TD 268 Users Manual
AADI Real-Time Collector

AANDERAA DATA INSTRUMENTS
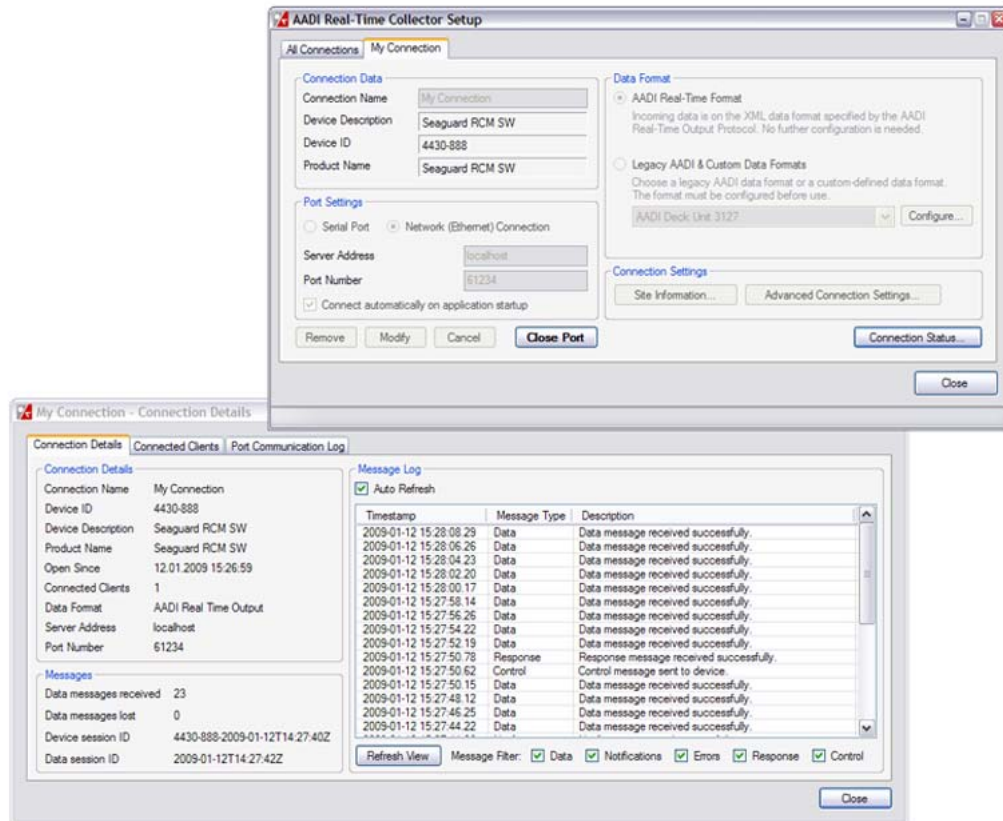
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Introduction

Purpose and scope

The purpose of this document is to describe how to set up a connection between an AADI Real-Time Device and the receiver PC, using the AADI Real-Time Collector. It further describes how the Collector application can be used to verify the connection status and distribute data to other applications through a programming interface.

Document overview

0 gives a short description of the AADI Real-Time Collector.

CHAPTER 2 describes how to install the application.

CHAPTER 3 describes the licensing requirements for the application.

CHAPTER 4 describes how to configure the application.

CHAPTER 5 describes how to manage custom data formats.

CHAPTER 6 describes how to verify the status of a connection.

CHAPTER 7 describes how to use the Control Panel for remote configuration of the device.

CHAPTER 8 describes how received messages can be stored in the file system.

Requirements

The AADI Real-Time Collector requires:

- At least 512MB RAM.
- At least 500MHz CPU.
- One RS232 or RS422 port (RS232/RS422-to-USB converter may be used) for each connected device.
- Windows 2000 SP4, Windows XP SP2 or Windows Vista.

Applicable documents

TD262a   SEAGUARD® Platform Operating Manual
TD267a   AADI Real-Time Output Protocol
TD267b   AADI Real-Time Output Protocol – Diagram View
TD271   AADI Real-Time Communication
TD272   AADI Real-Time Control Protocol – Diagram View
TD278   AADI Real-Time Programming Reference

CHAPTER 1 Short description of the AADI Real-Time Collector

The AADI Real-Time Collector is a background application running on a PC. Its main task is to:

- Receive data from devices that uses the AADI Real-Time Output Protocol.

- Receive and convert data from devices that uses certain custom data formats.

- Provide an interface for client applications that utilize the data, e.g. a display program.

The application has dialogs for:

- Setting up a connection between the transmitting device and the receiver PC.

- Displaying status information for all of the defined connections.

- Controlling the device recorder.

- Changing the device configuration.

The AADI Real-Time Collector can:

- Receive data from multiple devices.

- Serve multiple client applications through the provided .NET programming interface.

- Store data to files.

The purpose of the AADI Real-Time Collector is not to display data. Display programs and other client applications must be arranged by the user. A couple of 'getting started' applications with source code are provided to show the application designer how to connect and obtain data from the AADI Real-Time Collector.

CHAPTER 2 Installing the application

Insert the installation CD or start the downloaded installation file. Follow the instructions on the screen. Use default settings.

When installed, you will find a shortcut to the program on the desktop and in the start menu. The application will automatically start up with windows; you must manually delete the shortcut from the Startup folder in the start menu to avoid having the application starting up with windows.

Note!

The installation will check for a Windows component called .NET 2.0 and request an upgrade if the component is missing. This upgrade requires an active internet connection.

CHAPTER 3 Licensing

The AADI Real-Time Collector application requires activation with a valid license key in order to be used. A fully functional 30 day demo version is also available. When first starting the application, the dialog presented in Figure 3-1 will be displayed.
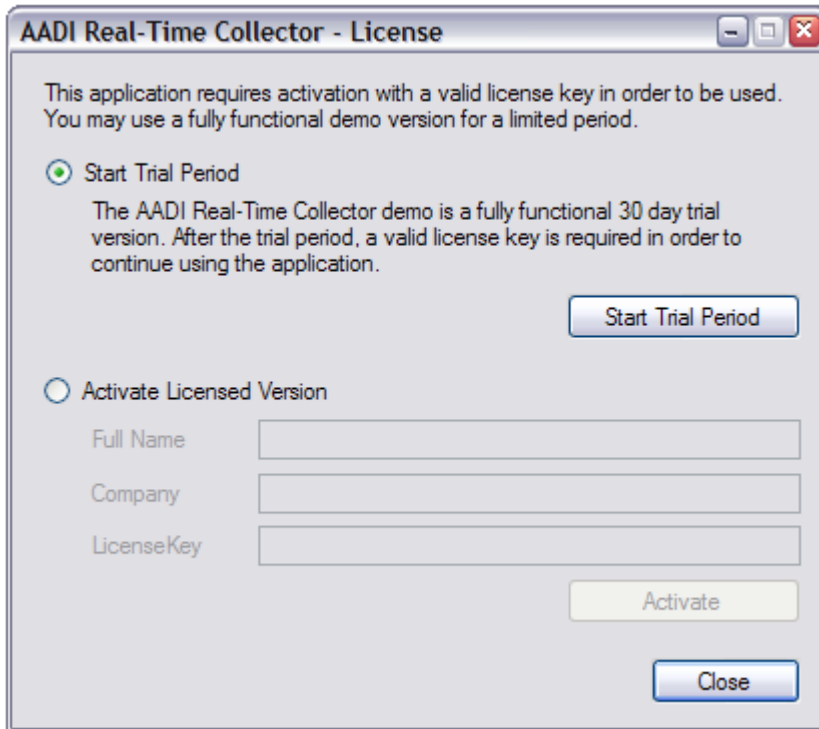
Figure 3-1 The application requires a license key. A 30-day trial period is also available.

Press the *Start Trial Period* button to start the 30 day trial period.

Activate the licensed version by filling out your full name, company and license key, and then pressing the *Activate* button.

If you choose to start the trial period, the application will function normally for 30 days. After this period, a valid license key is required in order to continue using the application. It is possible to enter a license key during the trial period by right clicking the *Collector* icon in the Windows system tray and choosing *Activate Full License*.

The current license status is available in the *About* dialog, which is accessed through the right click menu in the system tray.

CHAPTER 4 Connection setup

4.1 Connect the instrument or device to the PC

You may set up connections without any device connected. However, the Real-Time Collector will not receive feedback to verify reception of data until a transmitting device is actually connected.

Connect a SEAGUARD® device to the receiver PC as described in TD271 AADI Real-Time Communication.

Start the SEAGUARD® device as described in TD 262a SEAGUARD® Platform Operating Manual. Prepare the device for deployment. Remember to enable Real-Time output, and set the communication settings in the System Configuration. Start recording.

4.2 Create a new connection

Double click the AADI Real-Time Collector icon on the desktop (Figure 4-1) or in the start menu to start the application and open the *AADI Real-Time Collector Setup* window.
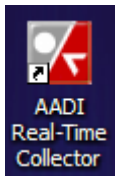
Figure 4-1 Desktop icon.

If the application is already running, you will find an icon in the Windows system tray. Open the *AADI Real-Time Collector Setup* window by right clicking this icon and choosing *Connection Setup* from the popup menu (Figure 4-2).
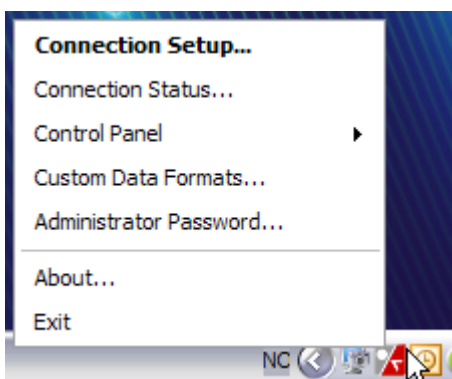
Figure 4-2 Open Connection Setup

From this menu, you can also choose to open the *Connection Status* window (CHAPTER 6) and the *Control Panel* (CHAPTER 7). You may also open the *Custom Data Formats* window (CHAPTER 5) and edit the *Administrator Password* (chapter 4.10).

The *Connection Setup* window (Figure 4-3) lists all available connections. This list will initially be empty. Press *New connection* in the lower left part of the window. Type a name for the new connection, e.g. *My Connection*, and press *OK*.
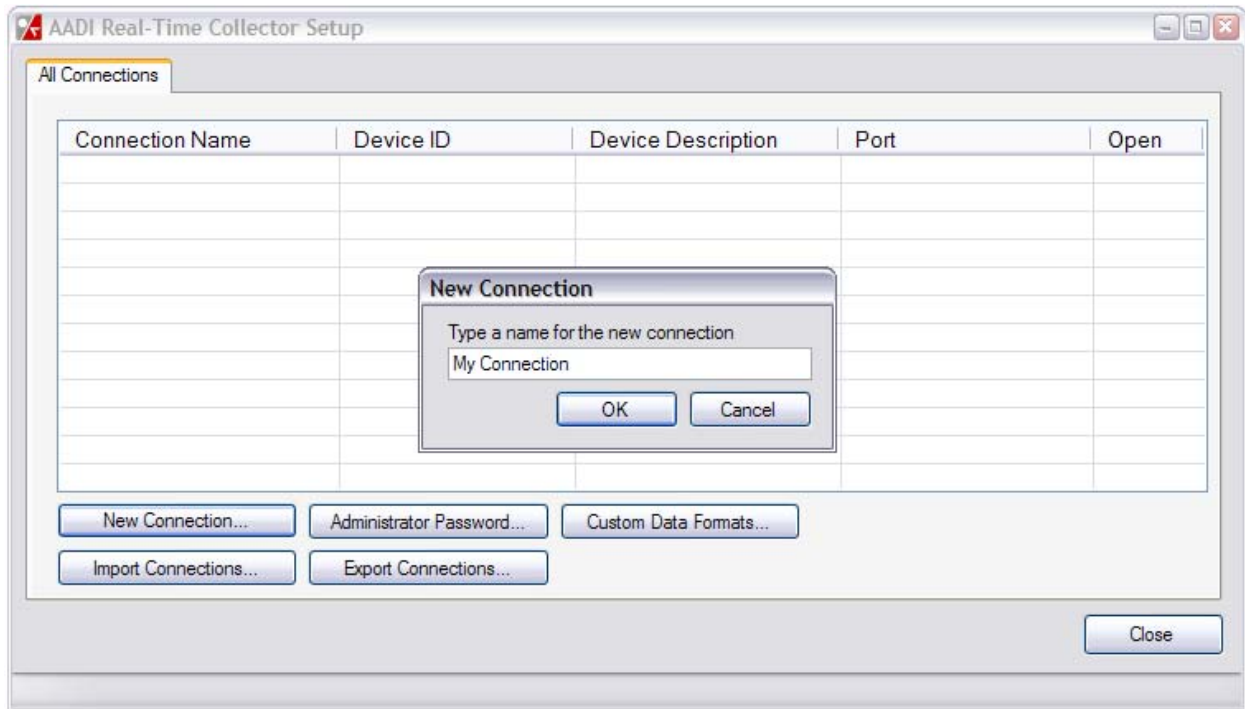
Figure 4-3 Add a new connection.

Note! The connection name must be unique and consist of only letters and numbers. Duplicates will be rejected. The name should be short and precise as it identifies the connection on the settings tabs. If data are stored to file, the connection name is also used in the folder name to ensure unique directories for each connection, refer chapter 4.9.5.

After the user has typed in a name and pressed OK, a new tab is created for the connection (Figure 4-4). Some configuration is now needed before contact can be established with the device.

In the upper left corner, the connection name may be modified as required. The Device Description, Device ID and Product Name fields can however not be modified; this information will be retrieved directly from the device.
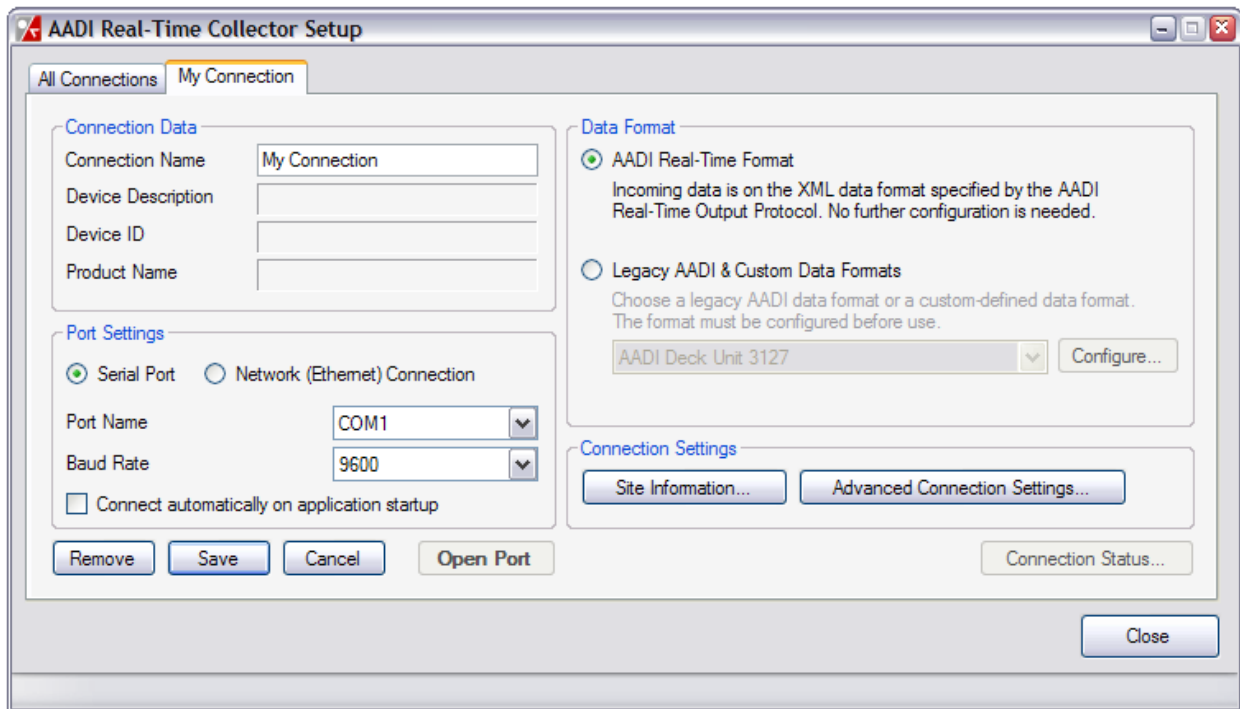
Figure 4-4 Connection Setup window.

4.3 Port settings

The user can choose either a serial port connection or a socket connection, depending on the kind of device that is used. The SEAGUARD® is normally connected using a serial port connection.

Click either *Serial Port* or *Socket Connection* to choose the corresponding connection type (Figure 4-4).

4.3.1 Serial port connection

The user has to set the name and baud rate of the serial port that the transmitting device is connected to. Additional port settings can be set under *Advanced Settings* (chapter 4.9.3).

Select the *Serial Port* to which the device is connected, e.g. COM1. Available ports are listed in the dropdown menu. Select the correct *Baud Rate*, e.g. 9600. Available baud rates are listed in the dropdown menu.

Note! The Baud Rate must equal the Baud Rate configured for the transmitting device.

Select *Connect automatically on application startup* to automatically open the connection whenever the application is started. If leaving the option unchecked, the user has to open the setup window and press the *Open Port* button to manually open the connection.

4.3.2 Network connection

When using a network (ethernet) connection, the user must set the server address and server port. If the server is running on the same machine as the Collector, the server address is *localhost*.

Please refer to the previous chapter for details on how to open the connection.

4.4 Selecting data format

The user must specify which data format the connected device is using. Choose *AADI Real-Time Format* for AADI devices that uses this format, such as the SEAGUARD® or the AADI Wave And Tide sensor. This data format does not need to be configured.

Legacy AADI devices (e.g. Datalogger 3660 or Deck Unit 3127), most AADI stand-alone sensors, and other 3rd party sensors does not use the AADI Real-Time format. For these devices, select the *Legacy AADI & Custom Data Formats* option. Select the appropriate device type in the drop-down list.

The AADI legacy and custom data formats must be configured before use. Press the *Configure* button to open the configuration window. It will not be possible to open the connection before the data format has been properly configured.

Please refer to chapter 5.3 for a detailed description of this configuration process. That chapter also describes how to add new custom data formats, or modify existing data formats.

4.5 Saving the settings and opening the connection

After the port settings and data format have been configured, the connection to the device can usually be opened. In some cases, a user may also which to edit the Site Information or the Advanced Settings. Please refer to chapters 4.8 and 4.9 respectively, for a detailed description.

Press *Save* to save the settings (Figure 4-5). The current settings are saved and will be present each time the AADI Real-Time Collector is launched.
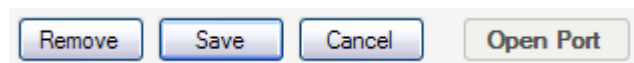
Figure 4-5 Press Save to save the current connection settings.

Pressing the *Save* button will enable the *Open Port* button. Press this button to open the connection.

Note! As soon as the first message is received from the connected device, the information fields in the upper left part of the window will change from "Pending..." to values read directly from the device.

Press *Connection Status...* in the lower right corner of the *Connection Setup* window to open a new window with a detailed status summary for the connection. Refer to CHAPTER 6 for more details on the connection status.

4.6 Changing an existing connection

The port must first be closed to enable changes (Figure 4-6).
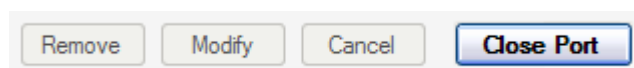
Figure 4-6 The port must be closed before a connection can be modified.

When the connection is closed, the *Modify* button will be enabled Figure 4-6. Press this button to enter edit mode.
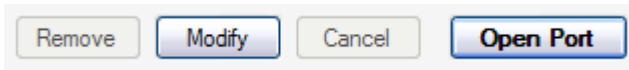
Figure 4-7 Press Modify to enter edit mode and change the connection settings.

In edit mode the user can make changes to the connection settings as described for a new connection. Press *Save* to save the new settings or press *Cancel* to discard the changes (Figure 4-5).

4.7 Removing a Connection

To remove a connection the user must first close the port and enter edit mode (chapter 4.6) and then press the *Remove* button (Figure 4-8).
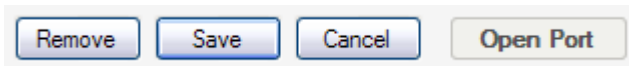
Figure 4-8 Press Remove to remove a connection.
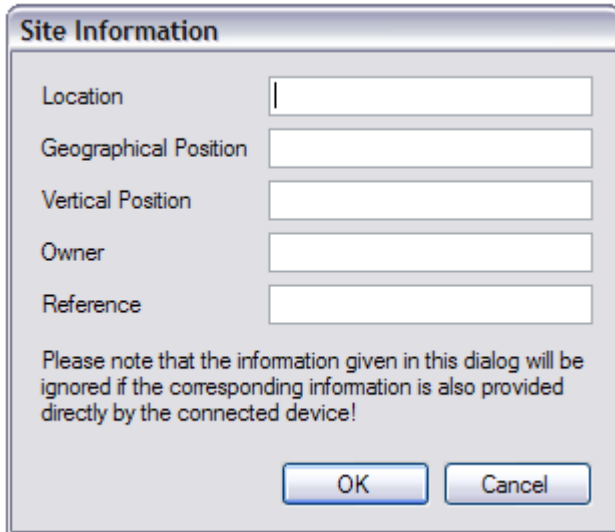
The user must confirm that the selected connection should actually be removed. Press *OK* to completely remove the connection. This action cannot be undone.

The collector returns to the summary view *All connections*.

4.8 Site information

In cases where the device does not provide enough site information, the user can manually add this information. Devices that use the AADI Real-Time format normally provides complete site information, while devices that use legacy AADI or custom data formats does not.

Press *Site Information* in the lower right part of the connection setup window (Figure 4-4) to edit the site information (Figure 4-9).

Figure 4-9 Manually add site information.

All five fields are optional, and may contain whatever information the user requires. This is however the recommended usage:

- The *Location* is typically the place where the device is currently located, e.g. Bergen Harbour.

- The *Geographical Position* is typically a GPS position.

- The *Vertical Position* is the depth (negative number, e.g. -20m) or the altitude (positive number, e.g. 50m) where the device is currently located.

- The *Owner* is typically the company owning the device, e.g. AADI.

- The *Reference* may be a particular project or the person responsible for the device.

Press *OK* to store the site information, or *Cancel* to exit the dialog without storing the site information.

Note!

The information given in this dialog will be ignored if the corresponding information is also provided directly by the device, i.e. any site information stored in the device will always overwrite the information written in this dialog.

4.9 Advanced connection settings

Press *Advanced Connection Settings* in the lower right part of the connection setup window (Figure 4-4) to edit the advanced settings.

The Advanced Connection Settings dialog contains additional options for each connection, split into five tabs (Figure 4-10). The default settings for all tabs can always be restored by pressing the *Default* button in the lower left corner.
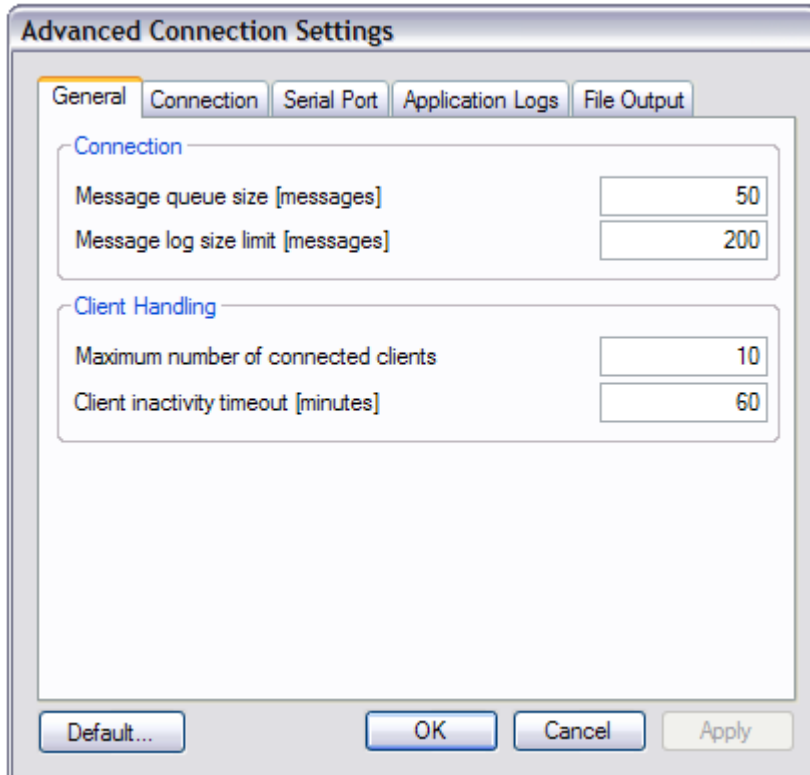
Figure 4-10 Advanced Connection Settings.

4.9.1 General

Refer to Figure 4-10 for an illustration of the General tab.

- The *Message queue size*: Set the maximum number of previous messages kept in queue and available for reading by client applications. The default value is 50.

- The *Status log size*: Set the maximum number of message statuses kept in log (counted backward from the last received). The default value is 200.

- The *Maximum number of connected clients*: Set the maximum number of client applications allowed for each connection. The default value is 10.

- *Client inactivity timeout*: A client application that requests data through the AADI Real-Time Collectors interface will be disconnected if no request has been received within the configured timeout. The default value is 60 minutes.

4.9.2 Connection

Refer to Figure 4-11 for an illustration of the Connection tab.
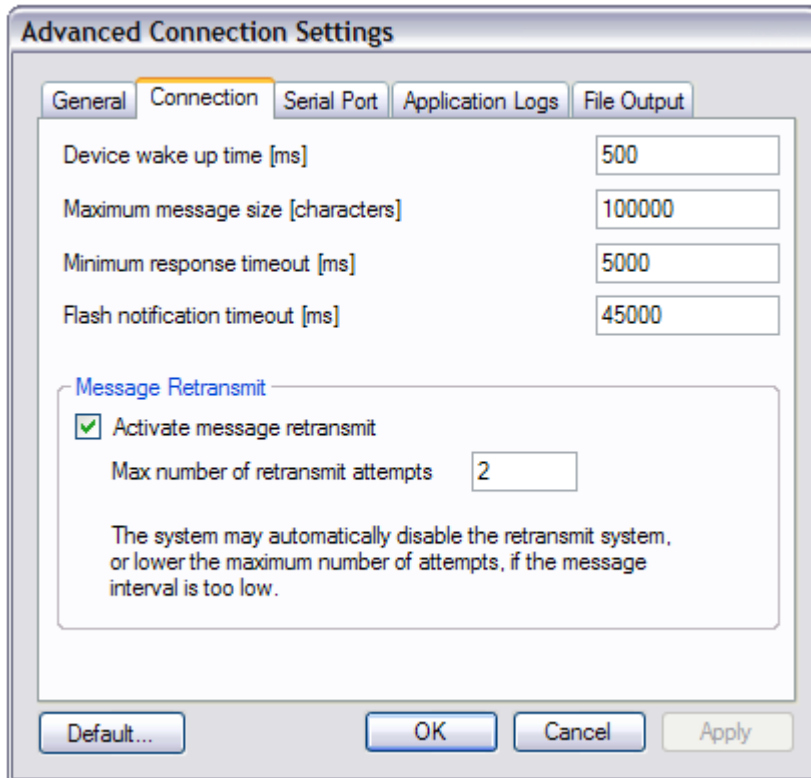
Figure 4-11 Connection Settings.

- *Device wake up time*: The time needed by the connected device to wake up before it can start receiving control messages. Set this value to zero if the device is never going into sleep mode. The default value is 500 milliseconds.

- *Maximum message size*: The maximum expected message size. This value *must* be larger than all possible output messages from the device. If uncertain, set it to a higher value. The default value is 100000 byte.

- *Minimum response timeout*: When sending control messages to the device, the Collector automatically calculates for how long it should wait for an answer from the device before giving up. The *minimum response timeout* is a lower limit to this value. The default value is 5000 milliseconds.

- *Flash notification timeout*: When waiting for nodes to be flashed after a configuration update using the Control Panel, this value determines the timeout before giving up. The default value is 45000 milliseconds.

- *Activate message retransmit*: If checked, the Collector application will request retransmission of missing or corrupted messages from the connected device. The mechanism is limited to a maximum of one single missing message. When the sequence gap becomes two or more (messages), the missing messages are considered lost. The system may automatically disable the retransmit system (or lower the maximum number of attempts) if the message interval is too low.

- *Max number of retransmit attempts*: The maximum number of times the Collector will request retransmission of a single message before giving up.

4.9.3 Serial Port

Refer to Figure 4-12 for an illustration of the Serial Port tab.
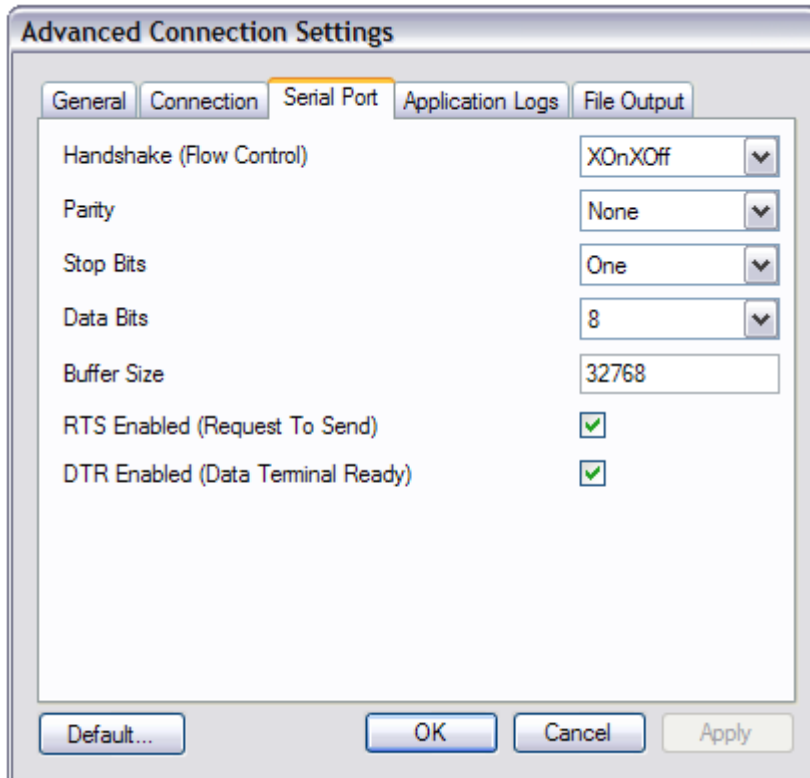
Figure 4-12 Serial Port Settings.

- *Handshake (Flow Control)*: The handshaking protocol for serial port transmission of data. The default value is XOnXOff.

- *Parity*: The parity-checking protocol. The default value is None.

- *Stop Bits*: The number of stop bits per byte. The default value is One.

- *Data Bits*: The standard length of data bits per byte. The default value is 8.

- *Buffer Size*: The size of the serial port input and output buffer. The default value is 32768.

- *RTS Enabled (Request To Send)*: If checked, the Request to Send (RTS) signal is enabled during serial communication. The default value is enabled.

- *DTR Enabled (Data Terminal Ready)*: If checked, the Data Terminal Ready (DTR) signal is enabled during serial communication. The default value is enabled.

4.9.4 Application Logs

Refer to Figure 4-13 for an illustration of the Application Logs tab.
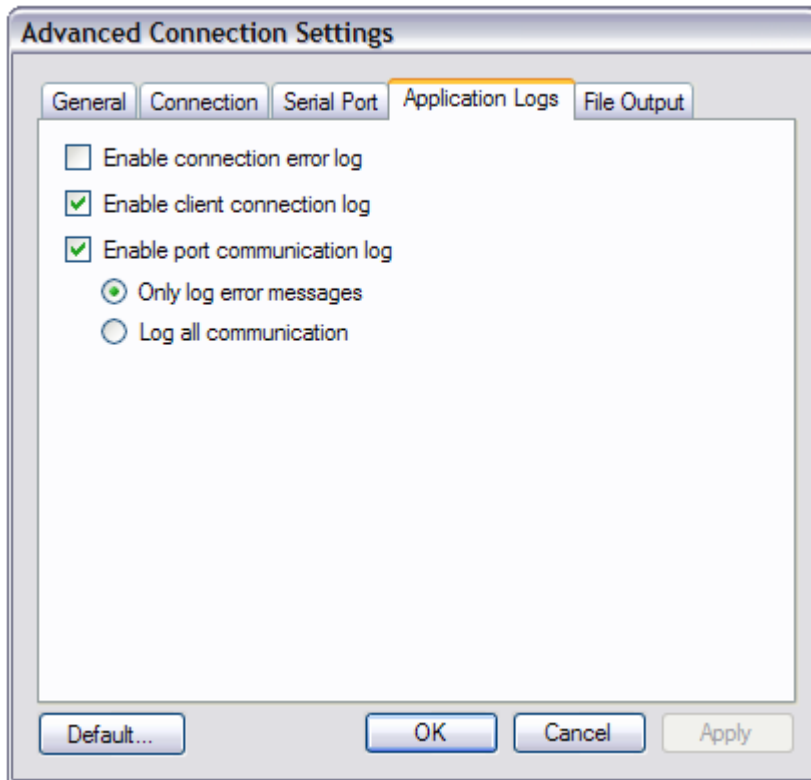
Figure 4-13 Application Log settings.

- *Enable application error log*: If checked, all application errors (exceptions) are logged to "Application Error.log" in the install folder.

- *Enable connection error log*: If checked, all errors on the connection, e.g. checksum errors, are logged to "Connection Error.log" in the install folder. The default value is disabled.

- *Enable client connection log*: If checked, all client connections are logged to "Client Connections.log" in the install folder. The default value is enabled.

- *Enable port communication log*: If checked, port communication is logged to "Port Communication.log" in the install folder. Choose if all communication should be logged, or only error messages, by checking the corresponding radio button. The default value is to log only error messages.

4.9.5 File Output

The received messages can be saved to separate files for each individual connection. The user can also maintain a 'last received file' for each individual connection. This file may be used as a data source for a frequently refreshed web-page or similar application.
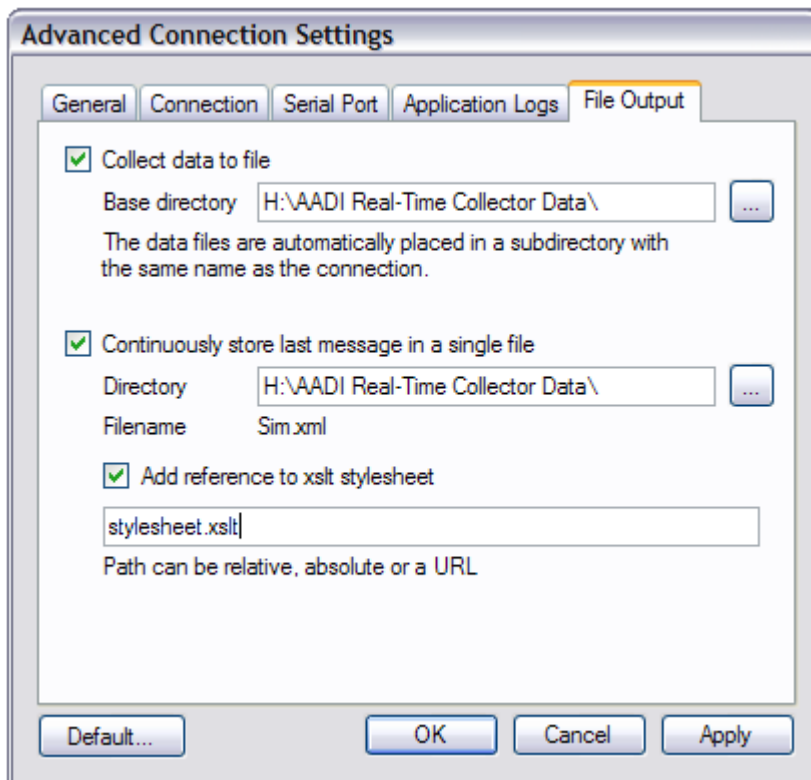
Figure 4-14 File output dialog.

Procedure to store received data to file:

- Check the *Collect data to file* option.

- Type or browse the path to a root directory (base directory) where the data should be stored.

The AADI Real-Time Collector will automatically add a subdirectory named by the connection name to ensure unique directories for each connection. One more directory level will automatically be created to limit the number of files in a single directory (the maximum number of files are by default 50).

Refer to CHAPTER 8 for an illustration of the directory and a description of the folder contents.

Procedure to maintain a 'last received file':

- Check the option *Continuously store last message in a single file* to activate the option.

- Type or browse the path to a root directory where the file should be stored.

The AADI Real-Time Collector will automatically name the file equal to the connection name; the file extension is .xml.

- Style sheet reference for received message. This is an option intended for easy viewing of the 'last received data' file:

    o Using the XML style sheet technique the user may design a certain layout for the data presentation in a web browser or another program with xml style sheet capabilities. The style sheet needs to be referenced in the xml message file.

    o If the user checks the 'Add reference to xslt…' box the AADI Real-Time Collector will put the reference supplied in the style sheet reference field below

into the 'last received data' file. When viewed in for example Internet Explorer, the file will then be displayed in the format described in the referred style sheet.

o   The path to the style sheet may be relative to the base directory, absolute or a URL.

o   An example style sheet is installed with the application and can be found in the same directory as the application. Examples will also become available on the AADI Real-Time web site.

4.10 Administrator password

The AADI Real-Time Collector provides access to a programming interface through which it is possible to control a connected device, assuming that the device supports the control commands.

This access is protected by an administrator password which can be set by clicking the *Administrator Password* button in the Collector Setup Window (Figure 4-15) or by right-clicking the Collector icon in the system tray and choosing *Administrator Password...* (Figure 4-2).
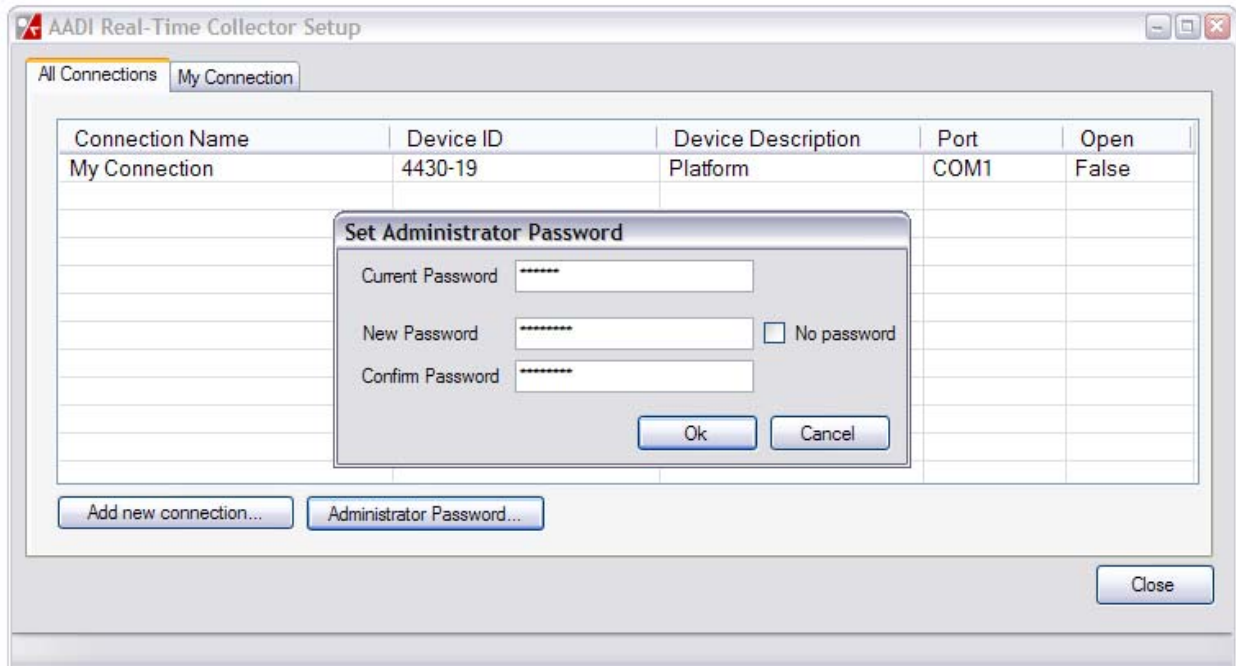
Figure 4-15 Set the administrator password.

The client application that connects to the Collector must provide the administrator password when subscribing to a device connection.

The default is no password, which means that any client application will be able to connect as administrator. The password should therefore always be set in situations where restricted access to control commands is desired.

Check the *No Password* box to disable the password.

Note!

The Collector allows only one connected administrator at any given time.

The password is checked only when the client is first connecting. If the password is changed, a client application that is already connected with the old password will not be affected until it disconnects and then tries to re-connect again.

4.11 Import and export connection settings

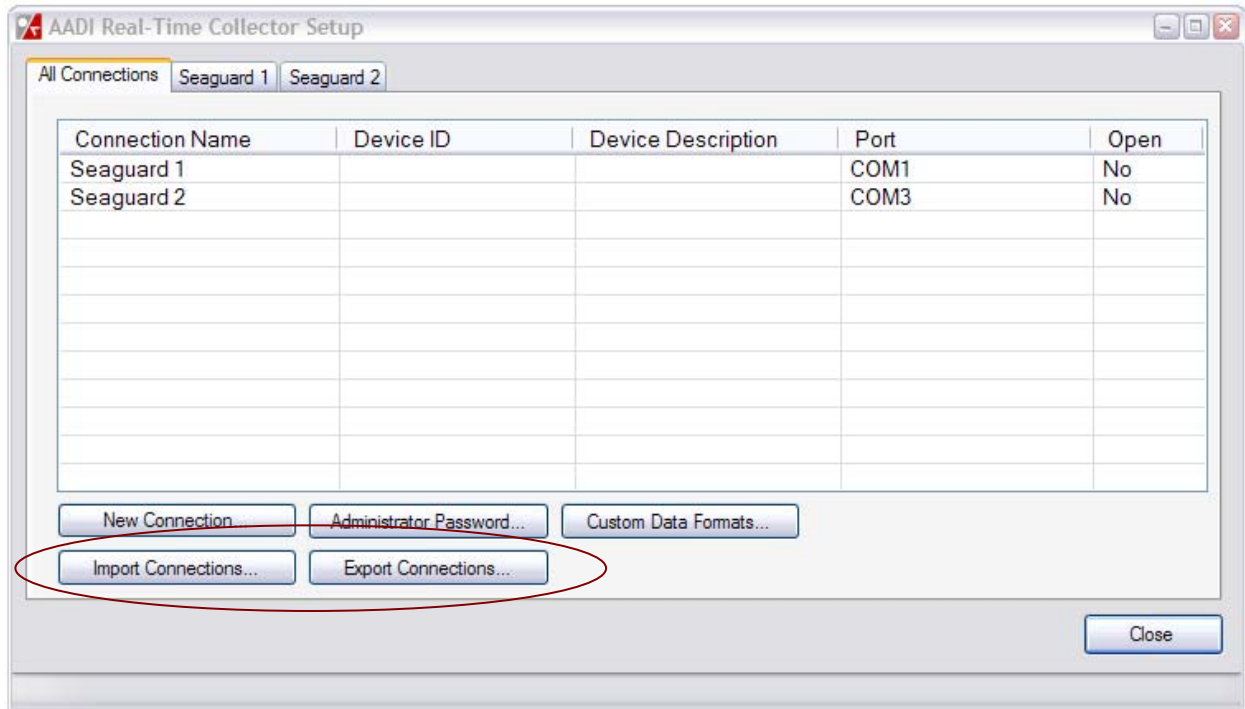The list of connection settings can be exported to a file by pressing the *Export Connections* button (Figure 4-16). This will create a file that contains the current list of connections, including for example port settings, custom format configuration and advanced settings.

Figure 4-16 Import and export connection settings

The exported file may be used as a backup of the settings at the current machine, but can also be used on other computers. Press the *Import Connections* button (Figure 4-16) to import a list of connection settings from file. The imported connection settings will be added to the end of the current list of connections, i.e. the existing connections will not be removed. Any imported connection that has the same name as an existing connection will be automatically renamed.

Each imported connection must be manually opened in order to start receiving data, even if the *Connection automatically on application startup* option is enabled.

If an imported connection is configured to use a custom data format that does not exist on the current computer, a warning will be given during the import process, and the connection will automatically be configured to use the defult AADI Real-Time Format. Make sure to first import any relevant custom data formats (CHAPTER XXXXXX) in order to avoid this situation.

Note!

Make sure that the port or network settings are correct for imported connections, even if the imported file was originally exported from the same computer. Serial port names may be changed by Windows at any time.

CHAPTER 5 Legacy AADI and custom data formats

Legacy AADI and custom data formats may be used to retrieve data from certain sensors and instruments that does not use the AADI Real-Time Output format.

The legacy AADI data formats have been designed specifically for certain older AADI instruments, and come pre-installed with the AADI Real-Time Collector.

Custom data formats may be designed by the user in order to retrieve data from other sensors or instruments. These formats must however adhere to the following requirements:

- A single data message (device measurement) must be a single line of ASCII data that ends in any of the three standard newline character sequences.
    - Line Feed (LF) – used in Unix, Linux, Max OS X and others.
    - Carriage Return + Line Feed (CR+LF) – used in Microsoft Windows, DOS, Symbian OS and others.
    - Carriage Return (CR) – used in Mac OS up to version 9, OS-9 and others.
- The elements of the data message (measurements, meta-data etc) must be delimited by any combination of *tabs, semicolons, colons, commas, spaces or asterisks*.

Using custom data formats is a two-step process. First the data format must be specified. This is only done once for a particular device format, and the resulting format specification can be used on more than on connection. This process is described in chapter 5.1.

The second step is to select the desired data format for a particular connection, and configure it for use. This also applies for the built-in legacy AADI data formats. The configuration process is described in chapter 5.3.

5.1 Edit the list of custom data formats

Click the *Custom Data Formats...* button in the Collector Setup Window (Figure 4-16) or right-click the Collector icon in the system tray and choose *Custom Data Formats...* (Figure 4-2) to open the *Custom Data Formats* window (Figure 5-1).
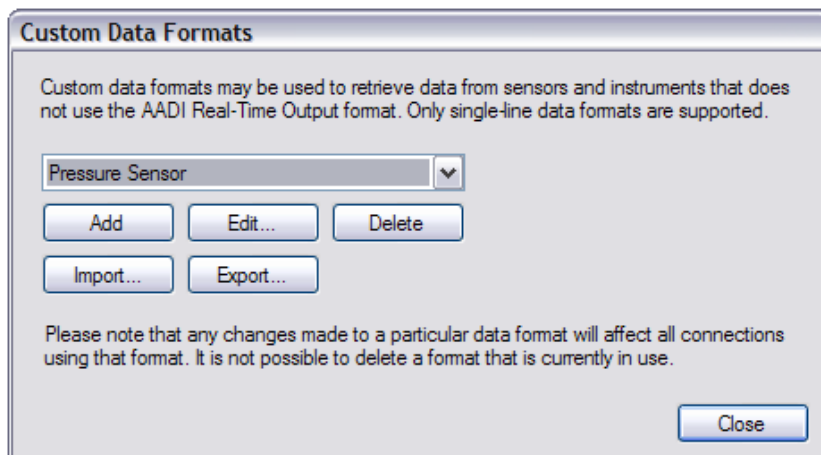
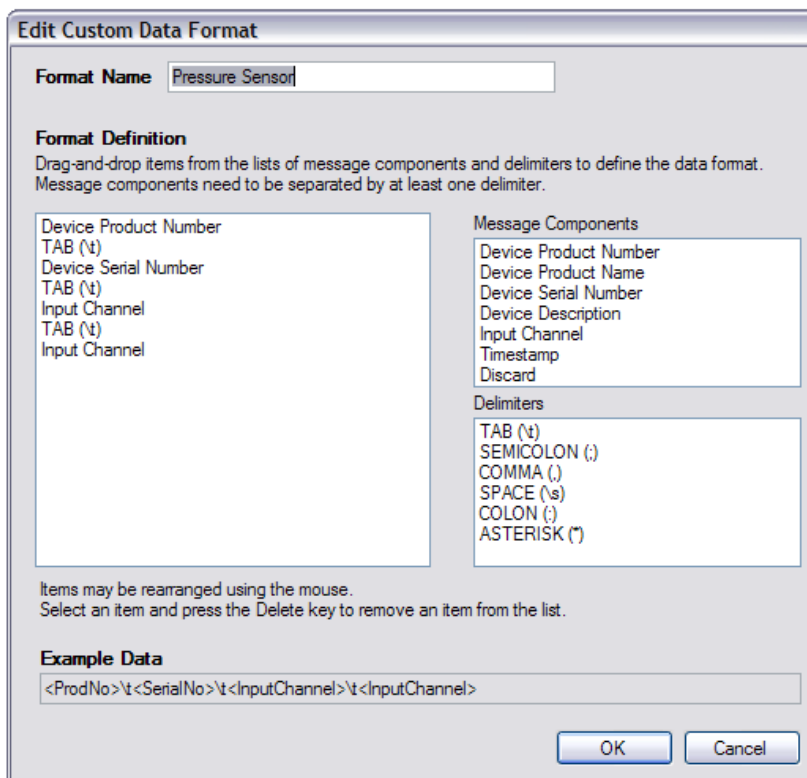

Figure 5-1 Custom data formats.

The drop-down list holds the current list of custom data formats. The first format in the list is selected by default when opening the window, e.g. the Pressure Sensor format in Figure 5-1. The built-in legacy AADI data formats cannot be modified or removed, and are thus not displayed in this list.

Press the *Add* button to add a new format. Give the format a suitable name. The *Edit Custom Data Format* window is automatically opened (described below).

Press the *Edit* button to edit the selected format using the *Edit Custom Data Format* window (described below). It is not possible to edit a format that is currently being used by one or more *open* connections. Formats that are being used only by *closed* connections can be edited, but a warning will be displayed.

Press the Delete button to delete the selected format. It is not possible to delete a format that is currently in use by one or more connections (either open or closed).

The *Edit Custom Data Format* window allows the user to edit a custom data format (Figure 5-2).

Figure 5-2 Edit Custom Data Format window.

The format name may be edited in the text box at the top of the window.

The larger list box to the left displays the elements that together make up a complete data message. The top-most element corresponds to the first (left-most) element in the data message.

To the right are two list boxes. The Message Components is a list of actual message components, while the Delimiters list holds the elements that simply separate the message components.

Drag-and-drop items from these two list to define the data format. Message components must always be separated by at least one delimiter. The *Device ProductNumber*, *Device Product Name*, *Device Serial Number* and *Device Description* components are used to match the corresponding metatada, if available. If this information is not provided by the device, the information may be added to each individual connection that uses this format (XXXXXX).

The *Input Channel* component matches actual data values from the device.

The *Discard* component matches any element in the data format that cannot be properly matched or that simply should not be saved, e.g. a description text or some other data that cannot be used.

Items in the format definition may be rearranged using the mouse (drag-and-drop inside the list box).

Select an item and press the Delete key on the computer keyboard to delete an item from the format definition.

The *Example Data* field in the bottom of the window shows an example string using the current setting.

Note!

The data format definition must match the output from the device exactly *in order to work.*

Press the *OK* button save the data format, or *Cancel* to discard your changes.

5.2 Import and export custom data formats

Press the Import button (Figure 5-1) to import a custom data format from a file. If the import is successful, the new format will be displayed in the format list.

Select a custom data format in the format list (Figure 5-1) and press *Export* to export the selected format to a file.

Exported formats can if necessary be transferred (by email, USB-stick etc.) to another computer and imported to an instance of the AADI Real-Time Collector running on that computer.

5.3 Configure a data format for use

Legacy AADI and custom data formats can be used by more than one connection, but they must always be individually configured for each connection. As described in chapter 4.4, select the desired data format in the connection setup window, and press the *Configure* button to open the configuration window (Figure 5-3).

Figure 5-3 Configure legacy AADI and custom data formats.

The *Product Number*, *Product Name*, *Serial Number* and *Description* of the device may be specified. This information will be included in the output from the Collector and might be useful in for example a display program or database. If the information is already included in the incoming data messages, the information provided here will be ignored.

The device type can be set to either *Standalone Sensor* or *Instrument with multiple sensors*. Choose the option that best describes the connected device. Choose standalone sensor if you are uncertain.

If the device type is set to instrument, the sensors connected to the instrument must be specified. Click *Add...* to add a new sensor (Figure 5-4). Note that all the fields (*Product Number*, *Product Name*, *Serial Number* and *Description*) must be specified for each sensor. Press OK to save the sensor specification. Add more sensors as required. Press the *Edit* button to modify, or the *Delete* button remove an existing sensor.

Figure 5-4 Add a new sensor.

The *Channel Properties* section in the lower part of the configuration window (Figure 5-3) contains the list of input channels for this particular data format. An input channel is defined as a single data value, such as a temperature, pressure or any other type of measurement.

For custom data formats, such as the Pressure Sensor format shown in Figure 5-3, the number of input channels is fixed in the format specification and cannot be changed.

For legacy AADI data formats however, the number of input channels must be specified. Type the appropriate number of channels in the text box and press *Update* to change the number of channels. The channel list below will be automatically updated to reflect the changes.

The channel list has four columns:

- *#* is the channel number (starting from 1). This number is only used to make reading the channel list easier. It is not used in the output from the Collector.

- *Input Channel (ID – Descr.)* is the ID and name/description of the input channel. This information may be edited by double clicking the channel (explained below).

- *Calculated Channel (ID – Descr.)* is the ID and name/description of the *calculated* channel. The calculated channel is disabled by default, but can be set to contain a value calculated/derived from the input channel. This information may be edited by double clicking the channel (explained below).

- *Sensor* is the sensor that this channel belongs to. Only relevant if the device type is set to instrument. This information may be edited by double clicking the channel (explained below).

5.3.1 Configure an input channel

Double click a channel in the channel list to edit the information for that particular input channel (Figure 5-5).

Figure 5-5 Configure an input channel.

If the device type has been set to instrument, the input channel must be assigned to one of the defined sensors. If the device type is set to standalone sensor, this option will be disabled.

The *Input Channel* section allows the user to add additional information about the channel, or disable the channel completely by un-checking the *Enable the input channel* checkbox.

Change the information here as required, or leave the fields blank if the information is not available.

- ID is used to identify this particular input channel in the output from the Collector. All input channels must have unique ID.

- Description is the name/description of the input channel, e.g. Pressure, Temperature or Salinity.

- Unit is the unit of the input channel, e.g. kPa, DegC or percent.

- Range Min is the minimum value (lower calibration limit) for this input channel.

- Range Max is the maximum value (higher calibration limit) for this input channel.

- Format is the output format of the channel value, e.g. %0.3f.

- Data Type is the data type of the channel value.

How much of this information that needs to be provided depends on where and how the data will be used. It is recommended to provide at least description and unit, but it is perfectly possible to leave all values except for the ID blank.

Note! For the built-in legacy AADI formats, some channel information is pre-configured and cannot be modified.

The Calculated Channel section allows the user to add an additional channel which is based on the input channel. This is useful in situations where the input channel contains raw data, and conversion to engineering units is required. The general channel information is specified as described above. The output value is calculated using the formula $M = C0 + C_1X + C_2X^2 + C_3X^3 + C_4X^4$, where C_0, C_1, C_2, C_3, C_4 are the calibration coefficients, and X is the raw data value (input channel).

The calculated channel may be enabled even if the input channel is disabled.

Press *OK* to save any changes, or *Cancel* to exit without saving changes.

Configure the rest of the channels as required. Press OK in the *Configure Data Format* window (Figure 5-3) to store the changes and return to the *Connection Setup* window. Open the port to start receiving data.

Verify that the data conversion from the original data format is working by checking the connection status, refer to CHAPTER 6 for details.

CHAPTER 6 Connection Status

Right click the AADI Real-Time Collector icon in the system tray and choose *Connection Status...* to view details about each available connection (Figure 6-1).
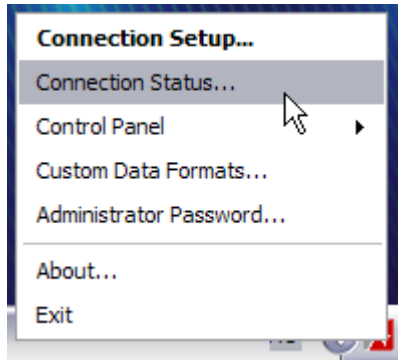
Figure 6-1 Opening the Connection Status window.

The Connection Status window lists all connections, along with the basic status for each connection:

- The *Connection name* is the name set by the user in connection setup.

- *Open* is *True* when the port is actually activated (opened), *False* if not.

- *Open Since* shows the date and time when the connection was activated (opened). That is since AADI Real-Time Collector was launched or the *Start* button pressed.

- *Messages* states the number of messages received since the connection was opened. The number will increment for each received message; the number can be used for easy confirmation of data reception trough the connection.

- *Connected Clients* show the number of client applications currently connected to the particular device connection.
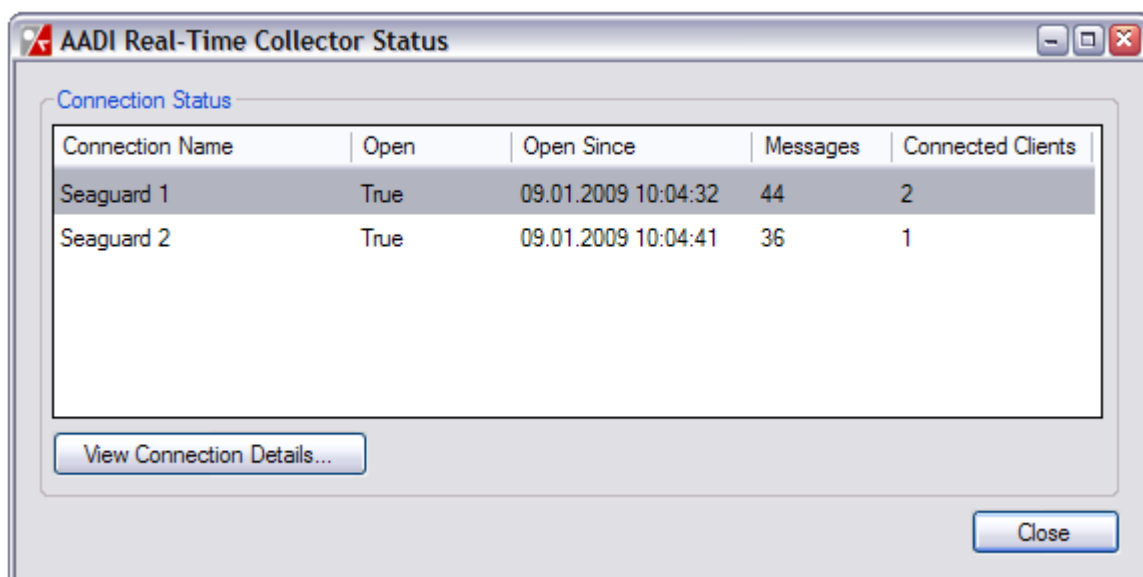
Figure 6-2 AADI Real-Time Collector Status.

Double-click a connection, or select a connection and press *View details*, in order to open a new window with detailed information about the selected connection.

The *Connection Details* window contains three tabs, called *Connection Details, Connected Clients* and *Port Communication Log* (Figure 6-3).

Figure 6-3 Connection details.

6.1 Connection Details tab

The Connection Details (Figure 6-3) tab is divided into three sections.

The *Connection Details* section lists some important information about the connection, e.g. the device ID, device description and product name.
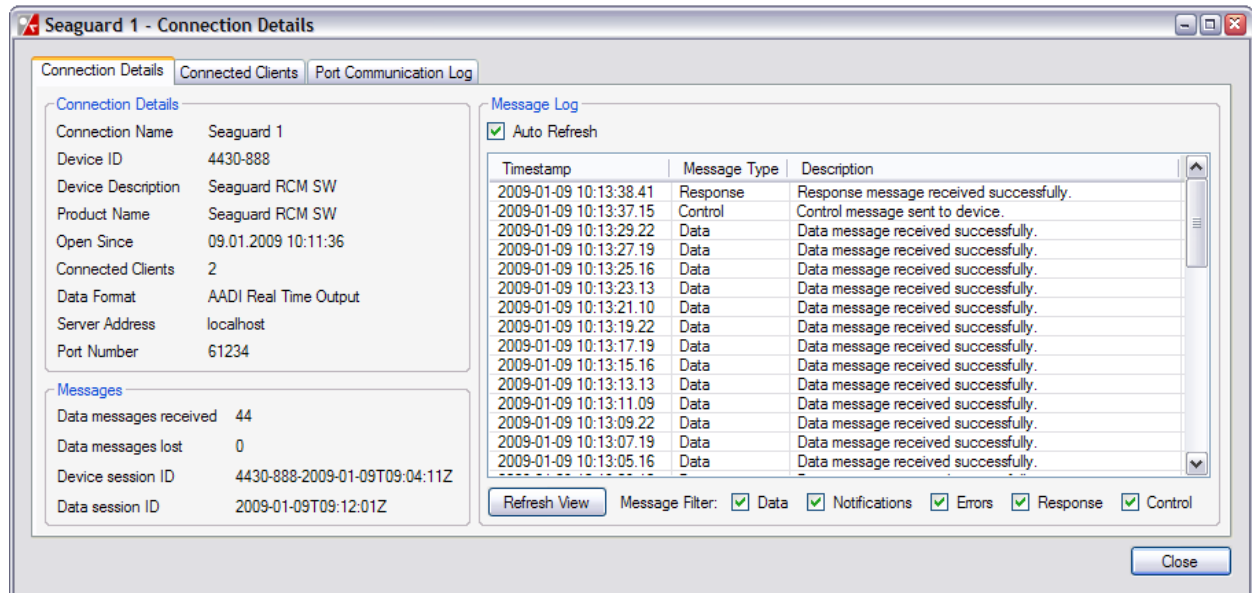
The *Messages* section lists the total number of received and lost messages, as well as the current device session ID and data session ID. Lost messages usually indicate that incoming messages are corrupted as a result of an unstable connection to the device. The retransmission mechanism discussed in chapter 4.9.2 can often reduce this problem significantly.

The *Message Log* section contains entries for the last 200 received messages (the log size can be changed in the Advanced Connection Settings dialog, refer chapter 4.9). Each entry has a timestamp, a message type and a status description. The log will also indicate if messages have been lost. Double click a log entry to view the full message, or error information in case of an error. Press *Refresh view* to update the message log.

When *Auto Refresh* is checked, the log is updated automatically as new messages arrive.

The log can be filtered by using the checkboxes below the message log. Uncheck the appropriate checkbox in order to hide messages of that type.

6.2 Connected Clients tab

The Connection Clients tab shows a list of currently connected clients (Figure 6-4). Clients may be both the built in control panel (CHAPTER 7), or user applications such as a display program.

Figure 6-4 Connected clients, e.g. user applications.

The client list contains the following details:

- *Name*: Optional name that the client application can choose to provide when connecting to the Collector.

- *Windows Login Name*: The Windows login name of the user controlling the connected application.

- *Internal IP Address*: The local IPv4 address of the computer where the connected client application is running.

- *Last Active*: Date and time when the client last contacted the collector.

- *Access Level*: The access level granted to the connected client application, e.g. 'User' or 'Administrator'.

Select a client in the list and press *Remove Selected Client* to forcefully disconnect the client from the Collector. This feature may be particularly usefull when custom designed user applications has exited or crashed without first un-subscribing from the Collector. Inactive clients are however eventually removed automatically (chapter 4.9.1).

6.3 Port Communication Log tab

The *Port Communication Log* tab shows a detailed log of the low level activity on the serial port or socket (Figure 6-5). Each log entry contains a timestamp and a short description of the entry.

The log will by default only show error messages. Verbose logging (as shown in Figure 6-5) may be enabled in the Advanced Settings for the connection (chapter 4.9.4).

**Figure 6-5 Port communication log with verbose output enabled in the Advanced Settings.**

When *Auto Refresh* is checked, the log is updated automatically as new log messages arrive. Press *Refresh View* to update the log manually.

CHAPTER 7 Using the Control Panel

The AADI Real-Time Control Panel allows a client to control the device recorder and to change the device configuration remotely. The Control Panel is built into the AADI Real-Time Collector and can be accessed from the icon in the System Tray. Choose *Control Panel* in the right-click menu, and select a connection name (Figure 7-1).
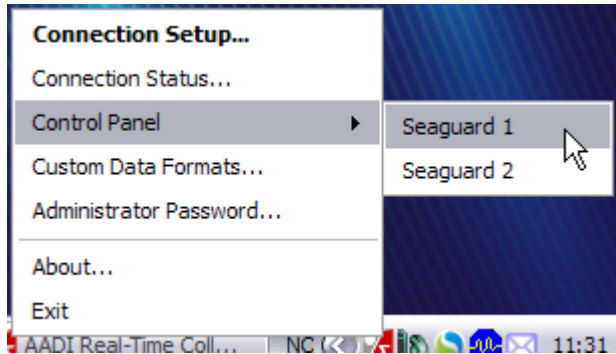
Figure 7-1 Opening the Control Panel

Note!

The Control Panel will only be available for devices that support the AADI Real-Time Output and the AADI Real-Time Control protocols.

In order to use the Control Panel, an open connection must exist between the Collector and the device at all times. The buttons in the Control Panel will automatically be disabled if the connection to the device is lost.

Please note that there will always be a slight delay when communicating with the device through the Control Panel. The length of this delay depends on the type of operation, and the baud rate used for the connection.

Also note that the Control Panel cannot be used if another client is connected to the Collector with Administrator privileges, refer chapter 4.10 and 6.2.

When the Control Panel is opened, it automatically attempts to read the recorder status from the connected device. If this operation is successful, the Control Panel is ready to use. If contact with the device cannot be established within a certain time, the operation will fail with an error message describing the problem.

The Control Panel is split into two tabs (Figure 7-2 and Figure 7-3). The *Recorder Panel* tab is described in chapter 7.1, and the *Device Configuration* tab in chapter 7.2.

7.1 Recorder Panel

The Recorder Panel (Figure 7-2) provides methods to directly control the device recorder.

Figure 7-2 Recorder Panel.

The current Recorder status can always be found in the top left part of the tab. This status is automatically updated as needed, but can be also be manually refreshed by using the *Refresh Status* button.

7.1.1 Starting and Stopping the Recorder

The recorder is started using the *Start Recorder* button. If the recorder is already running or armed (set to start at a later time), this button will be disabled.

Check *Start Now* to start recording immediately, or choose a later starting time by checking *Start Delayed* and setting the date and time from the drop down lists.

Check *Fixed Interval* and set a fixed recording interval in seconds, or check *Script* and select one of the preconfigured timing sequences. Refer to chapter 7.2 for instructions on how to edit these sequences.

When the recorder is running or armed, it can be stopped using the *Stop Recorder* button.

7.1.2 System Status

Press the *System Status* button to view information about the device, e.g. battery capacity and available space on the SD memory card.

7.2 Device Configuration

The second tab in the Control Panel provides full access to the device configuration (Figure 7-3).

Figure 7-3 Device Configuration

The device configuration is divided into three categories; Deployment Settings, System Configuration and User Maintenance.

The *Deployment Settings* category is configured by the user based on the specific site and usage of the instrument on that site. Typical properties that are modified are recording interval, which sensors to include and data storage.

The *System Configuration* is configured by the user based on the application of the system. Typical properties that are modified are enable/disable extended data, number of pings (DCS) and number of samples (WTS).

The *User Maintenance* category is configured on the production site, but can also be modified by a trained user if necessary. Typical properties in this category are calibration settings.

7.2.1 Changing the Device Configuration

In order to secure proper operation, the current device configuration must always be fetched from the device before any configuration changes can be made.

Press *Get Configuration* to retrieve the current configuration from the device. This operation will fetch the settings from the *Deployment Settings* category and the *System Configuration* category. Check the *Include User Maintenance Settings* checkbox in order to also fetch the settings from the *User Maintenance* category. Type the correct password in the dialog box that appears as the *Get Configuration* button is pressed. The password is *1000*.

Note!

The recorder must be stopped prior to changing settings. Press Stop Recorder *in the* Recorder Panel, *(Figure 7-2). Press* Start Recorder *to restart the recordings when the configuration is completed.*

Refer to the instrument operating manual for further information on how to configure the device.

Press *View Node Information* to open a new window with basic information about all device nodes and connected sensors.

Press *Save To File* to save the current device configuration to a file on the computer.

Some settings in the system configuration and the user maintenance will influence the minimum recording interval. Ensure that the recording interval is as expected before you start recording. Refer to the instrument operating manual for more details.

The configuration can be changed in one category (e.g. *Deployment Settings*) at a time. Press the corresponding button to start the configuration process.

A new dialog opens, where you are given the choice to either run a configuration wizard, which steps through all settings for the available nodes, or to manually select which node to configure. An example of this dialog can be seen in Figure 7-4. Please note that the selection of available nodes and sensors will vary depending on the type of device, and which sensors that are connected to it.
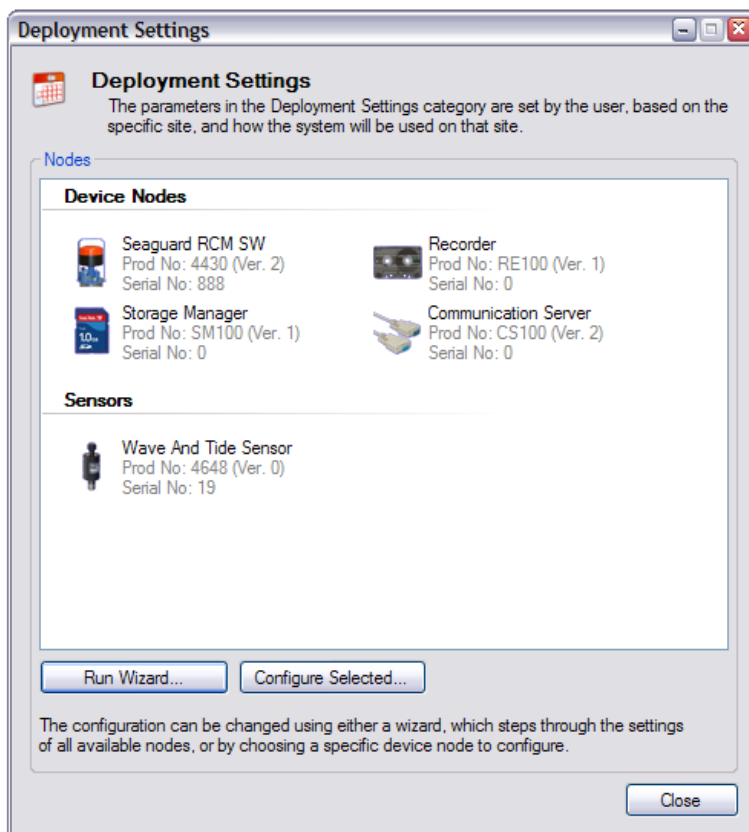
Figure 7-4 Example of the Deployment Settings window.

Using the Wizard, you can either step through the available nodes using the *Next* and *Back* buttons, or by clicking on the corresponding icons in the toolbar to the left in the wizard dialog (Figure 7-5).
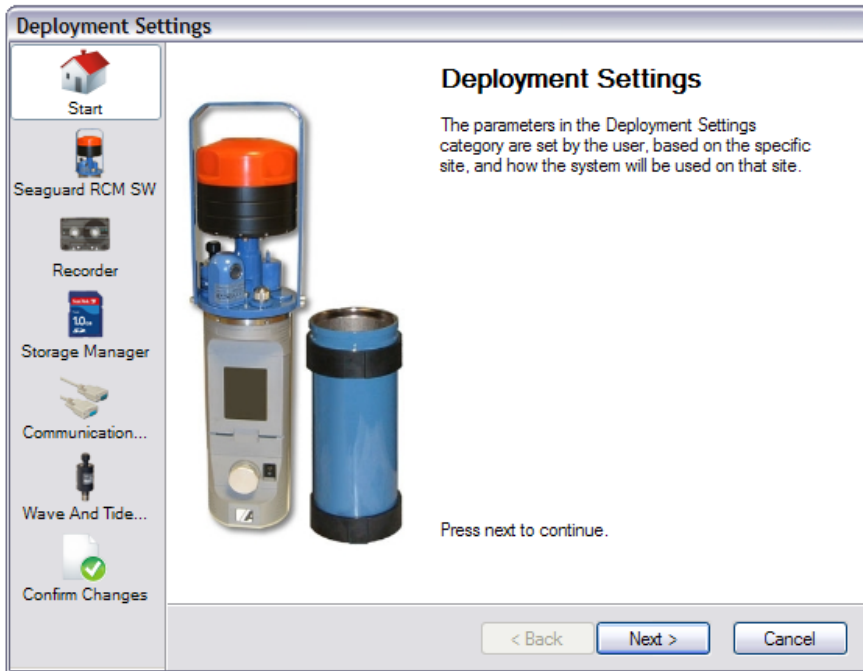
Figure 7-5 Example of Deployment Settings wizard.

Before sending the new configuration to the device, you are asked to confirm the changes (Figure 7-6). Use the *Back* button or click on the icons to the left if you wish to revise any of the changes.
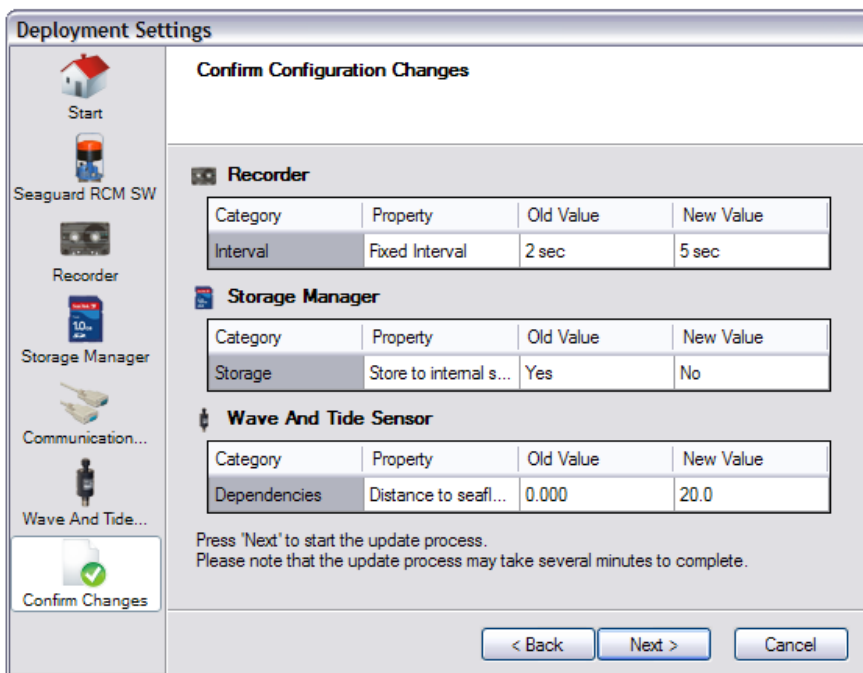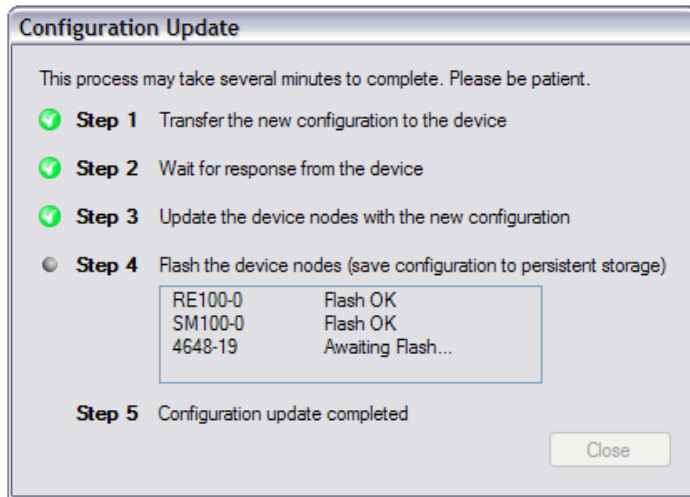

Figure 7-6 Confirm configuration changes.

Press the *Next* button when you are certain that all changes are correct. This will start the update process. A new window shows how the update process is proceeding (Figure 7-7).

Figure 7-7 Configuration update process.

Note!

The update process may take several minutes, and cannot be cancelled by the user. Please be patient!

Wait until the *Configuration Update* window shows that the update process is completed, and the *Close* button is enabled. Press the *Close* button to return to the Settings dialog. The device is now ready for another configuration update, if necessary.

If you get an error message during the update process (e.g. the connection to the device is lost) the update process will automatically be cancelled. When this happens, the recorder status must be manually refreshed using the *Refresh Status* button in the *Recorder Panel* and the current configuration must again be fetched from the device, before it is possible to again attempt to change the configuration. This procedure is necessary to ensure proper device operation.

CHAPTER 8 Saved messages – folder overview

If file output is enabled in the advanced settings dialog (chapter 4.9.5), the data messages are stored in a directory set by the user.

The most recent messages (50) are stored in a subdirectory named *Current* (Figure 8-1).
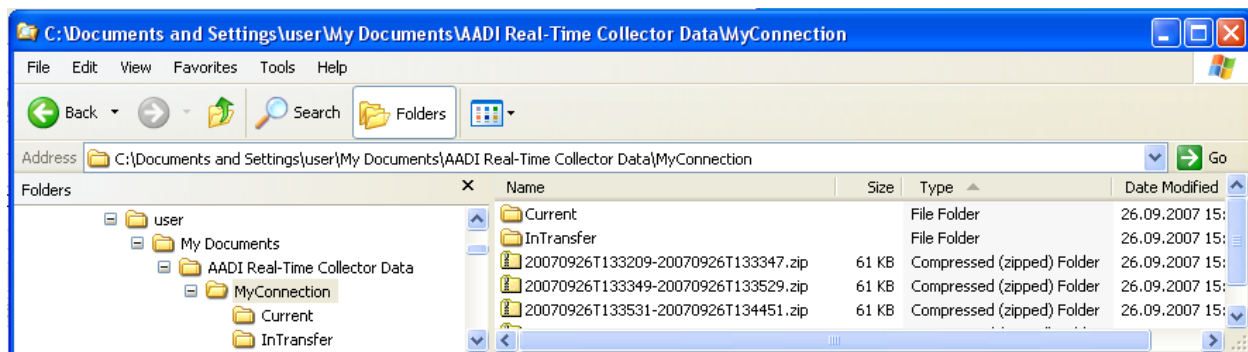
Figure 8-1 Folder overview.

As the number of files exceeds the maximum limit the oldest files are moved to a folder named *InTransfer* (temporary directory). As the number of files in *InTransfer* reaches 50, the entire content is compressed to a zip file with a name equal to the timestamp for the oldest and the most recent file, e.g. *20070921T132842-20070921T133019.zip* (Figure 8-1).

Open a file in a web browser or another XML capable program to view the XML formatted data.

As described in chapter 4.9.5, the option also exists to repeatedly save the last message to a single file. This file may be used as a data source for continuous updates of a web page or similar application displaying the latest data from the device.

One way of utilizing the file is by applying a style sheet to the data as described in chapter 4.9.5.

8.1 Utilizing the 'last received data' file – getting-started example

The following example provides a quick start option for a user who wants to view real-time data from the device. It also serves to illustrate the style sheet technology as an effective way to display real-time information.

Applying the example style sheet distributed with the installation may be done as follows:

- Stop the connection you want to use.

- Locate the application folder for AADI Real-Time Collector on your computer (typically C:\Program Files\AADI\AADI Real-Time Collector), and open the *Stylesheet* sub folder .

- Copy the content of the *Stylesheet* sub folder to the base directory where the last message file is stored (Figure 4-14).

- One of the files you just copied is named *stylesheet.xslt* (or a similar name ending with .xslt). Type or copy that file name into the style sheet reference field in *Advanced Settings* dialog (chapter 4.9.5).

- Restart the connection.

- Wait until new data has arrived from the device.

- Then double-click the last message xml-file (e.g. MyConnection.xml) as shown in Figure 8-2, and the data will appear in the web browser (Figure 8-3).

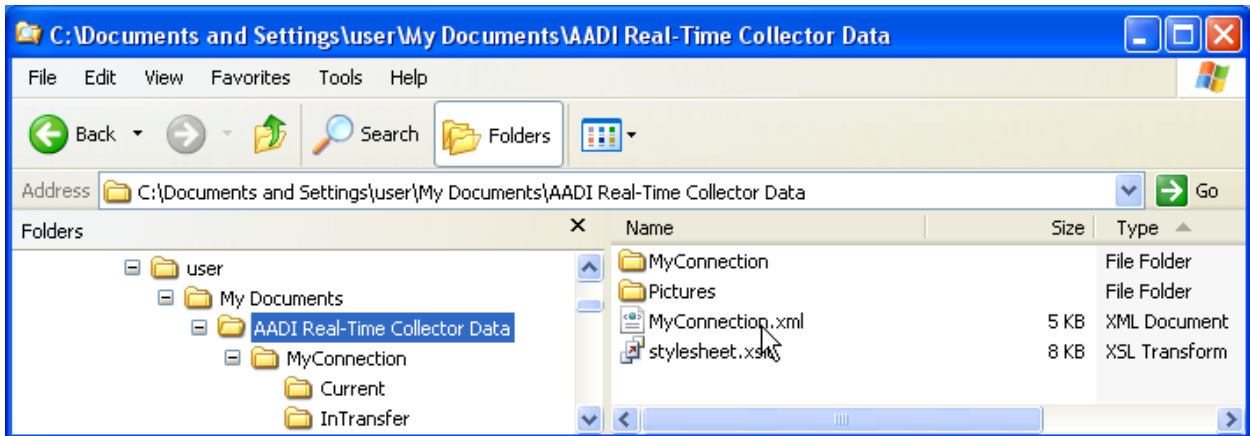- Use the refresh button to update the page with the latest data.

Figure 8-2 Locate MyConnection.xml.

Figure 8-3 Viewing the xml file by using a style sheet to format the output.