

addVANTAGE Pro 6.4

User Guide



SMART WIRELESS SOLUTIONS

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Chapter 1. Introduction

This manual details the installation and use of the addVANTAGE Pro software product, which is used in conjunction with most of Adcon's telemetry devices. For information about the installation and use of the telemetry devices, refer to the respective device's manual.

This User Guide describes the features available to users assigned to the `extension_user` role, which includes the `average_user` role. You will not see features reserved for any of the administrative roles.

What's New in addVANTAGE Pro 6.4

Following are some of the features in this version:

- Updated the data acquisition feature
- Added settings to show the server status
- Added backup verification after backup is complete
- Added server diagnostics, the node template manager, and the RTU creation wizard
- Added copy/cut/paste of nodes (similar to "create by template")
- Added the ability to send messages to groups of users
- Updated several features for trends
- Updated the user interface with new search features, buttons, and icons

What is the Adcon System?

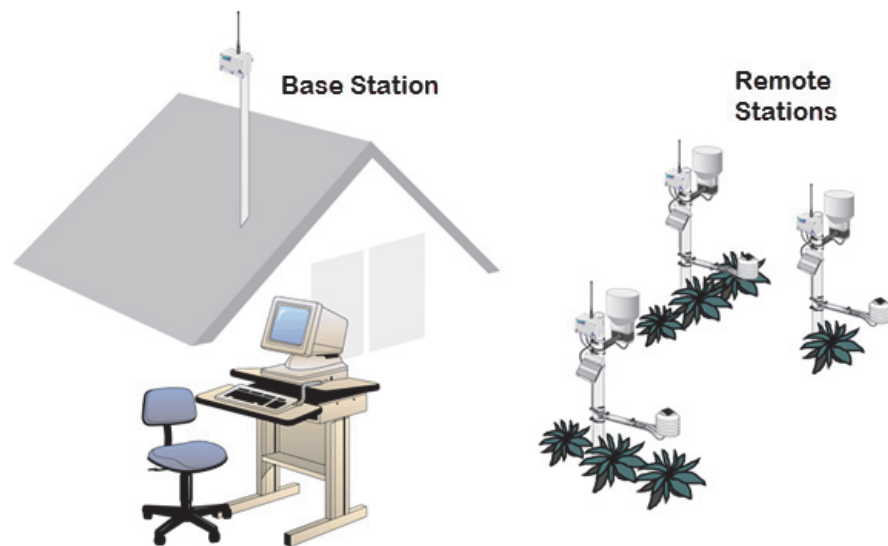
The addVANTAGE Pro software and telemetry devices work together to form the Adcon system, which can be defined as a system that allows you to:

1. Measure certain parameters over a predefined area
2. Send those parameters over relatively large distances to a central point
3. Process the parameters as needed for various applications such as agriculture, meteorology, irrigation control, water management, and environmental analysis

By *parameters* we mean a physical value that can be converted to an electrical counterpart. For example, air temperature, relative humidity, and leaf wetness have values that can be converted to an electrical form by means of *sensors*. If a sensor exists for a certain physical parameter, it is very likely that it can be

adapted to Adcon's system. *Figure 1* illustrates the components of the Adcon system.

Figure 1. The Adcon Telemetry System



System Components

The electrically converted parameters are first stored in the memory of a *remote telemetry unit*, or RTU. Adcon currently provides a large array of RTUs employing different wireless technologies, from private radio to GSM/GPRS based devices.

An RTU has its own intelligence in the form of a built-in microcontroller, which periodically performs several tasks, for example, interrogate the sensors, store the measured data, check the radio channel, check the local battery status, and so forth. It is part of a *remote station*, which consists of the RTU, its assembly parts, and its sensors. The RTU is equipped with a radio module or a GSM modem, which allows for real-time wireless communication with a base station.

Reverse communication is also possible with the Adcon system. The addVANTAGE Pro software can issue a command that will be sent via the wireless network to the RTUs to control devices such as switches, pumps, motors, and relays.

The *base station* consists of a Telemetry Gateway (or receiver) and your personal computer. The Gateway acts as a network controller—at regular intervals (typically 15 minutes, but this can be changed) it requests data via radio or modem from the RTUs in the network. The receiver stores the incoming data in its memory, thus allowing the receiver to supervise a large number of RTUs and keep their data for a period of time without the need to download the data to the PC. The number of controlled RTUs depends on the receiver type, and some receiver models can handle over 1000 units

Note: *The period of time a receiver can store data is dependent on the number of RTUs in the network and the type of receiver. The oldest data is overwritten.*

The addVANTAGE Pro software regularly downloads the data from the receiver's memory to the PC. The receiver's internal battery allows it to operate for 12 to 24 hours (depending on the number of RTUs to be requested and the respective polling interval) in the event of a power outage. After that, the receiver stops accumulating data, but it keeps the data already retained—even without power—until you are able to provide power to it.

A Modular Approach

The addVANTAGE Pro software, which is based on a client/server architecture, collects data from one or several Adcon Telemetry Gateways (receivers) and makes it available for viewing or for specialized analysis.

The *server* is that part of the software where all the actual processing takes place. It usually starts automatically when the computer is started and runs in the background. The server is responsible for downloading data from the Telemetry Gateway, storing data into the database, starting and stopping extensions, and servicing clients as they connect.

The addVANTAGE Pro server is based on a modular concept, meaning its parts contribute to the whole but are also independent of it. The server has a framework that runs various *services* and each service is responsible for a function. For example:

- The *Security service* authenticates the users and checks their privileges.
- The *Directory service* deals with all objects existing on the system.
- The *Data Acquisition service* retrieves the remote data.
- The *Extension service* creates the proper environment for the extensions to run.
- The *Database service* assures the connection to the database for all other services.

Extensions are a very important concept of addVANTAGE Pro. They are standalone modules dealing with raw data and processing it according to certain rules. Extensions provide events and alarms; in some cases, extensions may provide output tags (which are also called *virtual sensors*, but more on this later).

This modular approach provides a great degree of flexibility both to users and programmers because it offers, among other things, an open interface for third parties that want to program new extensions.

Starting with addVANTAGE Pro 5.0, the client software is based on a standard web browser. Internet Explorer 10.0 and all versions of Mozilla Firefox have been certified to be fully compatible with addVANTAGE Pro 6.x. Additional browsers could be supported in future releases. If you use Internet Explorer (IE) 10, Adcon recommends that you run IE in Compatibility Mode.

WAP Access

WAP access is automatically enabled in addVANTAGE Pro 6.4 and it is password protected. The information accessible via WAP is limited and the users can access only the last value recorded for each tag. However, you can disable password protection for WAP access on your server.

To access the addVANTAGE Pro server via WAP, your users need to enter (and store) a link similar to:

`http://yourserver.domain.com:8080/wap?u=username&p=passwd`

If the password protection feature is disabled, the link becomes simply:

`http://yourserver.domain.com:8080/wap`

After the link is entered in the cell phone, the user simply accesses it as a normal WAP link. The navigation is limited to the areas, RTUs, and tags where the user has access rights (if password protection is enabled).

Conventions and Terminology

This section explains standard terminology and usage for Adcon software and manuals.

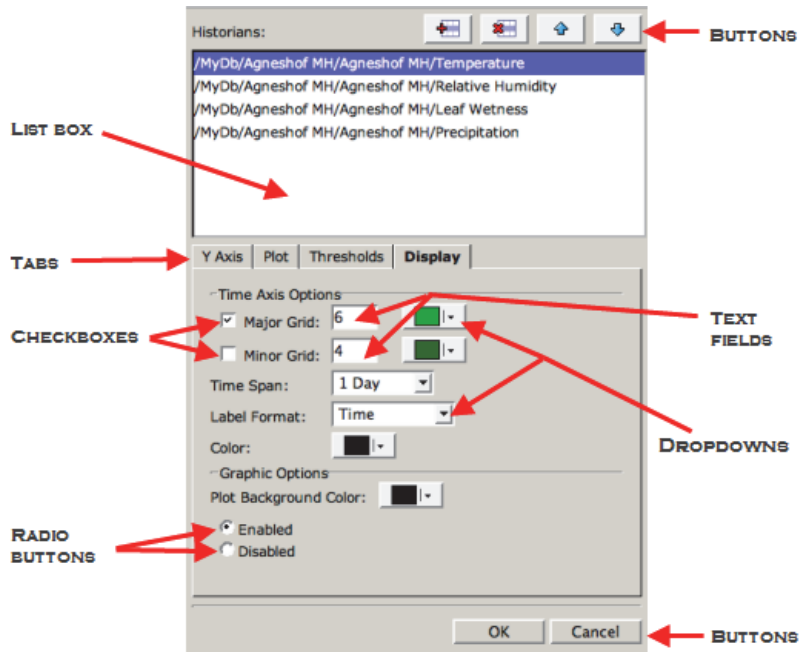
Windows and Captions

Although you will not see a software window that looks exactly like the one shown in [Figure 2](#), we have included it to illustrate the various items on a software window.

Most operations in addVANTAGE can be performed on a context basis. That is, right-clicking an object displays a context menu from which you select the desired operation. You can see an example of a context menu in [Figure 5](#) in Chapter 2.

This manual does not attempt to explain basic computer use. Therefore, you should be familiar with basic computer terminology and the use of typical computer interfaces like the mouse and keyboard.

Figure 2. A Sample Software Window



- Text Field Type information here.
- Checkbox Select or unselect by clicking the box. A selected box has an X or a check mark in it, while an unselected box is empty.
- Radio button These round buttons come in multiples. You can select only one.
- Listbox This area shows a list of choices you can select by clicking.
- Dropdown A box with a small down arrow (▾) you must click before you can see the list of choices to select from.
- Button These are rectangular shapes with a name. Select a button by clicking it.
- Tab Click to see another view of the dialog.

Documentation

Certain conventions apply in this documentation.

- Italics* Indicate the text is variable and must be substituted for something specific, as indicated in the explanation. Italics can also be used to emphasize words as words or letters as letters, and for cross references to other books.
- Bold** Indicates special emphasis of the text.
- fixed font Indicates characters you must type or system messages, as well as default values and file names.
- Help ▶ About** Indicates menu selection. For example, select the **Help** menu, then the **About** option. Also indicates items on the graphical user interface.
- Note Indicates information of interest. Notes appear **after** the information they apply to.

- CAUTION** Indicates that you might get unexpected results if you don't follow the instructions. Cautions appear **before** the information they apply to.
- WARNING** Indicates danger to yourself or damage to the device if you don't follow the instructions. Warnings appear **before** the information they apply to.

Tags

You'll see the terms *tag* and *sensor* used throughout this manual. Tag is a generic term for something that pertains to data, regardless of whether it collects or controls that data. Tags can represent any of the following:

- Physical sensors, such as those for temperature, leaf wetness, or humidity.
- Actuators, such as switches, relays, or valves.
- Virtual sensors, which are the result of a computation, such as an average, a sum, or an ET_0 (evapo-transpiration reading). Virtual sensors are created with extensions. With some extensions, you can use a virtual sensor in combination with other sensors to create a new virtual sensor, which in itself is another tag.

Summary

Adcon's Data Acquisition system contains hardware and software parts. The hardware components are:

- A personal computer and/or a server machine
- The receiver or Telemetry Gateway (A840, A850, A440 modem)
- The RTUs (also referred to as devices), for example addWAVE A733, addWAVE A733GSM, addIT A723, and addNODE A740.
- Sensors and actuators
- Various supplementary parts (accessories such as antennas, cables, and masts)

The software consists of:

- The addVANTAGE Pro 6.4 server
- Application-specific server extensions
- Utilities for configuration and maintenance
- A web browser

Chapter 2. Getting Started

Since the initial introduction of addVANTAGE Pro 5 in 2006, you have been able to access the client software through a standard Internet browser such as Microsoft Internet Explorer or Mozilla Firefox. While you still have the option to install addVANTAGE Pro on your own machine, you can also work through an internet connection linking up to your data provider's addVANTAGE Pro 6.4 server, accessing all the features through your web browser on *that* machine. All you will need is a reasonably fast internet connection and a user name and password to access your data.

Overview

For large installations, Adcon recommends that you install the server on a separate computer. The server must have enough power and memory to sustain the expected number of clients and RTUs, as well as the number of extensions that will process the data.

You can consider several types of systems depending on your application and the corresponding license type you acquired. For example, if you have an application where you manage only one or two remote stations (RTUs), you could install the server on the same machine you are using for your day-to-day use. After installing addVANTAGE Pro you need only point your browser to your local computer (e.g., <http://localhost:8080>) and you can analyze your data. You don't even need access to the Internet for this type of setup.

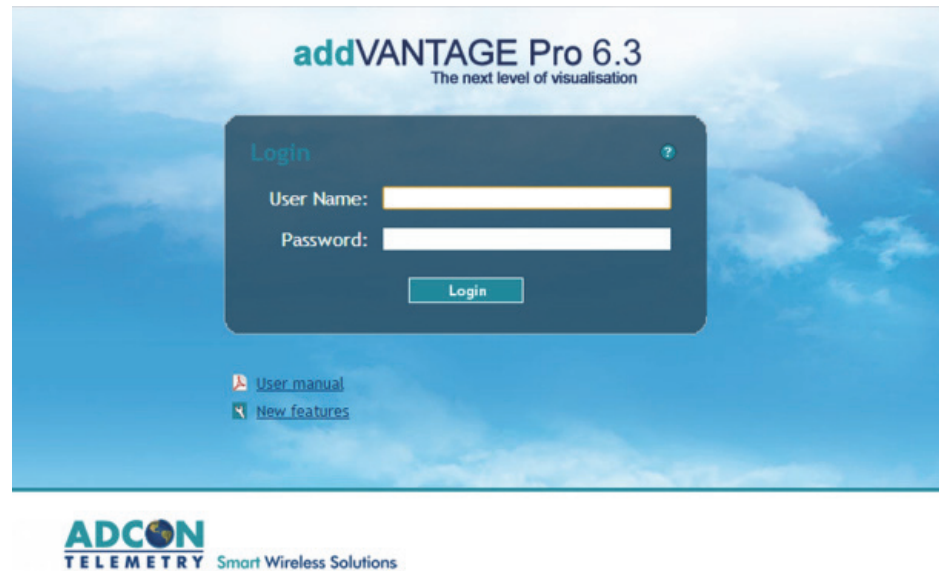
At the other end of options, if you intend to offer addVANTAGE Pro services to other users, running tens or hundreds of RTUs, you most likely will want to install the software on a powerful server with a good connection to the Internet. A fixed IP address is mandatory in this case.


In many cases you might not want to run a server at all and would rather use the addVANTAGE Pro services offered by an addVANTAGE Pro service provider as described in the previous paragraph. You need only a web browser, an Internet connection, and an account (possibly subscription-based) with your addVANTAGE provider.



Connecting to addVANTAGE Pro

You connect to addVANTAGE Pro by starting your browser and entering the URL of your server, for example, `http://addvantage.adcon.at:8080`. A web page similar to the one in [Figure 3](#) is displayed in your browser.

Figure 3. addVANTAGE Pro Login Window



If you need browser information for logging in, you can click the question mark () on the login window. A page with login help is displayed.

You can also see the documentation before you log in, or get a preview of the new features. Click the  [User manual](#) or  [New features](#) icon as needed.

Enter your **User Name** and **Password** and click the **Login** button to access the system.

If the account data was correct, you are logged in to addVANTAGE Pro and an Explorer window showing you the root node appears. For more information about the Explorer, see ["The Explorer" on page 12](#). If you want to disconnect from the server, click the **Logout** button.

Navigating the Data

The main elements of the software are:

- The Explorer
- The List
- The Trend viewer
- The Events viewer
- The Map viewer
- Administration tools
- Extensions

Logging in to the Server

To start your addVANTAGE Pro session, follow the steps in ["Connecting to addVANTAGE Pro" on page 12](#).

The Explorer

After you have logged in, the browser will display the opening page of addVANTAGE Pro. This is called the *Explorer* because it allows you to explore all the objects in an addVANTAGE Pro system.

Note: *Your browser window might be resized when you log in to addVANTAGE Pro.*

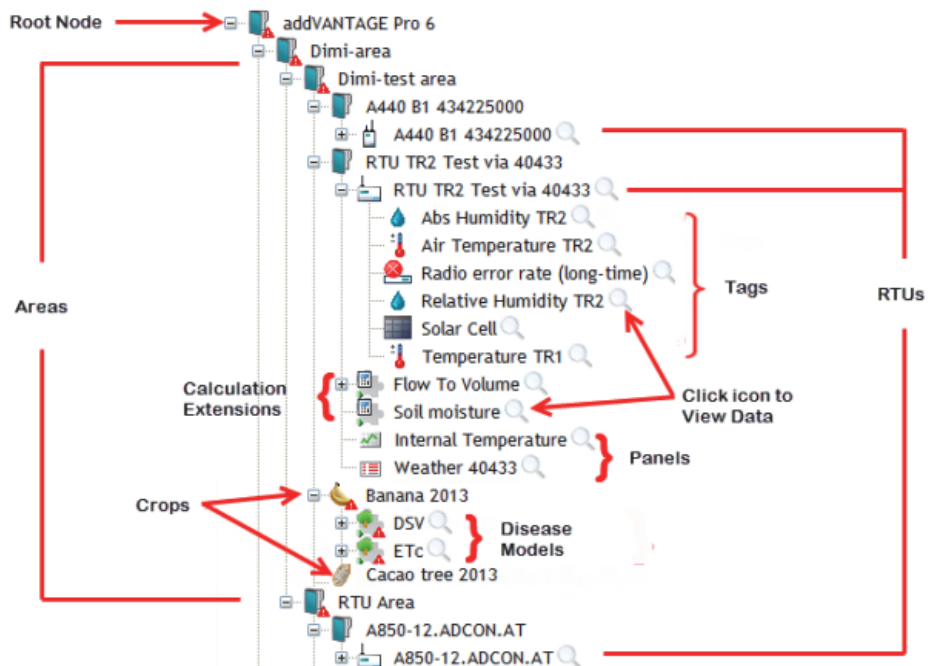
Objects in the Explorer

Use the Explorer to navigate through all the objects in your system: areas, RTUs (devices), tags (sensors), extensions, and panels. All such objects are generically called *nodes*. You can open more than one Explorer at once, each showing different levels of the system tree. You can also move certain node types from one area to another.

After opening an Explorer, expand the root node, which will probably show only areas, RTUs, and tags. In order to familiarize you with the new terms, [Figure 4](#) shows most of the node types available in the tree structure. You probably won't have all of them in your tree, but you will be able to generate them later.

The *root node* contains all the objects in a system. You can also think of it as the container for the database on a server.

Figure 4. Expansion of Root Node in Explorer



An *area* is an object that defines a certain place that you have associated with a specific property. It can be a field, a city, a section in a plant, a country, or any other physical place. You can also have areas within areas, or subareas.

An *RTU* is placed in an area. You can have as many RTUs in an area as you want—limited only by the type of license you own and the remote server or Telemetry Gateway you are downloading data from. All the RTUs in a certain area have the common property that they belong to that area.

The RTUs have *tags*, which can be sensors or actuators. A tag can also result out of the processing of other tags by an extension.

Crops act as containers for extensions (calculations or disease models) that are specific to one crop field in one year. Crop nodes have all the required phenological phases, irrigations, and treatments.

Calculation extensions are types of embedded software that process input tags following certain rules and output events or other tags (virtual tags). This type of extension can also control output tags (actuators), effectively implementing remote control functions. Calculation extensions apply to an area rather than a crop.

Disease models are types of embedded software that track the progress of common diseases that are specific to a crop. They are always the children of a crop node.

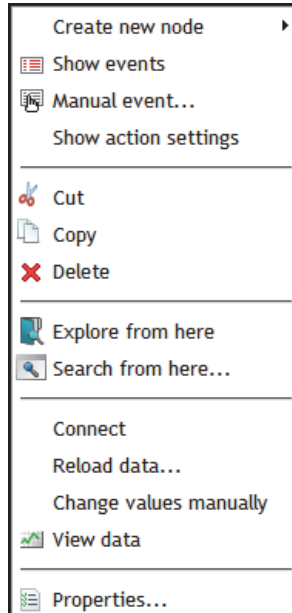
Panels are the result of saving a view. For example, if you create a Trend and want to refer to it later (see [page 32](#)), you can save it as a panel.

Functions in Explorer

As the “main window” in addVANTAGE Pro, the Explorer offers many features. In addition to the usual expand/collapse of branches by clicking the plus (+) or minus (-) sign, you can rename a node just by clicking the name twice.

You can also right-click a node and see a variety of options on the context menu, depending on the node type and the permissions your user ID has. *Figure 5*, for example, shows the context menu for a tag for someone with admin permissions.

Figure 5. Right-clicking a Tag in Explorer



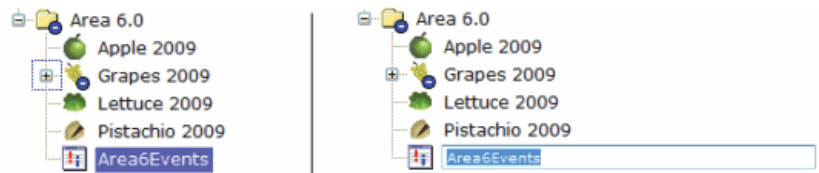
These features are discussed below and in other sections of this book.

Rename Node

Follow these steps to rename a node:

1. Click once to highlight the node you want to rename (left side of *Figure 6*).
2. Click the node again to turn the name into an edit box (right side of *Figure 6*).
3. Type the new name.
4. Press **Enter**.

Figure 6. Renaming Nodes



Create New Node

Create nodes such as areas, windows, extensions, crops, and tags.

Show Events

Open a list panel showing the events on the node and all of its subnodes.

Manual Event

When you right-click a node in the Explorer, you'll see a **Manual event** choice. Select it to display a dialog similar to the one shown in [Figure 7](#).

Figure 7. Creating a Manual Event

1. In the **Begin Date** field, enter or select the date you want to be associated with the event.
2. Leave the **Duration** fields blank if this is an active event. Otherwise, enter a zero for days, hours, or minutes to indicate a simple, one-time event.
3. Select a **Severity** level from the dropdown. Your selection determines whether the manual event is shown as an **Alarm**, **Event**, or entry in the **Service log**.
4. Enter the **Comments** that will be displayed in the Events viewer.
5. Click **OK** to close the dialog.

Show Action Settings

Opens a dialog that lists the Action settings of the selected node and its children. With this dialog, you know at a glance which Actions have been executed, such as when the threshold was reached.

Explore from Here

Open a new Explorer with this node as the root.

Search from Here

Search only this part of the Explorer.

Connect To

Connect the node to the server by selecting the server and choosing the device from the dialog that appears.

Reload Data

Retrieve data from the server.

Note: You need another addVANTAGE Pro server, an A840 (firmware release 3.8.0 or higher) or an A850 Telemetry Gateway, to be able to retrieve remote data.

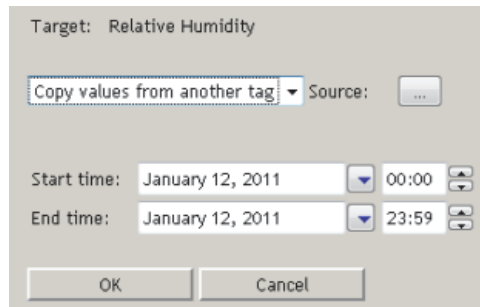
Change Values Manually

You might find that the values on one sensor have data errors or need to be marked as bad. You can use this feature to change the values manually. Follow these steps:

1. Right-click the tag whose values you want to replace.

2. Select **Change values manually** to display the dialog shown in *Figure 8*.

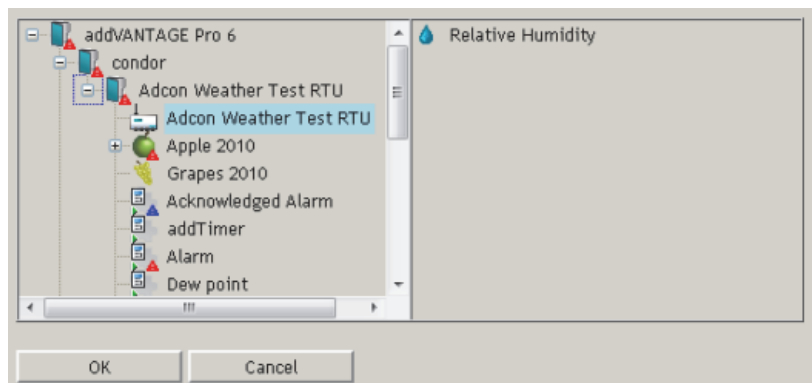
Figure 8. Change Values Manually Dialog



Target shows which value you selected to change.

3. Click the down arrow next to Source to choose what you want to do:
 - **Copy values from another tag**
Select this when you know another tag has the correct values and you want to copy them to the current tag. Continue with step 4.
 - **Mark values as BAD**
Select this to mark a range of values as incorrect. Skip to step 7.
 - **Remove manual values**
Select this to replace manual values with automatic values for a range. Skip to step 7.
4. Click the **Source** field to display a Tag Chooser dialog similar to the one shown in *Figure 9*.

Figure 9. Tag Chooser Dialog



5. Click the appropriate station in the left pane, then select the tag with values you want to copy in the right pane.
6. Click **OK** to return to the Change Values Manually dialog.
7. Enter the **Start time** and **End time** for the values to copy, mark as bad, or remove.
8. Click **OK**.
If you copied values from another tag, you'll see that where the values for both sensors are the same, the old are overwritten by the new.

View Data

Open a Trend panel to see data from the node's children.

Show on Map

View the location of the selected RTU on a map.

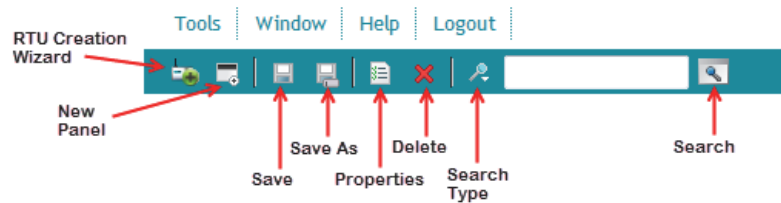
Properties

View and edit node-specific information.

Menubar and Toolbar

The menubar and toolbar in the Explorer (*Figure 10*) provide different ways to access the features of addVANTAGE Pro 6.4.

Figure 10. The Menu Bar and the Toolbar



Menubar

- **Tools:** accesses addVANTAGE Pro 6.4 user options and other administrative tools.
- **Window:** refreshes the current window and allows you to select an addVANTAGE Pro 6.4 window when multiple windows are open
- **Help:** displays the documentation and information about the software.
- **Logout:** exits the addVANTAGE Pro 6.4 software.

Toolbar

- **RTU Creation Wizard:** starts a wizard that helps you create an RTU.
- **New Panel:** creates a new Events viewer, Explorer, List, or Trend.
- **Save:** saves the settings of the window or panel you have the focus on.
- **Properties:** shows the properties of the selected node.
- **Delete:** deletes objects you have selected in the Explorer.
- **Save As:** enables you to save the current window or panel with a different name.
- **Search Type:** provides a quick search option to select an object from the popup and then type search criteria in the text field.
- **Search:** displays the advanced search dialog with more specific options.

Chapter 3. Node Properties and Tools

The robust Properties and Tools features in addVANTAGE Pro are the building blocks of the system. Properties let you tinker with node settings such as whether a node is connected to the server and what to do when a threshold is reached. The tools options affect system-wide settings such as data acquisition and e-mail.

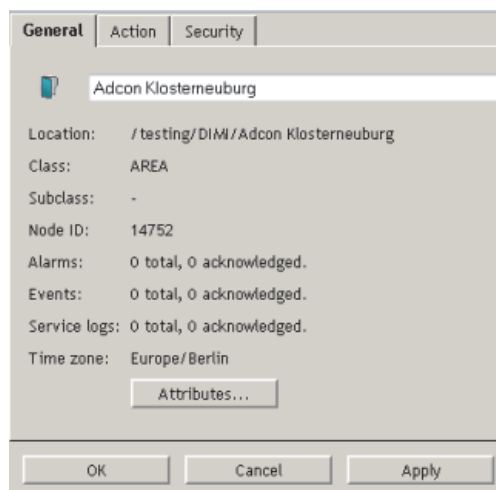
The tabs you see on the Properties dialog depend on the node type and, in some cases, your user role.

Node Properties

When you right-click a node in Explorer and select **Properties**, you have the option to view and edit various features related to the node. The dialog that appears (*Figure 11*) has three default tabs—**General**, **Action**, and **Security**—but might have additional tabs, depending on the node type and your user role.

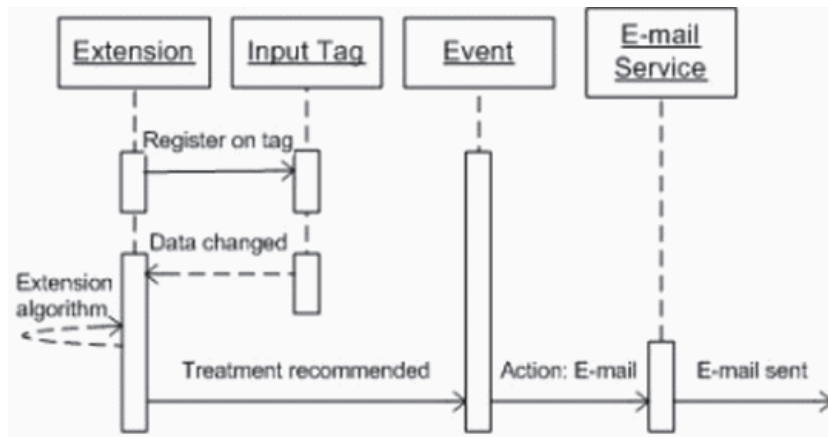
The **General** tab displays certain information about the node, such as its location and name. The **Action** tab enables you to set events and actions specific to the node itself. The **Security** tab shows the node's owner and the permissions various groups have in relation to the node.

Figure 11. General Tab of Node Properties Dialog



Node Action Properties

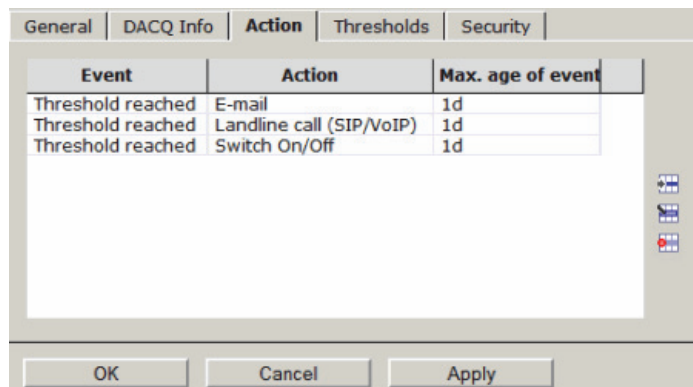
With the **Action** tab, you can specify the action that a certain event will cause. The example below illustrates the sequence that occurs when an extension's threshold event is "Treatment recommended" and action is "E-mail."



The extension registers itself as listener on the input tag (e.g. the Temp sensor) as soon as you set the Temp sensor as an input tag of the extension. A possible event of this extension is the "Treatment recommended" event. This means when you open the Action tab of this extension, the table shows the "Treatment recommended" event. For this event, you might choose to send an E-mail. As soon as this event is issued, the mail is sent. In any case, an issued event is always written to the node's event list.

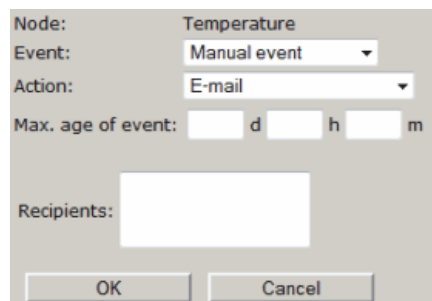
Figure 12 shows the Action tab of the Node Properties dialog.

Figure 12. Action Tab of Node Properties Dialog



1. Click the **Add** icon to display the dialog shown in Figure 13.

Figure 13. Adding an Action



2. Select an **Event** from the list. The choices in the Event list depend on the node type. For a tag, the choices might include problems with the data or a threshold being reached. **Manual event** is a choice for every node type.
3. Select an **Action** from the list.

The following actions are available, depending on the node type:

- **Landline call (SIP/VoIP)** uses the Session Initiation Protocol (SIP) to make a landline call through the Voice over Internet Protocol (VoIP) to the **Recipients** you specify in the field below. For recipients who are

also system users, you can enter a shortcut in the format `user{name}`, such as `user{root}`. You can also specify a group as a recipient, such as `group{admin}`. The user's phone number, or the phone numbers of each member of the group, must be set in the system.

When you select this action, you must enter the appropriate **Phone numbers** and, optionally, select the **Soundfile** you want to be played.

- **E-mail** sends an email to the **Recipients** you specify in the field below. In specifying recipients, you can enter full e-mail addresses in the format `name@address.extension`. For recipients who are also system users, you can enter a shortcut in the format `user{name}`, such as `user{root}`. You can also specify a group as a recipient, such as `group{admin}`. For multiple recipients, the order does not matter but you must separate each with a semicolon:
`user{dimi};m.weller@adcon.com;user{root}`

Note: *In order to successfully send e-mails from addVANTAGE Pro, the e-mail service must be properly configured.*

- **Switch On** switches on an output port of an RTU.
 - **Switch On/Off** switches on an output port of an RTU and instructs it to switch it off automatically after a predefined time elapses.
 - **Switch Off** switches off an output port of an RTU.
If you defined the rule to issue a command (**Switch On**, **Switch Off** or **Switch On/Off**), you must click the **Node** button to select the tag to be acted upon. In the case of **Switch On/Off**, you must also specify how long the switch should be on (**Open time**)
4. Enter the day (**d**), hour (**h**), and minute (**m**) of the **Max. age of event**. In other words, if you enter 6 hours and 30 minutes, the action will not occur for the selected event if it happened more than six and a half hours ago. This field is helpful because you would likely find an event that happened two years ago uninteresting and you certainly wouldn't want a SIP call made because of it.
 5. Click **OK** to close the Add Action dialog.
 6. When you're finished with the Properties dialog, click **OK** to close it.

The next time the event you specified occurs in the node, the action you specified will happen.

You can **Edit** or **Remove** only those actions you created.

Node Security Properties

Use the **Security** tab (*Figure 14*) to set permissions for the node.

All of these settings show default values for the node. Our example of a tag's security settings shows that the owner is **dimi** and the tag belongs to the **admin** group. You will rarely need to change these settings, but you might want to assign different **Privileges**. Whether you can assign different privileges is determined by your account permissions.

Read and **Write** determine whether the node can be viewed (read) or edited (write). Therefore, you can use this dialog to determine the permissions the **Owner** of the node, the **Group** the node belongs to, and **Everyone** else has. You

can also select **None** for any of the fields to prevent anyone from viewing or editing the node.

Figure 14. Security Tab of Node Properties Dialog



For **Children Nodes**, you select whether to have child notes get the same privileges as the user or the privileges of the node.

Figure 14 also shows the **Availability** section. If you select the checkbox in this section, users who are not logged in will still be able to see the node. In the case of a trend, selecting the checkbox makes it publicly available.

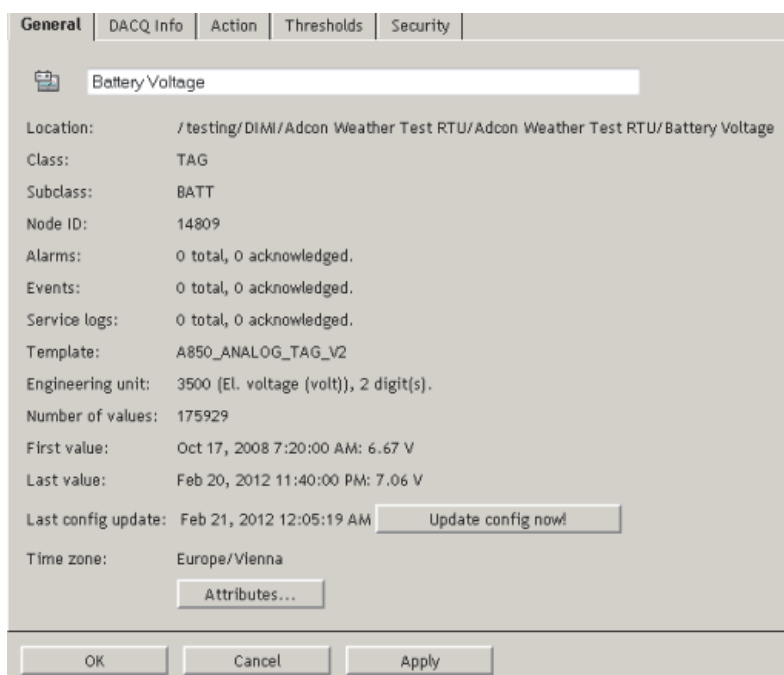
If you want the security permissions to apply to all the nodes that the current node is the parent of, click the **Apply to all child nodes** button.

Following is a discussion of the tab options for specific node types.

RTU/Tag

Figure 15 shows you the Properties dialog for a tag. One difference between RTU and tag properties is that you can set thresholds for a tag. A discussion of the **Thresholds** tab begins on [page 23](#).

Figure 15. General Tab of Tag Properties Dialog



The other difference between RTU and tag properties is the addition of the **Climate** setting for an RTU immediately above the Attributes button (Figure 16). You use this setting to select the type of climate applicable to the RTU’s location. You can also click **Detect by GPS** to automatically select a climate setting based on GPS coordinates.

Figure 16. Climate Setting on RTU Properties Dialog



Tag General Properties

Review the General tab for information about the tag, such as its class and subclass, node ID, number of alarms and events, engineering unit used, time zone of its server, and so forth.

Updating the addVANTAGE Pro Configuration

The tab also shows you the last time the software configuration database entries were updated, which will usually be midnight of the current day, unless it’s set to update at another time. However, if you don’t use automatic configuration—or if you just want to update the configuration now—click the **Update config now!** button. The system retrieves the current configuration from the server and updates the local one. If any special conditions are reached, an event could be issued (for example, if you specified an action based on an event such as the engineering units being changed, the event would be registered.)

Viewing Node Attributes

The **General** tab has an **Attributes** button. Click it to display the dialog shown in Figure 17.

Figure 17. The Attributes Dialog

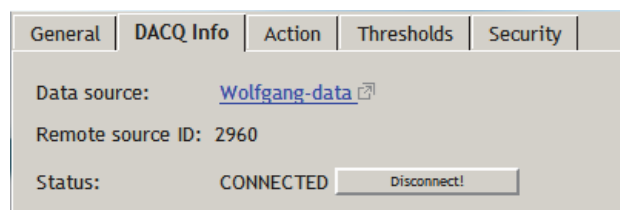
| Name | Type | Value |
|---------------------|---------|----------------------|
| EUID | INTEGER | 3500 |
| acquisitionMode | INTEGER | |
| acquisitionSchedule | STRING | |
| manufacturer | STRING | Adcon Telemetry GmbH |
| maxValue | DOUBLE | 20.0 |
| minValue | DOUBLE | 0.0 |
| sdiAddress | STRING | |
| sdiIndex | INTEGER | |
| sdiInfo | STRING | |
| sdiMethod | STRING | |
| type | STRING | |
| version | STRING | |

This dialog shows technical information about the tag’s attributes. You close the dialog by clicking the **X** in the upper right corner.

Tag DACQ Properties

As Figure 18 shows, use this tab to view information about the source and connection status of the tag.

Figure 18. DACQ Info Tab of Tag Properties Dialog



If you disconnect an RTU or tag on the DACQ Info tab, you will need to right-click the node in the Explorer and select **Connect To ▶ hostname**. Then select the device in the dialog that appears.

When a tag is acquiring data, the icon for the tag and for the RTU will display in the Explorer with a tiny moving arrow.

Tag Threshold Properties

Use the **Thresholds** tab (*Figure 19*) to set conditions that will trigger an alarm, event or service log entry when a threshold has been reached.

Figure 19. Thresholds Tab of Tag Properties Dialog

One of the actions you can set on the **Action** tab is for the **Threshold reached** event. Use the **Thresholds** tab to create the threshold that causes the action to occur, as detailed in the following steps:

1. Select whether to **Create "Threshold reached" event when** one of these choices is true:
 - **ALL conditions were met**
 - **ANY condition was met**
2. Add one or more conditions:
 - a. In the **Conditions** pane, click **Add**.
The dialog shown in *Figure 20* is displayed.

Figure 20. Adding a Threshold Condition

- b. Click the **Condition** dropdown to select the threshold's condition. Following are the choices in this dropdown:
 - **is greater than**
 - **is greater or equal to**
 - **is equal to**
 - **is less or equal to**
 - **is less than**
 - **is between (incl)**
The values are inclusive.
 - **is between (excl)**
The values are exclusive.
 - **is between (incl - excl)**
The values include the first but exclude the last.
 - **is between (excl - incl)**
The values exclude the first but include the last.
- c. In the **Value1** field, enter the condition's value.

- d. If you used any of the “**between**” conditions, enter the other value in the **Value2** field that appears. The following table describes how values are used with these conditions.

| Condition | Sample Value 1 | Sample Value 2 | Condition Applies to |
|---------------------------------|----------------|----------------|----------------------|
| is between (incl) | 2.0 | 5.0 | 2.0, 3.0, 4.0, 5.0 |
| is between (excl) | 2.0 | 5.0 | 3.0, 4.0 |
| is between (incl - excl) | 2.0 | 5.0 | 2.0, 3.0, 4.0 |
| is between (excl - incl) | 2.0 | 5.0 | 3.0, 4.0, 5.0 |

- e. Click **OK** to close this dialog and continue with adding a threshold.
- In the **Event** pane, click the dropdown to choose whether this threshold will result in an **Alarm**, **Event**, or entry in the **Service Log**.
 - Add a **Remark** to be displayed with the alarm, event, or service log entry. (optional)

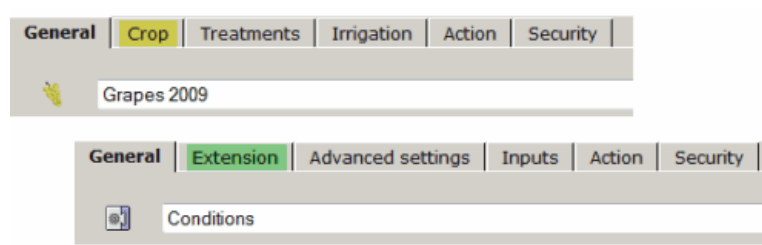
Panels

If you right-click a panel in the Explorer and select **Properties** from the context menu, the dialog shows only the three default tabs. To set up Lists, Trends, and Events, see [“Creating Panels” on page 30](#).

Extensions and Crops

If you right-click an extension or a crop in the Explorer and select **Properties** from the context menu, the dialog shows the default tabs illustrated in [Figure 21](#).

Figure 21. Default Tabs for Crop and Extension



To set up Extensions and Crops, see [“Working with Extensions and Crops” on page 50](#).

The Tools Menu

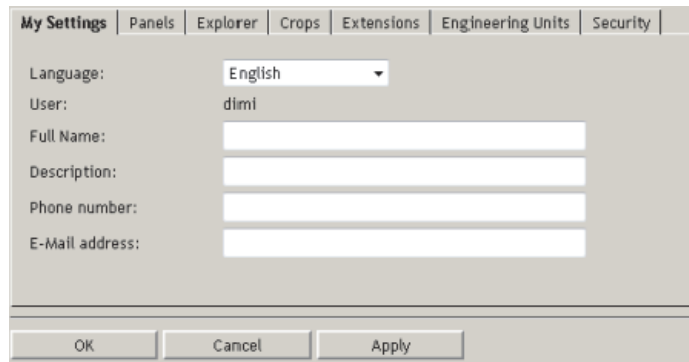
Use the **Tools** menu for administrative tasks such as setting users and groups, administering data sources, administering chemicals (for Plant Protection extensions), and so on. The menu options you see depend on your role, but following is a sample of the options:

- User options
- Server settings
- Chemicals database administration (only if at least one Plant Protection extension is installed)

Selecting User Options

To change options in your addVANTAGE Pro user profile, select **Tools ▶ User options** in the Explorer window. The dialog shown in [Figure 22](#) appears.

Figure 22. User Options Dialog, My Settings Tab



My Settings Tab

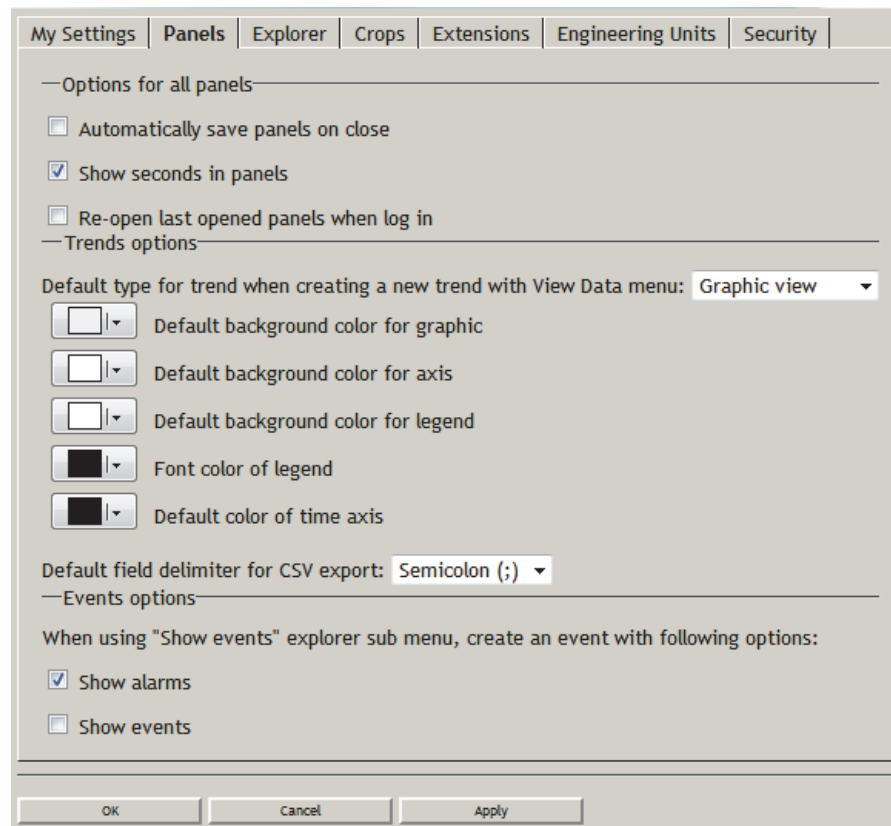
Use the **My Settings** tab to view or change various settings:

- Select the **Language** dropdown to choose the language used by addVANTAGE Pro during your sessions.
- Enter or update your **Full Name**, **Description**, **Phone number**, or **E-Mail address**.

Panels Tab

Use the **Panels** tab ([Figure 23](#)) to view or change default options for trends, events, and all panels. You can change all of these options separately when you work with panels, as described in ["Creating Panels" on page 30](#).

Figure 23. User Options Dialog, Panels Tab



Options for All Panels

- Automatically save panels by selecting the **Automatically save panels on close** checkbox. If you activate this option and close a panel you made

changes to, you are not asked if you want to save the panel—the panel will be saved by default.

- Select whether to see seconds when displaying time in a panel by clicking **Show seconds in panels**.
- If you prefer to always open addVANTAGE Pro with the panels you previously used open, select **Re-open last opened panels when log in**.

Options for Trends

These options serve three purposes:

1. At the top of the section, select the default view to use for a trend you create when you select **View Data** from the context menu: graphic, table, or instrument.
2. From the boxes that follow, define color defaults for the all views of new trends. You cannot use this dialog to change the colors in open or existing trend panels.
3. Use the last dropdown in this section to select the character to be used as the **Default field delimiter for CSV export**. When you export a trend into a CSV file, this option shows the character used to separate columns in the file.

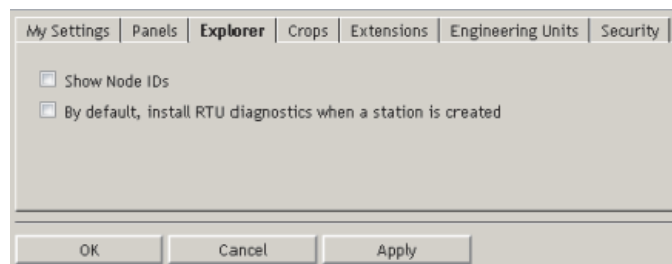
Options for Events

Use these checkboxes to determine whether a new Events Viewer should **Show alarms**, **Show events**, or show both.

Explorer Tab

Use the **Explorer** tab ([Figure 24](#)) to display the internal ID of each object in the Explorer. You probably won't need to activate **Show Node IDs** under normal use, but it can be valuable when you are debugging the system or you need technical support. You can also use this tab to **install RTU diagnostics** when you add RTU stations in Explorer.

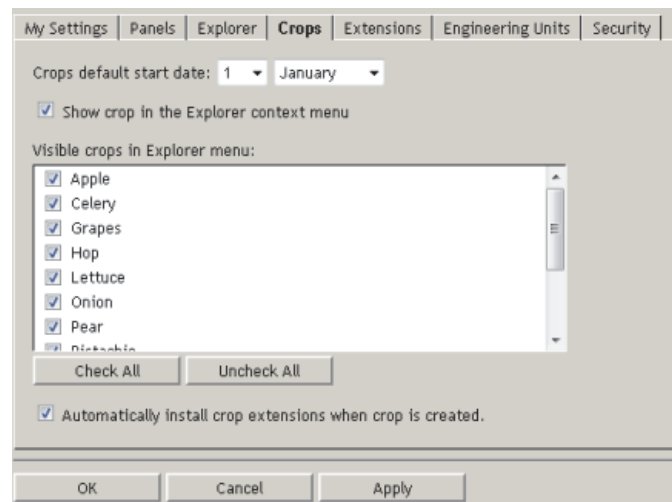
Figure 24. User Options Dialog, Explorer Tab



Crops Tab

Use the **Crops** tab ([Figure 25](#)) to view or change the **Crop default start date**, that is, the date to start collecting data about the crops.

Figure 25. User Options Dialog, Crops Tab



This dialog shows which crops will be visible to the user in the Explorer context menu. If a crop is not selected in this list, the user cannot add it to a node.

You also see an **Automatically install crop extensions when the crop is created** checkbox. The addVANTAGE Pro software can automatically include disease models and calculation extensions (collectively called crop extensions) usually associated with the crop. If you select this checkbox, those defaults are automatically added with the crop when it is added to a node. If this checkbox is not selected, only the crop itself is added to the node. The user can select the crop extensions separately—but only the extensions that are associated with the crop.

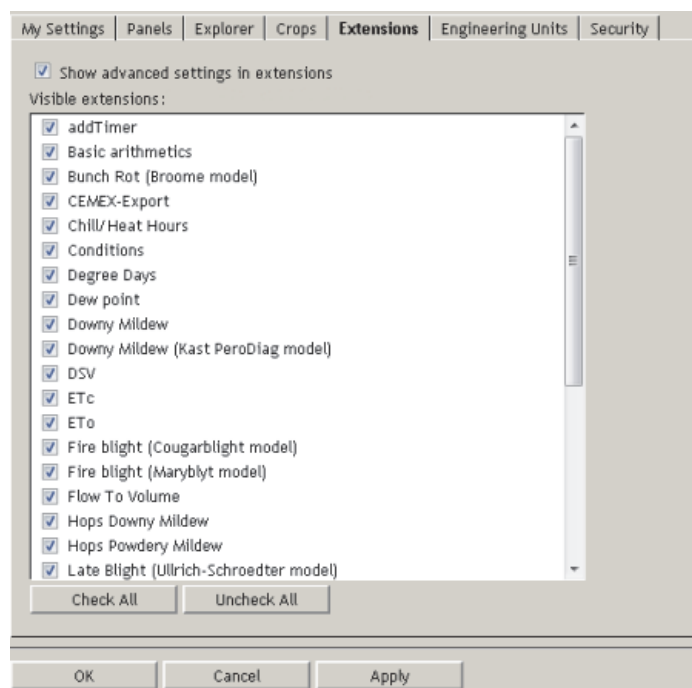
If a specific crop extension has been made invisible on the **Extensions** tab (as described next), the extension will not appear in any list of disease models or calculation extensions that can be added to the crop.

Your ability to edit this dialog depends on your role.

Extensions Tab

Use the **Extensions** tab (*Figure 26*) to select whether to **Show advanced settings in extensions**. If selected, the **Advanced settings** tab displays in an extension's Properties dialog.

Figure 26. User Options Dialog, Extensions Tab



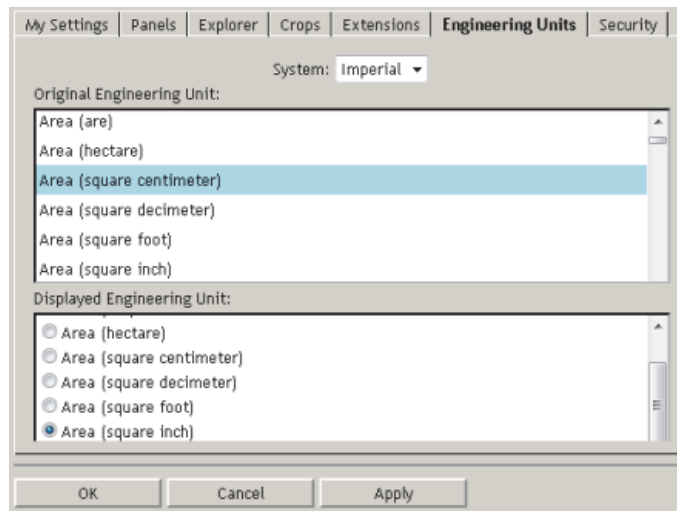
You can also make the various calculation extensions and disease models visible on the context menu.

Your ability to edit this dialog depends on your role.

Engineering Units Tab

Use the **Engineering Units** tab (*Figure 27*) to change the engineering units used to express the tags.

Figure 27. User Options Dialog, Engineering Units Tab



Use the **System** dropdown to choose how engineering units will be displayed to you. **Metric** and **Imperial** provide a set of default units that are either metric or American. For example, *Figure 27* shows that the original engineering unit for **Area (square centimeter)** in the **Metric** system will be displayed as **Area (square centimeter)**. If you select the Imperial system, the displayed unit changes to **Area (square inch)**.

You can also make specific selections for one or more of the original engineering units. To use a different displayed unit, select the **Custom**, system and click the radio button indicating the unit you want to be displayed, such as **Area (square foot)**.

To change the engineering unit for a specific tag in addVANTAGE Pro, do the following:

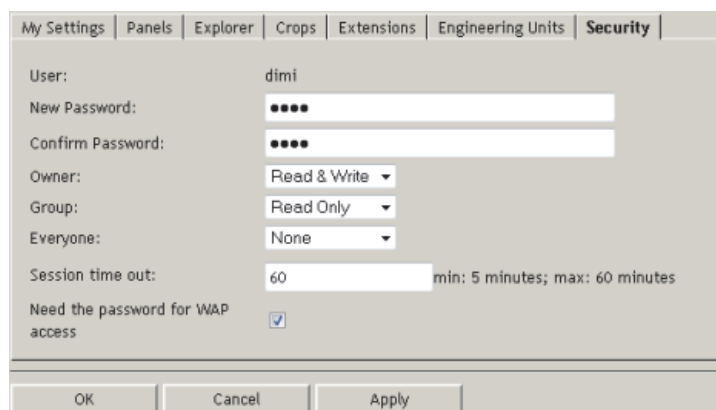
1. Find the engineering unit you want to change in the upper pane of the dialog and select it.
2. Valid alternatives are displayed in the lower pane. Select the one you want.
3. Click **Apply**.
4. To change other engineering units, repeat steps 1 through 3.
5. When you are finished, click **OK** to close the dialog.

Your ability to edit this dialog depends on your role.

Security Tab

Use the **Security** tab (*Figure 28*) to view or change security settings associated with your user profile.

Figure 28. User Options Dialog, Security Tab



You can change your password and account privileges, as well as the duration of your session timeout and whether you must use your password for WAP access to addVANTAGE Pro.

Some users will see only the User's name and the password fields. Your ability to edit this dialog depends on your role.

Using the Chemicals Service

Adcon does not supply lists of chemicals because the rules for their use differ between locations. For more details about this service, please consult the *addVANTAGE Pro 6.1 Extensions and Crops* manual.

Chapter 4. Creating Panels

Lists, Trend Viewers, and Event Viewers are panels that offer different ways to view data in addVANTAGE Pro 6.4.

You can right-click any panel and use the **Cut**, **Copy**, and **Paste** options to duplicate the panel in another part of the Explorer.

The List

Use the List to display a group of addVANTAGE Pro objects in a different way. The List is similar to an Explorer view, with the difference that the objects in a list are not expandable. Use a List when you need to work on a group of objects with similar properties, for example, configure extensions or synchronize tag settings.

You can create a List by clicking the **New Panel** icon and selecting **List**. Use the **Add Nodes** button on the List's toolbar (Figure 29) to add objects to the list. You can also remove objects that you no longer need by using the **Remove Nodes** button on the toolbar.

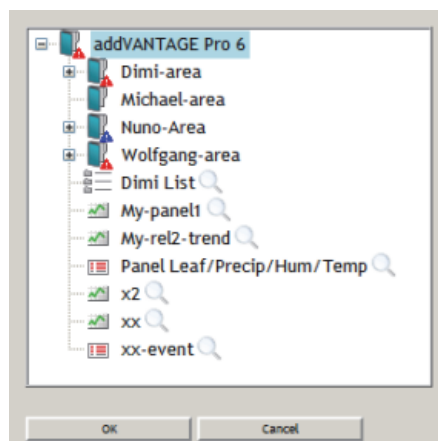
Figure 29. List Toolbar



Note: Removing an object from the list does not permanently delete it from the database. You will continue to see the object in an Explorer panel. To permanently remove an object, right-click it and select **Delete**.

When you add objects to a list from the List's toolbar, the Choose Nodes dialog opens, as shown in Figure 30.

Figure 30. Choosing Objects to Add to a List



Select an object in the dialog and click **OK**. You can add only one object at a time.

If you're using Internet Explorer, you can also add objects to the List by dragging and dropping them from an Explorer into an open List. If you're using Firefox, you can drag and drop an object onto the saved List's icon in an Explorer.

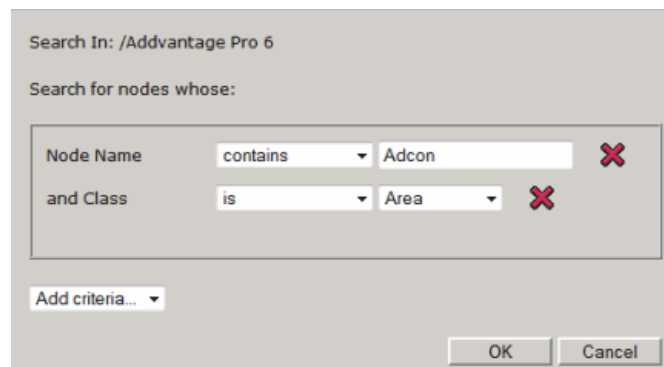
Search

You can also create a list as a result of a search operation. Suppose you want to search for all areas in the system having the string "Adcon" in their name.

Follow these steps to search for those areas and populate the List:

1. In an Explorer, click the Search icon (the magnifying glass icon on the right side of the text box in the Explorer toolbar) to open the advanced search dialog (*Figure 31*).
2. **Node name** is displayed by default, with the default property of **contains**. Enter `Adcon` in the text field.
3. Click the **Add criteria** dropdown, then select **Class**. Another line of search parameters is displayed in the Search dialog. You can also search by **Name**, **Subclass**, **ID**, and **Attribute**. Each type of criteria has its own properties. Click the down arrow to see those properties.
4. Keep the default property of **is**, but from the next dropdown, select **area**.
5. Click the **OK** button.

Figure 31. The Search Dialog



A List appears (*Figure 32*), containing all the objects fulfilling the selected criteria. After performing the required operations on the nodes in the list, you can save the list as a panel or discard it by closing it.

Figure 32. A List Viewer

| # | Name | Location |
|---|--------------------------------------|------------------------------------|
| 1 | Adcon Events | /addVANTAGE Pro 6/Dimi/ |
| 2 | Adcon Trends | /addVANTAGE Pro 6/Dimi/ |
| 3 | Adcon Weather Test RTU | /addVANTAGE Pro 6/MH_test_AUSTRIA/ |
| 4 | Adcon Weather Test RTU | /addVANTAGE Pro 6/condor/ |
| 5 | APRO Hosting 01 Adcon Klosterneuburg | /addVANTAGE Pro 6/Dimi/ |

Quick Search

A quick search option is also available:

1. Click the magnifying glass icon on the left side of the text box in the Explorer toolbar.
2. Select the search criteria (**Name**, **Class**, **Subclass**, or **ID**). Add and remove the search criteria as needed.

Note: The search starts from the node you selected in the Explorer.

3. Type the string you are searching for and confirm it by pressing the Enter key.

A list with the criteria you entered is displayed.

Search from Here

You can also right-click a node in the Explorer and select **Search from here**. The Search dialog shown in *Figure 31* is displayed, but the **Search in** line shows the

node where you started the search. Complete the Search dialog as described previously.

Properties

A list is a collection of nodes you want to treat as one object. For this reason, you should view properties only on the items in the list.

The Trend Viewer

Use the Trend viewer to see a plot of tag values stored in the database. To open a Trend viewer, click **New Panel** and select **Trend**. The trend toolbar is shown in *Figure 33*.

Figure 33. Trend Viewer’s Toolbar



Prior to explaining the ways to display data in a Trend viewer, please make yourself familiar with the tool bar and its elements, which you will frequently use in your daily work with addVANTAGE Pro 6.4.

| | | |
|-------------|---|---|
| Button 1 | Save | Saves the current panel. If this panel has not been saved before, clicking this button opens a dialog you use save it. |
| Button 2 | Save As | Opens a dialog you use to save the current panel with different name. If the current panel has not been saved before, this button functions the same as the Save button. |
| Button 3 | Add to node template library | Opens a dialog where you choose the destination for the template. |
| Button 4 | Print | Prints the Trend on the default printer. |
| Button 5 | Export all values in time range to PDF | Saves the values shown in Graphical or Table view as a PDF file. |
| Button 6 | Export all values in time range to CSV | Saves the values shown in Graphical or Table view as a CSV file. |
| Button 7 | Properties | Opens the Trend Options dialog, where you set the options for each object in the Trend, or add/remove objects from the Trend. |
| Button 8 | Go to Begin | Sets the starting date of the trend to the beginning date of your database. |
| Button 9 | Go 30/7/1 Days back | Moves the starting date of the trend 1, 7, or 30 days back. |
| Button 10 | Go back X | Goes back the specified period of time, where X is the span shown in 13. |
| Calendar 11 | Date Chooser | Shows the start date of the Trend viewer. Clicking the downwards arrow to the right of the Date Chooser opens a calendar you use to select a specific start date. |
| Button 12 | Go forward X | Goes forward the specified period of time, where X is the span shown in 13. |
| Button 13 | Go 1/7/30 Days forward | Moves the starting date of the trend 1, 7, or 30 days forwards. |

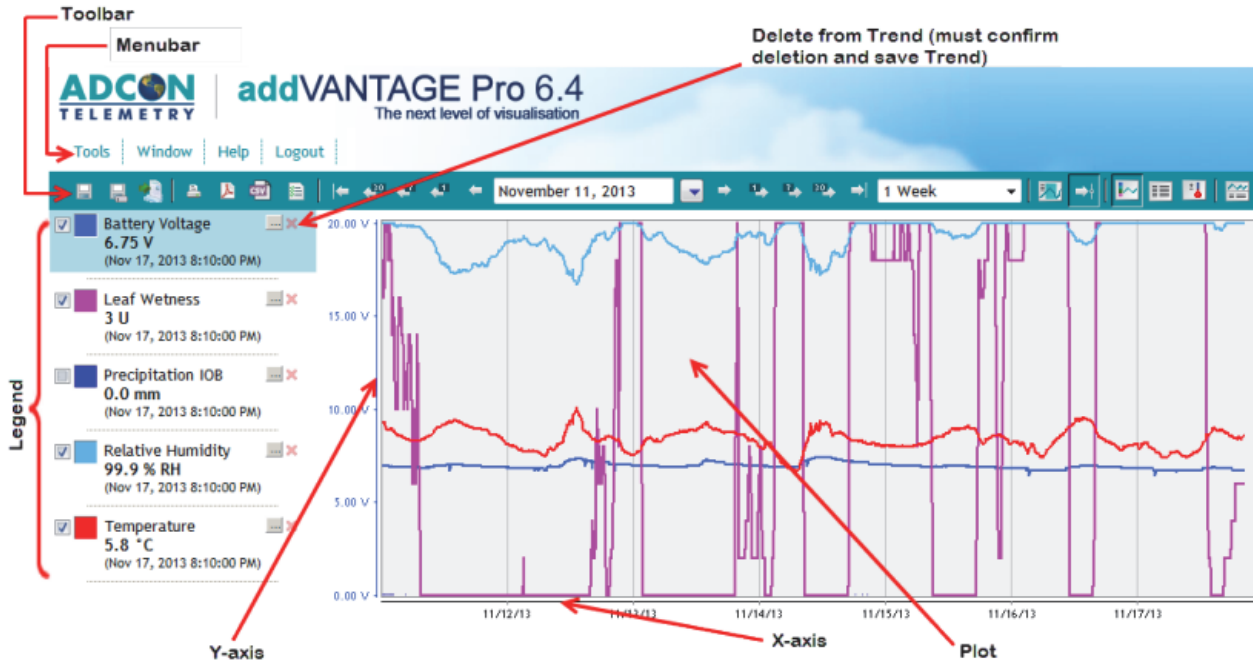
| | | |
|-----------|---|---|
| Button 14 | Go to End | Sets the end date of your database at the end of the currently selected span. If you have, for example, selected to view a 7-day span, and you click Go to End , the trend viewer will show you the data of the last 7 days of your database. |
| List 15 | Span Chooser | Displays the time span being used in the trend. Click the downwards arrow to the right of the Span Chooser to open a dropdown with predefined time spans to choose from. You'll also see a Custom duration. Select this to display the Trend Options dialog, where you'll select the Display tab and choose the duration you want. |
| Button 16 | Show Values at Cursor | Displays the values of each tag in a little flag next to the cursor. This allows a faster understanding than looking at the legend. If you unselect this button, you can click and drag to see several statistical values for the selected area. |
| Button 17 | Always jump to last available data | Sets the Trend view to always open showing the last available date. (Replaces having to open a Trend view and click Go to End .) |
| Button 18 | Graphical view | Displays the Trend's values on a graph. |
| Button 19 | Table view | Displays the Trend's values in a table. Table View also enables you to export data with a mouse-click. |
| Button 20 | Virtual instruments | Displays the Trend's values as they might appear on an instrument panel. |
| Button 21 | Link to another window | Opens a panel chooser to let you link the panel you are working with to another panel (see " Linked Panels " on page 48). |

Viewing Trends with Drag-and-Drop

Expand the tree in an Explorer until you reach the desired tag, then drag and drop it into an open Trend viewer. After a short delay, the tag's plot is displayed in the Trend viewer. [Figure 34](#) shows a Trend viewer displaying data for several tags. Notice that each tag in the graph displays in the color designated for it in the Legend that is to the left of the graph. You'll also see that the Y axis color is

linked to the tag color, but you can change that in the trend's properties (see [page 36](#)).

Figure 34. A Trend Viewer



You can plot tags coming from different RTUs on one Trend viewer. If you have tags from different RTUs with the same name, you can easily identify them by placing the cursor in the legend for the respective tag. After a short delay a tool tip pops up, displaying the tag's full path.

Note: Currently the drag and drop method works only if you are using Microsoft Internet Explorer. In Firefox you can still drag and drop tags, but only onto a Trend viewer icon within the same Explorer.

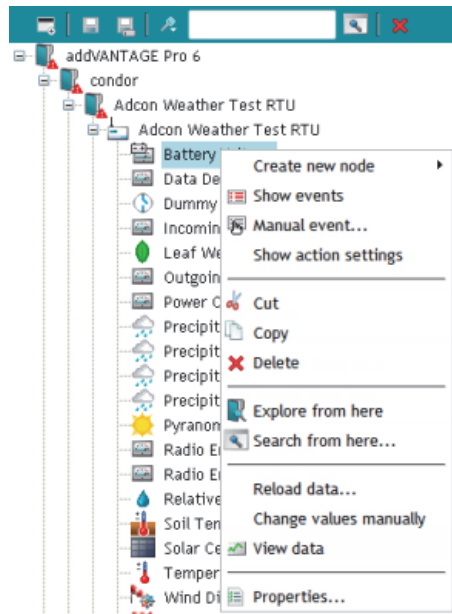
Viewing Trends from Explorer

addVANTAGE Pro 6.4 provides another way of creating a trend view, right from your Explorer. This is a great way to quickly create a trend panel for temporarily looking at data.

1. In the Explorer select the tags you want to see in your Trend (left-click the desired tags while holding down the Shift or the Ctrl key).

- Right-click the selected tags and select **View Data** from the context menu as shown in *Figure 35*.

Figure 35. View Data from Explorer



If you want to keep this Trend, you need to save it by clicking on the **Save** icon. Else if you close the panel you will be asked if you want to save it, unless you have selected **Tools** ▶ **User options** ▶ **Panels** ▶ **Automatically save panels on close**. In this case the new panel will be discarded unless you save it manually.

Using Properties to Add Tags to Trends

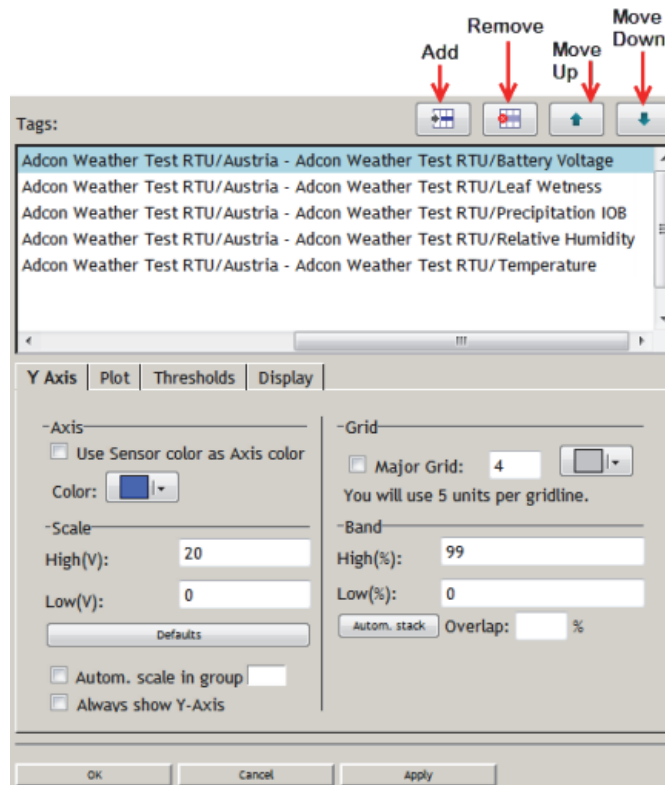
If you can't use drag and drop, follow these steps to display data in a Trend viewer:

- In an active Trend viewer, click **Properties** to display the Trend Options dialog shown in *Figure 36*.
- Click **Add** to display the Tag Chooser dialog listing the available tags.
- Expand the tree until you find the tags you need to display (you can select more than one tag by using the shift and control keys).
- Click **OK** when you are finished. The selected tags are now displayed in the **Tags** list, in the order you chose them.

If you need to add other tags in the Trend viewer, including tags from different areas/RTUs, repeat Step 2 through Step 4. To delete a tag, select it and click the **Remove** button. By using the arrow buttons, you can change the order of the tags in the list. When the Trend Options dialog lists all the tags you want to

display, click the **OK** button. The Trend viewer displays the tags and their data in a graphic form.

Figure 36. Selecting, Adding, and Removing Tags



Note: If no plots are displayed, check the date and use the arrows and the calendar in the Trend viewer to move to a date and time where you have data.

You can also use the extensive features available in the Trend Options dialog to customize the way your graph looks by viewing and changing the options on the **Y-axis**, **Plots**, **Thresholds**, and **Display** tabs. As you make changes in this dialog, you can click **Apply** to see how the changes affect the Trend before you save the changes. If you're satisfied with the changes, click **OK** to save the Trend.

Y-axis Tab

Following is an explanation of the options on the **Y-axis** tab shown in [Figure 36](#).

- **Use sensor color as Axis color.** The Y-Axis and sensor colors are assigned by addVANTAGE Pro and are identical by default. If you leave this checkbox unselected, you can use the color chooser you see to change the y-axis color, but the corresponding color of the tag on the graph will not change. If you select this checkbox, the color of the y-axis will be the same as the sensor color (as displayed on the Plot tab).
- **Scale**
 - **High /Low:** The scale refers to the tag's value range—in other words, the maximum or minimum value that is expected. If the tag can deliver data only in the range of -60°C to +40°C, for example, you need not enter +1000°C for the **High** and -200°C for the **Low** because no one would see the trend curve.

Normally, only people who know that their value is within a certain range use the **Scale** fields. For example, say you have a special Temp sensor in a production process. Its range is always between 20°C and 25°C but it is very important to see small changes. For this sensor, you would choose settings of **Low**=20 and **High**=25.

- The **Defaults** button resets the **High/Low** settings to the tag's default.
- If you select the **Autoscale** checkbox, the minimum and maximum values of the sensor will be determined automatically within the current time range. The **Scale High** and **Low** fields are ignored in this case.
- Use **Automatic scale in group** to display the scale as an average of the highs and lows for the tags in a trend. You can display multiple groups of such

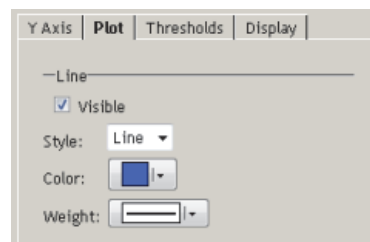
autoscaled sensors by assigning each to a group. For example, you could assign sensor values above a certain point to one group and values below that point to another group. Groups are entirely arbitrary and of your own making. Group numbers need not be consecutive.

- If you select the **Always show y-axis** checkbox, the y-axis for the current sensor (meaning the sensor whose y-axis properties you are viewing) will be shown on the grid always, even when another sensor is selected. Normally, when you select a sensor in the Legend section, the y-Axis is refreshed and the scale of the selected sensor is shown. However, if you select the **Always show y-axis** checkbox, you will see the current sensor's y-axis and the y-axis for the sensor you select in the Legend.
- Use the **Major Grid** to show horizontal lines. The number gives the number of lines spread over the value range of the sensor and the values between the lines. To know how many units will be displayed between two major grid lines, enter a number and press the Tab or Enter key. The line below shows You will use *XX* units per gridline, where *xx* is the number of units. The *xx* value depends on the **Scale** and the number of gridlines used. For example, if you turn on the major grid for a Temperature sensor, you might see You will use 6 units per gridline, meaning one gridline might show 20°C, while the line above it shows 26°C and the line below it shows 14°C.
- The **Band High (%) / Low (%)** is the percentage of available space for this y-axis and the trend curve. The default is 0 to 100% (meaning that the grid will use all available space). **Band** is helpful for Trends that contain many similar tags (e.g. Battery voltages=BV). You can say: Use the lower 50% for BV 1 and the upper 50% for BV 2. The axis and the trend curves would not overlap, but be drawn in different parts of the grid. The settings for BV 1 would be Low=0, High=50 and the lower half of the grid would display these voltages. BV 2 would have settings of Low=50, High=100 and the upper half of the grid would display its voltages. You can also experiment with these fields in conjunction with the autoscale, autostack, and overlap features to create a variety of interesting trends.
- The autoscaling feature introduces the ability to show multiple graph lines that overlap for multiple sensors, causing graphs that can be difficult to read. Use the **Automatic stack** and the **Overlap** percentage features to display the graph in several different ways that eliminate any such difficulty. You can select all of the sensors in the Properties dialog and click the Automatic stack button to stack the values for each sensor on top of each other. In some instances, however, you might need to show some overlap. You can still select sensors to autostack but enter a percentage of overlap to show.

Plots Tab

Following is an explanation of the options on the **Plot** tab shown in [Figure 37](#).

Figure 37. Trend Properties, Plot Tab



- The **Visible** checkbox has the same function as the checkbox in the Legend. If the checkbox is selected, the sensor values appear in the grid. If the checkbox is not selected, the values do not appear.
- You can use a **Line** or **Bar Style** for the values in the grid. The **Bar** style is useful for sum values, such as precipitation or data flow.
- Use the **Color** chooser to change the color of the **Line** or **Bar**.
- Select the **Line** or **Bar** thickness from the **Weight** list.

Thresholds Tab

You can define multiple thresholds per tag in a trend. A threshold is an interesting value (range), where the trend curve "enters" or "leaves" a certain range. For example, you can set a threshold for when a value is suddenly outside its usual range (e.g. "only values between 0 and 10°C are valid") or

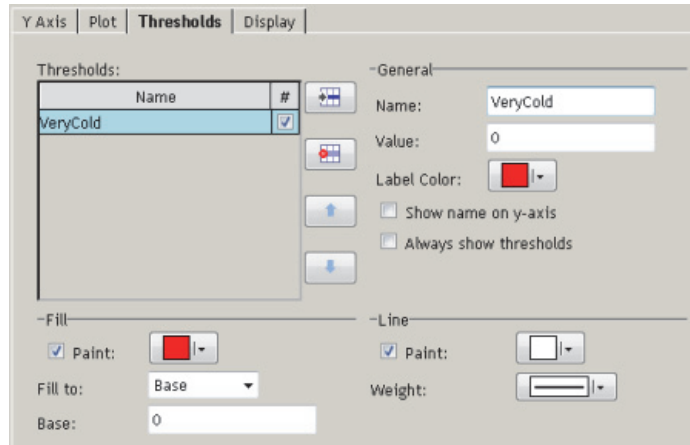
when a certain value is met (e.g. “when value drops below 0°C”). [Figure 38](#) illustrates the Thresholds tab.

CAUTION

Do not confuse this feature with the threshold settings in the tag itself.

With addVANTAGE Pro 6.4, each tag, independent from the trend, can have thresholds. When the tag’s thresholds are met, normally an action is performed. The trend’s thresholds are only informational and thus are not the same as the tag’s thresholds.

Figure 38. Trend Properties, Thresholds Tab



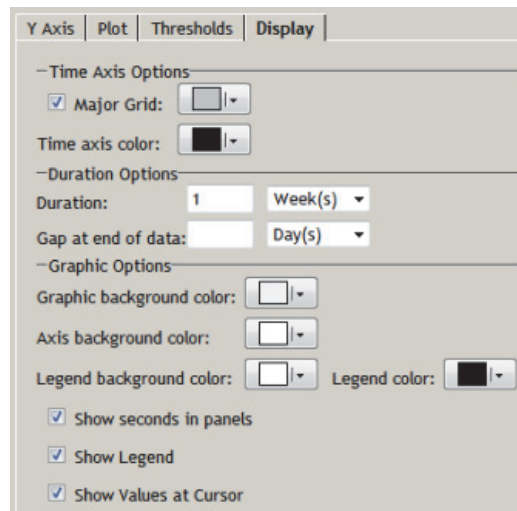
Following is an explanation of the options on the **Thresholds** tab shown in [Figure 38](#).

- In the **Thresholds** list, use the **Add**, **Remove**, **Move Up**, and **Move Down** buttons the same way you use them for Tags. In this case, however, when you **Add** a threshold, you will give it a name that has meaning for you.
- **General**
 - **Name** the threshold you added. If you don’t enter a name, addVANTAGE names it something like Threshold 1.
 - Enter a **Value** that determines where the threshold starts.
 - Use the **Label Color** chooser to pick the color of the name or value of the threshold displayed in the trend.
 - Select the **Show name on y-axis** checkbox to display the **Name** of the threshold on the grid, in the color you chose. If you do not select this checkbox, the **Value** will be displayed instead.
 - When you select the **Always show thresholds** checkbox, the threshold always displays on the grid, no matter which sensor is selected in the Legend. When this checkbox is not selected, the threshold displays on the grid only when the corresponding tag is selected in the Legend.
- Use the **Fill** fields to determine an area that should be filled (**Fill to**) from the entered **Value** to a **Base** set in the next field. You can also select **Min. Scale** or **Max. Scale** to draw a fill box in the range between the **Value** and the bottom or top of the plot.
- Use the **Line** fields to determine whether to **Paint** (draw) a line and which color to use, as well as which line **Weight** (thickness) to use.

Display Tab

Following is an explanation of the options on the **Display** tab shown in [Figure 39](#). These options apply to the Trend itself, not the individual tag selected in the Tags list.

Figure 39. Trend Properties, Display Tab



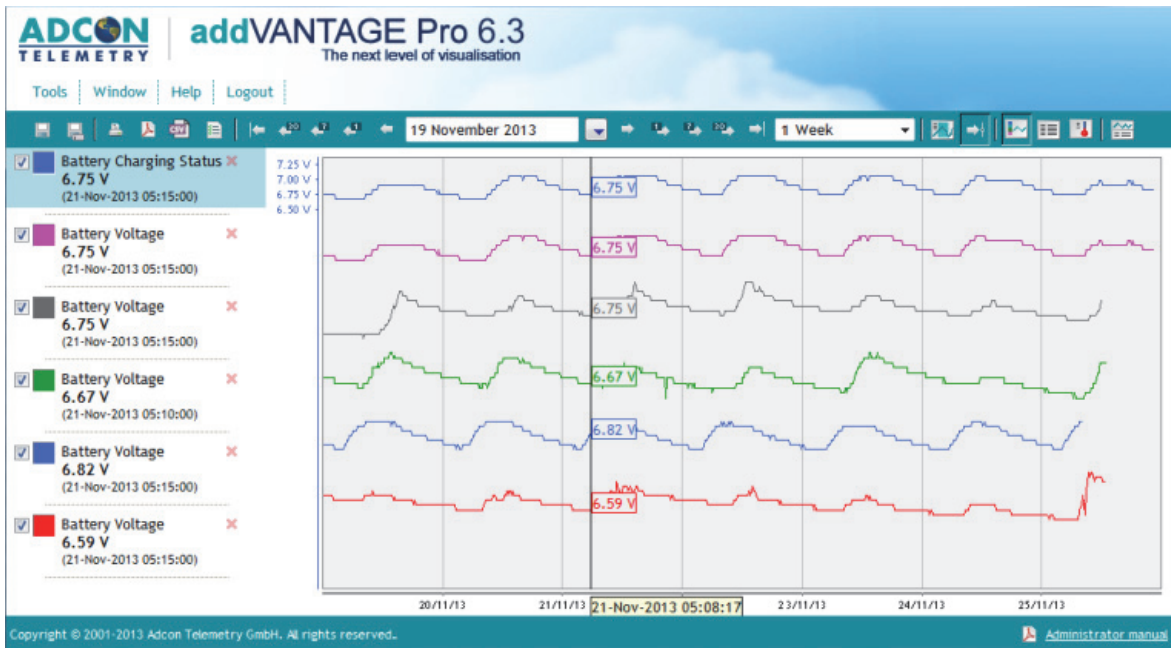
- **Time Axis**
 - If you select the **Major Grid** checkbox, vertical lines will display on the grid. The number of lines is not selectable, but it depends on the selected time range (e.g. 7 lines when 1 Week is selected or one line every 4 hours when 1 Day is selected). Use the color chooser next to the checkbox to specify the vertical line color.
 - The **Time axis color** shows the color of the time axis.
- The **Duration Options** are the same as the duration shown in the toolbar. You can change the duration on this tab or in the toolbar.
- Use the **Gap at end of data** to specify a period of time to appear at the end of the grid with no data, which could be useful, for example, to show when a threshold was reached.
- Use the **Graphic Background Color** chooser to pick a color for the grid's background.
- Use the **Axis background color** chooser to pick the color that displays in the background of the Y and X axes.
- Use the **Legend background color** chooser to pick the color used for the background of the legend along the left side of the dialog.
- The **Show seconds in panels** checkbox works as described on [page 26](#) to determine whether seconds show in displays of time.
- Use the **Show Legend** checkbox to display the Legend next to the grid.
- Use the **Show Values at Cursor** checkbox the same way you use Button 13 in the toolbar. That is, if you select the checkbox and then click the left mouse button, you see the sensor values at that position. Furthermore, you can click and drag the mouse to see all the values.
If the checkbox is not selected, you see certain statistics on the fly. Click and drag the mouse between two vertical lines to see a table with SUM/AVG/MIN/MAX values for all the tags at the bottom of the grid.

A Trend Example

Displaying tags from different areas/RTUs on the same Trend viewer can be very useful. For example, you could set up a panel showing the battery level for a

group of RTUs and be able to inspect or compare them at a glance, such as the example shown in *Figure 40*.

Figure 40. A Trend Viewer Showing Tags from Several RTUs



You can export all of the data from this graphical view the same way as from the table view, which is described on *page 42*.

Saving Trends

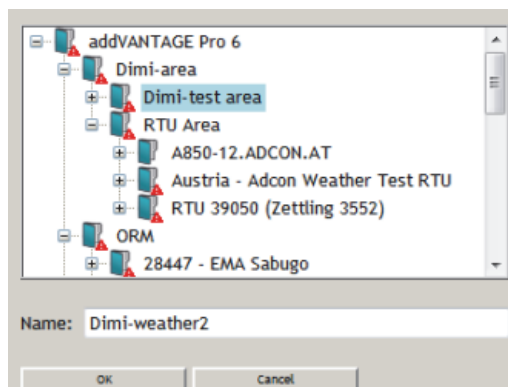
Now that you’ve configured those tags, you might want to save this panel for later use. If you are working with a data provider rather than your own copy of addVANTAGE Pro 6.4, please make sure that you have the privileges to save your changes.

When you first create a trend or any other type of panel, you must click **Save** or **Save As** in the toolbar to save the panel. You typically use **Save As** when you’ve made changes to an existing panel and want to save it under a different name. In either case, the Save dialog shown in *Figure 41* is displayed.

If you try to close an existing Trend, one of two things happens. If you chose to automatically save panels when you close them (*page 25*), the Trend closes with any changes you made saved. If you did not choose to automatically save panels, a pop-up appears, asking if you want to save the Trend viewer. Click **Yes** to display the Save dialog.

Select an area (a folder) where you want your custom Trend viewer saved. It’s best to select an area having a certain relationship with the content of the Trend, but there is no rule to prevent you from saving it directly under the root node (except that the name must be unique in that area). Enter an appropriate name in the **Name** field, then click **OK** to save the customized Trend viewer as a panel.

Figure 41. Save Dialog



You can also save a panel any time by clicking **Save**.

Create a Trend from a Template

If you have to create a large number of identical panels on different areas, you can use the **Trend from template** function and save yourself some work:

1. Create a panel in a single area by using one of the methods previously described, then add the tags you need and configure the panel's properties.
2. Save the panel in its area. This will be used later as a template panel.
3. Right-click the areas where you want to save the copied Trends and select **Create New Node ▶ Panel ▶ Trend from Template**. A File Open dialog is displayed.
4. Navigate to the area where you saved the template panel and select it, then click **OK**.

The system creates a Trend panel with the same properties as the panel used as the template in each area you selected. If a tag does not exist in the respective area, a placeholder for it is included in the panel, and you can choose to import data from another RTU that does have the tag. The new panels will borrow the name of the original panel used as the template. If a panel with this name already exists in an area, the newly created panel will have a running number appended, for example, **Weather (2)**.

Note: The term "template" is used only for better understanding the concept of creating panels from existing panels. Any panel can be used as a template.

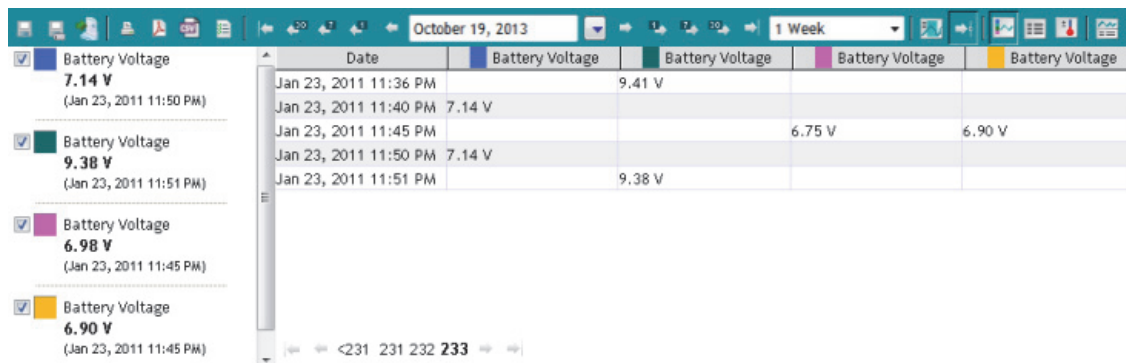
You can also right-click a trend and use the **Cut**, **Copy**, and **Paste** options.

From Trends to Tables


To switch from a graphical view to a tabular view of data, click the **Table view** button previously described (, page 33).

While the legend to the left and the tool bar remain the same, your trend lines will disappear and every value of the time span you selected will appear as a table, as shown in [Figure 42](#). Please note that this usually requires several screens, since a single day of 15-minute data already consists of 96 entries. You can therefore navigate back and forth in time by either clicking the page number or the navigation arrows on the bottom left of the table viewer.

Figure 42. Table View



| Date | Battery Voltage | Battery Voltage | Battery Voltage | Battery Voltage |
|-----------------------|-----------------|-----------------|-----------------|-----------------|
| Jan 23, 2011 11:36 PM | | 9.41 V | | |
| Jan 23, 2011 11:40 PM | 7.14 V | | | |
| Jan 23, 2011 11:45 PM | | 6.75 V | 6.90 V | |
| Jan 23, 2011 11:50 PM | 7.14 V | | | |
| Jan 23, 2011 11:51 PM | | 9.38 V | | |

You can click the **Graphical view** button () to return to the graphical display.

You can now edit data in the table view. One way to do this is to double-click a value in the table, type what you want the value to be, and press Enter. The value displays in the table and the cell is highlighted in red. If you change your mind, you can right-click in the cell and select **Remove manual values**.

If you want to add values to the table, right-click in the table and select **Add new values** to display the dialog shown in [Figure 43](#).

Figure 43. Adding a Value in the Table View

Say you manually recorded values in addition to the u's values. You can add them to the table by following these steps:

1. Select the **Tag** from the dropdown.
If you right-clicked a column in the table view, that tag is displayed by default.
2. Select the date and time (**Timestamp**) for the first new value.
3. The **Duration** defaults to the recording interval for the selected tag's values. Change this duration if needed.
4. Enter the **Value** and click **Add**.
The dialog remains, but the timestamp moves to the interval shown in the **Duration** field.
5. Enter any other new values, clicking **Add** each time.
6. When you've entered all the values, click **Close**.
The table will redisplay with the manual values you've just entered highlighted in red.

Note: If you entered values that already existed for the timestamp you selected, they will overwrite the table's values as manual entries.

Export data on the fly

While viewing data in the table view you can easily export all or part of it into an ASCII format file. In the graphical view, you can export only all of the data.

Method 1: Exporting all the data

1. Right-click in the body of the table.
2. Choose **Export** from the menu that appears.
3. Depending on your browser, you can open and/or save the file on your computer. The default name of this file is `values.csv`, which you should replace with a more meaningful name.
4. You can now open this file with spreadsheet software such as Excel or OOo.Calc

Figure 44. Export All Data from Table View

| Date | Battery Voltage | Battery Voltage | Battery Voltage | Battery Voltage |
|-----------------------|-----------------|-----------------|-----------------|-----------------|
| Jan 23, 2011 11:36 PM | 9.41 V | | | |
| Jan 23, 2011 11:40 PM | 7.14 V | | | |
| Jan 23, 2011 11:45 PM | | | | 6.90 V |
| Jan 23, 2011 11:50 PM | 7.14 V | | | |
| Jan 23, 2011 11:51 PM | | | | |

The values exported are not limited to the values you can currently see on the screen. This tool will export all the data that you could see in the initial table view, with the start date as shown in the calendar, and the amount of data as shown in the Span area (List 12 on page 33). Look at the example above. What we export in [Figure 44](#) is the data as can be seen in [Figure 42](#): 1 week (calendar), beginning on January 17.

Should you want to export all the data of a selected trend, you need to:

- Set the start date to the beginning of the database (Button 5 - Go to Begin)
- Select **Custom** in the Span Chooser (List 12), then select a reasonable duration that shows all of the data on the **Display** tab.

Method 2: Export selected data sets only (copy to clipboard)

If you want to export only a few lines of data from the current screen, you can copy them to the clipboard.

1. Select data you want to copy (Ctrl+Click or Shift+Click, as shown in [Figure 45](#)).
2. Right-click in the body of the table and select **Copy to clipboard** from the menu that appears.
3. Open a text editor or spreadsheet program such as Excel or OOo.Calc and paste the contents of the clipboard.

Figure 45. Copying Selected Data into the Clipboard

| Date | Battery Voltage | Battery Voltage | Battery Voltage | Battery Voltage |
|-----------------------|-----------------|-----------------|-----------------|-----------------|
| Jan 23, 2011 11:36 PM | | 9.41 V | | |
| Jan 23, 2011 11:40 PM | 7.14 V | | | |
| Jan 23, 2011 11:45 PM | | | | 6.90 V |
| Jan 23, 2011 11:50 PM | 7.14 V | | | |
| Jan 23, 2011 11:51 PM | | | | |

Context menu options:

- Copy selected values to clipboard
- Export all values in selected time range...
- Add new values
- Remove manual values
- Manual Event...

Instrument View


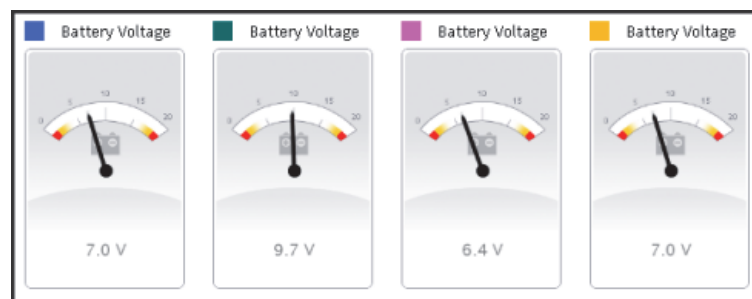

If you click the **Virtual Instruments** button (), you can view trend data in one other view ([Figure 46](#)), similar to what you might see on an instrument panel.

Figure 46. Trend Viewer Using Virtual Instruments



The Events Viewer

Use the Events viewer to see the events generated by nodes. To create an Events viewer, click **New Panel** and select **Events Viewer**.

You'll notice that the toolbar is very similar to the Trend's toolbar. You are not able to print the Events viewer, but you can click  to export the table values to a PDF file. The other buttons up through the time span chooser are identical. The differences after the span chooser are that the Events viewer has an **Acknowledge** button, and no button for switching between views (only the tabular view is available).

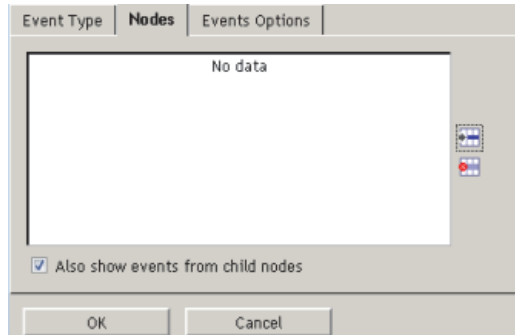
Properties

The Events viewer has extensive configuration possibilities to help you display the events and alarms in the most appropriate way for your needs. In an active Events viewer, click **Properties** to display the Events Options dialog shown in [Figure 49](#).

Selecting Nodes

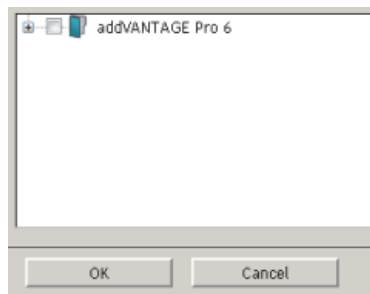
Use the **Nodes** tab (Figure 47) to select the nodes whose events you want to display. It is the second tab in the Properties dialog, but you must select a node before you can select the event types to display alarms for. With addVANTAGE Pro 6.4, all nodes can issue events.

Figure 47. Events Options Dialog, Nodes Tab



- Click the **Add** button to display the Nodes Chooser (Figure 48), which you use to add nodes whose events you want to view. You can select the root or expand it to select areas.

Figure 48. The Nodes Chooser



- To remove a node from the Events viewer, select it on the **Nodes** tab and click the **Delete** button.
- Use the **Also show events from child nodes** checkbox to see alarms/events from nodes belonging to the node you selected.

Another way to create an Events viewer is to select the nodes whose events you want to see from the Explorer, then right-click and select **Show Events**. Click **Properties** in the viewer to see the dialogs discussed here.

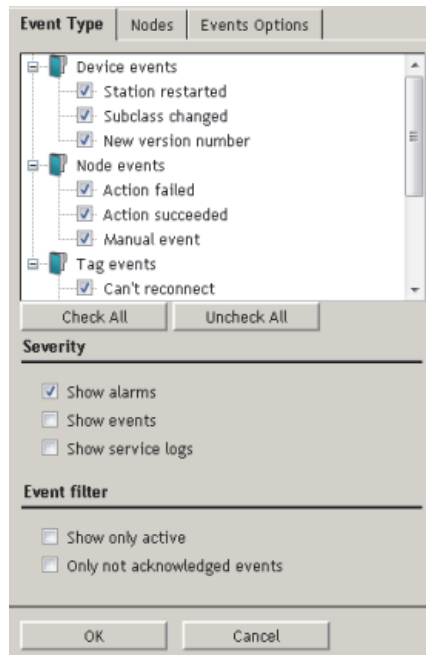
Displaying Event Types

The **Event Types** tab (Figure 49) displays all of the types of events that can issue an alarm or event. If the tab is blank, you have not selected any nodes (see "Selecting Nodes" on page 44).

You can drill down in the list to see that all events are selected by default. If you do not want a specific event to display in the Events viewer, unselect it in the

list. Use the **Check All** and **Uncheck All** buttons to select or unselect all events at once.

Figure 49. Events Options Dialog, Event Types Tab



The **Event Types** tab has several options for viewing events.

First, you can select which types of events to view in the Severity section:

- **Show alarms** displays alarms.
- **Show events** displays events.
- **Show service logs** displays messages from the system or from administrators, such as when an RTU has been replaced.

You can also use the Event filter section to further customize the Event Viewer. For example:

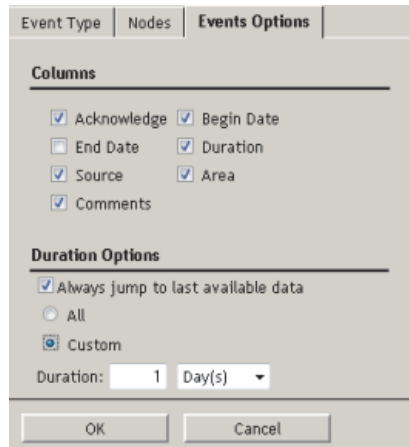
- **Show only active** displays only active alarms/events, depending on your choices for the next two checkboxes. If you leave this checkbox unselected, all alarms/events for the selected span will be displayed in the Events viewer. "Active" is defined as an alarm/event whose end date has not been reached or is unknown.
- **Only not acknowledged events** allows you to display only those messages you have not set as acknowledged.

A new alarm that can be set in an Events viewer is the alarm on delayed data.

Selecting Event Options

The **Events Options** tab (Figure 50) has customization options for the data to be displayed in the viewer.

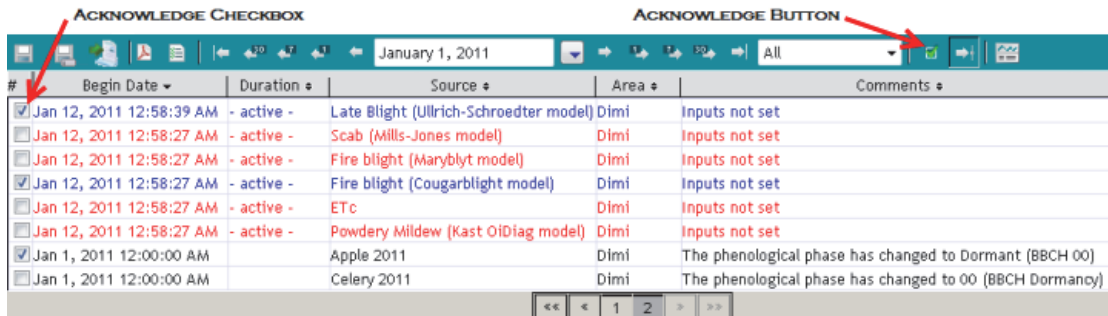
Figure 50. Events Options Dialog, Events Options Tab



- In the **Columns** section, each checkbox represents a column. Select the columns you want to see in the viewer
- The **Duration Options** mirror the settings on the toolbar. You can choose to **Always jump to last available data** or not. If you do select the checkbox, you will either view **All** of the available data or a **Custom** amount—data from the last available to a time frame you specify in **Duration**. As an example, say the tag was installed on January 1, 2009. If you choose **All**, the Events Viewer will display the most recent data—perhaps today’s data (the “last available”)—back to January 1, 2009. However, if you select **Custom** and then **26 Week(s)**, you’ll see the most recent data and back only 6 months from the most recent date.

Click **OK** when you are finished. The Events viewer (Figure 51) shows the events you selected.

Figure 51. Events Viewer Showing Events



Note: If no events are displayed, check the date and use the arrows and the calendar to move to a date and time where you have data.

Event Alarms

By default, alarms are shown in red. If you click the **Acknowledge** checkbox or button, they turn blue, which means that the alarms have been acknowledged.

If an extension issued an alarm, an alarm icon will be shown in the Explorer window by that extension (Figure 52), and the alarm icon will also be shown next to all the parent areas (folders) where the extension resides. Therefore,

while it's the *Statistic* extension that has an alarm, the *Hop* crop and the *Dimi area* folder also show the alarm icon.

Figure 52. Alarm Icons in the Explorer



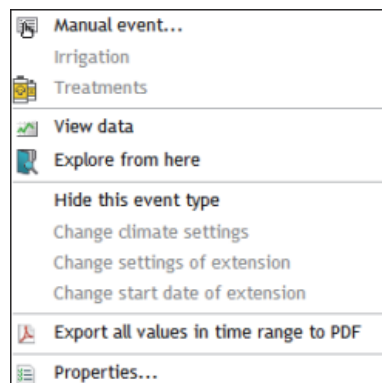
Locating the Source of an Alarm

If you notice in an Explorer that an area shows an alarm, you can right-click the node and select **Show Events**. An Events viewer properly configured for you is displayed, showing only the alarms pertinent to the selected object.

Using the Events Viewer

Right-click an event in an Events viewer to see the context menu shown in *Figure 53*.

Figure 53. Event Viewer Context Menu



You have several options for working with the events:

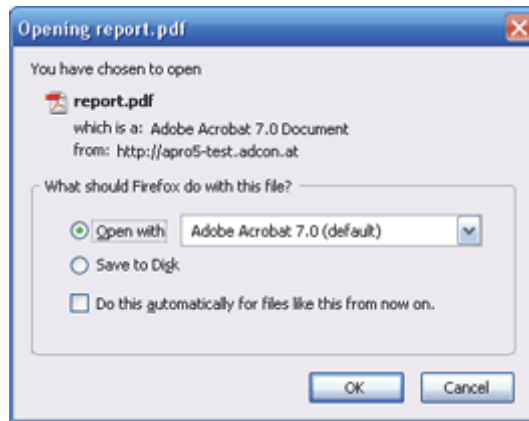
- Select **Manual Event** to manually add an event.
- If you selected a crop event, you can add **Irrigation** or **Treatments** to the crop.
- Create a trend by selecting one or more events, right-clicking, and selecting **View data**.
- Click **Explore from here** to an Explorer showing where the event originated.
- Use **Hide this event type** to hide all events similar to the one you selected in the Events viewer. Show the event type again by going to the **Event Types** tab, clicking **Select All**, and clicking **OK**.
- If appropriate for the event, you can **Change climate settings**, **Change settings of extension**, or **Change start date of extension** from this context menu.
- Use **Export all values in time range to PDF** to view the events in a table in a PDF document.
- Select **Properties** to open the same Properties dialog as when you select **Properties** in the Events viewer toolbar.

Saving the Events Viewer

You can save your Events viewer as a panel, just like you did with the Trend (see also page 40). You can also export events in the table view to a PDF file by right-clicking anywhere in the table and selecting **Export all values in time range to PDF** (see *Figure 53*).

The dialog shown in [Figure 54](#) appears.

Figure 54. View/Save dialog for Event List PDF



Notice that the file is named `report.pdf` by default. You can view the document immediately by selecting **Open with**, or you can use **Save to Disk** to save the file to the default location for your downloaded files. If you open the PDF, then save it, it is by default saved in your Temp folder.

When you view the PDF, you'll see that all of the events that are shown in the panel are included.

Create an Events Viewer from a Template

If you have to create a large number of identical panels on different areas, you can use the **Events from template** function and thus save yourself some work:

1. Create a panel in a single area using one of the methods described above, then add the events you need and configure the panel's properties.
2. Save the panel in its area. This will be used later as a template panel.
3. Right-click the selected areas where you want a copy of the Events viewer and choose **Create New Node** ▶ **Window** ▶ **Events from Template**. A File Open dialog displays.
4. Navigate to the area where you saved the template panel and select it, then click **OK**.

The system creates an Events panel with the same properties as the panel used as the template in each area you selected. If an event source node does not exist in the respective area, it won't be included in the panel. The new panels will borrow the name of the original panel used as the template. If a panel with this name already exists in an area, the newly created panel will have a running number appended, for example, **Statistics (2)**.

Note: The term "template" is used only for better understanding the concept of creating panels from existing panels. Any panel can be a template.


As mentioned in [" on page 29](#), you can right-click an area where you want to save the new Event viewer and select **Create New Node** ▶ **Using node templates**. In the dialog that opens, navigate to and select the template you want to base the new Event viewer on, then click **Finish**. Another dialog displays the area and Event viewer name. When you click **Close**, you'll see the new Event viewer in your Explorer.

You can right-click any event and use the **Cut**, **Copy**, and **Paste** options to duplicate the Event viewer in another part of the Explorer.

Linked Panels

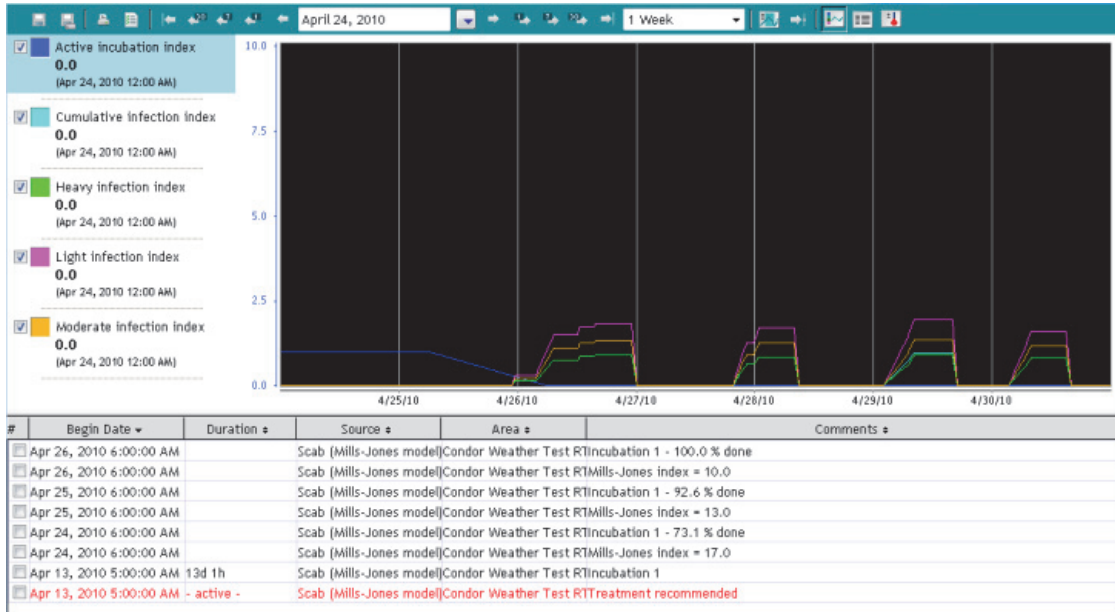
You can link two panels by combining them in a single window. You can then use the standard navigation methods to "move" both panels synchronously in time.

Note: Only Trend and Events panels can be linked.

To combine two panels, click the **Link to another window** button () on the toolbar of one of the panels. In the Explorer that is displayed, navigate to and select the panel you want to link, then click **OK**. A new panel will be created. You can now save the linked panel for future use, just like any other panel ([Figure 55](#)).

Note: The original panels are not affected.

Figure 55. Linked Panels



To change the properties of an individual panel, right-click the appropriate panel and select **Properties**.

Chapter 5. Working with Extensions and Crops

As with previous versions, the addVANTAGE Pro 6.4 software has extended functionality through additional software modules called *extensions*. Extensions are entities that perform calculations.

The types of extensions you work with are *calculation extensions* and *disease models*. Crops are nodes that store information about phenophases, irrigations, and treatments. They are not extensions. Disease models and calculation extensions are relatively new to addVANTAGE Pro. Disease models are extensions that apply only to crops. They “hear” events issued by the crop. Calculation extensions usually apply to an area. Although they can be children of a crop node, calculation extensions do not “hear” events issued by the crop (such as when a treatment is applied).

Another set of extensions now available is called RTU diagnostics. These diagnostic extensions are associated with RTU tags and they verify whether the data coming from a tag is plausible. The configuration of these extensions is related to climate, which is why you learned about the Climate Manager on [page 29](#) of Chapter 3.

You can right-click any extension or crop and use the **Cut**, **Copy**, and **Paste** options to duplicate the extension or crop in another part of the Explorer.

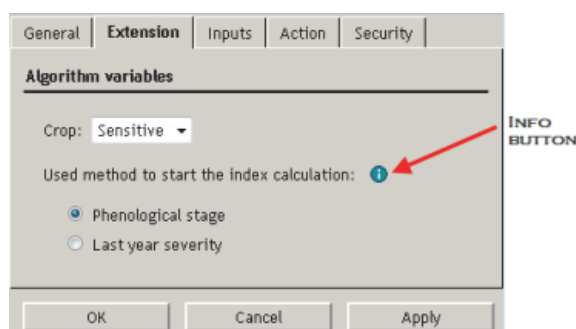
About addVANTAGE Pro Extensions

Some extensions are included with the software and others can be installed separately. For example, Adcon Telemetry provides a collection of calculation extensions and disease models (still collectively known as extensions) in a package you can receive free of charge upon request from your Adcon distributor. These extensions are documented in a separate *addVANTAGE Pro 6.1 Extensions and Crops* manual. This manual is located on the software CD, which also contains these free extensions, or you can download it from Adcon Telemetry’s website at <http://www.adcon.at>.

The Info Button

You will also find that certain calculation extensions and disease models have additional information available in the software itself, on their Properties dialog’s **Extension** tab. When you see an “info” button like the one shown in [Figure 56](#), click it to open a dialog with additional information about using the extension.

Figure 56. Info Button for Apply Powdery Mildew (Kast OiDiag) Extension



Recalculating Extensions and Crops

An extension will automatically recalculate some properties in the input data sets if their options have been changed. This operation usually takes only a couple of seconds, but in extreme cases (large data sets or many extensions

running in parallel) it can take up to several minutes. The properties in the **Crops, Treatments, Inputs, Irrigation** and **Extension** tabs may force a recalculation if changed. You can also force a recalculation of one or more extensions by selecting the respective extension in the Explorer, right-clicking, and selecting **Recalculate**.

Adding Extensions and Crops to an Area

Extensions can be added to areas and crops, while crops can be added only to areas. To add either, follow these steps:

1. Open an Explorer.
2. Select where you want the extension or crop added (use the shift and control keys if you're selecting multiple locations).
3. Right-click the highlighted areas and select **Create New Node ▶ Calculation extension ▶ extension** or **Create New Node ▶ Crops ▶ crop**.

The extension or crop is added to the area in the Explorer, where you can configure it as needed. When you add a crop, all of the disease models of the crop are created by default.

Adding Multiple Extensions and Crops

You can add multiple extensions and crops to the same area and create different settings for each. Subsequent extensions and crops in the same area take the name of the first, but with a number appended (for example, **Apple [1]** or **Running Total [1]**).

You can also edit multiple extensions and crops. Use Ctrl+Click to select the nodes, then click **Properties**. If the selected extensions are not identical, only their common properties will be displayed.

Using Templates to Add Extensions or Crops

You can add an extension or crop by creating it from a template, that is, from an existing extension or crop.

1. Add the extension or crop in a single area using one of the methods described above and set up its properties as you want to.
2. Right-click the selected areas where you want a copy of the extension or crop and select **Create New Node ▶ Calculation extension ▶ Create from template** or **Create New Node ▶ Crops ▶ Create from template**. A File Open dialog displays.
3. Navigate to the area where you saved the template panel and select it, then click **OK**.

The system creates the extension or crop with the same properties as the one used as the template in each area you selected. All child extensions will also be created.

You can also install extensions and crops using node template by right-clicking an areas and selecting **Create New Node ▶ Using node templates**. Select the appropriate template and click **Finish** to add the extension or crop. See [" on page 29](#) for an explanation of the node template library.

Adding a New Season to a Crop

In a way that is similar to creating a crop by template, you can start a new season of a crop. This procedure is probably more useful for the previous year's crops because it copies the crop properties but uses current dates.

1. In the Explorer, right-click the crop you want to copy for the new season and select **Create New Node ▶ Start new season**.
2. Update the new crop's properties or move it to another area as needed.

Adding RTU Diagnostics to a Tag

RTU diagnostics can be added only to tags or sensors. To add these diagnostic extensions, follow these steps:

1. Open an Explorer.
2. Select the sensor where you want the diagnostic extension added (use the shift and control keys if you're selecting multiple sensors).

- Right-click the highlighted areas and select **Create New Node ▶ RTU diagnostics ▶ extension**. You can also select **Create New Node ▶ RTU diagnostics ▶ Create all missing** or **Create New Node ▶ RTU diagnostics ▶ Create from template**. With the first option, all missing diagnostic extensions are added to the sensor. The second options allows you to use a template to create the diagnostic extension, the same as you would in [Using Templates to Add Extensions or Crops](#) above.

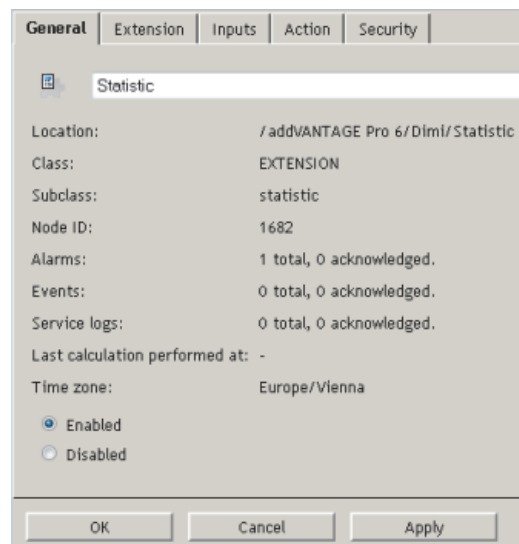
Alternatively, you can all select of the RTUs in an Explorer or a List and then right-click and select **Create New Node ▶ RTU diagnostics ▶ Create all missing**.

The extension is added to the sensor in the Explorer, where you can configure it as needed.

Properties for Extensions and Crops

Some extensions and crops must be configured. To display the properties ([Figure 57](#)), highlight the extension or crop in the Explorer and click the **Properties** icon.

Figure 57. Statistics Extension Properties Dialog, General Tab



Common Properties

[Figure 57](#) shows the properties specific to the **Statistics** calculation extension.

The **General** tab displays general information about the extension/crop, and for calculation extensions and disease models, allows you to enable or disable individual extensions. If you look closely at the extension's icon, you can tell whether the extension is enabled or disabled.

The green triangle in the bottom left corner indicates the extension is enabled.



The gray square in the bottom left corner indicates the extension is disabled.



If an extension is being executed, the green triangle appears to move across the bottom of the icon.

The **Action** and **Security** tabs are discussed in Chapter 3, beginning on [page 18](#)

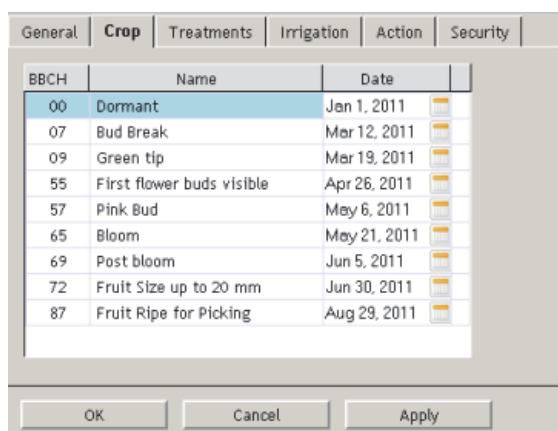
Properties for Crops

Three additional tabs pertain to crops.

The Crop Tab

Use the **Crop** tab (Figure 58) to specify and monitor the phenological stages of crops.

Figure 58. Apple Crop Properties, Crop Tab



Note: Clicking a phase causes a graphic depiction of the phase to be displayed on the right side of the dialog, if such a graphic is available.

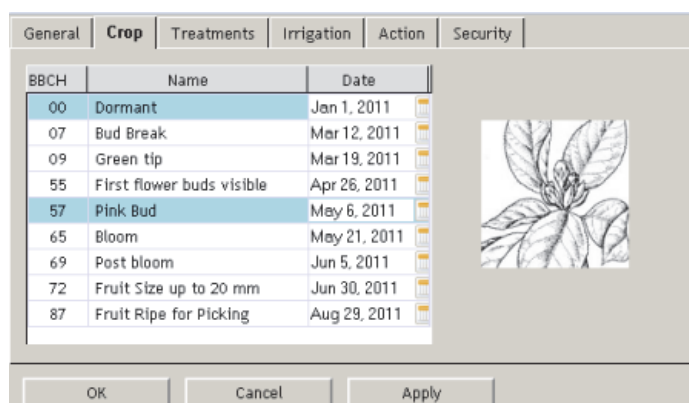
Changing Dates for Phenological Phases

In principle, the system can be installed anytime, but starting it at the beginning of the growing season has certain advantages. The software uses a calendar year with the appropriate phase dates set, but you can change these dates. Do this by using the **Crops** panel, which sets the proper phenological phase.

To set the season or phase starting date, complete the following steps (Figure 59):

1. Right-click the crop and select **Properties**.
2. Click the **Crop** tab.
3. Select the desired phase in the **Name** column.
4. Click the calendar icon and select the date for the phase to begin, then click **Apply**.

Figure 59. Setting a Phase's Start Date



Generally, the first phenological phase corresponds with the year's begin in the northern hemisphere, that is the 1st of January. After you set the date for a phase, dates for subsequent phases are automatically computed from the defaults programmed for each crop.

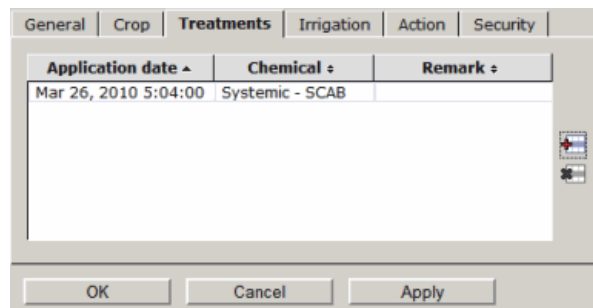
Climatic conditions during certain seasons could differ from the pre-programmed defaults, so Adcon recommends that you verify at regular intervals whether the model is in synchronicity with the field conditions. If this is not the case, use the method described above to change each individual phase's date accordingly.

The Treatments Tab

Use the **Treatments** tab (Figure 60) to inform the crop that a chemical treatment was applied.

If the chemical you want to apply is not in the system's database, you must first add it. For more details about adding to or modifying the chemicals database, refer to the *addVANTAGE Pro 6.1 Extensions and Crops* manual.

Figure 60. Apple Crop Properties, Treatments Tab

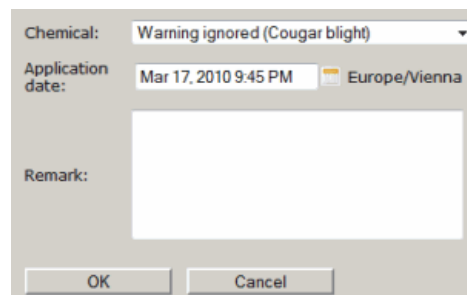


Adding Treatments

A spraying application usually follows a treatment recommendation (displayed in the Events list). To inform the model you applied a field treatment, do the following (Figure 61):

1. Right-click the crop and select **Properties**.
2. Click the **Treatments** tab, then the **Add** icon.

Figure 61. Applying a treatment



3. Select the chemical you applied in the field from the list.
4. In the **Application date** field, click the calendar icon to select the correct treatment date and time from the pop-up that appears.

Note: *The wording shown to the right of the calendar icon indicates the server's location.*

5. Enter a **Remark**. (optional)
6. Press **OK** when you are done.

Note: *If you want to add a spray for more than one disease (even if the chemicals used are identical), you have to perform this operation for each individual disease for which the treatment is valid.*

If you decide that you don't need to apply a treatment, e.g. if other circumstances determine a treatment is not warranted, you must select the entry "Warning ignored" from the chemicals list. Whatever the case is, you must either apply a treatment or choose to ignore the warning. Failure to do so will leave the current alarm active and no new warnings will be issued.

Removing a Treatment

If you added a treatment and you find out at a later date that it was incorrect (either the date of application, or the type of chemical), you can delete the treatment and add the correct one, if needed. Proceed as follows:

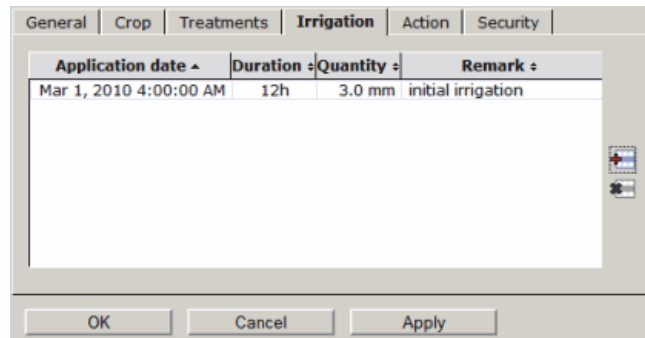
1. Right-click the crop and select **Properties**.
2. Click the **Treatments** tab.
3. Select the treatment from the lower list and click the **Remove** icon.
4. Click the **OK** button.

The system automatically recalculates the model's new data.

The Irrigation Tab

Use the **Irrigation** tab (Figure 62) to create irrigation schedules for the crop.

Figure 62. Apple Crop Properties, Irrigation Tab

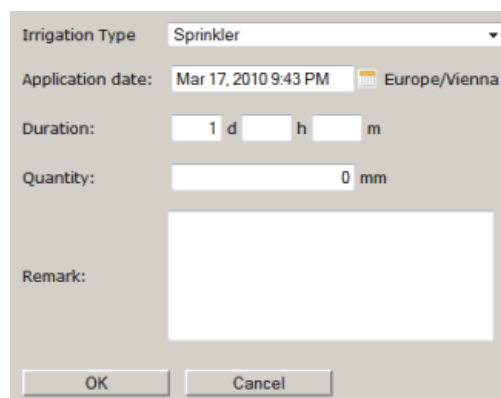


Adding an Irrigation Schedule

When you add an irrigation schedule, you are telling the model what type of irrigation, how long the irrigation occurs, and how much irrigation the crop gets (Figure 63). Follow these steps to add this schedule:

1. Right-click the crop and select **Properties**.
2. Click the **Irrigation** tab, then the **Add** icon.

Figure 63. Adding Irrigation



3. Select the **Irrigation Type**.
4. In the **Application date** field, click the calendar icon to select the correct treatment date and time from the pop-up that appears.

Note: The wording shown to the right of the calendar icon indicates the server's location.

5. In the **Duration** field, enter how long the irrigation lasted, in days, hours, and/or minutes.
6. In the **Quantity** field, enter how much water was sent to the crop.
7. Enter a **Remark**. (optional)
8. Press **OK** when you are done.

Removing an Irrigation Schedule

If you added an irrigation and you find out at a later date that it was incorrect, you can delete the treatment and add the correct one, if needed. Proceed as follows:

1. Right-click the crop and select **Properties**.
2. Click the **Irrigation** tab.
3. Select the appropriate irrigation schedule from the lower list and click the **Remove** icon.
4. Click the **OK** button.

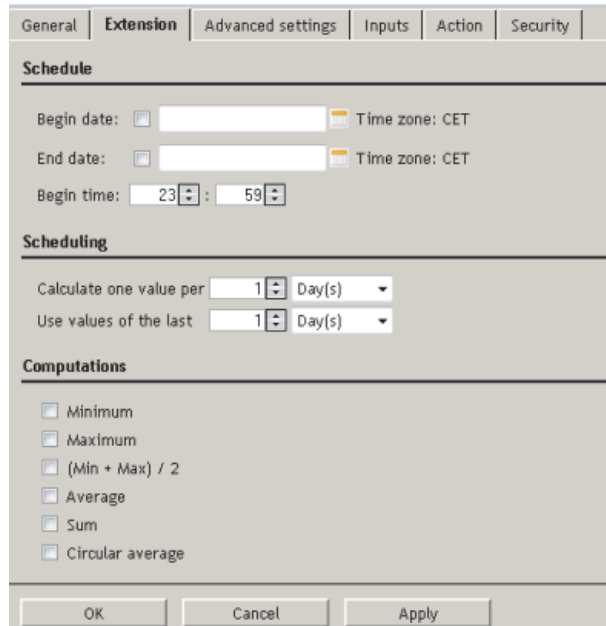
Properties for Calculation Extensions and Disease Models

Calculation extensions and disease models have tabs that are different from the ones for crops.

The Extension Tab

Most calculation extensions have an **Extension** tab, as shown in *Figure 64*.

Figure 64. Statistic Extension Properties, Extension Tab

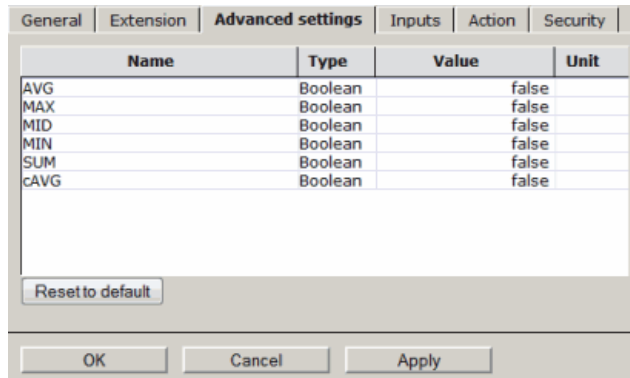


The **Extension** tab contains options and configuration panels that are specific to the extension.

The Advanced Settings Tab

The **Advanced settings** tab (*Figure 65*) provides additional information about the extension options.

Figure 65. Statistic Extension Properties, Advanced Settings Tab

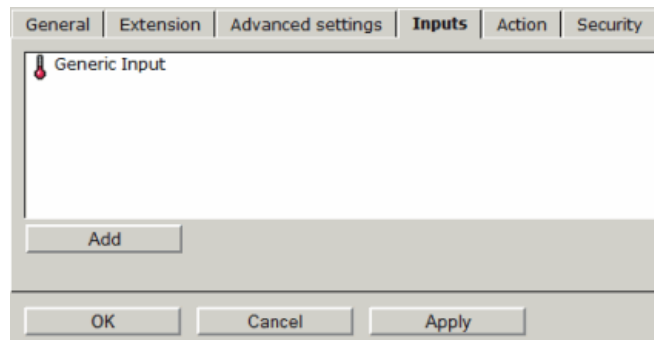


Note that your ability to see the **Advanced Settings** tab is determined by your user role and a setting in the **Tools** menu.

The Inputs Tab

The **Inputs** tab ([Figure 66](#)) allows you to set the input tags for the extension. The extensions have an intelligent algorithm that searches for the appropriate tags, but only within the extension's own area.

Figure 66. Extension Properties Dialog, Inputs Tab



Adding Inputs

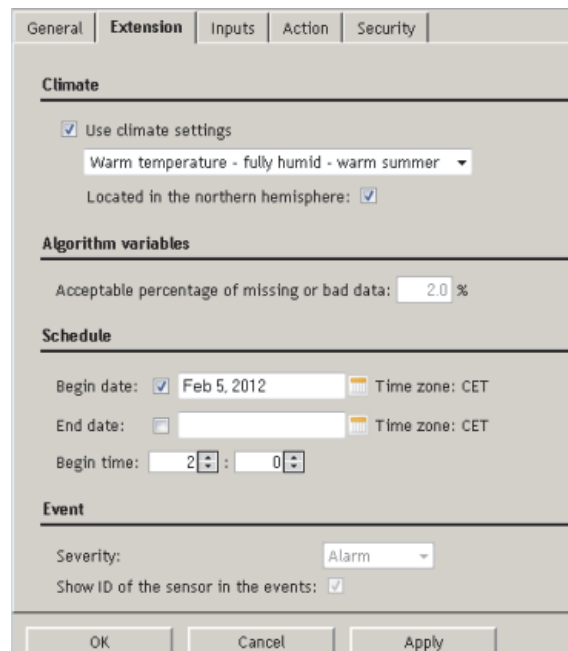
If some tags are missing and the auto discovery feature fails, you should manually intervene to identify the required tags. If multiple tags of the same type exist on a given area, you will have to manually select which tag type you want. You can also choose tags from other areas if you need the same type of tag in more than one area, or if the application can be used with tags from other areas.

For more details about calculation extensions and disease models, please consult the *addVANTAGE Pro 6.1 Extensions and Crops* manual.

Extension Properties for Diagnostic Extensions

Although the diagnostic extensions have the same properties as calculation extensions, the **Extensions** tab has some differences, as you can see [Figure 67](#).

Figure 67. Diagnostic Extension Properties, Extensions Tab



RTU diagnostics are tied to the 30 climate options you can choose from. Your climate was most likely selected for you when you installed the RTU and is based on your GPS location, although you can select a different climate. Climate characteristics are controlled through the Climate Manager, discussed in [" on page 29](#).

The properties shown in [Figure 67](#) are for a Missing Data diagnostic extension of a temperature sensor. If you use one of the available climates, you must use the **Algorithm variable** and **Event** settings that are associated with it. However, you

can unselect the **Use climate settings** checkbox and enter or select the data you want. The **Schedule** settings are the same as for calculation extensions.

Appendix. Appendix

This appendix contains information concerning third-party tools Adcon employs.

Third-Party Tools

The following tools are used in the addVANTAGE Project. You can find the actual license agreement for each tool in our separate addVANTAGE Pro Third-Party License Agreements document.

ant.jar
Version 1.6.2
<http://ant.apache.org>
Apache License Version 2.0, January 2004
Used to compile the project with dependencies on other project parts

antlr-2.7.6.jar
Version 2.7.6, Current Version 3.2
<http://www.antlr.org/>
Freeware
Database framework

backport-util-concurrent-3.0.jar
Version 3.0, Current Version 3.1
<http://backport-jsr166.sourceforge.net/>
Creative Common Public Domain
Database framework

bcprov-jdk14-131.jar
Version 1.31, Current Version 1.37
<http://www.bouncycastle.org/>
MIT License
keymanager.RSACipher

commons-beanutils.jar
Version 1.7, Current Version 1.8.3
<http://jakarta.apache.org/commons/beanutils/>
The Apache Software License, Version 1.1
Toolkit which is used for webdevelopment

commons-codec-1.3.jar
Version 1.3, Current Version 1.3
<http://jakarta.apache.org/commons/codecs/>
Apache License Version 2.0, January 2004
Used to en-/decode binary data

commons-collections-3.1.jar
Version 3.1, Current Version 3.2
<http://jakarta.apache.org/commons/collections/>
Apache License Version 2.0, January 2004
Helper for webapplication

commons-compress-1.4.1.jar
Version 1.4.1
<http://commons.apache.org/proper/commons-compress/>
Apache License Version 2.0, January 2004
zipping/unzipping files (backups, mail attachments)

commons-digester.jar
Version 1.8, Current Version 3.2
<http://jakarta.apache.org/commons/digester/>
The Apache Software License, Version 1.1
Toolkit which is used for webdevelopment

commons-discovery-0.4.jar
Version 0.4, Current Version 0.4
<http://commons.apache.org/discovery/>
Apache License Version 2.0, January 2004
Webapp programming framework

commons-fileupload-1.3.jar
Version 1.3
<http://commons.apache.org/proper/commons-fileupload/>
Apache License Version 2.0, January 2004
to upload&import node templates

commons-io-2.4.jar
Version 2.4
<http://commons.apache.org/io/>
Apache License Version 2.0, January 2004
handling text files

commons-logging.jar
Version 1.0.4, Current Version 1.1
<http://jakarta.apache.org/commons/logging/>
Apache License Version 2.0, January 2004
Helper for Scheduler (Quartz)

commons-logging-api.jar
Version 1.0.4, Current Version 1.1
<http://jakarta.apache.org/commons/logging/>
Apache License Version 2.0, January 2004
Helper for Scheduler (Quartz)

commons-net-3.1.jar
Version 3.1
<http://commons.apache.org/proper/commons-net/>
Apache License Version 2.0, January 2004
export extensions, FTP Queue

commons-validator.jar
Version 1.1.3, Current Version 1.3.1
<http://jakarta.apache.org/commons/validator/>
Apache License Version 2.0, January 2004
Used to validate entries in webapplication

datetimepicker2.7.jar
Version 2.7, Current Version 2.7
<http://www.lavantech.com/datetimepicker/>
Bought - <http://www.lavantech.com/license.shtml>
Used to set addMIN's update Backup time

dom4j-1.6.1.jar
Version 1.6.1, Current Version 1.6.1
<http://www.dom4j.org/>
BSD license
For all parts that are by SPG

ehcache-1.5.0.jar
Version 1.5.0, Current Version 1.7.2
<http://ehcache.org/>
Apache License Version 2.0, January 2004
Database framework

ejb3-persistence.jar
Version 3.0 FR (1.0.1.GA)
basically MIT
Database framework

gmaps4jsf-1.1.3-u3.jar
Version 1.1.3
<http://code.google.com/p/gmaps4jsf/>
Apache License Version 2.0, January 2004
Google maps implementation

gson-2.2.2.jar
Version 2.2.2
<http://code.google.com/p/google-gson/>
Apache License Version 2.0, January 2004
making webapp programming easier

hibernate-annotations.jar
Version 3.4.0.GA, Current Version 3.4.0.GA
<http://annotations.hibernate.org>
LGPL
Database framework

hibernate-commons-annotations.jar
Version 3.1.0.GA
<http://annotations.hibernate.org>
LGPL
Database framework

hibernate3.jar
Version 3.4.0.GA, Current Version 4.0.1.GA
<https://www.hibernate.org/344.html>
LGPL
Database framework

hibernate-entitymanager.jar
Version 3.4.0.GA, Current Version 3.4.0 GA
<https://www.hibernate.org/397.html>
LGPL
Database framework

hsqldb.jar
Adcon-Version
<http://hsqldb.org/>
LGPL (Version 3, June 2007)
Database

iText-2.0.7.jar
Version 2.0.7, Current Version 5.0.0
<http://itextpdf.com/>
LGPL (Version 2.1, February 1999)
PDF creation

jaas.jar
<http://java.sun.com/javase/technologies/security/>
Sun binary code license (~Freeware)
Used in authentication

JainSipApi1.2.jar
Version 1.2
<http://jain-sip.dev.java.net/>
Public Domain, SIP Calls

JainSipRi1.2.jar
Version 1.2
<http://jain-sip.dev.java.net/>
Public Domain, SIP Calls

javamelody-1.25.0.jar
Version 1.25.0

<http://code.google.com/p/javamelody/>
LGPL (Version 3, June 2007)
Monitoring tool

javassist-3.4.GA.jar
Version 3.4.GA, Current Version 3.11.0.GA
<http://www.csg.is.titech.ac.jp/~chiba/javassist/>
LGPL
Database framework

javasysmon-0.3.4.jar (com.jezhumble.javasysmon.JavaSysMon)
Version 0.3.4
<https://github.com/jezhumble/javasysmon>
NetBSD (2-line) license
CPU usage monitor

jaxen-1.1.1.jar
Version 1.1.1, Current Version 1.1.1
<http://jaxen.org/>
Apache style, Attached
XPath in DOM4J (webapp)

JbcParser.jar
Version 3.7, Current Version 3.7
<http://www.bestcode.com/html/jbcparser.html>
Bought
Basic arithmetic extension parser

jcommon-1.0.10.jar
Version 1.0.10, Current Version 1.0.10
<http://www.jfree.org/jfreechart/>
LGPL (Version 3, June 2007)
Chart drawing tool

jfreechart-1.1.1_adcon.jar
Version 1.1_adcon, Current Version 1.0.6
<http://www.jfree.org/jfreechart/>
LGPL (Version 3, June 2007)
Chart drawing tool

jmf.jar
<http://java.sun.com/products/java-media/jmf/>
JMF License
Java Media Framework, used to play Wave files in SIP calls

jsf-api-1.2_04-p02.jar
Version 1.2_04-b16-p02, Current Version 2.0
<http://java.sun.com/javaee/javaserverfaces/reference/api/>
CDDL (parts Apache)
Webapp programming framework

jsf-facelets.jar
Version 1.1.14
<https://facelets.dev.java.net/>
Apache License Version 2.0, January 2004
Webapp programming framework

jRegistryKey.jar
Version 1.4.5
<https://sourceforge.net/projects/jregistrykey/>
LGPL (Version 2.1, February 1999)
Tool to read/write the windows registry (addTray)

jspeex.jar
Version 0.9.7
<http://jspeex.sourceforge.net/index.php>
BSD License
Used in SIP Calls

jta-1.1.jar
1.1
1.1
<http://java.sun.com/javaee/technologies/jta/index.jsp>
Attached
Database framework

log4j-1.2.14.jar
Version 1.2.14, Current Version 1.2.14
<http://logging.apache.org/log4j/docs>
The Apache Software License, Version 1.1
Used to create logfiles depending on the loglevel and package name

mail.jar
Version 1.2, Current Version 1.4
<http://java.sun.com/products/javamail/>
Click Download / you must accept License
Used to handle E-Mail

minimalSipCaller.jar
Derived from <http://sip-communicator.org>
LGPL (Version 2.1, February 1999)
Used in SIP Calls

myfaces-api-1.2.3.jar
Version 1.2.3, Current Version 2.0.0-alpha
<http://myfaces.apache.org/>
Apache License Version 2.0, January 2004
Webapp programming framework

myfaces-impl-1.2.3.jar
Version 1.2.3, Current Version 2.0.0-alpha
<http://myfaces.apache.org/>
Apache License Version 2.0, January 2004
Webapp programming framework

nist-sdp-1.0.jar
<http://jain-sip.dev.java.net/>
Public Domain
Used in SIP Calls

ojdbc14.jar
Version 10.2.0.1.0, Current Version 10.2.0.1.0
<http://www.oracle.com>
Bought
Used in the Oracle database connection

quartz.jar
Version 1.6.0, Current Version 1.6.0
<http://www.opensymphony.com/quartz/>
Apache License Version 2.0, January 2004
Scheduling engine used for addTimer and data acquisition

richfaces-api-3.3.1.GA.jar
Version 3.3.1.GA, Current Version 3.3.2 SR1
<http://www.jboss.org/richfaces>
LGPL
Webapp programming framework

richfaces-impl-3.3.1.GA.jar
Version 3.3.1.GA, Current Version 3.3.2 SR1
<http://www.jboss.org/richfaces>
LGPL
Webapp programming framework

richfaces-ui-3.3.1.GA.jar
Version 3.3.1.GA, Current Version 3.3.2 SR1
<http://www.jboss.org/richfaces>
LGPL
Webapp programming framework

serializer.jar
Version 2.7.0
<http://xml.apache.org/xalan-j/>
Apache License Version 2.0, January 2004
Helper to (de-)serialize data, which is needed by Velocity

slf4j-api-1.5.3.jar
Version 1.5.3, Current Version 1.5.10
<http://www.slf4j.org/>
Freeware
Used for logging in JPA

slf4j-log4j12-1.5.3.jar
Version 1.5.3, Current Version 1.5.10
<http://www.slf4j.org/>
Freeware
Used for logging in JPA

struts.jar
Version 1.2.4, Current Version 2.0.8
<http://struts.apache.org/>
Apache License Version 2.0, January 2004
Framework that supports web development

Stun4J.jar
-no versioning-
<https://stun4j.dev.java.net/>
LGPL (Version 2.1, February 1999)
SIP call tool

velocity-1.4.jar
Version 1.4, Current Version 1.5
<http://velocity.apache.org/>
Apache License Version 2.0, January 2004
Framework that supports web development

velocity-tools-1.1.jar
Version 1.1, Current Version 1.3
<http://velocity.apache.org/>
Apache License Version 2.0, January 2004
Framework that supports web development

WinRegistry-4.5.jar
Version 4.5
<https://code.google.com/p/java-registry/>
LGPL v3
Used for installer

xalan.jar
Version 2.7.0, Current Version 2.7.1
<http://xml.apache.org/xalan-j/>
Apache License Version 2.0, January 2004
Used in the database framework

xmlsec-1.4.3.jar
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Used in the database framework

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