

## USER'S GUIDE

### Vaisala Observation Display for AWS330



PUBLISHED BY

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# CHAPTER 1

## GENERAL INFORMATION

This chapter provides general notes for the manual and the Vaisala Observation Display software.

### About This Manual

#### Contents of This Manual

This manual consists of the following chapters:

- Chapter 1 provides general notes for the Vaisala Observation Display software.
- Chapter 2 gives an overview of the application.
- Chapter 3 gives instructions on setting up the application and the PC.
- Chapter 4 contains information for configuring the application.
- Chapter 5 includes instructions for real-time display, terminal window and event log.
- Chapter 6 contains basic troubleshooting advice.
- Appendix contains instructions on how to use the software with Vaisala Automatic Weather Station AWS330.

## Version Information

**Table 1** Manual Revisions

Manual Code	Description
M211326EN-A	First version of this manual.

## Related Manuals

**Table 2** Related Manuals

Manual Code	Manual Name
M211296EN	Vaisala Automatic Weather Station AWS330 User's Guide

## Documentation Conventions

Throughout the manual, important safety considerations are highlighted as follows:

**WARNING**

Warning alerts you to a serious hazard. If you do not read and follow instructions very carefully at this point, there is a risk of injury or even death.

**CAUTION**

Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

**NOTE**

Note highlights important information on using the product.

## Recycling



Recycle all applicable material.



Dispose of batteries and the unit according to statutory regulations. Do not dispose of with regular household refuse.

## Trademarks

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## Warranty

For certain products Vaisala normally gives a limited one-year warranty. Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

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# CHAPTER 2

## PRODUCT OVERVIEW

This chapter gives an overview of the application.

### Introduction

Vaisala Observation Display is a PC software application intended for displaying and storing meteorological and environmental measurement data. The software can be used as a weather station data display.

### Software Components

The software consists of two components:

- Observation Display background service, which starts automatically whenever the host PC is started.
- User interface application, which can be opened from the Windows **Start** menu or desktop icon.

The background service is transparent to the user. It handles all automatic tasks: communications to the AWS, passing data to the user interface process, validating and logging incoming data, and so on.

The user interface provides possibilities to monitor and configure data processing. Having a separate background service process guarantees that the user does not accidentally terminate data collection process by closing the user interface.

## System Requirements and Restrictions

Vaisala Observation Display can be used with any of the following Windows® operating systems: XP, 2003 Server, 2008 Server, Vista, and Windows 7.

The PC should have at least 512 MB of free memory, a 2.0 GHz processor, and a CD drive. The PC should have at least 512 MB of free memory, a 2.0 GHz processor, and 10 MB of free hard disk space. Hard disk space requirement depends on the amount of data to be stored in the system.

Vaisala Observation Display is designed to support data collection from one weather station only.

## CHAPTER 3

# INSTALLATION

This chapter helps you to install and configure the software and provides a checklist for suggested operating system settings.

## Recommended Operating System Settings

To guarantee the best operation, check the following settings from the **Control Panel** before installing software. Please note that these settings apply to the Windows XP operating system. In other operating systems, the instructions may be different.

### Windows User Accounts

The application must be installed on a user account that has administrative rights on the computer.

Administrative rights are only required during initial setup. After that, the application can be operated by users who only have the default Windows user level rights.

User Account Control (Windows Vista, Windows 7 only) should be set to the "Never Notify" setting. Change the setting from **User Accounts - Change User Account Control Settings**.

### Operating System Updates

The software has been tested with the latest operating system versions at the time of the shipping. However, future operating system updates might conflict with the installed software version.

It is advisable to update the PC with the latest service packs before running the setup procedure. If the computer is dedicated for data collection only, it may be advisable to turn off automatic operating system updates.

## System Time

It is recommended that you adjust the PC and the weather station clocks to the same time zone. Usually, universal coordinated time (UTC) time is used instead of local time in all meteorological reports. In this case, the PC is set to UTC time zone, too.

If you wish to use local time in the PC and UTC time in the weather station, please see section Graphs on page 20 for separate instructions on how to adjust real-time graphs on the display.

Adjusting PC time zone:

1. From **Control Panel**, select **Date and Time**.
2. From the **Time Zone** tab, verify that the computer clock is set to UTC time and that the daylight savings option is **not** selected.

## Power Options

Power Options are under **Control Panel**. Check that the PC never turns off hard disks, never enters standby state, and never goes to hibernation.

## Firewall and Virus Checking

Anti-virus programs may interfere with the application. If this happens, you should adjust the anti-virus programs so that the installation directory is not checked.

If data is received via TCP/IP connection, the PC firewall should be configured to allow communications to and from the weather station.

## Network Options

Unless otherwise specified, use the default settings:

1. Select **Network Connections**.
2. Select **Internet Protocol**.
3. Click **Properties**.
4. In the dialog that opens, make sure that "Obtain IP address automatically" has been selected. If your network administrator has provided the PC with a specific IP address, subnet mask, and default gateway, make sure that they are configured correctly.

See also Chapter 5, Administrator's Guide, on page 27 regarding the configuration and testing of communications with automatic weather station.

## Keyboard

If the computer keyboard contains special characters that do not appear on the screen, select local keyboard from **Control Panel - Regional and Language Options - Languages - Details**.

# Installation Procedure

## Preparing for Installation

Before you install the software, ensure that the AWS installation has been completed. You should be able to connect to and receive data messages from the AWS with terminal software (for example, HyperTerminal).

Microsoft .Net Framework v. 3.5 should be installed on the computer. Usually, this module comes with the operating system. If the module is missing for some reason, installation of Vaisala Observation Display fails. You can verify that the .Net Framework has been installed from the Add/Remove Programs dialog in the **Control Panel**. In case that the module is missing, the latest version can be set up from the installation CD.

Check that the operating system uses the settings described in section Recommended Operating System Settings on page 9.

## Software Setup

Insert then Observation Display installation CD into the PC. Using Windows Explorer, navigate into the **setup** directory. Double-click file **SetUp.msi** to initiate the setup procedure.

The setup wizard guides you during the installation. Follow the instructions of the wizard to complete the setup.

## Verification

Select **All Programs - Vaisala - Observation Display** from the **Start** menu. The main application window should open on the screen. You should also see the startup icon on the desktop.

Vaisala Background Service should be visible in the **Control Panel - Administrative Tools - Services** pane.

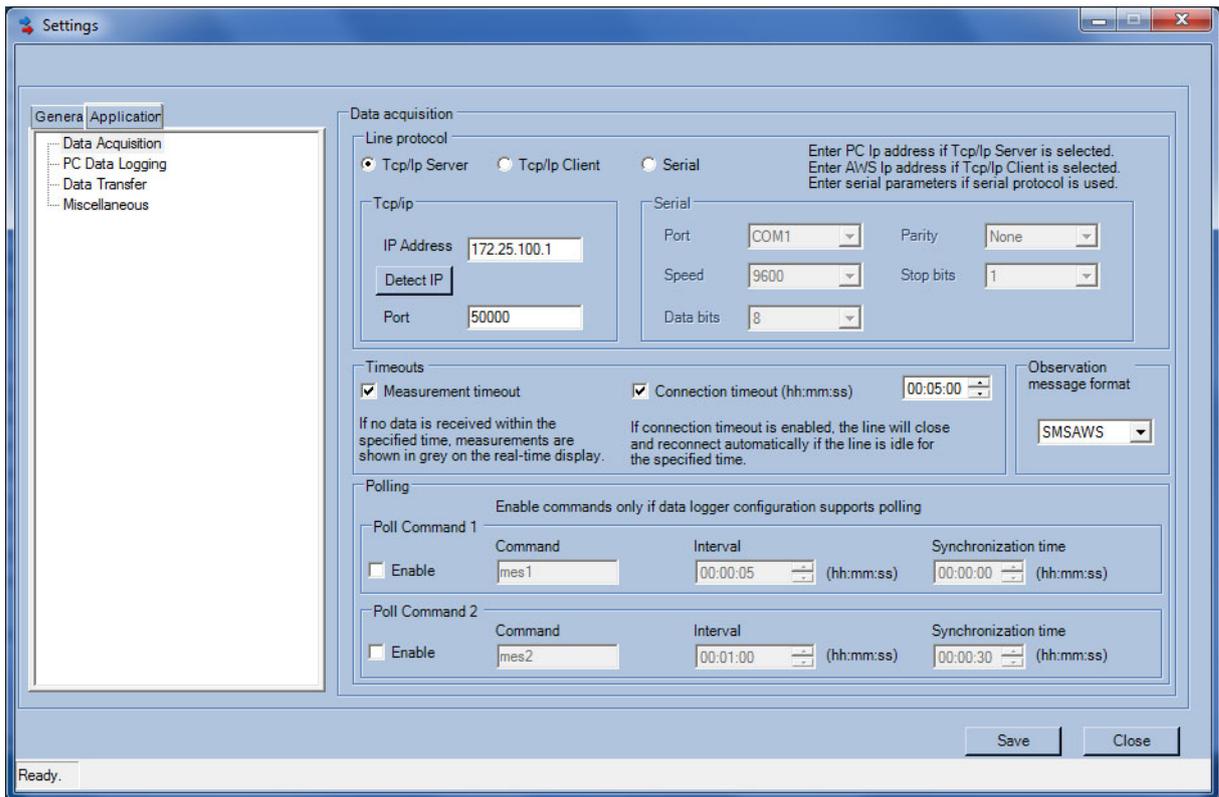
## After Installation

### Receiving Data from AWS

The software is shipped with a default configuration that corresponds to the generic weather station settings. However, the default configuration may require setting the station-dependent parameters.

Below is a proposed task list of minimum post-installation configuration steps.

1. Log in as administrator. From the main menu, select **System - Log In as Administrator**. (See Chapter 5, Administrator's Guide, on page 27.)
2. From the main menu, select **View - Settings**. A configuration dialog opens. Select the **Application** tab and select sub-item **Communications** from the left.
3. Depending on your AWS set-up, select either TCP/IP server, TCP/IP client, or serial line protocol. Make sure that the communications parameters match with the AWS settings. If the AWS is sending data using TCP/IP, enable the TCP/IP server option and enter the local IP address. If AWS is operating as TCP/IP server, enter its IP address. If serial communications are used, select serial port and line parameters.
4. Click the **Save** button to save the settings.



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**Figure 1 Communications Settings**

- From the left side list, select item "Miscellaneous". In the screen that opens, select option "Open connection automatically." Click **Save** and exit the dialog by clicking the **Close** button.
- AWS data values should now appear on the main display. You should also see the incoming messages on the terminal window; select **View - Terminal** from the main menu. If necessary, adjust the communications parameters.

## Miscellaneous

### Uninstallation

Observation Display can be uninstalled using the **Add or Remove Programs** dialog in the Windows **Control Panel**. Note that uninstallation does not delete observation data files or application configuration files. These are left into the installation directory. To make a full uninstallation, you have to delete the files manually.

### Command Prompt Setup Procedure

Alternatively, Observation Display can be uninstalled and installed using the Windows command prompt.

The following command installs the application without any dialogs:

```
MSIEXEC.EXE /I C:\setup\SetUp.msi /QB- /LWAMOE C:\setup\install.log  
ALLUSERS=1
```

The software is installed into the default directory using default settings. It is assumed that the installation package has been copied into directory C:\setup. A log of the installation is generated into the same directory.

The following command uninstalls the application silently without any dialogs:

```
MSIEXEC.EXE /Q /x {95161421-79E0-4997-B14F-021C9C8A5D26}
```

The commands can be saved into a batch file, reducing work in mass installations.

# CHAPTER 4

## BASIC FEATURES

This chapter contains information for configuring the application.

### User Roles

#### General

Vaisala Observation Display supports two separate user roles: administrator and observer.

A user logged in as **administrator** can change all configuration settings and use all functions in the application. The administrator role is password-protected.

When the user is logged in as **observer**, the configuration settings cannot be modified. Normally, users log in as observers because configuration settings do not need to be modified after the initial installation.

Current user role is shown on the status bar at the lower right corner of the main display.

Note that these user roles are internal to the Observation Display and are not in any way related to the operating system user accounts.

#### Logging in as Observer

The observer role is activated by default at startup. To switch back from administrator into the observer role without restarting the application, select "Logout as administrator" from the **System** menu.

## Data Collection

Data collection is handled by a separate Windows background service ("Vaisala Observation Display Service"). The service starts automatically whenever the computer is restarted, even if no one logs into Windows.

If the administrator has configured data collection to start automatically, the background service opens the AWS connection and starts processing data. When the Observation Display user interface is started, the background service passes the AWS data to the user interface.

## Observation Time Series

Each data message from the AWS contains one or more observation variable values (for example, 1-minute average air temperature reading). Observation Display displays the latest variable values and stores them into ASCII files for later use.

The observation time is saved together with the value of the observation variable. The observation time is set by the AWS.

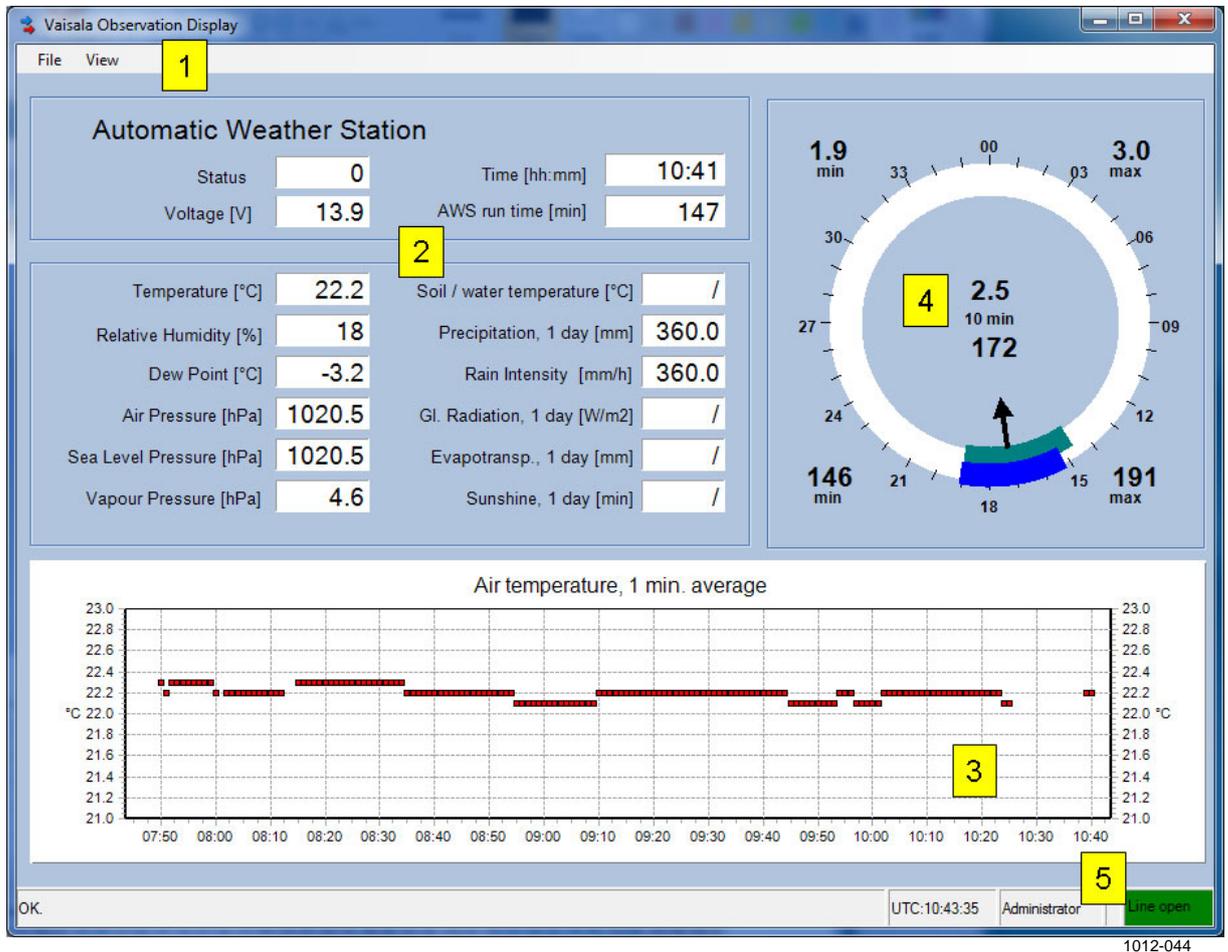
The sequence of observation variable values forms an *observation time series*. You can visualize the various time series using either the real-time graph display or the **View - History** dialog.

Note that the observation values shown are not necessarily direct sensor readings. Instead, they have been processed by the weather station.

By default, all variables are stored and displayed using the same engineering unit that AWS uses. However, it is possible to define unit conversions on the user interface (such as displaying wind speed in knots).

## Main User Interface

A sample of the main user interface displaying the real-time data is shown in Figure 2 below.



**Figure 2 Main User Interface**

The following numbers refer to Figure 2 above:

- 1 = Menu bar, which contains operating commands
- 2 = Text section, which shows the latest measurement values
- 3 = Graph section, which contains configurable graphs
- 4 = Wind display component
- 5 = Status bar, which displays UTC time, current user, and status of the communications line

The display is highly configurable. An administrator user may completely change the layout and all settings of display elements. An observer user can modify some of the display settings.

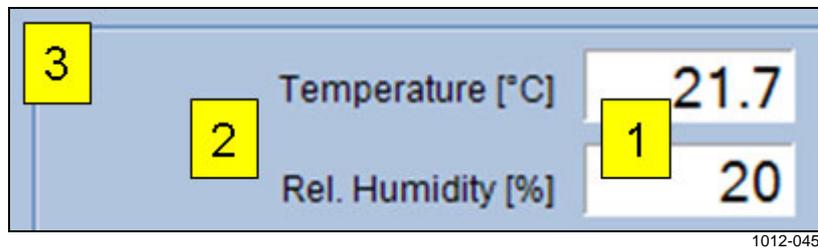
## Text Boxes, Text Labels, and Groups

A *text box* displays the latest value of an observation variable. An empty text box indicates that no data has been received. If AWS has been unable to measure or calculate the value, a missing data symbol (///) is shown.

If measurement timeouts are being used, text boxes turn gray if no new data is received within the timeout period.

If an alarm is active, the text box background is shown in yellow.

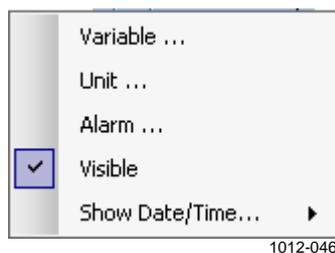
*Text label* is a fixed string shown on the screen. Text boxes and labels have been organized into *groups* to help navigation within the display.



**Figure 3** Text Boxes (1), Labels (2), and Enclosing Group (3)

## Text Box Settings

All text box configuration settings can be accessed by right-clicking the mouse on the box. Note that some settings are available to the administrator only.



**Figure 4** Text Box Settings

**Variables:** Selects the variable to display in the text box. Requires logging in as administrator.

**Unit:** Configures automatic engineering unit conversion for the displayed variable. Note that the conversion has only effect within the text box.

**Alarm:** Configures a visual and/or audible alarm to take place whenever the variable value exceeds the reset limits. Alarm configuration is described in detail in section Alarms below.

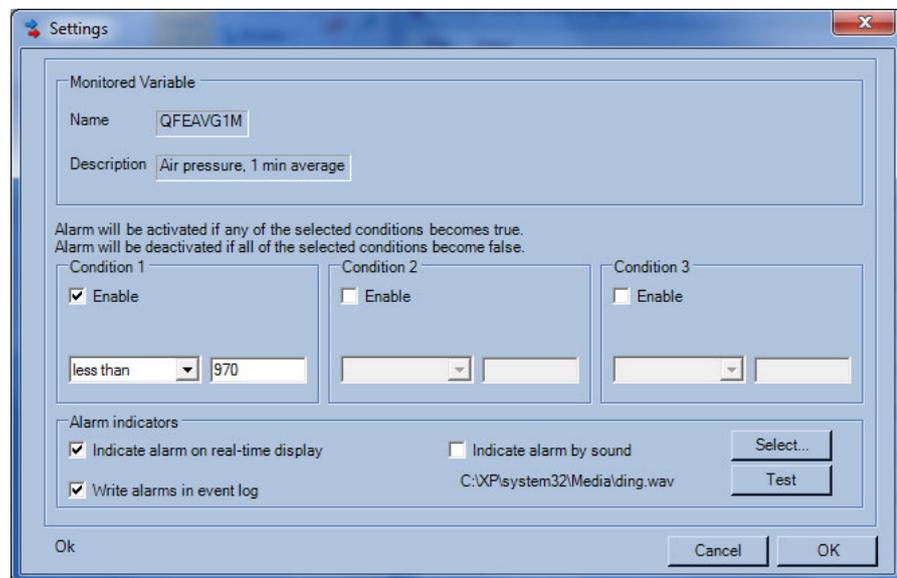
**Visible:** Hides/shows the text box.

**Show Date/Time:** Configures text box to display either PC time or observation time.

## Alarms

You can enter the alarm configuration dialog by right-clicking a text box.

Alarm configuration dialog can be entered by right-clicking a text box and selecting **Alarm**.



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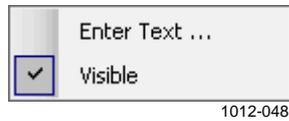
**Figure 5** Alarms Configuration

Up to three separate alarm conditions can be configured. If any of the conditions set in the alarm is fulfilled, the alarm starts. Once none of the conditions are met, the alarm stops.

An alarm is indicated in real-time display, by sound or in writing in the event log.

## Text Label Settings

You can configure text labels by using the following pop-up menu:



**Figure 6** Text Label Settings

**Enter Text:** Changes the text shown in the label.

**Visible:** Hides/shows the text label.

## Graphs

The real-time graph displays up to 48 hours of observation data. Each graph can contain one to six time series. You can access all graph settings by right-clicking the mouse. Note that some settings are available to administrator only.



**Figure 7** Graph Settings

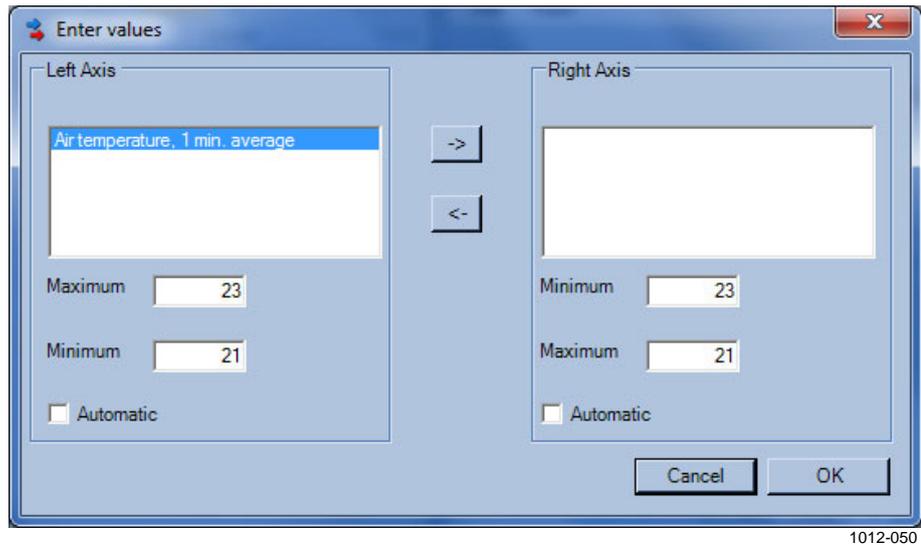
**Variables:** Selects the variables to display. The graph supports up to six different variables.

**Line Width:** Width of the line that connects the measurement points.

**Marker Size:** Size of the marker dot on top of each measurement point.

**Y-Axis:** This setting allows you to adjust the Y-axis settings. The graph supports both automatic and manual scaling. When automatic scaling is used, the graph adjusts maximum and minimum values so that all data values within the graph are visible. When manual scaling is used, you can set maximum and minimum values.

The left and the right Y-axis can be configured to use different scales.



**Figure 8 Example Y-Axis Configuration**

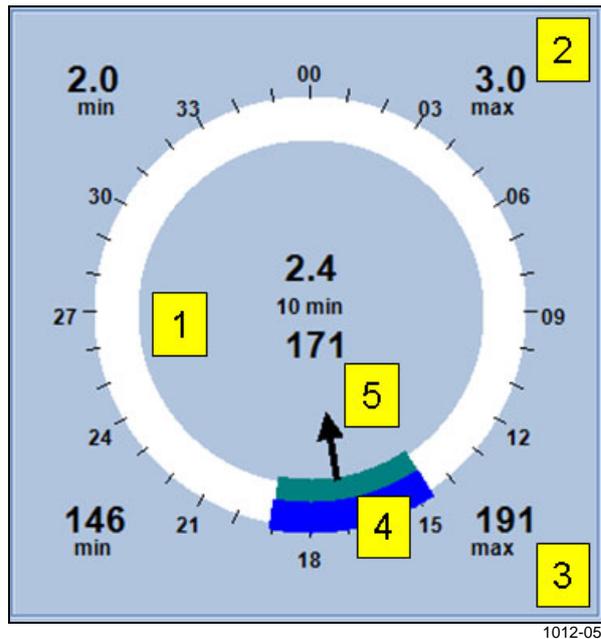
**X-Axis Length:** Allows the user to manually set X-axis length.

**Time Settings:** Allows shifting of the measurement time (X-coordinate) by a constant value. This setting can be used to display graph in local time while having the AWS operate in UTC time. The setting only affects the graph.

## Wind Display Element

The wind display module shows minimum, maximum, and average wind values. The time span of the wind measurement (10 min/2 min/instant) is user-selectable.

Wind display element may optionally contain a ship image (maritime systems) or a runway image (airport/heliport systems).



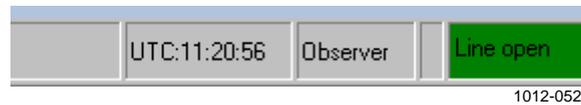
**Figure 9** Wind Display

The following numbers refer to Figure 9 above:

- 1 = Average wind speed and direction in the center
- 2 = Minimum and maximum speed on the top left and right corners
- 3 = Minimum and maximum directions in the bottom left and right corners
- 4 = Variations of 2-minute (inner arc) and 10-minute (outer arc) wind direction values. Both variation arcs are always shown, regardless of selected time span
- 5 = Wind direction arrow, which indicates the direction *from which* the wind is blowing

## Status Bar

The status bar is shown at the bottom of the main screen. It contains various status indicators.



**Figure 10 Status Bar**

In the rightmost corner, the communications line status is shown. The status turns green if the communications line is open and red if the connection is closed. Note that the line may be open (the application has connected to a PC serial port), but data may still be missing (AWS cannot send data due to a power failure).

Line Protocol	Meaning of "Line Open"
TCP/IP Client	Application has connected to external TCP/IP server.
TCP/IP Server	Application has started internal TCP/IP server and is waiting for an external client to connect.
Serial	Application has connected to serial port.

To the left, the status bar indicates the role of the user (observer or administrator). Next to the status bar, current UTC time is shown.

# View Menu Commands

## Settings

Opens a window for setting configuration. Only available to an administrator.

## Terminal

The terminal window can be opened from the **View** menu. The window shows the messages exchanged between the PC and the AWS.

In the bottom of the window, the AWS communications parameters are shown. Note that these values can only be changed by the administrator, from the **Settings - General Settings - Communications** display.

If the communication link to the AWS is closed, you can initiate it by clicking the **Start** button. The connection should open within a few seconds.

The connection remains open as long as you manually close it by clicking the **Stop** button. If the connection is temporarily broken (for example, the communications cable has been disconnected for a while), it resumes automatically after a few seconds.

The administrator may configure the connection to open automatically whenever Observation Display is started. Note that the terminal window does not allow direct user-typed input from the keyboard.

The terminal menu settings are:

**Connection - Connect.** Opens a connection to the AWS.

**Connection - Disconnect.** Closes the AWS connection.

**Connection - Capture.** The submenu commands of Capture can be used to make a capture log of the terminal window. These menu items only become visible when the connection has been opened.

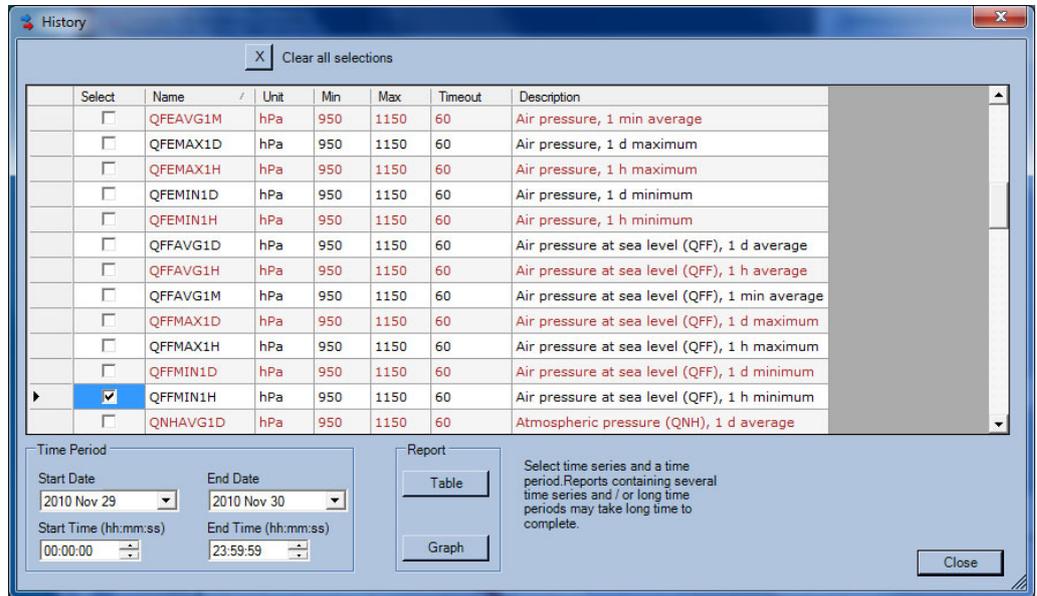
**Command - Synchronize clocks.** Immediately synchronizes AWS clock with PC clock.

**Command - Synchronize parameters.** Sets the following AWS parameters: station name, station altitude, and pressure sensor height.

**Command - Reset AWS.** Resets the AWS immediately.

## History Reports

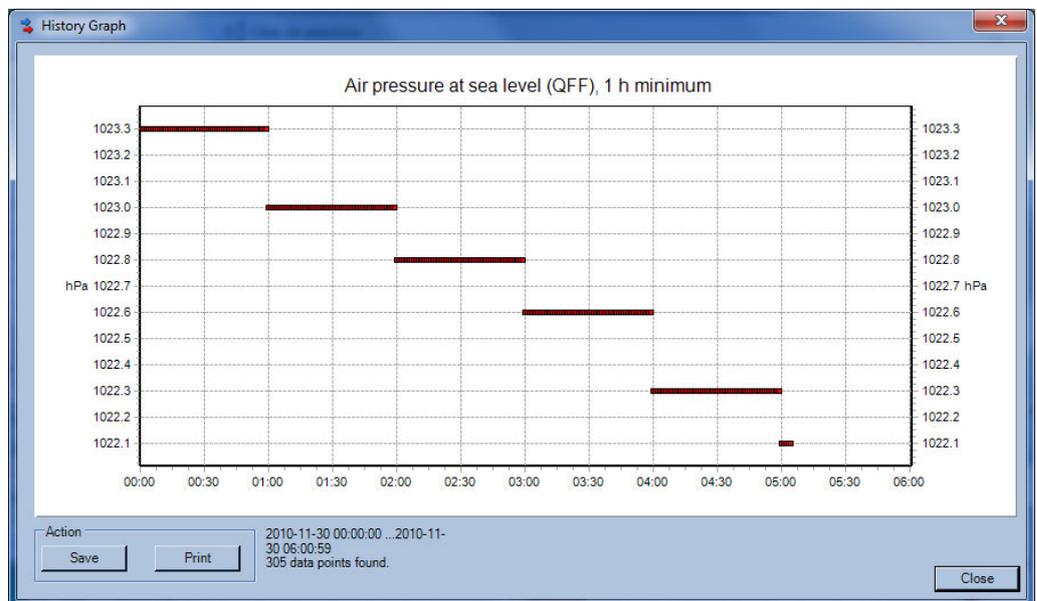
Use the **History** command to make reports of the observation data.



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**Figure 11** Creating History Report

When the **History** command is selected, a variable selection dialog is shown. Select one or more variables, start and end time, and click the **Table** or **Graph** button to generate a tabular or graphical report.



1012-054

**Figure 12** Selecting Variables for History Report

Note that very large reports (more than 10 000 data points) may take a long time to complete.

## Data Archive

Data archive is made of ASCII log files. Each log file contains AWS variables that have been selected for the logging. Please see Chapter 5, Administrator's Guide, on page 27 for data archive settings.

## Event Log

The event log window displays the following events:

- Application start and stop
- AWS clock synchronization events
- System errors

Note that some special non-printing characters in the messages have been replaced in the log by visible characters. ASCII 10 (line feed, new line) is printed as '\r'. ASCII 13 (carriage return) is printed as '\n'.

The event log extends to one month backward in time. Older events are overwritten.

## CHAPTER 5

# ADMINISTRATOR'S GUIDE

This chapter provides you with information that is intended to help you configure all the settings in the software.

## Administrator Role

### Logging in as Administrator

When the application is started, the user is automatically given the observer role. From the **System** menu, select **Log in as administrator**. Enter the password in the dialog that opens. Once the password has been verified, you can access the configuration dialog (**View - Settings**).

**NOTE**

After the setup, the administrator password is empty.

**NOTE**

To always start the application under the administrator role, select **Log in as administrator automatically** from **View - Settings - Application - Miscellaneous**.

### Changing Administrator Password

Only an administrator can alter the password. Enter a new password can be entered from the **System - Set Password** menu item.

**NOTE**

If you forget the password, the application has to be reinstalled for you to regain access as administrator.

## Automatic Functionality

While the background service handles most of the automatic functionality of the application, the user interface contains some automatic functions as well.

### Background Service

The background service carries out following automated tasks:

- Opening a connection to the AWS
- Polling or listening to the incoming data
- Parsing of AWS data messages, detection if valid message format
- Usage of a correct AWS message parser
- Monitoring of communications timeouts
- Logging of AWS data into ASCII files
- Transfer of data files to FTP/SFTP servers
- Synchronization of AWS clock
- Passing of AWS data to the main user interface
- Passing of AWS data to the TCP clients (slave user interfaces)
- Writing key events into application event log
- Alarm management, recording alarms in the event log

### User Interface

The user interface takes care of the following automated tasks:

- Display of data in real-time
- Saving screenshots of main display
- Alarm display

## Directory Structure

### Installation Directory

By default, the application is installed in *C:\Program files\Vaisala\Observation Display*. The installation directory cannot be changed after the setup.

Under the installation directory, there are some subdirectories which may be useful to the administrator.

**Table 3 Installation Directory**

Subdirectory	Description of Contents
\TimeSeries	This directory contains original data received from the weather station. Graphs and text boxes in the real-time display use data from these files.
\EventLog	Monthly event log files.
\Diag	Diagnostic event log files.
\Transfer	Directory of files waiting for transfer via FTP/SFTP.
\Conf	Observation Display configuration file.

### Observations Directory

The application can save observation data in various formats to be used by external applications. By default, these optional output files are generated under directory *C:\Observations*.

**Table 4 Observations Directory**

Subdirectory	Description of Contents
\History \History\Station \History\Station\Year \History\Station\Year\Month	History subdirectory has subdirectories named by station name and year and month of observation. Each monthly subdirectory contains daily data files. Daily data files contain all observations saved in table format. The first row contains variable names, and the first column contains the time stamp of the observation.
\Latest	This directory contains files with only latest data from the AWS.
\LogGroups	This directory contains copies of log group files.

## Setup Files

Observation Display uses a single setup file to load and save all of its operational parameters. The setup file is located in the `\Conf` subdirectory.

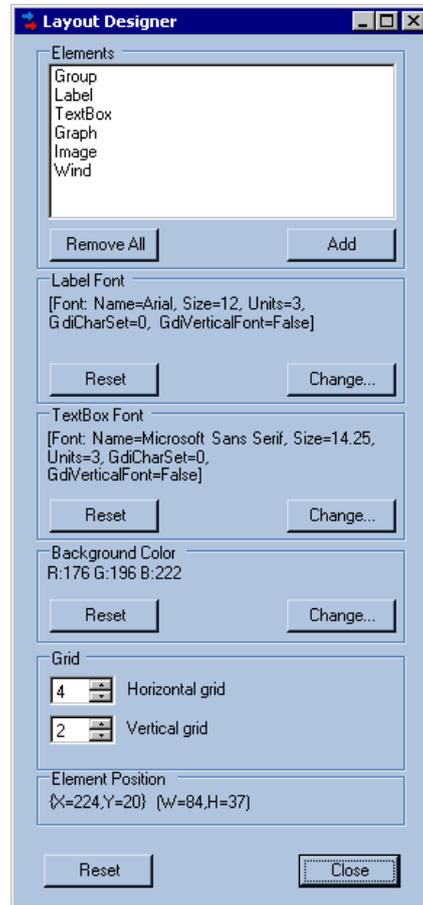
The administrator may reload the setup at any time by selecting **File - Load Setup** from the main menu. Loading the setup will undo any unsaved settings changes.

To save current settings into the setup file, you can use any of the following:

- Click the **Save** button in the **View - Settings** dialog.
- Select **File - Save** or **File - Save As** from the main menu.
- Open the **Layout Designer** dialog.
- Close the application.

# Layout Designer

The main real-time display layout can be changed by the administrator.



**Figure 13** Layout Designer

To activate layout editing, select **File - Layout Designer** from the main menu.

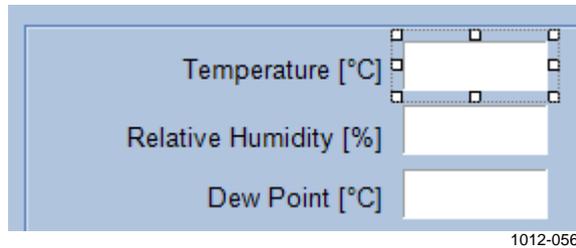
When the Layout Designer dialog is open, several new functions become available:

- Existing display elements can be moved and resized.
- New display elements can be added to the screen. Elements can be grouped using the group box.
- Existing display elements can be deleted.
- All text fonts can be modified.

When you close the Layout Designer, the changes made to the layout are saved and replace the existing layout settings. Alternatively, undo the changes by clicking the **Reset** button at the bottom of the dialog.

## Editing Existing Layout

When the Layout Designer is open, you can select any screen element for editing by clicking. The selected element is shown with small handles around it as shown in Figure 14 below.



**Figure 14** Editing Existing Layout

Move the selected element anywhere on the screen by dragging it with the mouse. Resize the element by clicking on any of the handles and dragging the mouse.

Select a group box to move all the contained elements at once.

Copying, cutting, and pasting can also be used. These are available in the pop-up menus and in keyboard shortcuts.

If you press CTRL-C or CTRL-X when an element has been selected, it can be copied or cut, respectively. CTRL-V pastes the element to a new location.

When pasting the element, the element is placed in the center of the screen. To paste an element into a group box, select the target group box before pasting. The pasted element appears in the center of the group box.

Elements within a group box cannot be dragged outside the group box. You must cut or delete elements to move them out from a group box.

## Adding and Deleting Display Elements

There are two ways to add new display elements:

1. You can copy and paste existing elements on the screen.
2. You can select an element type from the Layout Designer and click the **Add** button.

There are two ways to delete existing display elements:

1. Select the element and press the **Delete** button on the keyboard.
2. Select the element, right-click and select **Delete** from the pop-up menu.

You can also delete all elements on the screen by clicking the **Remove All** button on the Layout Designer.

## Element Positions

The position and size of the selected element is shown in the bottom section of the Layout Designer.

The positioning grid helps to align the elements to rows and columns. It is possible to configure how elements are positioned and sized by adjusting the grid size. When the grid is active, the elements "snap" to the nearest grid position.

## Fonts

When the Layout Designer is active, the pop-up menu of each element allows the user to define the type of font to use with the element.

You can define common fonts for all *label* and *text box* elements using the middle section of the Layout Designer.

## Configuration Settings

You can access all important configuration settings can be accessed from the menu by selecting **View - Settings**. The configuration screen consists of two main parts:

- General settings
- Application settings

To configure a general setting:

1. Select the **General** tab on the left side of the screen.
2. Select the category (such as station or variables).
3. Select the setting item from the list on the right side of the screen. Enter the new value in the box.

Note that all settings are taken into use when you close the dialog. However, the settings are saved permanently only if you click the **Save** button.

### **CAUTION**

The default settings have been tested at factory to match the AWS configuration. Use caution when changing the settings.

## General Settings – Station

These parameters are related to the details of AWS name and location.

**Station Name:** Unique identifier of the station in the AWS message.

**Altitude:** Station altitude. This parameter is needed only if Observation Display is calculating atmospheric pressure reduced to sea level.

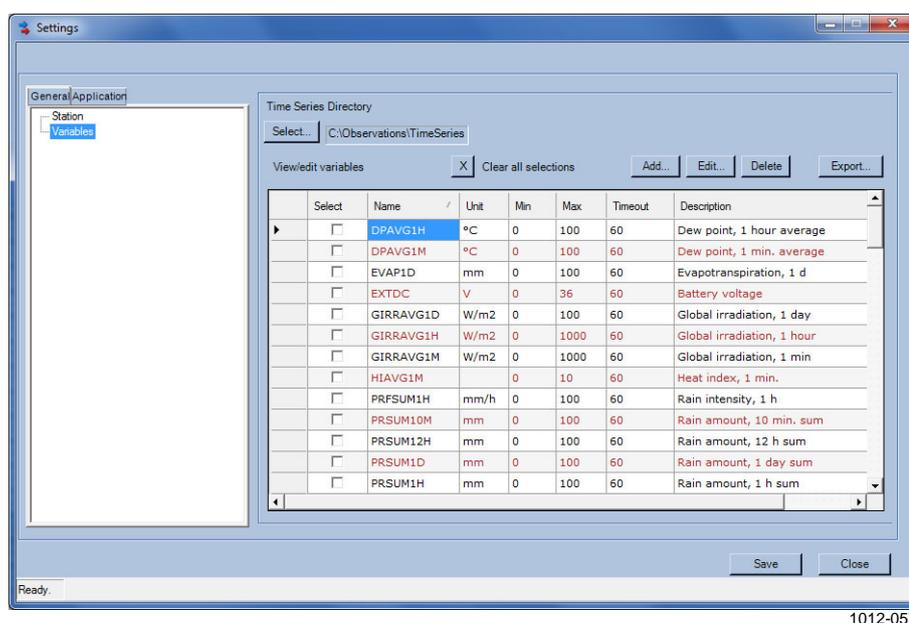
**Pressure Sensor Height:** Vertical distance between the pressure sensor and the station altitude. This parameter is needed only if Observation Display is calculating atmospheric pressure reduced to sea level.

**Wmo Block Number:** WMO block number in the region where AWS is located. This parameter is needed only if station has been registered to WMO use.

**Wmo Station Number:** WMO identifier of the AWS. This parameter is needed only if station has been registered to WMO use.

**Standard Pressure Level Indicator:** Standard isobaric surface for which the geopotential is reported from WMO code table 0264. This parameter is needed only if station is generating WMO synoptic messages.

## General Settings – Variables



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**Figure 15** General Settings – Variables

This section of parameters shows the data of the AWS variables. For each variable, following columns are listed:

**Name:** Unique identifier for the variable in the AWS message.

**Unit:** Indicates either the unit of the variable or the WMO code table for the variable (if applicable).

**Min value:** Minimum value for the AWS variable. This parameter is used in the real-time display. Variables below this value can still be used in the message generation.

**Max value:** Maximum value for the AWS variable. This parameter is used in the real-time display. Variables above this value can still be used in the message generation.

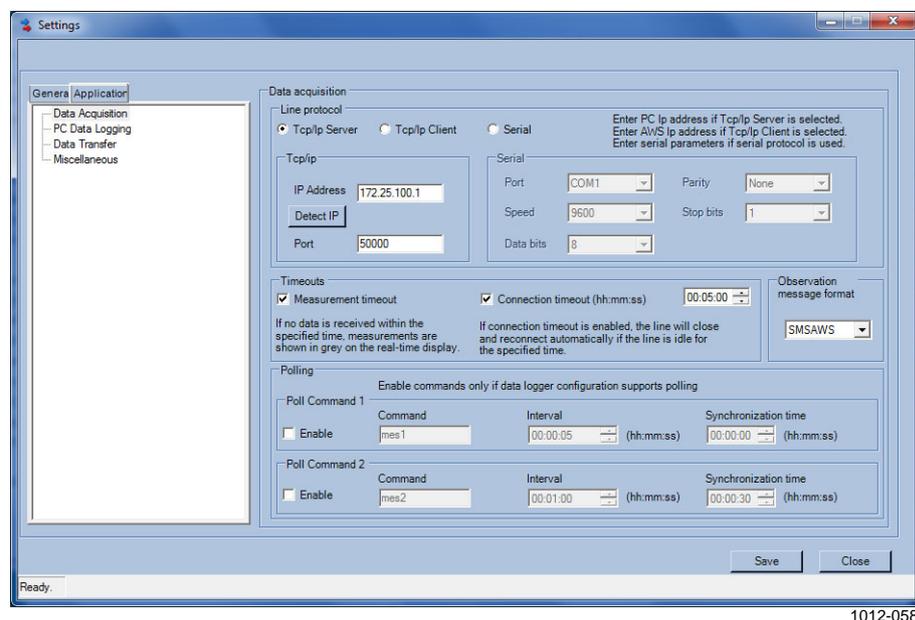
**Description:** Free description of the variable. This text appears in the real-time display screen.

**Timeout:** Time (in seconds) after which a user interface element (text box, wind display element) indicates that variable is missing if no new value has been received from the AWS. Note that the timeout should be at least as long as is the interval between two AWS messages.

For unit conversions, see section Observation Time Series on page 16.

If data messages are received into the terminal window but values do not show up in the main display, there may be a conflict between the weather station and the application variable names. Check that the variable names used by the system match to the names included in the incoming message. If necessary, add new variables by clicking the **Add** button.

## Application Settings – Communications



**Figure 16** Application Settings – Communications

### Line Protocol

The communications dialog can be used to select the data input type and related parameters. First, select the communications type: TCP/IP client, TCP/IP server, or serial communications.

If **Tcp/Ip client** is selected, Observation Display uses a TCP/IP client to connect to a TCP/IP server running at the weather station. Enter the weather station IP address in the text box.

If **Tcp/Ip server** is selected, Observation Display starts a TCP/IP server to which the weather station connects. Enter the IP address of the PC in the text box. You can click the **Detect IP** button to find out the primary address.

If **Serial** port is selected, Observation Display connects to the selected serial port. Note that *virtual serial ports* can also be used as long as the operating system treats them as serial interfaces.

If the weather station sends data automatically, any of the three communications types can be used. If data is to be polled, TCP/IP client or serial communications should be used.

Next, you can fill in the details of each communication protocol.

### Timeouts

In the center of the screen, you can activate two types of timeout procedures:

- **Measurement timeouts** (see **General Settings - Variables**) can be enabled to indicate missing variable values. The default timeout is 60 seconds for all variables.
- If **Connection timeout** is enabled, the application automatically closes and re-opens the connection if no data at all has been received from the AWS within the specified time. This setting should be enabled at least in all TCP/IP-type connections.

### Polling

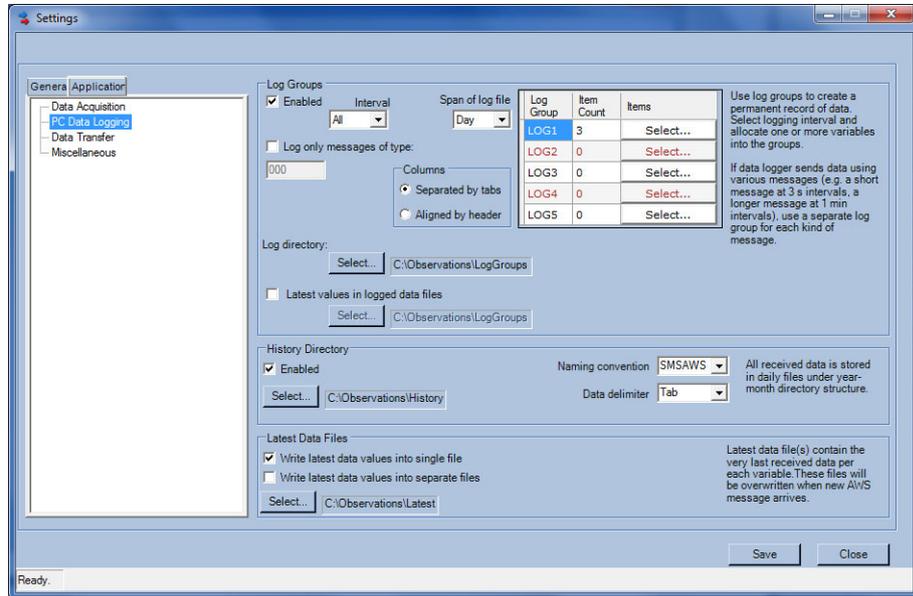
Observation Display supports polling with two separate polling commands. These should only be used if the weather station has been configured to respond to commands by sending a data report back to the PC.

Select **Enable** to activate a polling command. Type the poll command into the **Command** box. Select the interval and the synchronization time from the numeric display controls. **Interval** indicates the time period interval in seconds between successive polling commands.

**Synchronization time** indicates the time after midnight when the first command is sent.

## Application Settings – Data Logging

The application supports several ways to generate ASCII files from the received data.



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**Figure 17 Application Settings – Data Logging**

*Log groups* can be utilized to store received data in ASCII files. A log group may contain one or more AWS variables. The received variables automatically saved into log files, under the \log subdirectory. Each group has its own set of files. The application supports up to five different log groups.

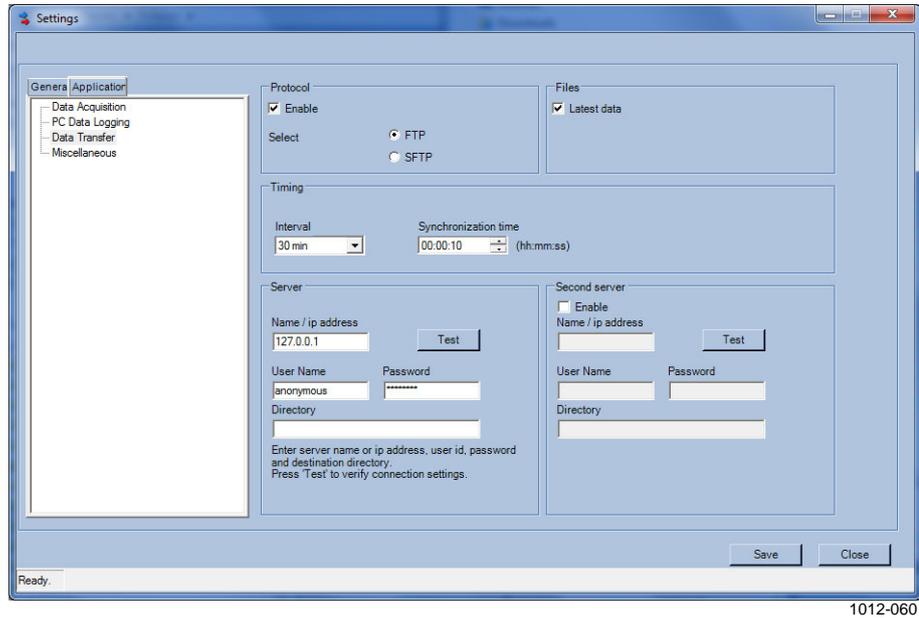
As the AWS may be transmitting variables at different intervals (for example, wind message at 3 s intervals and general message at 1 min interval), it is recommended that each log group only contains variables that are received in the same message.

To configure log groups, first select **Enabled**. Next, add variables into a group by clicking **Select** in the group table. From the dialog that opens, select variables.

The log files are named according to the log group identifier and date/time when the configuration settings were made.

The **Interval** setting defines how often variables are logged. By default, every time a new variable is received, it is stored in the file. Choosing another interval makes the application only store the variables after the specified time. The interval setting uses 00:00 h as its synchronization time. For instance, using 6 h interval would store data from the first messages received after 00:00, 06:00, 12:00, and 18:00. The **Span of log file** setting indicates how often a new log file is started.

## Application Settings – Data Transfer

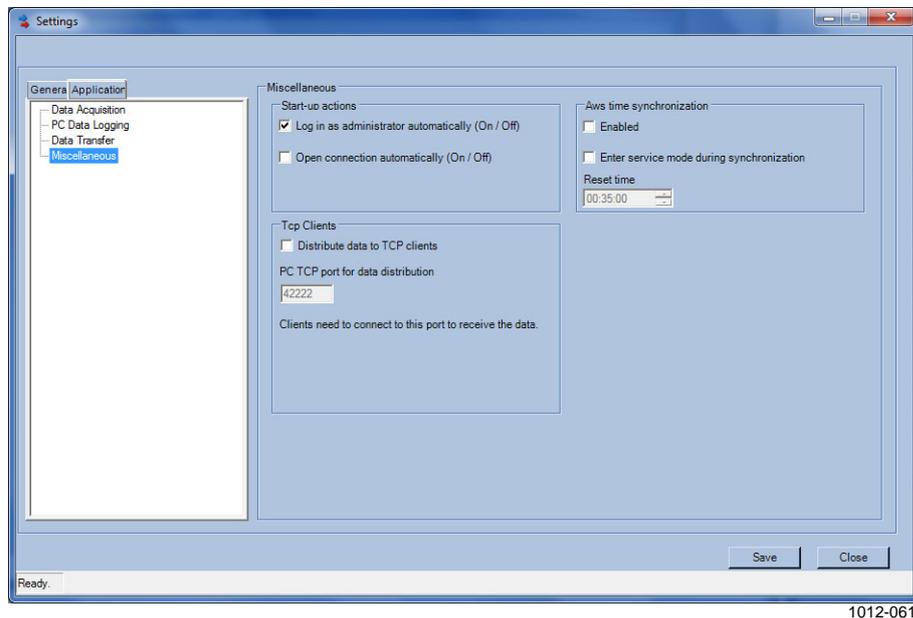


**Figure 18** Application Settings – Data Transfer

This dialog contains settings for sending the latest data files to another PC. The user may select either FTP or SFTP protocol to transfer files.

It is possible to forward the files to one or two FTP/SFTP servers. To test the connection settings manually, click the **Test** button.

## Application Settings – Miscellaneous



**Figure 19** Application Settings – Miscellaneous

This dialog contains miscellaneous settings.

**Start-up actions** can be used reduce manual work when launching the application. Selecting the **Log in as administrator automatically** option gives all users the possibility to change settings. If the **Open connection automatically** option is selected, the user does not need to use terminal dialog to start receiving data.

If **Aws time synchronization** is **Enabled**, the application synchronizes AWS clock with PC clock at the given time, once per day.

Select the **Distribute data to TCP clients** option to enable automatic AWS data forwarding to client applications on other PCs. This option allows the possibility to use the Observation Display PC as a server (master) into which the clients connect instead of having several clients connecting to the AWS. Client applications may be Observation Display setups or other TCP/IP clients (such as Telnet and terminal application).

Clients must connect to the Observation Display PC at the port indicated in the text box. For instance, to test a client Observation Display connection from a client PC to a master PC:

1. Make sure that the master Observation Display is running connected to the AWS and receiving data.
2. Select **Distribute data to TCP clients** on the master PC.
3. On the client PC, open Observation Display and configure master PC IP address into the **Settings - Data Acquisition - Ip Address**. Enter master data distribution port (by default, 42222) in the port text box.
4. Save the client settings and select **Connect** from the terminal window.

Data should appear on the client immediately after it has been received on the server PC.

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# CHAPTER 6

## TROUBLESHOOTING

This chapter describes common problems, their probable causes and remedies, and contact information for technical support.

### Troubleshooting Procedure

When troubleshooting the product, write a problem report consisting of the following issues:

- What failed (what worked/did not work)?
- Where did it fail (location and environment)?
- When did it fail (date, immediately/after a while/periodically/randomly)?
- What was connected to the product and to which connectors?
- What was done when the failure was noticed?

## Problem Situations

**Table 5** Some Problem Situations and Their Remedies

Problem	Probable Cause	Remedy
User cannot open "Settings" menu.	User has been logged in as observer.	Log in as administrator (select <b>System - Login as Administrator</b> ).
Application cannot connect to the AWS.	Communications failure.	1. Check that IP address and TCP port have been correctly configured. 2. Close the application and try to connect to the AWS using a terminal program that uses the same TCP/IP settings. 3. Check that PC firewall is not blocking the connection.
Data does not appear in Vaisala Observation Display or the external terminal.	Communications failure or AWS configuration failure.	Check connection to AWS and AWS configuration.
AWS data messages can be seen in external terminal (for example, HyperTerminal) but no data is visible in Observation Display.	Error in Observation Display communications settings or invalid AWS message format.	Check communications settings, check AWS message.
AWS data can be seen in Observation Display Terminal window but some text boxes in the main screen are left empty.	TextBox configuration error.	Select text box variable from the pop-up menu.
AWS data is being received by the Observation Display but graphs in the main screen are left empty.	AWS clock has different time from PC time.	Synchronize AWS and PC clocks. If AWS is supposed to use different time zone than PC, adjust the graphs using <b>Time Settings</b> from the graph pop-up menu.

## Technical Support

For technical questions, contact the Vaisala technical support:

E-mail [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com)

Fax +358 9 8949 2790

## APPENDIX A

# AWS330 CONFIGURATION

Vaisala Automatic Weather Station AWS330 is preconfigured, and there is no need to make any configuration changes to take Observation Display software into use.

## Report Format

The report format used for communication between Observation Display and the weather station is called **SMSAWS**. Lizard Setup Software provides automated tools for generating reports in the correct format. On some Lizard versions, you have to use the **MetMan** message template, which is identical with SMSAWS format.

The following is an example of the SMSAWS report format:

```
(S:Station01;D:040607;T:182035;TA:61.12,0;RH:76.40;;DP:21.12;PA:1008.42;PAA1:1007.35;PAX1:1008.23;PAM1:1005.90)
```

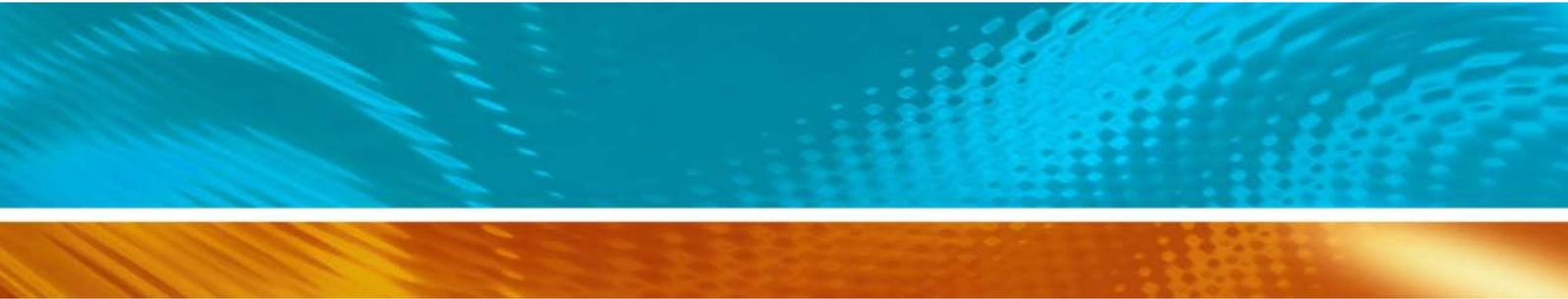
The format consists of elements having the following structure:

```
(S:STATIONID;D:YYMMDD;T:HHMMSS;TAG:value;TAG:value; ....  
TAG:value)
```

- Left parenthesis marks the first character in the message.
- Right parenthesis marks the last character.
- Message body consists of pairs of variable identifiers (tags) and values.
- There is a semicolon (;) between the (tag,value) pairs.
- There is no semicolon between the last (tag,value) pair and the closing right parenthesis.
- Colon (:) separates tag and its value.
- First three (tag,value) pairs must contain station identifier, date, and time.
- Remaining (tag,value) pairs may contain any variables in any order.
- Message may not contain the same tag twice.
- Tag "S" is reserved for station identifier.

- Tag "D" is reserved for date, which must be in format YYMMDD. The first two characters identify the year, the next two characters identify the month, and the last two characters identify the day.
- Tag "T" is reserved for time, which must be in format HHMMSS. First two characters identify the hour (24-hour format), next two characters the minute and last two characters the second.
- There may be extra spaces, tab or newline characters anywhere within the message.





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