Row headers are just when footers are defined. Use these settings to modify their appearance. To the right of each setting is a red button that is used to default the setting. When defaulted, the value to use is retrieved from the *Default Appearance* section of the *Table* tab.

The *Column Width* is only used when an extra column needs to be created for showing the row headers. This is only necessary if there is no row description column defined, as row description columns are used for displaying row headers within the footers area.

Item	Description
Column Width	Defines the pixel width of the column.
Cell Colour	Background colour of cells in the first, third, fifth row and so forth.
Alternate Colour	Background colour of cells in the second, fourth, sixth row and so forth.
Text Colour	Colour of cell text.
Font Family	Font used for cell text.
Font Size	Size of the font used for cell text.
Font Style	Optionally draws the font in bold, italic and underlined.
Alignment	Positions the text to the left, centre or right of the cell.

13.4.3.2.3 Columns Tab
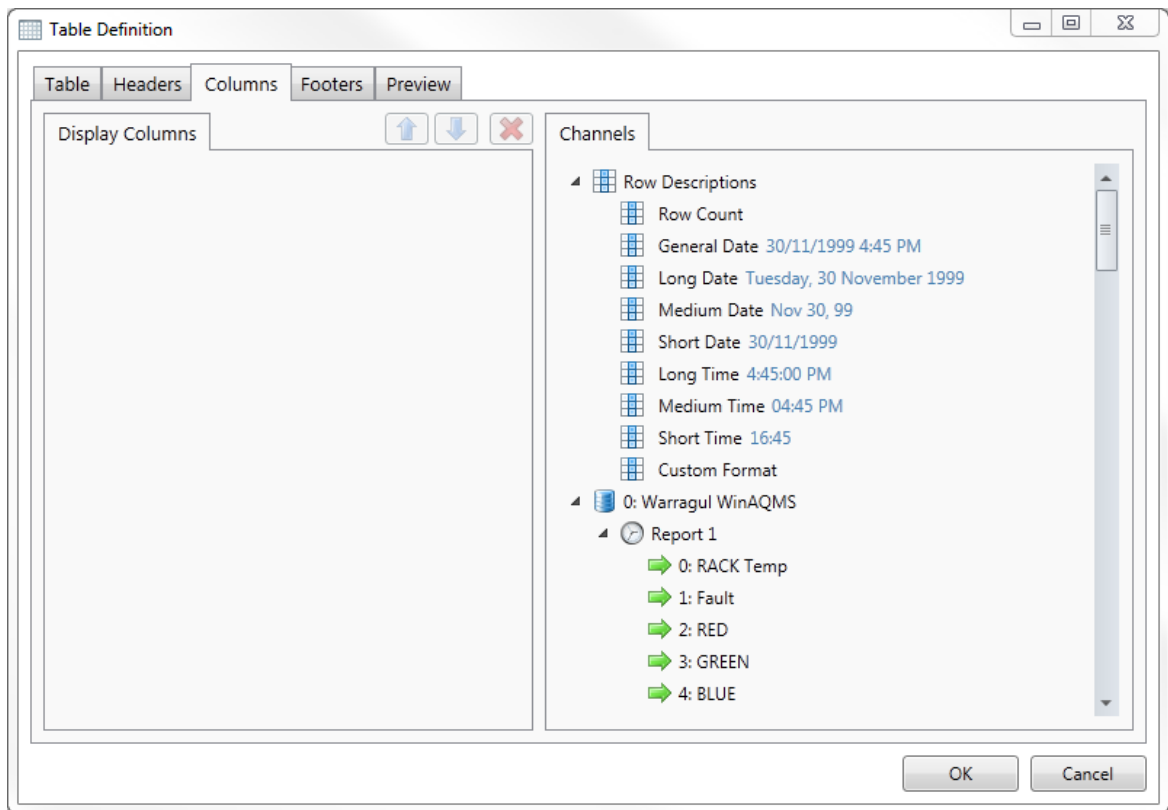
Display Columns Tab

The *Display Columns* tab shows a list of the output columns. To add a new entry you use the mouse to drag an item from the *Channels* tab and drop it onto the display columns list. A new entry will then be created and appended to the end of the current entries.

On the same line as the *Display Columns* tab are three small buttons. These show an up arrow, down arrow and red cross and become enabled once you select a display column entry. The up and down arrows are used to move the selected item up and down the list of entries. This alters the order in which the columns will be output in the table. To ensure a column is output as the first table column it should be moved upwards to become the first entry in the list. Use the button with a red cross to delete the currently selected entry.

Channels Tab

This tab contains items that can be dragged into the display columns area in order to define the output columns. Available items include:-

Row Descriptions

Use the Row Count to output the row number starting at 1 and incrementing by one for each output row. This is useful in checking that the table is outputting as many rows as expected.

Following are a set of predefined time and date formats, such as General Date, for showing the time and date associated with each row. If none of the predefined formats is appropriate you can use the Custom Format entry instead, this allows you to enter a custom formatting specification.

Stations

Each station associated with the report will appear as a single entry. You can expand the station to show the reports and expand reports to see available channels. Only channels can be dragged over to the display columns area for output as columns.

Calculated Channels

Each calculated channel for the report will be listed.

13.4.3.2.3.1 Data Tab

When a display column is selected this tab is shown and allows settings related to generating the cell data to be modified.

The setting displayed depends on the type of column selected.

Row Description Settings

Item	Description
Header	Text used in the column header.
Row Description	Specifies if the column is outputting a row number or a date.
Date Format	Determines how the date is converted into text. Predefined settings such as *General Date* and *Short Time* can be used for common requirements. If none of the predefined settings are appropriate then use the *Custom Format* option in combination with the following field.
Custom Format	When the *Date Format* is set to *Custom Format* this setting is used to define how a date is converted to text.

Station Channel and Calculated Channel Settings

Item	Description
Header	Text used in the column header.
Rolling Period	Time interval over which the rolling function operates. If an empty value is specified then it defaults to using the *Display Interval* from the *Table* tab.
Rolling Function	Function used to calculate the cell value.
Rolling Parameter	This field only appears if you select a *Rolling Function* that requires an additional parameter. For example, selecting a function of *Nth Maximum* will show a rolling parameter labeled Nth.
Valid Threshold	Percentage of values that must be valid in order for an output to be generated. If the percentage is not met then the output cell is left blank.
Minimum Value	Values must be greater than or equal to this setting to be valid.
Maximum Value	Values must be less than or equal to this setting to be valid.
Numeric Format	Determines how the output value is converted into text. Predefined settings such as *General Number* and *Percentage* can be used for common requirements. If none of the predefined settings are

	appropriate then use the *Custom Format* option in combination with the following field.
Custom Format	When the *Numeric Format* is set to *Custom Format* this setting is used to define how a value is converted to text. You can specify the number of decimal places, user of thousands separators and alternate formats for positive, negative and zero values.
Output Status Value	When selected the *Status Value* will be output in place of the data value for this Channel. See here for *Status Codes*.
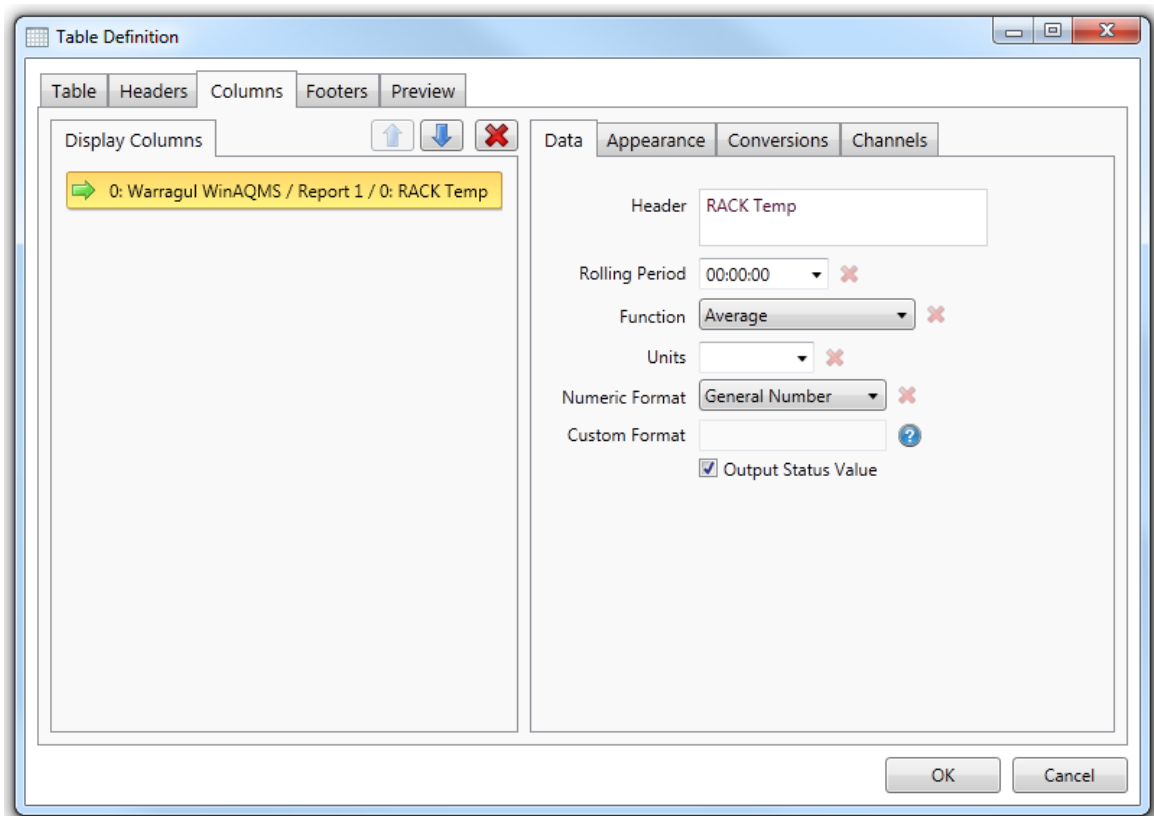
13.4.3.2.3.2 Appearance Tab

Use the settings in this tab to modify the appearance of column specific cells. By default all of these settings are defaulted and so the settings are retrieved from the Default Appearance section of the Table tab.
When you change any of the settings it will only be applied to the selected display column. For example, if you have two display columns defined and you modify the Text Colour of the first to be blue the generated table will only have blue text in the first column. The second column will not be affected by the change.

If you modify a setting and need to set it back to the defaulted state you can use the red button to the right of each property.

Item	Description
Column Width	Defines the pixel width of the column.
Cell Colour	Background colour of cells in the first, third, fifth row and so forth.
Alternate Colour	Background colour of cells in the second, fourth, sixth row and so forth.
Text Colour	Colour of cell text.
Font Family	Font used for cell text.
Font Size	Size of the font used for cell text.
Font Style	Optionally draws the font in bold, italic and underlined.
Alignment	Positions the text to the left, centre or right of the cell.

13.4.3.2.3.3 Conversions Tab

Cell values for a data column can be converted before they are output. This allows the output text to be modified as well as the colour, font and other visual appearance settings.

The conversions list always has a first entry for modifying the output of null values. A null value occurs when there is no data present for the cell. For example, instead of leaving the cell empty you might decide to output a fixed string, such as 'empty', 'null' or 'missing'. You might also alter the cell appearance by making the cell background red so that the absence of data is brought to the attention of the user. By default the null conversion makes no changes

and so null values simply result in an empty table cell output.

To add additional conversions you need to click the button to the right of the Conversions tab containing a green cross. Use the adjacent button with a red cross in order to delete a conversion that is no longer required. Note that you cannot delete the null conversion entry.

Each conversion is applied to cell values that are less than its defined 'If <' field but greater than or equal to the previous conversion in the list. The first non-null conversion is applied to all values less than the specified value. Once a conversion entry has been selected you can alter the visual appearance settings by using the settings in the lower half of the conversions tab.

Item	Description
If <	The conversion is applied to cell values that are less than the value entered here but greater than or equal to the value of this field for the previous conversion entry. Note that the null conversion does not have a field for entering a value because it is a fixed entry that is applied automatically.
Then output	Specifies the text to be output. Use the special placeholder $(Value) to indicate where the actual cell value should be placed. This allows fixed text to be placed before and/or after the placeholder. You can omit the placeholder entirely if you want to output fixed text only.
Preview	This is a read only field used to show a preview of how the output will look given the current conversion settings.
Gradient	By default this is not selected and so the conversion background setting will be used. When selected the background of the cell is the interpolated value between this conversions background colour and the background colour of the previous conversion. This allows a pleasing gradient effect.
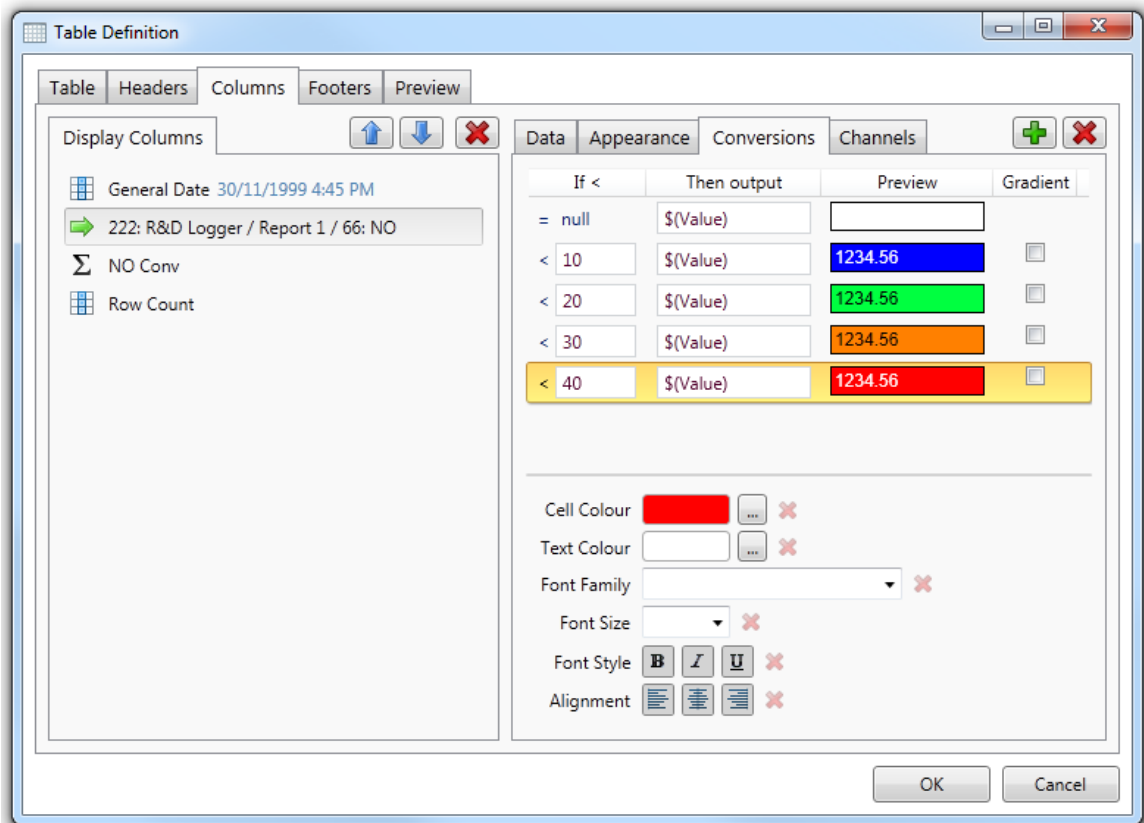
13.4.3.2.4 Footers Tab

The *Footers* tab is used to add rows to the bottom of a table. The tab itself is divided into two additional tabs.

Rows Tab

To add a new entry you use the mouse to drag an item from the *Predefined* tab and drop it onto the rows list. A new entry will then be created and appended to the end of the current entries.

Predefined Tab

All possible footer functions are listed in this tab. Use the mouse to drag an entry onto the *Rows* tab in order to add a new footer for output. You can modify the function used by an existing *Rows* entry by selecting the *Data* tab and modifying the *Function* setting.
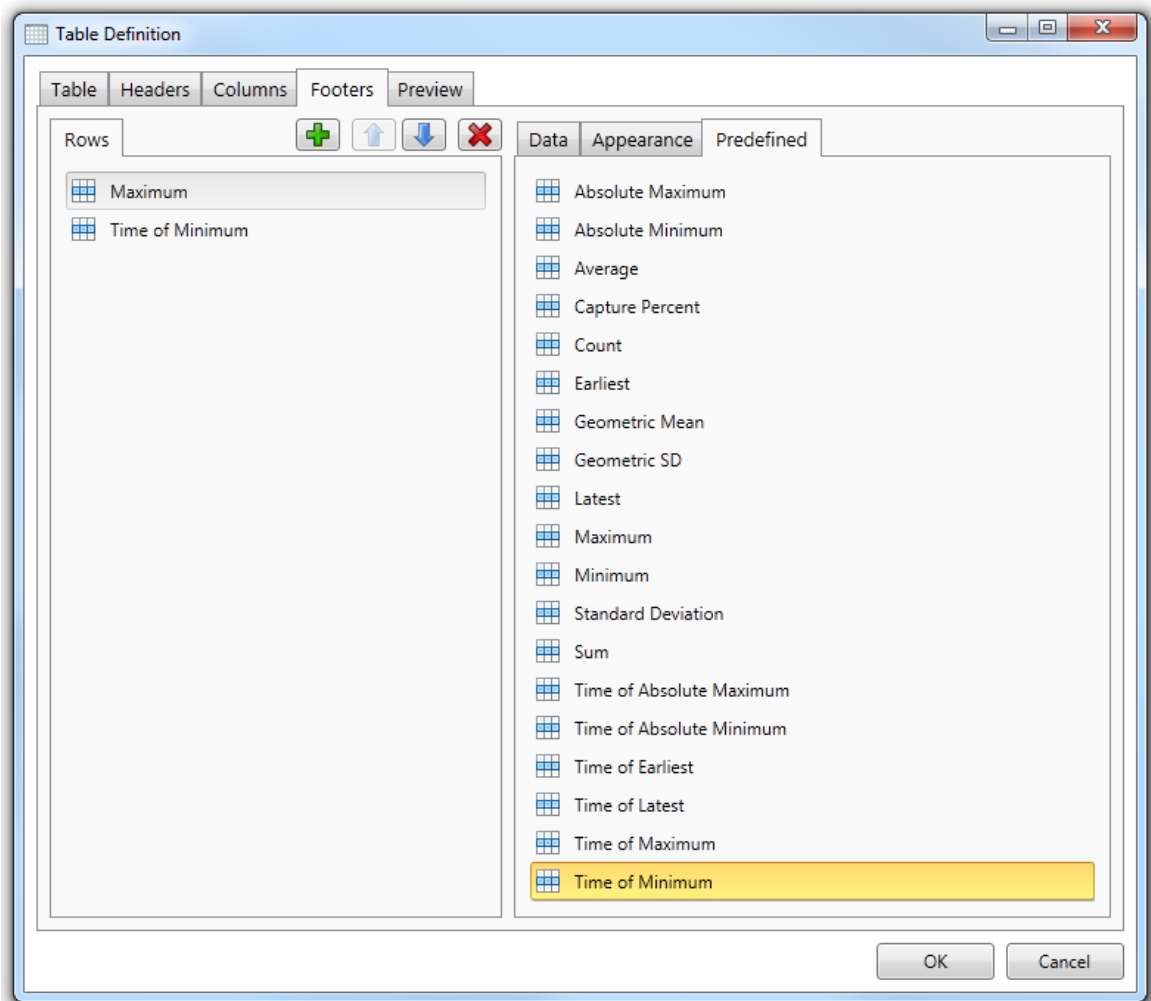
13.4.3.2.4.1 Data Tab

When a *Rows* tab entry is selected this tab is shown and allows settings related to generating the cell data to be modified. The majority of the predefined options will output a numeric cell value, such as the *Average*, *Minimum* and *Maximum* entries. A few, such as *Time of Latest* and *Time of Minimum*, output a time and date value. The available fields in the *Data* tab depend on which output is being produced.

Data Value Types

Item	Description
Label	Text used in the row header.
Function	Function used to calculate the cell value.
Function Parameter	This field only appears if you select a Rolling Function that requires an

	additional parameter. For example, selecting a function of Nth Maximum will show a rolling parameter labeled Nth.
Numeric Format	Determines how the output value is converted into text. Predefined settings such as General Number and Percentage can be used for common requirements. If none of the predefined settings are appropriate then use the Custom Format option in combination with the following field.
Custom Format	When the Numeric Format is set to Custom Format this setting is used to define how a value is converted to text. You can specify the number of decimal places, user of thousands separators and alternate formats for positive, negative and zero values.

Time and Date Types

Item	Description

Label	Text used in the row header.
Function	Function used to calculate the cell value.
Date Format	Determines how the date is converted into text. Predefined settings such as General Date and Short Time can be used for common requirements. If none of the predefined settings are appropriate then use the Custom Format option in combination with the following field.
Custom Format	When the Date Format is set to Custom Format this setting is used to define how a date is converted to text.

13.4.3.2.4.2 Appearance Tab

Use the settings in this tab to modify the appearance of footer specific cells. By default all of these settings are defaulted and so the settings are retrieved from the *Default Appearance* section of the Table tab.

When you change any of the settings it will only be applied to the selected footer row. For example, if you have two footers defined and you modify the Text Colour of the first to be blue the generated table will only have blue text in the first columns footer cells. The second column footer cells will not be affected by the change.

If you modify a setting and need to set it back to the defaulted state you can use the red button to the right of each property.

Item	Description
Column Width	Defines the pixel width of the column.
Cell Colour	Background colour of cells in the first, third, fifth row and so forth.
Alternate Colour	Background colour of cells in the second, fourth, sixth row and so forth.
Text Colour	Colour of cell text.
Font Family	Font used for cell text.
Font Size	Size of the font used for cell text.
Font Style	Optionally draws the font in bold, italic and underlined.
Alignment	Positions the text to the left, centre or right of the cell.

Appearance Tab

13.4.3.2.5 Preview Tab

The *Preview* tab is used to generate a table for immediate display so you can see how the current settings generate output.

This allows a quick development cycle, where settings are modified and then the effect on the output can be previewed. Each time the preview tab is selected another preview will be generated.

Preview Tab Example

> In the example image above the *'Max Data Rows'* is used to show the end of the data in the example. When the report is generated the table will expand to include all of the rows required for the report period.

13.4.3.3 Pictures

Graphic images can be added to a report by making use of the *Image* object. When selected a dialog box will appear allowing you to select a file of format png, bmp, jpg or tiff. This feature is useful for adding fixed images such as a company logo.
Another use is for loading a satellite image of a data logger's location and then overlaying a wind rose graph, thus showing the physical location of data readings data.

When an image object is selected the following properties can be viewed and edited.

Item	Description
Opacity	A slider that allows the transparency of the image to be controlled.
Stretch	Determines how the image is drawn when the object size does not exactly match the image size. Options include : -

	None – Image drawn as the original size. Fill – Image stretched to both directions to match the available space. Uniform – Stretched to match the smallest length that maintains aspect ratio. UniformToFill – Stretched to match the longest length that maintains aspect ratio.
Width	Defines the pixel width of the object.
Height	Defines the pixel height of the object.
Top	Defines the vertical position of the object.
Left	Defines the horizontal position of the object.

Stretch = None   Stretch = Fill   Stretch = Uniform   Stretch = UniformToFill

Try putting a map image behind a *Wind Rose* graph for added detail. The opacity of the image can be altered so that it doesn't obscure the graph.

Polar Scatter   June 2012
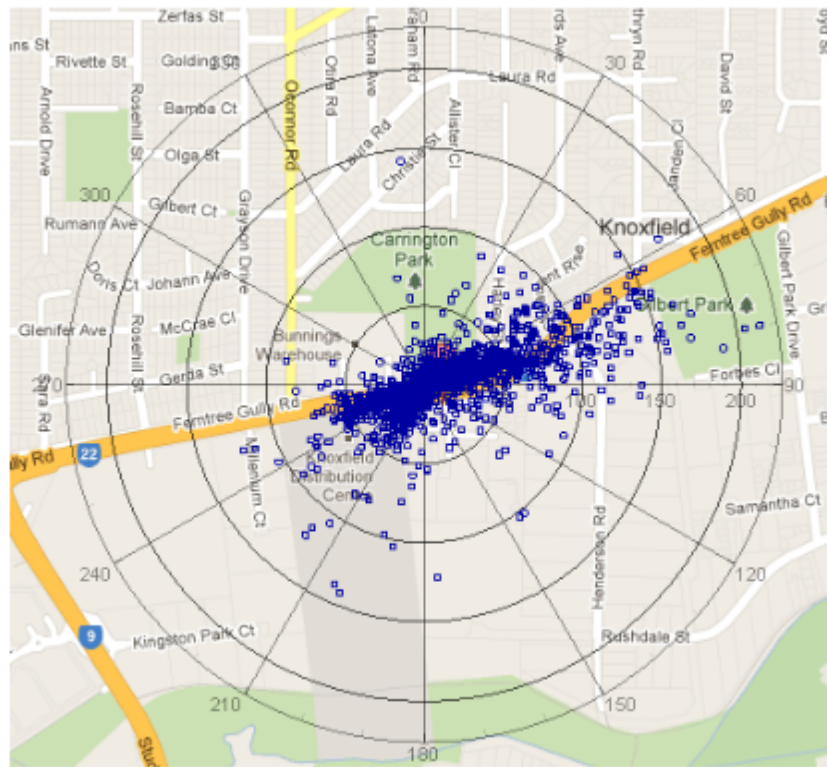
94.8% valid data present

Polar Graph with image

For an example of the use of images in graphs see the file:
Polar Graph Example

13.4.3.4 Shapes

Three simple shape objects are available for creating additional graphics that enhance the appearance of reports.

A *Line* object is useful for drawing a separator between different sections of a report. *Ellipse* and *Rectangle* objects are useful for drawing frames around areas or grouping together related objects.

To add a shape object you must begin by selecting the appropriate shape option from the *Shapes* drop down button on the *Edit* tab. Then move the mouse to the report canvas and press the left mouse down to begin a drag operation. Continue moving the mouse until the approximate required size of the shape is defined and finally release the mouse.

The ellipse and rectangle objects have the following properties that can be viewed and edited:

Item	Description
Border Colour	Colour used for the border around the shape, by default this is black.
Border Thickness	Pixel thickness of the border, set to zero to remove any border drawing.
Fill Colour	Inner colour of the shape, defaults to transparent.
Opacity	A slider that allows the transparency of the image to be controlled.
Width	Defines the pixel width of the object.
Height	Defines the pixel height of the object.
Top	Defines the vertical position of the object.
Left	Defines the horizontal position of the object.

The line object has different properties; those not already listed are as follows.

Item	Description
Line Colour	Colour used for drawing the line.
Line Thickness	Pixel thickness of the line.
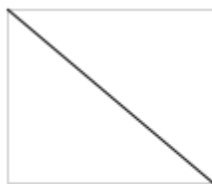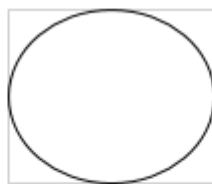
Shape Objects

13.4.3.5 Text

Use the *TextBox* to display simple text output in a report. To add a new *TextBox* you must begin by selecting the appropriate option on the *Edit* tab.
Then move the mouse to the report canvas and press the left mouse down to begin a drag operation.
Continue moving the mouse until the approximate required size of the box is defined and finally release the mouse.

Text Objects gives an overview of this object type.

TextBox objects are available in three types:

- Static Text Types
- Fixed Text Types
- Data Text Types

Static Source Type

By default the *TextBox* will output static text that you have defined. To modify the static text you can double click the *TextBox* and update the contents directly.
Alternatively change the *Text* property that is shown in the properties window to the right side of the report.
Also note that all aspects of the text appearance can be controlled by using settings on the ribbon or from the properties window. For example, the text colour, font size and alignment are often customized.

Static type text is useful for creating titles, headers, footers and heading. On the first page of the report you can modify the header and footer areas.
Use the *TextBox* in these two areas to define titles that appear on each page of the generated report.

Fixed Source Type

To change the source type of the *TextBox* you must first select the *TextBox* using the mouse so that the properties for the object are displayed in the properties window situated on the right of the application window. Then click the button containing three dots inside the *Source Type* property.

The displayed dialog can then be used to select the *Fixed Output* option of interest. A range of fixed output values are available and all these values are determined at runtime.
For example, the *Page Number* is useful when placed in the footer so that multi-page reports can indicate the page number being output.

The following table lists all options and what they output:

Item	Description
Report Name	Filename of the report, not including the path.
Report Created Time	Date/time when the output is actually generated.
Data Run Time	Date/time used as the basis for the report data period.
Data Start Time	Starting date/time for the report data period.
Data End Time	Ending date/time for the report data period.
Page Number	Page number of the output this box appears on.

When you choose one of the Fixed Output options that will output a date/time an additional Output Settings section is shown that allows you to format the date/time output.
This can be seen in the following example:
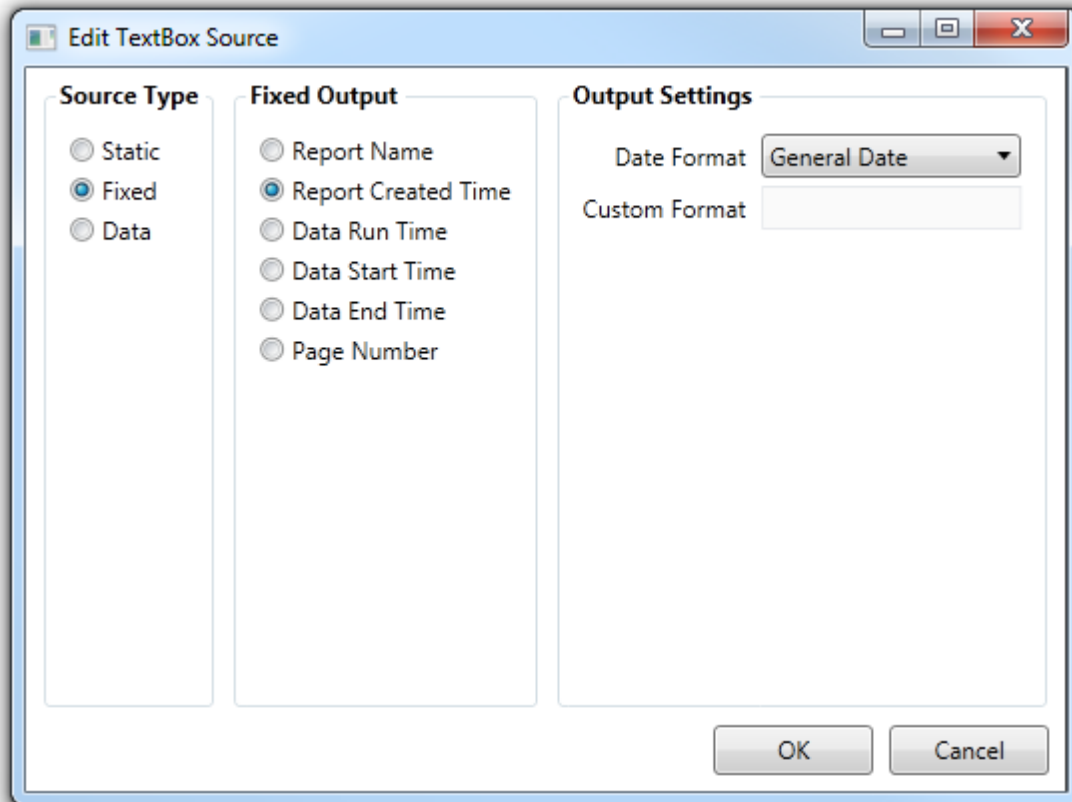
TextBox Source Dialog - Fixed Type

Data Source Type

Select this option when you need to output information about an individual *Station*, *Report* or *Channel*. When selected the dialog shows a *Data Output* section allowing you to specify which of the three possible sources of data is required. Depending on the source selected a list of available data items for that source are shown.

If you choose a channel and then select the *Channel Calculation* data item then another section titled *Output Settings* will be displayed. This allows you to define how the answer is calculated for the selected channel.

For example, you can use this to output the average for a channel. Note that the data period covered by the selected function is that defined by the report itself.

The following example shows a channel calculation being setup with the following settings available:

Item	Description
Function	Function used to calculate the cell value.

Parameter	This field only appears if you select a *Rolling Function* that requires an additional parameter. For example, selecting a function of *Nth Maximum* will show a rolling parameter labeled *Nth*.
Units	Optional unit conversion can be applied by specifying the target units needed. This is only applied is the channel has a defined units value in the client application.
Valid Threshold	Percentage of values that must be valid in order for an output to be generated. If the percentage is not met then the output cell is left blank.
Minimum Value	Values must be greater than or equal to this setting to be valid.
Maximum Value	Values must be less than or equal to this setting to be valid.
Numeric Format	Determines how the output value is converted into text. Predefined settings such as *General Number* and *Percentage* can be used for common requirements. If none of the predefined settings are appropriate then use the *Custom Format* option in combination with the following field.
Custom Format	When the *Numeric Format* is set to *Custom Format* this setting is used to define how a value is converted to text. You can specify the number of decimal places, user of thousands separators and alternate formats for positive, negative and zero values.

TextBox Source Dialog - Data Type

13.5 Layout Tab

This tab enables the user to define the overall layout of the report, the ribbon contains the following menu items:
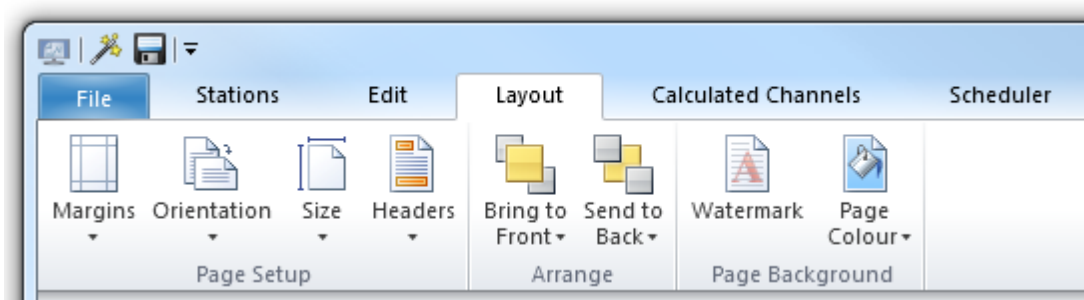
Margins

A set of predefined margins are available, these include *Normal*, *Narrow*, *Moderate* and *Wide*.

Margin	Description
Normal	Top: 1", Bottom: 1", Left: 1", Right: 1"
Narrow	Top: 0.5", Bottom: 0.5", Left: 0.5", Right: 0.5"
Moderate	Top: 1", Bottom: 1", Left: 0.75", Right: 0.75"
Wide	Top: 1", Bottom: 1", Left: 2", Right: 2"

Note that the selection of margin type here will affect the entire report.

Orientation

Portrait and Landscape orientations are available. Selecting either will cause the orientation to be applied to every page in the report.
Note that when changing orientation the report objects on a page may not retain their absolute positions but will be moved in order to fit them within the page boundaries.

Size

A set of predefined page sizes are available, these include *Letter, Tabloid, Ledger, Legal, Executive, A3, A4* and *A5*.

Headers

A set of *Header* templates is provided in a variety of styles. Selecting one of these templates will apply that *Header* and *Footer* to the entire report.
The user may edit an applied *Header* or *Footer* by editing the objects within the *Header* or *Footer* block on the first page of the report.

Bring To Front

This menu contains two item:
- Bring to Front - brings the selected report object to the 'front' or 'top' of the report objects order.
- Bring Forward - brings the selected report object forward one level

Send To Back

This menu contains two item:
- Send to Back - sends the selected report object to the 'back' or 'bottom' of the report objects order.
- Send Backward - sends the selected report object backward one level

Watermark

The Watermark dialog allows the user to add or remove watermarks from the report. Watermarks can be either Image or Text based. The watermarking results can be previewed in the dialog.

> Note that any watermarking will be applied to every page of the report.
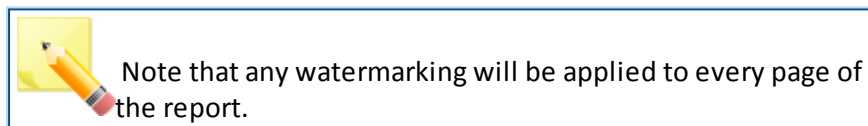
Page Colour

The page colour can be changed using this menu item.

> Note that the selected page colour will be applied to every page in the report.
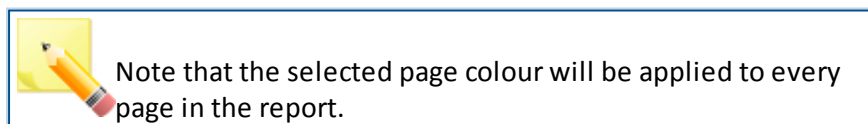
13.6   Scheduler Tab

The *Scheduler* tab is used to view and manage schedules that automatically run reports on a periodic basis. An individual schedule is associated with a single report but a schedule can produce multiple types of output. So a single schedule could produce a Microsoft Word document that is saved to a directory as well as a Microsoft Excel file that is transferred using FTP to a remote server.

Schedule List View
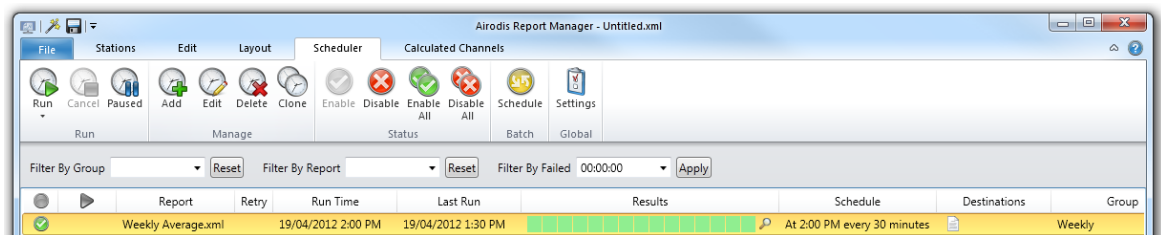
Scheduling a Report provides details of the scheduling process.

A list of all the currently defined schedules can be seen in the main area of the window. Each line represents a single schedule definition.
The different list view columns provide the following summary information about each schedule.

Item	Description
(Enabled)	Indicates the enabled state of the schedule. A red circle indicates a disabled schedule and a green circle used for enabled. Only enabled schedules are eligible to be automatically run.
(Running)	Shows the current running state. When currently being run a green arrow will be drawn along with a percentage completed number. Percentages are an estimate of how much of the total work has been completed.
Report	Directory path and name of the report associated with the schedule.
Retry	If the schedule is due to be run but there is insufficient data available the schedule will be delayed. This field indicates how many retries have been attempted whilst waiting for data to be available.
Run Time	Date and time when the schedule is next due to run.
Last Run	Date and time when the schedule was last run.

Results	Rectangles are used to show a summary of the last 15 results of running the schedule. Green indicates no errors, red indicates at least one error and yellow shows that there was insufficient data available. Results are ordered from left to right so that the most recent result is the leftmost rectangle. Place the mouse over the rectangle for a tool tip giving more detailed information about the results of that particular run. To see all 15 results in one go you can click the magnifying glass button on the right side of the field. This will show a dialog window.
Schedule	Description of how often the schedule is run.
Destinations	One image is used for each output type of the schedule. This allows you to quickly see what type of output the schedule is setup to produce. Place the mouse over the image to see a tool tip with detailed information about the output settings.
Group	Name of the group this schedule is associated with.

Schedule List Filtering

When you have a long list of schedules it can become difficult to find the schedule of interest. Use the filtering controls located above the list view to reduce the displayed list to only those required.

Three types of filtering are available.

Item	Description
Filter By Group	As you type into this filter box it will remove all schedules from display that do not contain the entered text in the group name. If you enter the letter 'x' then only schedules with a group name containing the letter 'x' will be displayed. Use the drop down arrow on the right side of the edit box to see a list of all the available unique group names. This provides a quick way to select a known group. To remove group filtering use the Reset button to the right of the group filtering box.
Filter By Report	This filter box will remove schedules that do not contain the entered text in the report name. If you enter the letter 'x' then only schedules with a report name containing the letter 'x' will be displayed. Use the drop down arrow on the right side of the edit box to see a list of all the available unique report names. This provides a quick way to select a known report. To remove group filtering use the Reset button to the immediate right of the report filtering box.
Filter By Failed	Use this filter to show only the schedules that have a failed result within

| | the specified period. For example, if you enter 2 hours then it will show all the schedules that have a failed result within 2 hours of the current time.

A drop down arrow on the right side of the edit box shows a list of common time periods. This provides a quick way to selecting a common time period.

Unlike the other filtering options this filtering is only applied if you push the Apply button to the immediate right of the edit box. To turn off the filtering you need push the button again. |

13.6.1 Managing Schedules

Use the menu items on the ribbon located at the top of the *Schedules* tab to invoke management functions.
Alternatively select schedules in the list view and then right click to show available options.

Item	Description
Run	Requests a schedule to be run as soon as possible. Any disabled state is ignored allowing any schedule to be started manually.

Note that if the report scheduler is already working at maximum capacity the requested schedule will not begin immediately. Instead it will be added to a priority queue and started at the next available opportunity.

The Schedule can be run immediately or it can be given a fixed end date or fixed start and end date in the same way as the *Preview* works. |
Cancel	Aborts a running schedule. This is useful when you have a long running schedule that needs to be stopped so that changes can be made to the schedule settings before starting it again.
Paused	Use this global setting to prevent schedules from starting to run. Existing schedules will continue running to completion. Click the button a second time to remove the paused state and return to normal operation.
Add	Allows the creation of a new schedule. See the following section called Defining Schedules for detailed information about creating a schedule.
Edit	Modify an existing schedule by selecting an entry in the list view and then clicking this button.
Delete	Permanently remove one or more selected schedules.
Clone	Makes a copy of one or more selected schedules. Note that the new copies will differ only in the label name. Each copy has the word 'Copy' appended to the copy so that they can be distinguished from the originals.
Enable	Sets the single selected schedule to be enabled.
Disable	Sets the single selected schedule to be disabled.

Enable All	Sets all the selected schedules to be enabled.
Disable All	Sets all the selected schedule to be disabled.
Schedule	Used to perform a batch change to the next run time of multiple schedules. See the Batch Rescheduling section for more details.
Settings	Global settings used in the handling of insufficient data checks.

13.6.2 Defining Schedules

Use the *Add* button to start the process of creating a new schedule. This will show a dialog window that allows all aspects of the schedule to be defined.

The first field is labeled *Report* and is the name of the report to be. This field is mandatory and can be defined by clicking the *Browse* button to the right of the field.
Below is the *Group* field that is used to associate a group name with the schedule. You should use the same group name to associated related schedules together. Use the group filtering capability, presented as a Combo Box above the list view, to remove all but the schedules of a particular group. This makes it quick and easy to filter down a long list of schedules to just the group of interest.

The main area of the dialog contains two tabs; a *Schedule* tab that is used to define when the schedule will be run and a *Destinations* tab that defines the output that is generated.
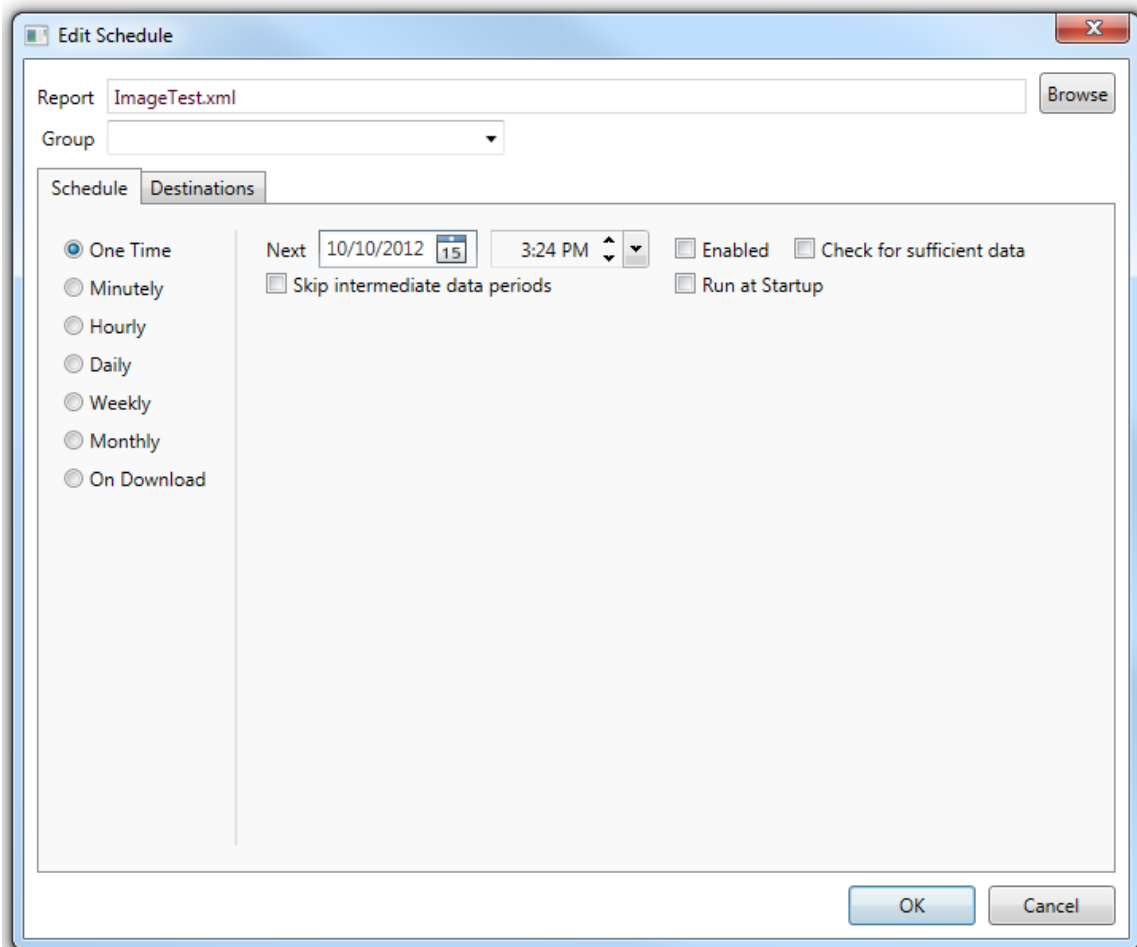
13.6.2.1 Schedule Tab

A schedule can be configured to recur at different intervals. The left side shows a list of the possible recurrence intervals.
On the right are settings relevant to the currently selected recurrence.

Three of the settings are common to all the recurrence intervals.

Item	Description
Next	Defines the date and time when the schedule will be run. You should set this the first time you define a schedule. This value is automatically updated each time the schedule runs according to the recurrence specific settings.
Enabled	Schedules are only eligible to be run if they are enabled.
Check for sufficient data	When selected the schedule will only execute if data is available for the entire reporting report as defined by the report. For example, if you have a report with a reporting period of the last hour then all the station channels used by the report must have data that covers

	that last hour. See the section on Global Settings for more information on how checks for insufficient data are configured and handled.
Run at Startup	When ticked this schedule will be run if the *Report Scheduler* is restarted instead of waiting for the next schedule time.
Skip intermediate data periods	Selecting this option will skip any scheduled report outputs between the last scheduled time and the current time in the case of the *Report Scheduler* being stopped and restarted. For example a report scheduled for every minute for output to a screen will be run 60 times if the *Report Scheduler* was stopped and restarted an hour later. In this case it is pointless catching up with the schedules for this report and running these extra reports will cause unnecessary overhead on the scheduler. Ticking this box will prevent the scheduler trying to catch up.

Available recurrence options are:-

Item	Description
One Time	The schedule will execute once at the time specified in the Next field and will then be automatically disabled. To run the schedule again the user needs to update the Next value and re-enabled the schedule.
Minutely	Each time the schedule is run the Next field is automatically moved forward a user defined number of minutes. For example, you would use this option to generate a report every 10 minutes.
Hourly	Each time the schedule is run the Next field is automatically moved forward a user defined number of hours. For example, you would use this option to generate a report every 4 hours.
Daily	Each time the schedule is run the Next field is automatically moved forward a user defined number of days. For example, you would use this option to generate a daily report.
Weekly	You can specify how many weeks to increment the Next field by as well as the days of the week the schedule is eligible for. For example, you could run the report every week on a Tuesday or every other week on the Friday and Saturday.
Monthly	You can specify which months of the year the schedule should be run on. Within those months you have two options. Either specify a list of days or indicate an individual occurrence of a week day. An example of the first use would be a schedule that runs on the 1st of each month. The second option would be the first Saturday of each month.
On Download	Every time the Download Server downloads from one of the stations used in this report the report schedule will be run if one or more conditions are met.

On Download Schedules

On Download Schedule Options

Item	Description
Station	This field displays all of the stations used in this report. Select one from the dropdown list to display further options below.
Event	The *Event* field specified the event or events associated with the selected station that will cause the report to be run. Events include: • Download Complete • Alarm Raised • Alarm Cleared • Alarm Raised or Cleared
Rules	The *Rules* field allows the user to select the rule or rules that will trigger the report schedule if the *Event* is an alarm raised or cleared.

The "*Override report start and end dates to reflect the alarm period*" check box, if ticked, will cause the report to be run for the duration of an alarm such that the report only shows the duration that the alarm has been triggered for.

13.6.2.2 Destinations Tab

The *Destinations* tab is used to define the actions to perform when the schedule is run. You can specify any number of different actions to occur for the same schedule. So a single schedule could generate multiple output files such as Word, Excel and HTML each time it runs. Although in practice the majority of schedules only produce a single output.
To add a new destination click one of the *File*, *Screen*, *Email*, *FTP* or *Serial* buttons listed down the left side of the page. Remove an existing destination using the *Delete* button. When a destination is selected you will see a group of properties displayed on the right of the page. The properties will vary depending on the destination type.

Available File Formats

Airodis can output reports in the following file formats:

Item	Description
Microsoft Word	Outputs with DOCX extension. Can be opened by Microsoft Word 2007 and later versions. See also: Open Office XML
Microsoft Excel	Outputs with XSLX extension. Can be opened by Microsoft Excel 2007 and later versions. Note that only tables will be generated with one Excel Sheet for each table in the report.
Adobe PDF	Portable Document Format output can be opened by Adobe Reader or any of the many commercial or free versions of PDF readers.
JPG PNG BMP TIFF GIF	Several popular different graphic formats are available. You should choose the appropriate format for your own specific needs. Note that there will be one output file per report page. So if you report has 3 pages there will be 3 output files, one for each page.
EMF	Enhanced Windows Metafile is a vector graphics format. Many graphics packages such as Microsoft Office, Adobe Illustrator and Coral Draw can open and display the EMF format. Note that there will be one output file per report page.
HTML	Hypertext Markup Language. Can be opened by internet browsers such as Internet Explorer and Mozilla Firefox. All report elements are converted into images and then embedded into a single HTML file.
CSV	Comma Separated Values. Can be opened by Excel, Open Office, Libre Office and any text editor. Note that only tables are output and there will be one output file per table defined in the report.
TXT	Outputs with TXT extension. There will be one output file per report page and only tables and text box elements will be converted into text and output. This is a special output format that is used in conjunction with the Serial destination.

13.6.2.2.1 File Destination

Output is generated and saved to a specified file. Note that the output directory is relative to the machine that is running the *Report Scheduler* service. If you are running the *Report Scheduler* on a different machine to the *Report Manager* then ensure the directory you specify is correct for the *Report Scheduler* machine.

Item	Description
Format	The file format required. See the *Available File Formats* section for a full list of all available formats and restrictions that different formats impose.
Directory	Target directory for the output file.
Filename	Name of the output file, including the extension.
Append timestamp	When selected a timestamp is appended to the end of the filename. For example, the 'out.bmp' filename could be configured to output with the current date, such as 'out 17-04-2012.bmp'.
Timestamp	Determines how the date and time are converted into text. Predefined settings such as General Date and Short Time can be used for common requirements. If none of the predefined settings are appropriate then use the Custom option in combination with the following field.
Custom	When the Timestamp is set to Custom Format this setting is used to define how a date is converted to text.
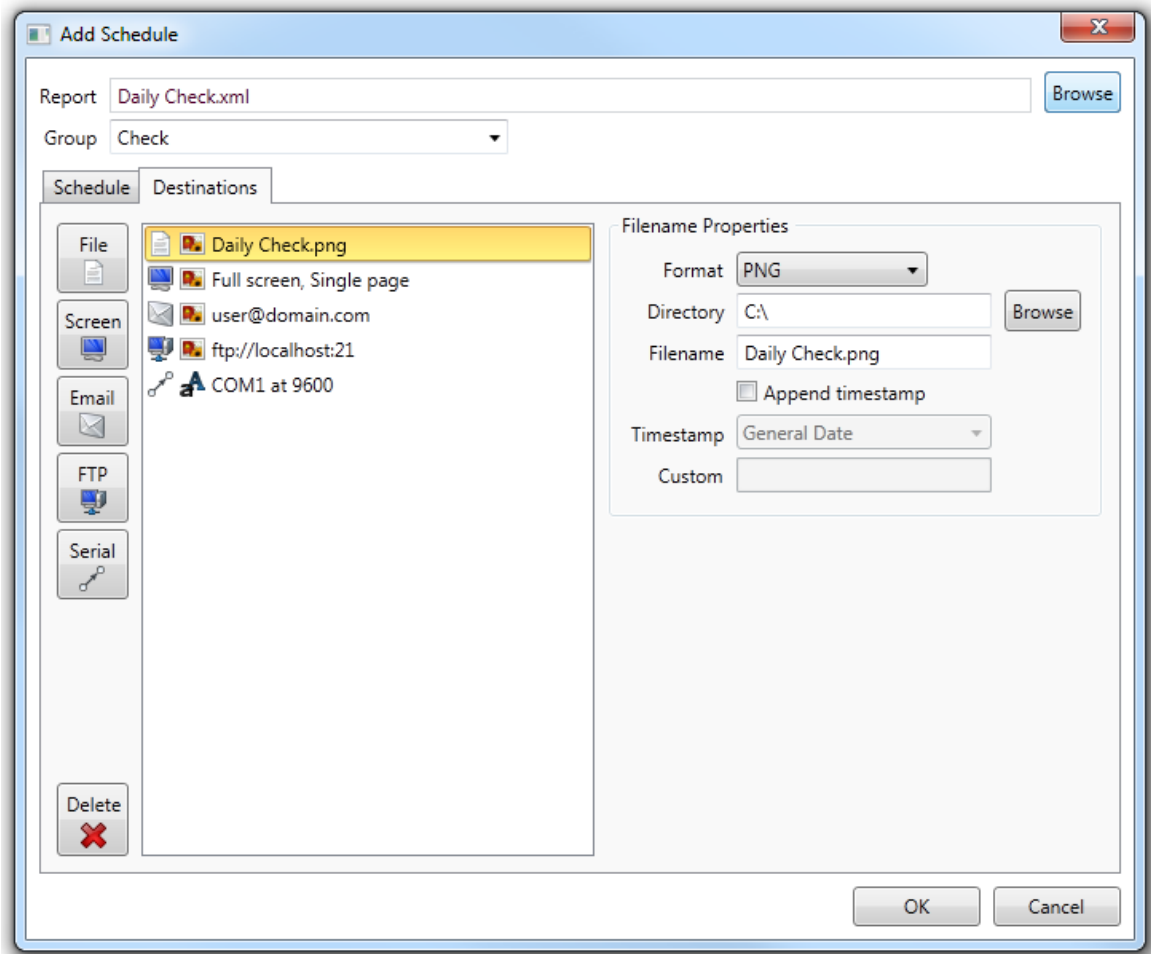
13.6.2.2.2 Screen Destination

The generated output is created and then displayed using a desktop window. If there is already a window showing output from the last time the schedule ran then the window will be updated to show the latest results. By combining a schedule running every minute with a screen destination you can achieve a real-time view of a report.

Note that the following set of display options are only applied when a new desktop window is needed. If an existing window is showing output for a schedule then that existing window is used and the display options are ignored.

Item	Description
Full screen	This is the default screen sizing option. It will cause the desktop window created to be maximized to the entire screen.
Manual	Use this option to prevent the full screen display of results. When selected you should modify the size and position values so that the created desktop window appears as required.
Single page	This is the default page showing option. When the desktop window is

	created this is the page number of the report that will be initially displayed.
Slide show pages	Use this option to automatically move from page to page of the report. Set the interval to define how long each page is displayed.
Destination	A comma separated list of user/machine destinations.
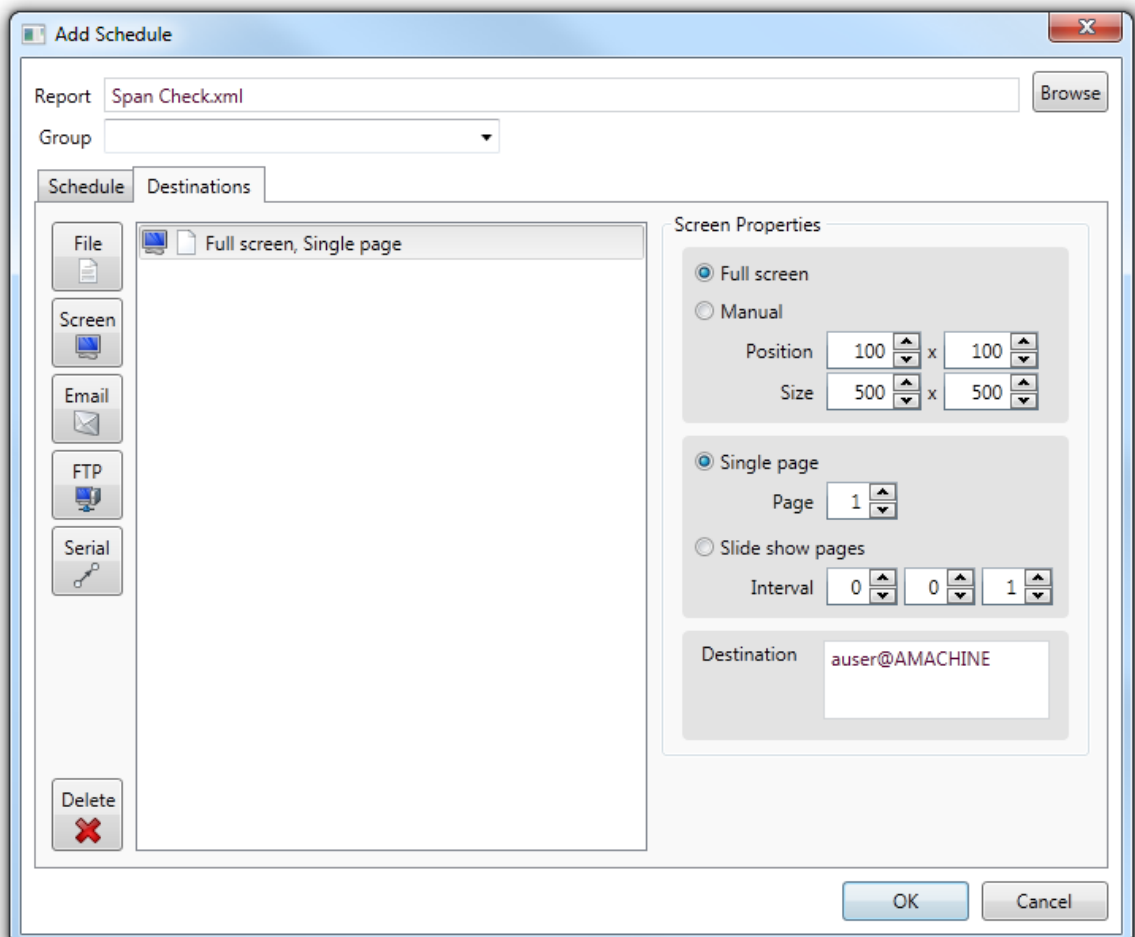
A screen destination will cause a desktop window to be created showing the pages of the generated report.
The report can be sent to many destinations by adding additional user and machine combinations in the *Destination* box.
All of the destinations for that schedule will receive the same report with the same screen properties. If multiple users
want to receive the same report but with different screen configurations then they should be scheduled separately.

A tool bar at the top of the page allows the report result to be manipulated.

You can save the current page as a PNG graphics file use the first button on the tool bar. To

print individual pages or all pages at once, you can use the second button with a printer icon. Use the blue arrow buttons to move between pages or enter a specific page number in the text box to navigate directly to a page. The green arrow towards the right of the toolbar is used to start the slide show feature; this automatically displays each page in turn until the red button is pressed to stop the slide show.

The status bar at the bottom of the page allows the zoom level to be changed.
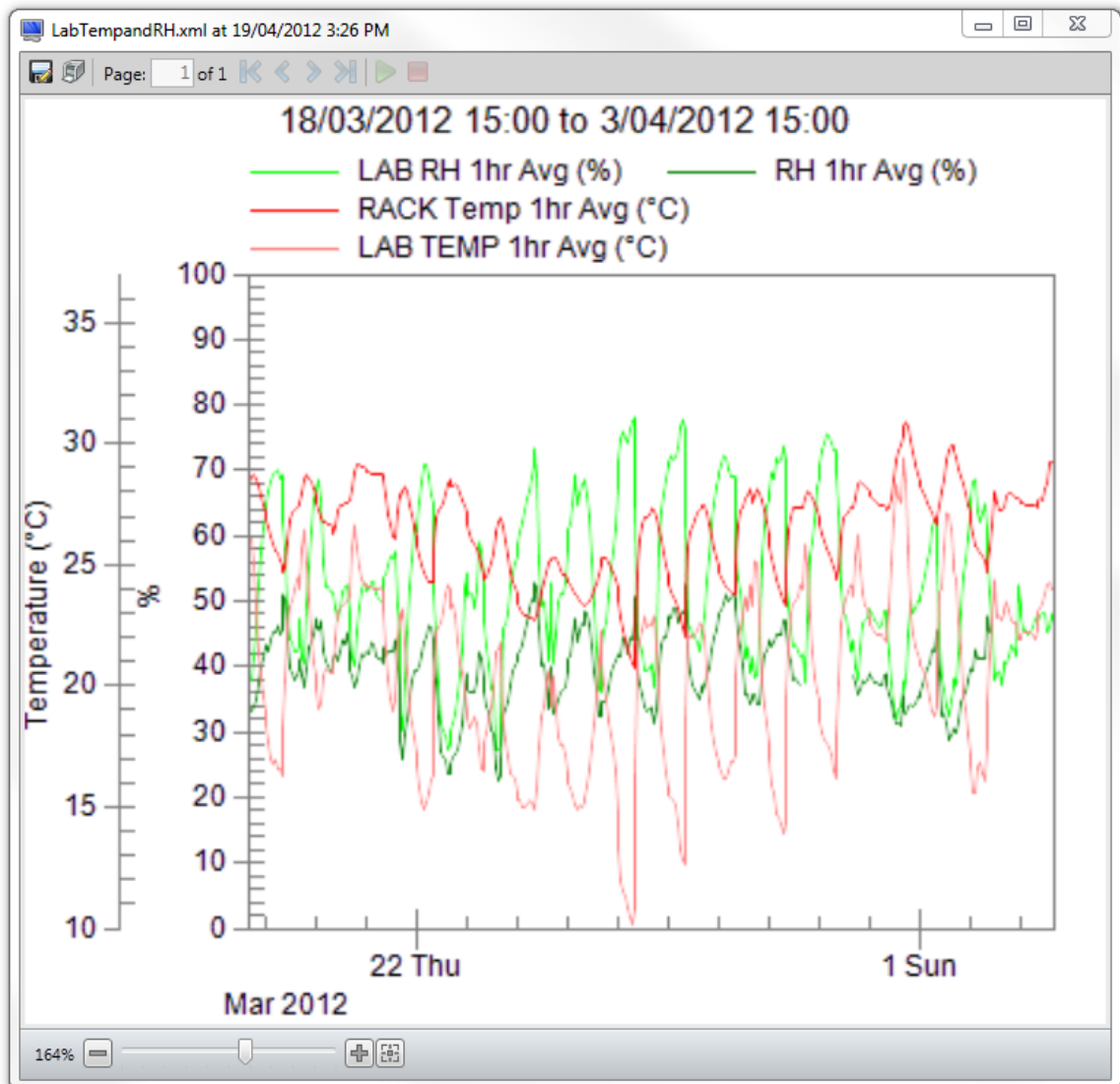
13.6.2.2.3 Email Destination

Output is generated to a temporary file and then emailed to the designated recipients. The temporary file is deleted once the email request has been completed. Use the *Filename Properties* section to define the type of file generated and emailed. Detailed information about the file properties section can be found in the *File Destination* documentation.

Item	Description
To	Semicolon separated list of recipients for the email. This field is mandatory and if left blank will generate an error when you try and close the dialog.
CC	Semicolon separated list of recipients to be provided a copy of the email.
BCC	Semicolon separated list of recipients to be copied the email but which To and CC recipients will be unaware received a copy.
Subject	Description that will be used as the subject field of the email.
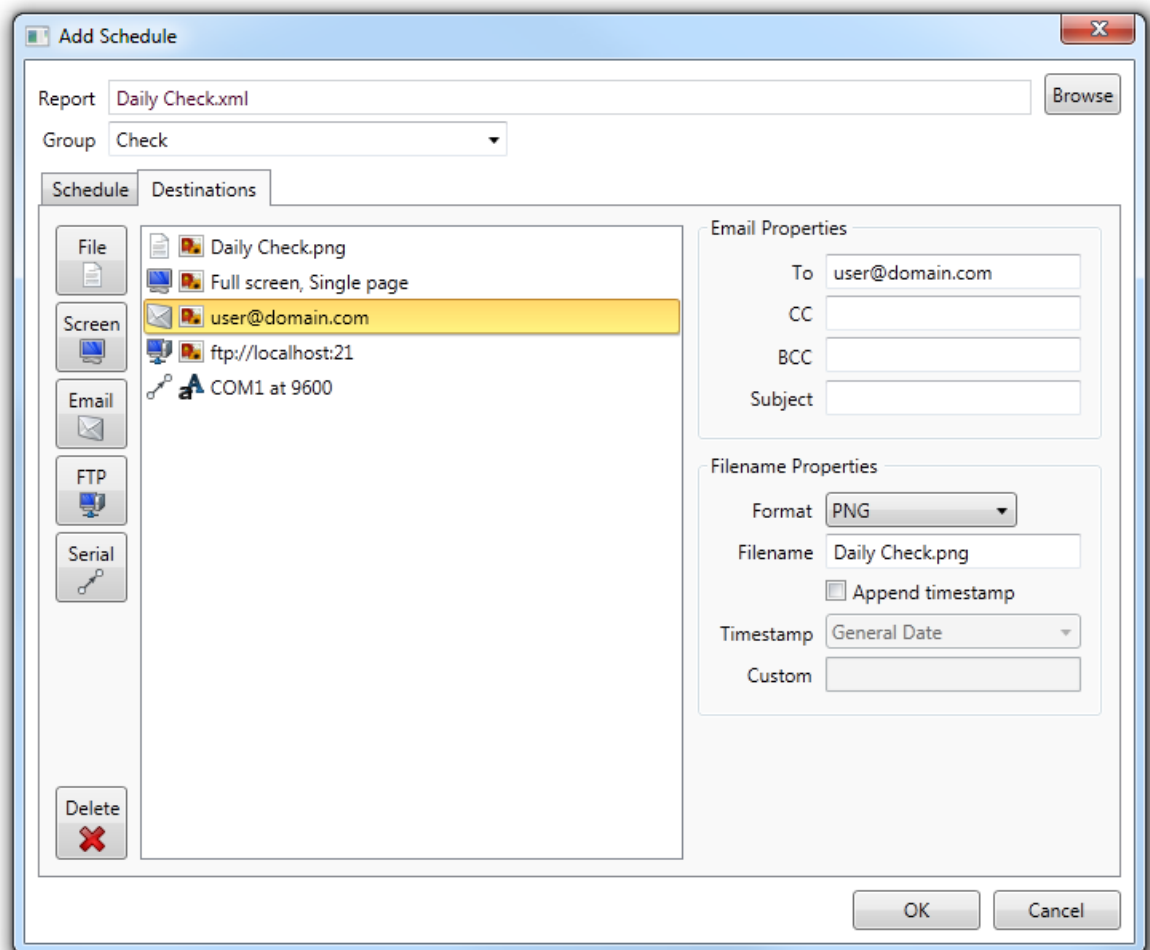
13.6.2.2.4 FTP Destination

FTP (File Transfer Protocol) output is generated to a temporary file and then transferred using FTP to a remote server. The temporary file is deleted once the FTP request has been completed. Use the *Filename Properties* section to define the type of file for generation and transfer. Detailed information about the file properties section can be found in the *File Destination* documentation.

Item	Description

Hostname	Provide either an IP Address such as '192.168.0.0' or a domain name such as 'server.com'.
Port	Port number to use when connecting. Most FTP servers use port 21.
Enabled SSL	When enabled this will encrypt all communication with the server, including sending the username and password. Note that the server must also be enabled for SSL in order for a secure connection to be made.
Passive Mode	This method of connecting needs to match the settings of the server for a successful connection to be made.
Directory	Target directory on the FTP server.
Username	Username required to logon to secure servers.
Password	Password required to logon to secure servers.

More information on FTP can be found here: [Wikipedia FTP Entry](#)
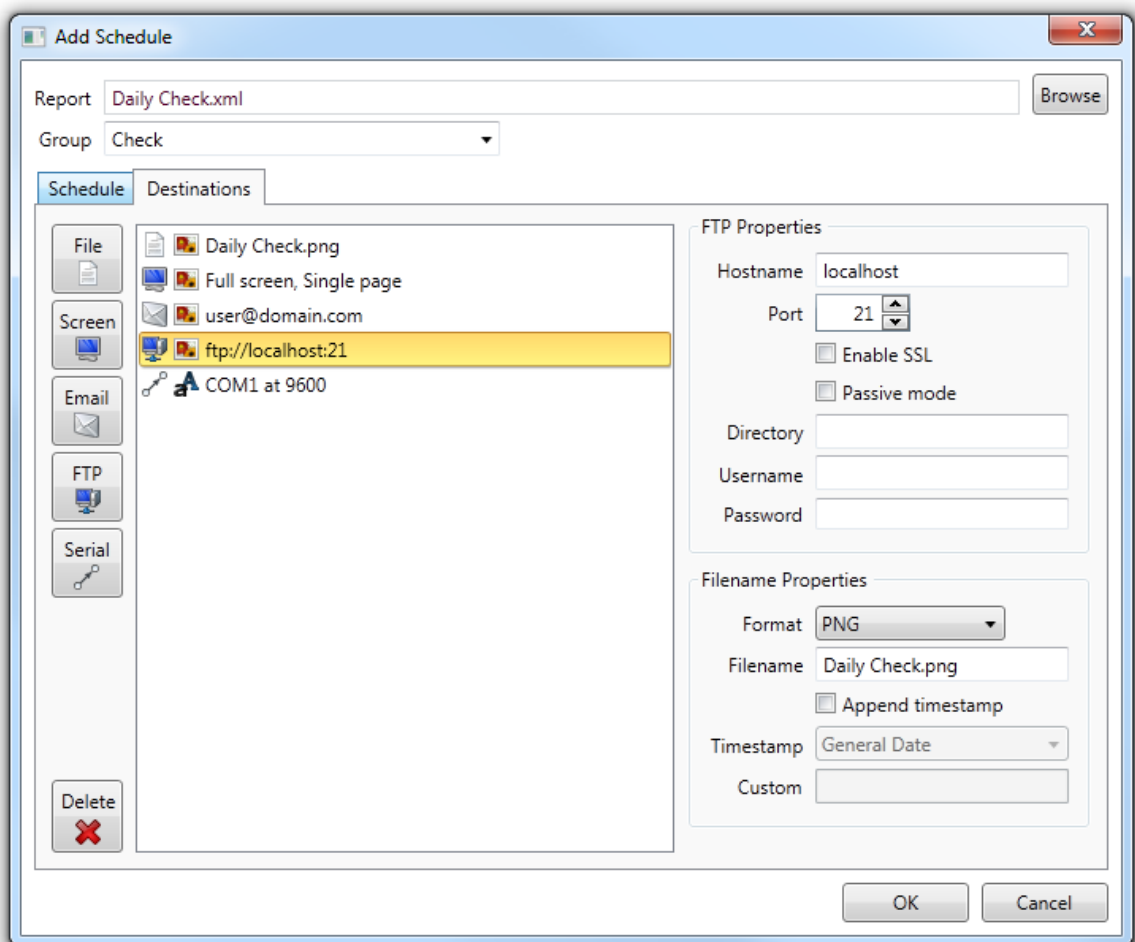
13.6.2.2.5 Serial Destination

Serial Destination generates a text file and then sends it to a designated COM port. There are multiple settings required to successfully setup a serial port and care must be taken to ensure your settings match those of the connected device. Consult the documentation of the connected serial device so a connection can be established.

Item	Description
Port name	Name of the COM port to use for communication.
Baud rate	Defines how many bits per seconds are transferred.
Data bits	Number of data bits per character.
Stop bits	Number of bits that mark the end of data.
Parity	Error checking procedure to use.
Handshake	Specifies the handshaking used to manage the transfer of data.

When using a serial destination the only allowed output type is TXT. This involves converting each report page into a single text file that is then sent over the serial port. Note that only tables and text boxes can be converted to text. Graphs, images and other graphics elements cannot be converted to text and so are ignored.
The following settings are used to control how the report is converted to text.

Item	Description
Columns per inch	The number of columns per inch of width is used to decide how a report character is positioned into a column of the output.
Rows per inch	The number of rows per inch of height is used to decide how a report character is positioned into a column of the output.
Output empty lines	Determines if lines that have no text are output.
Trim space from end of lines	Determines if the whitespace at the end of each line should be removed or left in place.
Append CR/LR to each line	Determines if each line should have a CR/LF pair of characters appended.

The columns and rows per inch are important because they determine how a character in the report is positioned in the output file. If these values are too small then multiple characters in the report will be placed in the same output position, resulting in characters overwriting each over and so the output will have missing characters. If the inch settings are too large then there will be spacing gaps between some output positions.
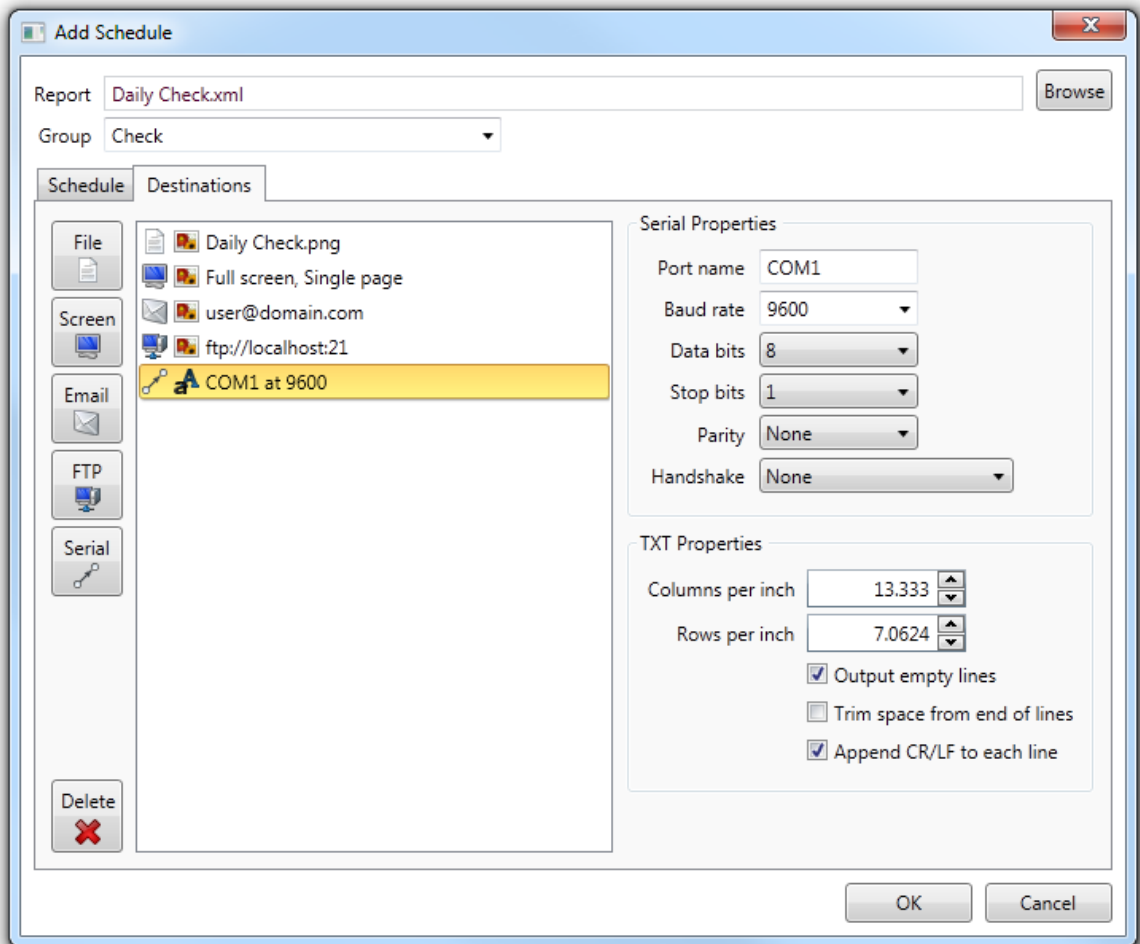
13.6.3 Batch Rescheduling

To update the *Next Run Time* of multiple schedules you can use the batch rescheduling feature that is started by clicking the *Schedule* button on the ribbon of the *Scheduling* tab.

Match Schedules

First you need to define which schedules are going to be modified. Select the required frequency of the schedules that will be matched using the *Minutely*, *Hourly*, *Daily* or *Weekly* radio buttons as shown in the following image.
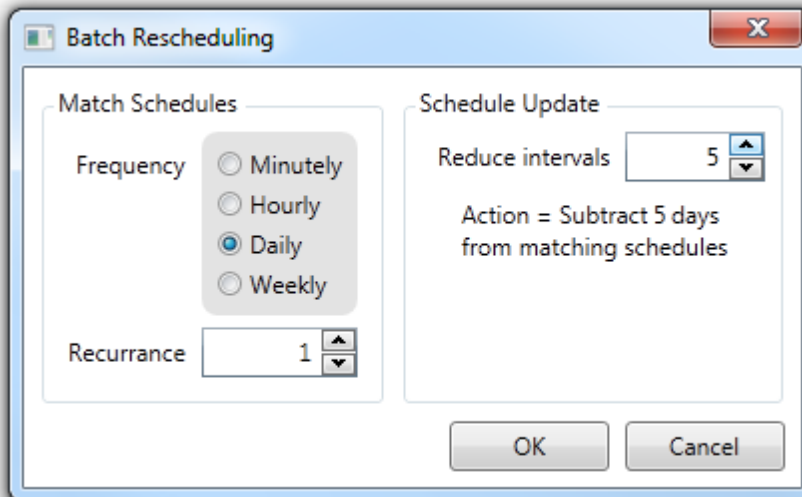
The *Recurrence* field is used to narrow down the set of schedules that are matched. For example, in the above image only daily schedules that have a recurrence of 1 will match. Any schedule that is daily but with a recurrence of 2, 3 or any other number excluding 1 would not be matched.

Schedule Update

Schedules that are matched are updated according to the number of intervals specified in the *Reduce* intervals field. Note that the number of intervals is the number of recurrence intervals to be subtracted from the *Next Run Time* field of each schedule.

This can be confusing when first used and so a short text description is presented underneath the input field to describe the action that will be taken. In the above example the recurrence (1) is multiplied by the intervals (5) to give the total number of days (1x5 = 5) subtracted from each schedule run time.

> ⚠️ Make sure you double check all the settings before pressing *OK*. Using the wrong details will result in a considerable amount of time wasted in manually updating schedules to correct a mistake.
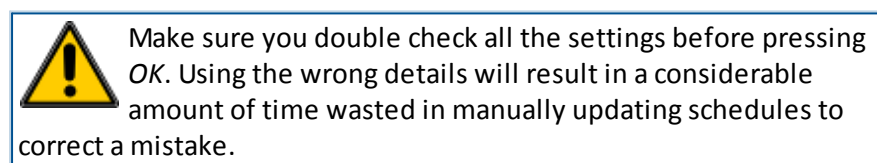
13.6.4 Global Settings

Clicking the *Settings* button on the *Schedule* tab ribbon will show the dialog used to define global settings that are applied to all defined schedules.

Retries

When a schedule has the *Check for insufficient data* option enabled an extra processing step is performed when the schedule is run.

A check is made that data is available for the entire reporting period of each report object (table, graph, text box etc) that is defined.

This ensures the report is only run if the expected data is present. If all the data is available then the report is run as normal.

If there is insufficient data then the global settings are used to decide how to proceed.

Each frequency period has a delay interval that is applied when insufficient data occurs. The running of the schedule will be delayed for that period of time and then retried.

The number of retries is also defined.

For example, the image below shows that an hour frequency schedule will wait 5 minutes before retrying and will retry 3 times before finally aborting the scheduling attempt.
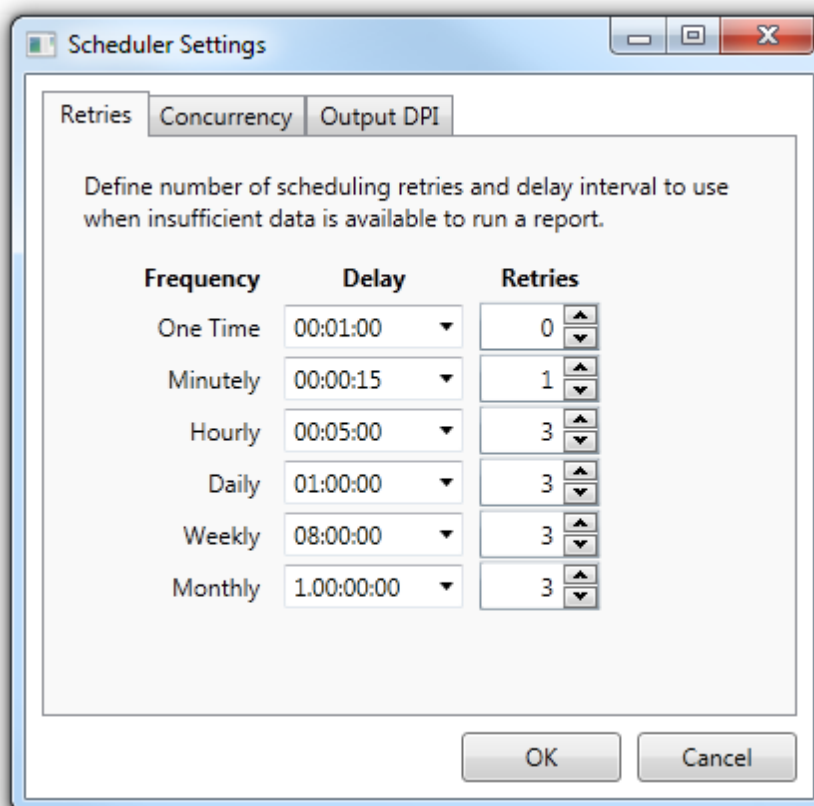
Global Settings - Retries Tab

Concurrency

The *Concurrency* setting relates to the number of schedules that can be run at any one time.

As a rule of thumb this could be set to the number of cores the host machine has in its processor.

If this number is set too high and a large number of schedules are run frequently then the user

may see a
decline in machine performance.

Should the user have this value set to two and four schedules are due to be run then the first two will start and the
remaining two will be queued. If at this time the user decides to manually run a schedule then this schedule will be
pushed to the front of the queue such that when either of the initial two schedules are finished the manual schedule
is run next followed by a queued schedule.

This would just leave a single queued schedule and the user doesn't have to wait for all queued schedules to finish before
their manual schedule can be run.

> ⚠️ Setting the concurrency value too high can have a
> performance impact on the *Report Scheduler*.
> The concurrency number should relate to the number of
> processor cores available.
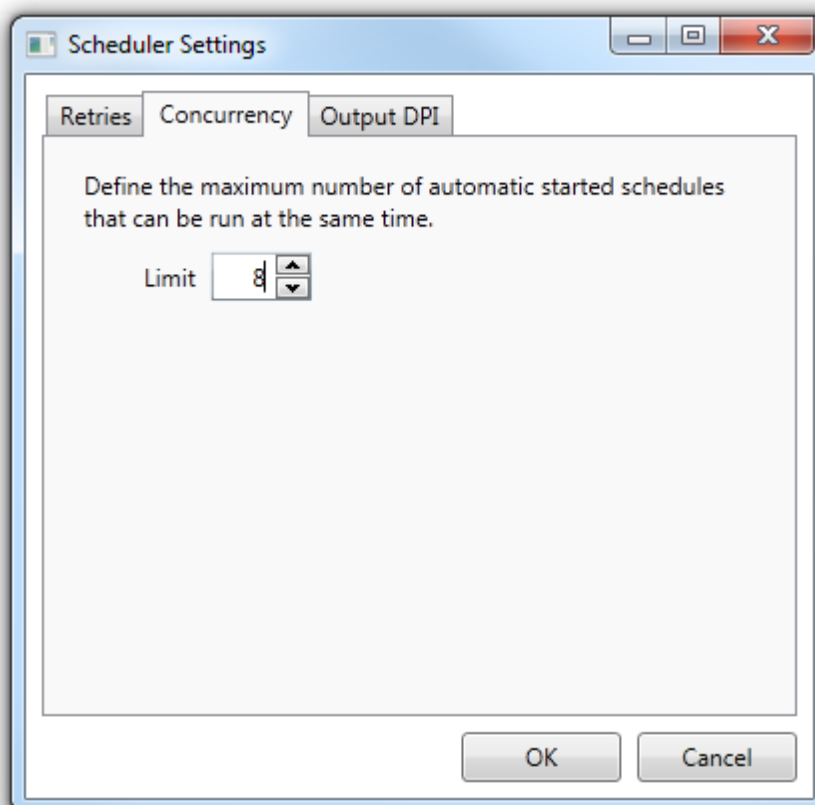
Global Settings - Concurrency Tab

Output DPI

This tab is for users who wish to produce reports with a higher Dots Per Inch (DPI) setting. The default is 96, which should be adequate for most users, but this can made as high as 1200.

> ⚠️ Setting the DPI value too high can cause the host machine to run out of system memory when processing large reports. This is more of a problem on 32 bit machines where the Windows .Net process memory limitation stands at around 1.2 GB.
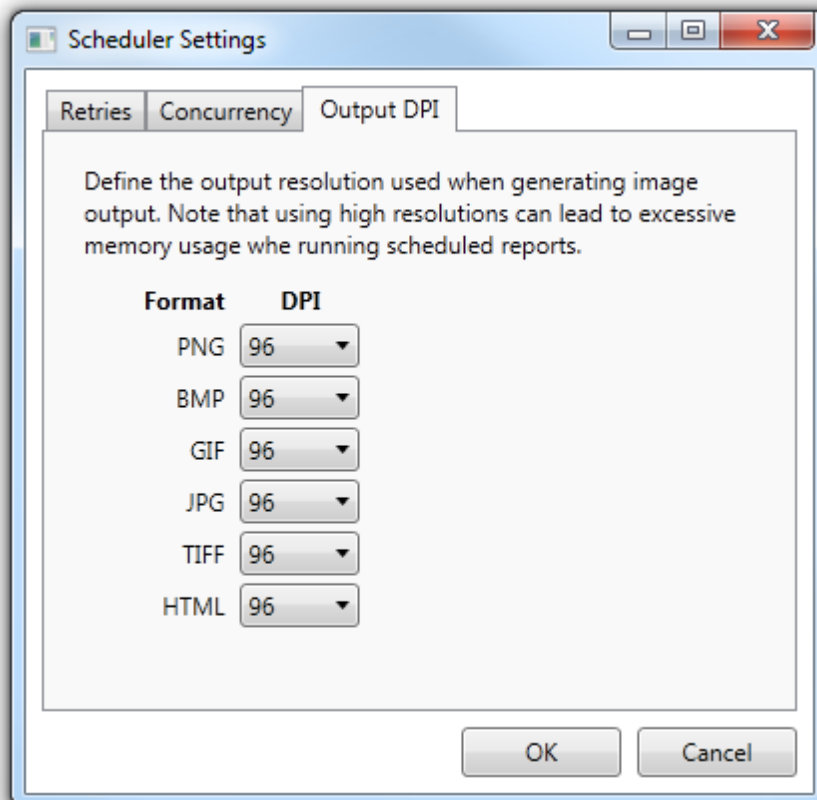
Global Settings - Output DPI Tab

13.7 Calculated Channels Tab

A calculated channel is a user defined formula that computes an output based on a set of one or more other channels. This allows calculations to be integrated into the results of tables and graphs.

Calculated channels are associated with a particular report. Creating a new blank report will result in starting with no defined calculated channels. Copying an existing report will result in

the copy having the same set of calculated channels as the original. Definitions can also be moved from one report to another by using the export function from one report and then opening another report and using the import function.

The *Calculated Channels* tab shows a list of the current definitions. Some of the calculated channel settings such as *Label*, *Description* and *Calculation* are shown in the display list for easy reference.
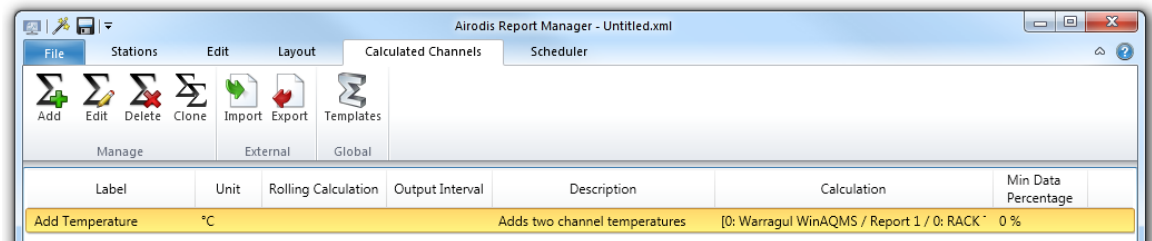
Calculated Channels Munu

Calculated Channels gives an overview of the creation, testing and use of *Calculated Channels*.

Managing Calculated Channels

Use the large buttons on the ribbon at the top of the *Calculated Channels* tab to perform management functions.
Alternatively you can select channels in the main area using the mouse and then right click to show the available functions.

Item	Description
Add	Shows a dialog for defining a new calculated channel.
Edit	Shows a dialog for editing the selected calculated channel.
Delete	Permanently removes the selected channels.
Clone	Makes a copy of the selected channels but with new labels.
Import	Imports all the calculated channels found in a specified xml file.
Export	Exports all the calculated channels to an xml file on the local machine.
Templates	Displays the Templates dialog in which new and existing templates can be edited.

13.7.1   Defining Calculated Channels

Use the *Add* button to start the process of creating a new calculated channel. This will show a dialog window that allows all aspects of the channel to be defined. Two of the fields are mandatory and the dialog will not allow the channel to be created until they have been specified.

The first of these is the *Label* field that must contain a valid name, it cannot be left blank. Second is the *Formula* field that must reference at least one input channel. The input channel can be either a station channel or another calculated channel. This means you cannot specify a *Formula* that contains just a number or other fixed arithmetic calculation.

To help with spotting errors in your formula a feedback message at the top of the formula editing area is displayed. If a valid formula is entered it will indicate this with a green tick, green background and appropriate success message. An error is indicated a warning icon, yellow background and error message giving specific details of the problem. You must correct any error before the dialog will allow the calculated channel to be saved.

Item	Description
Label	Display name of the channel, used as the default name when added as a column in a table or as a series in a graph.
Description	Text describing the purpose of the channel.
Rolling Interval	Time interval over which the rolling calculation operates.
Rolling Calculation	Function used to calculate each output value.
Output Interval	Time interval for that each output value represents. Usually you would specify the same value for this field as the Rolling Interval.
Output Unit	Units used for each output value.
Minimum Data	Values are only output if the output interval contains this percentage of valid data. Otherwise a null value is output.
Calculation Tab	This area is used to define the formula. It contains the Edit tab, Expanded tab plus sections labelled Operators, Functions and Channels.
Testing Tab	To help with testing a complicated formula this tab allows the user to enter test values for each of the input channels. The calculated result is displayed and can be compared to the expected result in order to confirm the formula is working as expected.
Edit Tab	Contains a large multiline edit box that is used to specify the formula. It is advisable to split a complicated formula into sections and use whitespace formatting to make this easier to read.
Expanded Tab	Contains a read-only version of the formula but colour coded to make it easier to see the different elements that make up the formula. Input channels are also converted from number representations to the actual names of the channels.
Operators	A set of buttons for inserting common operators into the formula.
Functions	A set of buttons for inserting common functions into the formula.
Channels	Select an input channel using the drop down combo box and then press the insert button to add that channel into the formula being edited.
Templates	Select a calculation from a predefined template.
Invalid/Null Values	This item allows the used to specify how the *Calculated Channel* should deal with invalid and null values. The options are:

	1. *Invalidate Equation* - This is the default option. If any of the dependent channels have a *Null* or *Invalid* value the calculated channel will be invalidated and the result will be *Null*.
	2. *Include Invalid Values* - This will use *Invalid* values in the calculation but will exclude *Null* values. This could be used when reporting on *Span* data.
	3. *Substitute Value* - When selected the user can enter a number that all *Invalid* and *Null* values will be substituted with.

Calculated Channel Definition

13.7.2 Testing Calculated Channels

Select the *Testing* tab within the calculated channel definition dialog in order to begin testing the currently defined formula. In the upper half of the tab a colour coded version of the formula will be displayed with the input channels converted from numbers into text descriptions. This makes it easy for you to check that the input channels are the ones required.

The lower half will show a list of the input channels and an input box. Use the input box to enter a test value for that individual input channel. Enter values for each of the input channels

and then check the formula result in the Test Result area at the bottom of the tab. The result will be updated automatically each time you alter the input channel values.

In the example image below you can see that the formula is adding two input channels together and then dividing by 2. The top half shows the input channels by name instead of internal identifier, so I can confirm the correct channels are being used for input. Below the number 6 and 3 have been entered as test values. My expected result of (6 + 3) / 2 = 4.5 is confirmed by the *Test Results* output.
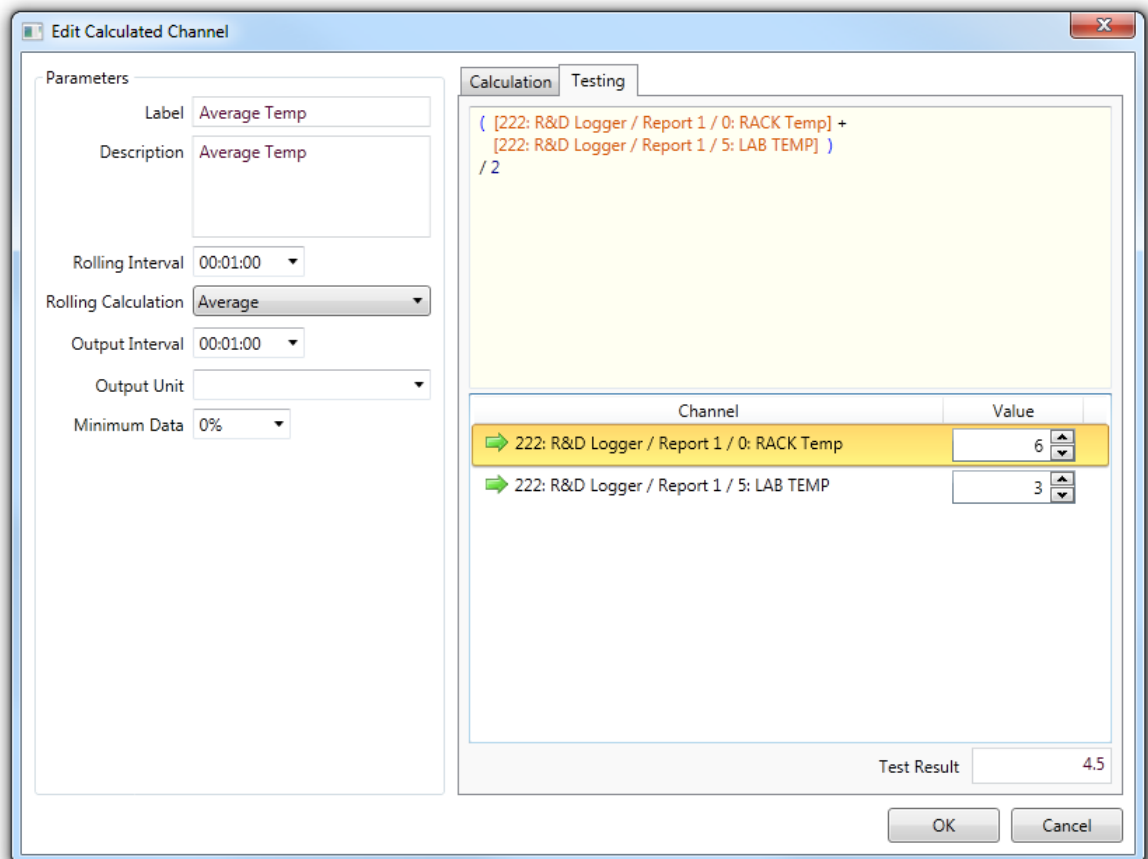
13.7.3 Calculated Channel Logic

There are a number of *Functions* and *Operators* that can be applied to Calculated Channels.

Code Comments

Code comments can be added to *Calculated Channel* logic by enclosing them in **#** characters

Nested IF Functions

The IF function takes the following form: **IF(,,)**, which means:

IF(Expression**,** result if Expression is True**,** result if Expression is False**)**

This example will demonstrate how the IF function can be nested. A *Calculated Channel* called *Limit Temperature* has been created and will be graphed against a temperature channel. We will limit the high and low values of the temperature channel using the *Limit Temperature* channel.

The outer IF function checks if the temperature is above 26 degrees or below 14 degrees. If it falls outside these limits then the logic from the inner IF function will be applied, if it is inside these limits then the result will be the temperature as it is.
The inner IF function checks to see if the temperature is above 26 degrees, if it is then the output is limited to 26 degrees. If the temperature is below 26 degrees it must then be below 14 degrees so the output is limited to 14.

```
# Check if temperature is above 26 or below 14 degrees #
IF($(1048581) > 26 OR $(1048581) < 14,

        # Temperature > 26 OR < 14 #
        IF(
                # Temperature > 26? #
                $(1048581) > 26,
                # Limit to 26 #
                26,
                # Else limit to 14 #
                14
        ),

# Temperature Not > 26 NOR < 14 - Output original value #
$(1048581)
)
```

In its expanded form the logic is as follows:

```
# Check if temperature is above 26 or below 14 degrees #
IF([1: Ooze Lake / Report 1 / 8: AT] > 26 OR [1: Ooze Lake / Report 1 / 8: AT] <
14,
        # Temperature > 26 OR < 14 #
        IF(
                # Temperature > 26? #
                [1: Ooze Lake / Report 1 / 8: AT] > 26,
                # Limit to 26 #
                26,
                # Else limit to 14 #
                14
                ),

# Temperature Not > 26 NOR < 14 - Output original value #
[1: Ooze Lake / Report 1 / 8: AT]
)
```

The result can be graphed like this:
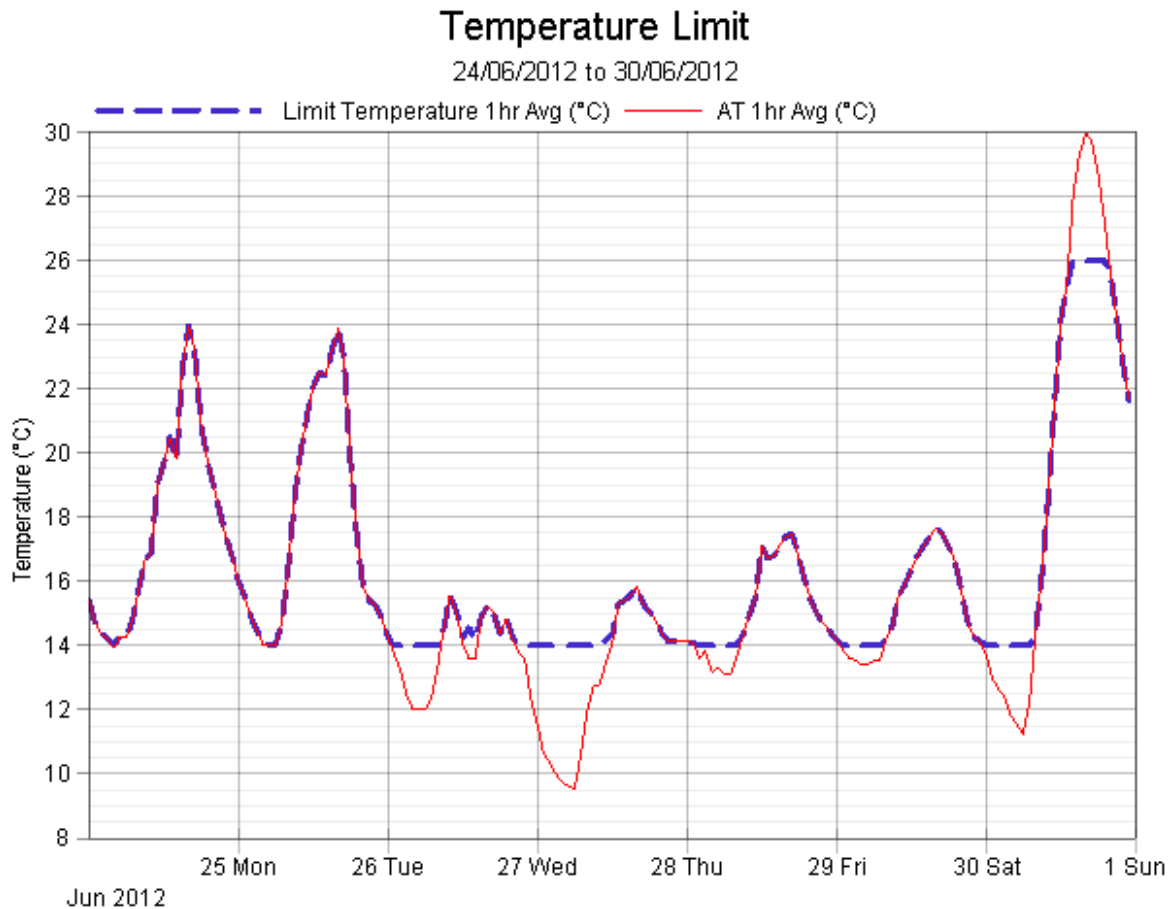
See this example in the file: Linear Graph Example

13.7.4 Templates

Calculated Channel Templates serve as a quick and easy way of generating and using frequently used calculations.
They are a descriptive prompt as to how the *Calculated Channel* should be constructed.

The *Template* is stored as free text and when used, appropriate substitutions must be made to make the calculation valid. Consider the following simplistic example:
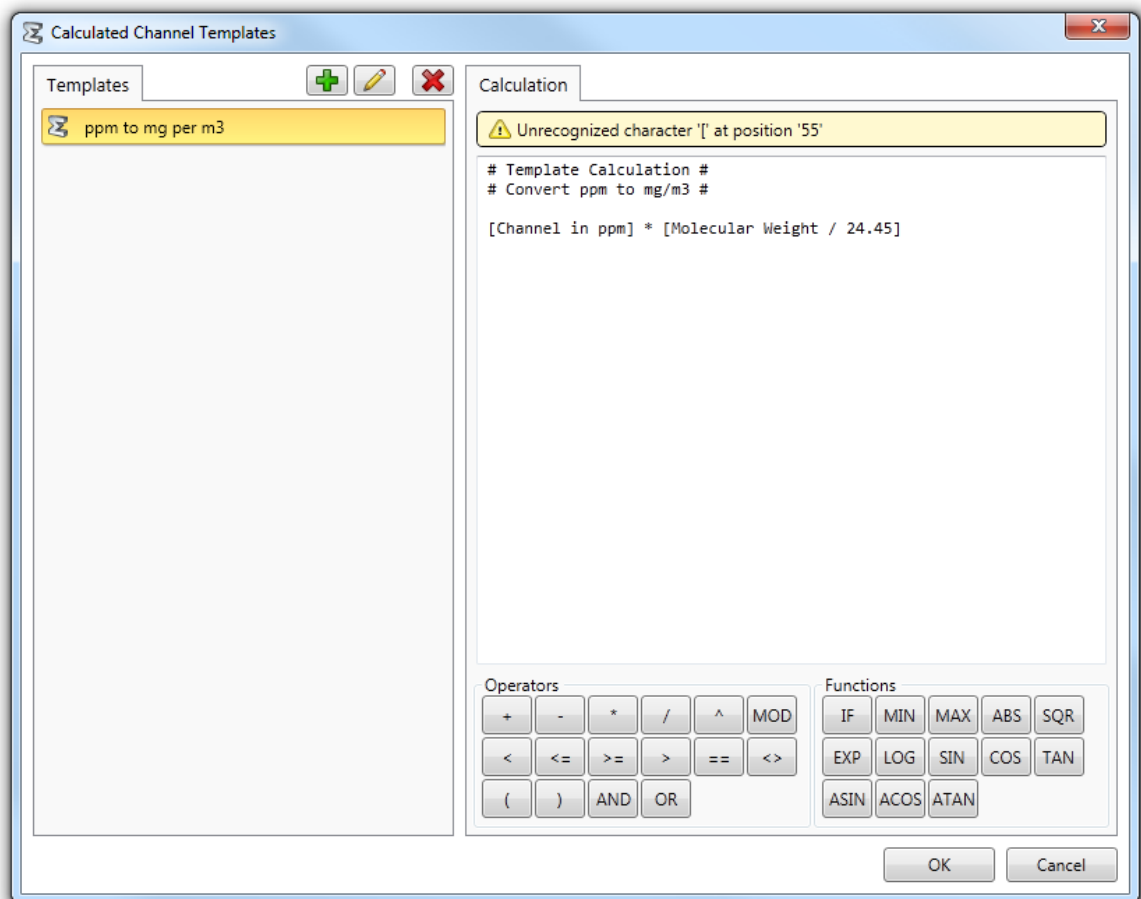
Calculated Channel Template

We are creating a template to convert from ppm to mg/m³. The calculation is: [Parts in ppm] * [Molecular Weight / 24.45]

When we come to use this template we need to substitute:
1. [Parts in ppm] with the *Channel* in ppm
2. Molecular Weight with the appropriate MW of the element we are working with

Web Module

Part

XIV
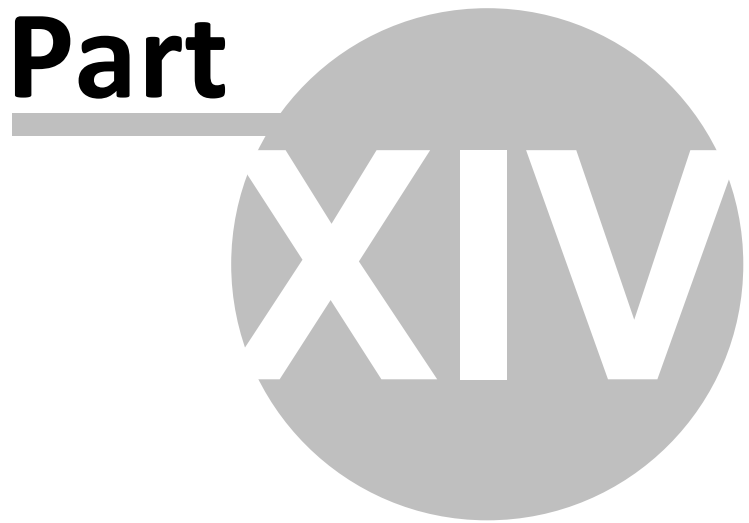
14   Web Module

Airodis Web Module

The Airodis Web Module component allows a user to run and publish reports via a web interface. A user can log in to run a selected report, and also create permalinks for embedding in an external web site. This is an additional module that is separately licenced and requires a separate installer.

Logging in to the Airodis Web Module

If you are running the Airodis Web Module locally, you can access the web interface through any modern web browser from the following URL:

http://localhost/

This URL will be different if the Airodis Web Module is running on a different machine. Check with your system administrator for the URL.
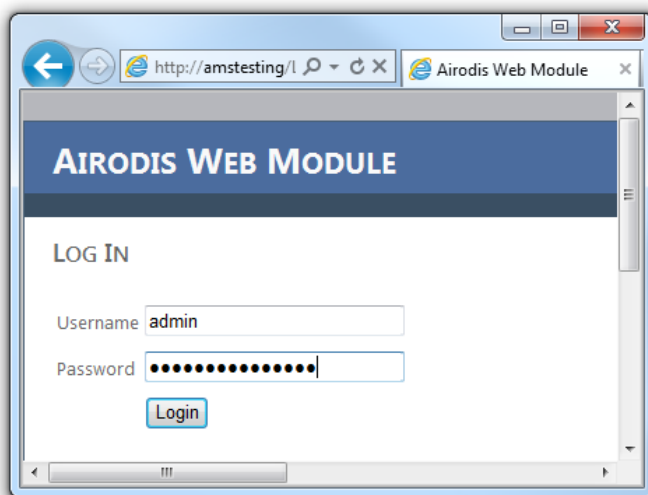
Web Module Login

Generating a Report

Once you have logged in, select a report using the browser. You can then specify the report parameters.

Field	Description
Output Format	Select the desired output format of the report. All of the standard report output formats from Airodis are supported in the web

	module.
Run At Date	This will run the report at a specific date. The start date will be calculated based on what is defined in the report.
Run With Fixed Dates	This will run the report for a fixed date range. The report start and end dates defined in the report will be overridden with the specified values.
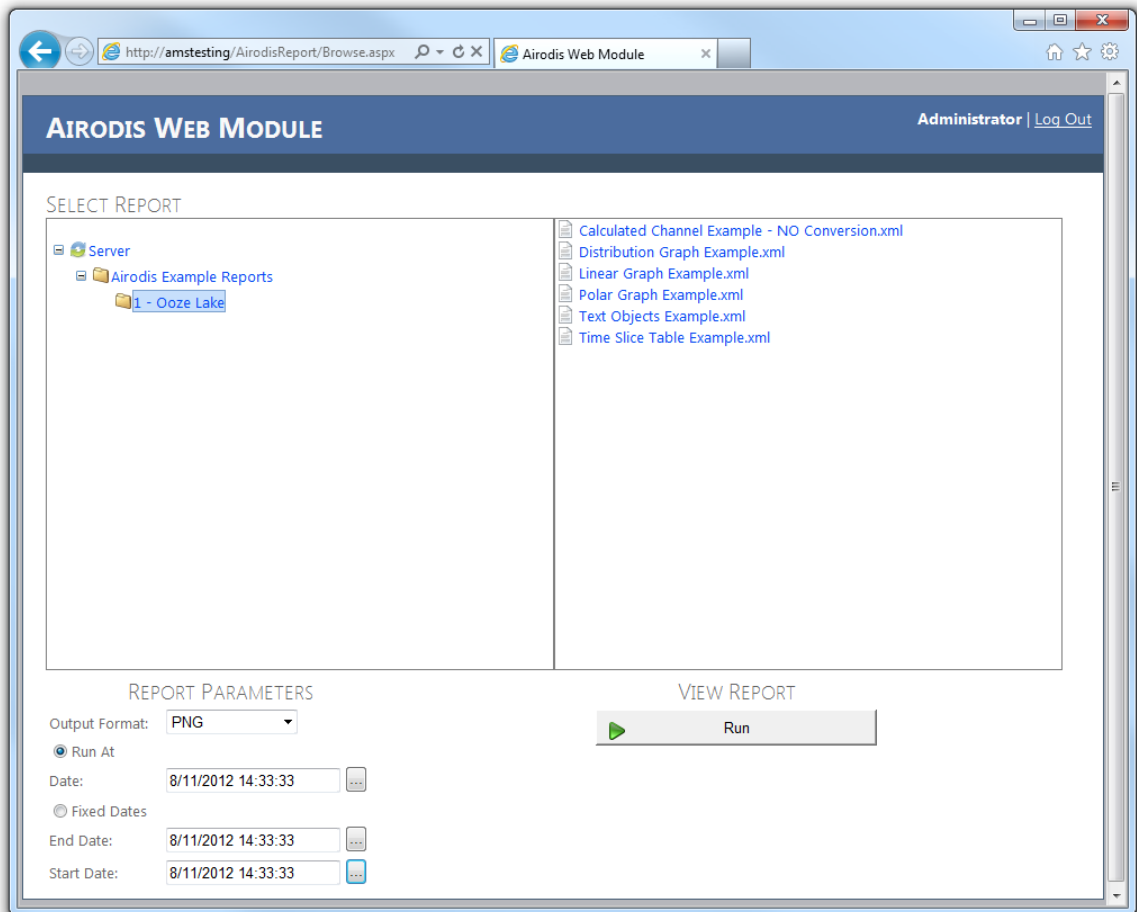
Select Report

Once the report parameters have been set, click the 'Run' button to generate the report.
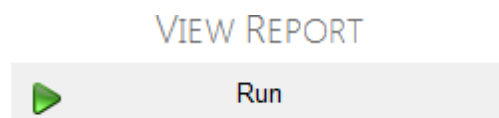
View Report

Depending on the output format, the link may open in a new browser tab or prompt to be

saved to disk or opened by an external application.

Embedding Reports in a Website

After generating a report, the permalink can be embedded in a website. By default, the report can only be viewed by users that have permission to run the report from the Airodis Web Module, while they are logged in. To publish the report to a wider audience, the IP access range must first be widened.
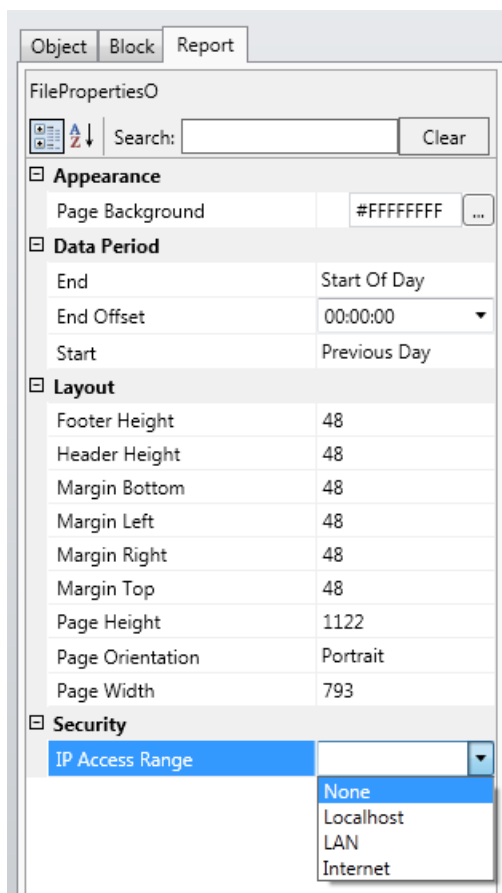
Setting the IP Access Range

A preset can be selected, or alternatively, the user can enter specific IP addresses or Classless Inter-Domain Routing (CIDR) blocks (comma delimited). This will define the IP ranges from which a report can be viewed via a permalink without having to authenticate with Airodis.

IP Access Range Presets

Preset	Value	Description
None	n/a	Only logged-in users with permissions to run the report are able to view it.

Localhost	[::1], 127.0.0.1	Unauthenticated users on the same machine can view the report.
LAN	[::1], [fc00::]/7, 127.0.0.1, 10.0.0.0/8, 172.16.0.0/12, 192.168.0.0/16	Unauthenticated users within a private network can view the report.
Internet	[::]/0, 0.0.0.0/0	Everyone can view the report.

Manipulating Permalinks

A typical permalink is a URL with additional parameters to specify the report to be run, the date range and the output format. Example:

http://mycompany.com/AirodisReport/JobSubmit.ashx?report=Airodis+Example+Reports%5c1+-+Ooze+Lake%5cLinear+Graph+Example.xml&start=1352393024&end=1352306624&format=png&seq=Page1

Permalinks can have the following parameters:

Parameter	Mandatory	Description
report	Yes	The path to the report to be executed.
start	No	The start date of the report in *Unix Time*. If this is omitted, the start date will be determined by the report definition.
end	No	The end date of the report in *Unix Time*. If this is omitted, the end date will be the current date and time.
format	Yes	The output format of the report (e.g. png, csv, doc etc.). 'png' is recommended for embedding images into websites.
seq	No	Sequence ID. On a multi-page report, this determines which page is to be displayed. If omitted, the first page will be displayed.

> There are many online tools available for calculating Unix Time.

Embedding Permalinks in HTML

The permalink can be embedded as an image or as a hyperlink. Here is an example of how to do both:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" >
<head>
    <title>Permalink Example</title>
</head>
```

```
<body>
    <h1>Permalink Example</h1>
    <a href="http://mycompany.com/AirodisReport/JobSubmit.ashx?report=Airodis
+Example+Reports%5c1+-+Ooze+Lake%5cLinear+Graph+Example.xml&format=doc">Download in
MS Word</a>
    <img alt="Airodis Example Report"
        src="http://mycompany.com/AirodisReport/JobSubmit.ashx?report=Airodis
+Example+Reports%5c1+-+Ooze+Lake%5cLinear+Graph+Example.xml&format=png" />
</body>
</html>
```

When viewed in a web browser, the page will appear as below:
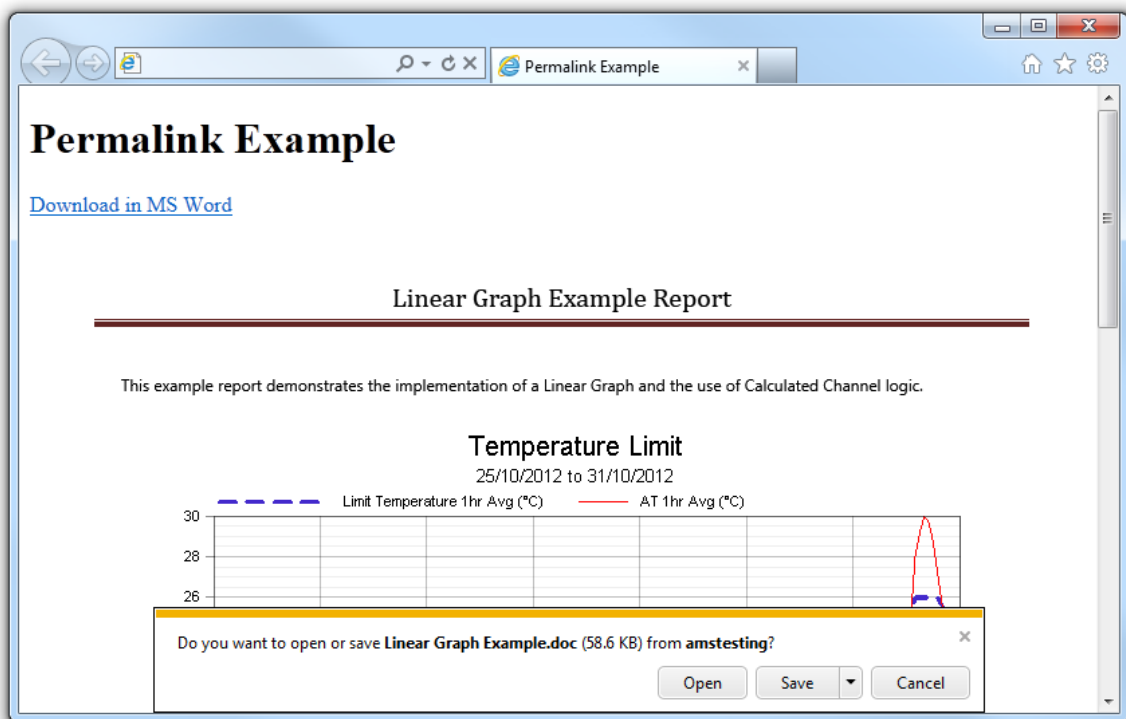
Permalink Example

Appendices

Part

XV
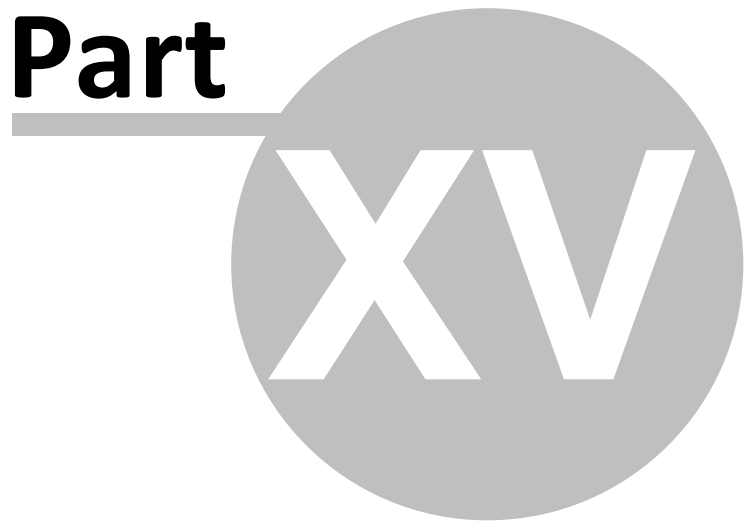
15   Appendices

15.1   Appendix A - Date and Time Formats

To Format	Do This
Numbers	Use predefined Numeric Formats provided, or enter a specific numeric format.
Dates and times	Use predefined date/time formats Airodis provides, or enter a specific date/time format using the following guide.

Date/Time Format

The following table identifies characters you can use to create user-defined date/time formats:

Character	Description
:	Time separator. In some locales, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings.
/	Date Separator. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings.
C	Display the date as ddddd and display the time as ttttt, in that order. Display only date information if there is no fractional part to the date serial number; display only time information if there is no integer portion.
d	Display the day as a number without a leading zero (1 – 31).
dd	Display the day as a number with a leading zero (01 – 31).
ddd	Display the day as an abbreviation (Sun – Sat).
dddd	Display the day as a full name (Sunday – Saturday).
ddddd	Display the date as a complete date (including day, month, and year), formatted according to your system's short date format setting. The default short date format is m/d/yy.
dddddd	Display a date serial number as a complete date (including day, month, and year) formatted according to the long date setting recognized by your system. The default long date format is mmmm dd, yyyy.
aaaa	The same as dddd, only it's the localized version of the string.
w	Display the day of the week as a number (1 for Sunday through 7 for Saturday).
ww	Display the week of the year as a number (1 – 54).
m	Display the month as a number without a leading zero (1 – 12). If m immediately follows h or hh, the minute rather than the month is displayed.
mm	Display the month as a number with a leading zero (01 – 12). If m immediately follows h or hh, the minute rather than the month is displayed.

mmm	Display the month as an abbreviation (Jan – Dec).
mmmm	Display the month as a full month name (January – December).
oooo	The same as mmmm, only it's the localized version of the string.
q	Display the quarter of the year as a number (1 – 4).
y	Display the day of the year as a number (1 – 366).
yy	Display the year as a 2-digit number (00 – 99).
yyyy	Display the year as a 4-digit number (100 – 9999).
h	Display the hour as a number without leading zeros (0 – 23).
hh	Display the hour as a number with leading zeros (00 – 23).
n	Display the minute as a number without leading zeros (0 – 59).
nn	Display the minute as a number with leading zeros (00 – 59).
s	Display the second as a number without leading zeros (0 – 59).
ss	Display the second as a number with leading zeros (00 – 59).
t t t t t	Display a time as a complete time (including hour, minute, and second), formatted using the time separator defined by the time format recognized by your system. A leading zero is displayed if the leading zero option is selected and the time is before 10:00 A.M. or P.M. The default time format is h:mm:ss.
AM/PM	Use the 12-hour clock and display an uppercase AM with any hour before noon; display an uppercase PM with any hour between noon and 11:59 P.M.
am/pm	Use the 12-hour clock and display a lowercase AM with any hour before noon; display a lowercase PM with any hour between noon and 11:59 P.M.
A/P	Use the 12-hour clock and display an uppercase A with any hour before noon; display an uppercase P with any hour between noon and 11:59 P.M.
a/p	Use the 12-hour clock and display a lowercase A with any hour before noon; display a lowercase P with any hour between noon and 11:59 P.M.
AMPM	Use the 12-hour clock and display the AM literal as defined by your system with any hour before noon; display the PM string literal as defined by your system with any hour between noon and 11:59 P.M. AMPM can be either uppercase or lowercase, but the case of the string displayed matches the string as defined by your system settings. The default format is AM/PM.

Predefined Date/Time Formats

The following table identifies the predefined date and time format names:

Format Name	Description
General Date	Display a date and/or time. For real numbers, display a date and time, for example, 4/3/93 05:34 PM. If there is no fractional part, display only a date, for example, 4/3/93. If there is no integer part, display time only, for example, 05:34 PM. Date display is determined by your system settings.
Long Date	Display a date according to your system's long date format.
Medium Date	Display a date using the medium date format appropriate for the language

	version of Airodis.
Short Date	Display a date using your system's short date format.
Long Time	Display a time using your system's long time format; includes hours, minutes, seconds.
Medium Time	Display time in 12-hour format using hours and minutes and the AM/PM designator.
Short Time	Display a time using the 24-hour format, for example, 17:45.

Examples of Date formats

Format specification	Output format
h:m:s	17:4:23
hh:mm:ss	05:04:23 PM
Dddd, mmm d yyyy	Wednesday, Jan 20 2012

15.2   Appendix B - Numeric Formats

Numeric formats

The following table identifies characters you can use to create user-defined number formats:

Character	Description
None	Display the number with no formatting.
0	Digit placeholder. Display a digit or a zero. If the data value has a digit in the position where the 0 appears in the format string, display it; otherwise, display a zero in that position. If the number has fewer digits than there are zeros (on either side of the decimal) in the format expression, display leading or trailing zeros. If the number has more digits to the right of the decimal separator than there are zeros to the right of the decimal separator in the format expression, round the number to as many decimal places as there are zeros. If the number has more digits to the left of the decimal separator than there are zeros to the left of the decimal separator in the format expression, display the extra digits without modification.
#	Digit placeholder. Display a digit or nothing. If the expression has a digit in the position where the # appears in the format string, display it; otherwise, display nothing in that position. This symbol works like the 0 digit placeholder, except that leading and trailing zeros aren't displayed if the number has the same or fewer digits than there are # characters on either side of the decimal separator in the format expression.
.	Decimal placeholder. In some locals, a comma is used as the decimal separator. The decimal placeholder determines how many digits are displayed

	to the left and right of the decimal separator. If the format expression contains only number signs to the left of this symbol, numbers smaller than 1 begin with a decimal separator. To display a leading zero displayed with fractional numbers, use 0 as the first digit placeholder to the left of the decimal separator. The actual character used as a decimal placeholder in the formatted output depends on the Number Format recognized by your system.
%	Percentage placeholder. The expression is multiplied by 100. The percent character (%) is inserted in the position where it appears in the format string.
,	Thousand separator. In some locales, a period is used as a thousand separator. The thousand separator separates thousands from hundreds within a number that has four or more places to the left of the decimal separator. Standard use of the thousand separator is specified if the format contains a thousand separator surrounded by digit placeholders (0 or #). Two adjacent thousand separators or a thousand separator immediately to the left of the decimal separator (whether or not a decimal is specified) means "scale the number by dividing it by 1000, rounding as needed." For example, you can use the format string "##0,," to represent 100 million as 100. Numbers smaller than 1 million are displayed as 0. Two adjacent thousand separators in any position other than immediately to the left of the decimal separator are treated simply as specifying the use of a thousand separator. The actual character used as the thousand separator in the formatted output depends on the Number Format recognized by your system.
:	Time separator. In some locales, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings.
/	Date Separator. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings.
E- E+ e- e+	Scientific format. If the format expression contains at least one digit placeholder (0 or #) to the right of E-, E+, e-, or e+, the number is displayed in scientific format and E or e is inserted between the number and its exponent. The number of digit placeholders to the right determines the number of digits in the exponent. Use E- or e- to place a minus sign next to negative exponents. Use E+ or e+ to place a minus sign next to negative exponents and a plus sign next to positive exponents.
- + $ ( )	Display a literal character. To display a character other than one of those listed, precede it with a backslash (\) or enclose it in double quotation marks (" ").
\	Display the next character in the format string. To display a character that has special meaning as a literal character, precede it with a backslash (\). The backslash itself isn't displayed. Using a backslash is the same as enclosing the next character in double quotation marks. To display a backslash, use two backslashes (\\).

	Examples of characters that can't be displayed as literal characters are the date-formatting and time-formatting characters (a, c, d, h, m, n, p, q, s, t, w, y, / and :), the numeric-formatting characters (#, 0, %, E, e, comma, and period), and the string-formatting characters (@, &, <, >, and !).
ABC	Display the string specified.

Predefined numeric formats

The following table identifies the predefined numeric format names:

Format name	Description
General Number	Display number with no thousand separator.
Currency	Display number with thousand separator, if appropriate; display two digits to the right of the decimal separator. Output is based on system locale settings.
Fixed	Display at least one digit to the left and two digits to the right of the decimal separator.
Standard	Display number with thousand separator, at least one digit to the left and two digits to the right of the decimal separator.
Percent	Display number multiplied by 100 with a percent sign (%) appended to the right; always display two digits to the right of the decimal separator.
Scientific	Use standard scientific notation.
Yes/No	Display No if number is 0; otherwise, display Yes.
True/False	Display False if number is 0; otherwise, display True.
On/Off	Display Off if number is 0; otherwise, display On.

Examples of numeric formats

Format specification	Input Value	Output Value
##,##0.00	5459.4 923.809 110923.809	5,459.40 923.81 110,923.81
###0.00	334.9 10 3405.005	334.90 10.00 3405.01
0.00%	5 .25 99	500% 25% 9900.00%

#,##0;(#,##0);\N\o\n\e	5.5 -5.5 0	6 (6) None

15.3   Appendix C - Modbus

Exposing Airodis Channels over Modbus

Airodis can be configured to run as a TCP Modbus Slave. It can expose raw readings (not re-averaged) for any combination of channels using a Virtual Station as a channel map. Any report on a virtual station can be exposed over the Modbus protocol:

1. Add the required channels to a report on a Virtual Station.
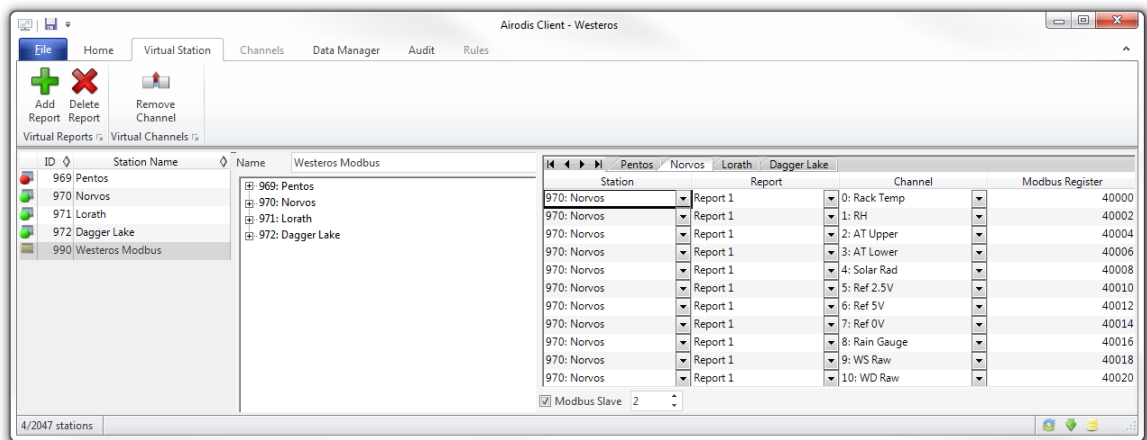
2. Tick the Modbus Slave checkbox and assign the Virtual Station Report a Modbus Slave ID (1-247). Ensure that the Modbus slave ID is globally unique for every report.
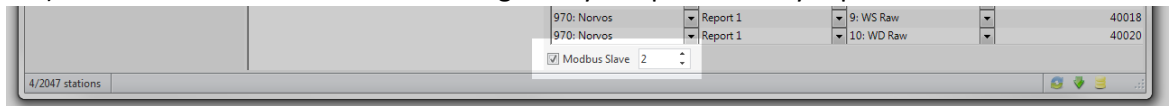
3. Assign each channel on the report an appropriate Modbus Register. These can be numbered odd or even, but must step in increments of at least two, as each channel (32-bit float) spans two 16-bit Modbus registers.
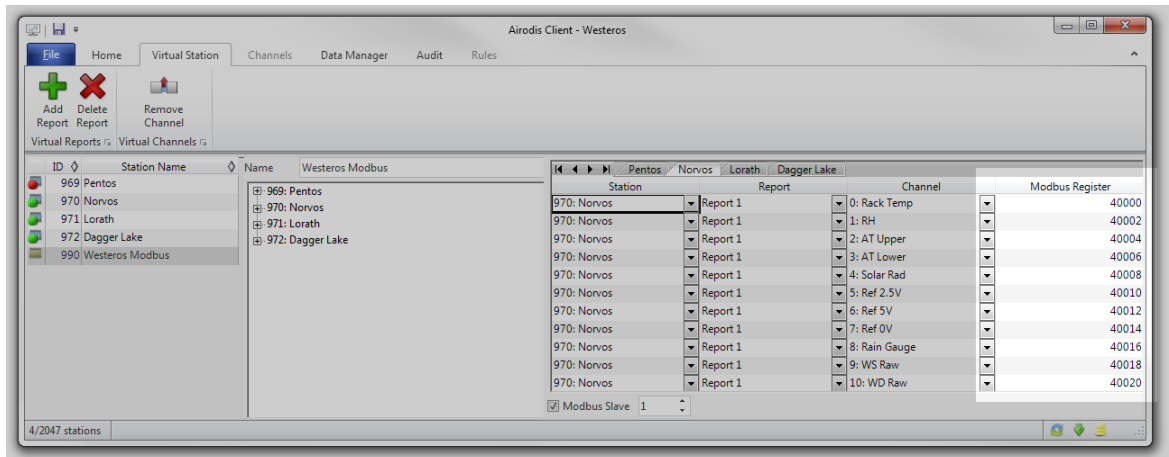
4. Save the station list. You can now query these channels over the Modbus protocol by communicating with the Download Server on TCP port 502.

Supported Modbus Function Codes

FC01 – Read Coils

This function will output the boolean status of a channel using 1-bit registers. 0 = OK, 1 = Alarm. Data is requested by specifying the starting register and the number of coils. In the response, 8 coils will be packed into each byte. There is one coil per 32bit channel.

Example Request:

To read the coil value for 16 registers (8 channels: 40000-40016):

Start register	40000
Register Count	16

Example Response:

The above example request will invoke a 16-bit (2-byte) response:

AB CD [**1010 1011 1100 1101**]

A = Registers **40003**, 40002, **40001**, 40000

B = Registers **40007**, 40006, **40005, 40004**

C = Registers **40011, 40010**, 40009, 40008

D = Registers **40015, 40014**, 40013, **40012**

Note: The registers highlighted in **bold** are in an alarm state. Values will typically appear in pairs because each channel spans two registers.

FC03 – Read Holding Registers

This will request a series of 32bit IEEE MSB floating point values (two 16-bit registers per

value).

Example Request:

To read the holding registers for 2 channels (4 registers: 40000-40003):

Start register	40000
Register Count	4

Example Response:

3F80 0000 C000 0000

These two 32bit values resolve to 1.0f and -2.0f respectively as IEEE single-precision floating point values.

FC04 – Read Input Registers

This will request the status of the requested channels as 16-bit MSB unsigned integers. To keep channel mapping aligned with dual 16-bit holding registers (32bit float), each status value is duplicated across two registers.

Example Request:

To read the input registers for 2 channels (4 registers: 40000-40003):

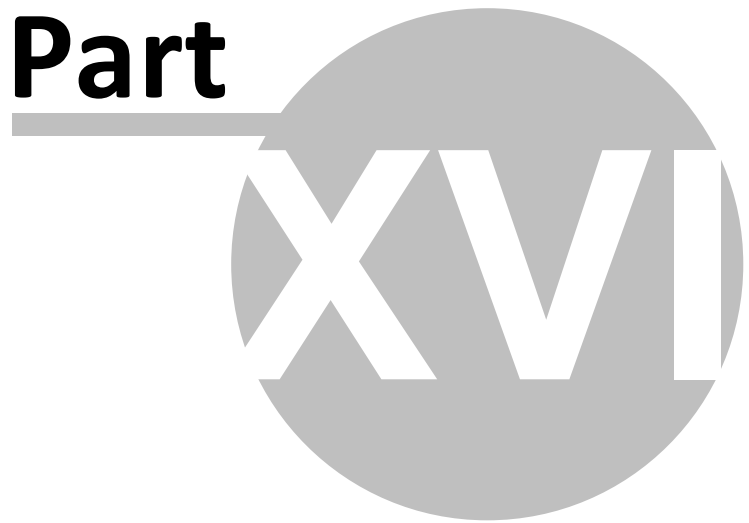| Start register	40000
Register Count	4

Example Response:

0090 0090 0001 0001

The first channel has a status of 144 (0x90; Good) and the second channel has a status of 1 (0x01; Bad - No samples). Because the first channel covers the address range of 40000 – 40001, both registers hold the same value.

Tips and Tricks

Part XVI

16 Tips and Tricks

This section provides a number of different useful topics that enable the user to make the most of their Airodis software.

16.1 Setting up email

Setting up email in Airodis

Email is set up in the *Client->File->Options->Global Options* tab. Email is sent via a SMTP server which normally requires user authentication before it can be used.
The server is for outgoing emails only and will deliver emails on behalf of the user.

Item	Description
Hostname	The host name of the server e.g. smtp.mycompany.com
Port	The port number to be used, usually port 25 or 587
SSL Authentication	Select this box if your server requires secure authentication
Username	The user name of the email account to be used
Password	The password for the email account to be used
From Address	An email address denoting which account sent the email, usually the same as the *Username* entry

> SMTP server settings differ between companies, consult your IT department if you encounter difficulty setting this up.
> If no SMTP server is specified then Airodis will attempt to use the Ecotech Pty Ltd SMTP server.
> In this case it is essential that a reply address is specified so that support staff can respond to the request.

Example Google GMail SMTP Settings

The following diagram shows the setting used to enable Airodis to use the Google GMail SMTP server services.
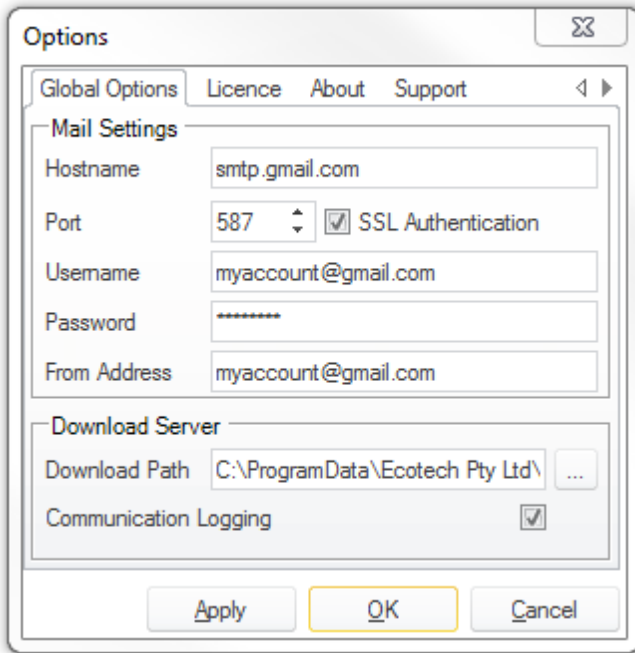
GMail SMTP Settings

16.2   Data Status Values

Status Values are made up of one byte which is broken down as follows:

	Current Status	Span Invalidated	Edited	Original Status	Spare	Original Info MSB	Original Info	Original Info LSB
Bit	7	6	5	4	3	2	1	0
Value	128	64	32	16	8	4	2	1
						If Original = 0 **(BAD)**		If Original = 1 **(GOOD)**
Meaning	0 Bad	0 Valid or Not Validated	0 No	0 Bad		0=Not Enough Samples 1=No Samples 2=Limits Exceeded 3=Data in Calibration		0=All OK 1=High Alarm 2=Low Alarm 3=Datataker Data
	1 Good	1 Span Invalidated or Manually Validated	1 Yes	1 Good		4=Out of Service 5=Power Fail 6=Instrument Fault 7=No Data in File		4=Old DBF Data 5=Hand Entered Data 6=Unknown Origin 7=Sufficient Data

Data Status Values

Examples

Example Status	Meaning	Bit	7	6	5	4	3	2	1	0
		Value	128	64	32	16	8	4	2	1
0	Bad Data		0	0	0	0	0	0	0	0
16	Bad Data - Data was Invalidated, original status was Good		0	0	0	1	0	0	0	0
144	Good Data		1	0	0	1	0	0	0	0
176	Good Data, original status was Good, Edited		1	0	1	1	0	0	0	0

> MSB and LSB stand for Most Significant Bit and Least Significant Bit respectively.
> See MSB and LSB.

16.3   How Report Data Periods Work

The *Data Period* settings in the *Report Manager* can often seem confusing. The period over which the report is run can be set at a report level or at the report object level, e.g. *Graph* or *Table* object.

In general the report period is determined by the *Start* and *End* settings, although durations and offsets can also be applied. The easiest way to determine the data period is to work backwards from the *End* time.

Examples

These assume a report interval of one hour.

How do I run a daily report that covers the last 24 hours?

Start	End
Previous Day	Start of Day

e.g report is run at 9 AM on the 16th May, the report period is 12 AM 15th May to 11 PM 15th May

How do I run a daily report that covers the time from midnight to 9 AM daily?

Start	End
Start of Day	Fixed Time (9 AM)

e.g report is run at 9:15 AM on the 16th May, the report period is 12 AM 16th May to 9 AM 16th May

How do I run a daily report that covers the time from 3 AM to 9 AM daily?

Start	End
Set Duration (6 Hours)	Fixed Time (9 AM)

e.g report is run at 9:15 AM on the 16th May, the report period is 3 AM 16th May to 9 AM 16th May

How do I run a report from the 2nd February 2011 at 09:15 am to the 20th February 2011 6:25 pm?

Easy! If a preview is all you want then in the *Report Manager* on the *Edit* tab use the *Preview-
>Preview at Date* menu item and select the *Fixed Dates* option.
Just fill in the dates required and a preview will be generated for that data period.

Should you want to generate a report in a format other than an image then on the *Scheduler* tab use the *Run->Run Schedule at Date* menu item.
Again, fill in the dates required and the report will be scheduled using the dates and times provided. The report output types will be generated as specified in the schedule.

In both of the above cases the *Start* and *End* times specified in the report are temporarily over ridden by the new times specified in the *Run* menu.

Troubleshooting Tips

Part XVI
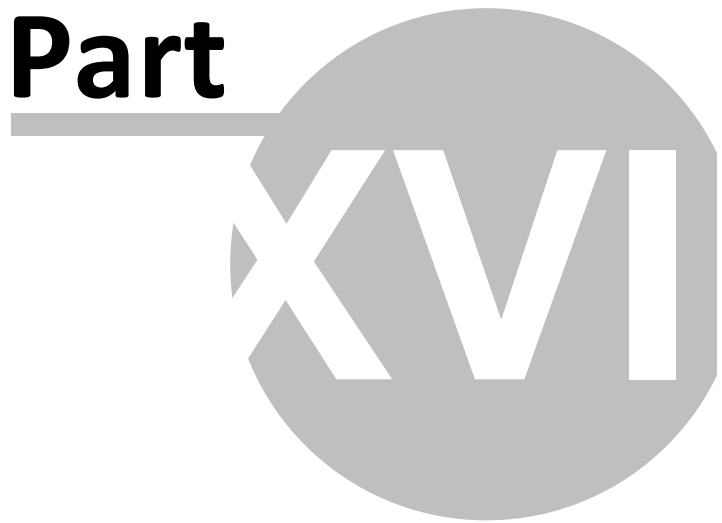
17   Troubleshooting Tips

SQL Server 2008 R2 Express Installation Problems

   ☐   SQL Server fails to install on a computer that has Microsoft Development Studio 2008 installed

If Microsoft Development Studio 2008 is installed on the machine then ensure that Development Studio 2008 SP1 has been installed before attempting to install the SQL Server.

   ☐   Where can I find the SQL Server 2008 R2 Express installation log?

A summary of the installation can be found at this location: **%programfiles%\Microsoft SQL Server\100\Setup Bootstrap\Log**

To find errors in the summary text file, search the file by using the "error" or "failed" keywords.

If this file does not exist then it is likely that the Microsoft .Net Framework 3.5 SP1 is not installed.

Download Scheduler

   ☐   My scheduled downloads aren't downloading

Check that the *Download Scheduler* isn't in a Paused state. On the *Client* window the *Download Scheduler* icon can be seen at the bottom right-hand-side of the window. The *Download Scheduler* icon is the middle icon.

If the *Download Scheduler* is Paused then click the icon and deselect the *Pause All Schedules* option.

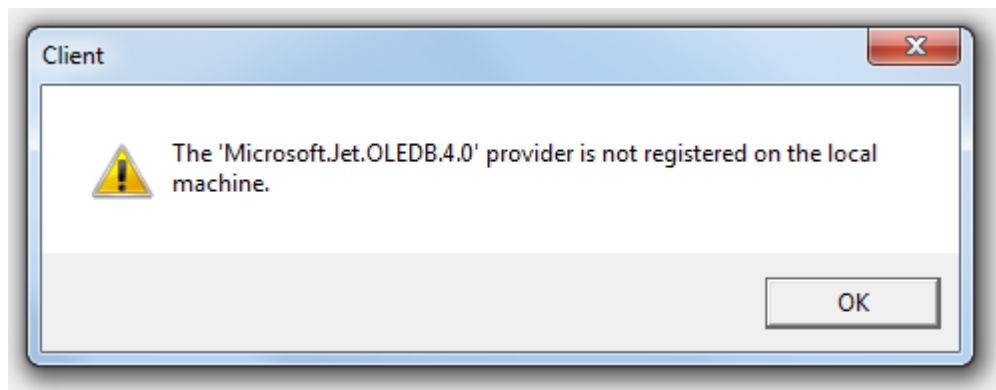**Paused State**   **Active State**

Client

Station Import

   ☐   When importing stations I get an error message 'Microsoft Jet OLEDB 4.0 provider is not registered on the local machine'

This error generally occurs on 64 bit machines when trying to import stations and/or data

from an existing WinCollect 3/4 database.

The solution is to uninstall the 64 bit version of Airodis and install the 32 bit version, then try importing the stations again.

Log Files

☐ Where can I find the Communication Log files?

Communication Logs are created and stored on a per-station basis and can be found in the download directory for the selected *Station*.
In the *Station* tab on the *Client* click on the *Download Directory* menu item to open the download directory in an instance of Windows Explorer.

> Communication Logs are only created if logging is explicitly turned on.
> See here for details.
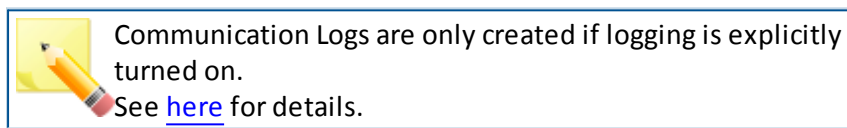
☐ Where can I find the Error Log files?

Error Logs are found in the following locations (presuming a default install):
Windows C:\Documents and Settings\All Users\Application Data\Ecotech\Airodis\Logs
XP
Windows C:\ProgramData\Ecotech\Airodis\Logs
7

Memory Exceptions

☐ Why do I get an OutOfMemoryException when viewing a large amount of data?
This may typically occur when trying to load up a years worth of data in the *Data Manager* tab. What is actually happening is the *Client* process is running out of memory while fetching the data from the database. Microsoft Windows imposes a limit on each process that determines the maximum amount of memory each process can use, on a 32 bit

platform this limit is around 1.2 GB. The solution is simply to load the data in smaller blocks for viewing.

Server

⊟ Where can I find my Report files?

Report files are stored as XML files and can be found in the following locations:

Windows XP   C:\Documents and Settings\All Users\Application Data\Ecotech\Airodis\Server\Reports

Windows 7   C:\ProgramData\Ecotech\Airodis\Server\Reports

Glossary

Part XVII

18   Glossary

A B **C** **D** E F G H I J K **L** M N O P Q **R** **S** T U **V** **W** X Y Z

A
Analyser
A physical piece of equipment accumulating data from various inputs. Interchangeable with *Logger*.

C
Calculated Channel
A special *Channel* that can be made up of other *Channels*, including *Calculated Channels*, and some logic and/or mathematical calculation.

Channel
An input on a *Logger*/*Analyser* that corresponds to a data field in the Airodis *Client* application.

Client
The Airodis *Client* application is a user interface for viewing and validating data and interacting with the various Airodis processes.

D
Data Manager
The *Data Manager* takes the form of a tab in the Airodis Client application and is the interface that the user uses to display data and perform validation on that data.

Download Server
The Airodis Download Server application is responsible for downloading data from the Loggers/Analysers at scheduled times dictated by the download schedule.

L
Logger
A physical piece of equipment accumulating data from various inputs. Interchangeable with *Analyser*.

R
Reason List
A physical list of *Validation Reasons* and their configurations used by Airodis. These are made available to the user for use when they are validating or invalidating data in the *Data Manager*.

Report (1)

A physical file generated by the *Report Manager*.

Report (2)

In terms of the *Station* a *Report* is a period of time. e.g Report 1 may correspond to a period of 10 minutes.

Report Manager

The Airodis *Report Manager* application is a user interface for constructing and viewing Reports, it is also the interface to the *Report Scheduler*.

Report Scheduler

The Airodis *Report Scheduler* application is responsible for ensuring that reports are generated in a timely manner as specified in the schedule.

Report Period

The report interval(s) set on the *Logger/Analyser*.

S

Server

The Airodis *Server* application is responsible for licence management, *Report* and *Station List* propagation and generally keeping the Airodis components synchronised.

Station

In terms of Airodis this can be a physical site and a *Logger/Analyser* as each *Station* in Airodis can have only one instrument associated with it. The *Station* holds details of the physical site as well as details of its associated *Logger/Analyser*.

Station List

A physical list of *Stations* and their configuration data stored in XML format that is used by Airodis.

SQL Server

The Microsoft SQL Server 2008 R2 database that Airodis uses to store data.

V

Virtual Station

A special *Station* that is made up of the *Channels* from one or more physical *Stations*.

W

Workspace

The *Workspace* is a collection of objects including database access and component port settings, a *Station List* file and a *Reason List* file.

Workspace Manager

The Airodis *Workspace Manager* application is a user interface that allows a user to select the *Workspace* that that want to work with and configure additional SQL Server and Airodis component settings.