

addVANTAGE Pro 6.6

User Manual



SMART WIRELESS SOLUTIONS



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Document Release 6.6, 11-2017
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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.

What's New in addVANTAGE Pro

Following are some of the features in this version:

- Enhanced right-click menu in Explorer and List view to improve usability.
- Graph view, Table view, Event list, Virtual instruments, and Map view are merged into one panel called Data view.
- It is possible to show/hide the Graph view, where you can select the event that is currently displayed. It can help to save space.
- Improved skipping to last value when selecting another time span.
- Data view now has a min/max start/end date; you cannot see data outside this interval.
- The newly integrated JavaScript engine (instead of former hostside rendering of PNGs) gives a faster response and opens the door to new features. New features can be added and modified easily.
- With addVANTAGE Pro 6.6 it is much easier to edit data in the Graph view (for example, min/max value and its position on the plot) and to change/adjust the views and its illustration.
- The algorithm used for stacking the Y-Axis on the plot has been improved.
- Added time selection to quickly see how much data there is and what part of it you are currently viewing. Also can be used to navigate and change the selected time duration.
- Added (semi-)transparent color selection for a trend line in Data view.

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.

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 Transmission Unit* (RTU) (or *transmitter*). Adcon currently provides a large array of RTUs employing different wireless technologies, from radio module (UHF) to 3G/4G 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 3G/4G 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*), your personal computer (and/or server) and a wireless modem. The addVANTAGE Pro software runs as server installation and provides a web front-end. You can access the data with your PC, laptop, tablet, smartphone—via an local area network or Internet.

The Gateway acts as a network controller—at regular intervals (typically 15 minutes, but this can be changed) it requests data via radio from the UHF RTUs or via 3G/4G modem from the GPRS RTUs in the network. The gateway stores the incoming data in its memory, thus allowing the gateway 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 gateway type, and some receiver models can handle up to 1000 stations.

Note: *The period of time a gateway can store data depends on the number of RTUs in the network, the customized settings and the gateway type. The oldest data is overwritten.*

The gateway is designed for the highest level of availability to ensure continuous operation, even during power failure. The addVANTAGE Pro software regularly downloads the data from the gateway's memory to the PC.

A Modular Approach

The addVANTAGE Pro software, which is based on a client/server architecture, collects data from one or several Adcon Telemetry Gateways 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. Depending on your settings it 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.

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 11.0 and Mozilla Firefox have been certified to be fully compatible with addVANTAGE Pro. Additional browsers could be supported in future releases.

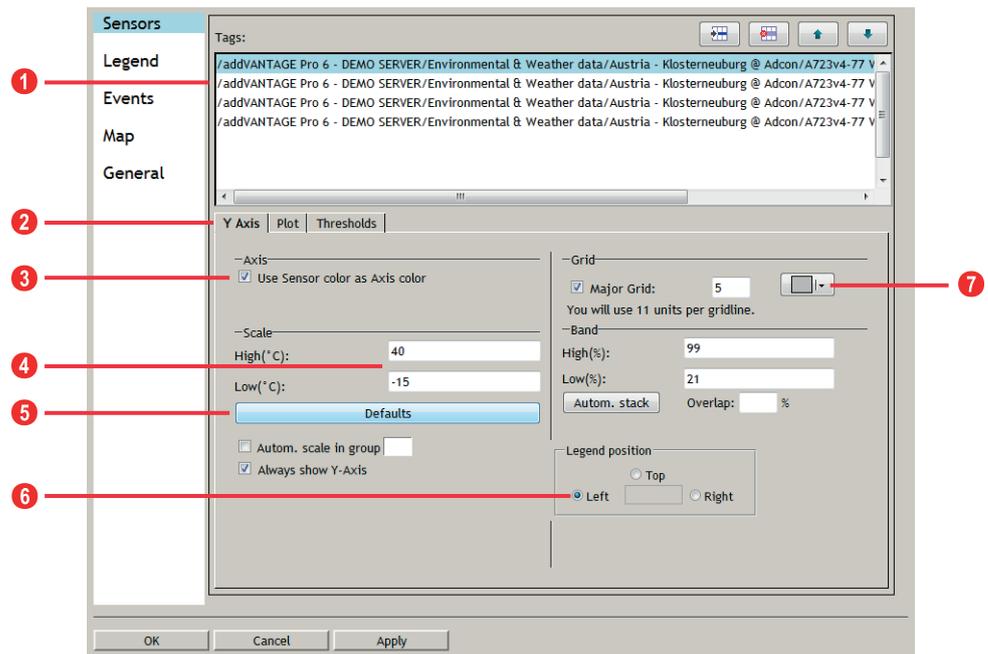
Windows and Captions

Note: *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.*

Most operations in addVANTAGE Pro 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 6](#).

Figure 2 illustrates the various items on a software window of addVANTAGE Pro.

Figure 2. A Typical Software Window



- 1 *Listbox* This area shows a list of choices you can select by clicking.
- 2 *Tab* Click to see another view of the dialog.
- 3 *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.
- 4 *Text field* Type information here.
- 5 *Button* These are rectangular shapes with a name or icon. Select a button by clicking it.
- 6 *Radio button* These round buttons come in multiples. You can select only one.
- 7 *Drop-down* A box with a small down arrow you must click before you can see the list of choices to select from.

About this User Manual

This User Manual is an essential part of the product. Keep it in a safe place during the product's entire life.

Safety Instructions

Read the User Manual carefully before use and follow the instructions, safety messages and warnings to ensure a flawless operation of the product.

Intended Use

The product is designed to suit the purpose of the application described in this User Manual. Applying the product outside the described purpose of application will result in the termination of warranty obligation.

Target Group

This User Manual 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.

This User Manual is intended for crop consultants, agricultural organizations and agriculturalists, who work with measurement data.

Terminology and Abbreviations

Certain terminology and abbreviations apply in this manual.

<i>RTU</i>	<i>Remote Transmission Unit (RTU)</i>
<i>Tags</i>	You'll see the terms <i>tag</i> and <i>sensor</i> 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.
<i>Parameters</i>	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 <i>sensors</i> . If a sensor exists for a certain physical parameter, it is very likely that it can be adapted to Adcon's system.
<i>Extensions</i>	<i>Extensions</i> 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 <i>virtual sensors</i>).

Typographic Conventions

Certain conventions apply in this manual.

<i>Italics</i>	Indicates 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.
<i>Note</i>	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.

Summary

Adcon's Data Acquisition system contains hardware and software parts.

The hardware components are:

- A personal computer and/or a server machine
- Complete base station to manage large networks of UHF and 3G/4G: Telemetry Gateway (A850) and wireless modem (A440)
- *Remote Transmission Units* (RTU) (also referred to as devices), for example addWAVE A753 (UHF or 3G/4G), addRELAY UHF Repeater Station (A751), addIT A723
- Sensors and actuators
- Various supplementary parts (accessories such as antennas, cables, and masts)

The software consists of:

- The addVANTAGE Pro 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 server, you can also work through an internet connection linking up to your data provider's addVANTAGE Pro 6.6 server, accessing all the features through your web browser on *that* machine. All you will need is a fast internet connection and a user name and password to access your data.

Overview

For optimal performance, especially in large networks, Adcon recommends that you install the server on a dedicated machine. 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.

Note: *The server machine should be configured for growing networks.*

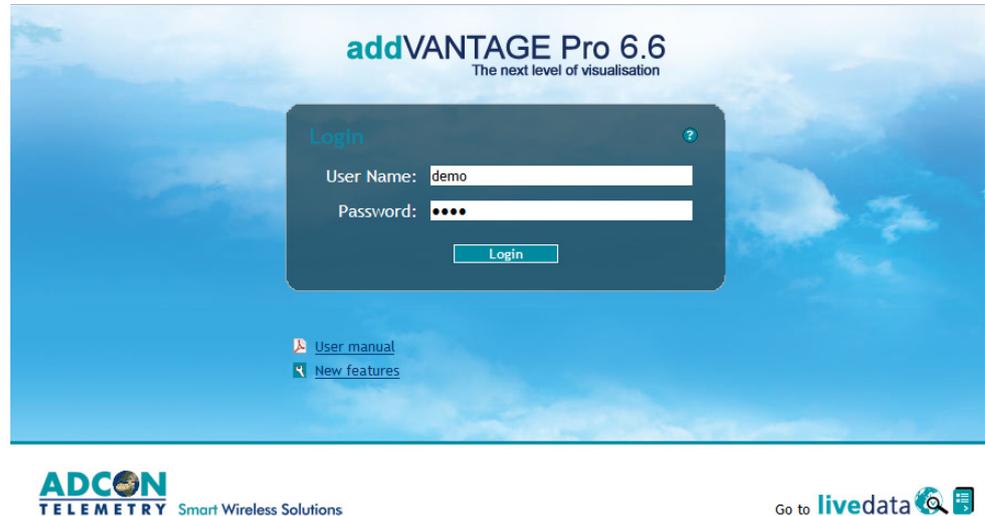
You can consider several types of systems depending on your application and the corresponding license type you acquired. For example, if you have an application where you manage only one or two remote stations (RTUs), you could install the server on the same machine you are using for your day-to-day 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. You need only a web browser, an internet connection, and an account (possibly subscription-based) with your addVANTAGE Pro provider.

Connecting to addVANTAGE Pro

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

Figure 3. addVANTAGE Pro Welcome Page



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

Note: *For the flawless use of addVANTAGE Pro you should deactivate the popup-blocker in your browser!*

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. If you want to disconnect from the server, click the **Logout** button in the Tool bar (see "[Menu Bar and Tool Bar](#)" on page 19.)

Navigating the Data

The main elements of the software are:

- The Explorer ("[The Explorer](#)" on page 13)
- The List (see "[The List](#)" on page 35)
- The Data view (see "[The Data View Panel](#)" on page 38)

The Explorer

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

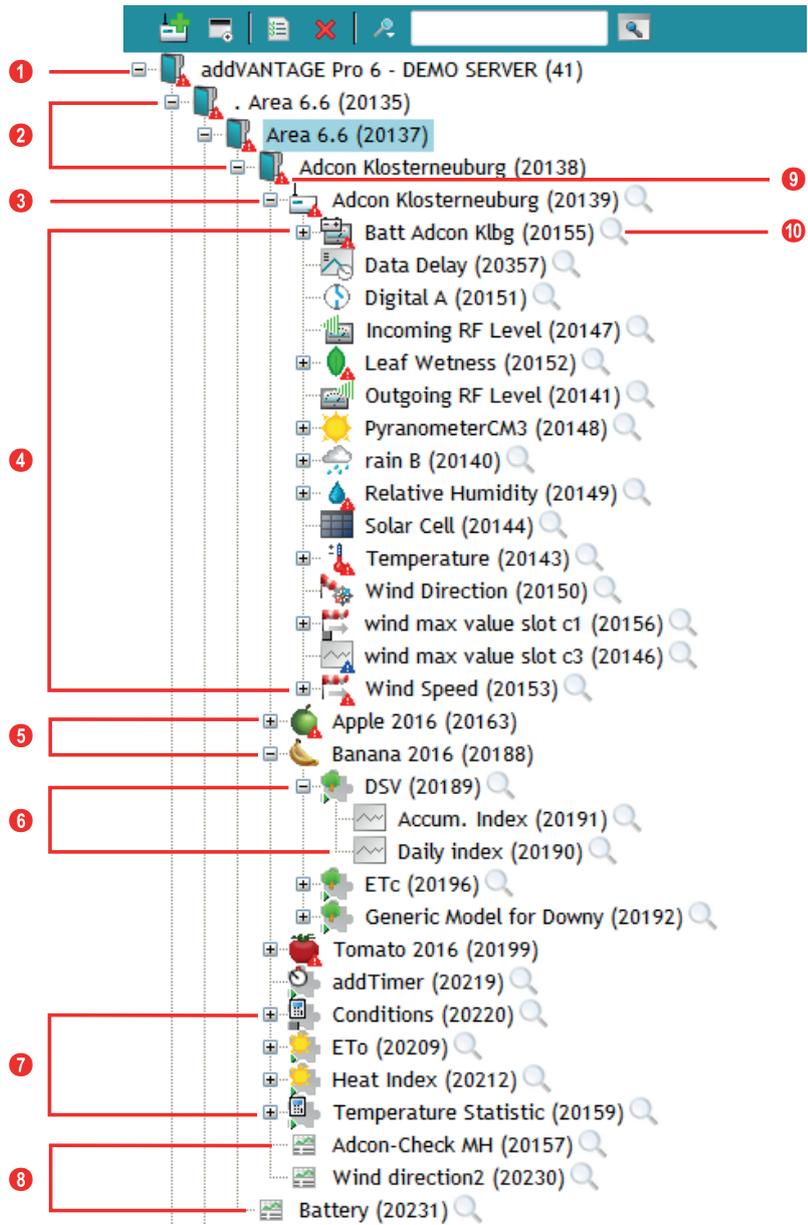
Objects in the Explorer

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 show 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.

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



Overview of Nodes

- | | | |
|---|-------------------------------|--|
| ① | <i>Root node</i> | All the objects in your system (e.g. areas, RTUs, tags, extensions, and panels) are called <i>nodes</i> . Start here to explore your network. |
| ② | <i>Area</i> | An <i>area</i> is an object that defines a certain place that you have associated with a specific setting. 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 sues. |
| ③ | <i>RTU</i> | An <i>RTU</i> 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 servers or Telemetry Gateways you are downloading data from. All the RTUs in a certain area have the common setting that they belong to that area. |
| ④ | <i>Tags</i> | The RTUs have <i>tags</i> , which can be sensors or actuators. A tag can also result out of the processing of other tags by an extension. |
| ⑤ | <i>Crops</i> | <i>Crops</i> 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. |
| ⑥ | <i>Disease models</i> | <i>Disease models</i> 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. |
| ⑦ | <i>Calculation extensions</i> | <i>Calculation extensions</i> 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. |
| ⑧ | <i>Panels</i> | <i>Panels</i> are the result of saving a view. For example, if you create a Data view and want to refer to it later (see " The Data View Panel " on page 38), you can save it as a panel. |
| ⑨ | <i>State icons</i> | The state icons allow you to enable or disable individual extensions and show if a tag issued an alarm. |
| ⑩ | <i>Magnifying glass</i> | Click icon to view data in Data view. |

Overview of state icons

- | | | |
|---|--|---|
|  | <i>Enabled
(bottom left)</i> | The green triangle in the bottom left corner indicates the tag is enabled (see " Common Settings " on page 62). |
|  | <i>Executive
(blinking bottom left)</i> | If a tag is proceeding, a recalculation is carried out (see " Recalculating Extensions and Crops " on page 59). |
|  | <i>Disabled
(bottom left)</i> | The gray square in the bottom left corner indicates the tag is disabled or disconnected (see " Common Settings " on page 62). |
|  | <i>Alarm not
acknowledged
(bottom right)</i> | If a tag issued an alarm, an alarm icon will be shown in the Explorer window by that tag. Acknowledge of alarm (see " Event Alarms " on page 56). |
|  | <i>Alarm
acknowledged
(bottom right)</i> | The alarm has been acknowledged (see " Event Alarms " on page 56). |

Functions in Explorer

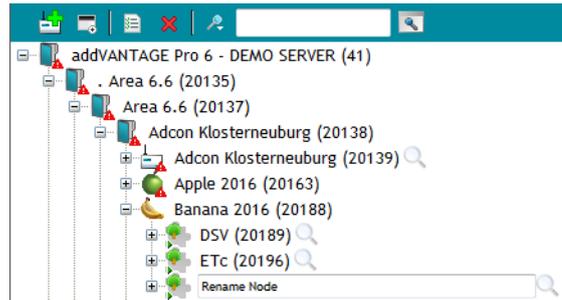
As the main window in addVANTAGE Pro, the Explorer offers many features. In addition to the usual expand/collapse of branches by clicking the plus (+) or minus (-) sign, you can rename a node.

Rename Node

Follow these steps to rename a node (see [Figure 5](#)):

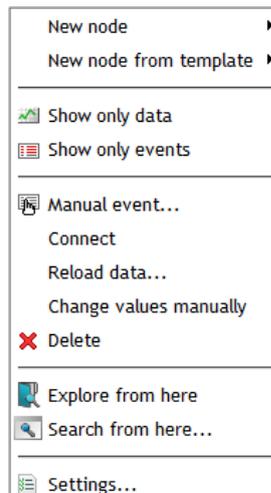
1. Click once to highlight the node you want to rename (left side of [Figure 5](#)).
2. Click the node again to turn the name into an edit field.
3. Type the new name.
4. Press the **Enter** key.

Figure 5. Renaming Nodes



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 6](#), for example, shows the Context menu for a tag for someone with admin permissions.

Figure 6. Right-clicking a Tag in Explorer, Context Menu



New Node

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

New Node from Template

Create nodes such as panels or extensions, crops, and tags from a saved template.

Show only Data

Open a Data view in the Graph view mode showing data from the node's children.

Show only Events

Open a Data view in the List view mode showing the events from the node's children.

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. The wording shown to the right of the calendar icon indicates the server's time zone.
2. Leave the **Duration** fields blank if this is a currently 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 drop-down. 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.

Connect

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

Reload Data

WARNING: *When retrieving, the data is deleted from the local database. If these are no longer present on the source, there is a risk of data loss!*

Retrieve data from the server.

Note: *You need another addVANTAGE Pro server, or an A850 Telemetry Gateway with the latest firmware release, to be able to retrieve remote data.*

Change Values Manually

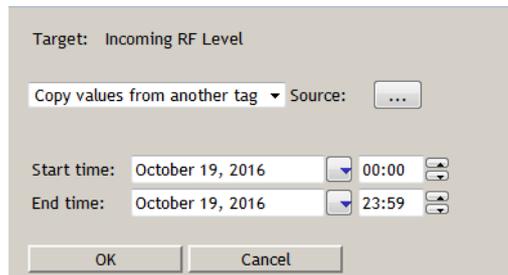
You might find that the values on one sensor have data errors or need to be marked as bad. You can use this feature to change the values manually. Follow these steps:

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

Note: *Automatic filtering takes place after appropriate tags. The Explorer shows only those tags that are compatible and suggests them for selection.*

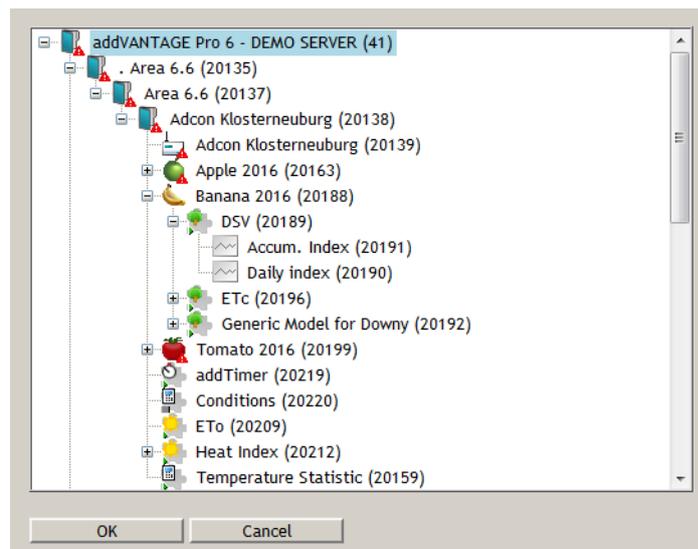
2. Select **Change values manually** to display the dialog shown in [Figure 8](#). **Target:** shows which value you selected to change.

Figure 8. Change Values Manually Dialog



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. Choose the appropriate station, then select the tag with values you want to copy.
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 and are highlighted in red in the Table view.

Explore from Here

Open a new Explorer with this node as the root.

Search from Here

Search only this part of the Explorer.

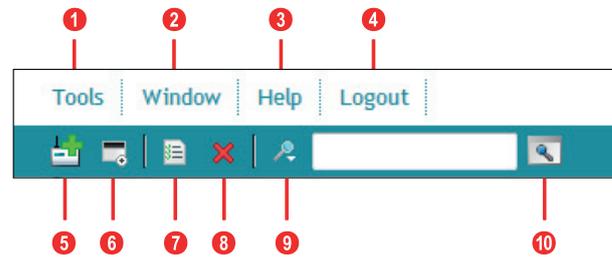
Settings

View and edit node-specific information.

Menu Bar and Tool Bar

The Menu bar and Tool bar in the Explorer (*Figure 10*) provide different ways to access the features of addVANTAGE Pro 6.6.

Figure 10. The Menu Bar and the Tool Bar



Menu Bar

- | | | |
|---|---------------|--|
| ① | <i>Tools</i> | Accesses addVANTAGE Pro user options and other administrative tools. |
| ② | <i>Window</i> | Refreshes the current window and allows you to select an addVANTAGE Pro window when multiple windows are open. |
| ③ | <i>Help</i> | Displays the documentation and information about the software. |
| ④ | <i>Logout</i> | Exits the addVANTAGE Pro software. |

Tool Bar

- | | | |
|---|----------------------------|---|
| ⑤ | <i>RTU Creation Wizard</i> | Starts a wizard that helps you create an RTU (see <i>Administrator Manual</i>). |
| ⑥ | <i>New Panel</i> | Creates a new Explorer, List, Data view. |
| ⑦ | <i>Settings</i> | Shows the settings of the selected node. |
| ⑧ | <i>Delete</i> | Deletes objects you have selected in the Explorer. |
| ⑨ | <i>Search Type</i> | Provides a quick search option to select an object from the pop-up and then type search criteria in the text field. |
| ⑩ | <i>Search</i> | Displays the Advanced Search dialog with more specific options. |

Chapter 3. Node Settings and Tools

The robust settings and tools features in addVANTAGE Pro are the building blocks of the system. Settings 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 Settings dialog depend on the node type and, in some cases, your user role.

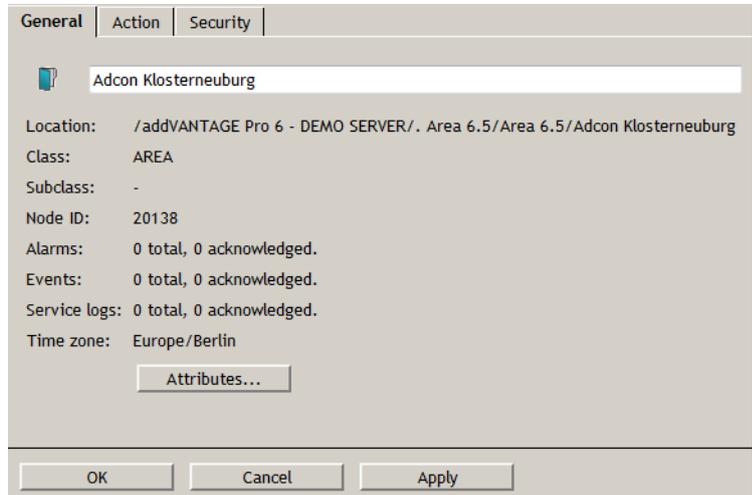
Node Settings

When you right-click a node in Explorer and select **Settings**, 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.

Node General Settings

Figure 11. General Tab of Node Settings Dialog



Node Action Settings

With the **Action** tab, you can specify the action that a certain event will cause. Figure 12 illustrates the sequence that occurs when an extension’s threshold event is **Treatment recommended** and action is **E-mail**.

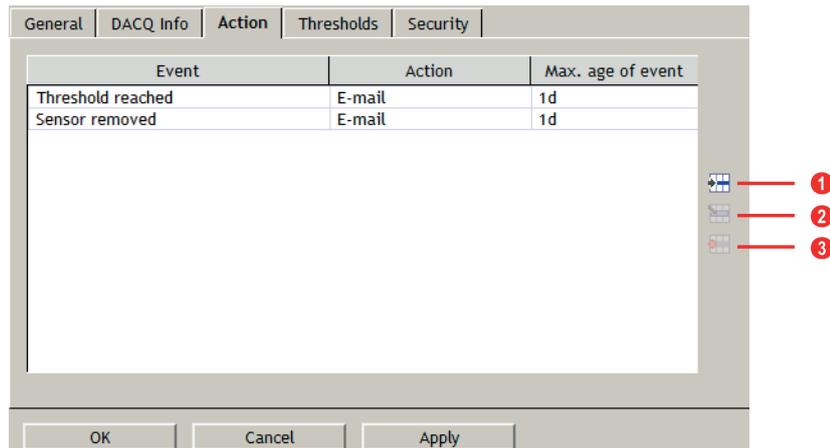
Figure 12. Node Action Setting



- 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 (see *"The Inputs Tab" on page 68*).
- As soon as new measured values from the input tags are retrieved, the calculation is updated and, if necessary, an event is triggered.
- 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 E-mail is sent to the defined recipients.

In any case, an issued event is always written to the node's Event list. *Figure 13* shows the **Action** tab of the Node Settings dialog.

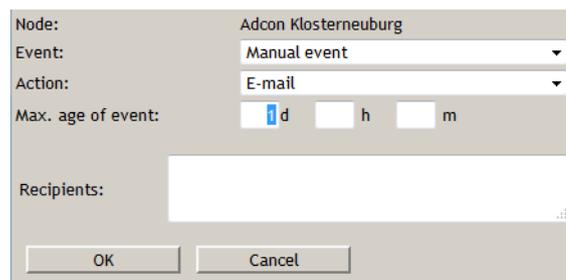
Figure 13. Action Tab of Node Settings Dialog



- ① *Add* Add actions to the list
- ② *Edit* Edit actions
- ③ *Remove* Remove actions from the list

1. Click the **Add** button to display the dialog shown in *Figure 14*.

Figure 14. 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 E-mail 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{name};john.doe@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**. Older events are suppressed and no action is triggered.
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.

Note: *Enter an appropriate value for **Max. age of event**—for example 1 day—to avoid resending lots of outdated E-Mail notifications (e.g. when the server gets restarted due to any reason).*

5. Click **OK** to close the Add Action dialog.
6. When you're finished with the Settings 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 Settings

Use the **Security** tab (*Figure 15*) to set permissions for the node.

All of these settings show default values for the node. The **Security** tab shows the owner and to whom the node belongs to. 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 15. Security Tab of Node Settings 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 15 also shows the **Availability** section. If you select the checkbox, also users without a login details will be able to see the node. Select the checkbox **Accessible from outside addVANTAGE Pro** to make the result 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.

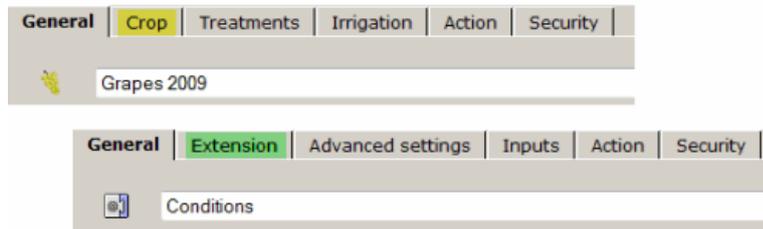
Panels

If you right-click a panel in the Explorer and select **Settings** from the Context menu, the dialog shows only the three default tabs. To set up Lists and Data view panels, see *"Creating Panels" on page 35*.

Extensions and Crops

If you right-click an extension or a crop in the Explorer and select **Settings** from the Context menu, the dialog shows the default tabs illustrated in [Figure 16](#).

Figure 16. Default Tabs for Crop and Extension

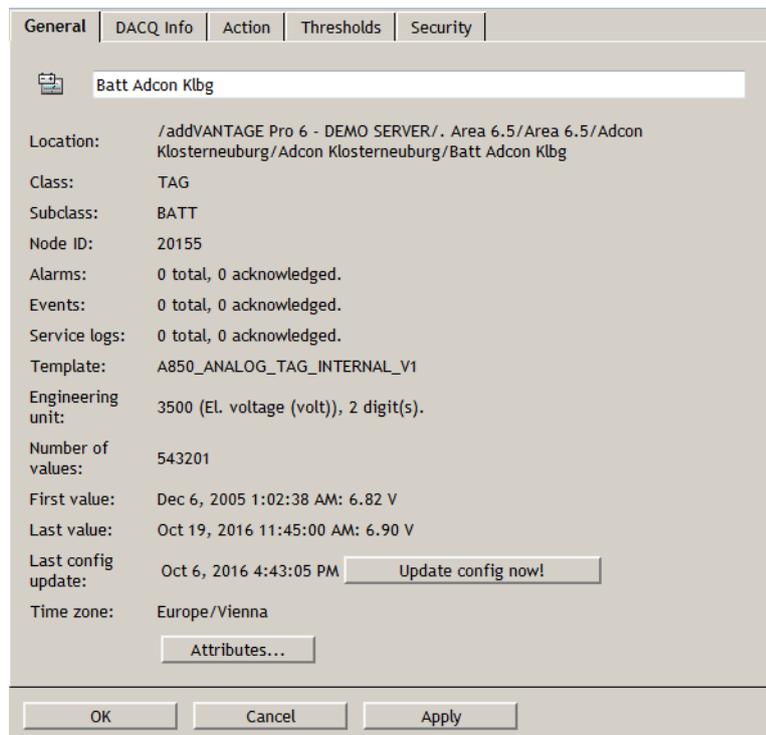


To set up Extensions and Crops, see ["Working with Extensions and Crops" on page 58](#).

RTU/Tag

[Figure 17](#) shows you the Settings dialog for a tag. One difference between RTU and tag settings is that you can set thresholds for a tag. A discussion of the **Thresholds** tab begins on ["Tag Threshold Settings" on page 27](#).

Figure 17. General Tab of Tag Settings Dialog



Climate Settings

The other difference between RTU and tag settings is the addition of the **Climate** setting for an RTU immediately above the Attributes button (*Figure 18*). 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 18. Climate Setting on RTU Settings Dialog

The screenshot shows the 'General' tab of the RTU Settings Dialog for 'Adcon Klosterneuburg'. The dialog has tabs for 'General', 'DACQ Info', 'Action', and 'Security'. The 'General' tab is active, displaying the following information:

- Location: /addVANTAGE Pro 6 - DEMO SERVER/. Area 6.5/Area 6.5/Adcon Klosterneuburg/Adcon Klosterneuburg
- Class: DEVICE
- Subclass: Weather
- Node ID: 20139
- Alarms: 0 total, 0 acknowledged.
- Events: 0 total, 0 acknowledged.
- Service logs: 0 total, 0 acknowledged.
- Template: A850_A733_V7
- Last config update: Oct 6, 2016 4:43:05 PM (with an 'Update config now!' button)
- Time zone: Europe/Vienna
- Climate: Warm temperature - fully humid - warm summer (with a 'Detect by GPS' button)

Buttons for 'Attributes...', 'RTU Notes...', 'OK', 'Cancel', and 'Apply' are visible at the bottom of the dialog.

Tag General Settings

Review the **General** tab for information about the tag, such as its class and subclass, node ID, number of alarms, events 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 19](#).

Figure 19. The Attributes Dialog

Name	Type	Value
active	BOOLEAN	true
altitude	DOUBLE	0.0
batteryVoltage	DOUBLE	7.29412
code	INTEGER	77
dataDelay	INTEGER	12
date	DATE	Tue Apr 19 17:44:18 CEST 2016
firstSlot	DATE	Sat Nov 14 06:30:00 CET 2015
frequency	DOUBLE	4.3941E8
internalTemperature	DOUBLE	15.1373
lastSlot	DATE	Wed Apr 20 00:10:00 CEST 2016
latitude	DOUBLE	48.2894
longitude	DOUBLE	16.344
manufacturer	STRING	Adcon Telemetry
master	BOOLEAN	true
maxDataDelay	INTEGER	21600
notesTimestamp	INTEGER	315532800
npnd	BOOLEAN	true
pmpHigh	DOUBLE	7.2
pmpLow	DOUBLE	6.5

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 Settings

As [Figure 20](#) shows, use this tab to view information about the source and connection status of the tag.

Figure 20. DACQ Info Tab of Tag Settings 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.

Note: *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 Settings

Use the **Thresholds** tab (Figure 21) to set conditions that will trigger an alarm, event or service log entry when a threshold has been reached.

Figure 21. Thresholds Tab of Tag Settings Dialog

- ① *Add* Add actions to the list
- ② *Edit* Edit actions
- ③ *Remove* Remove actions from the list

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. On the right side of the **Conditions** pane, click **Add**. The dialog shown in Figure 22 is displayed.

Figure 22. Adding a Threshold Condition

- b. Click the **Condition** drop-down to select the threshold's condition. Following are the choices in this drop-down:
 - **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.

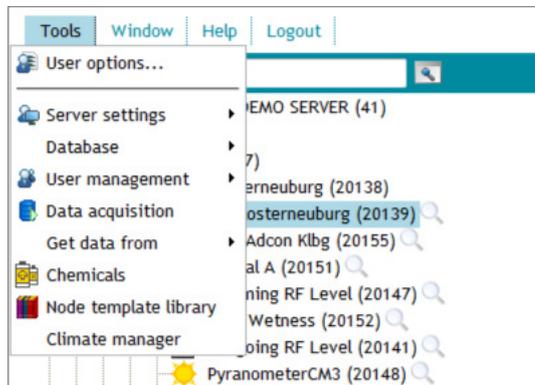
Condition	Sample Value 1	Sample Value 2	Condition Applies to
is between (incl)	2.0	5.0	2.0, 3.0, 4.0, 5.0
is between (excl)	2.0	5.0	3.0, 4.0
is between (incl - excl)	2.0	5.0	2.0, 3.0, 4.0
is between (excl - incl)	2.0	5.0	3.0, 4.0, 5.0

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

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.

Figure 23. Tools Menu Dialog



The menu options you see depend on your user 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 24](#) appears.

Figure 24. User Options Dialog, My Settings Tab

The screenshot shows a dialog box with the following fields and controls:

- Language: English (dropdown menu)
- User: admin_text-it (text field)
- Full Name: (text field)
- Description: (text field)
- Phone number: (text field)
- E-Mail address: (text field)
- Buttons: OK, Cancel, Apply

My Settings Tab

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

- Select the **Language** drop-down 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 25](#)) to view or change default options for Data view and all panels. You can change all of these options separately when you work with panels, as described in ["Erstellen von Fenstern" on page 35](#).

Figure 25. User Options Dialog, Panels Tab

The screenshot shows a dialog box with the following sections and controls:

- Options for all panels:
 - Closing a panel that was never saved: Ask to save changes (dropdown)
 - Closing a panel that is already saved as node: Ask to save changes (dropdown)
 - Show seconds in panels
 - Re-open last opened panels when log in
- Data view options:
 - Default type for data view panel when clicking View Data: Graphical view (dropdown)
 - Default background color for graphic (dropdown)
 - Default background color for axis (dropdown)
 - Default background color for legend (dropdown)
 - Font color of legend (dropdown)
 - Default color of time axis (dropdown)
- Default field delimiter for CSV export: Semicolon (;) (dropdown)
- Events options:
 - When using "Show events" explorer sub menu, create an event with following options:
 - Show alarms
 - Show events
- Buttons: OK, Cancel, Apply

Options for all Panels

- There are two drop-downs, one for saved and one for unsaved panels. The drop-down indicates the behavior of addVANTAGE Pro if the user closes the panel, if addVANTAGE Pro should discard changes, ask the user to save or save automatically.
- 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**.

Data View Options

These options serve three purposes:

- At the top of the section, select the default view to use for a Data view panel you create when you select **View Data** from the Context menu: Graph view, Table view, Event list, Virtual instrument or Map view.
- From the boxes that follow, define color defaults for the all views of new Data view panels. You cannot use this dialog to change the colors in open or existing Data view panels.
- Use the last drop-down in this section to select the character to be used as the **Default field delimiter for CSV export**. When you export a Data view into a CSV file, this option shows the character used to separate columns in the file.

Events Options

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

Explorer Tab

Use the **Explorer** tab (*Figure 26*) 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 need technical support. You can also use this tab to automatically **install RTU diagnostics** when you add RTU stations in Explorer.

Note: Before you contact our support team, please have your Node-ID shown in the Explorer available.

Figure 26. User Options Dialog, Explorer Tab

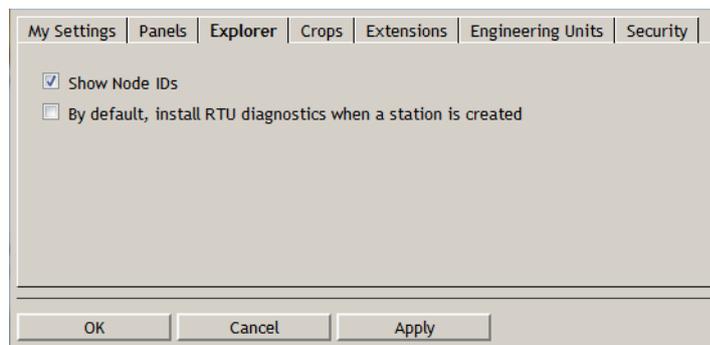
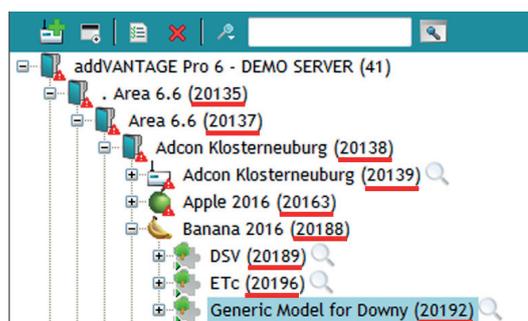


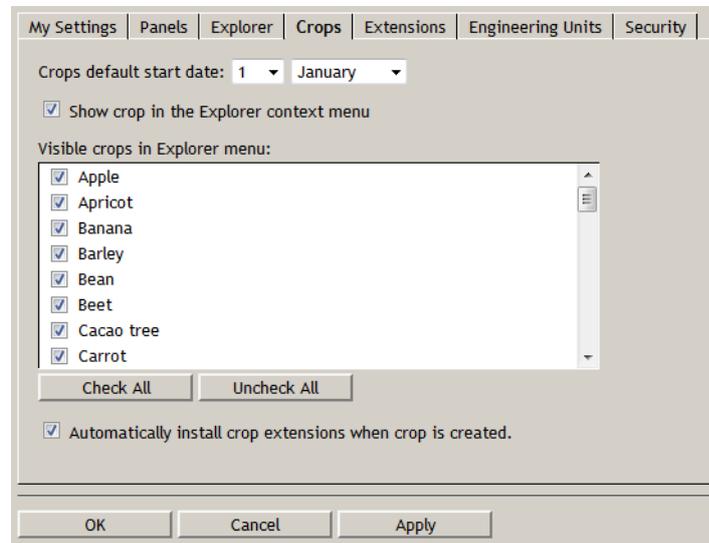
Figure 27. Node-ID in Explorer



Crops Tab

Use the **Crops** tab (Figure 28) to view or change the **Crop default start date**, that is, the date to start collecting data about the crops.

Figure 28. 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.

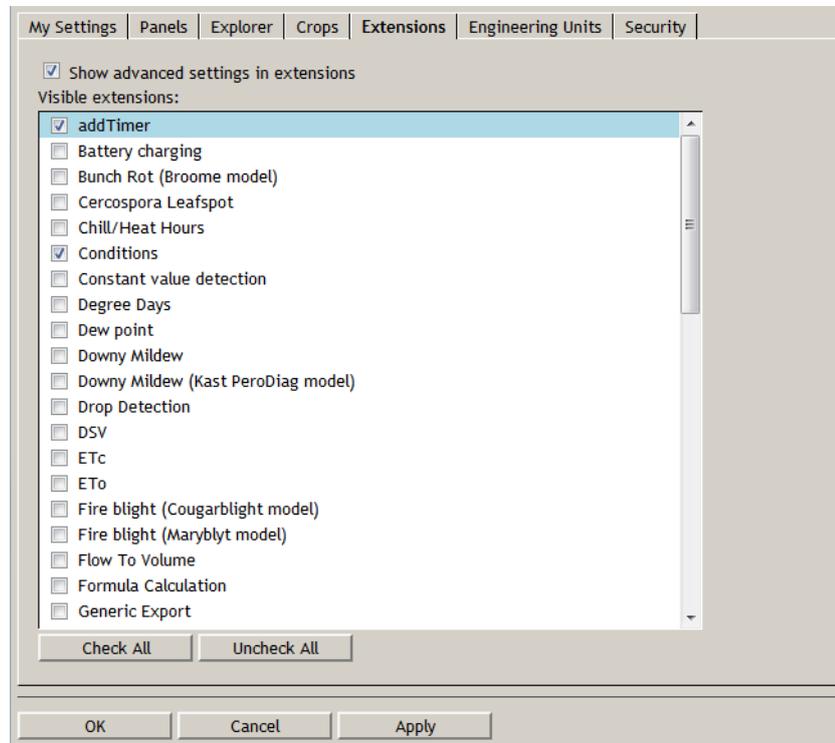
If a specific crop extension has been made invisible on the **Extensions** tab (as described next), the extension will not appear in any list of disease models or calculation extensions that can be added to the crop.

Note: *Your ability to edit this dialog depends on your user role.*

Extensions Tab

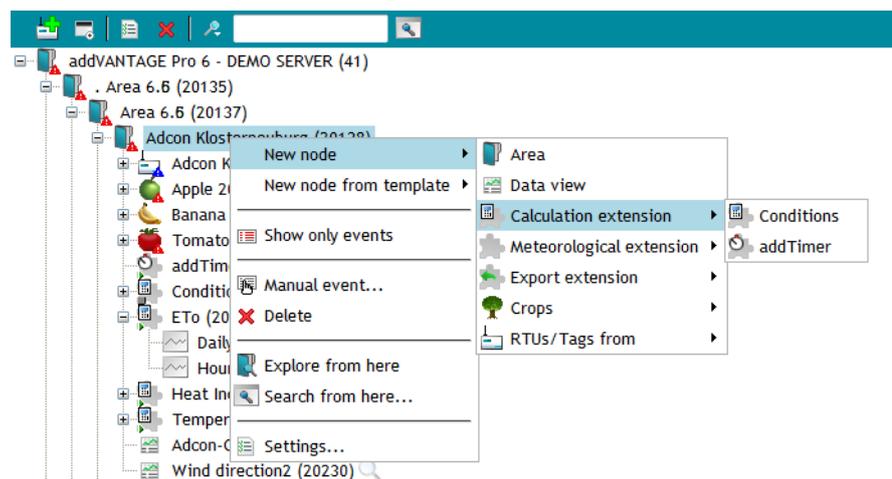
Use the **Extensions** tab (Figure 29) to select whether to **Show advanced settings in extensions**. All existing extensions are displayed. If selected, the **Advanced settings** tab displays in an extension's Settings dialog (see "The Advanced Settings Tab" on page 68).

Figure 29. User Options Dialog, Extensions Tab



You can also make the various calculation extensions and disease models visible on the Context menu. If you create a new node, only the selected extensions are visible (Figure 30).

Figure 30. Extensions on the Context Menu, New Node

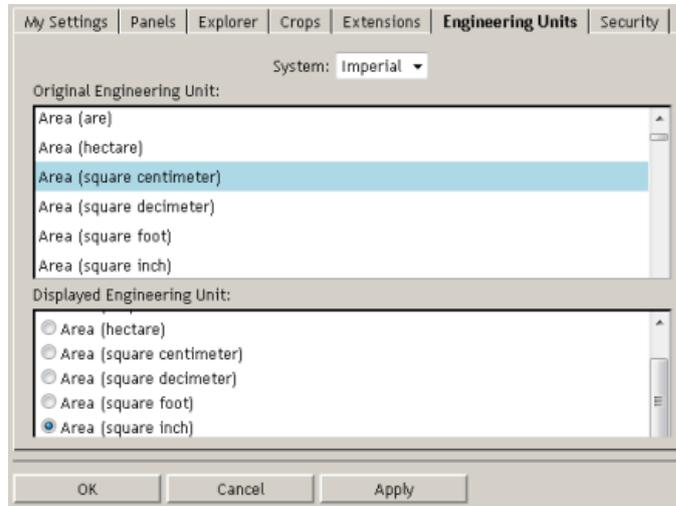


Note: Your ability to edit this dialog depends on your user role.

Engineering Units Tab

Use the **Engineering Units** tab ([Figure 31](#)) to change the engineering units used to express the tags.

Figure 31. User Options Dialog, Engineering Units Tab



Use the **System** drop-down 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 31](#) 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:

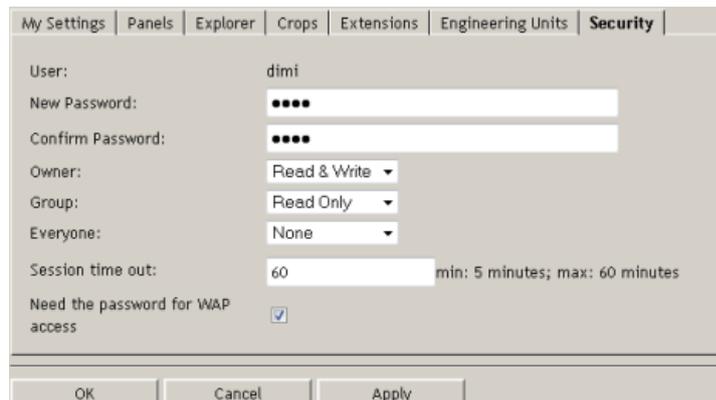
1. Find the engineering unit you want to change in the upper panel of the dialog and select it.
2. Valid alternatives are displayed in the lower pane. Select the one you want.
3. Click **Apply** to save changes.
4. To change other engineering units, repeat steps [1](#) through [3](#).
5. When you are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

Your ability to edit this dialog depends on your user role.

Security Tab

Use the **Security** tab ([Figure 32](#)) to view or change security settings associated with your user profile.

Figure 32. 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 user 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 Extensions and Crops* manual.

Chapter 4. Creating Panels

Lists and Data view are panels that offer different ways to view data in addVANTAGE Pro.

You can right-click any panel use the **Copy**, and **Paste & Reconnect** options to duplicate the panel in another part of the Explorer. You can save a crated panel using the **Save** button.

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 settings, for example, configure extensions or synchronize tag settings.

You can create a List by clicking the **New Panel** button in the Tool bar and selecting **List**. Use the **Add Nodes** button on the List's tool bar (Figure 33) to add objects to the list. You can also remove objects that you no longer need by using the **Remove Nodes** button on the Tool bar.

Figure 33. List Tool Bar

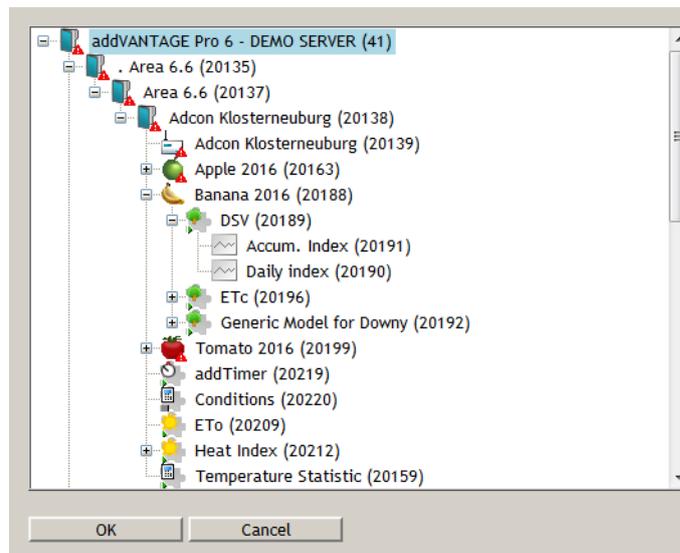


- | | | |
|---|--------------|--|
| ① | Save | Save new added nodes or reworked nodes. |
| ② | Save As | Save new added nodes or reworked nodes as a new position (under a new name). |
| ③ | Add Nodes | Add objects to the list. |
| ④ | Remove Nodes | Remove objects from the list. |

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 in the Explorer and select **Delete**.

When you add objects to a list from the List's tool bar, the Choose Nodes dialog opens, as show in [Figure 34](#).

Figure 34. 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.

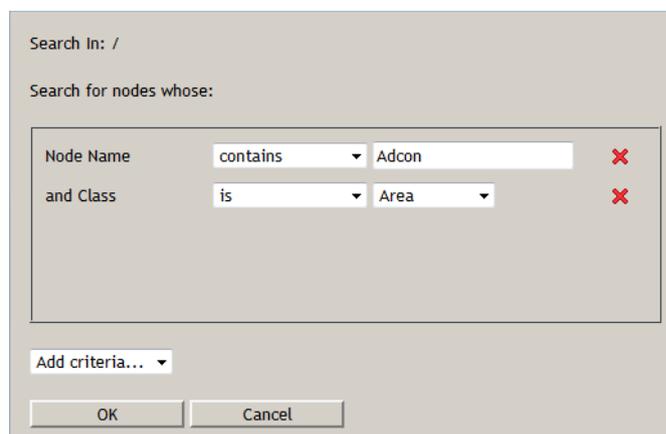
Search

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 tool bar) to open the Advanced Search dialog ([Figure 35](#)).
2. **Node name** is displayed by default, with the default setting of **contains**. Enter `Adcon` in the text field.
3. Click the **Add criteria** drop-down, 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 settings. Click the down arrow to see those settings.
4. Keep the default setting of **is**, but from the next drop-down, select **Area**.
5. Click the **OK** button.

Figure 35. The Search Dialog



A List appears (*Figure 36*), 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 36. A List Viewer

#	Name	Location
46331 S4 - adcon test outside		/addVANTAGE Pro 6 - DEMO SERVER/..PLAYGROUND - will be deleted every 1st day of a month/KNOTS/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Demo Customers/Renomia SK/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Wegernetnet/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/. Area 6.5/Area 6.5/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Meles/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Demo Customers/Novax/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Demo Customers/A2 technic/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/MAGAP/
Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Dow Argentina/
Adcon Weather Test RTU		/addVANTAGE Pro 6 - DEMO SERVER/.. TEST AREA/test_extension/
Adcon Weather Test RTU		/addVANTAGE Pro 6 - DEMO SERVER/..PLAYGROUND - will be deleted every 1st day of a month/Test SV/
Adcon Weather Test RTU		/addVANTAGE Pro 6 - DEMO SERVER/Syngenta CH/
Austria - Adcon Klosterneuburg		/addVANTAGE Pro 6 - DEMO SERVER/Agricultural disease management/
Austria - Adcon Weather Test RTU Klo		/addVANTAGE Pro 6 - DEMO SERVER/Agricultural disease management/
Austria - Klosterneuburg @ Adcon		/addVANTAGE Pro 6 - DEMO SERVER/Environmental & Weather data/
NOE_Weather ADCON KLBG		/addVANTAGE Pro 6 - DEMO SERVER/Demo Customers/BICU Nicaragua/

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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 tool bar).
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 35* is displayed, but the **Search in** line shows the node where you started the search. Complete the Search dialog as described previously.

Settings

A list is a collection of nodes you want to treat as one object. For this reason, you should view settings only on the items in the list. The list itself has no properties, and no dialog is displayed if you click the **Properties** button.

The Data View Panel

Use the Data view panel to see a plot of tag values stored in the database. To open a Data view, click **New Panel** and select **Data view** in the Explorer tool bar. The Data view tool bar is shown in *Figure 37*.

Prior to explaining the ways to display data in a Data view, please make yourself familiar with the Tool bar and its elements, which you will frequently use in your daily work with addVANTAGE Pro 6.6.

Figure 37. Data View, Tool Bar



1	<i>Save</i>	Saves the current panel. If this panel has not been saved before, clicking this button opens a dialog to save it.
2	<i>Save as</i>	Opens a dialog to save the current panel with a different name. If the current panel has not been saved before, this button functions the same way as the Save button.
3	<i>Add to node template</i>	Opens the template library dialog.
4	<i>Print</i>	Prints the Data view on the default printer.
5	<i>Export all values in time range to PDF</i>	Saves the values shown in Graphical or Table view as a PDF file.
6	<i>Export all values in time range to CSV</i>	Saves the values shown in Graphical or Table view as a CSV file.
7	<i>Show Settings</i>	Opens the Data view Options dialog, where you set the options for each object in the panel, or add/remove objects from the panel.
8	<i>Go to Begin</i>	Sets the starting date of the Data view panel to the beginning date of your database.
9	<i>Go 30/7/1 Days back</i>	Moves the starting date of the Data view panel 1, 7, or 30 days back.
10	<i>Go back X</i>	Goes back the specified period of time, where X is the span shown in 11.
11	<i>Date Chooser</i>	Shows the start date of the Data view panel. Clicking the calendar icon to the left of the Date Chooser opens a calendar you use to select a specific start date.
12	<i>Go forward X</i>	Goes forward the specified period of time, where X is the span shown in 11.
13	<i>Go 1/7/30 Days forward</i>	Moves the starting date of the Data view panel 1, 7, or 30 days forwards.
14	<i>Go to End</i>	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 Data view panel will show you the data of the last 7 days of your database.

- | | | |
|----|--------------------------------|---|
| 15 | <i>Span Chooser</i> | <p>Displays the time span being used in the Data view panel. Clicking the downwards arrow to the right of the Span Chooser opens a drop-down with predefined time spans to choose from.</p> <p>You'll also see a Custom duration. Select this to display the Data view Options dialog, where you'll select in the General tab the Duration you want.</p> |
| 16 | <i>Graphical view</i> | <p>Displays the Data view panel's values on a graph.</p> |
| 17 | <i>Table view</i> | <p>Displays the Data view panel's values in a table. Table View also enables you to export data with a mouse-click.</p> |
| 18 | <i>Event list</i> | <p>Shows the events that are stored in the nodes that are linked as event source nodes.</p> |
| 19 | <i>Virtual instruments</i> | <p>Displays the Data view panel's values as they might appear on an instrument panel.</p> |
| 20 | <i>Map view</i> | <p>Shows a map with the location of the stations and tags that are used in this Data view panel.</p> |
| 21 | <i>Show Values at Cursor</i> | <p>Displays the values of each tag in a little flag next to the cursor.</p> <p>If you unselect this button, you can click and drag to see several statistical values for the selected area.</p> |
| 22 | <i>Show events in graphics</i> | <p>Displays/hides the layer that contains event icons. Each icon represents an event/alarm.</p> |

Viewing Data View with Drag-and-Drop

Expand the tree in an Explorer until you reach the desired tag, then drag-and-drop it into an open Data view. After a short delay, the tag's plot is displayed in the Data view.

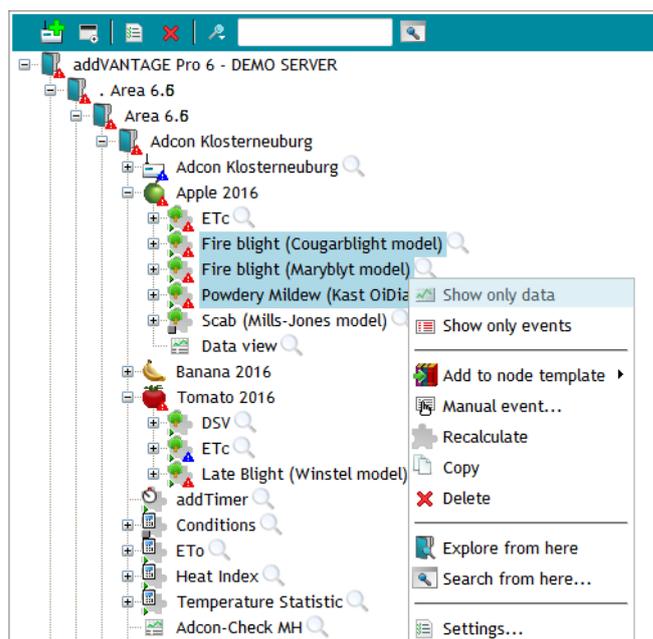
Note: *Currently the drag-and-drop method works only if you are using Microsoft Internet Explorer. In Firefox you can still drag-and-drop tags, but only onto a Data view icon within the same Explorer.*

Viewing Data from Explorer

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

1. In the Explorer select the tags you want to see in your Data view (left-click the desired tags while holding down the Ctrl key).
2. Right-click the selected tags and select **Show only data** from the Context menu as shown in [Figure 38](#).

Figure 38. View Data from Explorer



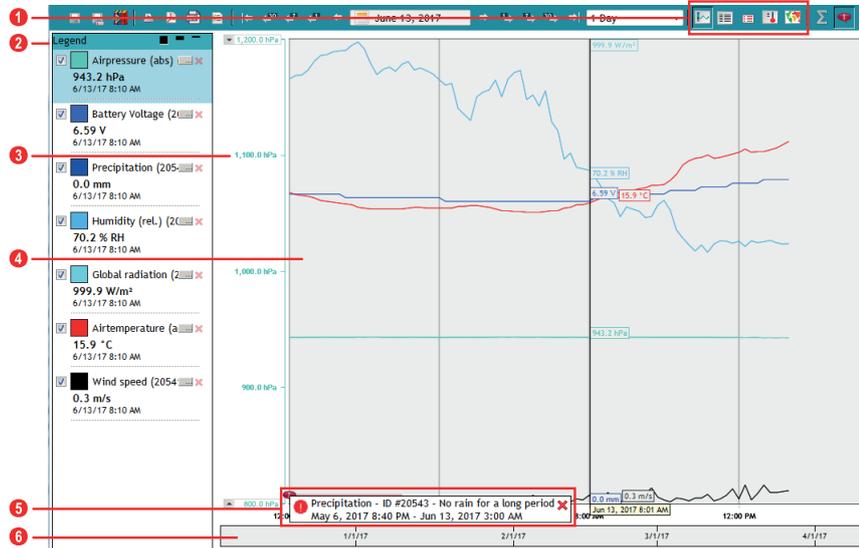
Note: *If you want to keep the created Data view panel for later use, you need to save it. You have the following options:*

- Clicking on the **Save** button in the Tool bar and type in a name for the new Data view panel.
- Automatically save the panel when closing it (this option depends on the selected function—see **Tools** ▶ **User options** ▶ **Panels** ▶ **Crops** ▶ and choose the appropriate function).

Showing Events in the Graphical View

You can click the button **Show events in graphics** to view the events and alarms in the plot. This means each event has an icon. If you click the icon, there is detailed information shown about the event, like the event message, the time stamp and more. You can click the exclamation point to acknowledge that you have seen the event. [Figure 39](#) shows the events in the graphical view.

Figure 39. Showing Events in Graphical View



- | | | | |
|---|----------|---|---------------|
| 1 | Tool bar | 4 | Plot area |
| 2 | Legend | 5 | Event message |
| 3 | Scale | 6 | Time line |

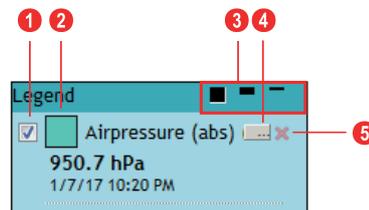
Tool Bar

In the Tool bar you can switch between Graphical view, Event list and Map view—see [Figure 37](#).

Legend

The legend shows the values at the current cursor position. You can arrange the legend on the side or at the top by clicking on an empty space and holding down the mouse button to drag it to the desired position in the Data view panel.

Figure 40. Legend, Tool Bar



- | | | | |
|---|--|---|--|
| 1 | Checkbox to enable or disable (hide) the curve. | 4 | Reconnects to the corresponding tag. |
| 2 | Changes color of the curve in the plot area. | 5 | Deletes the graph of a tag from the plot area (not from the data base).
Only delete a tag from the plot area if you don't need this view any longer. |
| 3 | Shows more or less detailed information about the tag. | | |

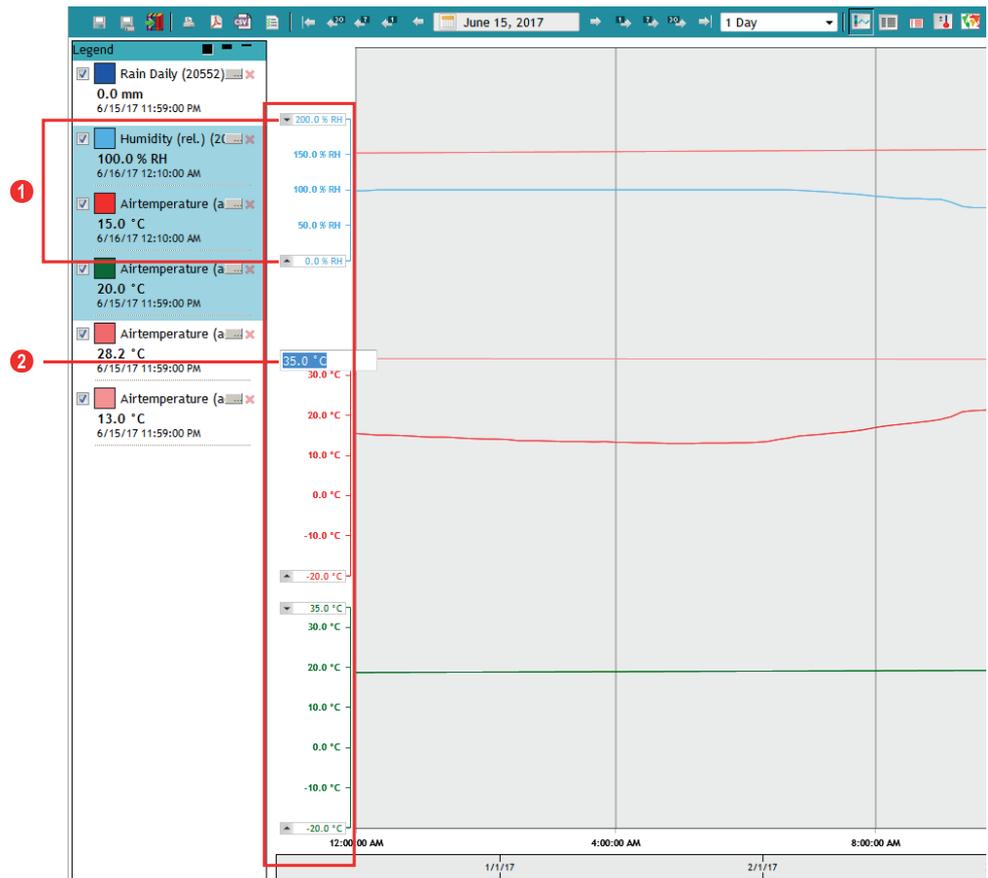
Notice that each tag in the plot area is displayed in the color designated for it in the Legend. You'll also see that the y-axis color is linked to the tag color, but you can change that in the Data view's settings (see "[Y-Axis Tab](#)" on page 45).

You can plot tags coming from different RTUs on one panel. 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.

Scale

You can arrange the scale ranges to save space for the view. To do this, drag the up / down arrows. You can also enter values directly by double-clicking on a value in the scale, to select it for editing.

Figure 41. Stacking Scales



① Arrows up / down

② Enter values directly (with double-click)

Plot Area

In the Tool bar, click on **Show Values at Cursor** to display the values directly on the chart curve in the plot area.

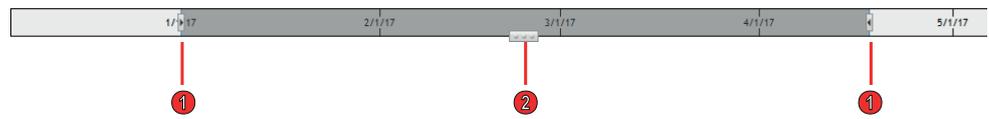
Event Message

In the Tool bar, click on **Show events in graphics** to display events and alarms directly in the Graphical view.

Time Line

The time line allows you to change the time range for the displayed events in the plot area.

Figure 42. Time Line

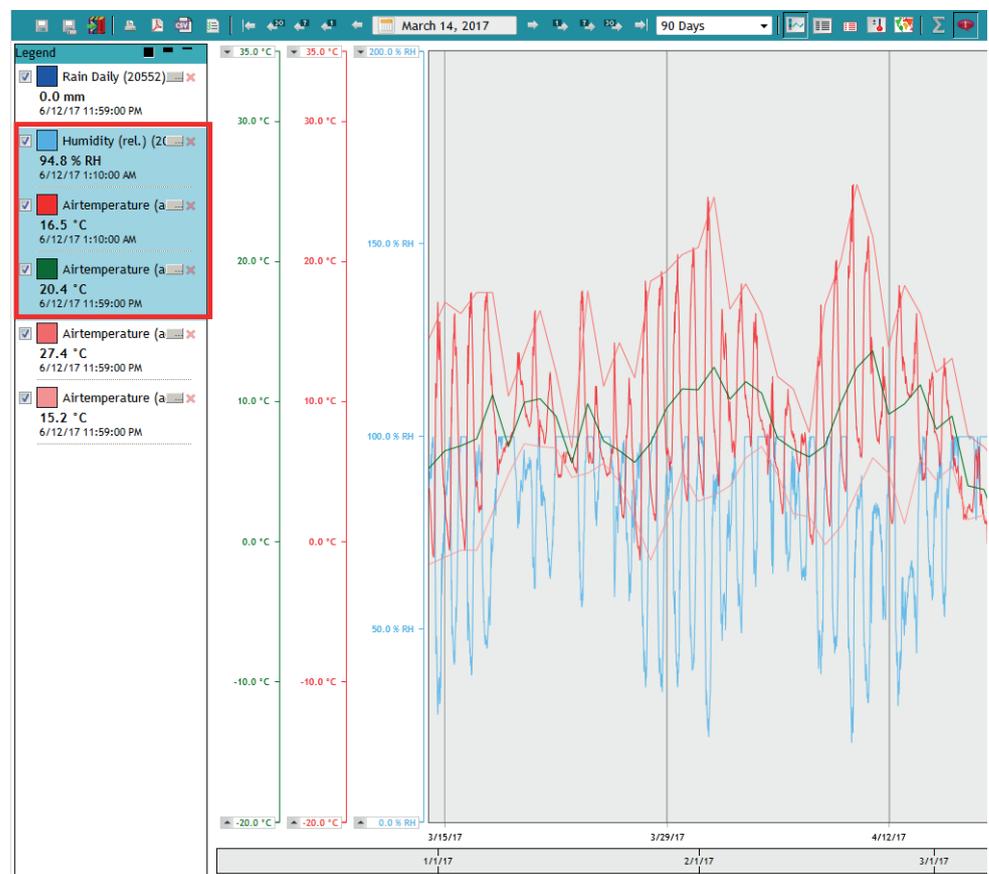


- ❶ Time line sliders: select the start and end period
- ❷ Panning: moves the view but keeps the time period

Multiselecting Tags

You can select multiple tags to display their scales. Select the data you want with Ctrl+Click. You can hover over a tag name in the legend to highlight the corresponding curve in the plot area.

Figure 43. Showing Tags from Multiple Selected Entries



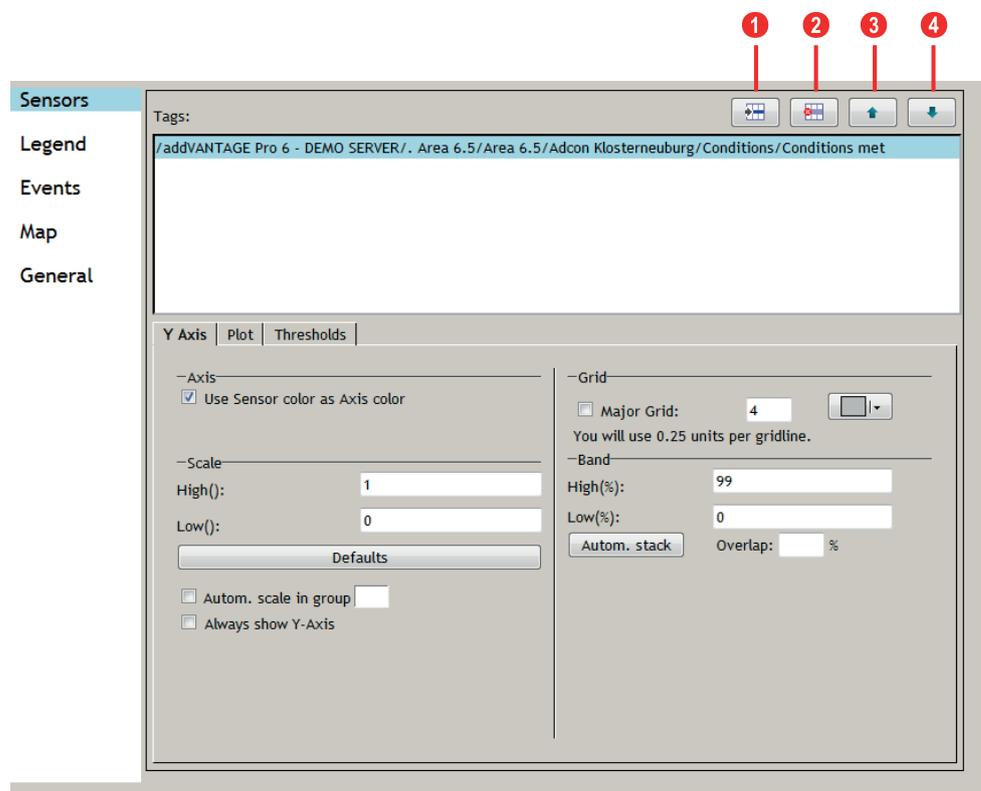
Using Settings to Add Tags to Data View Panels

If you can't use drag-and-drop, follow these steps to display data in a Data view:

1. In an active Data view, right-click in the Plot area and select **Settings** to display the Data view Options dialog shown in [Figure 44](#).
2. Click **Add** to display the Tag Chooser dialog listing the available tags.
3. Expand the tree until you find the tags you need to display (you can select more than one tag by using the Ctrl key).
4. 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 Data view panel, 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 Data view Options dialog lists all the tags you want to display, click the **OK** button. The Data view displays the tags and their data in a graphic form.

Figure 44. Selecting, Adding, and Removing Tags



- | | | |
|---|------------------|---|
| ① | <i>Add</i> | Add tags to the list (also from different areas/RTUs) |
| ② | <i>Remove</i> | Remove tags from the list |
| ③ | <i>Move up</i> | Change order of the list |
| ④ | <i>Move down</i> | Change order of the list |

If no plots are displayed, check the date and use the arrows and the calendar in the Data view to move to a date and time where data is available.

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

Y-Axis Tab

Following is an explanation of the options on the **Y-Axis** tab shown in [Figure 44](#).

- **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 curve 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. Enter relevant values, because otherwise you will not see the chart 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.
- Use **Automatic scale in group** to display the scale as an average of the **High/Low** settings for the tags in a chart. You can display multiple groups of such autoscaled sensors by assigning each to a group. Groups are entirely arbitrary and of your own making. Group numbers need not be consecutive. If you don't assign a sensor to a group you will see the **High/Low** settings only for the selected sensor.
- If you select the **Always show Y-Axis** checkbox, the y-axis for the current sensor (meaning the sensor whose y-axis settings 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 grid lines. The number you enter defines the interval for the Y-Axis. For example: enter 12 if your sensors scale is -20°C to +40°C and you want to have a grid line every 5° ($\text{number} = (\text{scale_max} - \text{scale_min}) / \text{interval}$). Some limitations apply.
- The **Band High (%) /Low (%)** is the percentage of available space for this y-axis and the chart curve. The default is 0 to 100 % (meaning that the grid will use all available space). **Band** is helpful for Data view panels 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 chart 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 charts.
- The autoscaling feature introduces the ability to show multiple chart curves that overlap for multiple sensors, causing curves that can be difficult to read. Use the **Autom. stack** and the **Overlap** percentage features to display the curve in several different ways that eliminate any such difficulty. You can select all of the sensors in the Settings dialog and click the **Autom. 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 45](#).

Figure 45. Data View Settings, 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 panel. If the checkbox is not selected, the values do not appear.
- You can use a **Line** or **Style** for the values in the panel. You can use different styles for plotting your data values. The style is useful for sum values, such as precipitation or data flow: *Line, Bar, or Area style*
- Use the **Color** chooser to change the color of the **Line**.
- Select the **Line** thickness from the **Weight** list.

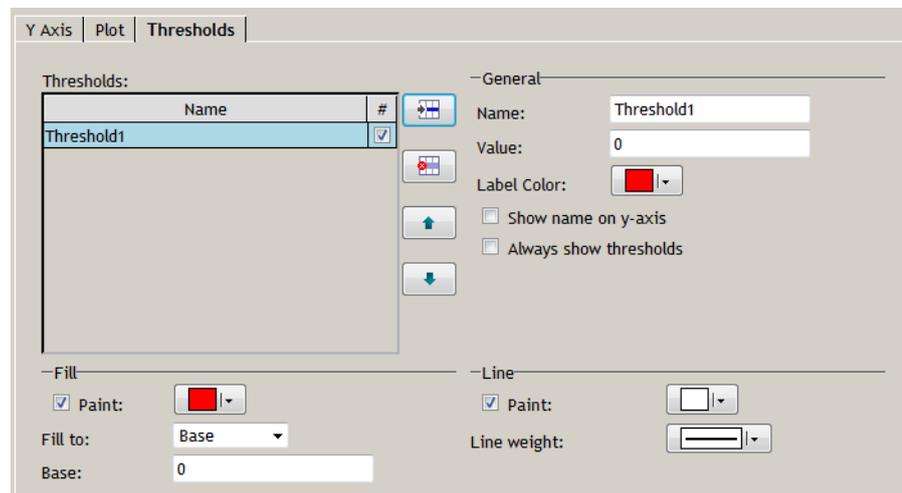
Thresholds Tab

You can define multiple thresholds per tag in a Data view. A threshold is an interesting value (range), where the chart 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 46](#) illustrates the **Thresholds** tab.

CAUTION: *Do not confuse this feature with the Threshold settings in the tag itself.*

With addVANTAGE Pro 6.6, each tag, independent from the Data view, can have thresholds. When the tag’s thresholds are met, normally an action is performed. The Data view panel’s thresholds are only informational and thus are not the same as the tag’s thresholds.

Figure 46. Data View Settings, Thresholds Tab



Following is an explanation of the options on the **Thresholds** tab shown in [Figure 46](#).

- 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 Pro 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 chart.
 - 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.

General Tab

Following is an explanation of the options on the **General** tab shown in [Figure 47](#). These options apply to the Data view itself, not the individual tag selected in the Tags list.

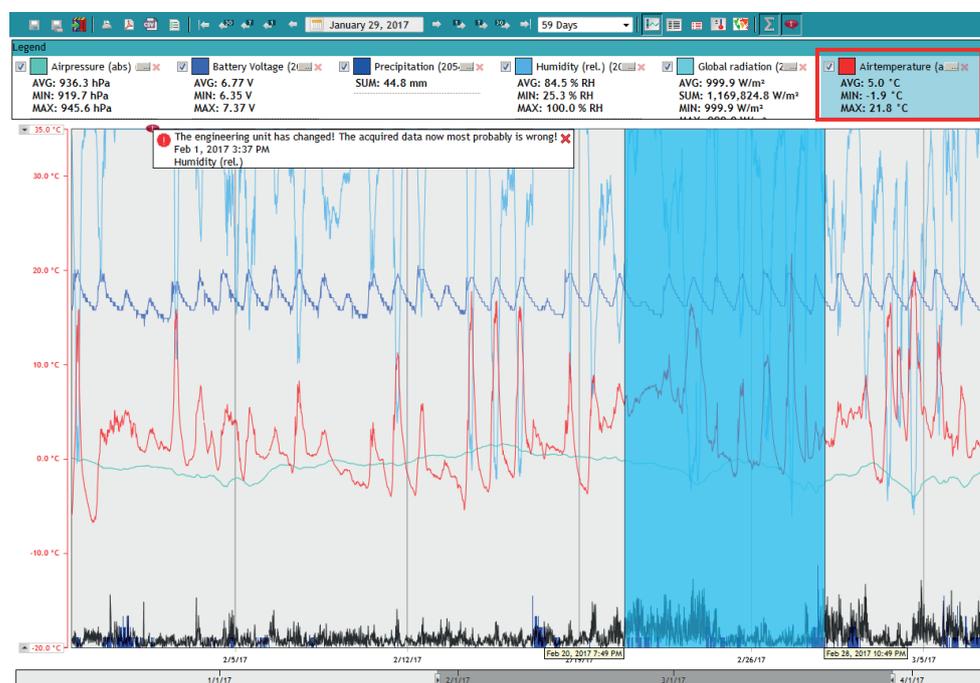
Figure 47. Data View Settings, General

- **Time Axis Options**
 - 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 Wee 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.
- **Duration Options**
 - The **Duration Options** are the same as the duration shown in the Tool bar. You can change the duration on this tab or in the Tool bar.
 - 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.
 - You can select the option **Always jump to last available data** which—as the name implies—executes the “Go to end” function every time you open the saved panel.
 - The **Min. start date and Max. end date** can be useful if you don’t want to show data outside this time range, e.g. when your station got relocated but still uses the same ID.

- **Graphic Options**

- 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.
- You can select the **Y-Axis style** as Collapsed or Expanded (=default). The Collapsed style is also known as the "LiveData style", where you can see all y-axis at once, but there are only 3 values shown: min, max and the middle of the y-axis.
- The **Show seconds in panels** checkbox works as described on "[Options for all Panels](#)" on page 30 to determine whether seconds show in displays of time.
- Use the **Show Values at Cursor** checkbox the same way you use button **Show Values at Cursor** in the Tool bar. 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. Uncheck this checkbox for statistics on the fly. Click and drag the mouse to select the range for calculating SUM/AVG/MIN/MAX. The results are displayed in the legend beneath each individual tag, such as the example shown in [Figure 48](#).

Figure 48. Statistics on the fly

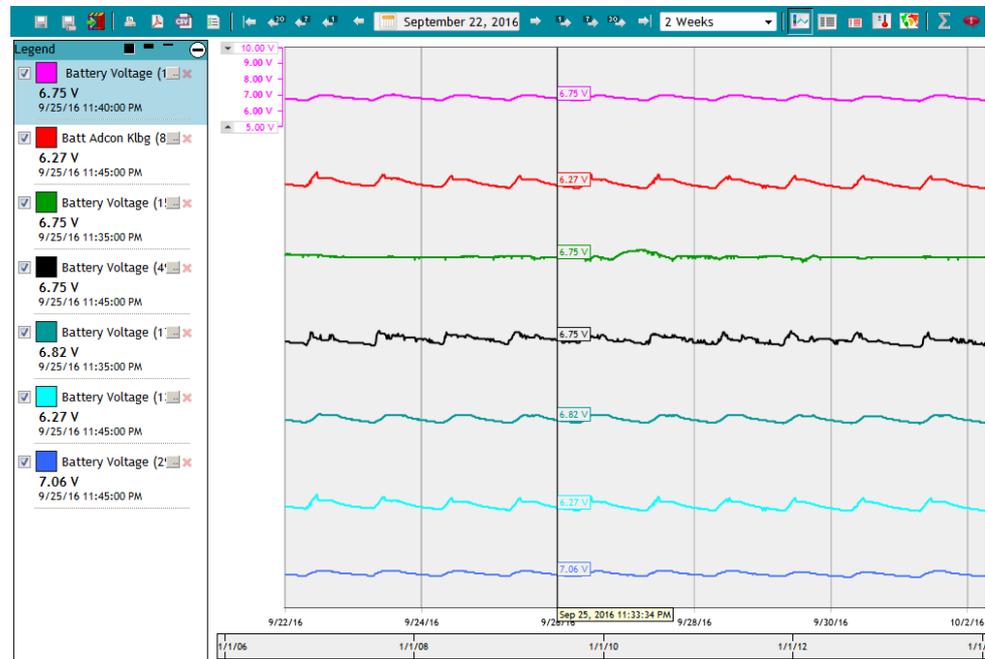


- **Show events in graphics** shows/hides the graphic, where you can select the event that is currently displayed. It can help to save space when you hide it.
- **Show time navigation** shows/hides the time line at the bottom, where you can select the time that is currently displayed. It can help to save space when you hide it.

A Data View Example

Displaying tags from different areas/RTUs on the same Data view panel 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 49](#).

Figure 49. A Data View Panel 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 ["Quick Export" on page 52](#).

Saving Data View Panels

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 6.6, please make sure that you have the privileges to save your changes.

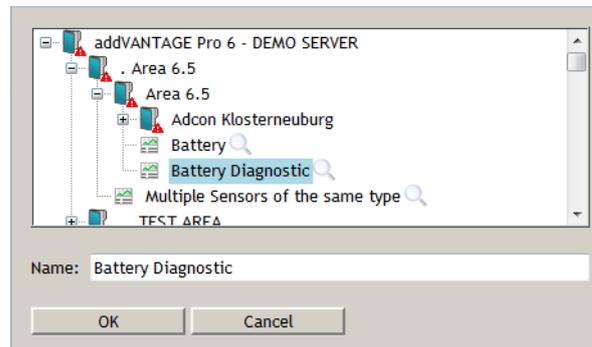
When you first create a Data view or any other type of panel, you must click **Save** or **Save As** in the Tool bar to save the panel. You typically use **Save As** when you've made changes to an existing panel and want to save it under a different name. In either case, the Save dialog shown in [Figure 50](#) is displayed.

If you try to close an existing Data view panel, one of two things happens. If you chose to automatically save panels when you close them (see ["Options for all Panels" on page 30](#)), the Data view panel 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 Data view panel. Click **Yes** to display the **Save** dialog.

Select an area (a folder) where you want your custom Data view panel saved. It's best to select an area having a certain relationship with the content of the Data view panel, 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 Data view panel.

Figure 50. Save Dialog



You can also save a panel any time by clicking **Save** in the Tool bar.

Create a Data View Panel from a Template

If you have to create a large number of identical panels on different areas, you can use the **Data view panel 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 settings.
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 Data view panels and select **New Node from template ▶ Panel 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 Data view panel with the same settings 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 Data view panel and use the **Copy**, and **Paste & Reconnect** options.*

From Charts to Tables

To switch from a Graphical view to a tabular view of data, click the **Table view** button previously described, see "**Table view**" on page 39).

While the Tool bar remains the same, your chart lines will disappear and every value of the time span you selected will appear as a table, as shown in [Figure 51](#). 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 51. Table View

Date	Battery Voltage	Batt Adcon Kibg	Battery Voltage				
Oct 5, 2016 7:00:00	6.43 V	5.96 V	7.14 V	6.35 V	6.59 V	5.96 V	6.82 V
Oct 5, 2016 7:05:00			7.14 V		6.59 V		
Oct 5, 2016 7:10:00	6.43 V		7.14 V		6.59 V		
Oct 5, 2016 7:15:00		5.96 V	7.14 V	6.35 V	6.59 V	5.96 V	6.82 V
Oct 5, 2016 7:20:00	6.43 V		7.14 V		6.59 V		
Oct 5, 2016 7:25:00			7.14 V		6.59 V		
Oct 5, 2016 7:30:00	6.43 V	6.04 V	7.14 V	6.35 V	6.59 V	6.04 V	6.90 V
Oct 5, 2016 7:35:00			7.14 V		6.67 V		
Oct 5, 2016 7:40:00	6.43 V		7.14 V		6.67 V		
Oct 5, 2016 7:45:00		6.12 V	7.06 V	6.35 V	6.67 V	6.12 V	6.98 V
Oct 5, 2016 7:50:00	6.43 V		7.06 V		6.67 V		
Oct 5, 2016 7:55:00			7.06 V		6.67 V		

Note: You can click the **Graphical view** button to return to the plot display.

Note: 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 the **Enter** key. 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 52](#).

Figure 52. Adding a Value in the Table View

Once you have manually recorded values in additions to the existing values, you can add them to the table by following these steps:

1. Select the **Tag** from the drop-down.
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.

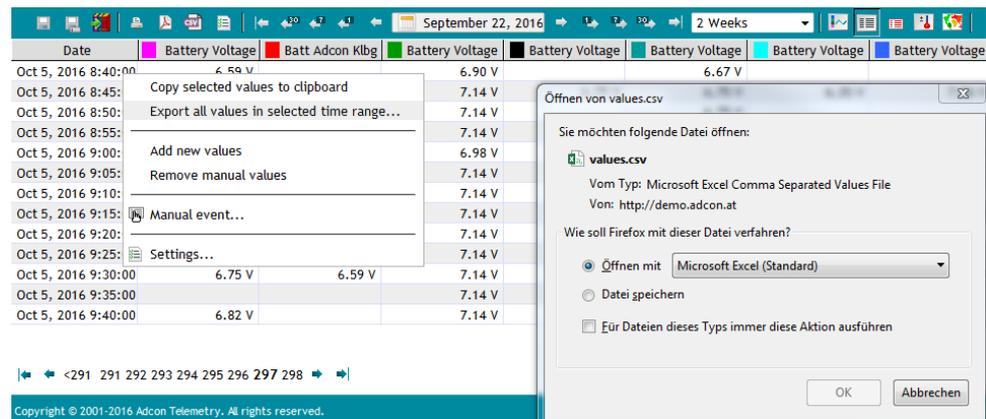
Quick Export

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 selected data sets via Date and Span Chooser (copy to csv)

1. Right-click in the body of the table.
2. Choose **Export all values in selected time range** 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 53. Export All Data from Table View



Note: Only the data you defined in the Date and Span Chooser will be exported (with the start date as shown in the calendar, and the amount of data as shown in the Span area), even if the register cannot display all entries on a page, or if you have scrolled forwards or back in the register.

Look at the example above. What we export in [Figure 53](#) is the data as can be seen: 2 weeks (Span chooser), beginning on September 22, 2016 (Date Chooser).

Should you want to export all the data of a selected chart, you need to (the Data view Tool bar is shown in [Figure 37](#)):

- Set the start date to the beginning of the database (**Go to Begin**)
- Select **Custom** in the Span Chooser, then select a reasonable duration.

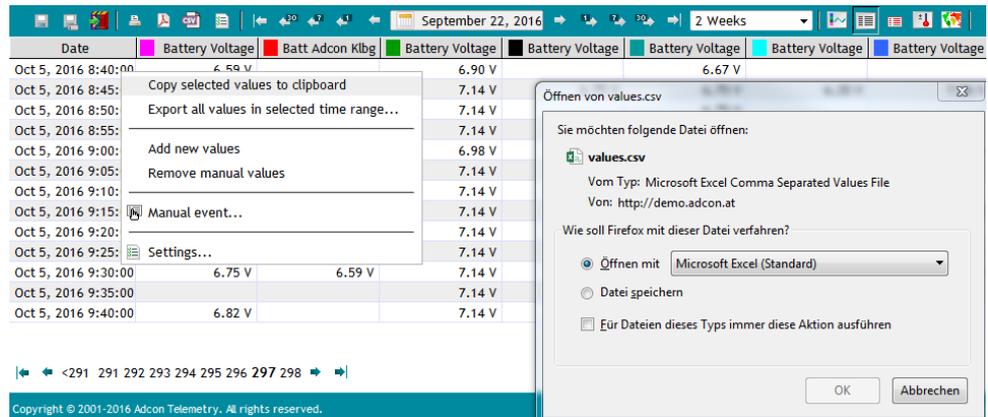
Method 2: Exporting selected data sets only (copy to clipboard)

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 as shown in [Figure 54](#)).
2. Right-click in the body of the table and select **Copy selected values to clipboard** from the menu that appears.

- Open a text editor or spreadsheet program such as Excel or OOo.Calc and paste the contents of the clipboard.

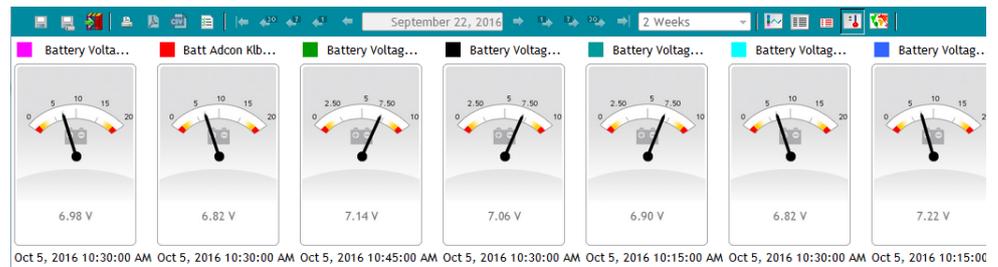
Figure 54. Copying Selected Data into the Clipboard



Instrument View

If you click the **Virtual Instruments** button, you can view chart data in one other view (*Figure 55*), similar to what you might see on an instrument panel.

Figure 55. Data View Using Virtual Instruments



Events View

Use the Events view to see the events generated by nodes.

You'll notice that the Tool bar is very similar to the Table view's tool bar. You are not able to print the Events view directly, but you can click **Export all values in time range to PDF** 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 view has an **Acknowledge** button.

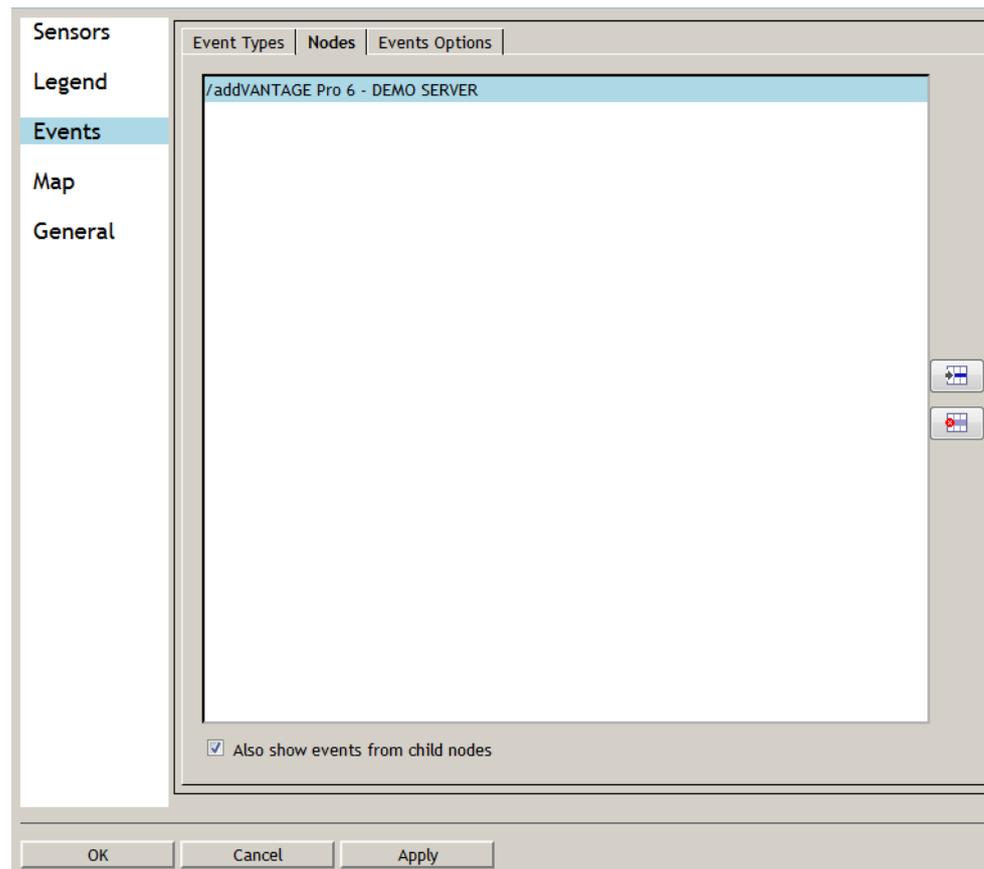
Settings

The Events view has extensive configuration possibilities to help you display the events and alarms in the most appropriate way for your needs. In an active Events view, click in the Tool bar **Show Settings** to display the dialog shown in [Figure 58](#).

Selecting Nodes

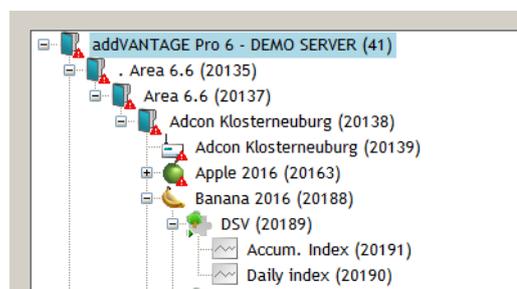
Use the **Nodes** tab ([Figure 56](#)) to select the nodes whose events you want to display. It is the second tab in the Settings dialog, but you must select a node before you can select the event types to display alarms for. With addVANTAGE Pro 6.6, all nodes can issue events. The selected nodes are not necessarily those that are used to plot the chart in the Graphical view.

Figure 56. Events Options Dialog, Nodes Tab



- Click the **Add** button to display the Nodes Chooser ([Figure 57](#)), which you use to add nodes whose events you want to view. You can select the root or expand it to select areas.

Figure 57. 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.

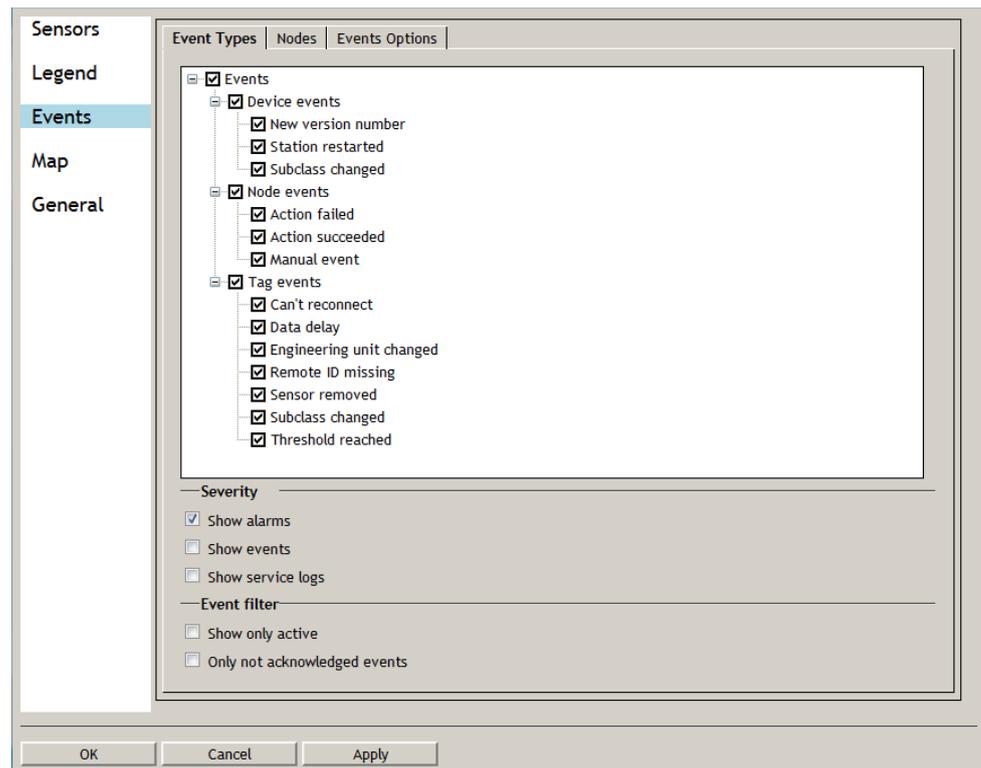
Another way to create an Events view is to select the nodes whose events you want to see from the Explorer, then right-click and select **Show only events**. Click **Settings** in the viewer to see the dialogs discussed here.

Displaying Event Types

The **Event Types** tab (*Figure 58*) 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 54*).

You can scroll 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 view, unselect it in the list. Use the **Events** checkbox to select or unselect all events at once.

Figure 58. 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.

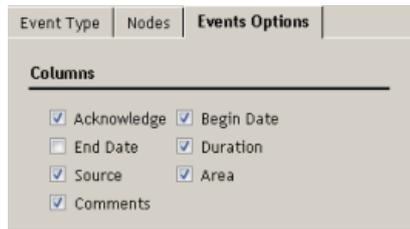
You can also use the **Event filter** section to further customize the Event list. For example:

- **Show only active** displays only active alarms/events, depending on your choices for the next checkbox. 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.

Selecting Event Options

The **Events Options** tab (Figure 59) has customization options for the data to be displayed in the viewer.

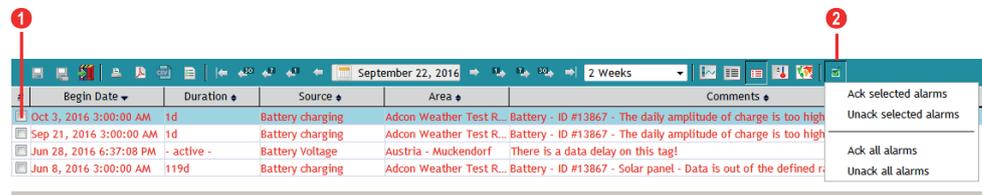
Figure 59. Events Options Dialog, Events Options Tab



- In the **Columns** section, each checkbox represents a column. Select the columns you want to see in the view.

Click **OK** when you are finished. The Event list (Figure 60) shows the events you selected.

Figure 60. Event List



- ❶ *Acknowledge checkbox* Acknowledges a specific alarm.
- ❷ *Acknowledge button* Acknowledges selected alarms (multiple selection) or all alarms.

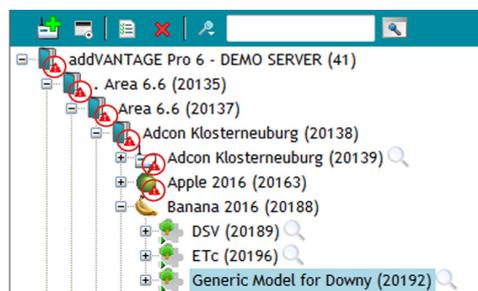
Note: *If no events are displayed, check the date and use the arrows and the calendar to move to a date and time where you have data.*

Event Alarms

By default, alarms are shown in red. If you click the **Acknowledge** checkbox or button, they turn blue or green, which means that the alarms have been acknowledged. Green means that the condition for the alarm is no longer present. Blue means that the condition for the alarm still exists.

If an extension issued an alarm, an alarm icon will be shown in the Explorer window by that extension (Figure 61), 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 61. Alarm Icons in the Explorer



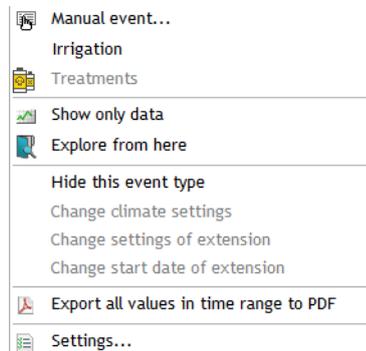
Locating the Source of an Alarm

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

Using the Event List

Right-click an event in an Event list to see the Context menu shown in [Figure 62](#).

Figure 62. Event List, 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.
- Select **Show only data** to open an event in the Graphical view.
- 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 **Settings** to open the same Settings dialog as when you select **Settings** in the Event List's Settings dialog.

Chapter 5. Working with Extensions and Crops

As with previous versions, the addVANTAGE Pro 6.6 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 are extensions that apply only to crops. They receive 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 receive 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 (see "*Plausibility Extension*" on page 60).

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

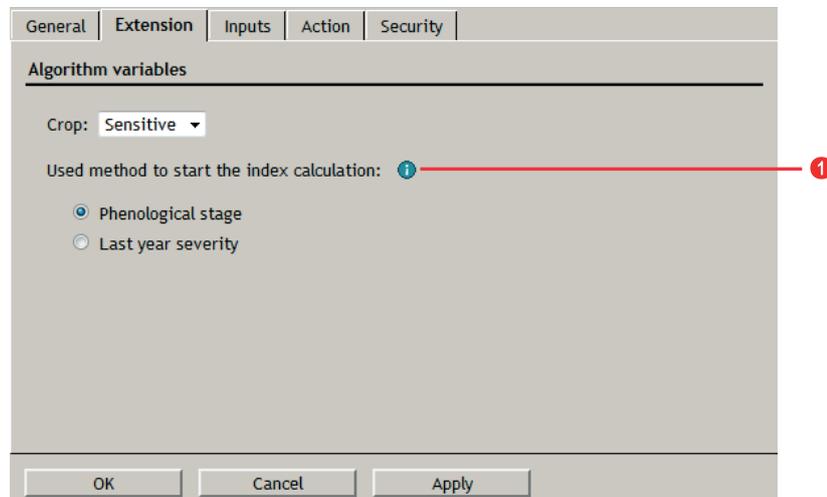
About addVANTAGE Pro Extensions

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. Additional extensions—as *addTIMER*, *BEE*, *Maryblight*—are available and may be purchased. These extensions are documented in a separate *addVANTAGE Pro Extensions and Crops* manual. For this manual and the extensions please contact Adcon Telemetry or your Adcon Distributor.

The Info Button

You will also find that certain calculation extensions and disease models have additional information available in the software itself, on their Settings dialog's **Extension** tab.

Figure 63. Info Button for Apply Powdery Mildew (Kast OiDiag) Extension



- ① *Info button* Opens a dialog with additional information about using the extension.

Recalculating Extensions and Crops

Extensions will automatically recalculated 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 settings 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 or the Ctrl key if you're selecting multiple locations).
3. Right-click the highlighted areas and select **New Node ▶ Calculation extension ▶ extension** or **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 **Settings**. If the selected extensions are not identical, only their common settings 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 settings as you want to.
2. Right-click the selected areas where you want a copy of the extension or crop and select **New Node from template ▶ Calculation extension** or **New Node from template ▶ Crops**. 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 settings as the one used as the template in each area you selected. All child extensions will be created.

You can also install extensions and crops using node template by right-clicking an areas and selecting **New Node from template ▶ Using node templates**. Select the appropriate template and click **Finish** to add the extension or crop.

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 settings but uses current dates.

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

Plausibility Extension

For automatically checking sensor values attach the RTU Diagnostics to the sensor. The data coming from the sensors or tags is then checked for plausible values. The detection of problems is based on typical patterns which are associated with defective sensors.

These patterns could be for example:

- Missing data
- Constant values detection
- Drop detection
- Shadow detection
- WMO equations
- and many more

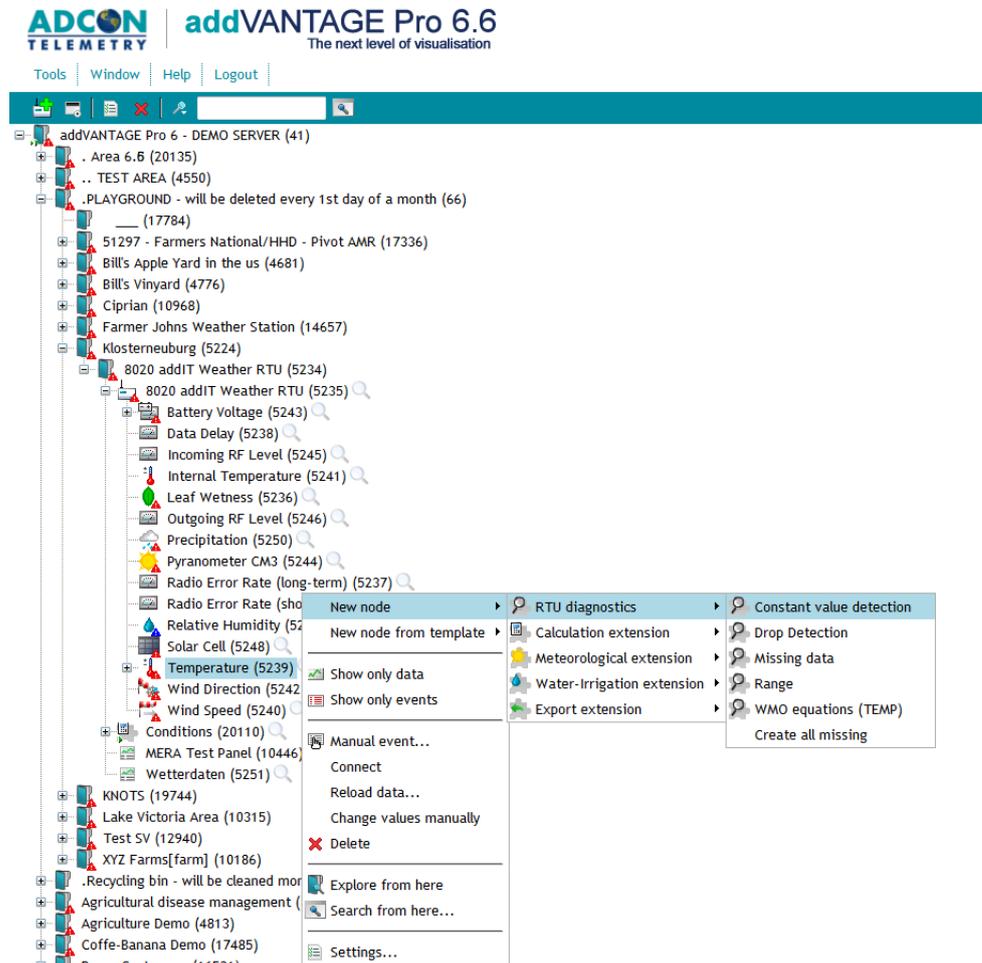
Adding RTU Diagnostics to a Tag

To add these diagnostic extensions, follow these steps:

1. Open an Explorer.
2. Select the sensor where you want to add the diagnostic extension (use the Shift or the Ctrl key if you are selecting multiple sensors).
3. Right-click the highlighted areas and select **New Node ▶ RTU diagnostics ▶ Extension**.

You can also select **New Node ▶ RTU diagnostics ▶ Create all missing**. If you choose this option, all available diagnostic extensions for the selected tag(s) or sensor(s) are installed (shown in [Figure 64](#)):

Figure 64. Plausibility Extension

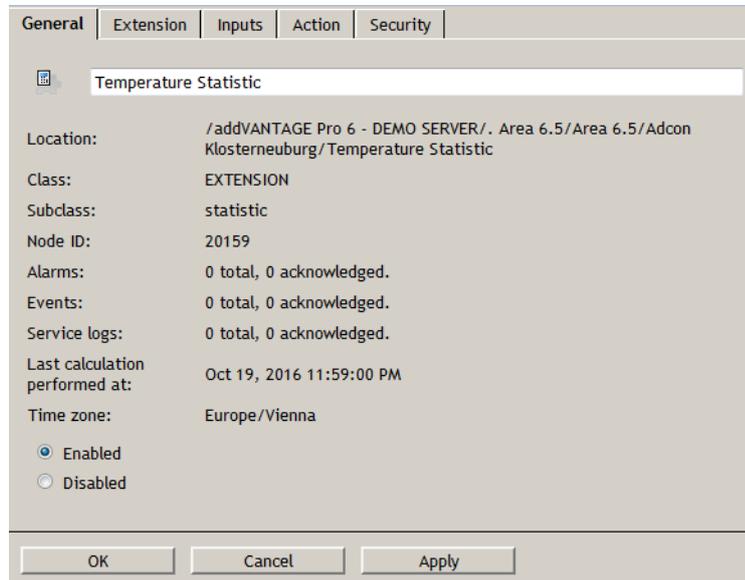


The Plausibility Extension is based on the Köppen-Geiger climate classification, a set of basic climate parameters, which can be adapted to your specific needs. You can access the Climate manager via the Tool bar **Tools ▶ Climate Manager** to modify the algorithm variables. Your ability to edit this dialog depends on your user role.

Settings for Extensions and Crops

Some extensions and crops must be configured. To display the settings (*Figure 65*), highlight the extension or crop in the Explorer and click the **Settings** button in the Tool bar.

Figure 65. Statistics Extension Settings Dialog, General Tab



Common Settings

Figure 65 shows the settings 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 "*Node Settings*" on page 20.

Settings for Crops

Three additional tabs pertain to crops.

The Crop Tab

Use the **Crop** tab ([Figure 66](#)) to specify and monitor the phenological stages of crops.

Figure 66. Crop Settings, Crop Tab

General Crop Treatments Irrigation Action Security					
BBCH	Name	Date			
00	Recently planted material	Jan 1, 2016			
10	Formation of the 1st leaf	Jan 11, 2016			
29	Nine or more suckers	Mar 18, 2016			
35	The pseudostem reaches 50 ...	Apr 25, 2016			
55	Flower bract completely open	May 10, 2016			
65	Full bloom: at least 50 % of t...	Jun 4, 2016			
72	The fingers of the hands sho...	Jun 29, 2016			
85	Degree of maturity 5: tinge o...	Oct 27, 2016			

OK Cancel Apply

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

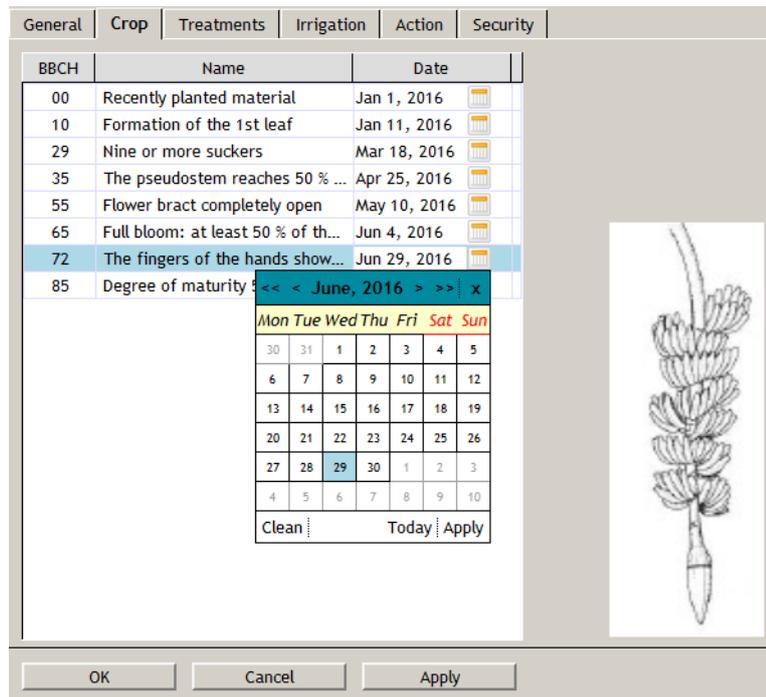
In principle, the system can be installed anytime, but starting it at the beginning of the growing season has certain advantages. The software uses a calendar year with the appropriate phase dates set, but you can change these dates. Do this by using the **Crops** panel, which sets the proper phenological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

To set the season or phase starting date, complete the following steps ([Figure 67](#)):

1. Right-click the crop and select **Settings**.
2. Click the **Crop** tab.
3. Select the desired phase in the **Name** column.

- Click the Calendar icon and select the date for the phase to begin, then click **Apply**.

Figure 67. 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.

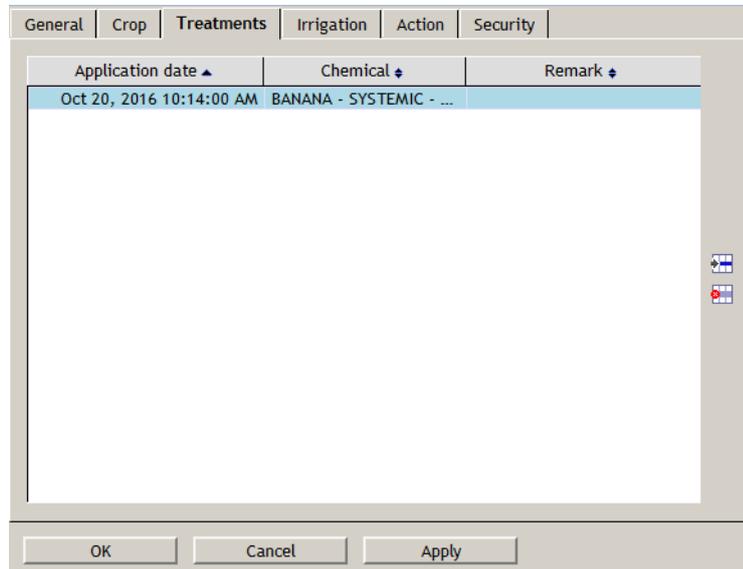
Climatic conditions during certain seasons could differ from the pre-programmed defaults, so Adcon recommends that you verify at regular intervals whether the model is in synchronicity with the field conditions. If this is not the case, use the method described above to change each individual phase's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

The Treatments Tab

Use the **Treatments** tab (Figure 68) 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 Extensions and Crops* manual.

Figure 68. Crop Settings, Treatments Tab

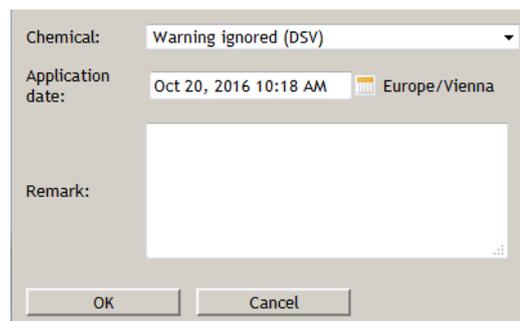


Adding Treatments

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 69):

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

Figure 69. 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: A treatment is made at the crop level so if for example the chemical used is valid for powdery and downy mildew a treatment made at the crop level will go for those two diseases.

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:

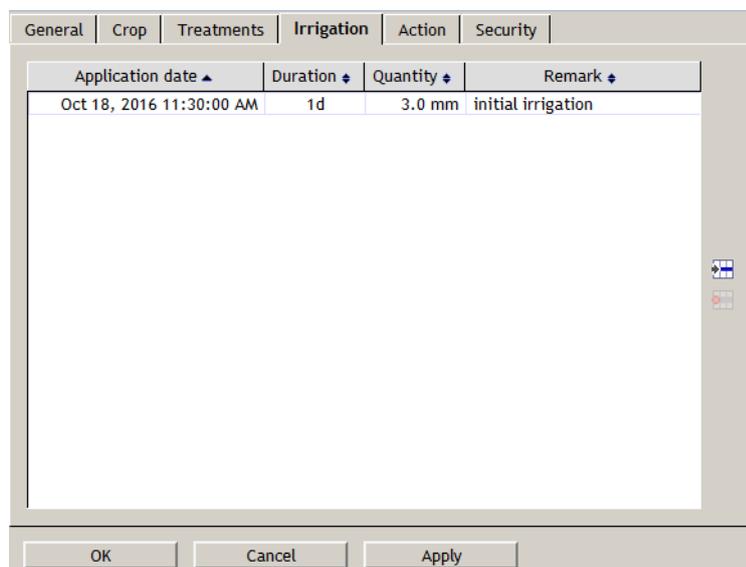
1. Right-click the crop and select **Settings**.
2. Click the **Treatments** tab.
3. Select the treatment from the lower list and click the **Remove** icon.
4. Click the **OK** button.

The system automatically recalculates the model's new data.

The Irrigation Tab

Use the **Irrigation** tab (Figure 70) to create irrigation schedules for the crop.

Figure 70. Crop Settings, Irrigation Tab

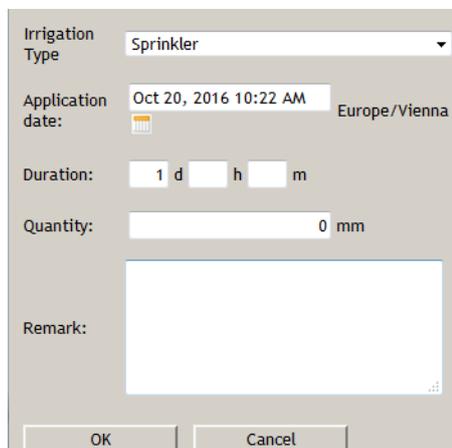


Adding an Irrigation Schedule

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 71). Follow these steps to add this schedule:

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

Figure 71. Adding Irrigation



3. Select the **Irrigation Type**.

- 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.*

- In the **Duration** field, enter how long the irrigation lasted, in days, hours, and/or minutes.
- In the **Quantity** field, enter how much water was sent to the crop.
- Enter a **Remark**. (optional)
- 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:

- Right-click the crop and select **Settings**.
- Click the **Irrigation** tab.
- Select the appropriate irrigation schedule from the lower list and click the **Remove** icon.
- Click the **OK** button.

Settings 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 72](#).

Figure 72. Statistic Extension Settings, Extension Tab

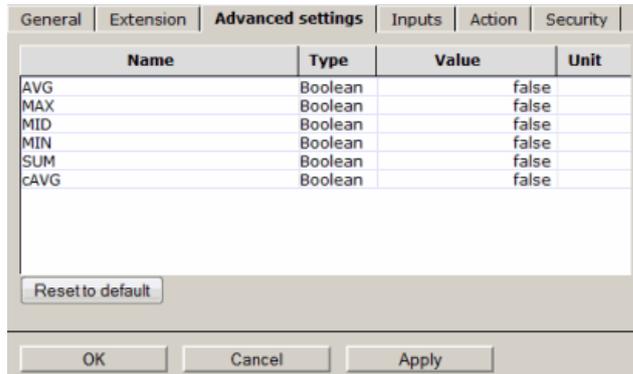
The screenshot shows the 'Extension' tab of a settings dialog. It is organized into three main sections: 'Schedule', 'Scheduling', and 'Computations'.
 - **Schedule:** Contains 'Begin date' and 'End date' fields, each with a calendar icon and a 'Time zone: CET' dropdown. Below these is a 'Begin time' field with two spinners set to '23' and '59'.
 - **Scheduling:** Contains two dropdown menus: 'Calculate one value per' set to '1' and 'Day(s)', and 'Use values of the last' set to '1' and 'Day(s)'.
 - **Computations:** Contains a list of checkboxes: 'Minimum', 'Maximum', '(Min + Max) / 2', 'Average', 'Sum', and 'Circular average'.
 At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

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

The Advanced Settings Tab

The **Advanced settings** tab (Figure 73) provides additional information about the extension options.

Figure 73. Statistic Extension Settings, Advanced Settings Tab

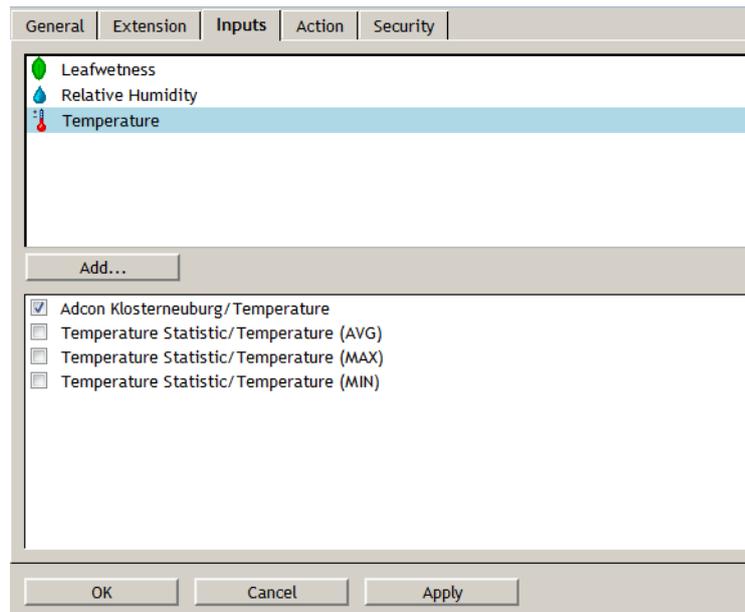


Note: Note that your ability to see the **Advanced Settings** tab is determined by your user role and a setting in the **Tools** menu.

The Inputs Tab

The **Inputs** tab (Figure 74) 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 74. Extension Settings 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 Extensions and Crops* manual.

Extension Settings for Diagnostic Extensions

Although the Diagnostic Extensions have the same settings as calculation extensions, the **Extensions** tab has some differences, as you can see in [Figure 75](#).

Figure 75. Diagnostic Extension Settings, Extensions Tab

The screenshot shows the 'Diagnostic Extension Settings' dialog box with the 'Extension' tab selected. The 'Schedule' section includes a checked 'Begin date' of 'Mar 21, 2014' and 'Time zone: CET', an unchecked 'End date' field, and a 'Begin time' of '2:00'. The 'Climate' section has 'Use climate settings' checked, a dropdown menu set to 'Warm temperature - winter dry - hot summer', and 'Located in the northern hemisphere' unchecked. The 'Algorithm variables' section shows 'Acceptable percentage of missing or bad data' set to '2.0%'. The 'Event' section has 'Severity' set to 'Alarm' and 'Show ID of the sensor in the events' checked. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

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—see ["Plausibility Extension" on page 60](#).

The settings shown in [Figure 75](#) are for a Missing Data diagnostic extension of a temperature sensor. Either you choose one of the supplied climate settings by using the checkbox, or you use your own Algorithm variable and Event settings. The **Schedule** settings are the same as for calculation extensions.

Appendix

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

Third-Party Tools

The following tools are used in the addVANTAGE Pro 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

antlr-2.7.6.jar
Version 2.7.6
<http://www.antlr.org/>

commons-beanutils.jar
Version 1.7
<http://jakarta.apache.org/commons/beanutils/>
The Apache Software License, Version 1.1

commons-codec-1.3.jar
Version 1.3
<http://jakarta.apache.org/commons/codecs/>
Apache License Version 2.0, January 2004

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

commons-compress-1.4.1.jar
Version 1.4.1
<http://commons.apache.org/proper/commons-compress/>
Apache License Version 2.0, January 2004

commons-digester.jar
Version 1.8
<http://jakarta.apache.org/commons/digester/>
The Apache Software License, Version 1.1

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

commons-fileupload-1.3.jar
Version 1.3
<http://commons.apache.org/proper/commons-fileupload/>
Apache License Version 2.0, January 2004

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

commons-logging.jar
Version 1.0.4
<http://jakarta.apache.org/commons/logging/>
Apache License Version 2.0, January 2004

commons-logging-api.jar
Version 1.0.4
<http://jakarta.apache.org/commons/logging/>
Apache License Version 2.0, January 2004

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

commons-validator.jar
Version 1.1.3
<http://jakarta.apache.org/commons/validator/>
Apache License Version 2.0, January 2004

datetimepicker2.7.jar
Version 2.7
<http://www.lavantech.com/datetimepicker/>
Bought - <http://www.lavantech.com/license.shtml>

dom4j-1.6.1.jar
Version 1.6.1
<http://www.dom4j.org/>
BSD License

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

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

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

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

hibernate-annotations.jar
Version 3.4.0.GA
<http://annotations.hibernate.org>
LGPL

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

hibernate3.jar
Version 3.4.0.GA
<https://sourceforge.net/projects/hibernate/>
LGPL

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

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

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

jaas.jar
<http://java.sun.com/javase/technologies/security/>
Sun binary code license

jvamelody-1.25.0.jar
Version 1.25.0
<http://code.google.com/p/jvamelody/>
LGPL (Version 3, June 2007)

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

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Version 0.3.4
<https://github.com/jezhumble/javasysmon>
NetBSD (2-line) license

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<http://jaxen.org/>
Apache style, Attached

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Version 1.0.10
<http://www.jfree.org/jfreechart/>
LGPL (Version 3, June 2007)

jfreechart-1.1.1_adcon.jar
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<http://www.jfree.org/jfreechart/>
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jmf.jar
<http://java.sun.com/products/java-media/jmf/>
JMF License

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Version 1.2_04-b16-p02
<http://java.sun.com/javaee/javaserverfaces/reference/api/>
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<https://facelets.dev.java.net/>
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<https://sourceforge.net/projects/jregistrykey/>
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<http://logging.apache.org/log4j/docs>
The Apache Software License, Version 1.1

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<http://myfaces.apache.org/>
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Version 10.2.0.1.0
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Version 1.6.0
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Version 3.3.1.GA
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Version 2.7.0
<http://xml.apache.org/xalan-j/>
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<http://struts.apache.org/>
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