AERMEC

Full Guide

Supervision and monitoring system

AERNET

Web Application

UK

AERNET - Full Guide_04

WARNING: The pages with the " " symbol at the bottom of the page indicate the new functions of the updated AerNet portal. These pages should be interpreted as a "parenthesis" in the manual, for a purely informational purpose. The entire manual remains valid and it is recommended to follow the order indicated in the table of contents.

Illustration of the new AerNet portal functionalities (https://aernet.aermec.com)

This document presents the additions/changes made to the web interface of the Plant Monitoring Web Application (https://aernet.aermec.com).

0) First access to the new portal

When accessing the updated AerNet portal for the first time, the following screen appears, allowing you to download the document summarising the variants that have been introduced (i.e. the document you are now reading):

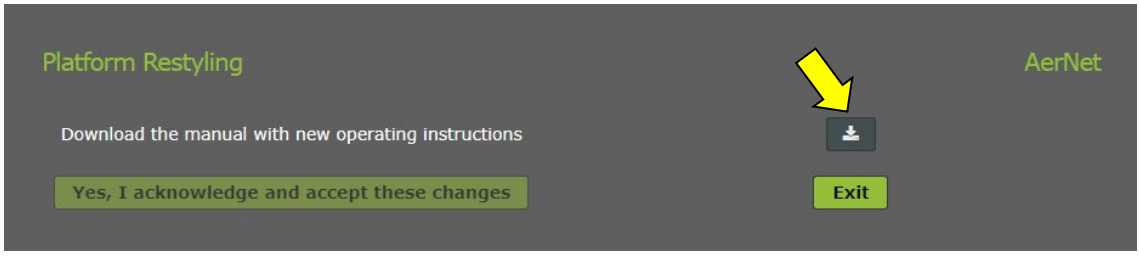


Figure 1: downloading the new instructions

1) General interface elements

Some general elements of the interface have been repositioned, in particular the menu for accessing functions has been developed horizontally at the top of the screen, in order to leave more space in the central part and thus make it easier to use certain functions, described below.

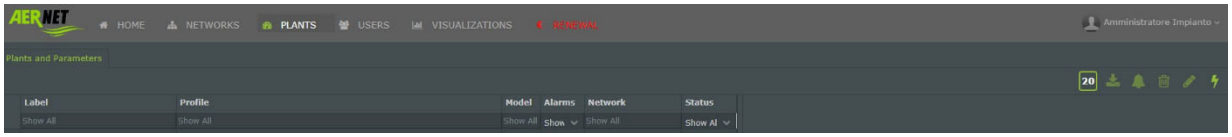


Figure 2: new access menu layout

2) Functionality of networks, systems and users

When creating a new user, the new "Visualizations" functionality is available:

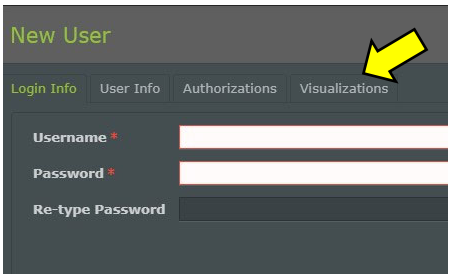


Figure 3 - New "Visualization" functionality

In fact, in this new version of the AerNet portal, any "user" or "superuser" who is created **has access by default <u>to all views of all networks</u> owned by the administrator**. Via the new "Visualization" tab, the administrator will have the option of removing access to any particular view:

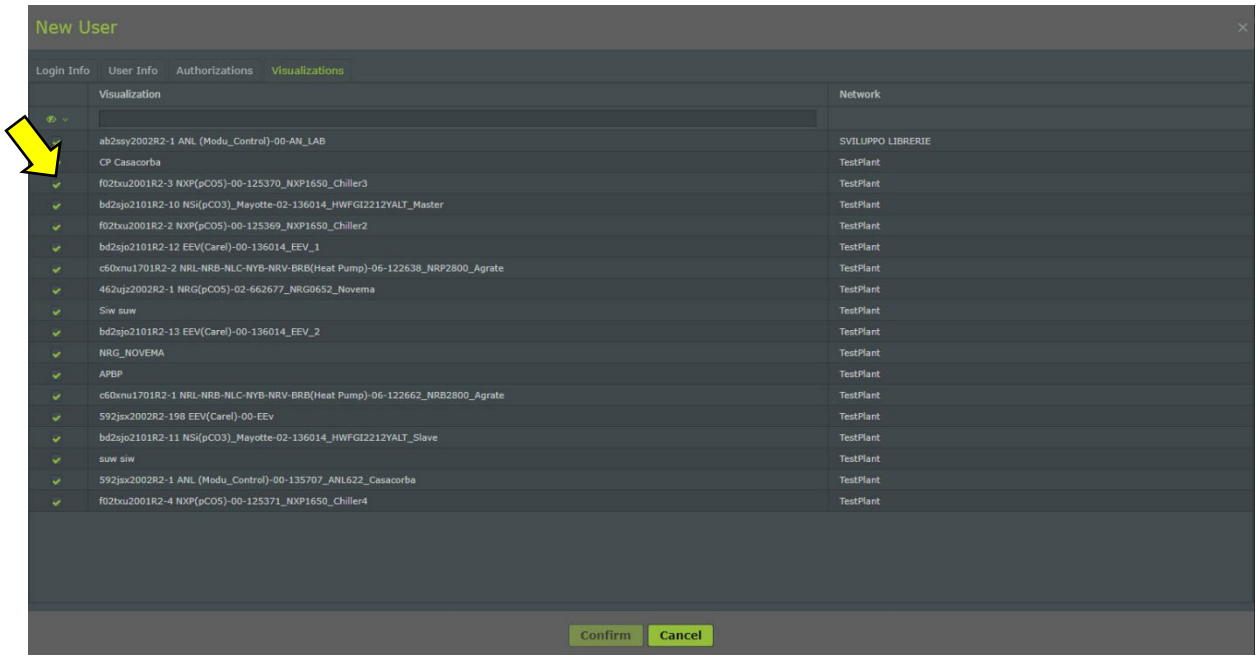


Figure 4: Display enabling

It should be borne in mind that once one or more slaves have been deleted, the corresponding displays will also be deleted.

3) <u>Sending alarms</u>

In this release, the possibility is given to set up additional e-mail addresses to which alarms can be sent. **These recipients will not be visible in the list of users and will not be able to log in, but will only receive e-mail alerts**.

To add these new recipients, proceed as follows:

- select the slave you want
- click on the 'Modify' button in the top right-hand corner
- then select the “Alarms” tab and then the “Alarm Notification” button . The classic alarm notification window opens, with a new icon in the centre

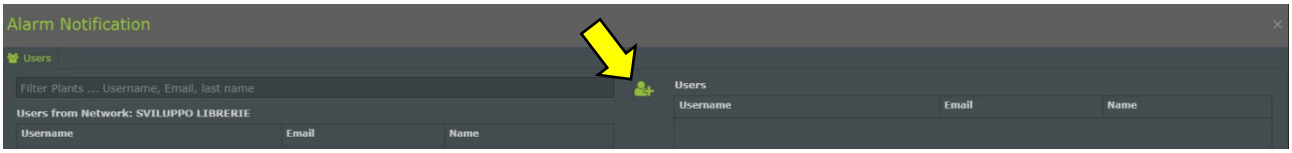


Figure 5: New icon for entering additional e-mail addresses

- Clicking on the new icon opens a window where you can enter a new e-mail address

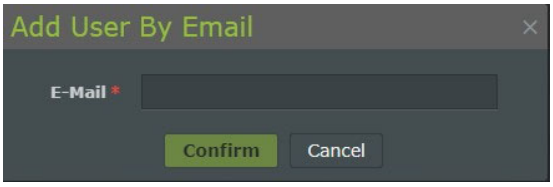


Figure 6: Email compilation

By clicking on confirm, the recipient is added. It is of course always possible to remove it at any time.

4) Manage Profiles

In this version, several changes have been made to the “Manage Profiles” area to improve the usability of the “Aernet Pro” interface. Let's see in detail.

Manage Templates

The interface is very similar to the previous one; the available templates are listed, with the revision and source file indicated:

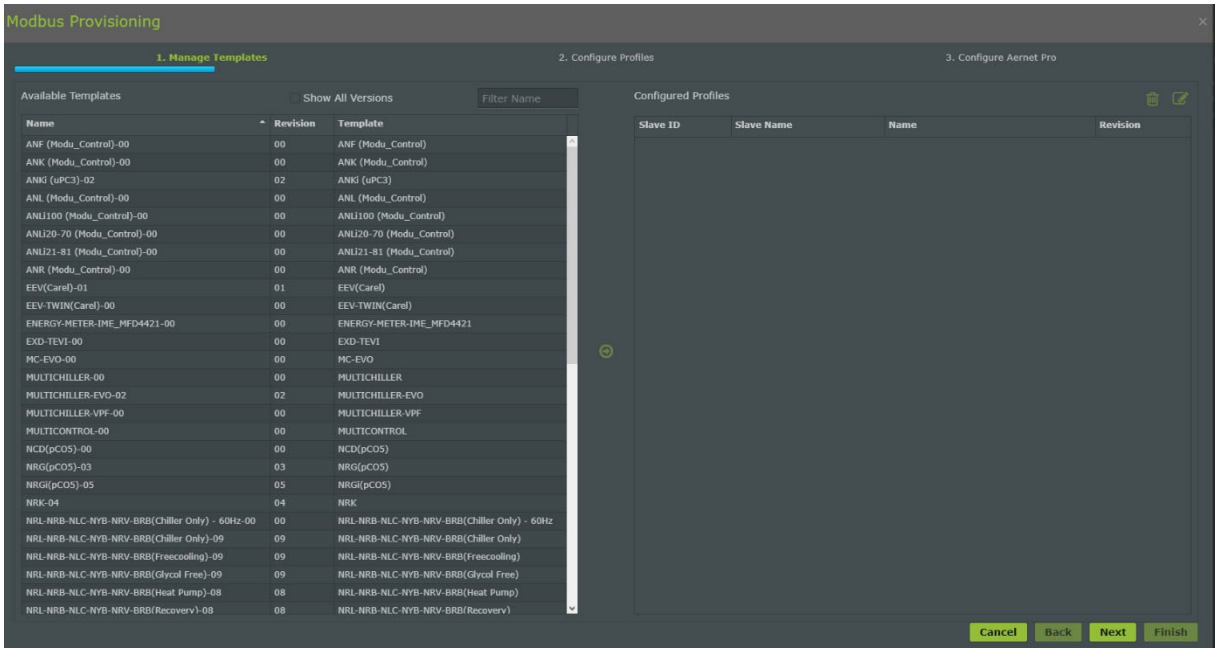


Figure 7: “Manage templates” screen

Once the template (or templates) to be imported has been chosen and the various required parameters (name, modbus address, etc.) have been set, two new icons are active:

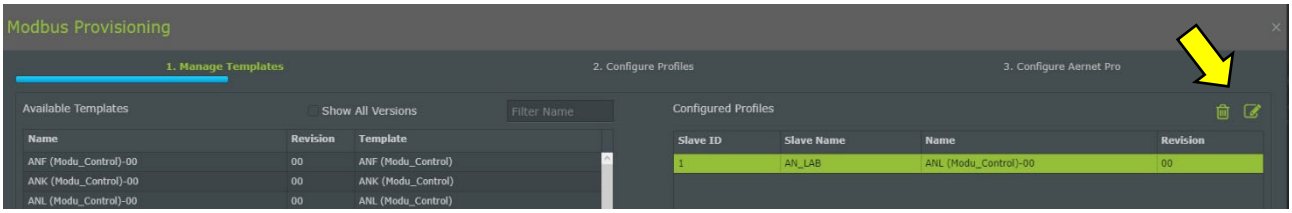


Figure 8: Manage Templates, Additional functionalities

The icon allows the newly imported (or already present) modbus slave to be deleted: please note that once one or more slaves have been deleted, the corresponding displays will also be deleted.
The icon allows all settings of the slave that has been created to be changed, including the modbus address.
Continuing the procedure leads to the next step, **Configure Profiles**.

Configure profiles

The interface is identical to that of the previous version, except for the presence of the “Copy” icon:

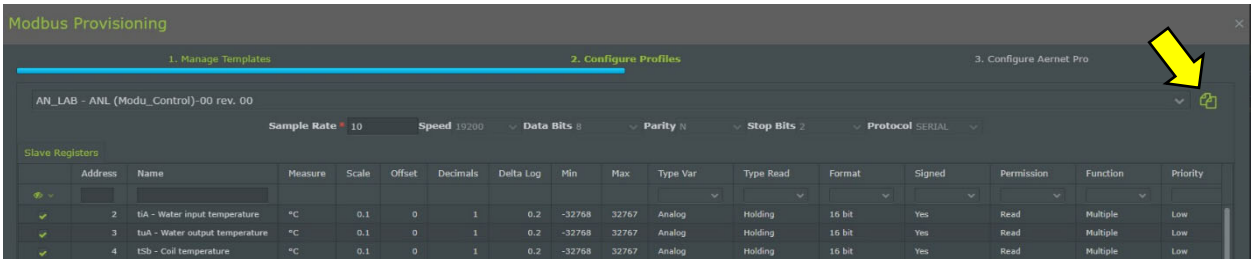


Figure 9: Configure Profiles, Copy icon

By clicking on the icon, it is possible to copy all settings of the current slave profile, including the enabled registers, to a second slave profile (of the same template) provided it was previously loaded with the "Manage Template" functionality:

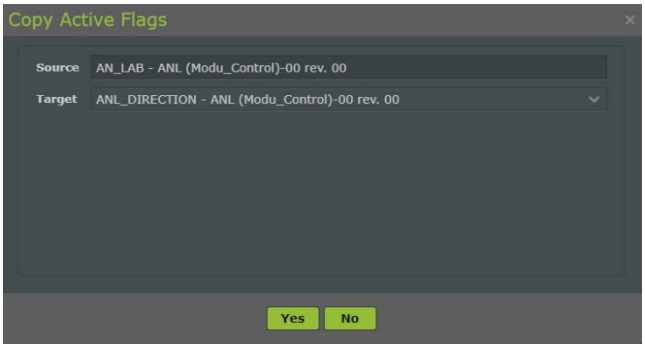


Figure 10: Copy Family functionality

Copying takes place from the "Source" family to the "Target" family. By pressing **Yes** the two slave profiles will be exactly identical, except for the address.
Continuing the procedure takes you to the next step, **Configure AerNet Pro**

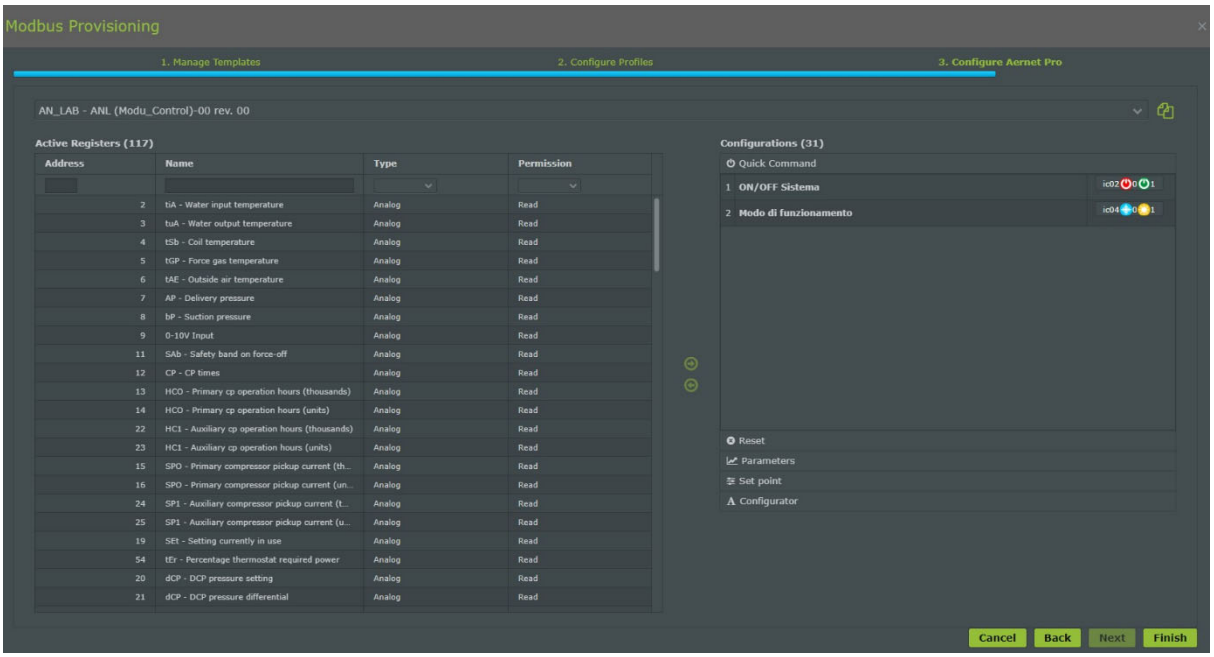


Figure 11: Interface Configure Aernet Pro

Configura Aernet Pro

The areas Quick Command, Reset, Setpoint and Configurator remained unchanged.
The Status and Series areas were merged into "Parameters".
"Histogram" has been removed

When creating the Aernet Pro interface, there is the possibility to choose up to 20 parameters in “read” or “read/write” to be presented on the Aernet Pro summary window. When they are chosen and brought to the right, it is possible to choose whether or not to graph them, MAXIMUM 10 PARAMETERS, by means of the appropriate flag. Please note that some of them will normally be present on both the summary and the graph, because they are already preset. They can of course be removed and/or modified.
Also in this step, you can use the 'Copy' function .

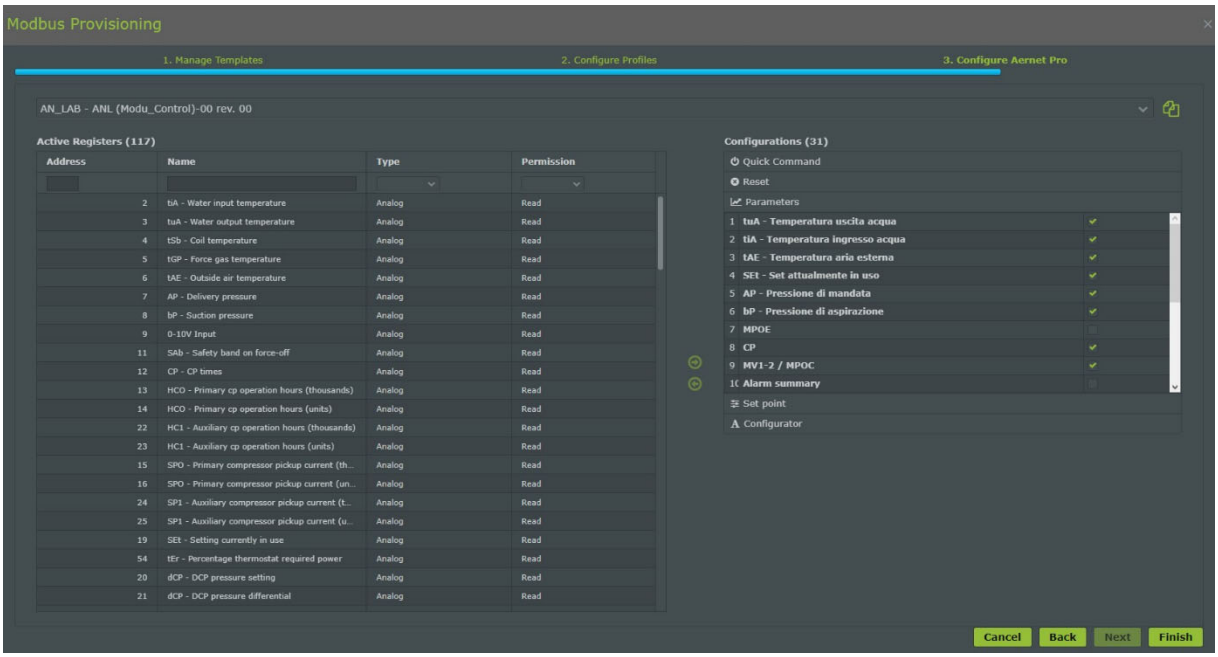


Figure 12: Configure Aernet Pro, parameter assignment to display

Once this step has been completed, pressing the **Finish** button returns you to the Plants e Parameters window, from which you can choose the standard Aernet Pro view, which will appear as follows:

Figure 13: new AerNet Pro interface display

Below is an explanation of the new AerNet Pro interface.

- The table you see with the 20 parameters under “Summary” is dynamic, i.e. it updates every 30 seconds.
- Data in the table that are not graphed appear in white, while those that are graphed appear in the colour of the corresponding series in the graph.
- Using the tick marks, it is possible to remove/add parameters (maximum 10), which are then updated on the graph by pressing the button.
- The labels below the graph are retained, allowing the series to be quickly removed or put back in or highlighted.
- The graph is dynamic, by default it shows the last hour of operation and allows zooming using the mouse, as with the graphs constructed in the “Visualizations” menu. It remains possible to manage display intervals, as usual.
- If one of the parameters is of the Digital or Coil type, the graph adjusts to a dual display, with the analogue tracks at the top and the digital tracks at the bottom, similar to the “Tandem chart” display.
- The three “Toggle” type buttons remain, allowing you to execute some quick commands (e.g. machine On/Off, season change and alarm reset)
- Setpoints are available in the dedicated “Set Points” form:

Figure 14: Set Points edit window

5) <u>Data retention</u>

In order to make AerNet's data cloud platform more efficient, while saving a little money during subscription renewal, the new AerNet platform provides the following time windows for the retention of recorded data:

- The retention time of averaged data (an average data every hour) **is reduced to 3 months** (previously it was one year)
- The retention time for point data, i.e. data recorded at the highest possible resolution, remains unchanged, one week.

WEEKLY REPORT OF RECORDED DATA

Automatic weekly reporting function

For each AerNet it is possible to set up an automatic weekly reporting function of the recorded data. This option allows you to obtain a compressed file referring to each slave connected to the AerNet; the file will contain 7 .csv files, one for each day of the week, with the data and time resolution set during library assignment.

Example: if I have an AerNet that manages 3 Modbus slaves, the automatic report will send 3 .zip files every week, each containing 7 .csv files relating to each connected slave.

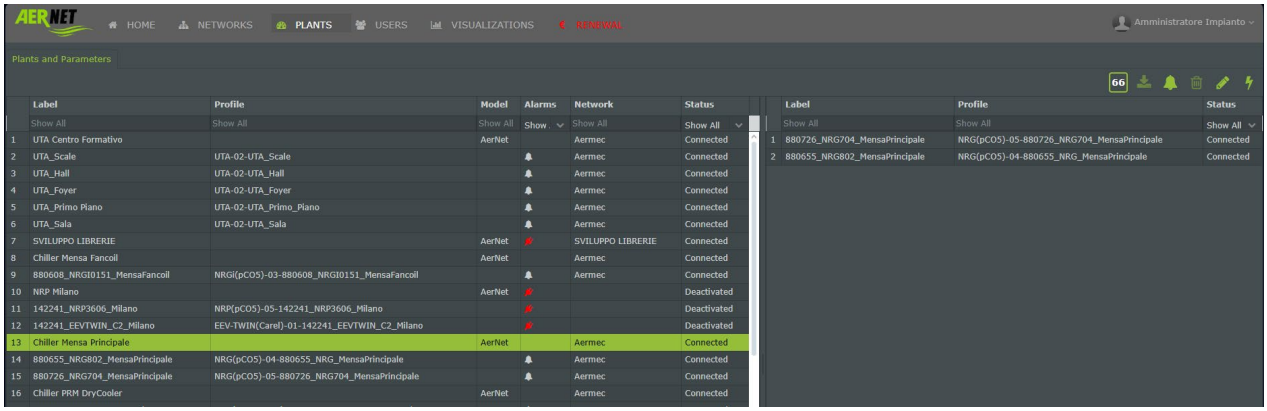
If only one Modbus slave is connected to the AerNet, the automatic report will produce only one .zip file.

Please note that the feature will be active after at least 7 days of data recording. In other words, if you also enable the automatic reporting function during the initial installation of AerNet, the first report will arrive after exactly one week of operation. If the function is activated after at least 7 days of operation, the report will be available immediately.

This function can be activated from the “Administrator” and “Super user” profiles, but not from the “User” profile. Once the function is activated, the report will be sent by default via email to the administrator. It will be possible to add the email addresses of recipients present in the AerNet address book and, if necessary, add new ones.

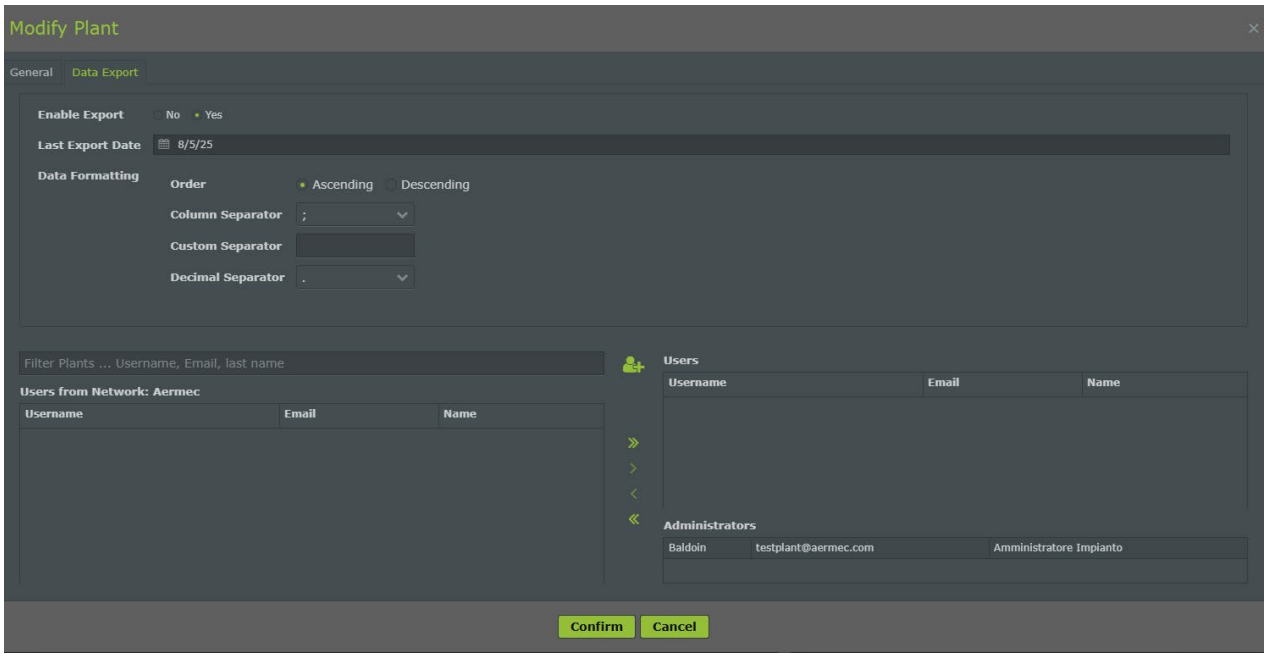
Setting up automatic reporting

From the list of systems, select the AerNet you are interested in and then click on the icon in the top right.



The following window opens:

Selecting the “Data Export” tab opens the following window that allows you to set the automatic reporting functionality:



Where the following fields are present:

- Enable export: choosing “Yes” enables export
- Last export date: the current date is proposed, NOT modifiable
- Data formatting: in these fields you can choose how to format the .csv data file that will be produced (sorting, separators, etc.).
- Email users: as mentioned, the Administrator user is present by default and cannot be removed. You can drag any users present in the left window into the right window (Associated Users), or add new ones by acting on the icon .

By clicking on the button **Confirm** the function is enabled. The first report will take about two to three hours, then the next one will be created exactly 7 days later.

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1. INTRODUCTION

The AERNET Router is a remote control and monitoring device that can be combined with any Aermec equipment fitted with an RS485 Modbus serial port. It can be used to remotely monitor the machine, by using, among other things, a series of services and features specifically designed for the remote diagnosis of the operation of equipment of a varying complexity.
This document describes the system's administration Web Application.

2. MONITORED SYSTEM

Below is a brief description of the AERNET system elements and some AERNET Router features.
To physically install the AERNET Router and connect it to the Internet, refer to the "AERNET Installation Manual" provided inside the accessory.

2.1 Main features

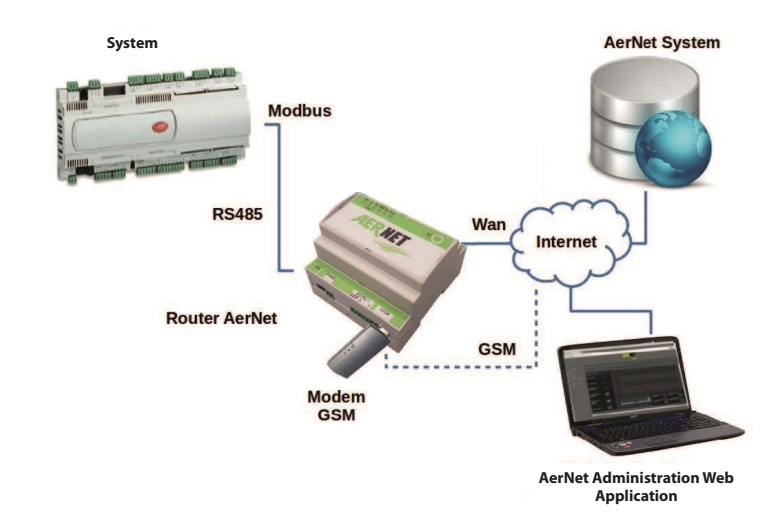


Fig. 1 Elements of an AERNET system.jpg

The system elements are:

- **MONITORED DEVICES**. One or more Aermec devices. The device controllers are connected via an RS485 Modbus to the AERNET Router RS485 port. The AERNET Router acts as a Modbus master, while each connected device is configured as a Modbus slave.
- **AERNET ROUTER.** The RS485 port connected to the monitored devices is used. The Router must be connected to the internet in order to activate the communication with the AERNET System in Cloud mode. Here are the available Router communication mechanisms:
  - The "WAN" network port used to access with an Ethernet cable to the LAN network and through the latter to the internet.
  - A Modem GSM dongle (3G, 4G) inserted in the Router's USB port to connect the Router directly to the internet.

The AERNET Router is configured with the Modbus mapping of the various Families of AERMEC Products. With a set frequency, the Router reads the parameters from the Modbus slaves, transmits them to the AERNET System and receives from the AERNET System implementations, settings and parameter settings, which it communicates to the slaves involved.

- **ADMINISTRATION WEB APPLICATION.** This is the application through which the AERNET system users can supervise and remotely control their systems.

2.2 AERNET Router functions

The AERNET Router performs a set of services that allow you to reliably and efficiently connect remote systems to the AERNET Cloud System.

- It performs a pre-calibration of the read samples, so as to only communicate the varied samples to the System. The AERNET System then properly rebuilds the timeline of transmitted samples. The Router also compresses the communication. These two functions minimise the traffic load which, in case of GSM communication, may be heavy.
- In case of communication issues, it stores the non-transmitted samples (data-logger function) in a circular buffer that can contain at least four hours of collected data. Upon restarting communication, as well as resuming communication of the samples collected in real time, also the stored samples are transmitted to the Cloud System and the data log is emptied. In this case as well, the AERNET System rebuilds the timeline of samples correctly.

2.3 Basic functions of the AERNET System

The AERNET System performs a set of basic services to supervise and remotely control the systems.

- It communicates with the configured AERNET Routers and collects the parameter readings of the monitored systems.
- It collects the samples and saves them in a database for large amounts of data (DB not SQL). Data relating to values read over the last seven days is kept, at the maximum allowed resolution (raw data). As the readings are carried out, data aggregations are built and collected (roll-up process) – with the frequency of one sample per parameter per hour – retained for 12 months.
- It prepares a "return channel" through which you can perform actuations, settings, parameter settings from the System to the managed systems.

3. AERNET ADMINISTRATION INTERFACE

The administration operations of the AERNET solution are performed via a Web Application. These are the operations carried out by the persons managing the monitored systems.

3.1 Overview of the AERNET environment

Below are some general concepts of the AERNET solution.
This chapter also refers to certain Web Application functions that will be explained in subsequent chapters.

3.1.1. Systems, Networks, Displays, Alarms

In the AERNET setting, the devices are identified with the term "Systems".

The systems are logically aggregated into "System Networks".
This aggregation can be used, for example, to geographically group together the systems (all the systems in Lombardy are surveyed in the "Lombardy" Network) or according to another classification useful to manage the range of devices. The network can be associated with a geographic map.

The different views with which the users have access to the data collected by the platform are called "Displays". AERNET provides many types of Graphic Widgets (graphs, multi-value graphs, tables, histograms, etc.). A display can contain one or more Widgets.

3.1.2. Roles

There are four types of users in the AERNET setting:

- **Supervisor** – Service maintenance user. Access reserved exclusively to Aermec.
- **Administrator** – User owning of one or more system networks and related systems, who can configure and set the individual systems, generate displays, create users associated to his/her networks and enable specific displays for the users. It is usually the person who owns AERNET.
- **SuperUser** – User created by an administrator, connected to a network of systems who can, like the administrator, operate on the systems of his/her network.
- **User** – Basic role, user created by an administrator, connected to a network of systems, who can only view the network map and use the displays enabled by the administrator.

The AERNET Web Application offers a different set of functions depending on the type of user access.

3.1.3. Systems

There are two types of systems in the AERNET setting:

- **AERNET Router** – Identified by its Serial Number. Each AERNET Router can be configured to manage one or more real systems connected to the Router via a Modbus. These systems are associated with the Router and configured by using the "Family Management" function.

- **Real Systems** – They consist of different Modbus slaves of the Router to which they are connected and can have their own set of parameters and their own sampling frequency (Profile). They are identified by a serial number whose root is the serial number of the AERNET Router hosting them, by the slave number and by a numeric field generated by the System.

The AERNET Router is associated with an administrator, who is able to "activate it" in two different ways: by registering the first time from the AERNET Web Application registration page or using the "System Activation" function ("ϟ" icon).
Later in the document we will specify which functions can be performed on an AERNET Router and which on a Real System configured on an AERNET Router.

3.1.4. System Family Template

The concept of "System Family Template" is a tool that allows the System Manufacturer to gather in one place the characteristic information common to the systems of the same Family, which are then used to automatically create the Modbus slave profile.

For one Family of Systems, AERNET manages:

- the complete mapping of the Modbus registers, inclusive of unit of measurement, scale factors, sensitivity thresholds;
- By AERNET convention, the notes for the units of measurement defined in BACNET are used.
- the parameter labels in the different languages;
- the assumed values and labels associated with different digital or whole size values, in different languages (Enumeration);
- the parameters for setting the display prepared by default for each configured system. The display is called "Aernet Pro". It allows you to set:
  - Eight settable Setpoint parameters.
  - Six plotted parameters in a multi-trace report and in a synoptic table.
  - A parameter represented by a histogram.
  - Three Status parameters.
  - Two settable digital parameters connected to buttons (on/off).
  - One settable digital reset parameter.

3.1.5. Networks

Upon activation of the AERNET Router, the administrator chooses the Network on which to activate it.
If during the administrator registration stage the administrator does not define a network name, the "Default network" on which the Router is connected is still created.

All Real Systems connected to the same AERNET Router belong to the same network. The administrator can choose to transfer a Router he/she activated, and therefore all the Real Systems configured on that Router, to another network by using the "Migration" function ("♻" icon).
When a AERNET Router is removed from a Network by using the Migration function, it is not associated with any network. With the same Migration function you can insert in a Network one or more Routers not associated with other networks.

Each network can be associated with a Map, which can be a "Geo-localised" (a geographical map that can be displayed on the interface) or a "Custom" map (e.g. the image of a system plan).

3.1.6. Displays

Whenever a new Real System is configured in AERNET by using the "Family Management" function, a special display called "AernetPro" is created.
This display is a power board from which you can view the current system status, launch controls and set some setpoint values.

The administrator can create additional displays, which are connected to a network.
A display may consist of one or more graphic widgets on parameters taken from different Real Systems of the.
Basic users can be connected to a display of their network via the "Associations" function ("🔀" icon).

When a AERNET Router is migrated to another network, all references to the parameters of its Real Systems in the displays of the home network are lost .
Except for the AernetPro display, which is always associated with the System and is then migrated to the new network together with its System.

3.1.7. Alarms

In AERNET, for each parameter identified as "Alarm", a list of users who receive email notifications on the status of that Alarm is defined. This list always shows the Administrator of the Router to which the System is connected and any "SuperUser" created by the administrator on the Network to which the Router belongs. Even basic users who are part of the same network can be included in the list.

There is an additional special Alarm managed in AERNET, "Inactivity Alarm" or "OFF_LINE" ("🔌" icon), which is managed for individual Real systems and for the AERNET Router as well. This alarm indicates when the Platform no longer communicates with the Real System or with a AERNET Router for more than 15 minutes.
The notification of this alarm is always sent to the Administrator and to the other SuperUser.

If a Router is migrated from a Network, the alarms of the associated Real Systems are only notified to the Administrator.

3.1.8. Example

Below is a simple example of how systems and users can be organised in the logic of the AERNET system.

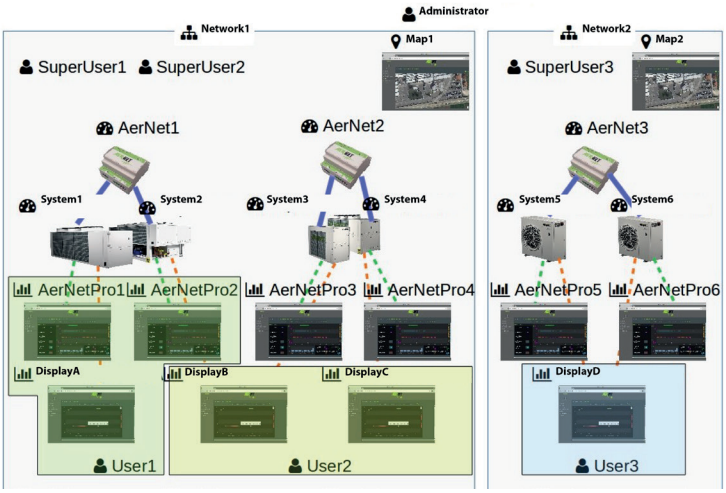


Fig. 2 Example of an AERNET system

The figure shows an Administrator who has defined two networks (Network1 and Network2).
There are two AERNETs in Network1 (AerNet1 and AerNet2), each connected to two systems (System1 and System2 on AerNet1 and System3 and System4 on AerNet2).

Each system has its AerNetPro Display created at the time of configuration.
Three additional displays have then been created, DisplayA that uses data from System1, DisplayB that uses data from System2 and System3 and DisplayC that uses data from System4.

Two SuperUsers (SuperUser1 and SuperUser2) have been defined in Network1, where they have the same functions of the Administrator.

Two basic users, User1 and User2, were then created in Network1. In this case User1 was connected to AernetPro1, AernetPro2 and DisplayA displays, while User2 was connected to DisplayB and DisplayC.
Network1 has its geo-localised map.

Similarly, for Network2 there is an AERNET connected to two systems. A SuperUser and a basic user were created. There is a geo-localised map.

While a SuperUser has access to some administrator functions and is automatically associated to all the displays of its network, the decision about which displays to associate with a basic user affects its functions.

In the example User1 can use the AerNetPro displays of System1 and System2 and so, as well as view the state of the systems, User1 can launch the controls and set the setpoint values in the displays. It can, for instance, reset the alarms, if this control is present in the displays. Instead, User2 can only view the trend of some parameters of System2, System3 and System4 through the DisplayB and DisplayC, if these are based on widgets that do not involve implementations.

3.2 Starting the AERNET Web Application

The AERNET Web Application is launched from any PC connected to the internet by opening a browser and entering this address: "aernet.aermec.com"

3.2.1. Login Page

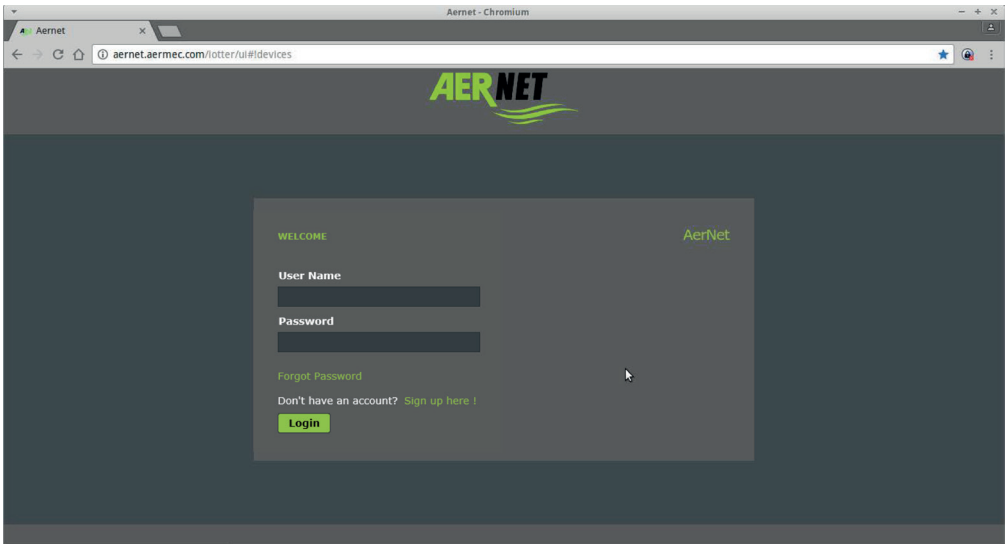


Fig. 3 AERNET - Login Page

On the first open page you will be prompted to Login (user ID/password).
The login for an "administrator" can be created by a "supervisor" user or requested directly when first accessing the system through the "Registration" function by clicking on "Registrazione" (Registration).
For the "SuperUser" or "User" (basic user), the details are defined by the administrator when the user is created.
If an administrator forgets the password, the latter can be regenerated through the "Recover Password" function by clicking on "Password Dimenticata" (Forgotten Password)

3.2.2. Password Recovery Page

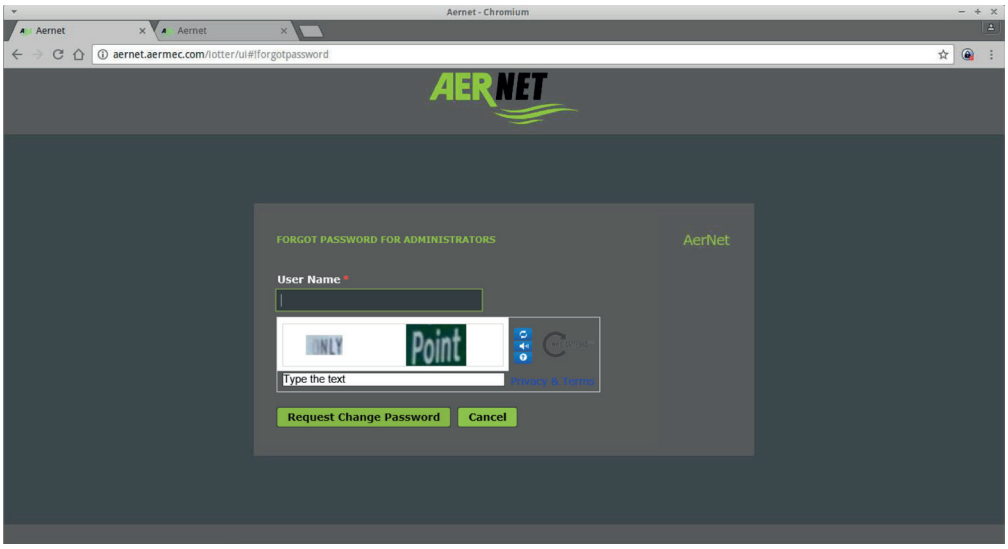


Fig. 4 AERNET - Password Recovery Page

Administrators must remember their username. By filling out the required fields, a link will be sent to the e-mail in the administrator profile, which can be used to enter a new password.

3.2.3. Registration Page

The function can be used upon first access to the system by a user with an AERNET Router and the enclosed document, "AERNET Codici di Attivazione / AERNET Activation Codes".

AERMEC AERNET Codici di Attivazione / AERNET Activation Codes

Il presente documento contiene i due codici, SERIAL KEY e ACTIVATION KEY, necessari per effettuare la registrazione del vostro AERNET. Il codice SERIAL KEY deve corrispondere al numero di serie riportato sul Vostro AERNET. Il documento è indispensabile per completare l'installazione di AERNET e si raccomanda di conservarlo in un luogo sicuro.

This document contains two codes, SERIAL KEY and ACTIVATION KEY, required to register your AERNET. SERIAL KEY code must match the serial number on your AERNET. The document is required to complete the installation of AERNET and always store it in a safe place.

Ce document contient les deux codes SERIAL KEY et ACTIVATION KEY, nécessaires pour enregistrer votre AERNET. Le code SERIAL KEY doit correspondre au numéro de série inscrit sur votre AERNET . Le document est indispensable pour compléter l'installation d'AERNET. Il est très important de le conserver en lieu sûr.

Dieser Dokument enthält die zwei Kodes, SERIAL KEY und ACTIVATION KEY, die fuer Ihre Registrierung in Aernet notwendig sind. Der SERIAL KEY muss der Seriennummer Ihrer Aernet entsprechen. Dieser Dokument ist unentbehrlich um die Aernet-Installation zu ergänzen, und es ist empfehlenswert den sicher zu stellen.

Este documento contiene dos claves, SERIAL KEY y ACTIVATION KEY, requeridas para registrar su AERNET. La clave SERIAL KEY debe coincidir con el número de serie de su AERNET. Se requiere el documento para completar la instalación de AERNET y por tanto se debe guardar siempre en lugar seguro.

Этот документ содержит два кода, SERIAL KEY и ACTIVATION KEY, которые требуются для регистрации вашго AERNET. SERIAL KEY должен совпадать с серийным номером на Вашем AERNET. Документ необходим для завершения процесса установки AERNET, всегда храните документ в надежном месте.

SERIAL KEY

ACTIVATION KEY

Fig. 5 AERNET - Activation Codes.png

To be able to register, the administrator must enter two codes with 12 alphanumeric characters defined in the document (Serial Key, Activation Key), by following the upper/lower cases.
The first code corresponds to the serial number of the AERNET Router on the label applied on the side of the device.
The second code is a key unique for the device allowing for its activation.

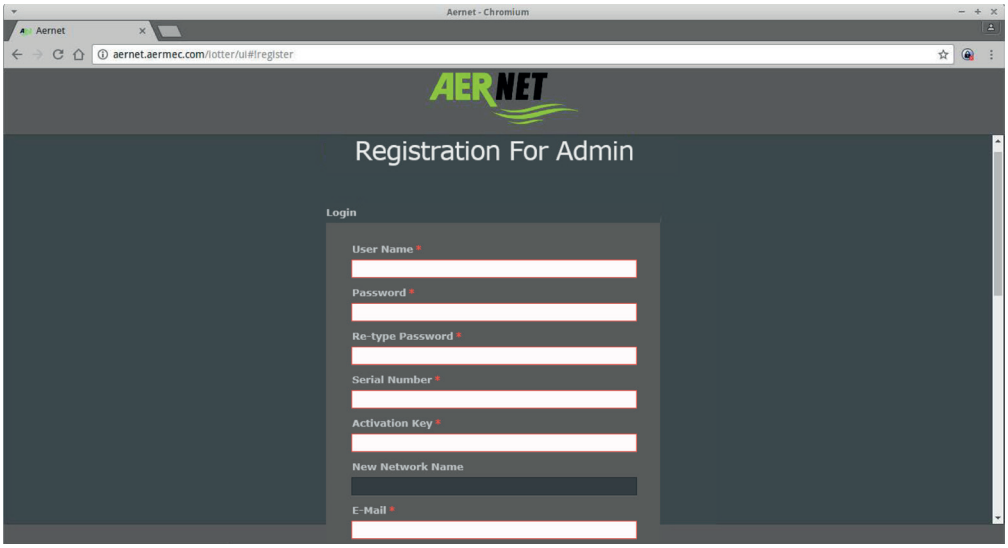


Fig. 6 AERNET - Registration Page 1

The administrator must fill out all the mandatory fields (fields marked in red).

⚠ The **"NOME UTENTE" AND "PASSWORD"** (Username and Password) fields should contain at least 8 characters

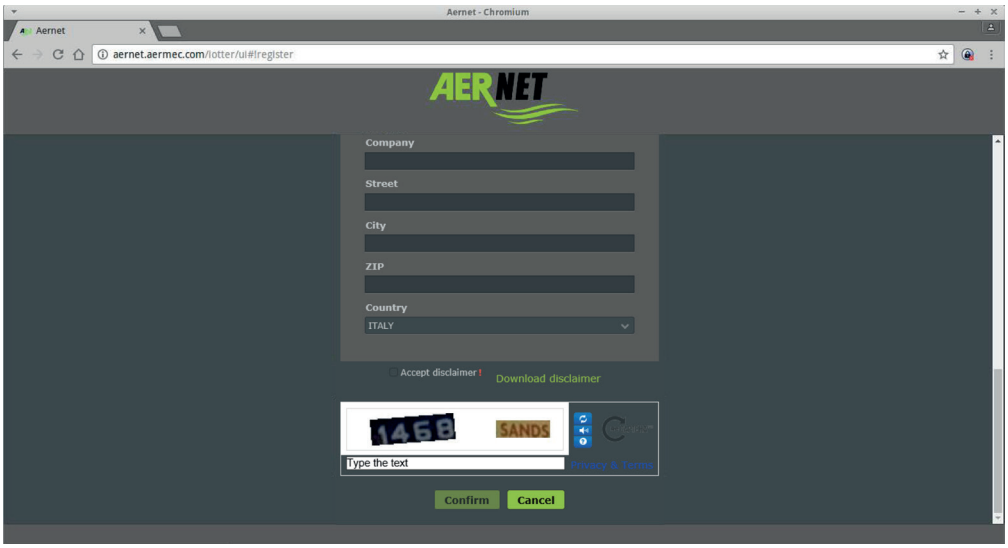


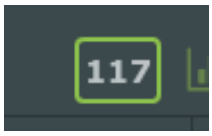
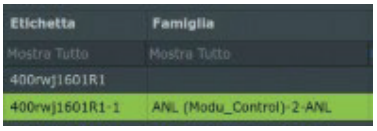
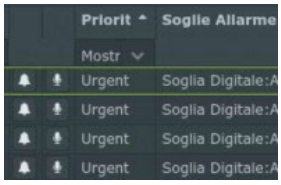
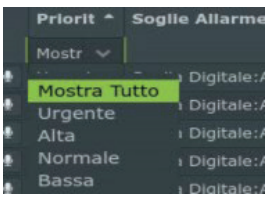
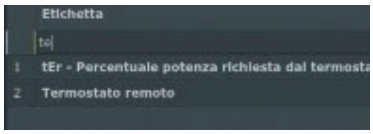
Fig. 7 AERNET - Registration Page 2.png

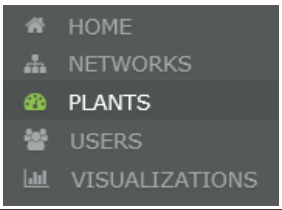
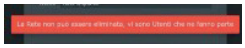
Namely, the administrator must select the "Accetto le Condizioni" (I accept the Terms and Conditions) box. The terms of use of the system can be downloaded by clicking on "Scarica le condizioni" (Download the terms).

Once logged in, the administrator can register other AERNET Router by using the "System Activation" function ("⚡" icon).

3.3 Interface Conventions

Below are some conventions used in this document:

	In the document it is assumed that the user is using a browser on a Personal Computer and a mouse. The term "to click" means positioning the cursor on a certain position and pressing the left mouse button.
	For some functions, such as zooming in on the maps, you should use the middle mouse wheel.
	With this graphic element, this document highlights the constraints that the user must consider to use a function or the important effects of applying a function on other system areas.
	In some tabular views, by positioning the mouse on the header of the last column, a ring nut icon appears, clicking which selects or deselects the columns displayed in the view.
	In any point of the interface a tabular view is shown, the first icon on the right under the header contains a number indicating the number of rows in the table.
	In any point of the interface a tabular view is shown, you can select a line by clicking on one of its elements. The selected line is highlighted with a green background.
	In any point of the interface a tabular view is shown, you can, by clicking on a column title, sort data according to the values of that column, either in increasing ⮝ or decreasing order ⮟.
	In some tabular views, under the column name there is a drop-down combo box with a list of values, plus the "Mostra Tutto" (Show All) option. In this case, the data will be selected by only displaying data for which that field has a selected value.
	In some tabular views, under the column name there is a field where you can enter a text. In this case, the data will be selected by only displaying data for which that field has the value that starts with the set value.

	Once logged in, the left pane of the administration application shows the name of the logged user, clicking which you can logout.
	The page body instead depends on the selected menu section, which is highlighted with a green icon and white label.
	On the right of the page, under the header there is a list of the available functions, in the form of icons, on the different pages. The icons are active if applicable and are highlighted in dark green, while the mouse pointer changes when it passes over an active icon, from " " to " " .
	Clicking the bottom-right icon in any view, allows you to hide the menu on the left pane of the application. Click on the icon again to reopen the menu.
	Some functions open pop-ups overlaying the page. Users cannot switch to another function or section of the system until they close the pop-up.
	Other functions instead open tabs on the same page. The different tabs are represented by a label under the page header. The user can freely move between different tabs open on a page.
	In any data entry form the mandatory fields feature a red asterisk * on the right-hand side of the field label and by placeholders marked in red.
	The system performs a validity check on all manually entered fields in the different interface forms. If a value is incorrect, the user is alerted by a signal (!) on the left-hand side of the inserted field.
	The system performs a validity check on executed controls. If a control cannot be applied, the user is alerted with a red pop-up containing the description of the problem. The user must click on the banner to proceed.

3.4 Home page

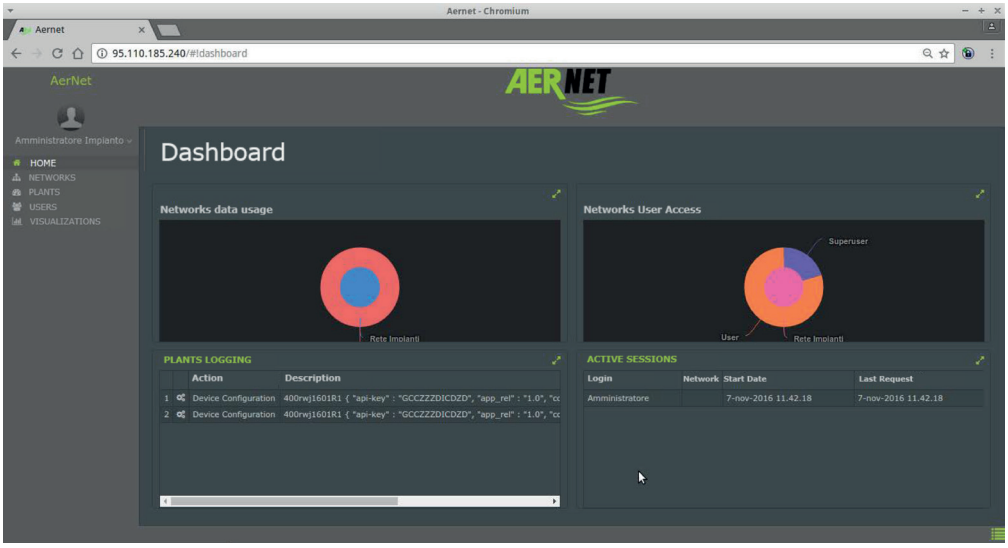


Fig. 8 AERNET - Homepage.pn

The Home page contains a dashboard with general information on the set of resources managed by the administrator: "Volume dati delle Reti", "Accesso utenti nelle Reti", "Attività Impianti", "Sessioni attive" ("Data volume of networks", "User access to Networks", "System Activities", "Active sessions").

By clicking on the symbol you can zoom the graphic widgets to full page. Click on the symbol again to go back to the original dimensions.

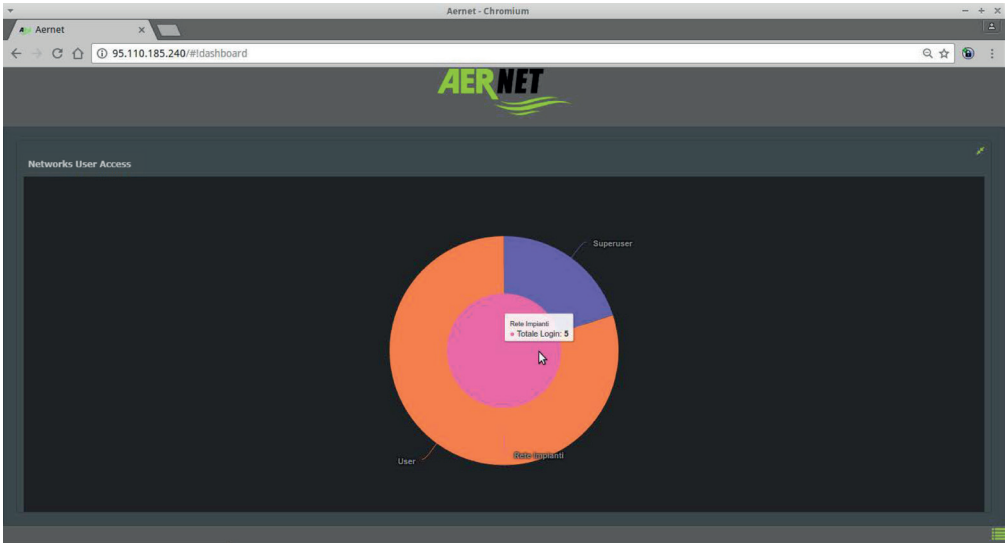


Fig. 8 AERNET - Homepage detail.png

The description of the represented data is:
"Data volume of networks" - An estimate of the saved parameters, aggregated by originating network, is shown for each Real System of Networks
"User access to Networks" - Number of logins performed in last week, per user aggregated by originating network
"System Activities" - Last 50 activities in the system log relating to elements managed by the administrator.
"Active sessions" - Sessions currently active in the networks managed by the administrator.

3.5 Networks

The Network section lists all user-owned networks. By selecting a network from the list, the buttons on the right of the interface are enabled.

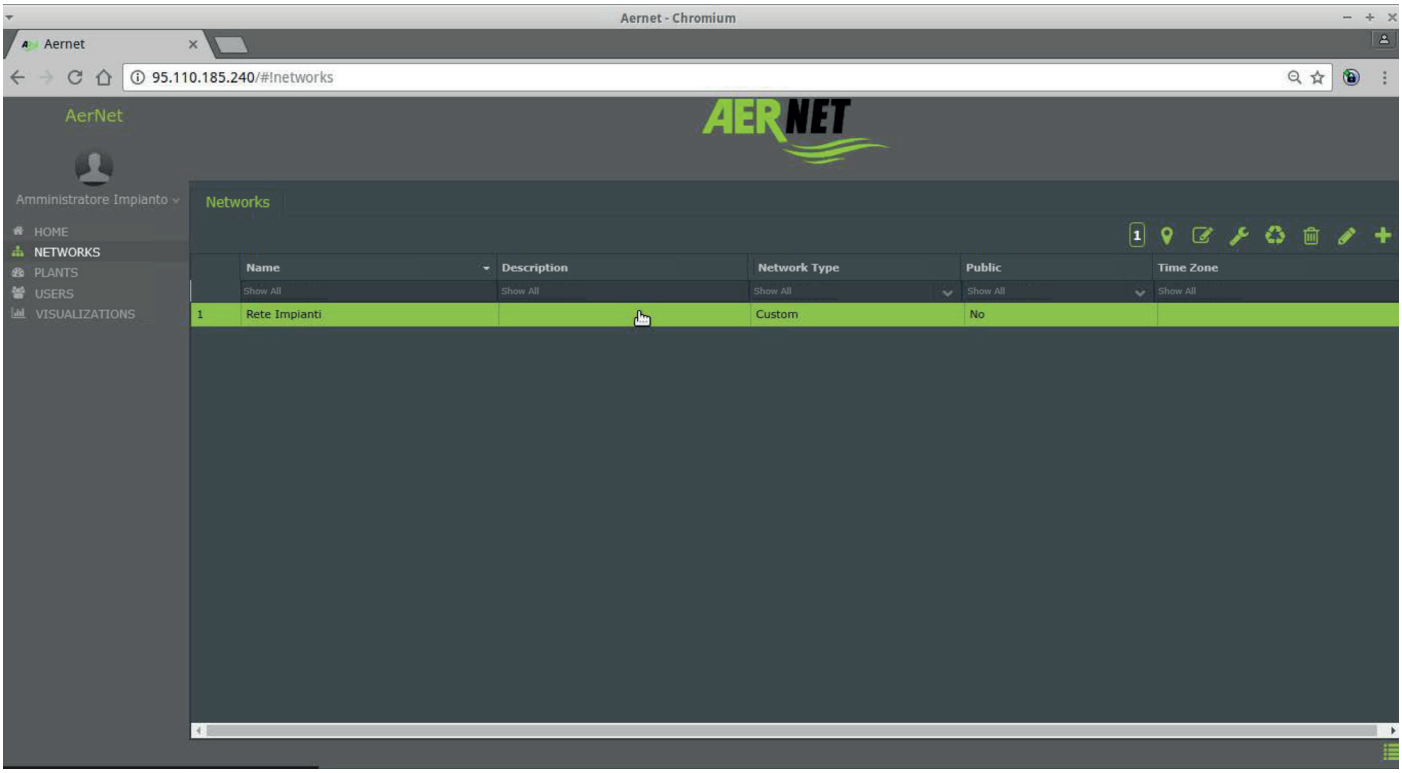


Fig. 9 AERNET - Network Section

The list values are:

- Nome (Name): Network name.
- Descrizione (Description): Network description.
- Tipo Rete (Network type): "Geo-localised" or "Custom" network.
- Pubblica (Public): Public network, yes or no.
- Fuso Orario (Time Zone): Time zone of the network.

The functions available in the network section are:

- "Add Network"
- "Edit Network"
- "View Map"
- "Edit Map"
- "Remove Network"
- "Migration"
- "Configurations"

3.5.1. Add Network

Click on "Add Network" ✚ to open a pop-up where you can define the features of a new network.

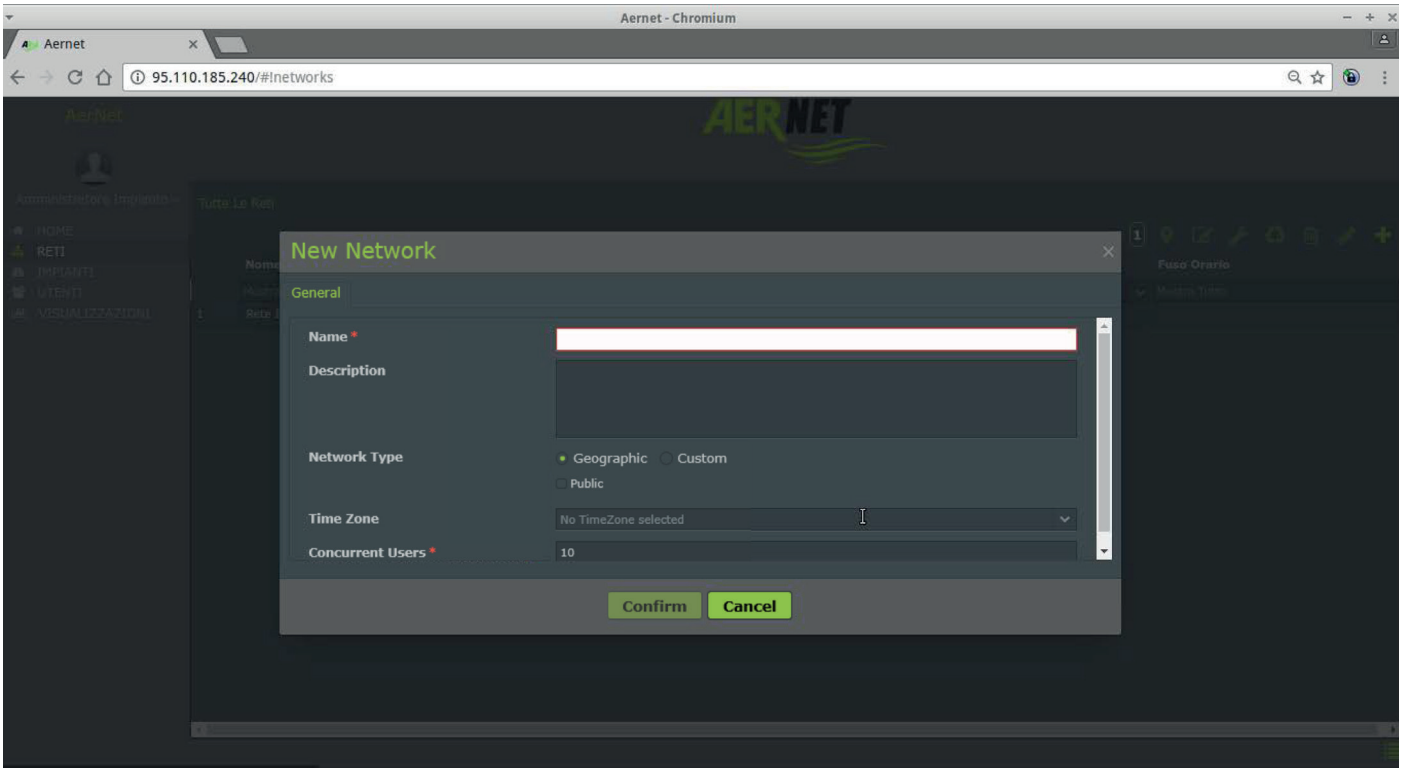


Fig. 10 AERNET - New network

Nome (Name) – Mandatory field.

- An administrator cannot own two networks with the same name.
- Descrizione (Description) – Descriptive text of the Network used by the administrator.
- Tipo Rete (Network Type): Geolocalizzata/Custom (Geo-localised/Custom).
- A Geo-localised network can be associated with a geographical map representing the positions of systems as placeholders (for non-alarmed systems, for alarmed systems).
- A "Custom" network allow you to display the placeholders on one or more maps (images) that can be uploaded by the administrator. This is useful when you want to represent the systems, for example on the plan of a building.
- Pubblica (Public): in a network set as "Public" you can insert the relative link on the web pages outside the platform and made available also to users not logged on the system. This can be used to include the map on company websites.
- Fuso Orario (Time Zone): The time zone may not be set (No TimeZone selected) or be set by selecting a value from the list that opens by clicking on the right button "❮".

If the time zone is not specified, the time zone of the user browser is taken.
If the network time zone is set, this determines the behaviour of the time bar at the top of the displays, and so the time axis of the graphs. For instance, the selection for the last hour, last 6 hours, last day, etc., will be referred to the chosen time zone.

- **NUMERO DI UTENTI CONTEMPORANEI (NUMBER OF SIMULTANEOUS USERS)**: a mandatory field set by default to "10" and representing a check performed by the system on the number of users simultaneously logged on the network.

3.5.2. Edit Network

Click on "Edit" to open a pop-up where you can edit the properties of an existing network.

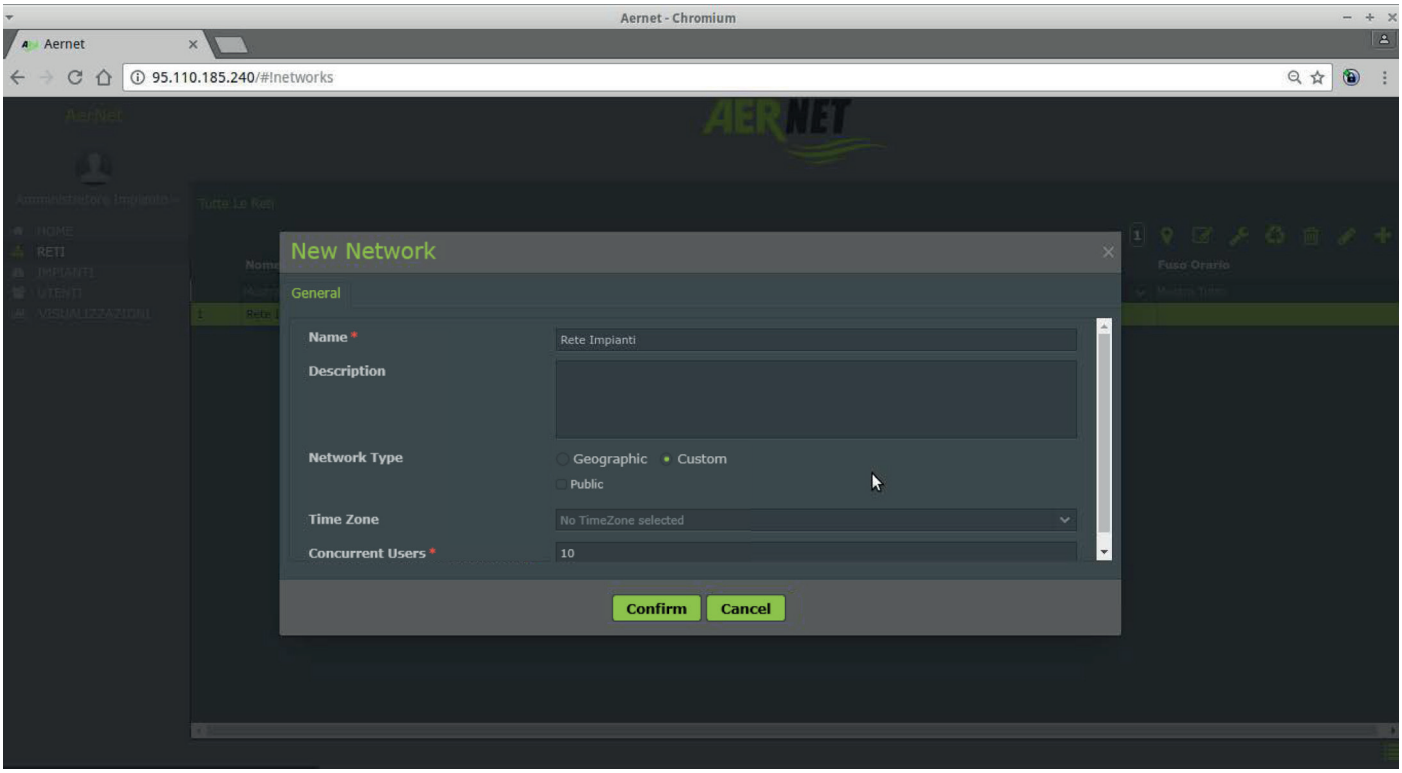


Fig. 11 AERNET - Edit Network.png

- **NOME (NAME)** – The name of a network can be modified. An administrator cannot own two networks with the same name.
- **DESCRIZIONE (DESCRIPTION)** – The description can be edited
  - **TIPO RETE (NETWORK TYPE)**: Geolocalizzata/Custom (Geo-localised/Custom) The type of Network can be edited. A Geo-localised type network can be associated with a geographical map representing the positions of systems as placeholders (for non-alarmed systems, for alarmed systems).
  - A "Custom" network allow you to display the placeholders on one or more maps (images) that can be uploaded by the administrator. This is useful when you want to represent the systems, for example on the plan of a building.
- **PUBBLICA (PUBLIC)**: You can change whether a network is "Public" or not. In a network set as "Public" you can insert the link to the map or its displays on the web pages outside the platform and made available also to users not logged on the system. This can be used to include the map on company websites.
- **FUSO ORARIO (TIME ZONE)**: The time zone may be set, or set to not specified (No TimeZone selected) or be set by selecting a value from the list that opens by clicking on the button to the right, .

If the time zone is not specified, the time zone of the user browser is taken.

If the network time zone is set, this determines the behaviour of the time bar at the top of the displays, and so the time axis of the graphs. For instance, the selection for the last hour, last 6 hours, last day, etc., will be referred to the chosen time zone.

- **NUMERO DI UTENTI CONTEMPORANEI (NUMBER OF SIMULTANEOUS USERS)**: The maximum number of users simultaneously logged on the network can be edited.

In order to export the link to the map or to the displays of a network, the latter must be set as "Public".

3.5.3. View Map

Click on "View Map" ( ) in the Network section to open the map view.

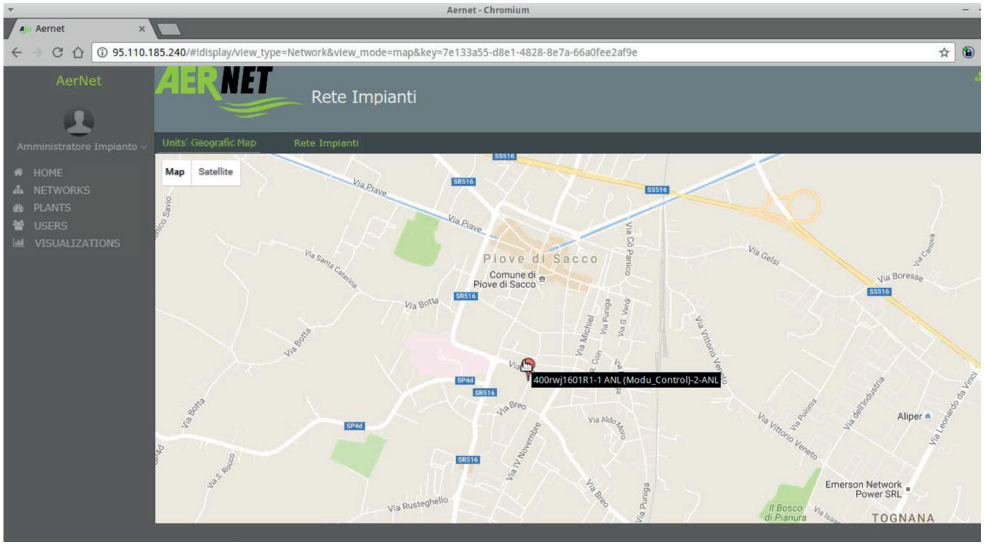


Fig. 12 AERNET - View Map

The system position is shown with a placeholder, which is green if there are no active alarms, red if there is an open alarm, or .
You can change the map zoom and the type of map (map/satellite)

3.5.3.1. Widget Device Info

Click on the placeholder to open a widget on the right pane, "Device inform", which features some relevant information about the system:

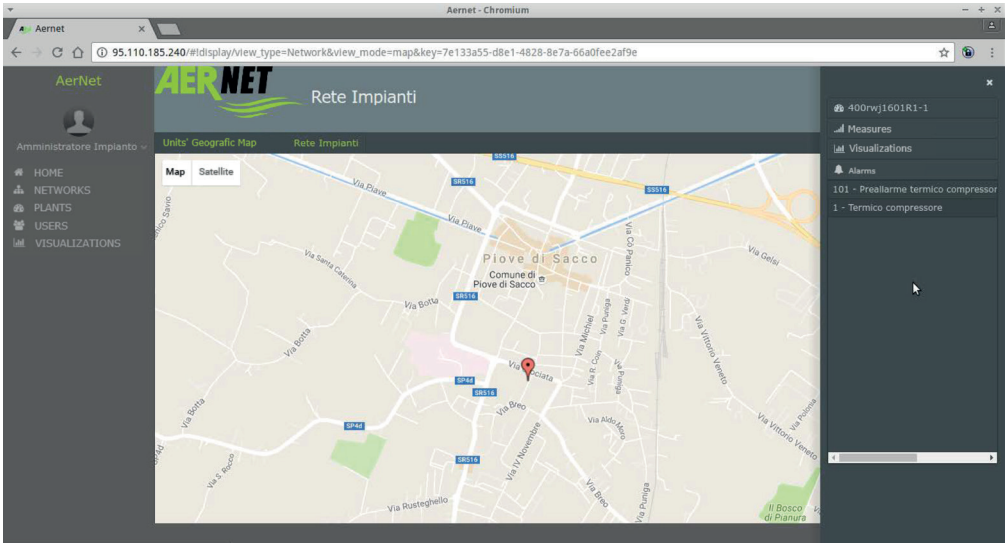


Fig. 13 AERNET - Widget Device Info

In the first top line

System label
Clicking on the label minimises, if opened, the following sections.

In the second line

Serial number of the system
Status

In the next

ONLINE status and Date and Time of the last data read

Presence of any alarms

If there are any active alarms, click on this line to open a list of active alarms.

In the next

Instant Values

Clicking on this line opens a list of values of the last reading for the same System parameters in the AERNETPro Display.

In the next

Displays

Click to open a list of available displays, clicking which opens the display in a new tab. Below is a description of the Displays.

3.5.3.2. Network list display

For the Network there is also a list view, which is selected at the top right in the interface (icon), with a list of systems and their relevant data.

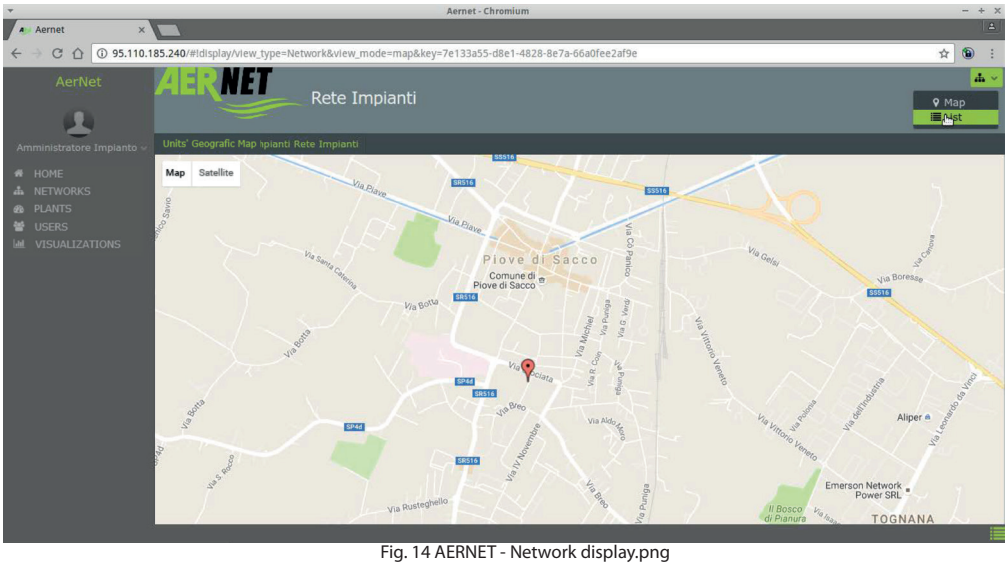


Fig. 14 AERNET - Network display.png

The systems are listed in the central section, selecting them opens the Widget Device Info on the right pane.

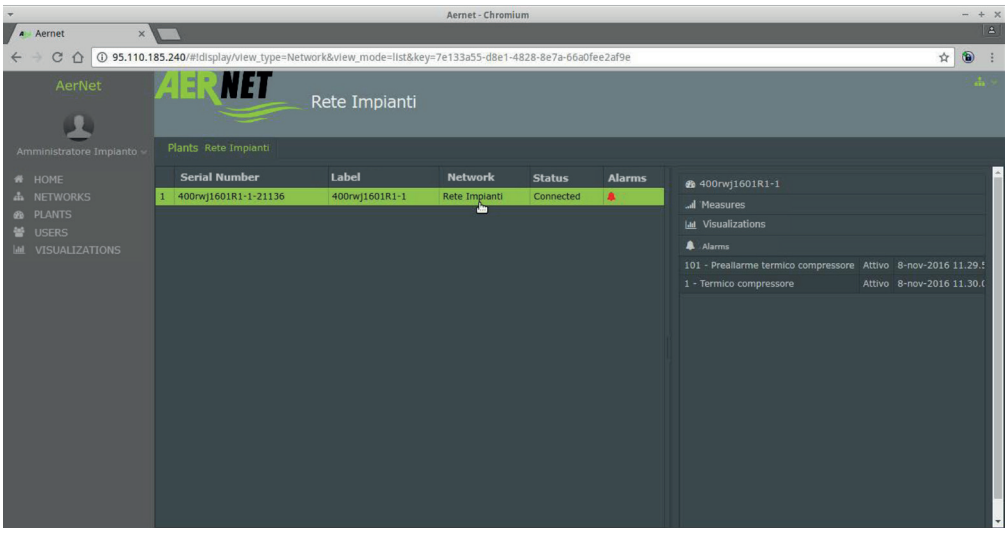


Fig. 15 AERNET - Network list display

3.5.3.3. Edit Map

Click on the "Edit Map" button ( ) in the Network section to open a map view where you can set the required map for the network, be it "Geo-localised" or "Custom".

- The function can only be activated if at least one AERNET Router is associated with the network and at least one Real System has already been configured. To associate an AERNET Router to a network, use the "Migration" function ( ) to configure Real Systems use the "Family Management" function.

3.5.3.4. Edit a Geo-localised Map

The following page opens if setting for the first time the geo-localised map of a network, which does not contain Real Systems with geographic coordinates already set.

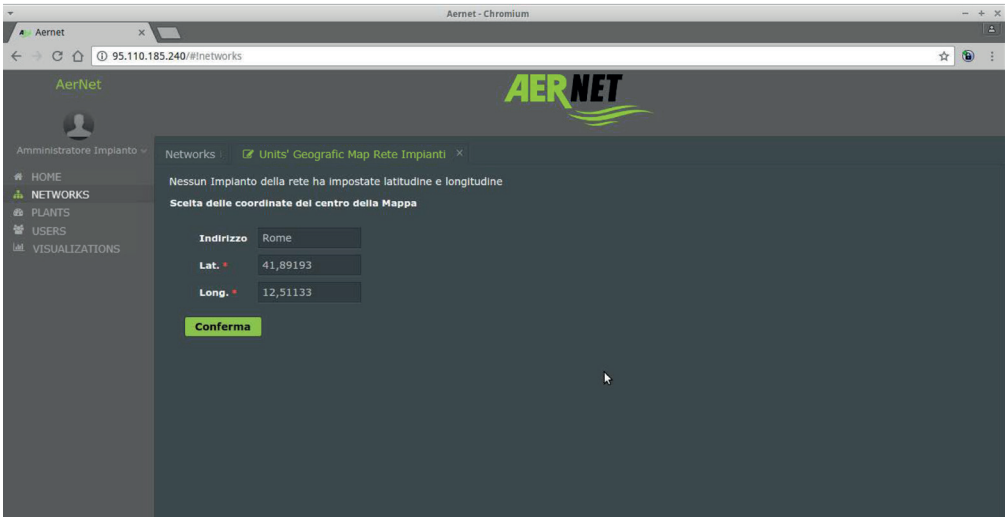


Fig. 16 AERNET - Coordinates

This page prompts the user to enter the initial coordinates on which the subsequent map will be centred to help the manual positioning of the system placeholders.

By default, the map is centred on the coordinates of "Rome" when it is opened:

- Latitude = 41,8913
- Longitude = 12,51133

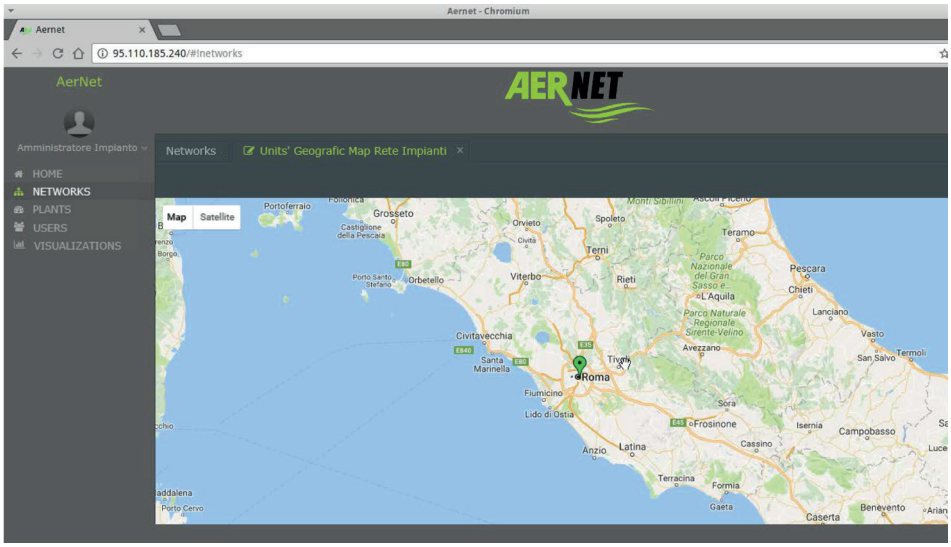


Fig. 17 AERNET - Setting of System Geographic Map.png

All the placeholders of the systems connected to the map are positioned in the selected coordinates.
The user can manually click on the placeholder and move (by holding down the left mouse key) the placeholder on the map. The map can be moved, resized or changed (map/satellite).

After saving the map by pressing "Save Map" , it will appear to the network users with the saved centring, zoom and features.

The position of a system – in terms of geographical coordinates – can also be set in the System section.

3.5.3.5. Edit Custom Map

When setting the "Custom" map of a network, an interface is opened, where you can define a new "Custom" map or edit one that has already been set.

If working on a network in which a custom map had not already been defined, information is successively required to set the first map.

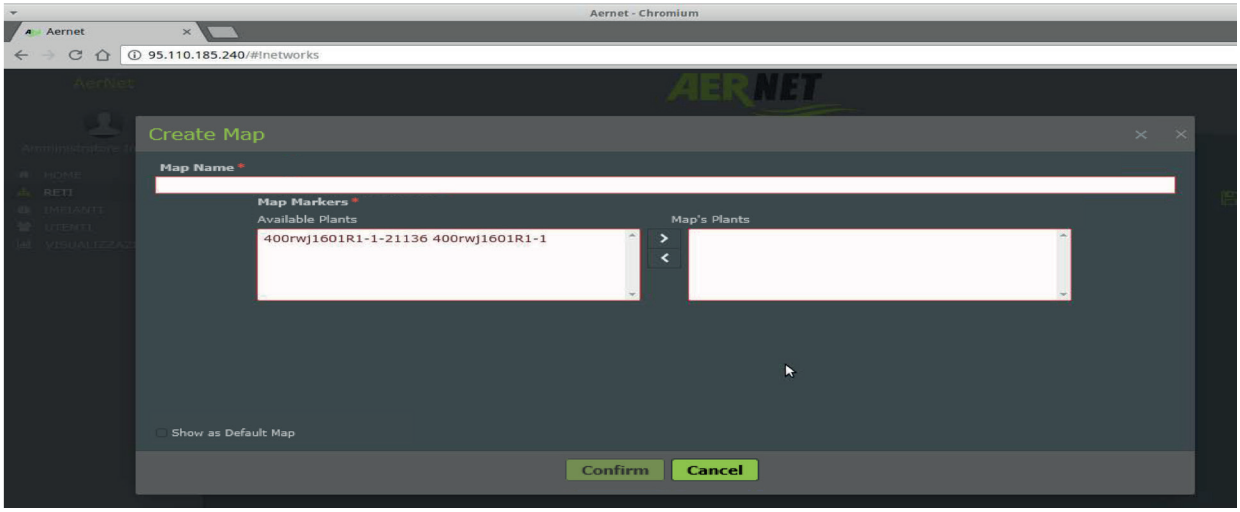


Fig. 18 AERNET - Create Custom Map

In the "Crea Mappa" (Create Map) pop-up you can set one of the maps representing the network. A network can have more than one custom map (e.g. images of plans of several floors of a building).

The fields to be set are:

- Nome della Mappa (Map name): mandatory field. Enter the name to be given to the map.
- Segna Posto sulla Mappa (Placeholder on Map): Mandatory setting. The following two columns show, on the left, "Impianti Disponibili" (Available Systems), the list of systems not located on other maps, and in the right column, "Impianti sulla Mappa" (Systems on the Map), the list of systems assigned to the map.
- Using the two arrows ❯ and ❮, you can move the systems from one column to the next, associating or not associating them with the map.
- Mostra come mappa principale (Show as main map): if set, this field indicates that the map in question is the one between the custom maps defined in the network; the first that opens.

After setting the map, upload the image file of the map.

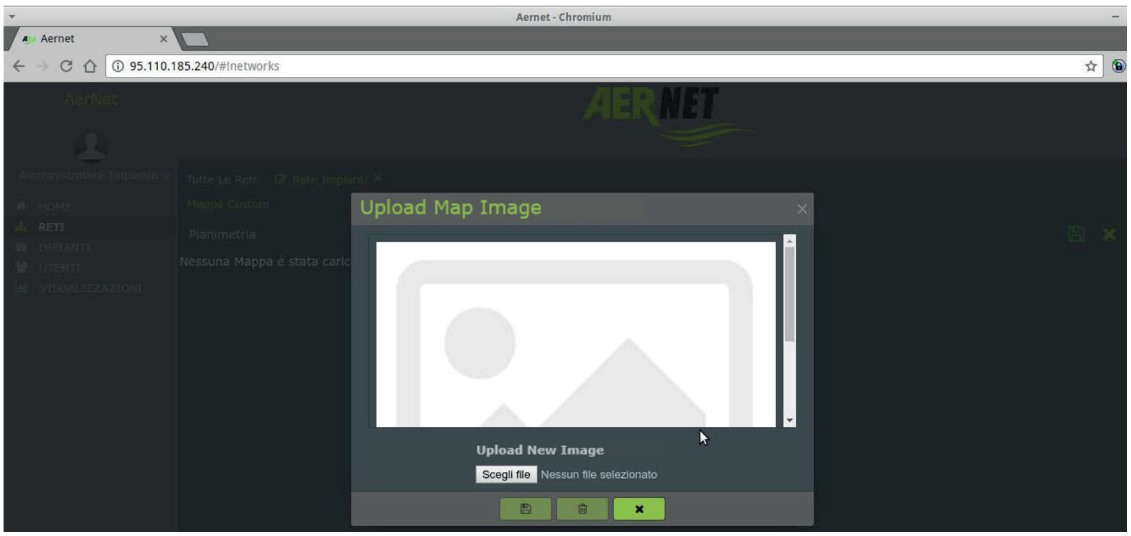


Fig. 19 AERNET - Upload Image of Map

By clicking on "Scegli file" (Select file), you can upload the image from your PC's file system.

The three buttons available are used to:

- : Save the uploaded image.
- : Delete the uploaded image.
- ✖ : Abandon the operation.

⚠ The uploaded file must not be larger than 1 MB.

The screen now shows the interface where you can change the custom maps of a network.
This is also the page that opens if a custom map had already been defined for the network.

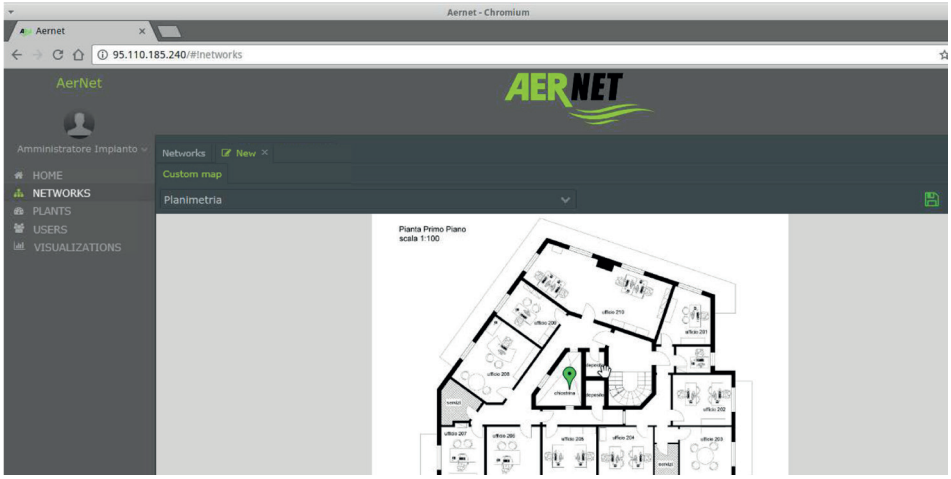


Fig. 20 AERNET - Edit Custom Maps

All the placeholders of the systems connected to the map are positioned at the centre of the image.
The user can manually click on the placeholder and move (by holding down the left mouse key) it on the map

In the top drop-down you can, by selecting the field with the ✔ symbol, open a list where you can select the custom map on which you want to operate.

The main buttons on the right of the page are used to:

- : Save the changes made.
- ✖ : Abandon the operation.
- ✚ : Insert a new custom map.

The buttons at the bottom, related to the open custom map, are used to:

- : Edit the current map. The "Edit Map" pop-up opens.

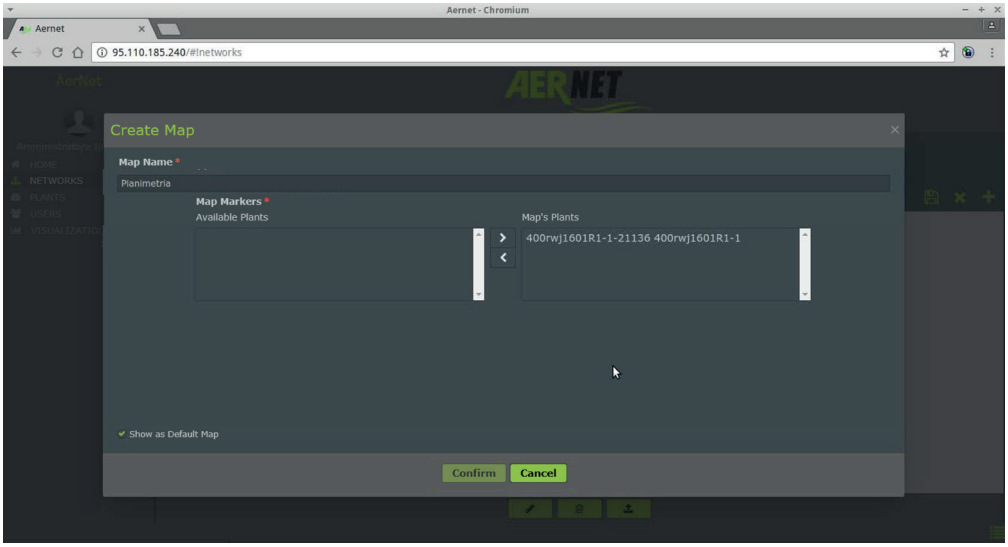


Fig. 21 AERNET - Edit Custom Maps.png

In this form you can change:

- Nome della Mappa (Map name): mandatory field.
- Segna Posto sulla Mappa (Placeholder on Map): Mandatory setting. The following two columns show, on the left, "Impianti Disponibili" (Available Systems), the list of systems not located on other maps, and in the right column, "Impianti sulla Mappa" (Systems on the Map), the list of systems assigned to the map.

Using the two arrows ❯ and ❮, you can move the systems between columns, associating or disassociating them to the map.

- Mostra come mappa principale (Show as main map): if set, this field indicates that the map in question is the one between the custom maps defined in the network; the first that opens.
- : Remove the current custom map.
- : Upload a new image for the current map. The pop-up "Upload Immagine della Mappa" (Upload Image of Map) opens.

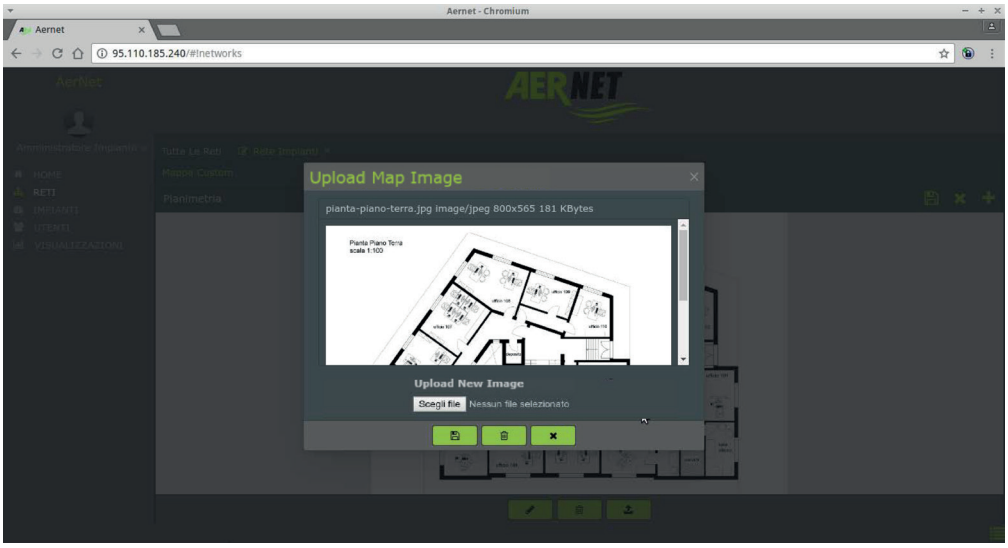


Fig. 23: AERNET - Upload Custom Map

By clicking on "Scegli file" (Select file), you can upload the image from your PC's file-system.

The three buttons available are used to:

- 🖫 : Save the uploaded image.
- 🗑 : Delete the uploaded image.
- ✖ : Abandon the operation.

- The uploaded file must not be larger than 1 MB.

3.5.4. Remove Network

In the Networks section, click on "Remove" (🗑) to open a pop-up where you are prompted to confirm the operation.

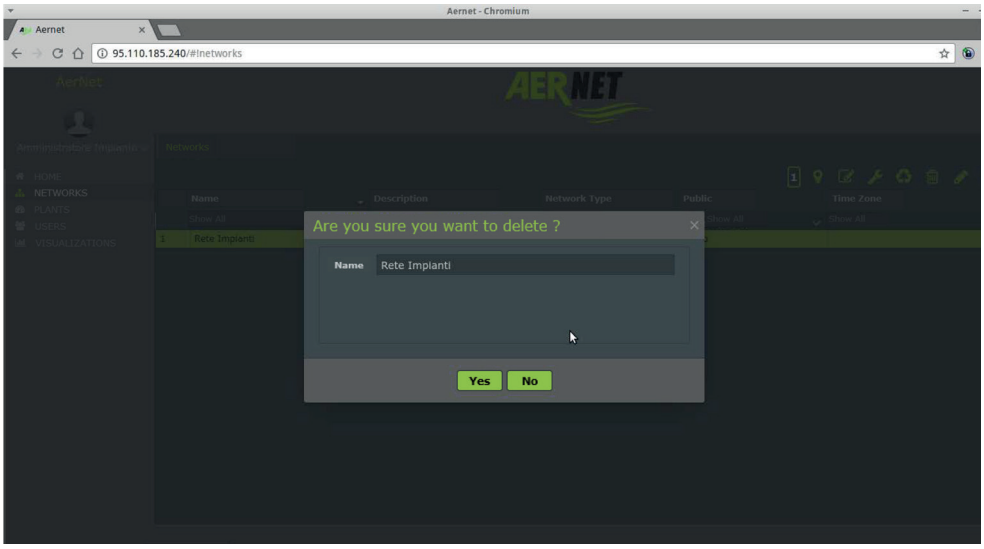


Fig. 24 AERNET – Remove Network

You can remove a network only if this is not associated with users or systems. Before removing the network, you must remove the users (SuperUsers and Users) defined in the network and the associations with the system through the "Migration" function.

3.5.5. Migration

In the Networks section, click on "Migration" (♻) to open a pop-up where you can associate an AERNET Router (not yet associated with a network) to the network or disassociate it from a network to then associate it to another.

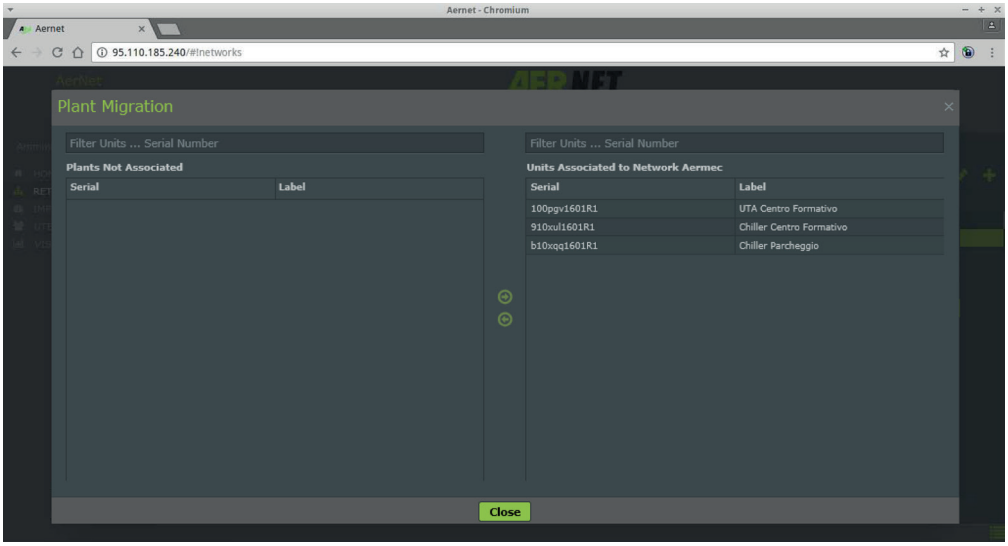


Fig. 25 AERNET - System Migration

The following two columns show, on the left, "Impianti Non Associati" (Systems Not Associated), the list of systems not associated with any network, and in the right column, "Impianti Associati Alla Rete" (Systems Associated With Network), the list of systems already associated with the network.

Using the two arrows ❯ and ❮, you can move the systems between columns, associating or disassociating them with the network.

When a AERNET Router is disassociated from a network, the following effects occur:
All Real Systems connected to that AERNET Router are also disassociated from the network.
The Systems disassociated from the network are also disassociated from all displays created in the network.
Except for the AernetPro displays created at the time of configuring the Real Systems, which always remain connected to the related Real Systems.
Any users on the alarm notification lists relating to a disassociated system are disassociated.
When a AERNET Router is removed from a Network using the Migration function, it is not associated with any network until the administrator associates it with another network.

3.5.6. Configurations

In the Network section, clicking on "Configurations" opens a special view that allows the Administrator to have two tabs Users, Systems, which select users and systems associated with the network.

The two tabs contain the functions present in the general sections, but dedicated only to the elements related to the network in question.

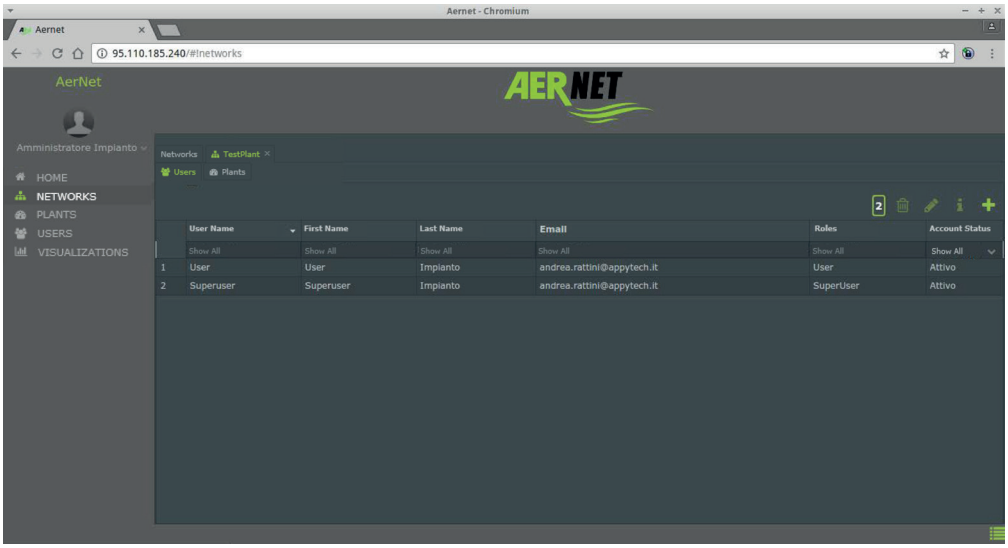


Fig. 26 AERNET - Users Tab Configurations

The tab "Users" shows all functions of the System "User" section, for the users of the network in question.

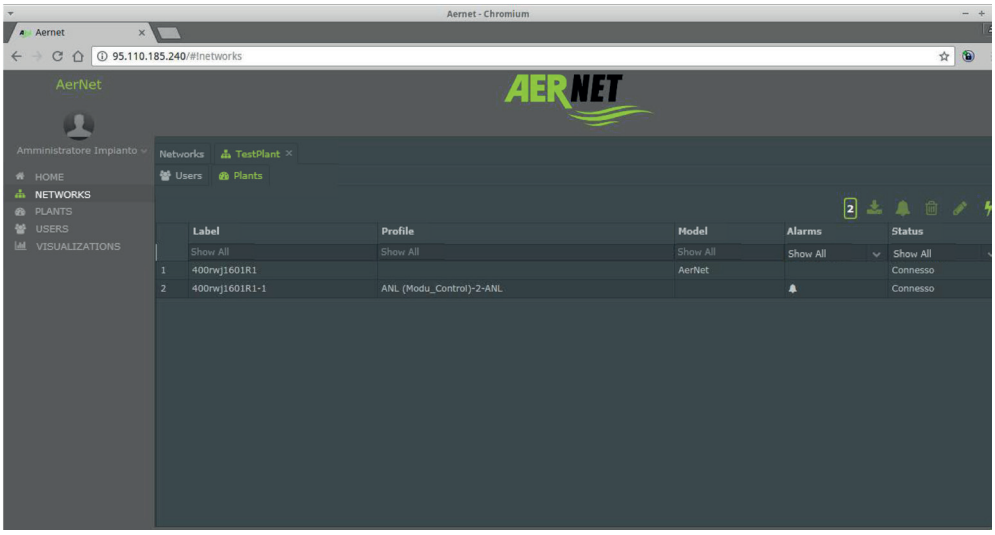


Fig. 27: 26 AERNET - Systems Tab Configurations

The "Systems" tab shows some of the functions of the System's "Systems" section, for the systems associated with the network in question.

The functions available in these tabs will be discussed in the "Users" and "Systems" sections of this document.

3.6 Systems

The Systems section ( ) list all systems belonging to the administrator user. By selecting a system from the list, the buttons on the right of the interface are enabled.

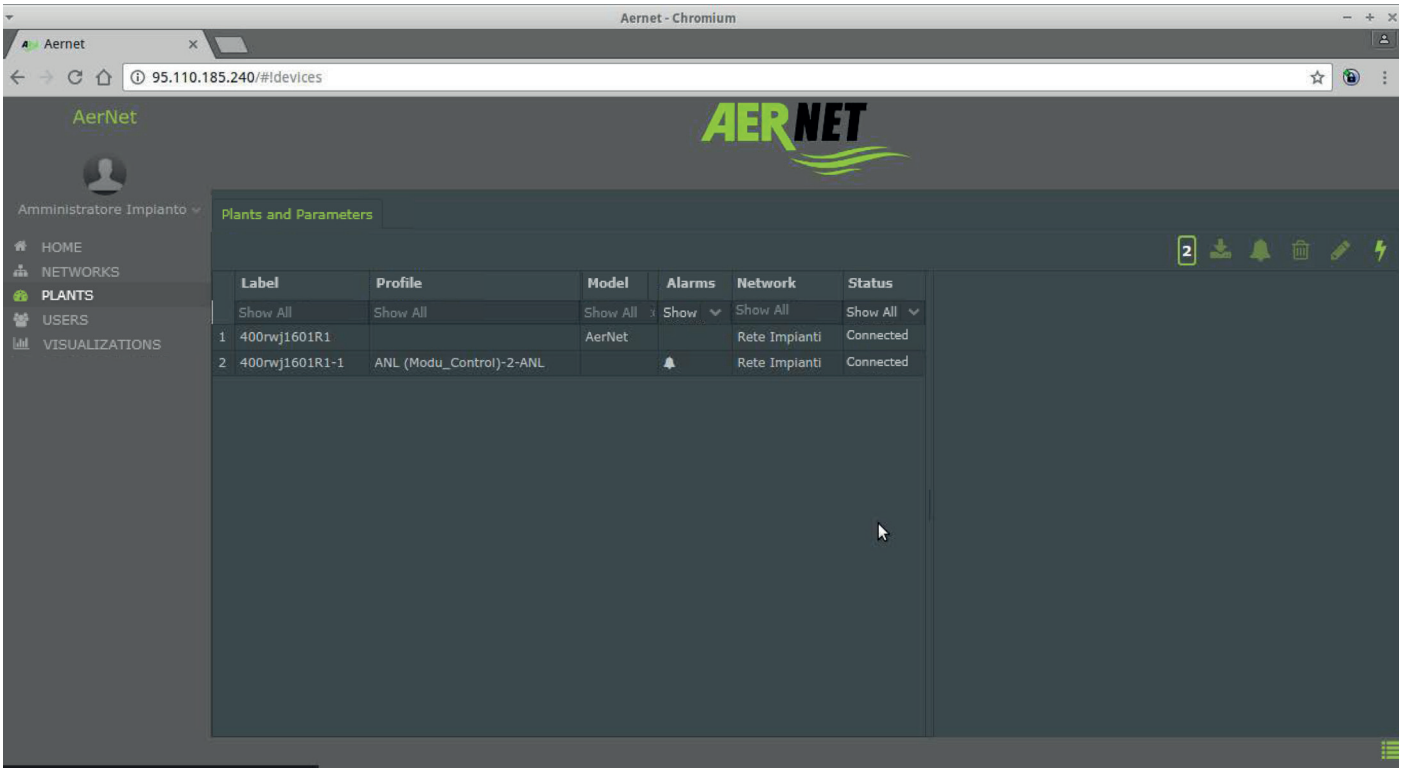


Fig. 28 AERNET - System Section

At the centre there is a list of the systems according to a convention where a AERNET Router appears first and then the systems associated with the router.

An example of representation of the systems is shown in the following two lines:

ETICHETTA (LABEL)	FAMIGLIA (FAMILY)	MODELLO (MODEL)	ALARMS	RETE (NETWORK)	STATO (STATE)
400rwj1601R1		AerNet		Rete Impianti (System Network)	Connesso (Connected)
400rwj1601R1-1	ANL (Modu_Control)-2-ANL			Rete Impianti (System Network)	Connesso (Connected)

The first line corresponds to the AERNET Router, with label "400rwj1601R1" identified by its model.
The second line corresponds to the Real System with label "400rwj1601R1-1" configured on that AERNET Router, using the product family "ANL (Modu_Control)-2" with slave ID "ANL".

The list values are:

- Etichetta (Label): Label set for the systems
- Famiglia (Family): Family of products with which a Real system has been configured
- Modello (Model): AerNet model for the AERNET Router
- Allarmi (Alarms): Symbol if there are no alarms, symbol if there are alarms, symbol in the presence of an idle alarm.
- Rete (Network): Name of network to which a system is associated.
- Stato (State): State of system. The possible values are:

ATTIVATO (ON): the AERNET Router has been activated by the administrator upon Registration or via the function "Activate System".
CONNESSO (CONNECTED): The AERNET Router informed the System of the configuration set by the administrator.

The function always available in the system section is:

"Activate System" ϟ

The other functions differ depending on whether you select a AERNET Router or a Real System connected to a AERNET Router.

3.6.1. Activate System

In the System section, clicking on "Attiva Impianto" (Activate System) ϟ, opens a pop-up from which you can activate a new AERNET Router.

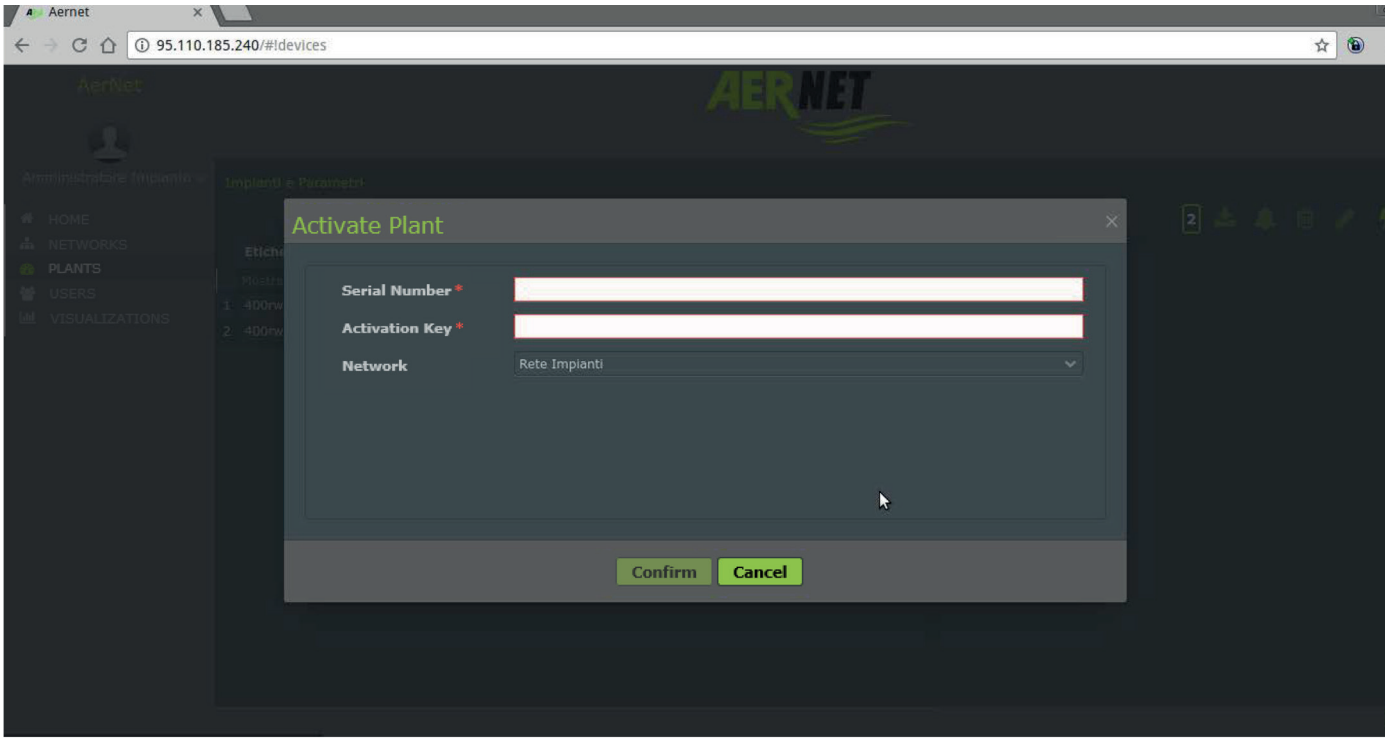


Fig. 29 AERNET - Activate System

The function allows the administrator in possession of the document "AERNET Codici di Attivazione / AERNET Activation Codes" to activate a AERNET Router.

AERMEC AERNET Codici di Attivazione / AERNET Activation Codes

Il presente documento contiene i due codici, SERIAL KEY e ACTIVATION KEY, necessari per effettuare la registrazione del vostro AERNET. Il codice SERIAL KEY deve corrispondere al numero di serie riportato sul Vostro AERNET. Il documento è indispensabile per completare l'installazione di AERNET e si raccomanda di conservarlo in un luogo sicuro.

This document contains two codes, SERIAL KEY and ACTIVATION KEY, required to register your AERNET. SERIAL KEY code must match the serial number on your AERNET. The document is required to complete the installation of AERNET and always store it in a safe place.

Ce document contient les deux codes SERIAL KEY et ACTIVATION KEY, nécessaires pour enregistrer votre AERNET. Le code SERIAL KEY doit correspondre au numéro de série inscrit sur votre AERNET . Le document est indispensable pour compléter l'installation d'AERNET. Il est très important de le conserver en lieu sûr.

Dieser Dokument enthält die zwei Kodes, SERIAL KEY und ACTIVATION KEY, die fuer Ihre Registrierung in Aernet notwendig sind. Der SERIAL KEY muss der Seriennummer Ihrer Aernet entsprechen. Dieser Dokument ist unentbehrlich um die Aernet-Installation zu ergänzen, und es ist empfehlenswert den sicher zu stellen.

Este documento contiene dos claves, SERIAL KEY y ACTIVATION KEY, requeridas para registrar su AERNET. La clave SERIAL KEY debe coincidir con el número de serie de su AERNET. Se requiere el documento para completar la instalación de AERNET y por tanto se debe guardar siempre en lugar seguro.

Этот документ содержит два кода, SERIAL KEY и ACTIVATION KEY, которые требуются для регистрации вашего AERNET. SERIAL KEY должен совпадать с серийным номером на Вашем AERNET. Документ необходим для завершения процесса установки AERNET, всегда храните документ в надежном месте.

SERIAL KEY

ACTIVATION KEY

Fig. 30 AERNET - Activation Codes

To perform the activation the administrator must enter two 12-alphanumeric character codes defined in the document (Serial Key, Activation Key), respecting upper/lower case.

The first code corresponds to the serial number of the AERNET Router on the label applied on the side of the device.

The second code is a key unique for the device allowing for its activation.

The operation is successful if the serial and activation key are entered correctly.

3.6.2. AERNET Router functions

Selecting the AERNET Router on the right opens the list of systems configured in the Router.

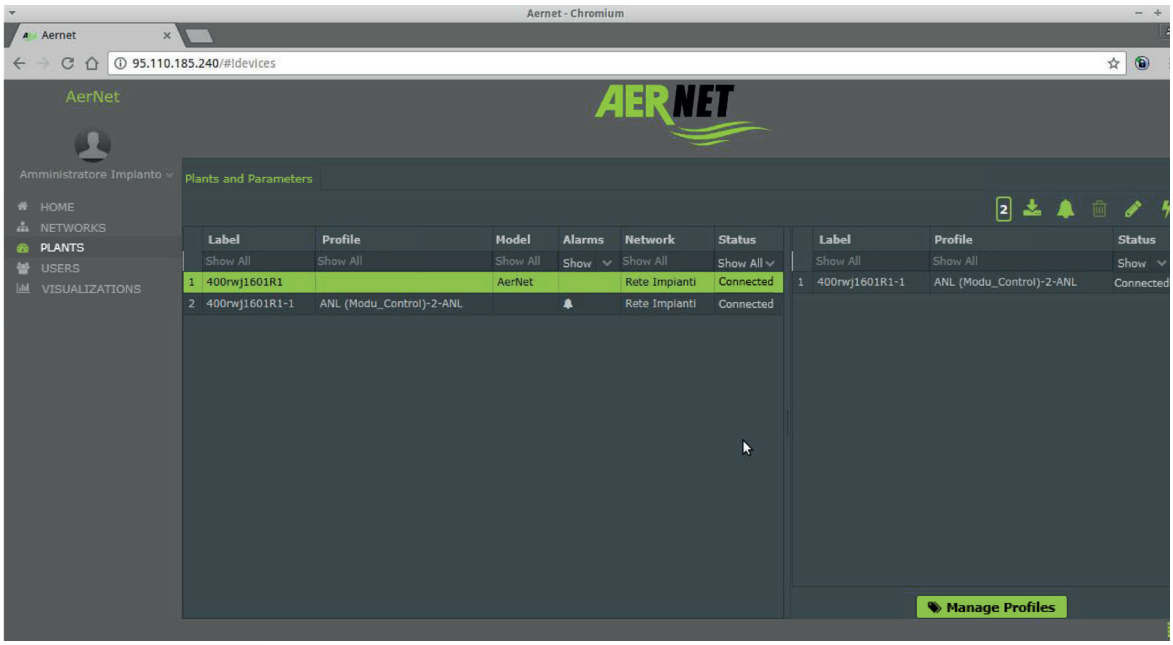


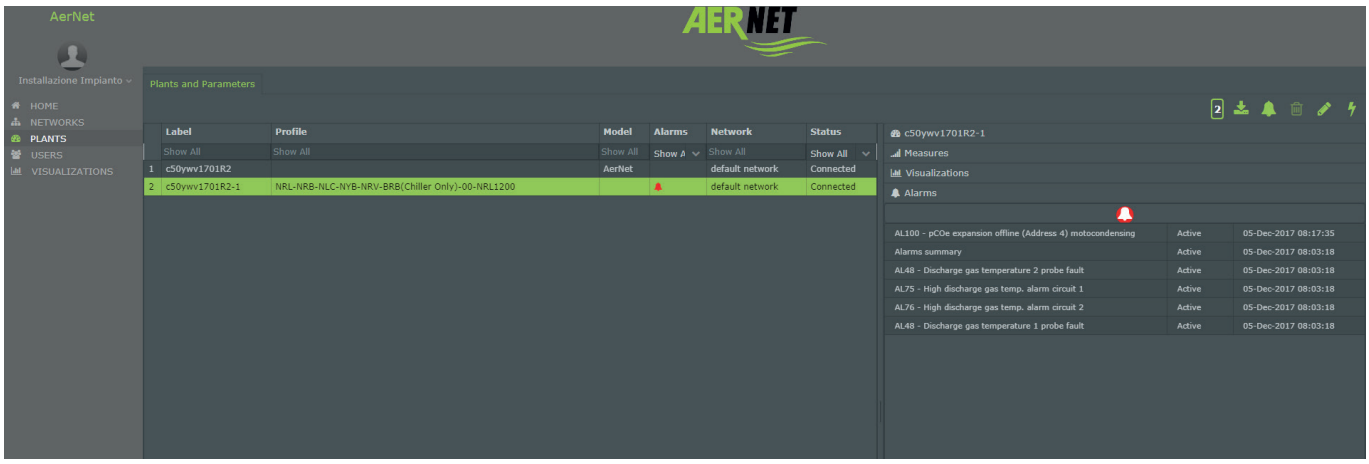
Fig. 31 AERNET - System Section - AERNET Router

The functions available in the system section by selecting a AERNET Router are:

- "Remove System" 🗑
- "Alarms" 🔔
- "Edit System" ✎

The "Family Management" key is also active.

- If there are one or more alarms active in the system, the alarm symbol in the shape of a bell is present. The alarms can be reset by clicking them, after a confirmation request message. This action is identical to the one present in the "AerNet Pro" display (see below)



3.6.2.1. Remove System

Clicking on the "Remove" button 🗑, opens a pop-up where you are prompted to confirm the removal of the AERNET Router.

Fig. 32 AERNET - Remove System

⚠ A AERNET Router can only be removed if it is not associated to a network. If an administrator wants to remove it, it must first be disassociated from the network to which it is associated, through the function "Migration" (♻) in the Network section.

When an AERNET Router is removed, you also remove the data of all Real Systems connected to the removed Router and all entries and data managed by the System relating to the removed systems are lost, thus so is all data collected up to that moment and relating to these systems.

3.6.2.2. Alarms

Clicking on "Alarms" 🔔 opens a pop-up which lists the alarms relating to the Aernet Router.

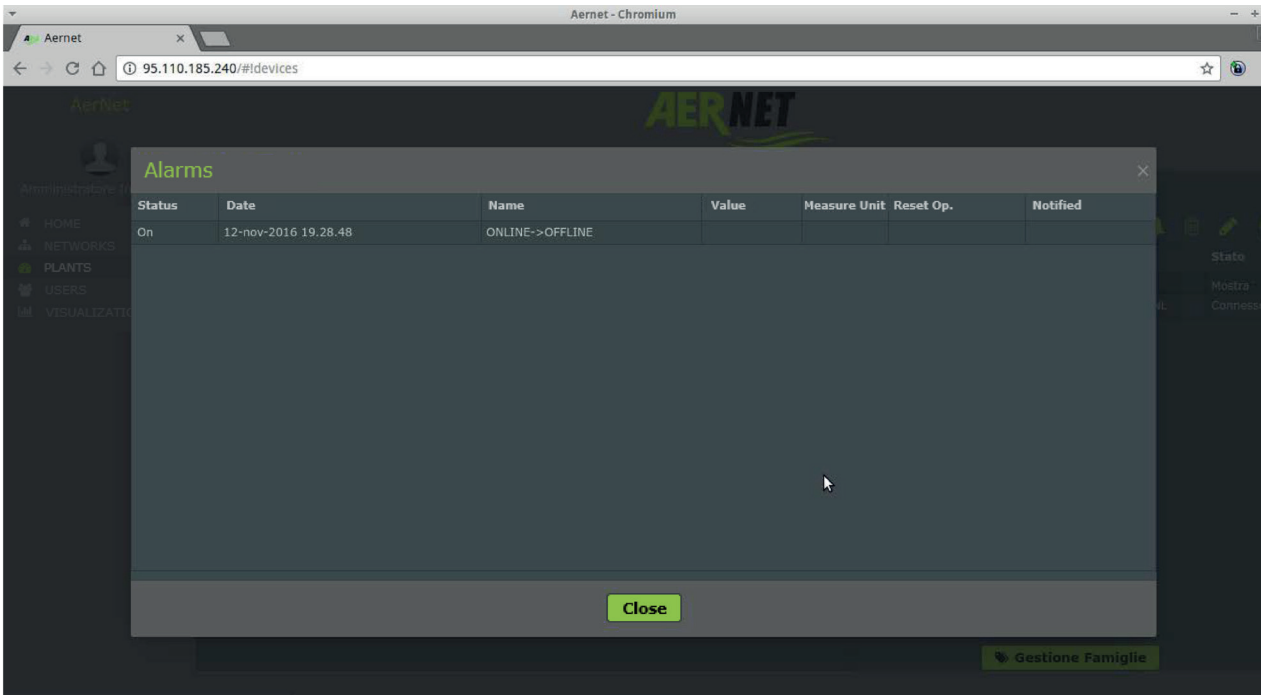


Fig. 33 AERNET - Notified Alarms

The last 30 notified events are reported (state change, alarm on, alarm reset).
For the AERNET Router only the idle alarms are reported.

The provided fields are:

- Stato (State): The states can be On - alarm activated, Reenter - alarm reset.
- Data (Date): Date and Time of event.
- Nome (Name): One of the strings "ONLINE->OFFLINE" or "OFFLINE->ONLINE".
- Valore (Value): Does not assume a value for the idle alarms.
- Unità di Misura (Unit of measurement): Possible unit of measurement associated with the alarm parameter. In AERNET the alarms are all non-dimensional sizes, so the field is empty.
- OP. Reset: Does not assume a value for the idle alarms.
- Notifiche (Notifications): List of users to whom the event was notified.

3.6.2.3. Edit System

Clicking on "Edit" opens a pop-up where you can view the AERNET Router configuration and set some values.

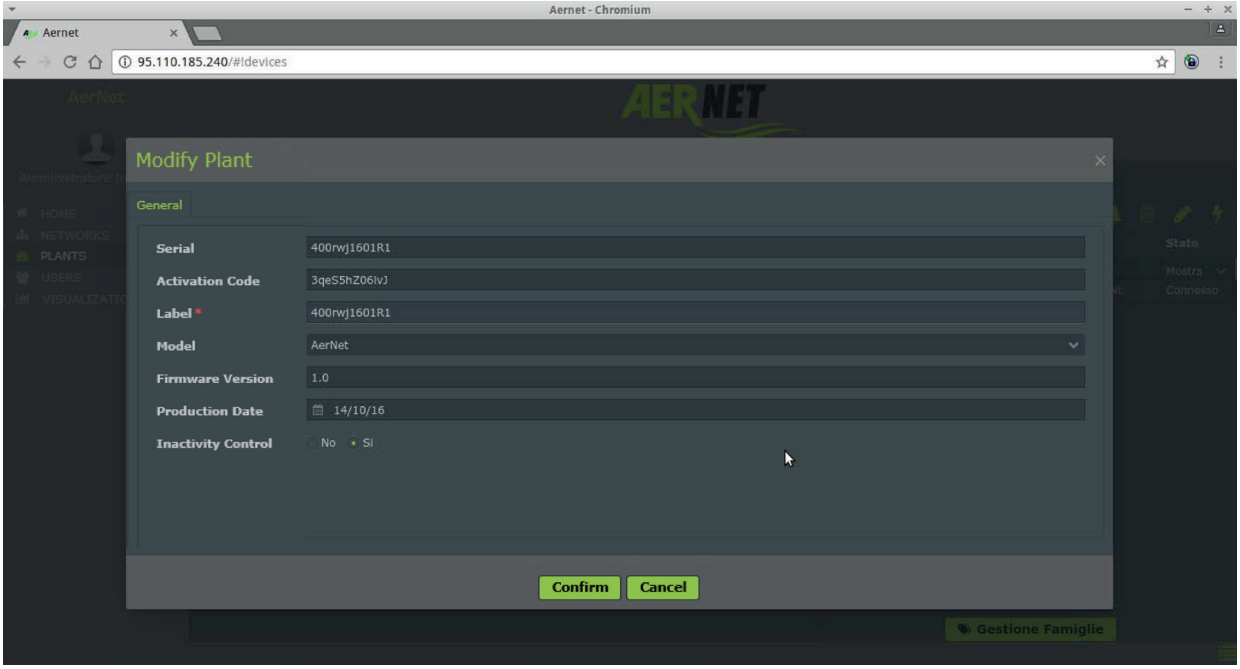


Fig. 34 AERNET - Edit System

The data displayed in this form are:

- Seriale (Serial): AERNET Router serial number.
- Chiave di Attivazione (Activation Key): AERNET Router activation key.
- Etichetta (Label): Mandatory field, modifiable. You can assign the label of a system.
- Modello (Model): For AERNET Router the model is "AerNet".
- Versione Firmware (Firmware Version): used to identify the firmware version uploaded on the AERNET Router.
- Data di Produzione (Production Data): is the date when the AERNET Router was stored on the system.
- Controllo Inattività (Idle Control): If set to "Sì" (Yes), the idle control is activated for the system. When the system no longer communicates with the system for more than 15 minutes, for various reasons such as communication or functioning problems, this is reported in the interface with the "OFF_LINE" alarm .

3.6.2.4. Family Management

Clicking on "Family Management" opens the pop-up "Fornitura Impostazioni Modbus" (Modbus Settings Supply).
This pop-up allows the administrator to add and configure a slave on the selected AERNET Router, starting from "Template di Famiglie di Prodotti" (Template of Family of Products), with a wizard that guides you through the configuration of a Real System connected to the AERNET Router.

The steps of the wizard are:
ASSEGNA FAMIGLIE (ASSIGN FAMILIES): allows removing a Real System (eliminating the relative MODBUS slave), or configure new Real Systems connected to the AERNET Router (configuring a new Modbus slave), selecting the relative Product Family.
CONFIGURA PROFILI (CONFIGURE PROFILES): allows disabling/enabling, for a configured System, some of the parameters included in the mapping of the Modbus parameters of the Product Family used.
CONFIGURA AERNET PRO (CONFIGURE AERNET PRO): allows configuring or modifying the parameters associated with the various sections of the AernetPro display, and the icons used.
Steps 2) and 3) can be used in the first configuration of a Real System as slave of a AERNET Router, and subsequently on an already activated System.

All operations performed in the various steps of the "Family Management" wizard are only applied when the button "Fine" (End) is clicked at third step. If you do not want to apply a change, simply exit the wizard by clicking on "Annulla" (Cancel).

1) Assign Families

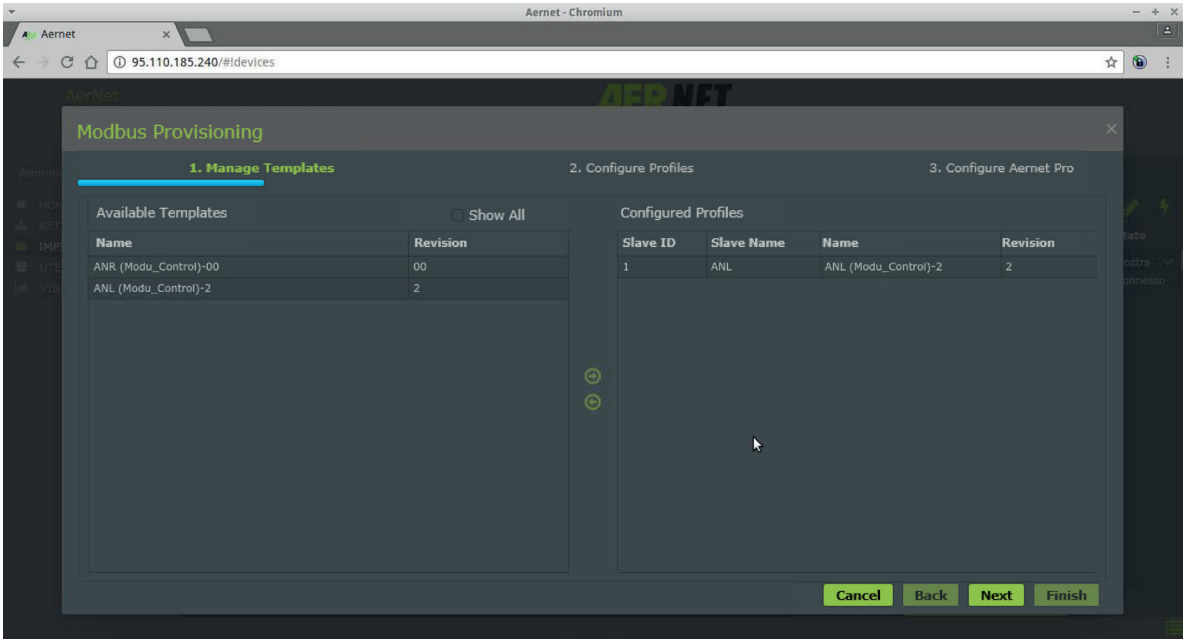


Fig. 35: AERNET - Assign families

In this form you can change:

- Famiglie Disponibili (Families Available): Section listing the Family of products configured by the Manufacturer.
- Nome (Name): Column where the name of the family of products is indicated.
- Revisione (Revision): Column where the revision of the family is reported.
- Mostra Tutte (Show All): when selected shows all revisions, if deselected shows, for each family, only the last available revision.
- Profili Configurati (Profiles Configured): List of slaves already configured on the AERNET Router.

In this first wizard tab you can remove a real system configured by clicking on the list to the right, and then on the centre left arrow 🡸.

⚠ Eliminating the profile removes a Real System (a Modbus slave of the AERNET Router) and looses all entries and data managed by the System relating to the removed system and all data collected up to that moment and relating to these systems.

The pop-up "Elimina Profilo" (Delete Profile) requires user confirmation.

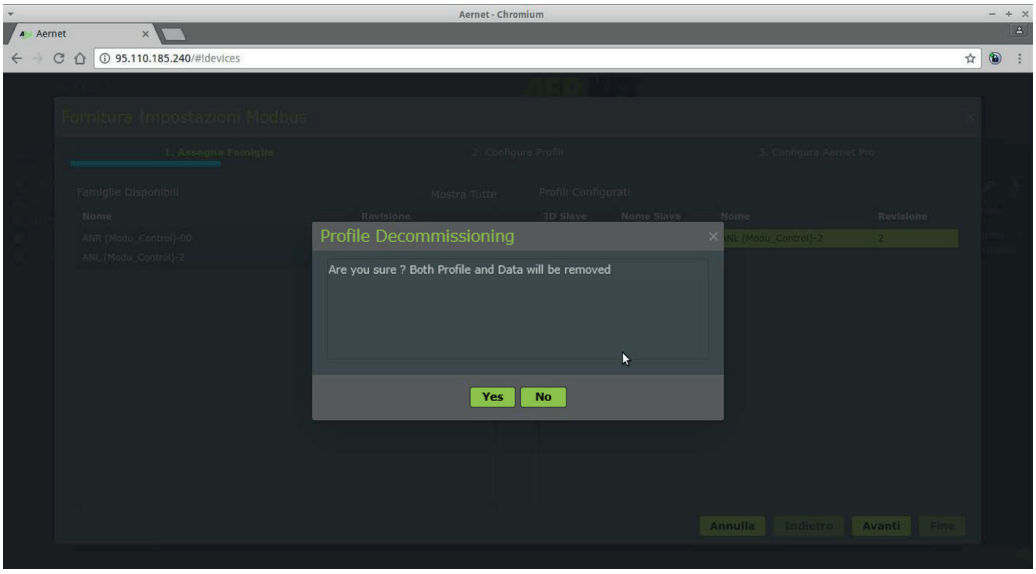


Fig. 36: AERNET - Remove Profile

Also from this tab, you can insert a new system from the families available on the list to the left, and then on the centre right arrow ➔.
The pop-up "Creazione Profilo" (Profile Creation) allows the administrator to configure the slave.

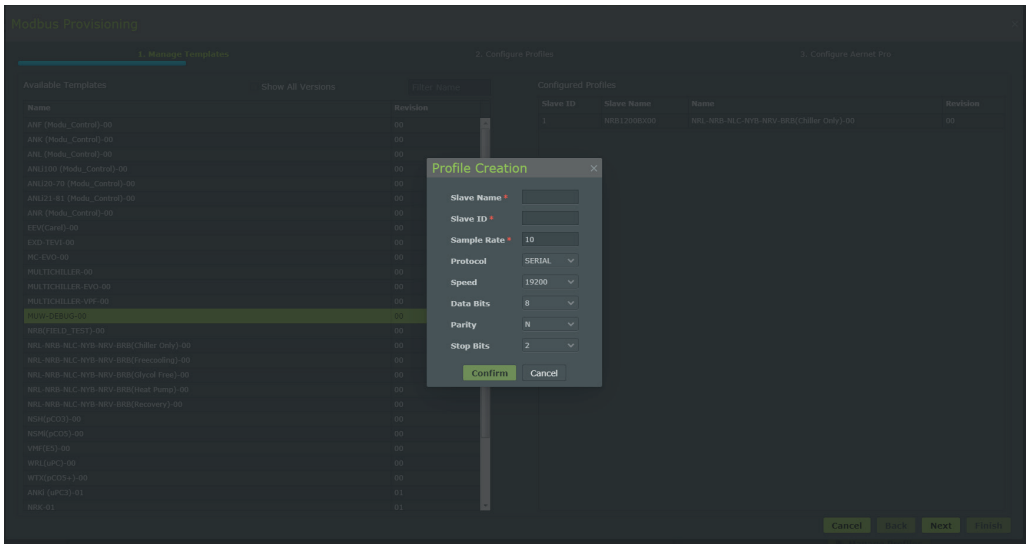


Fig. 37: AERNET - Profile Creation

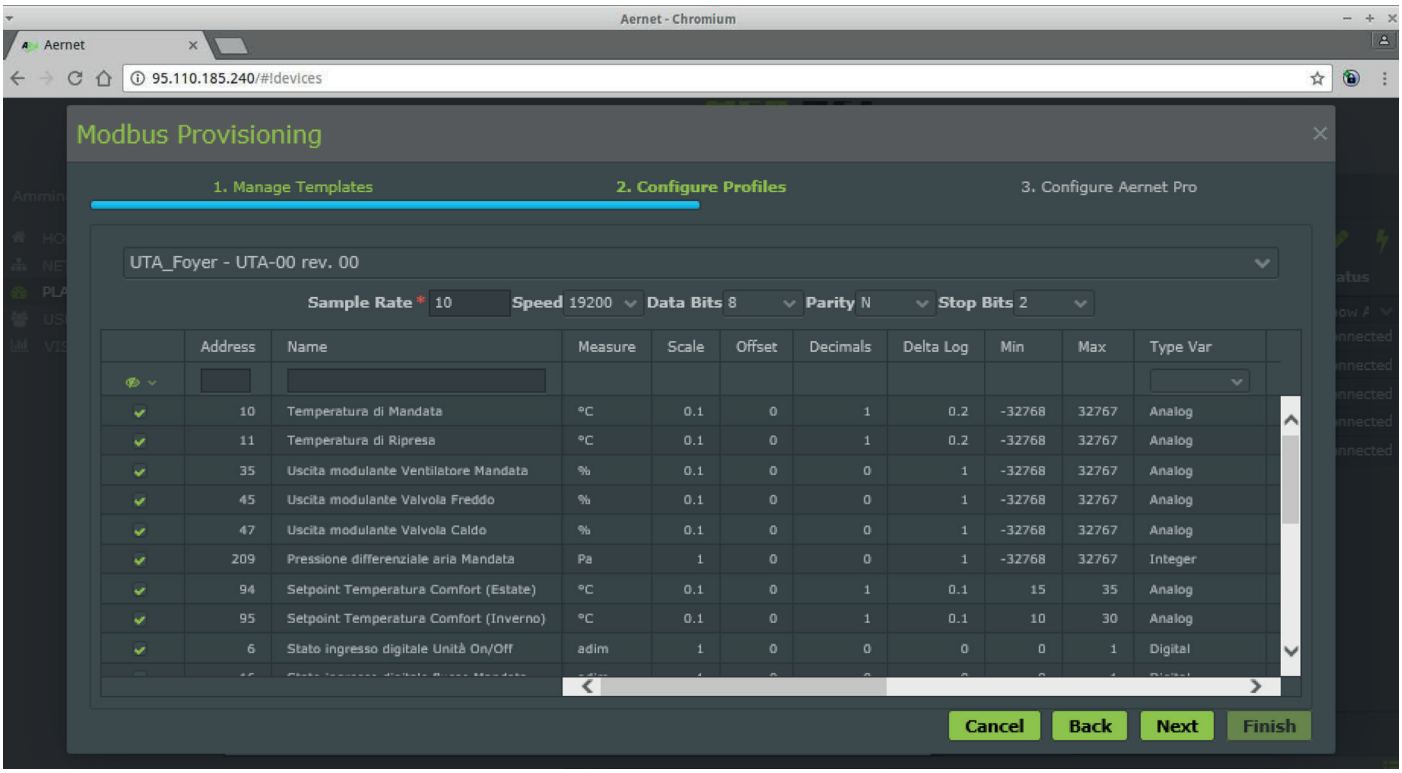
Inserting a new system opens a pop-up where the administration enters the distinctive parameters of the system:

- Nome Slave (Slave Name): mandatory field.
- ID Slave: mandatory numeric field. On a AERNET Router you cannot configure two slaves with the same ID.
- Frequenza (Frequency): mandatory field. It represents the period (in seconds) with which the AERNET Router reads the slave parameters.
- Protocol: type of protocol used, selected by a combo list. The "SERIAL" voice is set by default, do not change if not required.
- Velocità (Speed): Bus speed. It is selected from a combo list.
- Data Bits: Length of word in bus bits. It is selected from a combo list.
- Parità (Parity): Parity on the bus. It is selected from a combo list.
- Stop Bits: Stop Bits of the bus. It is selected from a combo list.

The buttons available on the form are:

- "Annulla" (Cancel): closes the wizard.
- "Avanti" (Forward): goes to the second step of the wizard.

2) Configure Profiles



	Address	Name	Measure	Scale	Offset	Decimals	Delta Log	Min	Max	Type Var
✓	10	Temperatura di Mandata	°C	0.1	0	1	0.2	-32768	32767	Analog
✓	11	Temperatura di Ripresa	°C	0.1	0	1	0.2	-32768	32767	Analog
✓	35	Uscita modulante Ventilatore Mandata	%	0.1	0	0	1	-32768	32767	Analog
✓	45	Uscita modulante Valvola Freddo	%	0.1	0	0	1	-32768	32767	Analog
✓	47	Uscita modulante Valvola Caldo	%	0.1	0	0	1	-32768	32767	Analog
✓	209	Pressione differenziale aria Mandata	Pa	1	0	0	1	-32768	32767	Integer
✓	94	Setpoint Temperatura Comfort (Estate)	°C	0.1	0	1	0.1	15	35	Analog
✓	95	Setpoint Temperatura Comfort (Inverno)	°C	0.1	0	1	0.1	10	30	Analog
✓	6	Stato ingresso digitale Unità On/Off	adim	1	0	0	0	0	1	Digital

Fig. 39: AERNET - Configure Profiles

In the second wizard page you can configure in detail the Modbus parameters of a system.

The displayed data are:

- Indirizzo (Address): Modbus address of the parameter.
- Nome (Name): parameter label.
- Misura (Measurement): unit of measurement of the parameter (ºC, bar, V, S, H, N, %, adim, etc.).
- Scala (Scale): scale factor applied to the value read by the Modbus to determine the parameter value.
- Offset: any offset applied to the value read by the Modbus to determine the parameter value.
- Decimali (Decimals): Number of decimal managed in the parameter value.
- Delta Log: variation range within which the read parameter is not considered changed. It is a filter that eliminates small non-significant changes.
- Min: minimum threshold of parameter excursion.
- Max: maximum threshold of parameter excursion.
- Tipo Var (Var Type): Type of parameter (Alarm, Analog, Integer, Digital).
- Tipo Lettura (Reading Type): Type of Modbus reading of parameter (Coil, Discrete Input, Holding, Input).
- Formato (Format): format of parameter read by Modbus (8bit, 16 bit, 32bit, Float).
- Segno (Mark): presence or not of the mark (Yes, No).
- Permessi (Permits): permits to access the parameter (Read, Read and Write).
- Funzione (Function): Modbus reading function (Multiple, Single).
- Priorità (Priority): Urgent, High, Normal, Low. This information is only used for the Alarm parameters, in the notification e-mail.
- Bit Position: bitmask used in reading the parameter.

Clicking at the top opens a list from which to select the system on which to operate ✓

In the line below you can change the Modbus configuration of the slave.

The settable fields are:

- Frequenza (Frequency): mandatory field. It represents the period (in seconds) with which the AERNET Router reads the slave parameters.
- Velocità (Speed): Bus speed. It is selected from a combo list.
- Data Bits: Length of word in bus bits. It is selected from a combo list.
- Parità (Parity): Parity on the bus. It is selected from a combo list.
- Stop Bits: Stop Bits of the bus. It is selected from a combo list.

The central part of the pop-up lists in a table all parameters included in the Product Family associated with the slave.
On this page you can choose the parameters managed for the system, selecting or deselecting the tick (☑) on the first column of the table.

Clicking the icon "👁" allows you to work on the selected parameters.

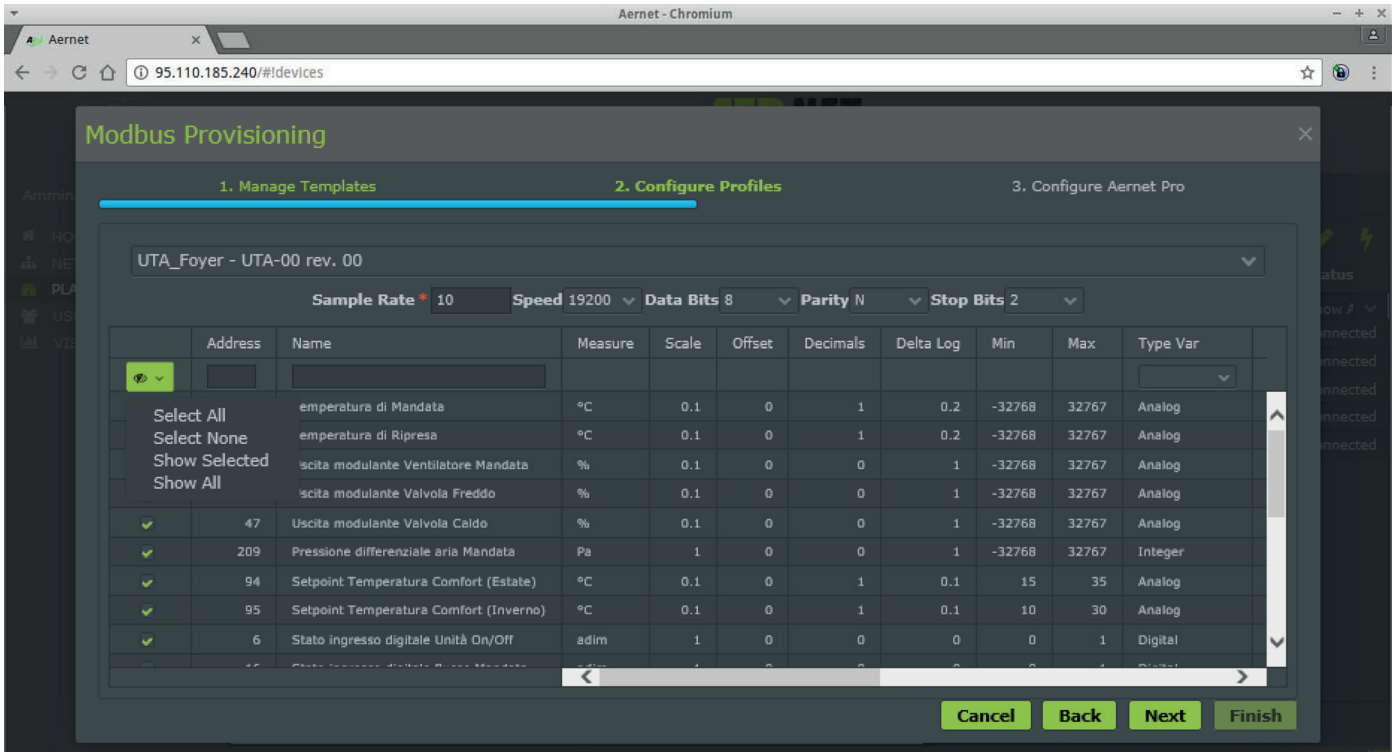


Fig. 40: AERNET - Configure Profile - parameter selection

The selections available are:

- Seleziona Tutto (Select All): selects all parameters.
- Seleziona nessuno (Select none): deselects all parameters.
- Mostra Selezionati (Show Selected): shows the selected parameters only.
- Mostra Tutti (Show All): show all parameters.

The buttons available on the form are:

- "Annulla" (Cancel): closes the wizard.
- "Avanti" (Forward): goes to the second step of the wizard.
- "Indietro" (Backward): goes back to the first wizard step.

3) Configura Aernet Pro

If, for the Product family applied, a setting is already prepared of the Aernet Pro display parameters, this is automatically uploaded. The user can, in this wizard step, change this setting.

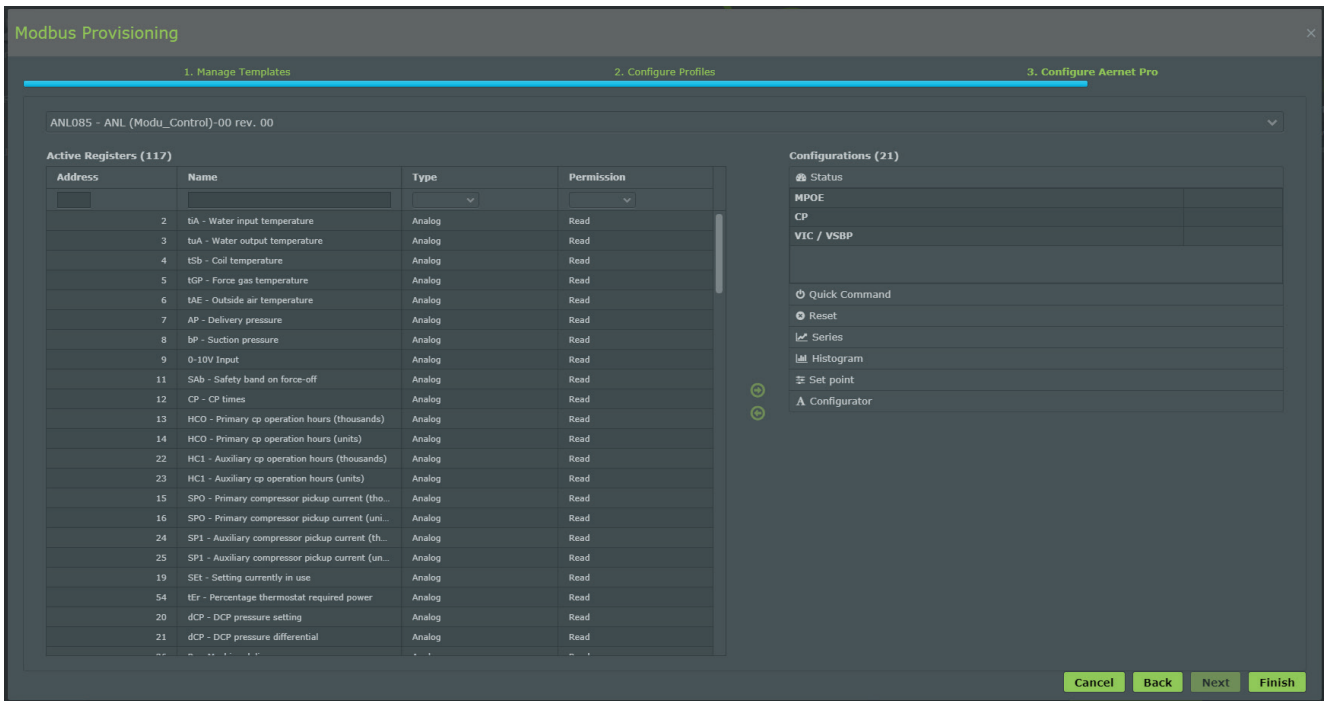


Fig. 41: AERNET - Configure AernetPro

In the third wizard page you can configure in detail the parameters displayed in the "Aernet Pro" display of the system.

Clicking at the top opens a list from which to select the system on which to operate ⮟.

In the left column, "Parametri Attivi" (Active Parameters), you can select the parameters managed for the system, and using the central arrows ➔ assign them to the different sections of the "Aernet Pro" display.

In the right column, "Configurazioni" (Configurations), you can deselect the parameters associated with the different sections in the "Aernet Pro" display ⮜, or configure the icons associated to some controls.

The sections available in the AernetPro widget are:

- Stato (State): three parameters representing a system state.
- Comando (Control): two digital read/write parameters connected to buttons that run controls (on/off).
- Reset: A digital reset parameter.
- Serie (Series): Six plotted parameters in a multi-trace report and listed in a synoptic.
- Istogramma (Histogram): A parameter represented in a histogram.
- Setpoint: Eight settable Setpoint parameters (Read/Write).
- A Configuring device: up to 16 parameters which identify the machine code. If present, the machine code shall appear in a specific area in the "AerNet Pro" display.

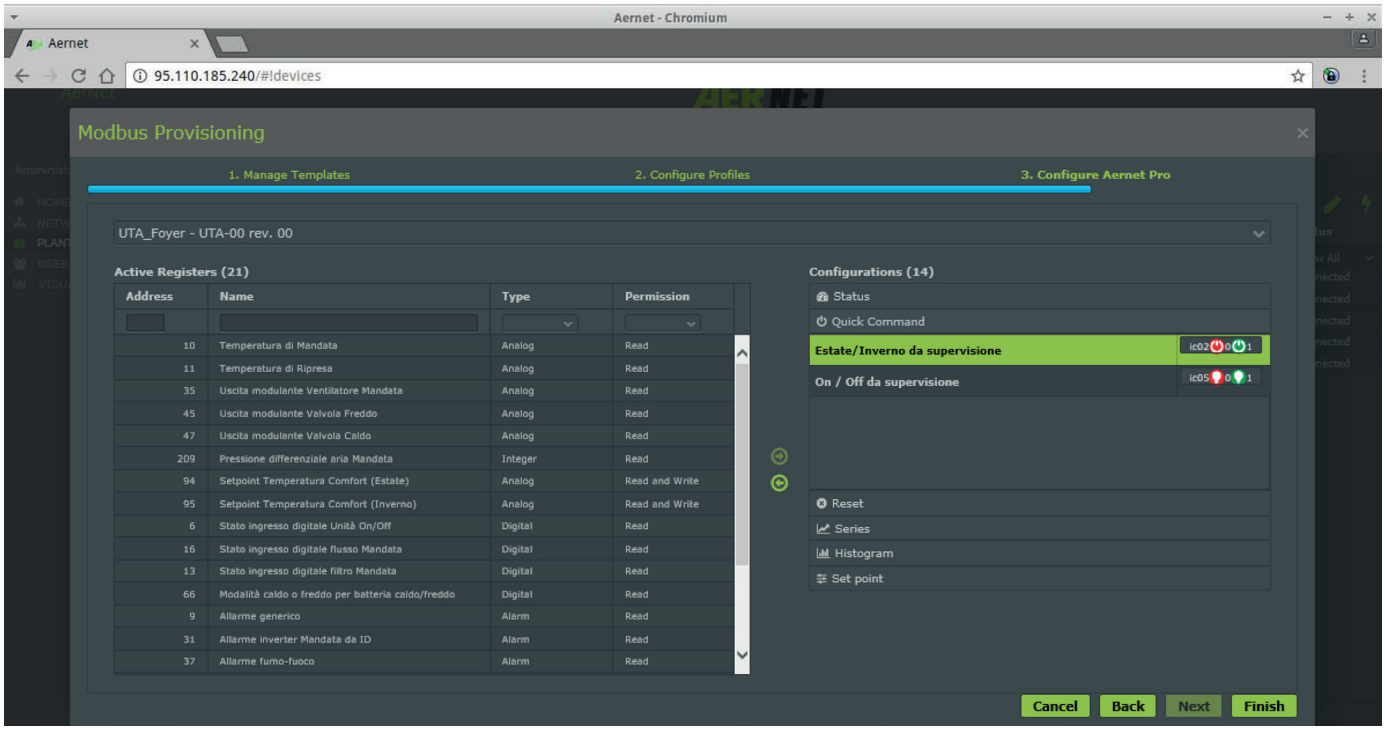


Fig. 42: AERNET - Configure AernetPro - controls

Icons are associated with the sections ⏻ Comando (Control) and ⊗ Reset.

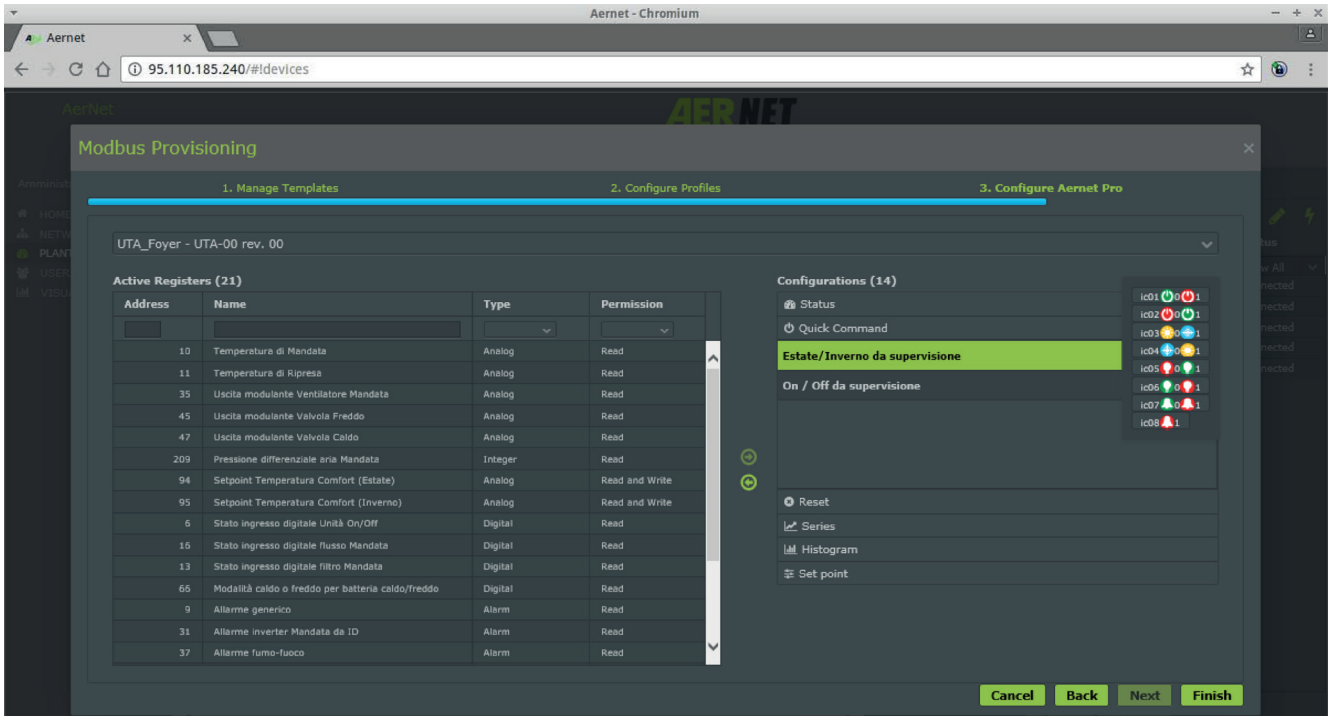


Fig. 43: AERNET - Configure AernetPro - set icons

The icons can be set from interface, by clicking on the right of the parameter, on the icon, and selecting the set of icons chosen from the combo list open.

The buttons available on the form are:

- Annulla (Cancel): closes the wizard.
- Avanti (Forward): goes to the second step of the wizard.
- Indietro (Backward): goes back to the first wizard step.
- Fine (End): clicking on the key applies all operations performed in the wizard. The configuration of a new system or changes to an existing one are applied, and then transmitted to the AERNET Router, which applies them and reconfirms them to the System.

3.6.3. Real System Functions

Selecting a Real System in the system section, on the right opens the "Device Info" widget.

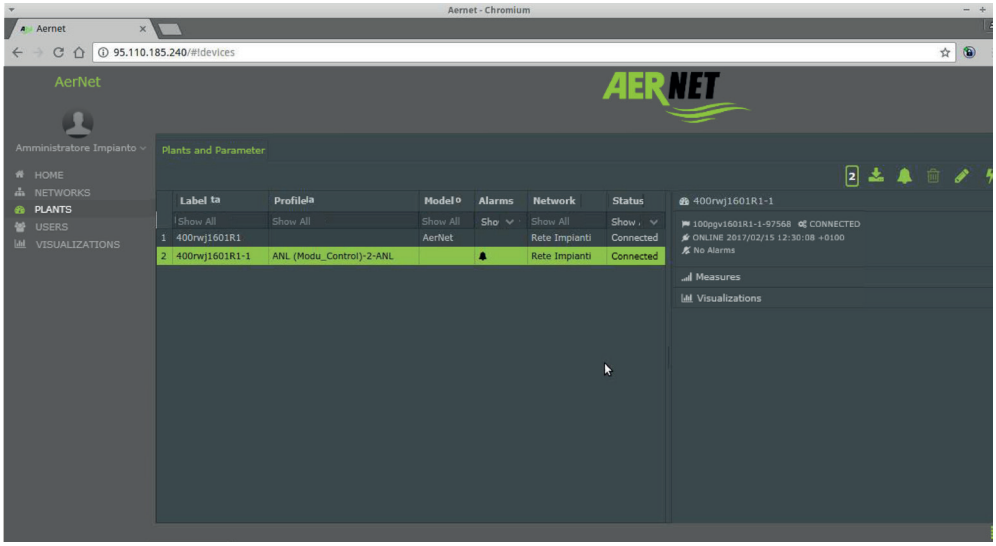


Fig. 44: AERNET - System Section - Real System

- The functions available in the system section by selecting a AERNET Router are:
- "Edit System"
- "Alarms"
- "Download"

3.6.3.1. Download

Clicking on the "Download" button opens a popup where you can set the download of the parameters registered in the system. Up to one year of records is available with the option to choose which data to download and for which period. Please note that the "raw" data is available only for the last week (i.e. the data with the highest resolution, decided during the setup stage of the slaves), while the remaining data shall be sampled with a frequency equal to one hour.

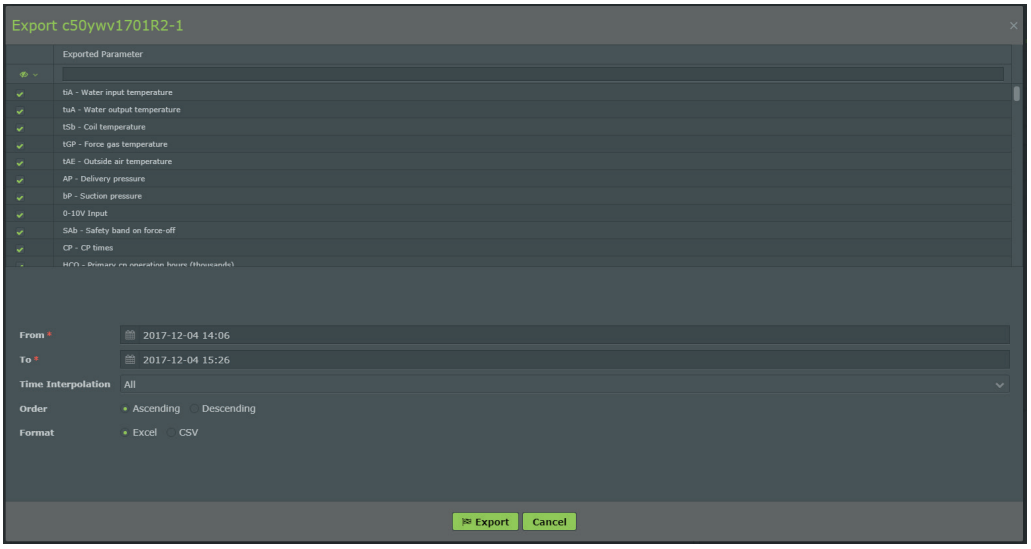


Fig. 44: AERNET - Download

The settable features are:

- The option to choose which parameters download. All parameters present are selected by default.
- From*: date and time of the first data downloaded can be set.
- To*: date and time of the last data downloaded can be set. The last week of data, if present, is always indicated by default.

- Temporal interpolation: sets the temporal fineness of the sample export. Clicking on ( ) opens a combo list from where to select the two different options:
- Tutto (All): the parameters are represented to maximum allowed resolution (raw data), according to the Modbus reading frequency set on the slave
- 1 Ora (Hour): the samples are aggregated in one data every hour. By selecting this option, the "From*" and "To*" fields automatically update to give the actual data available.
- Ordinamento (Sorting): sets the temporal ordering of the samples (Ascendente, Discendete (Ascending, Descending)
- Formato (Format): sets the exported file format (Excel, Comma Separated Values)

Clicking on "Conferma" (Confirm) runs the operation.

The export form is that of a table where the first column show the timestamp of the sample in correspondence of which a column of values for each parameter is shown.

Timestamp	158 - Prealla	tSb - Temper:	SC1 - Set cal	tEr - Percent	SPO - Spunti	5 - Pressosta	
18/10/2016 09.05.38	,	13,6	44,4	100	1.000	,	...
18/10/2016 09.05.48	,	13,6	44,4	100	1.000	,	...
18/10/2016 09.05.58	,	13,6	44,4	100	1.000	,	...
18/10/2016 09.06.08	,	13,8	44,4	100	1.000	,	...
18/10/2016 09.06.18	,	13,8	44,4	100	1.000	,	...
18/10/2016 09.06.28	,	13,8	44,4	100	1.000	,	...
18/10/2016 09.06.38	,	13,8	44,4	100	1.000	,	...
...	...	...	...	...	...	...	

The "Download" function is run "in batch", that is the user can continue to work on the interface.
When the result is ready, the user is alerted by a pop-up "Export Completato" (Export Completed), containing the export file name. Clicking on the file name launches the file download on the user's PC.

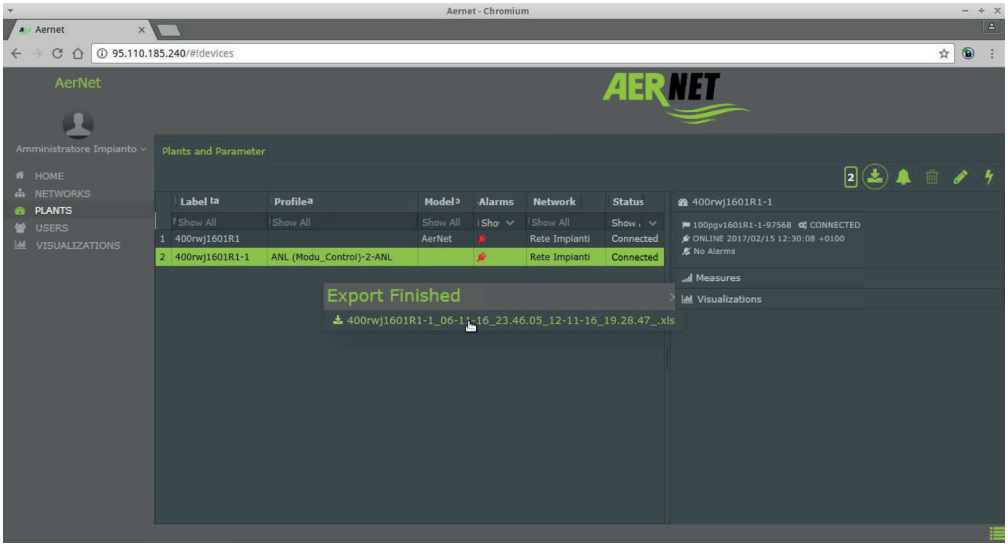


Fig. 46: AERNET - Export Completed

⚠ The "Download" function is particularly onerous for the system. We do not recommend using it excessively. A request may not be made until a previously performed one is served.

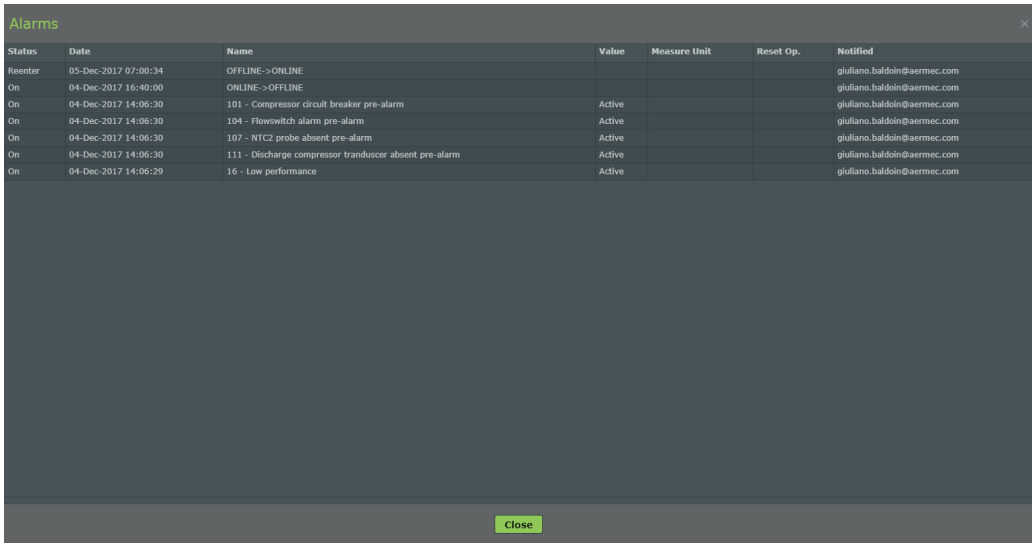
The time between the "Download" request and the availability of the result depends on many factors (number of system parameters, Modbus reading frequency, chosen Timeline), and can range from one minute to a few tens of minutes.

The export file dimension can reach several tens of MB, the download times on the PC may depend on the network.

Export of raw data (chosen Timeline = All), due to the dimension, is split into one file per day, grouped and compressed in a ".zip" archive.

3.6.3.2. Alarms

Clicking on "Alarms" opens the pop-up "Allarmi Notificati" (Notified Alarms) which lists the alarms relating to the System.



Status	Date	Name	Value	Measure Unit	Reset Op.	Notified
Reenter	05-Dec-2017 07:00:34	OFFLINE->ONLINE				giuliano.baldoin@aermec.com
On	04-Dec-2017 16:40:00	ONLINE->OFFLINE				giuliano.baldoin@aermec.com
On	04-Dec-2017 14:06:30	101 - Compressor circuit breaker pre-alarm	Active			giuliano.baldoin@aermec.com
On	04-Dec-2017 14:06:30	104 - Flowswitch alarm pre-alarm	Active			giuliano.baldoin@aermec.com
On	04-Dec-2017 14:06:30	107 - NTC2 probe absent pre-alarm	Active			giuliano.baldoin@aermec.com
On	04-Dec-2017 14:06:30	111 - Discharge compressor tranduscer absent pre-alarm	Active			giuliano.baldoin@aermec.com
On	04-Dec-2017 14:06:29	16 - Low performance	Active			giuliano.baldoin@aermec.com

Fig. 47: AERNET - Notified Alarms

The last 30 events notified in the last week are reported (state change, alarm on, alarm reset).

The provided fields are:

- Stato (State): The states can be On - alarm activated, Reenter – alarm over, Reset – alarm reset for execution of the Reset Alarms control.
- Data (Date): Date and Time of event .
- Nome (Name): Alarm name. Shows the Parameter alarmed in case of system alarm or one of the strings "ONLINE->OFFLINE" or "OFFLINE->ONLINE" in case of idle alarm.
- Valore (Value): value of parameter at the time of the event reported. Does not assume a value for the idle alarms.
- Unità (Unit): Possible unit of measurement associated with the alarm parameter. In AERMEC the alarms are all non-dimensional sizes, so the field is empty.
- OP. Reset: User who performed the Reset Alarms control.
- Notifiche (Notifications): List of users to whom the event was notified, if notification for that alarm is enabled.

3.6.3.3. Edit System

Clicking on "Edit" opens a pop-up where you can view the system configuration and set some values.

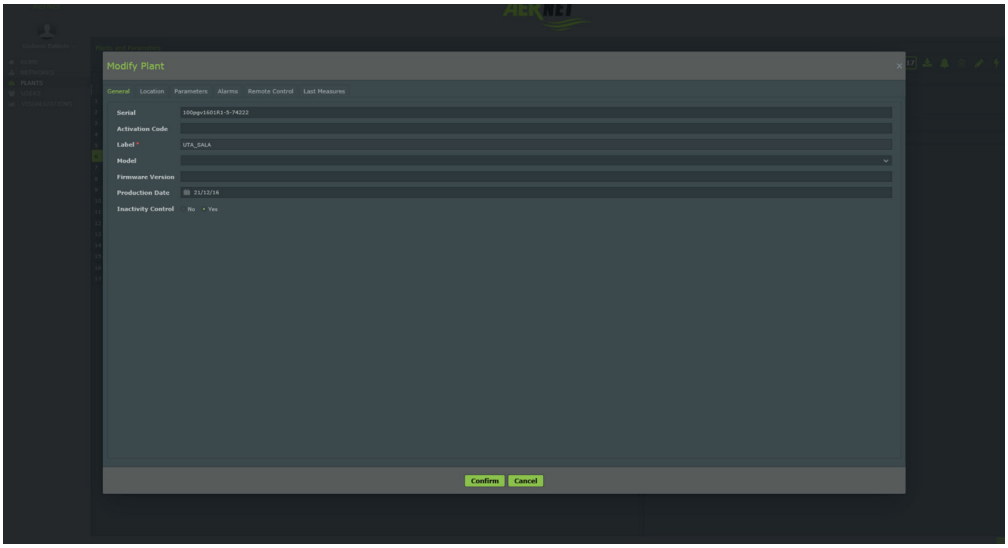


Fig. 48 AERNET - Edit System - General

The tabs available are:

- Generale (General): General system information.
- Posizione (Position): Geo-localisation of the system.
- Parametri (Parameters): List of the collected system parameters.
- Allarmi (Alarms): Alarm parameters managed.
- Telecontrollo (Remote control): Writeable parameters setting (Read&Write or Write).
- Ultime Misure (Last Measurements): List of last parameter measurements.

3.6.3.4. Tab "General"

The "General" tab contains the system master data information.

The data enhanced in this form are:

- Seriale (Serial): Real System serial number. It is made up starting from the serial of the AERNET Router on which it is configured, followed by the Modbus slave number and by a number automatically generated by the System. It is the key used by the System to manage the System information.
- Etichetta (Label): Mandatory field, modifiable. You can assign the label of a system.
- Data di Produzione (Production Data): date on which the slave of the AERNET Router connected to the Real system was created, via the function "Family Management".
- Controllo Inattività (Idle Control): If set to "Sì" (Yes), the idle control is activated for the system. When the system no longer communicates with the system for more than 15 minutes, for various reasons such as communication or functioning problems, this is reported in the interface with the "OFF_LINE" alarm .

Tab "Position"

The "Position" tab contains the system geo-referencing information.

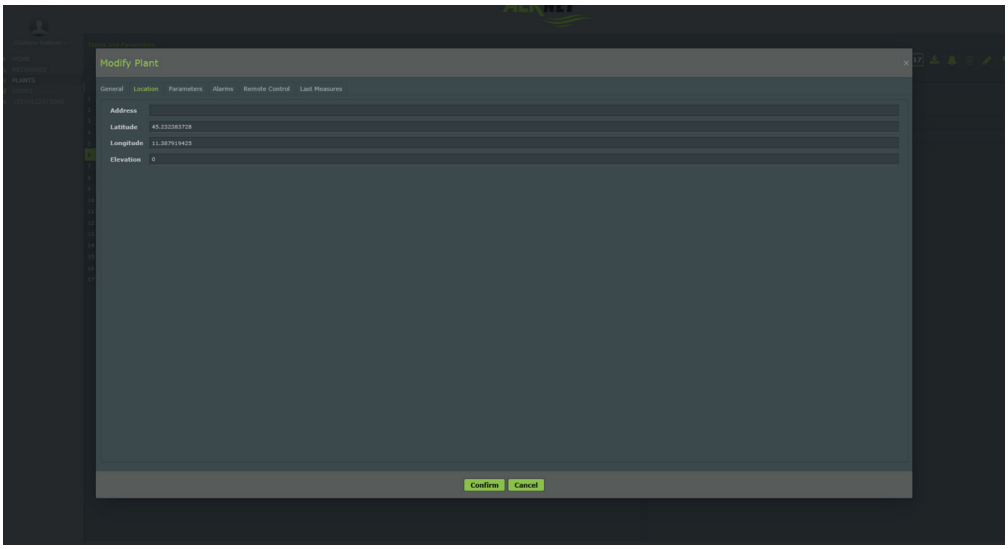


Fig. 49: AERNET - Edit System - Position

The fields available are:

- Indirizzo (Address): a descriptive field.
- Latitudine (Latitude): contains the latitude coordinates, settable from this form or set by positioning the system placeholder on the geographical map.
- Longitudine (Longitude): contains the longitude coordinates, settable from this form or set by positioning the system placeholder on the geographical map.
- Altitudine (Altitude): settable.

Tab "Parameters"

The "Parameters" tab contains the list of parameters collected for the system.

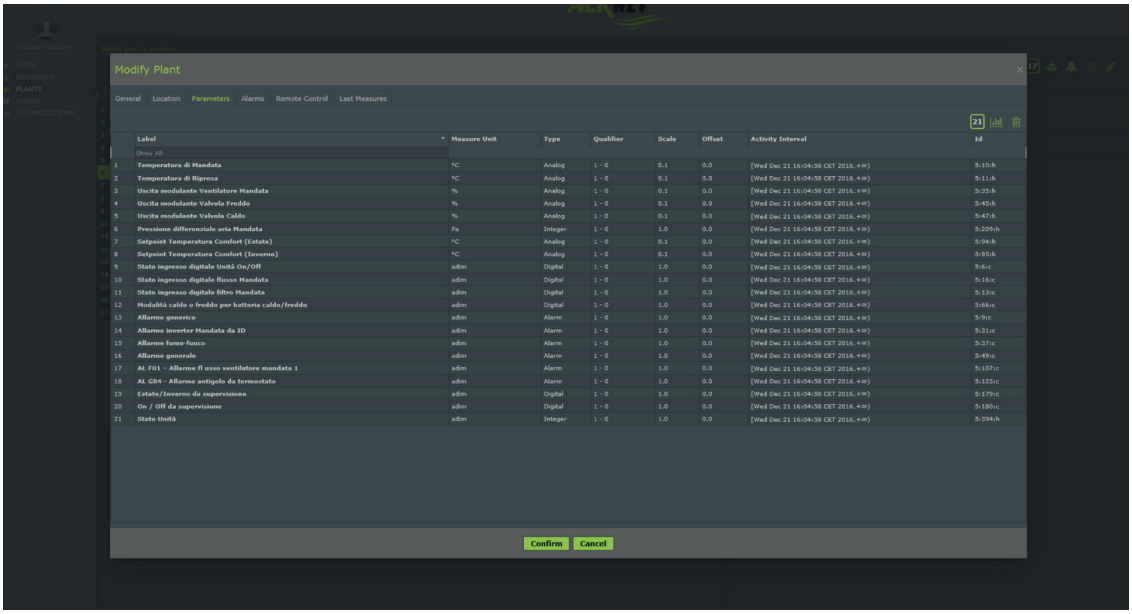


Fig. 50: AERNET - Edit System - Parameters

The "Parameters" tab has an overview of all parameters collected for the System.

The displayed data are:

- Etichetta (Label): parameter label.
- Unità di Misura (Unit of measurement): unit of measurement of the parameter (ºC, bar, V, S, H, N, %, adim, etc.).
- Tipo (Type): Type of parameter (Alarm, Analog, Integer, Digital).
- Qualificatore (Qualifier): internal parameter used by the System.
- Scala (Scale): scale factor applied to the value read by the Modbus to determine the parameter value.
- Offset: any offset applied to the value read by the Modbus to determine the parameter value.
- Intervallo di Attività (Operation Interval): last time interval during which a specific parameter was read by the System.
- ID: internal parameter used by the System.

By selecting a parameter and clicking top-right (📊), you can view the "Timeline Parametro" (Parameter Timeline) graph of the parameter trend for the whole period of collection of the data.

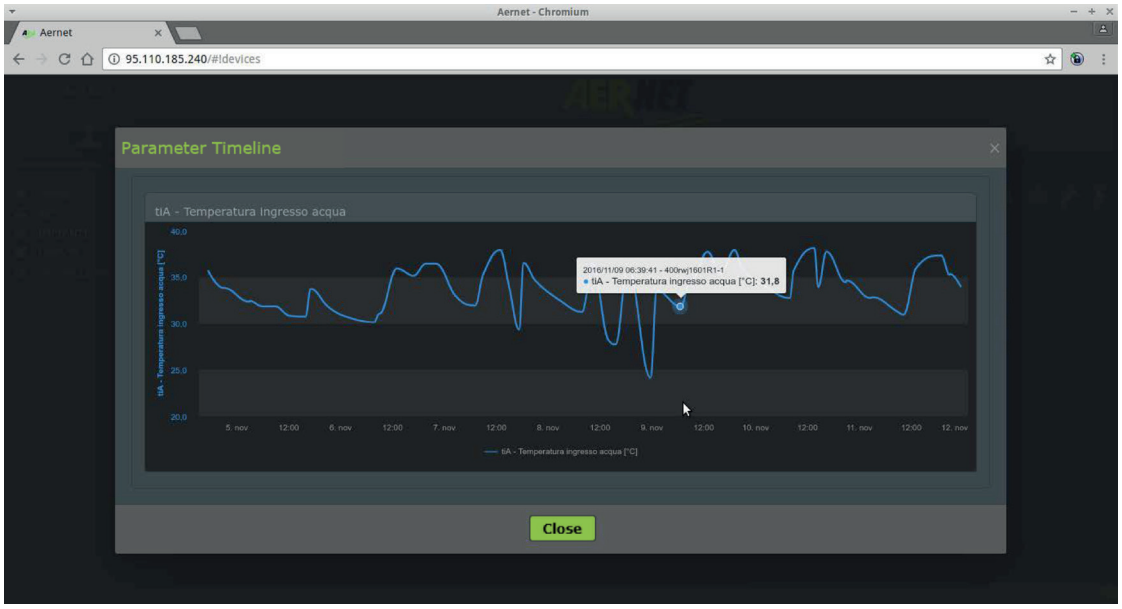


Fig. 51: AERNET - Parameter Timeline

Tab "Alarms"
The "Alarms" tab lists the Alarm type parameters set in the System.

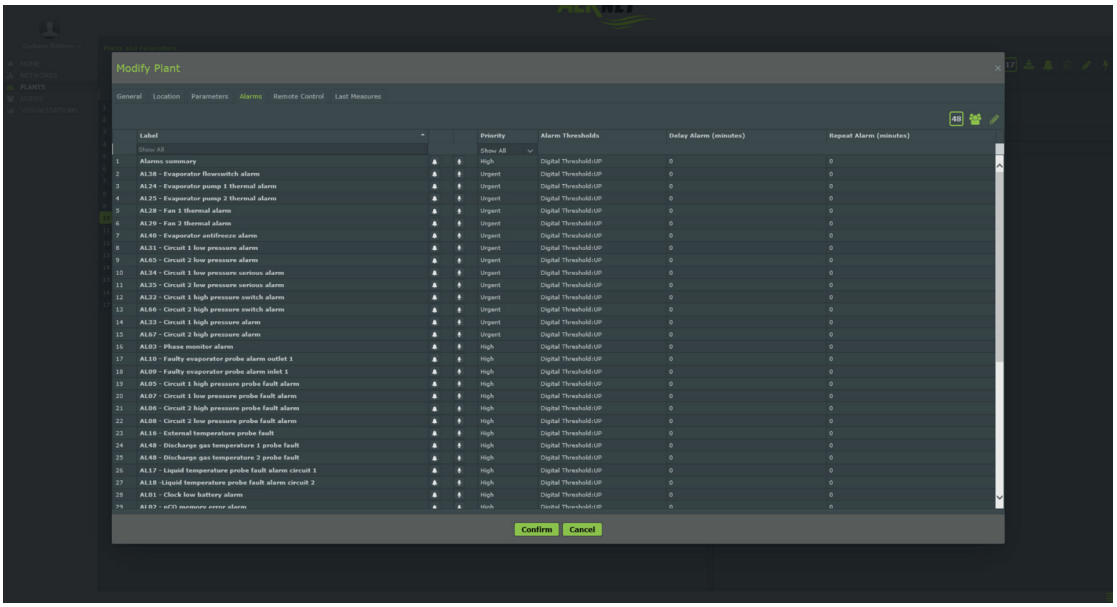


Fig. 52: AERNET - Edit System - Alarms

The displayed fields are:

- Etichetta (Label): label of Parameter from alarm.
- Symbol Alarm Enabled 🔔 or Disabled 🔕.
- Symbol Notification Enabled 🎤 or Disabled 🎤.
- Priorità (Priority): Urgent, High, Normal, Low. This information is used when sending the alarm notification e-mail.
- Soglia Allarme (Alarm Threshold): Ascendente, Discendente (Ascending, Descending).
- Ritardo Allarme (minuti) (Alarm Delay (minutes): If set.
- Ripeti Allarme (minuti) (Repeat Alarm (minutes): If set.

The functions available in the alarm section are:

- "Edit"
- "Alarm Notification"

Tab "Alarms" - Edit

Selecting an alarm and clicking on Edit" opens a pop-up where to set the alarm features.

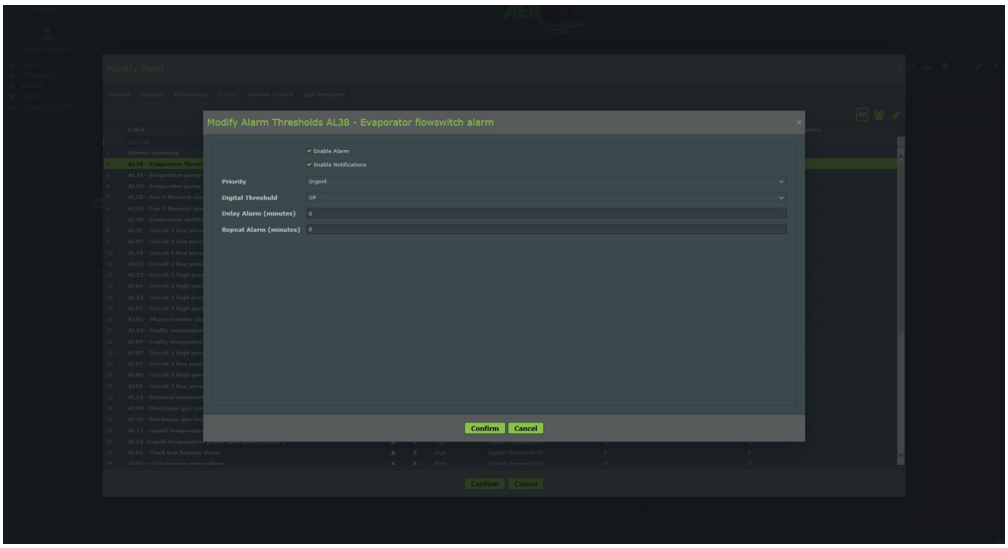


Fig. 53: AERNET - Edit Alarm

The available settings are:

- Symbol Alarm Enabled or Disabled .
- Symbol Notification Enabled or Disabled .
- Priorità (Priority): Urgent, High, Normal, Low. This information is used when sending the alarm notification e-mail.
- Soglia Allarme (Alarm Threshold): Ascendente, Discendente (Ascending, Descending).
- Ritardo Allarme (minuti) (Alarm Delay (minutes): If set.
- Ripeti Allarme (minuti) (Repeat Alarm (minutes): If set.

The alarm parameters are by default set with threshold Ascending. The administrator can, if necessary, change the threshold of this tab.**Tab "Alarms" - Alarm Notification**

Selecting an alarm and clicking on "Alarm Notifications" opens a pop-up where to define to which users the alarm notification e-mail will be sent.

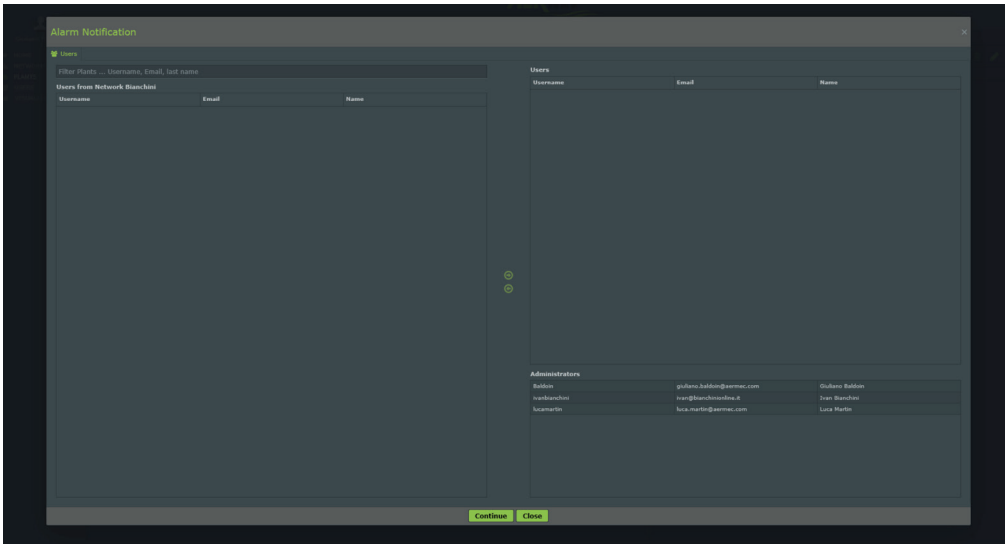


Fig. 54: AERNET - Alarm Notification

The left column, "Utenti della Rete" (Network Users), lists the basic users not associated with the alarm notification. The top of the right column, "Utenti Associati" (Associated Users), lists the basic users associated with the alarm notification.

Clicking on the list on the left allows you to select a user and using the central arrow → you can associate it with the alarm notification.
Clicking on the list on the right allows you to select a user and using the central arrow ← you can disassociate it from the alarm notification.

The bottom of the right column, "Amministratori" (Administrators), shows the network administrator and the list of super users of the network. By default, the alarm notification is sent to the administrator and to all "super users" of the network.

The notified events are:

- Opening of an alarm
- Re-entry of an alarm
- Reset of an alarm
- Opening of idle alarm
- Re-entry of idle alarm

Below is an example of an alarm re-entry e-mail text:

Aernet
Date hour / Data ora: 2017/12/05 06:18:00 +0000
Network / Rete: default network
Plant / Impianto: c50ywv1701R2-1
Status / Stato: REENTER
Measure / Grandezza: 14 - Suction transducer absent

Parametri/ Parameters	Valori/ Values
StC - Winter Setpoint	.0 [°C]
CP	Off
StF - Summer Setpoint	20.0 [°C]
bnC - Heating band	.0 [°C]
VIC / VSBP	Off
Operation mode	Winter
SC1 - Winter Setpoint 1	.0 [°C]
AP - Delivery pressure	21.5 [bar]
tiA - Water input temperature	26.5 [°C]
Alarms / Reset	Reset
tuA - Water output temperature	.0 [°C]
SF1 - Summer Setpoint 1	.0 [°C]
SEt - Setting currently in use	.0 [°C]
SF2 - Summer Setpoint 2	.0 [°C]
bnF - Cooling band	20.0 [°C]
Po - Machine delivery power	0. [%]
bP - Suction pressure	12.6 [bar]
SC2 - Winter Setpoint 2	.0 [°C]
ON/OFF System	OFF
tAE - Outside air temperature	20.0 [°C]

The notification e-mail of the opening of an alarm or re-entry of an alarm contains a list of instantaneous values of the system parameters. The sent parameters are those selected in the AernetPro display configured for the system. By clicking on "Aernet" on the first line or on the "AerNet Aermec" image below, the link for the "aernet.aermec.com" website is activated.

Tab "Remote control"
The "Remote control" tab displays the parameters that can be set from interface.
These are all parameters set as "Read&Write" or "Write".

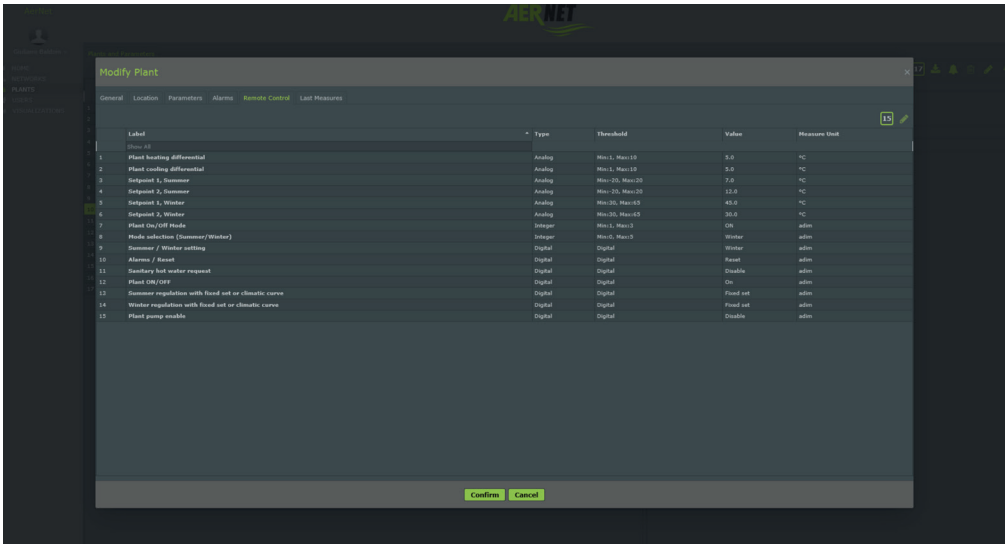


Fig. 55: AERNET - Edit System - Remote control

The displayed data are:

- Etichetta (Label): parameter label.
- Tipo (Type): Type of parameter (Alarm, Analog, Integer, Digital).
- Soglie di controllo (Control Thresholds): Parameter excursion thresholds (Min and Max).
- Valore (Value): Current value.
- Unità di Misura (Unit of measurement): unit of measurement of the parameter (ºC, bar, V, S, H, N, %, adim, etc.).

Selecting a parameter and clicking on the edit icon , opens a pop-up that allows the user to change the parameter value.

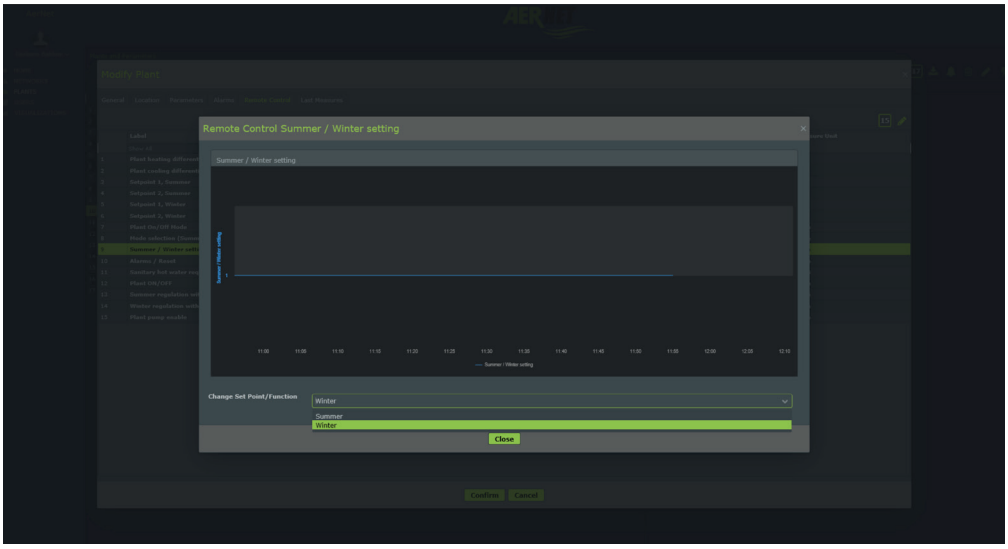


Fig. 56: AERNET - Remote control

The pop-up shows a graph of the last trend in real time of the parameter in the last 15 minutes. So you can change the parameter value.

If default values have been set for the parameter, the pop-up shows in a combo box a list of values.

If values are not set for the parameter, the user can set a value within the maximum and minimum limits defined for the parameter.

After setting the value, click on the right tick ✔ and the change is applied.
The graph will show in real time if the made change is applied.

Tab "Last Measurements"

The "Last Measurements" tab displays the last reading of the set parameters.

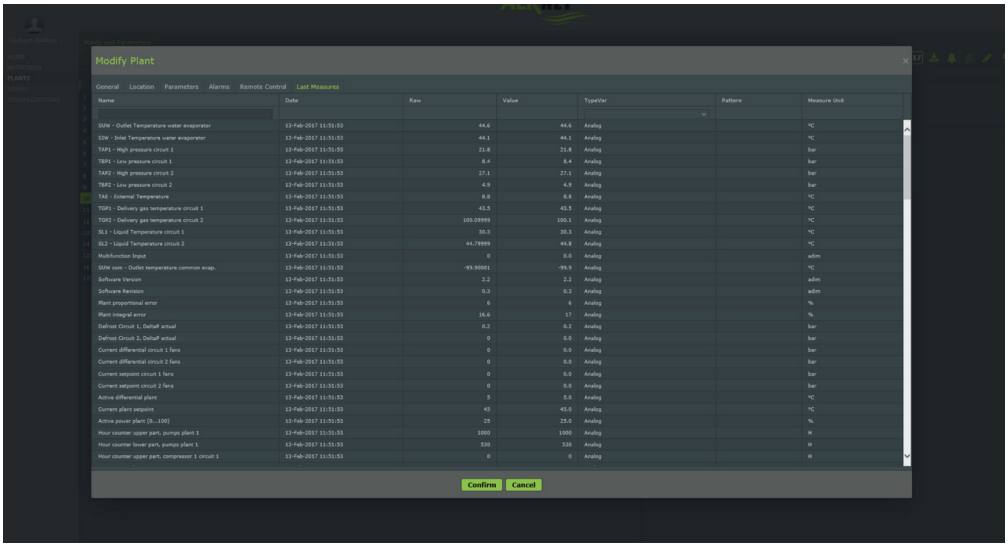


Fig. 57: AERNET - Edit System - Last Measurements

The displayed data are:

- Nome (Name): parameter label.
- Data (Date): Date and Time of last parameter reading sample.
- Valore Grezzo (Raw Value): actual value read by Modbus, after applying scaling and offset.
- Valore (Value): value displayed, corresponding to the application of the number of decimals provided for the parameter, or of the "Enumeration" rules of the parameter (for digital parameters) associating strings to values.
- Tipo (Type): Type of parameter (Alarm, Analog, Integer, Digital).
- Pattern: System rule to apply on the parameter a Enumeration rule (for digital parameters).
- Unità di Misura (Unit of measurement): unit of measurement of the parameter (ºC, bar, V, S, H, N, %, etc.). Not shown for the non-dimensional parameters.

The shown data refers to the last reading before opening the pop-up "Edit System" from the System section.

3.7 Users

The Users section lists all users managed by the administrator, including its own user. By selecting a user from the list, the buttons on the right of the interface are enabled.

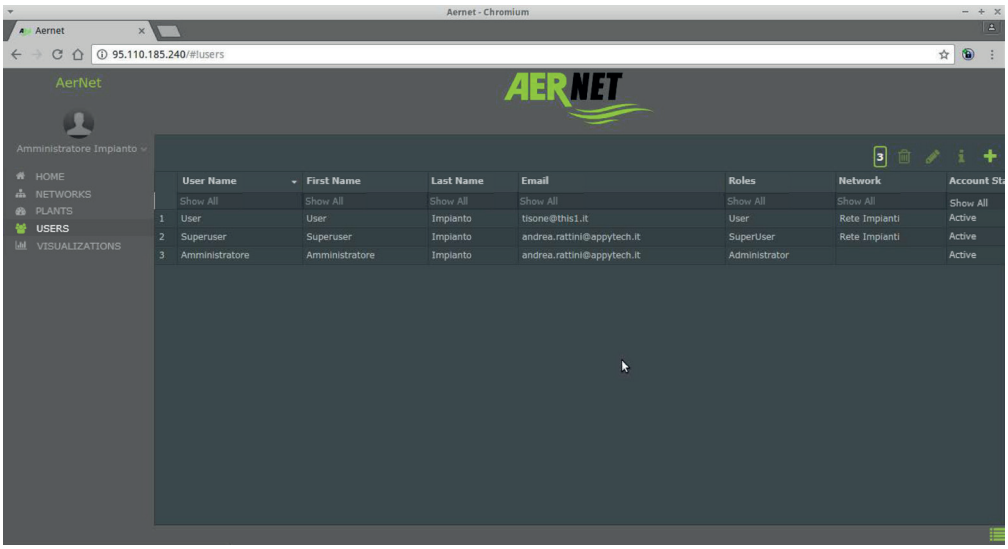


Fig. 58: AERNET - Users Section

The functions available in the Users section are:

- "Remove"
- "Edit"
- "Detail"
- "Add"

3.7.1. Add User

By clicking on the button "Add User", you can enter a new user.

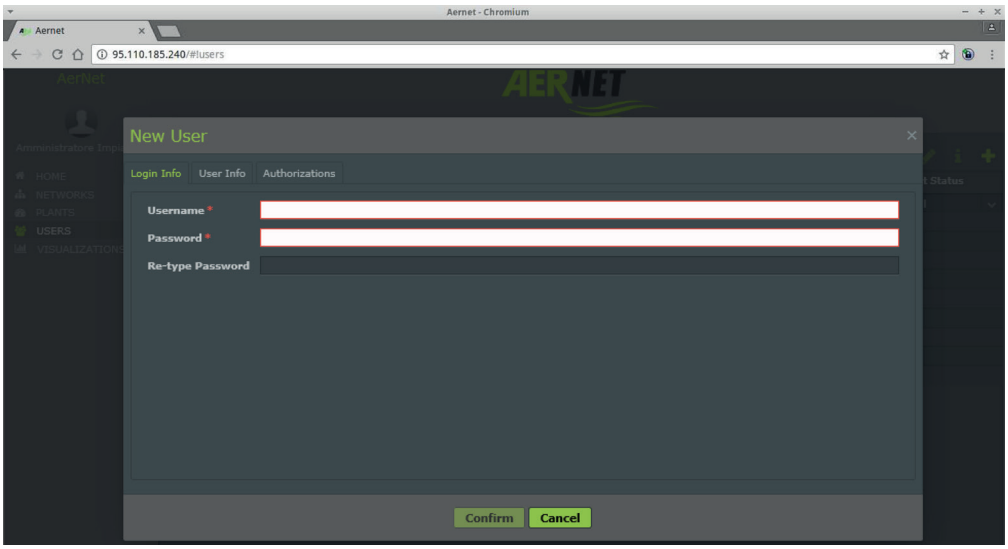


Fig. 59: AERNET - New User - Login

In the first tab, "Login", the mandatory fields are Username and Password of the new user.

The Username and Password fields should be of at least 8 characters

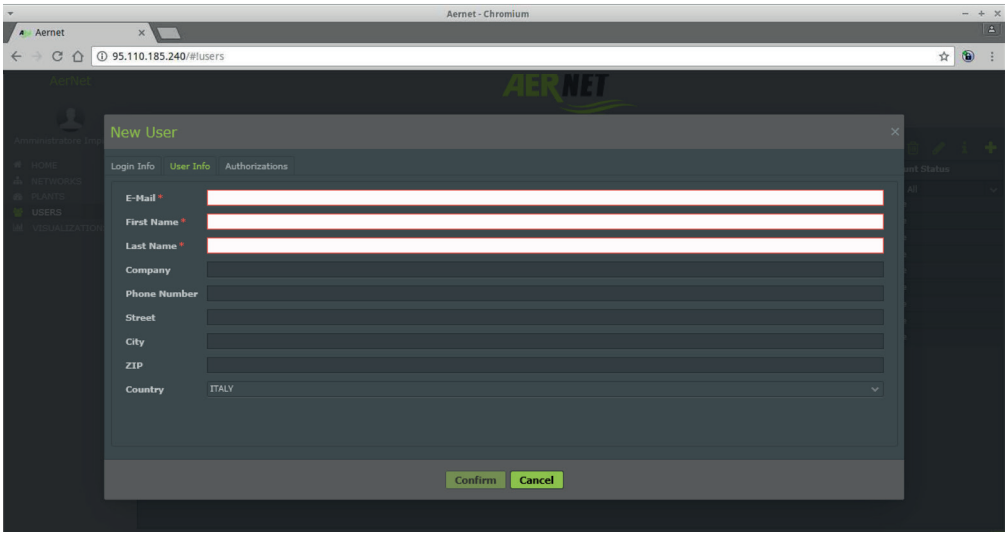


Fig. 60: AERNET - New User - Master Data

In the second tab, "Anagrafica" (Master Data), another significant field is the user e-mail to which the alarm notifications can be sent.

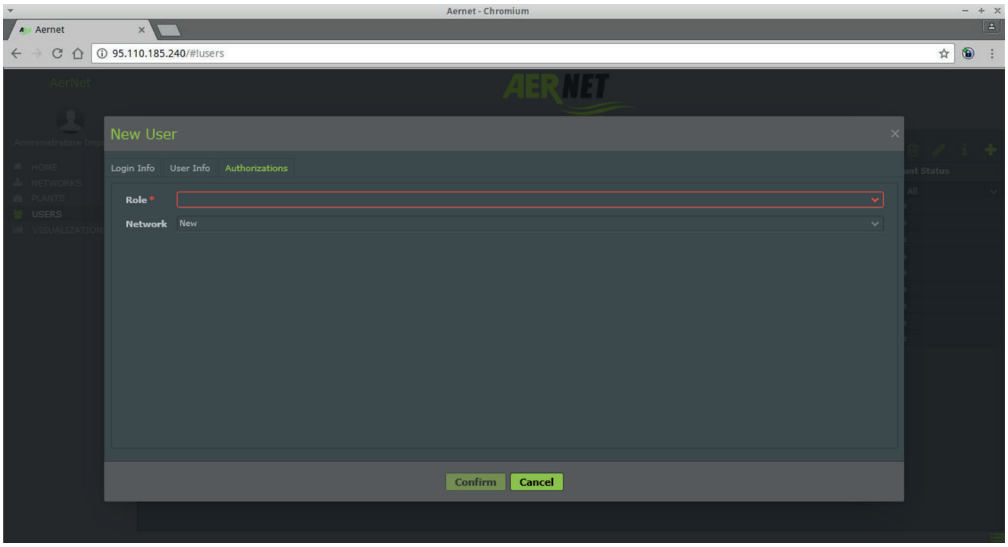


Fig. 61: AERNET - New User - Authorisations

In the third tab, "Autorizzazioni" (Authorisations), you must specify:

- Ruolo (Role): role (SuperUser, User) assigned to the user.
- Rete (Network): Network to which the user is associated.

Below is a brief note on the roles of the different types of users:

SUPERUSER: the "Superuser" users have access to all resources of the network to which they are associated, with the same privileges as an administrator, excluding the possibility of creating new users, creating and editing networks, and activating new systems.
A Superuser can create new displays, but not edit displays created by other users.
A Superuser receives all alarm notifications of the systems of its network.

USER: The "User", or basic, users can only access the displays of the network to which they have been associated by the administrator (or by a Superuser).

The administrator, once created the basic users, must associate them to the displays via the appropriate function "Associations" in the "Displays" section.

The basic user receives notifications only of alarms to which it was associated via the function "Alarm Notification" in the "Alarms" tab of the function "Edit System" .

3.7.2. Edit User

By clicking on the button "Edit", you can change the information of a user.

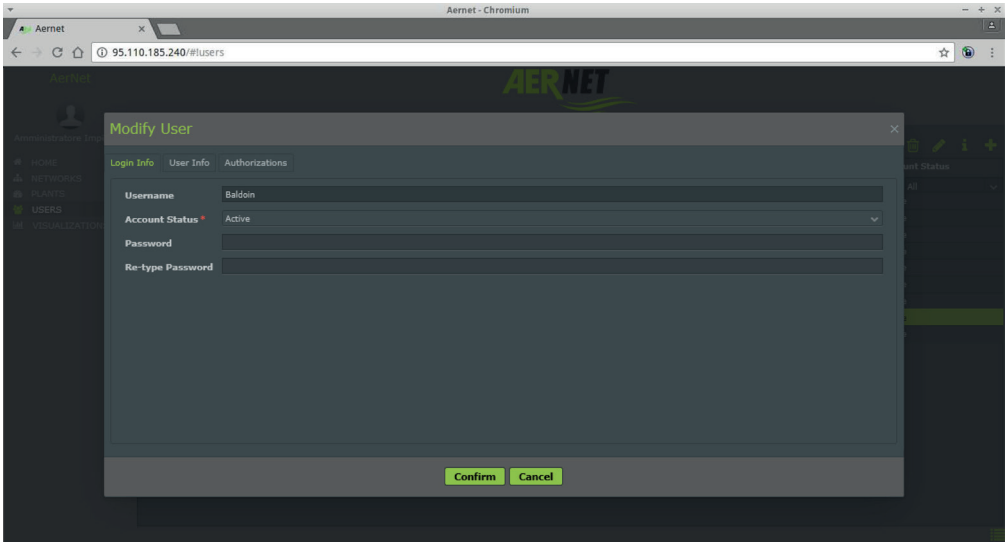


Fig. 62: AERNET - Edit User - Login

In the first tab, "Login", the editable fields are:

- Stato (State): user state (Attivo, Sospeso (Active, Suspended). If a user is "Suspended" it can no longer login until it is reset to "Active".
- Password: the administrator can edit the password of a user he manages.

The Password field should be of at least 8 characters

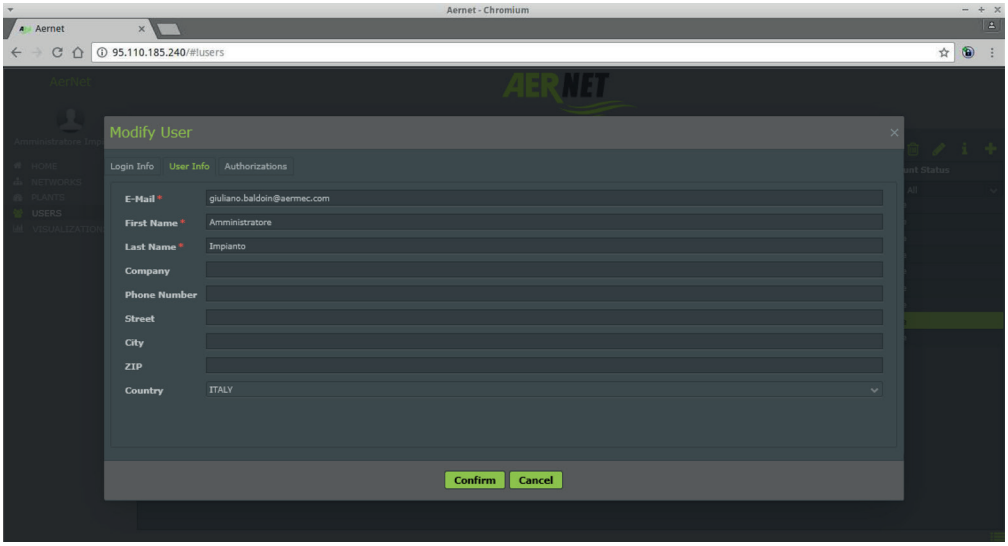


Fig. 63: AERNET - Edit User - Master Data

In the second tab, "Anagrafica" (Master Data), all fields are editable.

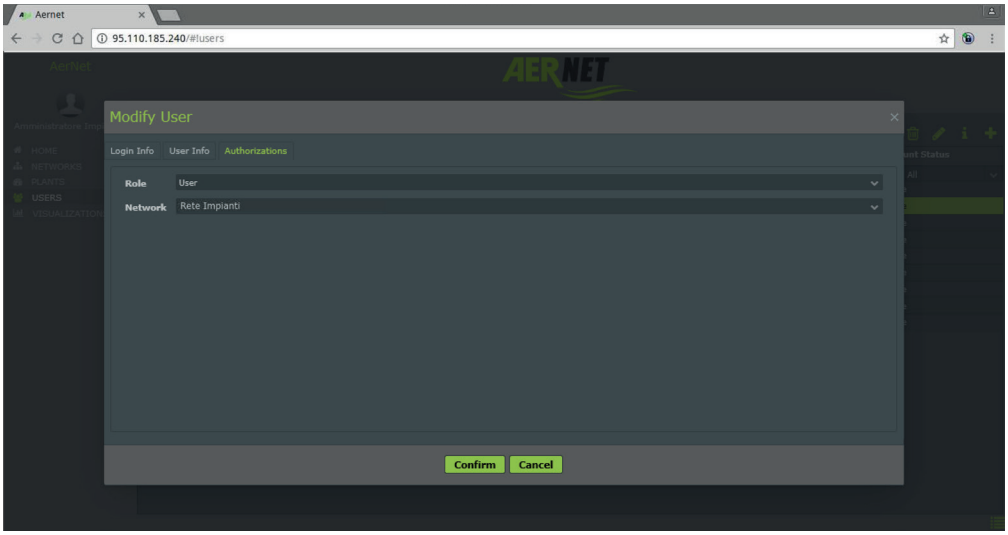


Fig. 64: AERNET - Edit User - Authorisations

In the third tab, "Autorizzazioni" (Authorisations), no field is editable.

Clicking on "Conferma" (Confirm) runs the operation.
By clicking on "Annulla" (Cancel) the operation is abandoned.

3.7.3. Detail

Clicking on the button "Detail" ℹ, opens a pop-up with some information on the selected user.

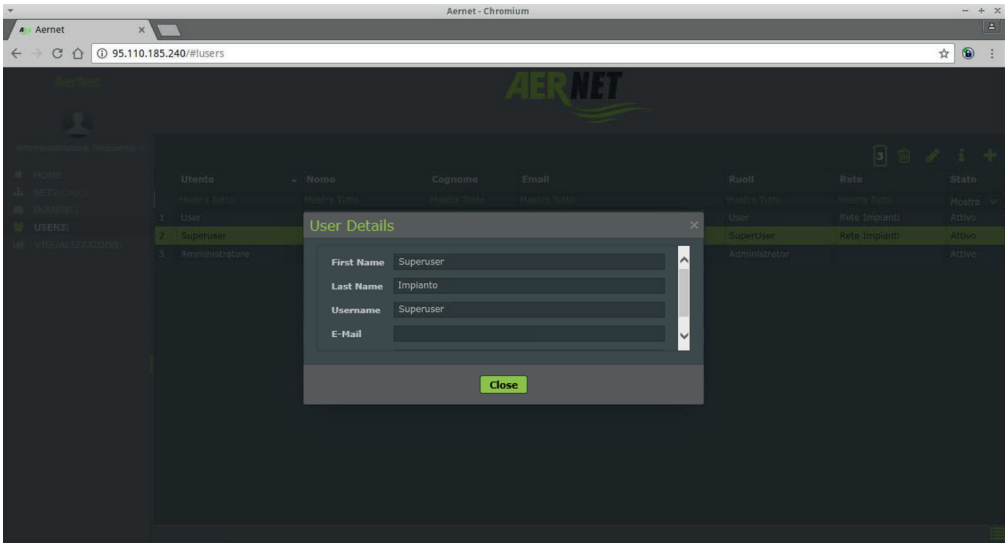


Fig. 65: AERNET - User Details

Clicking on "Chiudi" (Close) closes the pop-up.

3.7.4. Remove

Clicking on the button "Remove" 🗑, opens a confirmation pop-up of the request to delete the selected user.

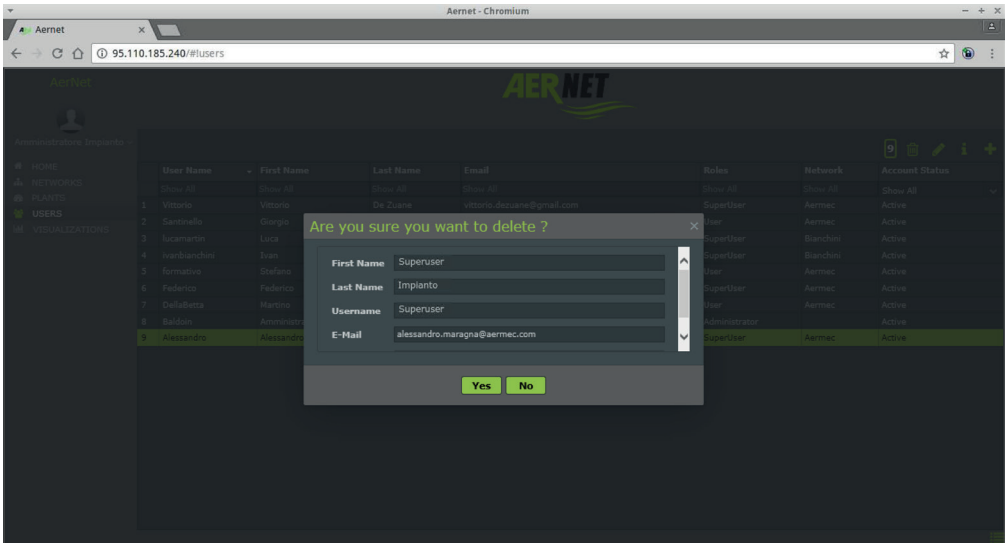


Fig. 66: AERNET – Remove User

Clicking on "Sì" (Yes) runs the operation.
By clicking on "No" the operation is abandoned.

⚠ The removal of a user involves the deletion of all user entries in the System

3.8 Displays

The Displays section lists all displays set for the networks and systems of the administrator. By selecting a display from the list, the buttons on the right of the interface are on.

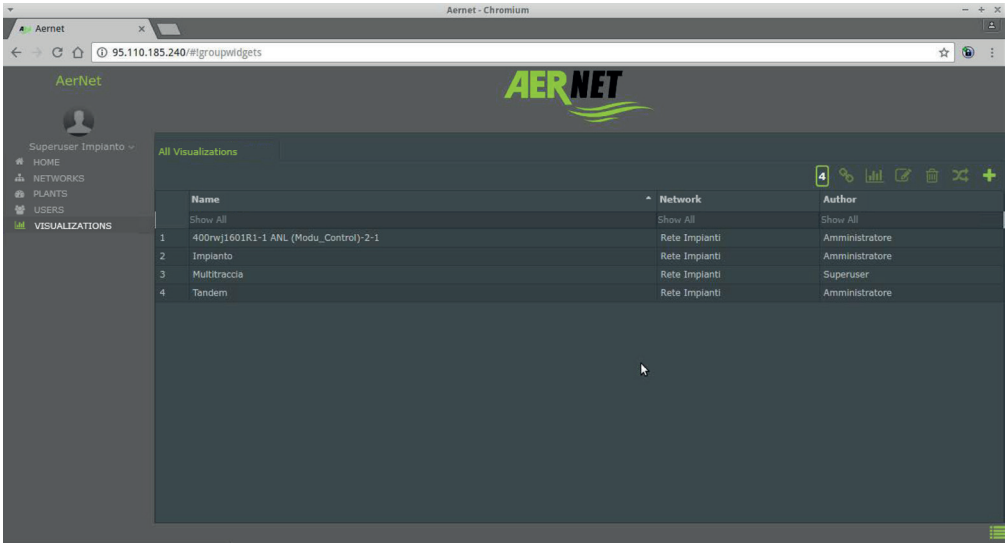


Fig. 67 AERNET - Displays Section

The functions available in the "Displays" section are:

- "Add Display"
- "Edit Display"
- "Remove Display"
- "Display"
- "Display"
- "Associations"

The list values are:

- Nome (Name): name assigned to the display.
- Rete (Network): network in which the display is defined.
- Autore (Author): user who created the display.

3.8.1. The Aernet Pro display

Before describing the functions of the "Displays" section, below is a description of the Aernet Pro display.
A Aernet Pro display is always associated with a Real System, and is configured and modified using the "Configure Aernet Pro" section of the wizard launched from the "Family Management" function of a Aernet Router.

The display sections available in the widget are:

- Stato (State): three parameters representing a system state.
- Comando (Control): two digital read/write parameters connected to buttons that run controls (on/off).
- Reset: A digital reset parameter.
- Serie (Series): Six plotted parameters in a multi-trace report and listed in a synoptic.
- Istogramma (Histogram): A parameter represented in a histogram.
- Setpoint: Eight settable Setpoint parameters (Read/Write).
- A Configuring device: up to 16 parameters which identify the machine code. If present, the machine code shall appear in a specific area in the "AerNet Pro" display.

The potential string representing the model of the machine shall appear in this position:

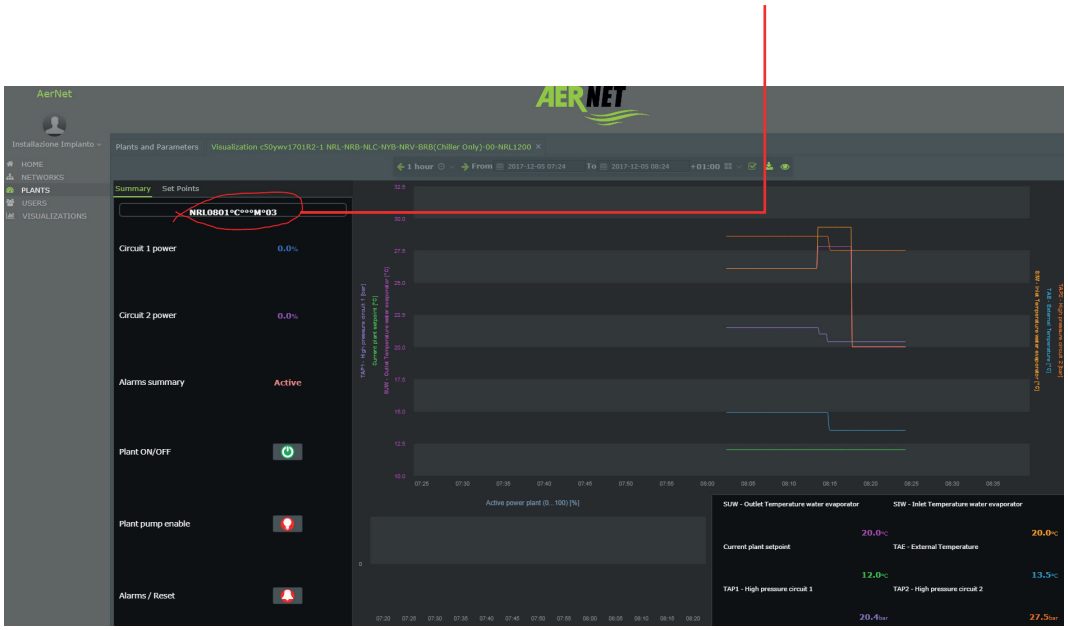


Fig. 68: AERNET - Aernet Pro Display

The left shoulder of the widget, in the "Summary" folder, shows:

- Three parameters representing a system state.
- Two digital read/write parameters connected to buttons that run controls (on/off). The right on the right of the parameter label, graphically represents the parameter value (e.g. on or off, summer, winter). By clicking on the icon, you can set the value contrary to the one shown (e.g. by clicking on an "on" parameter, this becomes "off"). The system indicates the successful implementation of the new value.
- A digital reset parameter. This type of parameter can be applied to reset the alarms. Clicking on the icon displays a warning messages, which if confirmed performs the reset.

Top-right of the display is a multi-trace graph of the six chosen series.
At bottom-right is shown a histogram of a parameter and on the right a synoptic listing the current values of the six sizes represented in the graph.
The graphs and synoptic are shown in "Real Time". The web interface updates the data every thirty seconds.

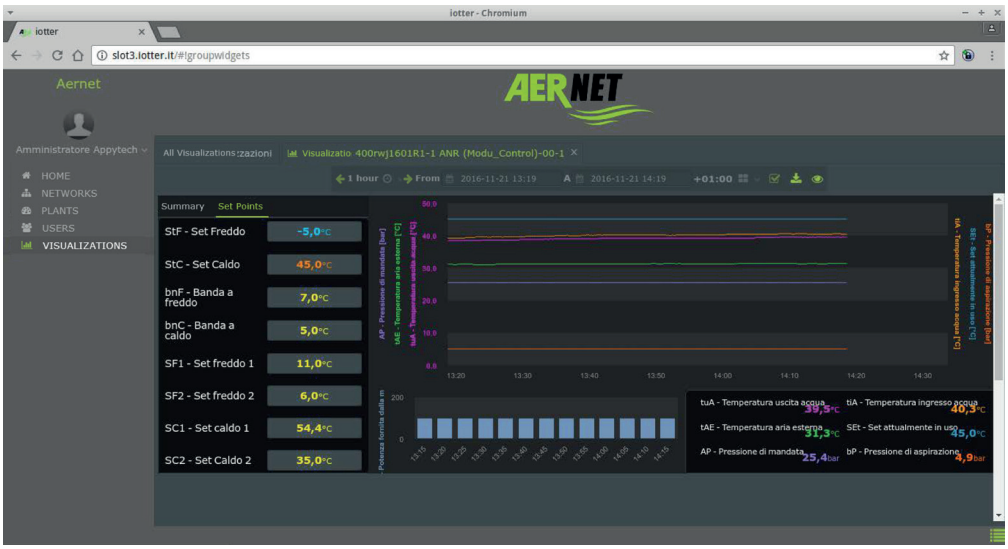


Fig. 69: AERNET - Aernet Pro Display

Clicking on the "Set Point" folder on the left shoulder of the widget, shows up to eight settable set-points. The current parameter value is shown in the right box of the parameter label. Clicking on the box opens a pop-up where to set a new value for the setpoint.

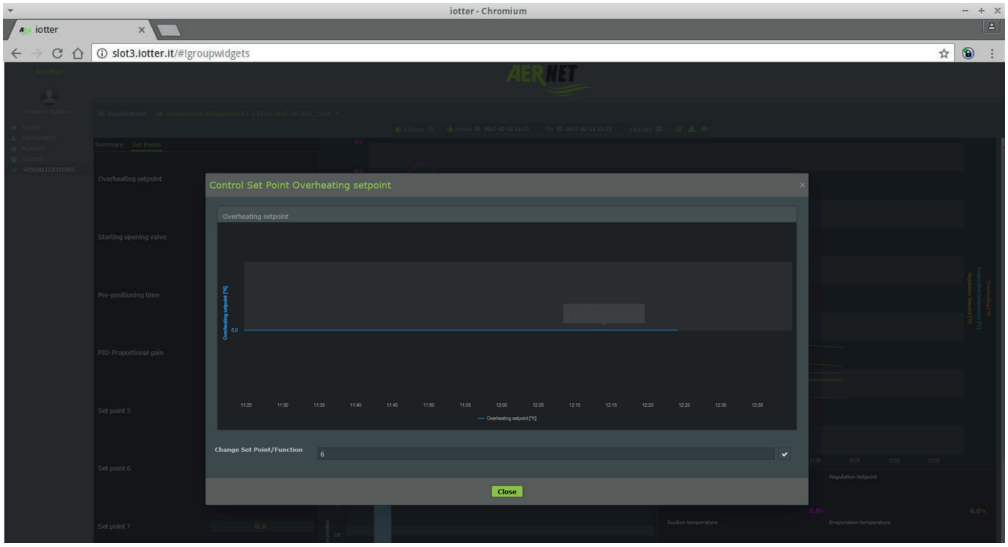


Fig. 70: AERNET - Aernet Pro Display

The pop-up shows a graph of the last trend in real time of the parameter in the last 15 minutes. So you can change the parameter value.

If default values have been set for the parameter, the pop-up shows in a combo box a list of values.

If values are not set for the parameter, the user can set a value within the maximum and minimum limits defined for the parameter.

After setting the value, click on the right tick ✔ and the change is applied.
The graph will show in real time if the made change is applied.

⚠ When a AERNET Router is disassociated from a network, while the displays created in the network are disassociated from all Real Systems connected to the Router, the AernetPro displays created at the time of configuring the Real Systems remain connected to the related Real Systems.

3.8.2. Add Display

Clicking on the button "Add Display" ✚, opens as pop-up the wizard "Nuova Visualizzazione" (New Display), where you can create a new display.

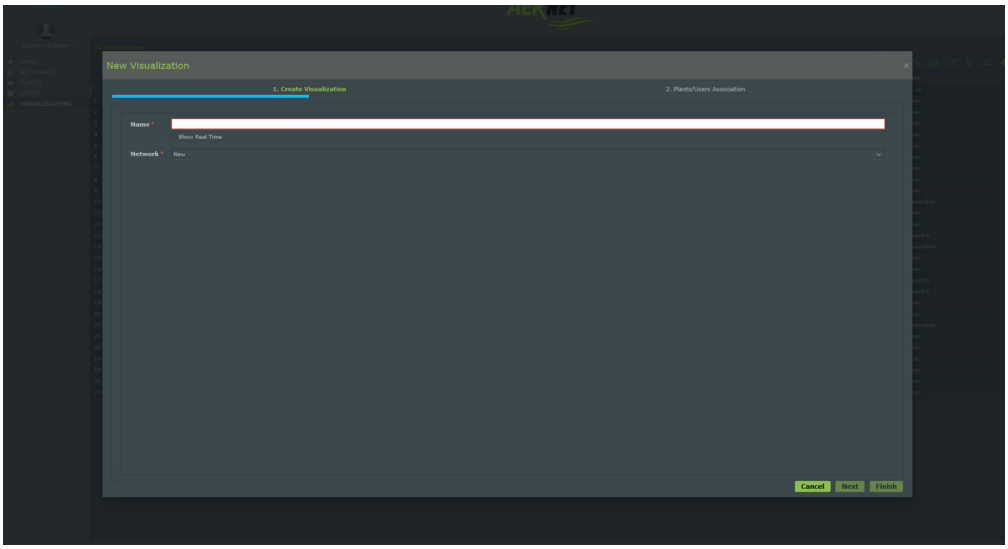


Fig. 71: AERNET - New Display

In the first step of the wizard, "Creazione" (Creation), the values settable in the form are:

- Nome (Name): it is the name assigned to the display.
- Mostra Tempo Reale (Show Real Time): by ticking this flag ☑, the display is set in "Real Time". The displayed data is updated to follow the trends in real time, of the displayed sizes.

- Rete (Network): network in which the display is defined. Clicking opens a list from where to select the network ❮.

In the displays set in "Real Time", the user interface updates the displayed values approximately every 30 seconds.

The buttons available on the form are:

- "Annulla" (Cancel): closes the wizard.
- "Avanti" (Forward): goes to the second step of the wizard.

In the second step of the wizard, "Associa Impianti/Utenti" (Associate Systems/Users), the Real Systems and the users of the network set to be associated with the displays, are set.

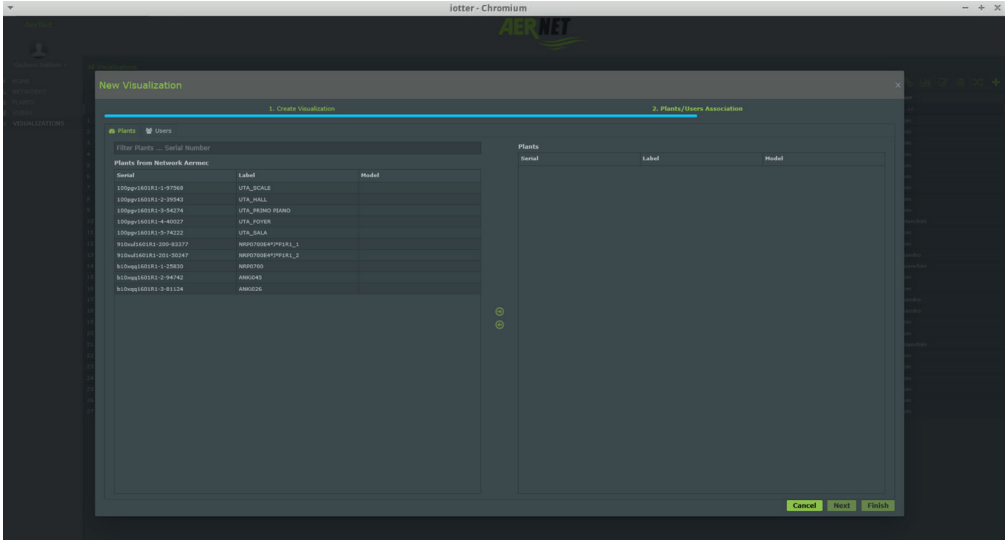


Fig. 72: AERNET - New Display

In the tab Systems:
The following two columns show, on the left, "Impianti Della Rete" (Network Systems), the list of Real Systems present in the network, and in the right column, "Impianti Associati" (Systems Associated), the list of Real Systems already associated with the display.
Using the two arrows ❯ and ❮, you can move the systems between columns, associating or disassociating them with the display.

⚠ It is not possible to create a display not associated with any Real System.

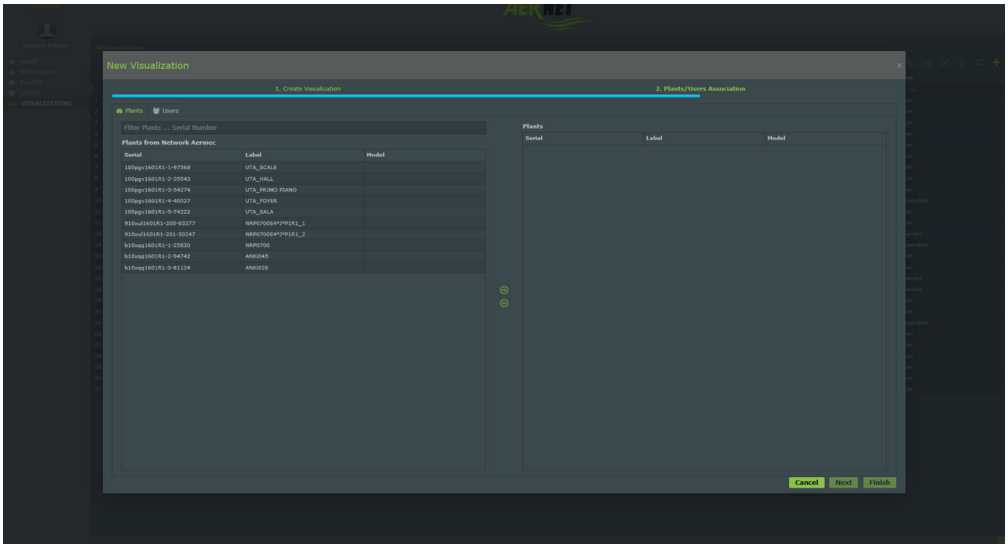


Fig. 73: AERNET - New Display

In the tab Users:
The left column, "Utenti della Rete" (Network Users), lists the basic users of the network. The top of the right column, "Utenti Associati" (Associated Users), lists the basic users associated with the display.

Clicking on the list on the left allows you to select a user and using the central arrow → you can associate it with the display.
Clicking on the list on the right allows you to select a user and using the central arrow ← you can disassociate it from the display.

The bottom of the right column, "Amministratori" (Administrators), shows the network administrator and the list of super users of the network. By default, the display created in a network is always associated with the administrator and all "super user" of the network.

The buttons available on the form are:

- "Annulla" (Cancel): closes the wizard.
- "Salve" (Save): clicking the key creates the new set display.

The display creation wizard opens a page with a grid, which represents the layout on which the display is built.

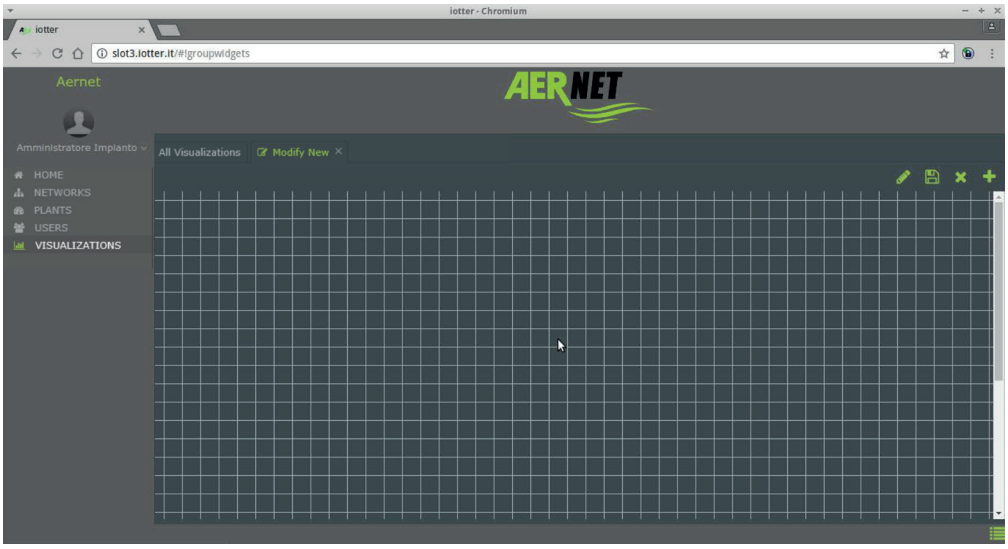


Fig. 74: AERNET - New Display

From this page the instructions to continue creating a display, are described in the chapter relating to the function "Edit Display".

3.8.3. Associations

Clicking on "Associations1" in the Displays section, opens a pop-up from which you can associate to the display basic users not yet associated, or disassociate basic users already associated.

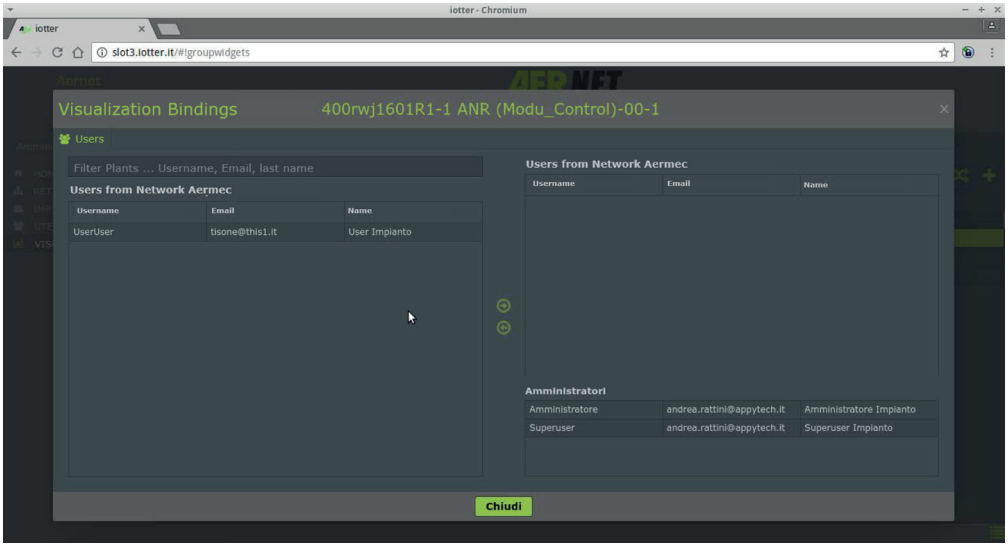


Fig. 75: AERNET - Displays Section - Associations

The left column, "Utenti della Rete" (Network Users), lists the basic users not associated with the display. The top of the right column, "Utenti Associati" (Associated Users), lists the basic users associated with the alarm notification.

Clicking on the list on the left allows you to select a user and using the central arrow → you can associate it with the display.

Clicking on the list on the right allows you to select a user and using the central arrow → you can disassociate it from the display.

The bottom of the right column, "Amministratori" (Administrators), shows the network administrator and the list of super users of the network. By default, the displays are always associated with the administrator and all "super user" of the network.

3.8.4. Remove Display

Clicking on "Remove Display" , opens a pop-up that asks for confirmation of the elimination of the display: "Vuoi Rimuovere la Visualizzazione?" (Do you want to Remove the Display?), which shows the name of the display.

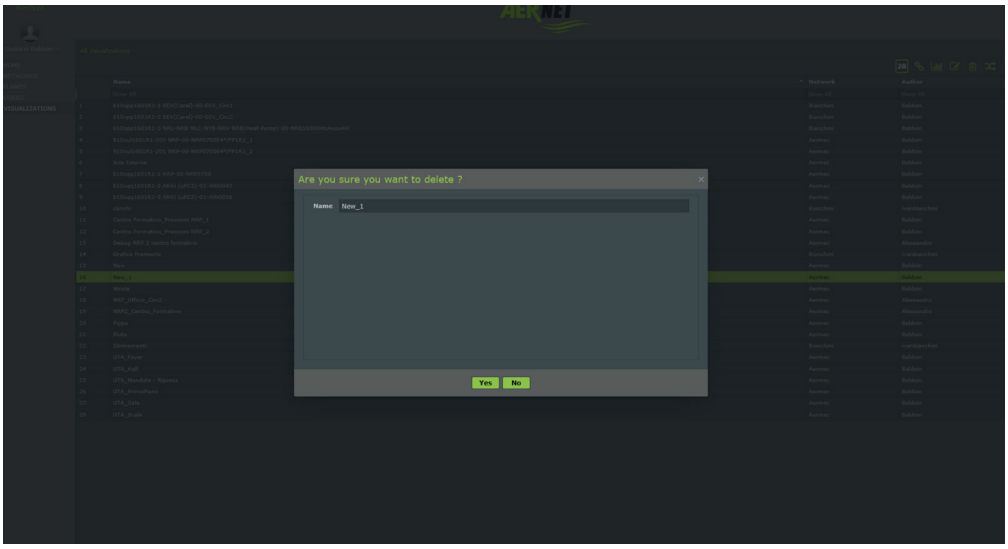


Fig. 76: AERNET - Displays Section - Remove Display

The buttons available on the form are:

- Sì (Yes): clicking on "Sì" (Yes) runs the operation.
- No: by clicking on "No" the operation is abandoned.

3.8.5. Display

Clicking on "Display" opens the display in a new tab on the current page.

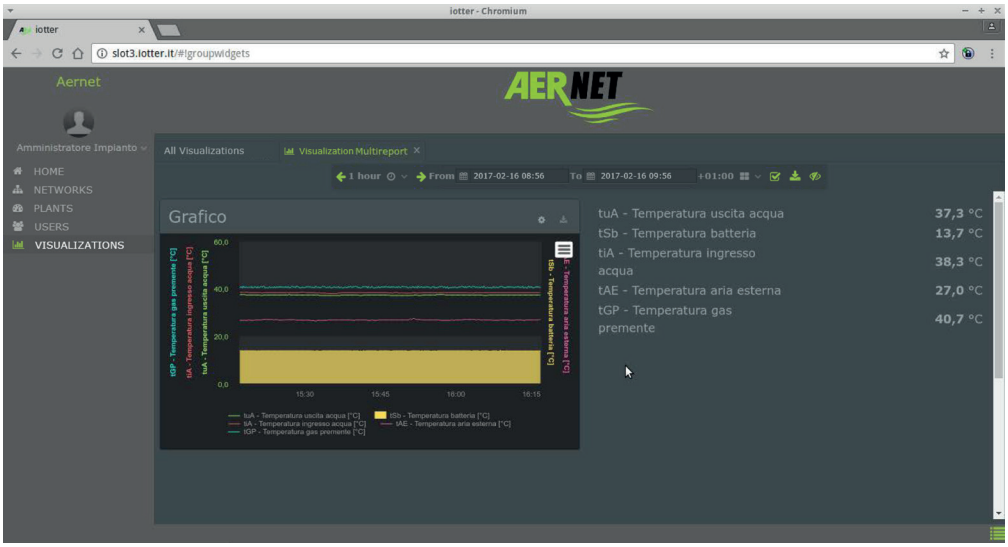


Fig. 77: AERNET - Displays Section - Display

The different graphic widgets are displayed. Scrolling over the right scroll-bar of the display, scrolls through any graphic widgets that are not visible.

Below are detailed some general aspects of a display:

- Navigation Bar of the display
- Navigation bar of the widget
- Graph axes
- Key of Graphs
- Zoom Function

3.8.5.1. Navigation Bar of the Display

At the top of each display there is a main navigation bar of the display.

Real Time

The first icon to the right is the display in "Real Time". The graphs are set on a time window for the last hour. The web page is updated approximately every 30 seconds, refreshing all values in the display widgets.
The plotted reports in the display are scrolled to the left as time goes by (floating window).

When active, you cannot change the other elements of the navigation bar. Clicking on the "Real Time" icon disables it .
You can now set some elements on the navigation bar.

Report window

Clicking on the window icon lowers a drop-down where to select the different display periods.
The periods available are:

- Last Hour
- Last 6 Hours
- Last 24 Hours
- Last Week
- Last Month
- Last Year

The setting is applied immediately.

If wanting to set a different display window, you can also set the values on two boxes "from" and "to" by clicking and manually changing the values, or click on the calendar symbol and use the drop-down to set start and end date and time of the display window of the reports. To apply the settings made, you must click on the icon "apply" ✔.

Scrolling

By clicking on the two left arrows in the bar ← and →, you can scroll the report forward or backward in the time of the dimension given between the two arrows.

By clicking on the clock icon you can change the scrolling dimension on a drop-down menu applied by the arrows. The settable values are:

- 1 minute
- 5 minutes
- 15 minutes
- 1 hour
- 6 hours
- 1 day
- 1 week
- 1 month

Export

Clicking on "Export" opens the pop-up to export the data on the display.

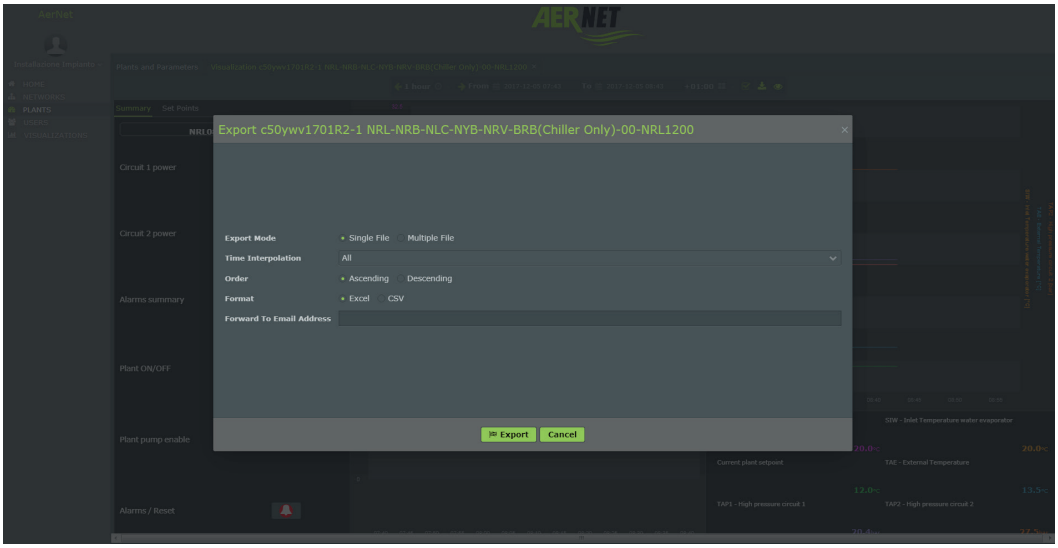


Fig. 78: AERNET - Display - Export Graph

The export involves all parameters shown in a display, in the period of the time window displayed. The options available are:

- Modalità Export (Export Mode): You can export all parameters on a single file, or export a single file for each parameter.
- Ordinamento (Sorting): sets the temporal ordering of the samples (Ascendente, Discendete (Ascending, Descending)
- Formato (Format): sets the exported file format (Excel, Comma Separated Values)
- Impostazione Temporale (Timeline): sets the temporal fineness of the sample export. Clicking on opens a combo list from where to select the different options

⚠ Tutto (All): the parameters are represented to maximum allowed resolution (raw data), according to the Modbus reading frequency set on the slaves (Real Systems) associated with the display.

15 Minuti (Minutes): the samples are aggregated in one data every 15 minutes

1 Ora (Hour): the samples are aggregated in one data every hour

1 Giorno (Day): the samples are aggregated in one data every Day

***Inoltra A Indirizzo Email* (Forward To E-mail Address): An e-mail address can be entered to which the export file will be sent.**

Clicking on "Conferma" (Confirm) runs the operation.
By clicking on "Annulla" (Cancel) the operation is abandoned.

The "Export" function is run "in batch", that is the user can continue to work on the interface.

When the result is ready, the user is alerted by a pop-up "Export Completato" (Export Completed) containing the export file name. Clicking on the file name launches the file download on the user's PC.
The file is compressed in "zip." format The name consists of the name of the display and the date of export.

3.8.5.2. Layout of graphs

For all widgets displaying a graph (Multi-trace, Histogram, AernetPro, Tandem), there are some common behaviours.

To facilitate interpretation, the graphs are always drawn on a background with bands of two shades of grey.

Moving the mouse over a trace on the graph shows the sample marker on the closest trace, with a white pop-up that provides, on two lines, precise information on the sample of the relative parameter:

First line

- Reading date and time of the sample.
- Label of the relative system.

Second line

- Sample marker (e.g. "•"), in the colour represented on the graph.
- Parameter label.
- Unit of measurement of the parameter.
- Sample value.

3.8.5.3. Graph axes

In the widgets displaying a graph (Multi-trace, Histogram, AernetPro, Tandem), the System automatically determines a setting for the value axes (ordinates).

For graphs with only one parameter, the axis is shown on the left of the graph, indicating the values of the two ends, and some intermediate values. The parameter label is written vertically on the left of the axis, in the colour of the parameter trace.

For graphs with several parameters, the System uses only one axis, taking the maximum variation amplitude of the samples of the different plotted parameters. The labels of the plotted parameters are written vertically on the right and left of the report, in the colour of the parameter trace.

With regard to the ends of the sample axes (ordinates), the settings can be changed during the creation or editing of the display.

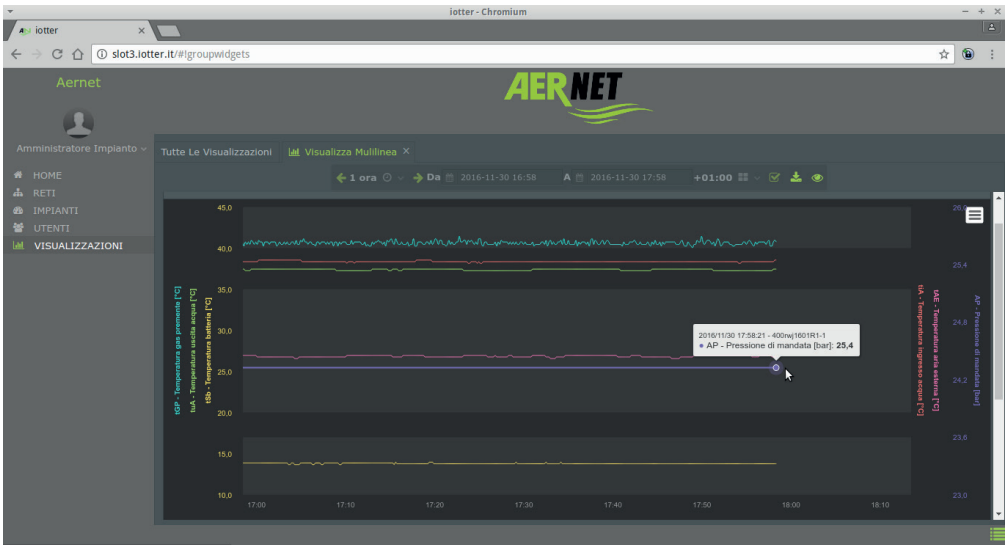


Fig. 79: AERNET - Display - Graph axes

In this example, for the parameter plotted in blue, the ends of the axes have been removed and in the graph its axis has been shown separately, on the right, with nearby, vertically, the parameter label.

3.8.5.4. Key of Graphs

In some of the widgets displaying a graph (Multi-trace, Histogram, Tandem), the System automatically shows a key of the parameters plotted on the bottom of the graph.

For each parameter are shown:

- a graphic element in the colour of the parameter trace in the graph (line for parameters shown as traces, rectangle for parameters shown as area or for the parameter of an histogram
- parameter label (blank)
- unit of measurement of the parameter

By clicking the key on a parameter label, the parameter trace is removed from the graph and the label in the key is set in grey (parameter disabled).
By clicking the key on a disabled parameter, this goes back to being enabled and its trace is redrawn on the graph.

By enabling or disabling traces, the System redraws the graph adapting the axis of the ordinates to the sample values of the active parameters.

This function may be useful to isolate a trace(s) for which special attention is required.

3.8.5.5. Zoom Function

By clicking within a report and moving holding the mouse (left mouse button), you can select a time area of the report, which is highlighted on the graph with a grey/blue band.
By releasing the mouse, the report is "zoomed" in the selected area, namely the two temporal ends of the selected area become the two ends of the graph, and the graph is redrawn.

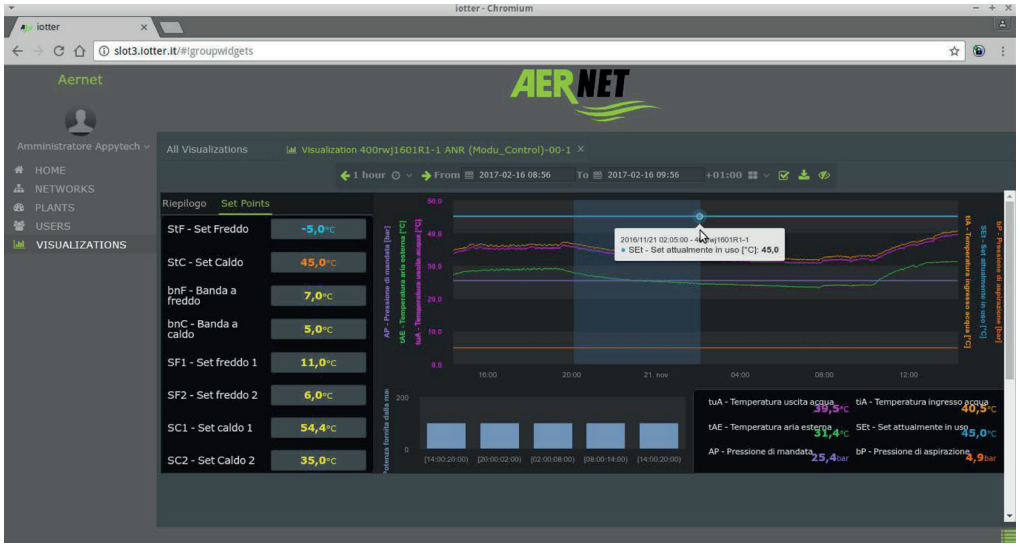


Fig. 80: AERNET - Display - Zoom function

The zoom is applied locally to the individual widget involved. If working on the main control bar of the display, all display widgets, including the zoomed one, go back to the time window set on the main bar.

The zoom function does not work on displays or individual widgets set in Real Time. If you want to apply it, firstly stop the real time (click on icon) .

3.8.6. Display (as link)

Clicking on "Display" opens the display (as link) o n a new page.

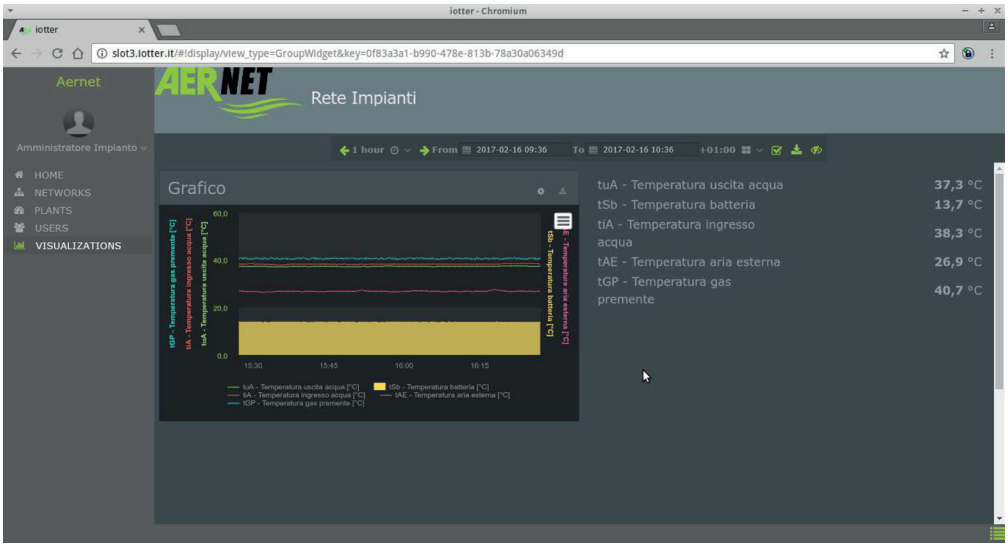


Fig. 81 : AERNET - Displays Section - Display as link

In the event of a display defined in a "Public" network, the URL in the browser address bar can be used to access the display even from web pages outside the platform, and also made available to users who are not logged on the system.

3.8.7. Edit Display

Clicking on "Edit Display", opens a grid in a new tab on the current page, representing the layout on which the display is built.

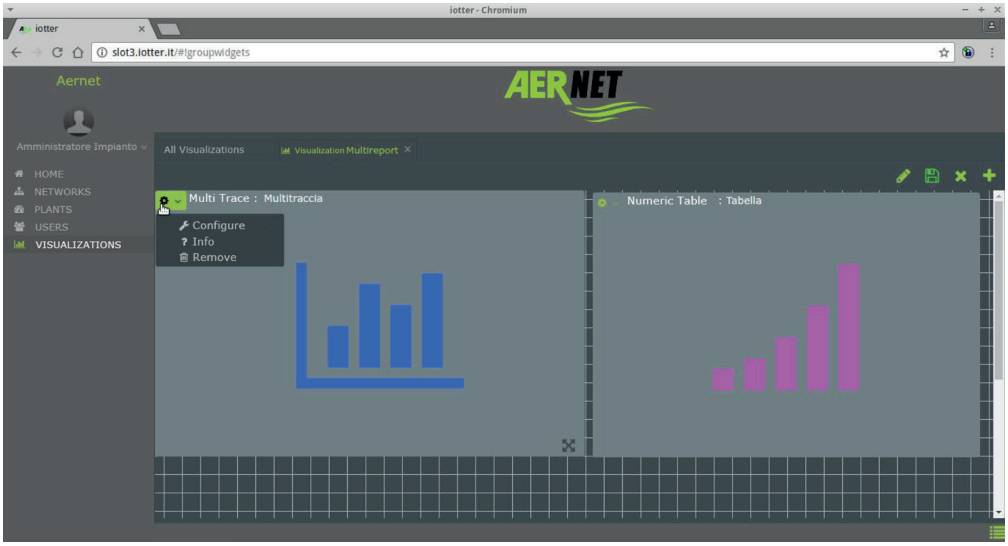


Fig. 82 : AERNET - Edit Display

A display may be composed of one or more graphs/widgets. On the page the graphs/widgets already in the display, are shown as grey boxes with an icon in the middle that represents the type of instantiated widget:

- Multi-trace
- Histogram
- Table
- Numeric Value
- Label
- Embedded
- AernetPro
- Tandem

Each grey box represents the dimension occupied on the screen by the widget.

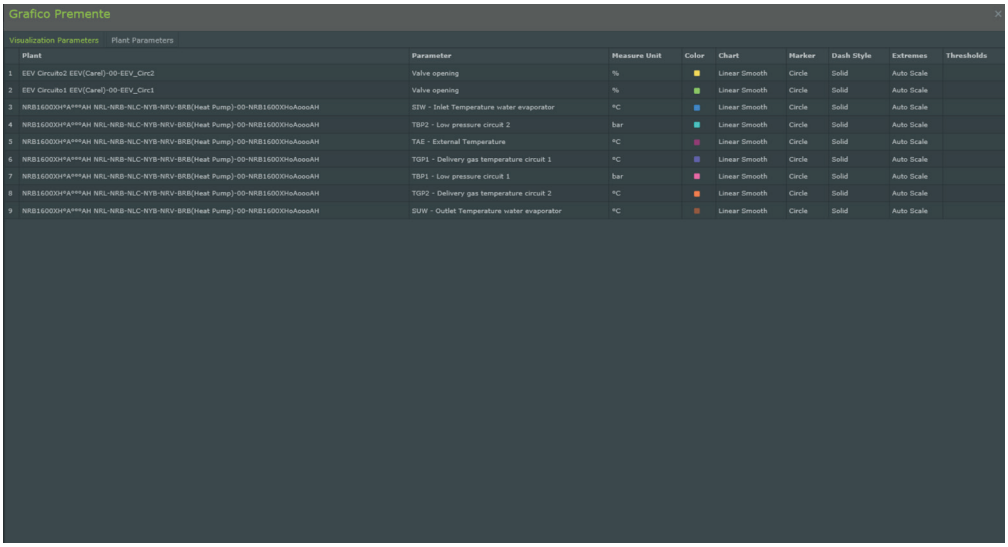
Holding the mouse clicked over the box area and moving it, you can drag the box to another location on the screen.

By positioning the mouse on the bottom-right corner of the box, the mouse pointer changes (arrow down towards the right corner). By clicking you can resize the box, and so the space on the screen occupied by the widget.

Placing the mouse on the ring nut icon on the top-left corner of the box representing a widget, a menu opens with:

- "Configuration"
- "Information" ?
- "Delete"

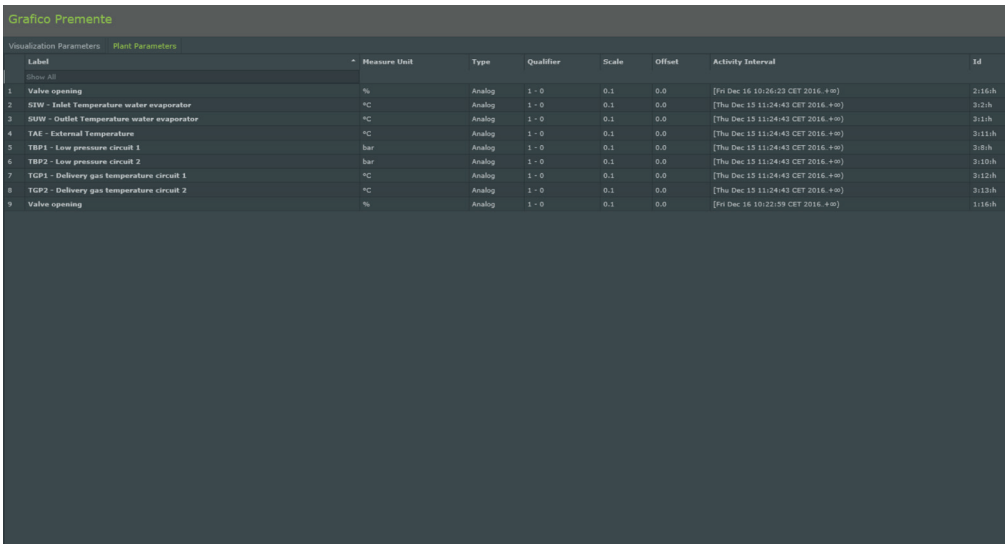
Clicking on "Information" ?, opens a pop-up containing detailed information of the widget settings.



	Plant	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	EEV Circuito2 EEV(Carel)-00-EEV_Circ2	Valve opening	%		Linear Smooth	Circle	Solid	Auto Scale	
2	EEV Circuito1 EEV(Carel)-00-EEV_Circ1	Valve opening	%		Linear Smooth	Circle	Solid	Auto Scale	
3	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	SIW - Inlet Temperature water evaporator	°C		Linear Smooth	Circle	Solid	Auto Scale	
4	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	TBP2 - Low pressure circuit 2	bar		Linear Smooth	Circle	Solid	Auto Scale	
5	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	TAE - External Temperature	°C		Linear Smooth	Circle	Solid	Auto Scale	
6	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	TGP1 - Delivery gas temperature circuit 1	°C		Linear Smooth	Circle	Solid	Auto Scale	
7	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	TBP1 - Low pressure circuit 1	bar		Linear Smooth	Circle	Solid	Auto Scale	
8	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	TGP2 - Delivery gas temperature circuit 2	°C		Linear Smooth	Circle	Solid	Auto Scale	
9	NRB1600XH*A***AH NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-00-NRB1600XHoAoooAH	SUW - Outlet Temperature water evaporator	°C		Linear Smooth	Circle	Solid	Auto Scale	

Fig. 83 : AERNET - Edit Display - Information

The first tab of the pop-up "Parametri grafico" (Graph parameters) lists the graphic features associated with the parameter traces.



	Label	Measure Unit	Type	Qualifier	Scale	Offset	Activity Interval	Id
	Show All							
1	Valve opening	%	Analog	1 - 0	0.1	0.0	[Fri Dec 16 10:26:23 CET 2016.+∞)	2:16:h
2	SIW - Inlet Temperature water evaporator	°C	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:2:h
3	SUW - Outlet Temperature water evaporator	°C	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:1:h
4	TAE - External Temperature	°C	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:11:h
5	TBP1 - Low pressure circuit 1	bar	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:8:h
6	TBP2 - Low pressure circuit 2	bar	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:10:h
7	TGP1 - Delivery gas temperature circuit 1	°C	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:12:h
8	TGP2 - Delivery gas temperature circuit 2	°C	Analog	1 - 0	0.1	0.0	[Thu Dec 15 11:24:43 CET 2016.+∞)	3:13:h
9	Valve opening	%	Analog	1 - 0	0.1	0.0	[Fri Dec 16 10:22:59 CET 2016.+∞)	1:16:h

Fig. 84 : AERNET - Edit Display - Information

The second tab of the pop-up "Parametri Impianto" (System Parameters) lists the features of the parameters associated with the widget. The shown information can be adapted depending on the type of graphic widget. This function does not show information in case of "Label" widget.

Clicking on "Delete", opens a pop-up requesting confirmation of the deletion of the widget.

Clicking on "Configuration" opens a pop-up "Modifica Grafico" (Edit Graph) specific for each different type of widget, where you can change all widget features (associated parameters, graphic features of the traces, etc.).

These pop-ups are similar to those of "Nuovo Grafico" (New Graph) shown in the next paragraph, which has the function "Add Graph" ✚ available on the page " Edit Display".

The main functions available on the page "Edit Display" are:

- "Edit" (✎)
- "Save Display" (💾)
- "Cancel" (✖)
- "Add Graph" (✚)

Clicking on "Save Display" 💾 saves all changes made to the display and the tab Edit Display" is closed.
Clicking on "Cancel" 💾 looses all changes made to the display and the tab Edit Display" is closed. The same occurs if you click on the header of the tab Edit Display", on icon ✖.

3.8.8. Edit

Clicking on "Edit" ✎ on the "Edit Display" page, opens the "Edit" pop-up where you can change some aspects of the display.

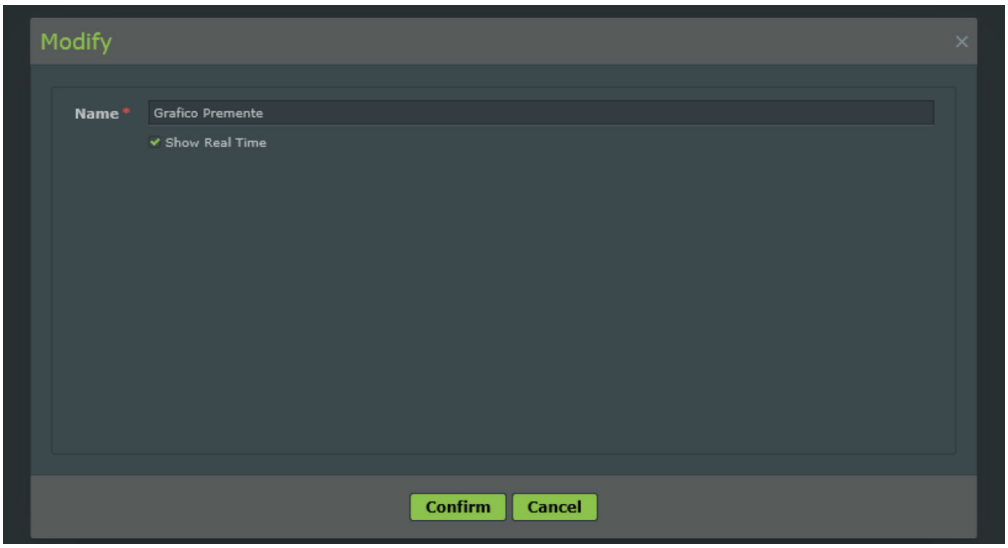


Fig. 85 : AERNET - Edit Display - Edit

The settable data are:

- Nome (Name): name of the display.
- Mostra Tempo Reale (Show Real Time): by ticking this flag ☑, the display is set in "Real Time". The displayed data is updated to follow the trends in real time, of the displayed sizes.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the set changes.
- "Annulla" (Cancel): abandons the changes.

3.8.9. Add Graph

Clicking on "Add Graph" ✚ on the "Edit Display" page, opens the pop-up "Aggiungi Grafico" (Add Graph) where you can select a new graphic widget to be inserted on the display.

Fig. 86 : AERNET - Edit Display - Add Graph

There are many graphic widgets/reports available:

- Multitraccia (Multi-trace): allows viewing up to 10 different parameters on a graph.
- Istogramma (Histogram): allows plotting the histogram of a parameter.
- Valore Numerico (Numeric Value): is the instantaneous value of a parameter.
- Tabella Numerica (Numeric Table): represents label and value of several parameters (up to 10) in a synoptic.
- Etichetta (Label): represents a fixed label on the display.
- Embedded: allows creating a "scada like" display on an image, showing instantaneous values and labels of system parameters (up to 10).
- AernetPro: the AernetPro widget may be itself inserted to compose another display.
- Multitraccia Tandem (Multi-trace Tandem): represents groups of analog parameters and groups of digital parameters, on two different graphs, aligned. Up to 10 parameters can be plotted.

After selecting the type of graphic widget/report, a pop-up opens that allows setting the required widget.
If the report requires you to select one or more parameters, the administrator is prompted to select from those available in the systems associated with the display.
The administrator can set the report by entering a name and some features that depend on the selected report.
If the report required the choice of parameters, the administrator can set, for each selected parameter, the display features. Selecting a parameter and clicking on "Edit" opens a further pop-up where you can edit general criteria, colours type of lines and thresholds for the selected parameter.
Once a report is set, the layout screen displays the overall profile of the report.
Clicking on "Configure" shows a drop-down menu in the top-left corner of the report where, by selecting "Configure", you can re-edit the report settings.
By clicking on the bottom-right corner of the report, you can move or resize the report.
Obviously the process can be repeated by inserting more graphs/reports in the display.
By clicking "Save", the display is saved and is, therefore, listed among those as available.

The administrator can edit an already set display by clicking "Edit" in the Displays section.

3.8.9.1. Multi-trace

The "Multitraccia" (Multi-trace) widget is a graph where the trends of the values collected by the System of several parameters (up to 10), can be represented as traces.

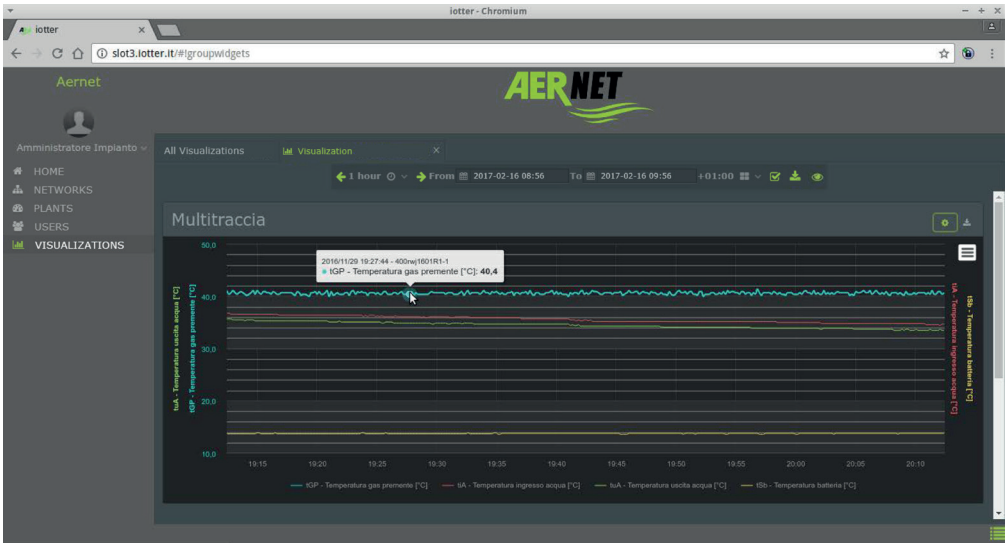


Fig. 87 : AERNET - Multi-trace display

Selecting the "Multitraccia" (Multi-trace) widget in the "Aggiungi Grafico" (Add Graph) pop-up opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can select up to 10 parameters from the Real Systems associated with the display.

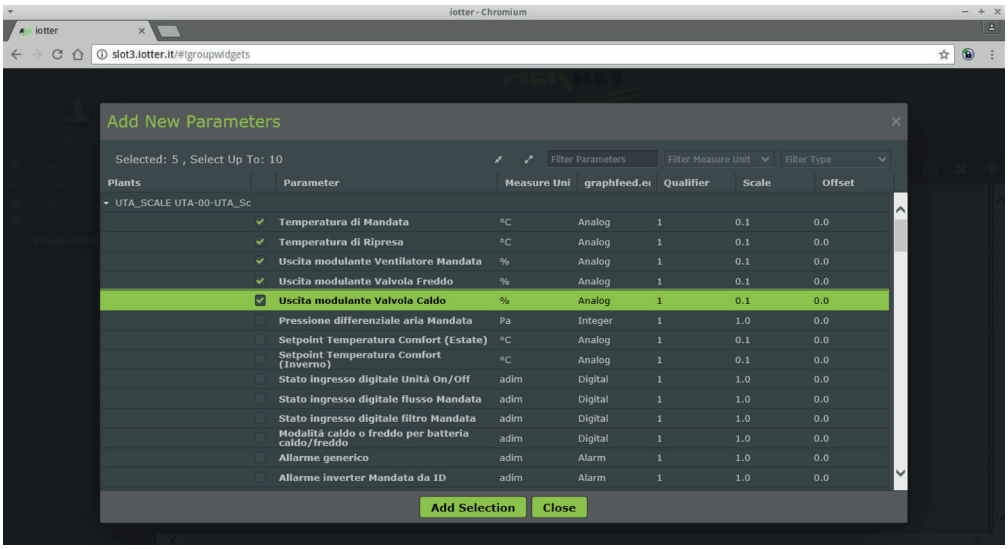


Fig. 88 : AERNET - Multi-trace - Add Parameters

The first column shows the list of Real Systems associated with the display.

When the system name is preceded by the symbol ▶ its parameters are not shown (compressed view), when it is preceded by the symbol ▼ the list of Real system parameters is shown in the following columns (expanded view).

The top-left header contains some elements to facilitate the selection:

- : clicking on this button compresses the displays of parameters of all Real Systems.
- : clicking on this button expands the displays of parameters of all Real Systems.
- Filtra per Nome Parametro (Filter by Parameter Name): click on this box to enter the initial text of the label of the parameter to be selected.
- Filtra per Unità di Misura (Filter by Unit of Measurement): click on this box to open a list from where to select the unit of measurement by which to filter the parameters (e.g. "bar").

- Filtra per Tipo (Filter by Type): click on this box to open a list from where to select the type of parameter to be selected. The types available are: Alarm, Analog, Digital, Integer.

The parameters to be included in the display are selected or deselected by clicking on the check in the second column of the pop-up ☑. A message warns the user if a number of parameters exceeding those available has been selected.

The buttons available on the form are:

- "Aggiungi" (Add): proceeds to the next step of inserting the widget.
- "Esci" (Exit): exits the insertion of the widget.

The "Nuovo Grafico" (New Graph) pop-up opens where the user can define the features of the newly inserted graphic widget.

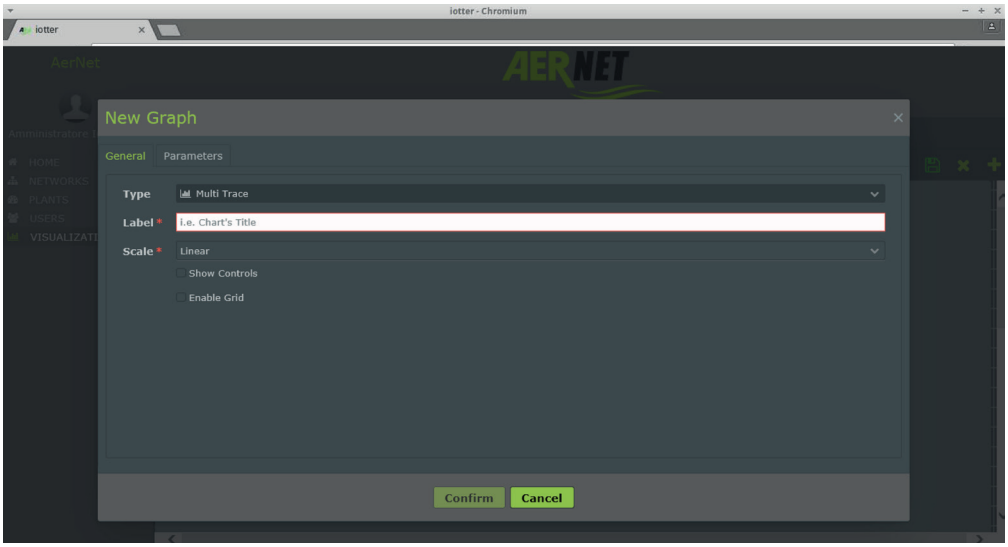


Fig. 89 : AERNET - Multi-trace - New Graph

The fields settable in the first tab of the pop-up, "Generale" (General), are:

- Etichetta (Label): insert the widget label that will be shown in the graph header.
- Scala (Scale): you can choose the axis scale of the ordinates ("y" axis) of the graph, between: Lineare (Linear), Logaritmica (Logarithmic). The logarithmic scale is indicated for certain types of sizes (e.g. to represent powers or sound intensity).
- Mostra Barra Controlli (Show Control Bar): if ticked ☑, the widget will have its own local control bar.
- Abilita Griglia (Enable Grid): if ticked ☑, an horizontal grid with grey bands will be active in the graph, to facilitate reading the graphs.

The buttons available on the form are:

- "Conferma" (Confirm): inserts the graphic widget in the first available position in the display grid, and goes back to the "Edit Display" page.
- "Annulla" (Cancel): exits the insertion of the widget.

The System assigns default features to the parameter traces. If you want to check how the traces are set or modify them, go to the second tab of the pop-up.

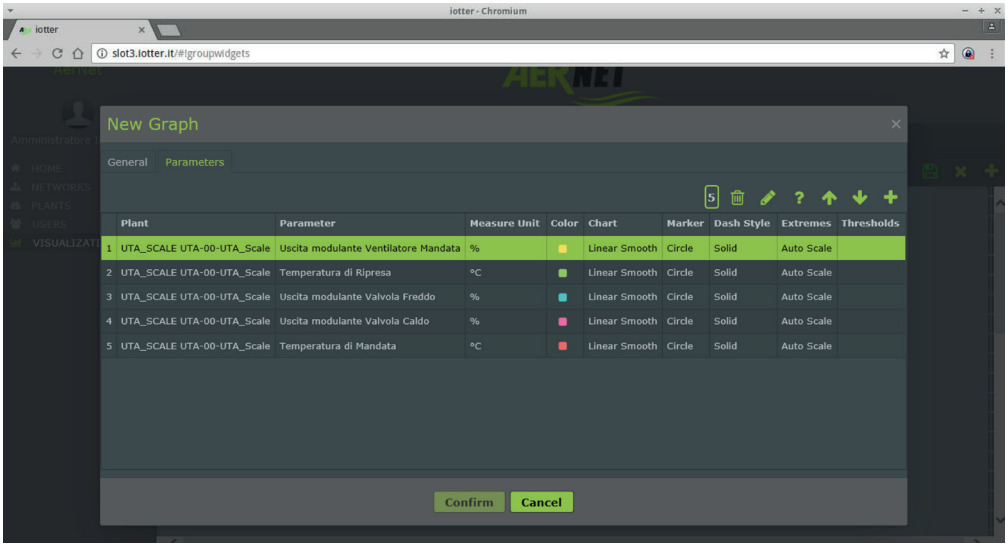


Fig. 90 : AERNET - Multi-trace - New Graph

The second tab of the pop-up, "Parametri" (Parameters), lists the parameters selected for the widget. From this tab you can intervene on the graph composition, edit the chosen parameters, their order and the features with which the parameter traces are drawn.
The fields in the table are:

- Impianto (System): system label.
- Parametro (Parameter): parameter label.
- Unità di Misura (Unit of Measurement): unit of measurement of the parameter.
- Colore (Colour): colour assigned to the parameter trace.
- Grafico (Graph): type of graph.
- Marcatore (Marker): sample marker in the trace.
- Stile Linea (Line Style): style of trace drawing.
- Estremi (Ends): vertical scale on which the parameter is represented.
- Soglie (Thresholds): any threshold lines inserted in the graph.

By default, the System assigns one of the colours available to the trace that will represent the parameter, and sets the Graph to "Lineare Smussato" (Linear Bevelled), the Marker to "Circolo" (Circle), the Line Style to "Intera" (Full), the Ends to "Scala Automatica" (Automatic Scale), no Threshold.

The functions available in the tab are:

- "Remove"
- "Edit"
- "Info"
- "Move Up"
- "Move Down"
- "Add"

The "Move Up" and "Move Down" functions allow changing the order in which the parameters are listed on the graph.

The function "Remove" opens the pop-up "Vuoi rimuovere il Parametro?" (Do you want to remove the Parameter?)

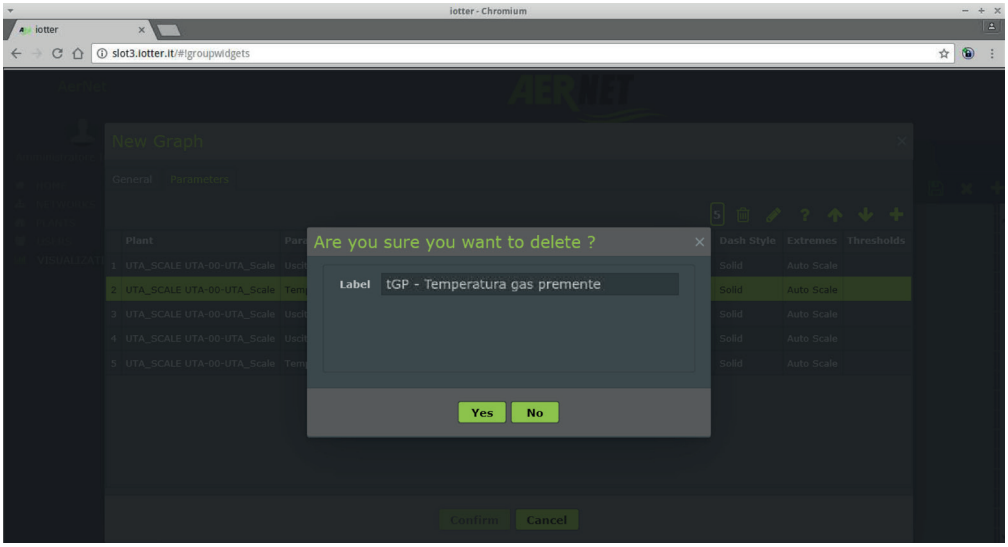


Fig. 91 : AERNET - Multi-trace - Parameter Removal

The label of the parameter to be removed is displayed.
The buttons available on the pop-up are:

- "Sì" (Yes): proceed to delete the parameter from the graph.
- "Annulla" (Cancel): exits the deletion of the parameter.

The function "Info" ? opens the detail pop-up of the selected parameter.

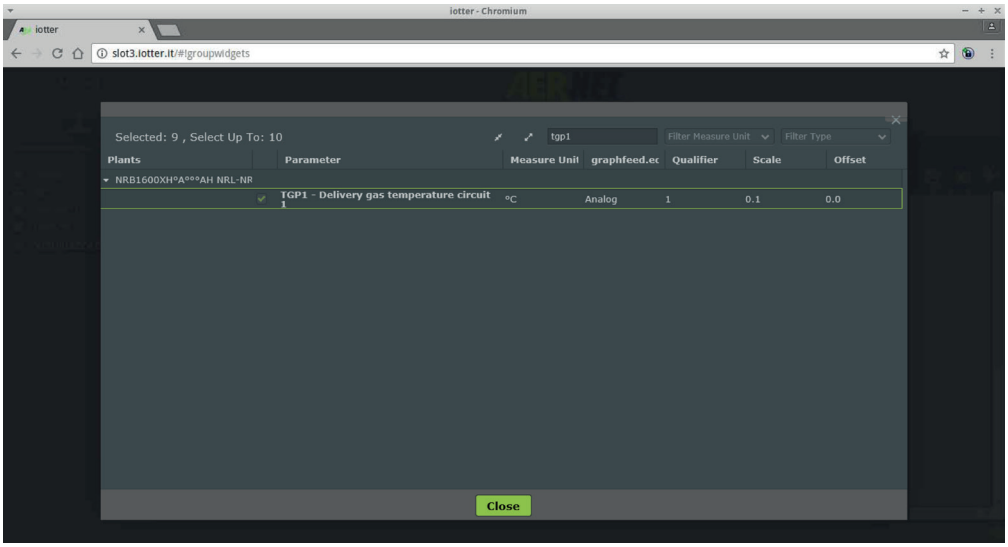


Fig. 92 : AERNET - Multi-trace - Parameter Information

This parameter cannot be modified.
The function "Edit" opens the pop-up "Opzioni Grafiche Parametro" (Parameter Graphic Options) of the selected parameter.

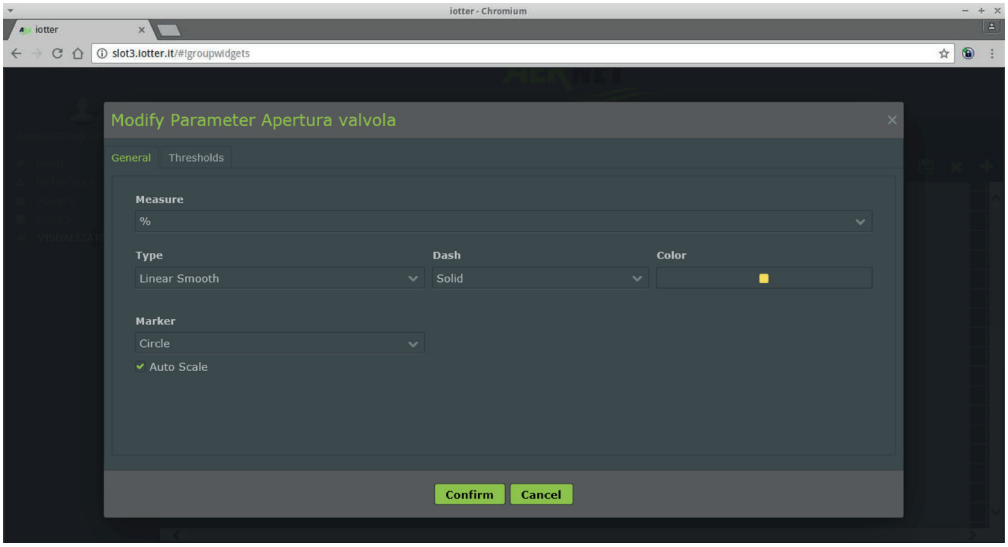


Fig. 93 : AERNET - Multi-trace - Parameter Graphic Options

The fields settable in the first tab of the pop-up, "Generale" (General), are:

- Tipo (Type): defines, through selection from a list, the type of graphic representation of the parameter. The values available are: "Lineare Smussato", "Lineare", "Area" (Linear Bevelled, Linear, Area).
- Tratto (Stroke): defines, through selection from a list, the stroke with which the parameter trace is represented on the graph. The values available are: "Intera", "Tratto", "Punto", "Tratto Corto", "Tratto Lungo", "Tratto Punto", "Tratto Punto Lungo" (Full, Stroke, Dot, Short Stroke, Long Stroke, Dot Stroke, Long Dot Stroke).
- Colore (Colour): allows you to define, through selection from a list, the colour that is associated with the parameter trace in the graph. There are 16 colours available.
- Marcatore (Marker): defines, through selection from a list, the graphic element with which a sample on the parameter trace is represented on the graph. The values available are: "Diamante", "Triangolo", "Triangolo Giù", "Quadrato", "Circolo" (Diamond, Triangle, Down Triangle, Square, Circle).
- Scala Automatica (Automatic Scale): when the checkbox is ticked ☑ , the axis scale of the parameter samples (ordinates) on the graph is automatically generated by the System. When unchecked ☐, two fields appear "Estremo Inferiore" (Lower End) and "Estremo Superiore" (Upper End), where the user can set the values of the axis ends.

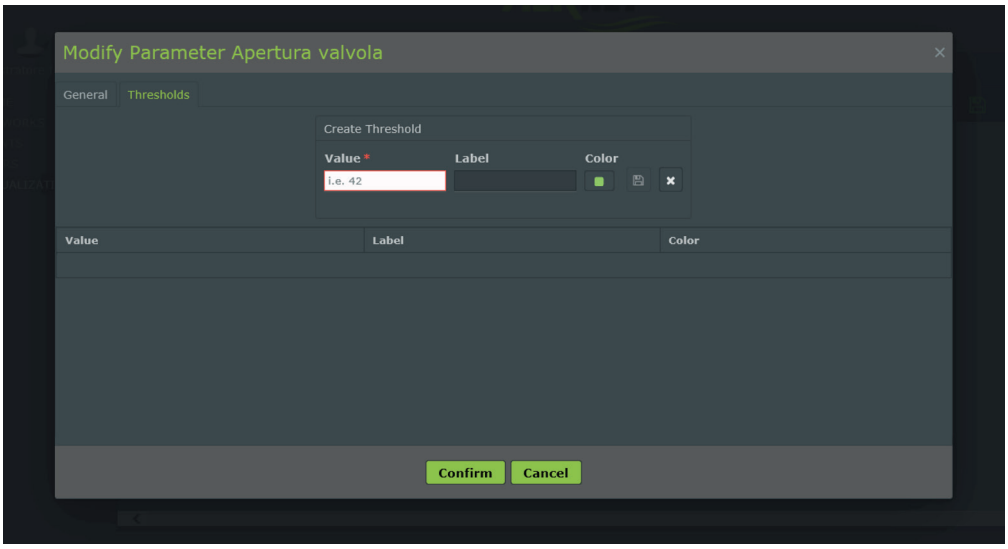


Fig. 94 : AERNET - Multi-trace - Thresholds

In the second tab of the pop-up, "Soglie" (Thresholds), you can create a threshold associated with a parameter, that is displayed on the graph with a line for which you can define:

- Valore (Value): threshold value.
- Etichetta (Label): label associated with the threshold.
- Colore (Colour): colour of the threshold trace.

- 🖫 : clicking on this button saves the threshold.
- 🗑 : clicking on this button (when a threshold is already set and is selected from the following list) deletes the threshold.
- ✖ : clicking on this button exits the threshold setting.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

The function "Add" ✚ re-opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can enter additional parameters from the Real Systems associated with the display.

3.8.9.2. Histogram

The "Istogramma" (Histogram) widget is a graph that represents, in the form of histogram, the trend of a parameter values collected by the System.

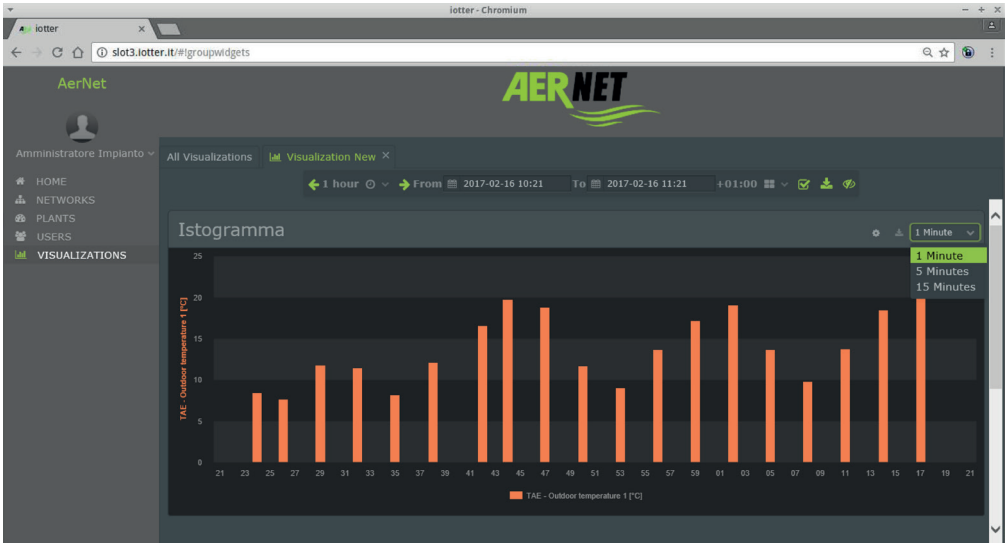


Fig. 95 : AERNET - Histogram Display

By clicking the top-right corner of the widget, you can choose on which time frame the histogram bars are built.

Selecting the "Istogramma" (Histogram) widget in the "Aggiungi Grafico" (Add Graph) pop-up, opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can select only one parameter from the Real Systems associated with the display.

The pop-up "Nuovo Grafico" (New Graph) is similar to that of the Multi-trace widget. Selecting the parameter in the tab "Parametri" (Parameters) and clicking on the function "Edit" , opens a pop-up "Opzioni Grafiche Parametro" (Parameter Graphic Options), specific for this widget.

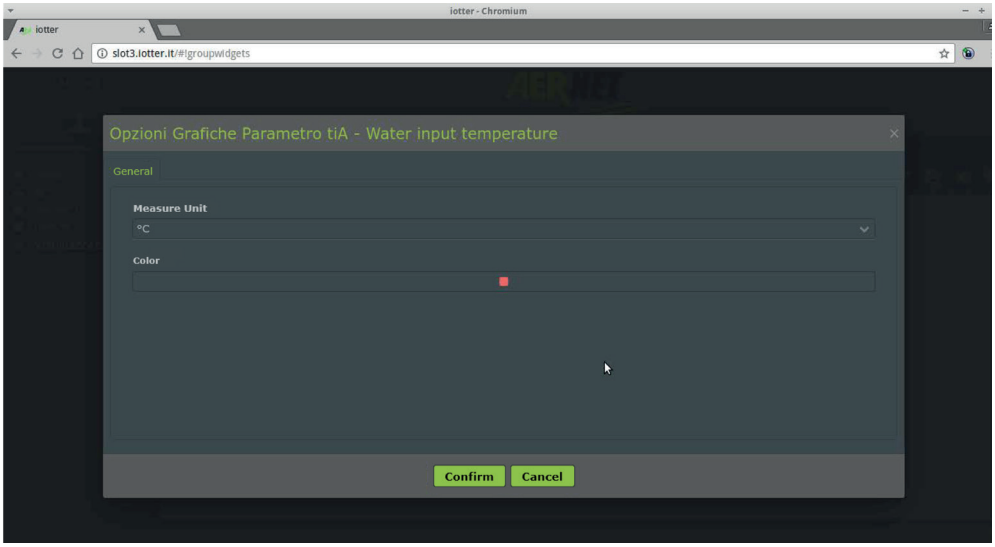


Fig. 96 : AERNET - Histogram - Parameter Graphic Options

The only configurable element is the histogram colour.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

3.8.9.3. Numeric Value

The "Valore Numerico" (Numeric Value) widget is the instantaneous value of a parameter with its label.

Selecting the "Valore Numerico" (Numeric Value) widget in the "Aggiungi Grafico" (Add Graph) pop-up, opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can select only one parameter from the Real Systems associated with the display.

The pop-up "Nuovo Grafico" (New Graph) is similar to that of the Multi-trace widget. Selecting the parameter in the tab "Parametri" (Parameters) and clicking on the function "Edit", opens a pop-up "Opzioni Grafiche Parametro" (Parameter Graphic Options), specific for this widget.

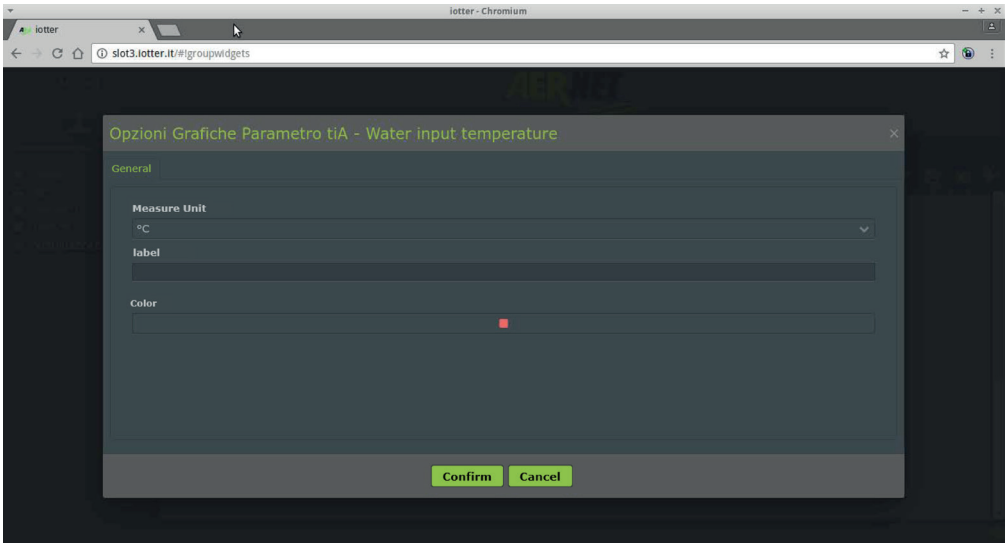


Fig. 97 : AERNET - Numeric Value - Parameter Graphic Options

The two settable elements are:

- Etichetta (Label): text associated in the report with the parameter value (replaces the parameter label)
- Colore (Colour): colour of the text string.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

3.8.9.4. Numeric Table

The "Tabella Numerica" (Numeric Table) widget represents label and value of several parameters (up to 10) in a synoptic.

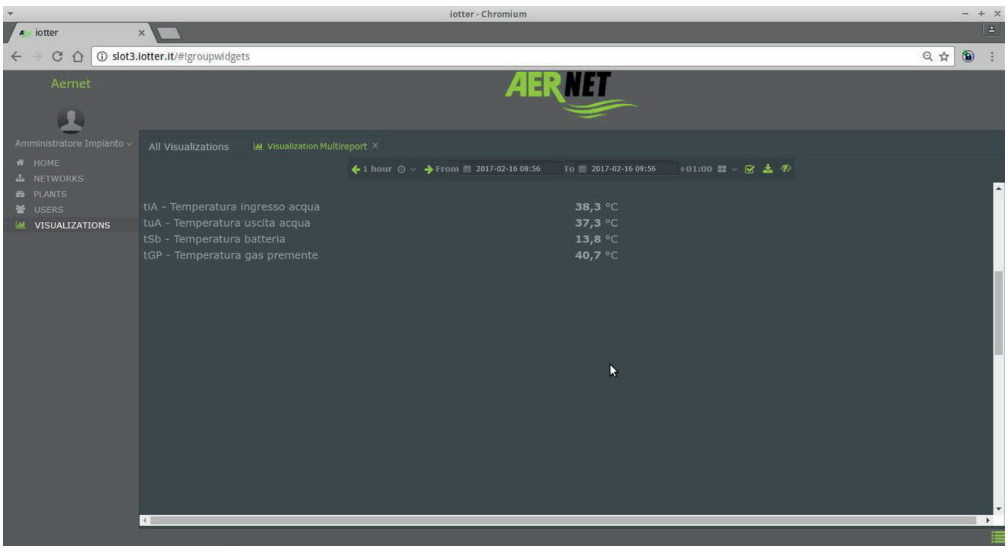


Fig. 98 : AERNET - Numeric Table Display

Selecting the "Tabella Numerica" (Numeric Table) widget in the "Aggiungi Grafico" (Add Graph) pop-up opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can select up to 10 parameters from the Real Systems associated with the display.

The pop-up "Nuovo Grafico" (New Graph) is similar to that of the Multi-trace widget. Selecting one of the parameters in the tab "Parametri" (Parameters) and clicking on the function "Edit" , opens a pop-up "Opzioni Grafiche Parametro" (Parameter Graphic Options), specific for this widget.

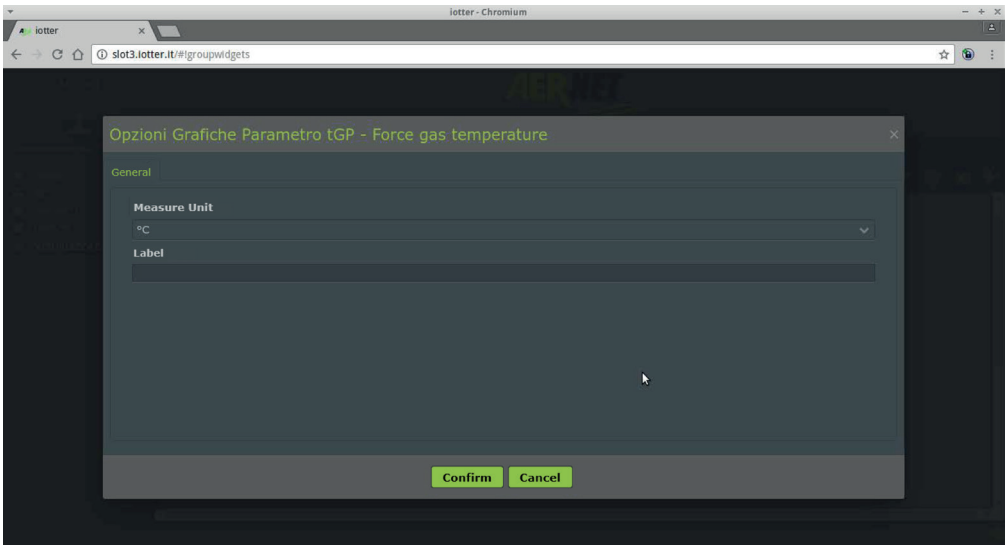


Fig. 99 : AERNET - Numeric Table Display

The only settable element is the label, that is the text associated in the report with the parameter value (replaces the parameter label).

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

3.8.9.5. Etichetta (Label)

The "Etichetta" (Label) widget represents a fixed label on the display.

Selecting the "Etichetta" (Label) widget in the "Aggiungi Grafico" (Add Graph) pop-up, opens a pop-up "Nuovo Grafico" (New Graph), specific for this widget.

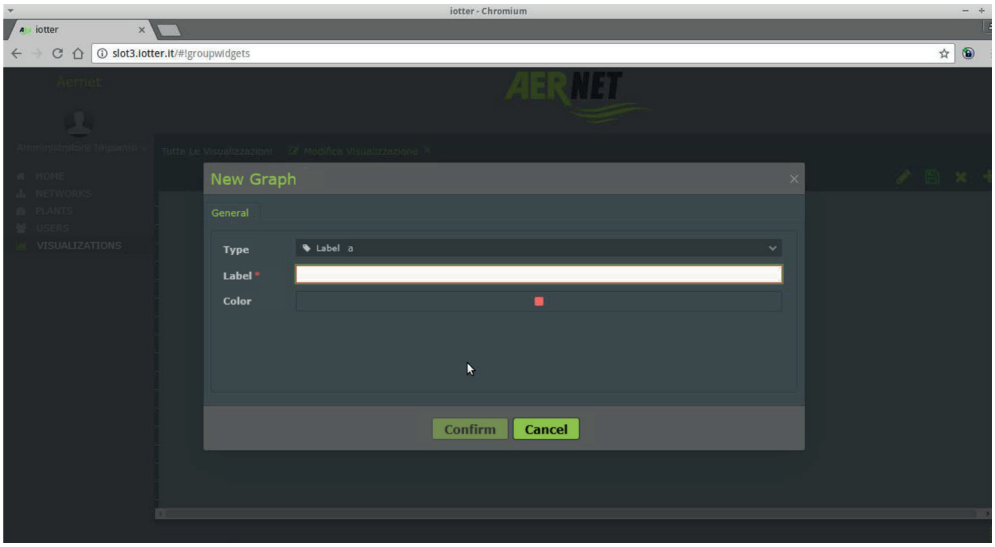


Fig. 100 : AERNET - Label

The two settable elements are:

- Etichetta (Label): text displayed in the report.
- Colore (Colour): text colour.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

3.8.9.6. Embedded

The "Embedded" widget allows creating a "scada like" display on an image, showing instantaneous values and labels of system parameters (up to 10).

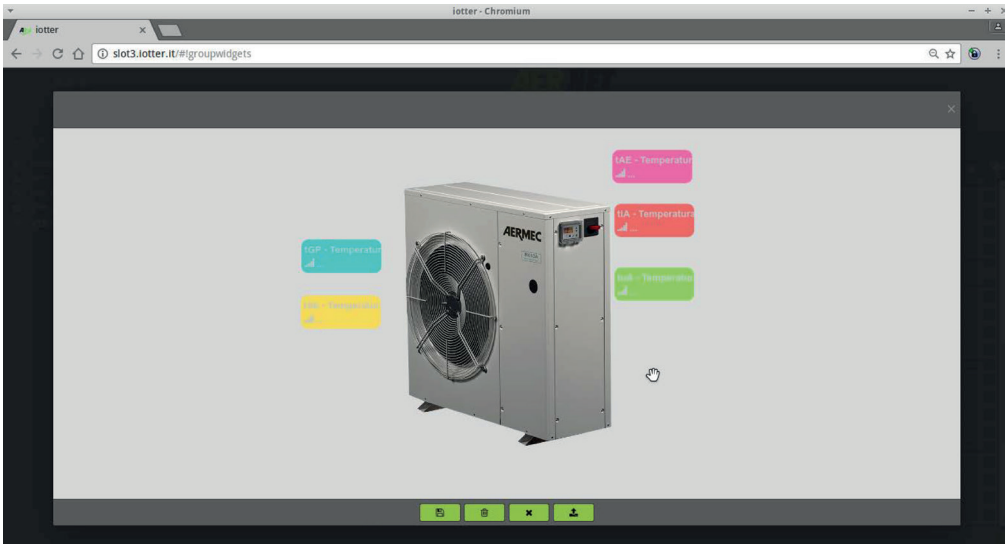


Fig. 101 : AERNET - Embedded Display

Clicking on the placeholder of a parameter opens a pop-up with the parameter label and date and time to which the value of the displayed parameter refers.

Selecting the "Embedded" widget in the "Aggiungi Grafico" (Add Graph) pop-up opens the "Aggiungi Nuovi Parametri" (Add New Parameters) pop-up, where you can select up to 10 parameters from the Real Systems associated with the display.
A pop-up "Nuovo Grafico" (New Graph) specific for this widget is then opened.

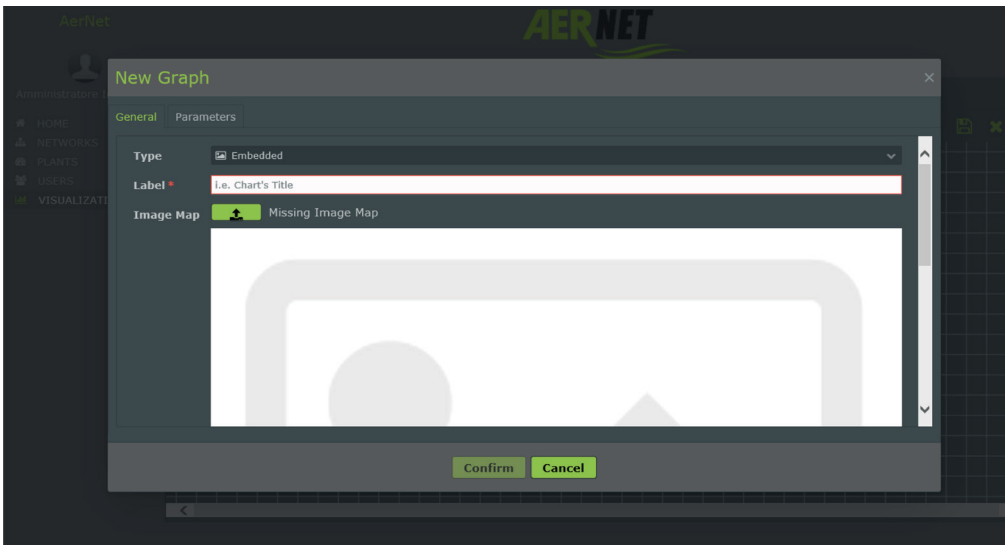


Fig. 102 : AERNET - Embedded - New Graph

The fields settable in the first tab, "Generale" (General), are:

- Etichetta (Label): widget label.
- Immagine Mappa (Map Image): if an image has not already been uploaded the button "Upload" appears, click it to open the pop-up "Upload Immagine della Mappa" (Upload Image of Map). If an image has already been uploaded, the button "Edit" appears and the pop-up to edit the image opens.

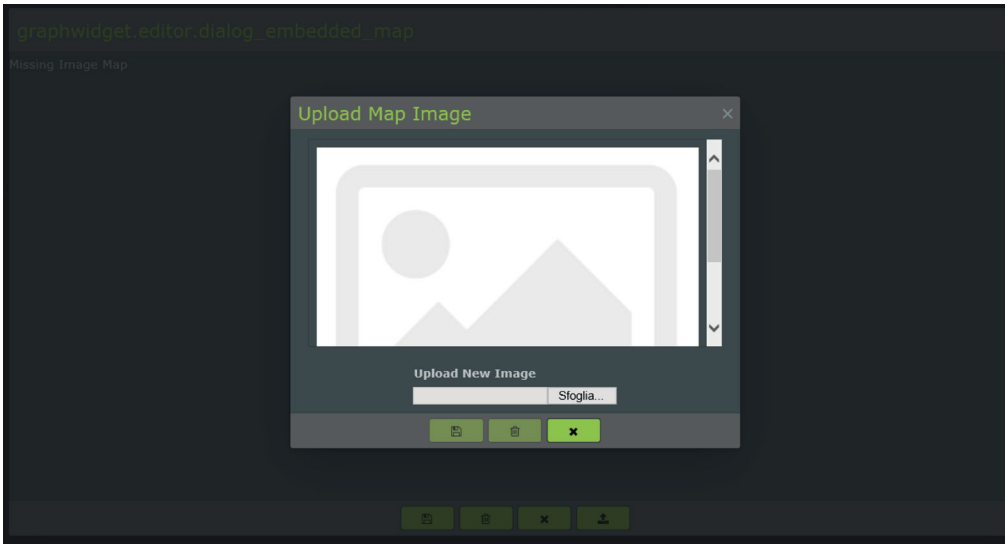


Fig. 103 : AERNET - Embedded - Edit Map

By clicking on "Scegli file" (Select file) in the pop-up "Upload Immagine della Mappa" (Upload Image of Map), you can upload the image from your PC's filesystem.

The three buttons available are used to:

- : Save the uploaded image.
- : Delete the uploaded image.
- ✖ : Abandon the operation.

The uploaded file must not be larger than 1 MB.

A pop-up is now opened from which you can change the positioning of the parameter placeholders on the image.

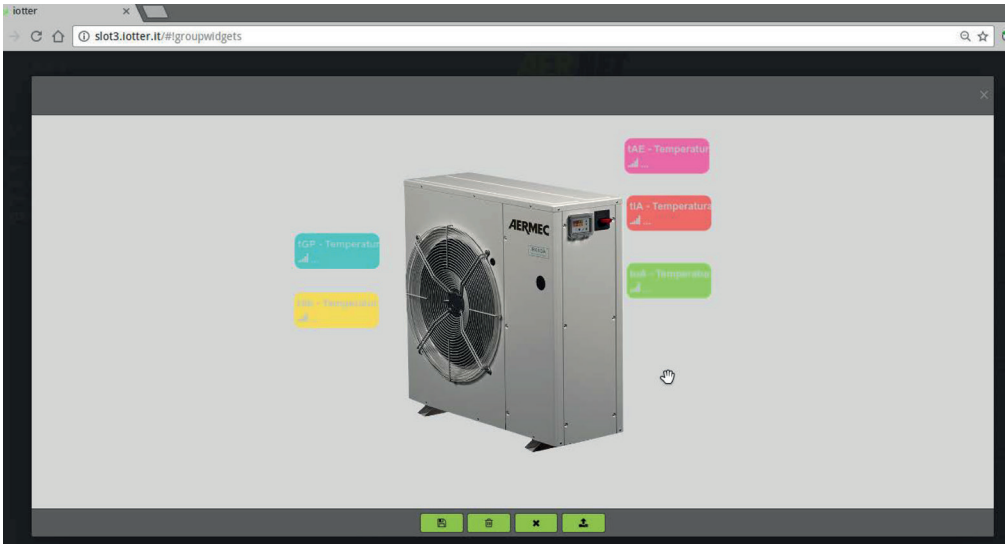


Fig. 104 : AERNET - Embedded – Edit Image

All placeholders of the widget parameters are initially placed in the centre of the image.
The user can manually click on the placeholder and move (by holding down the left mouse key) the placeholder on the image.

The main buttons on the right of the page are used to:

- : Save the made changes.
- : Remove the uploaded image. Goes back to the "Nuovo Grafico" (New Graph) pop-up.
- ✖ : Abandon the operation.
- : Upload of a new image

The second tab of the pop-up "Nuovo Grafico" (New Graph) , "Parametri" (Parameters), is similar to that of the Multi-trace widget. Selecting one of the parameters and clicking on the function "Edit" , opens a pop-up "Opzioni Grafiche Parametro" (Parameter Graphic Options), specific for this widget.

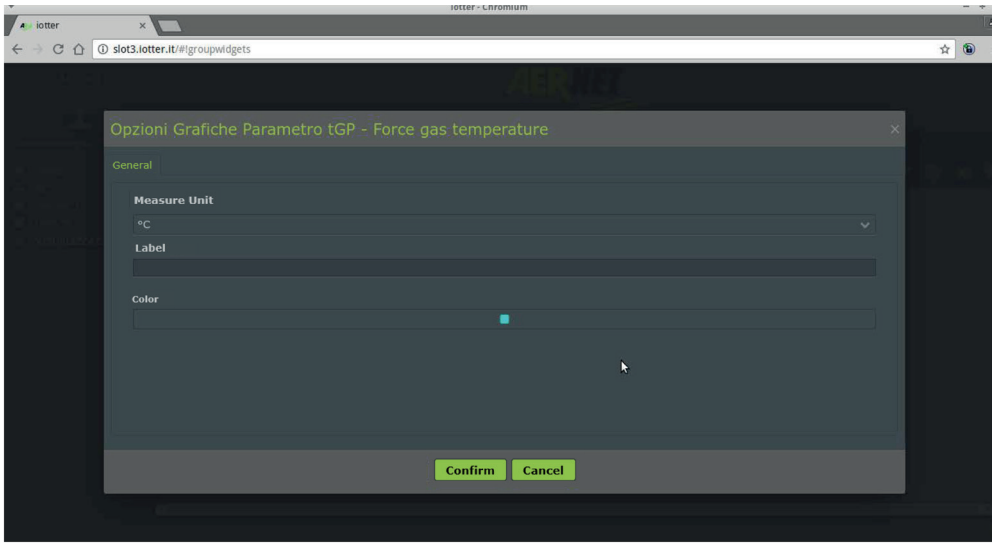


Fig. 105 : AERNET - Embedded - Parameter Graphic Options

The settable fields are:

- Etichetta (Label): text associated in the report with the parameter value (replaces the parameter label).
- Colore (Colour): colour of the placeholder associated with the parameter.

The buttons available on the form are:

- "Conferma" (Confirm): confirms the changes of the parameter graphic options.
- "Annulla" (Cancel): abandons the changes.

3.8.9.7. AernetPro

The "AernetPro" widget may be itself inserted to compose another display. The widget is graphically similar to the one created when connecting a Real System to a AERNET Router through the function "Family Management".

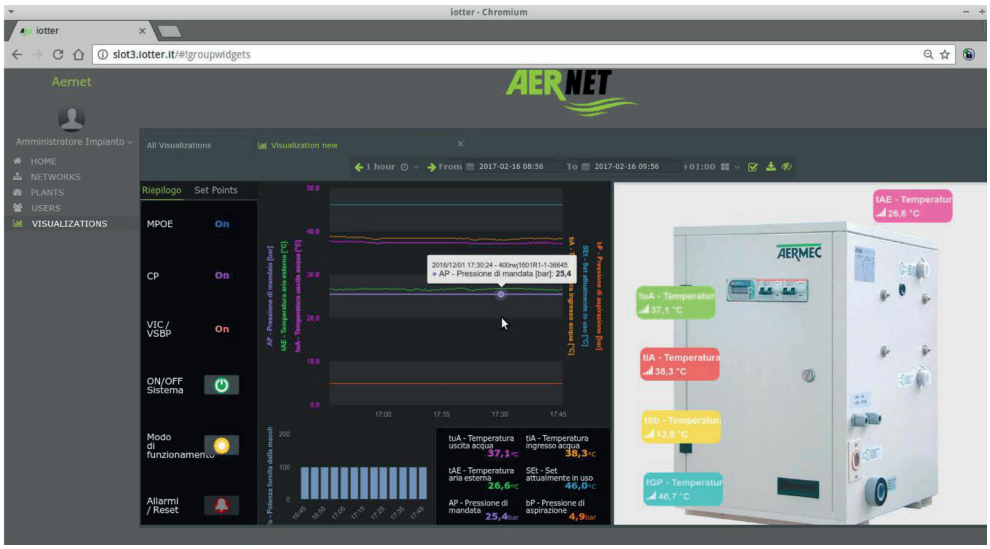


Fig. 106 : AERNET - Aernet Pro Widget Display

When a AernetPro widget is used within a display, this behaves like all the displays created by users. So, in case a AERNET Router is disassociated from a network, even a display defined in the network and containing the AernetPro widget is disassociated from the Real System connected.

Selecting the “AernetPro” widget in the “Aggiungi Grafico” (Add Graph) pop-up, opens the pop-up “Nuovo Grafico” (New Graph), specific for this widget.

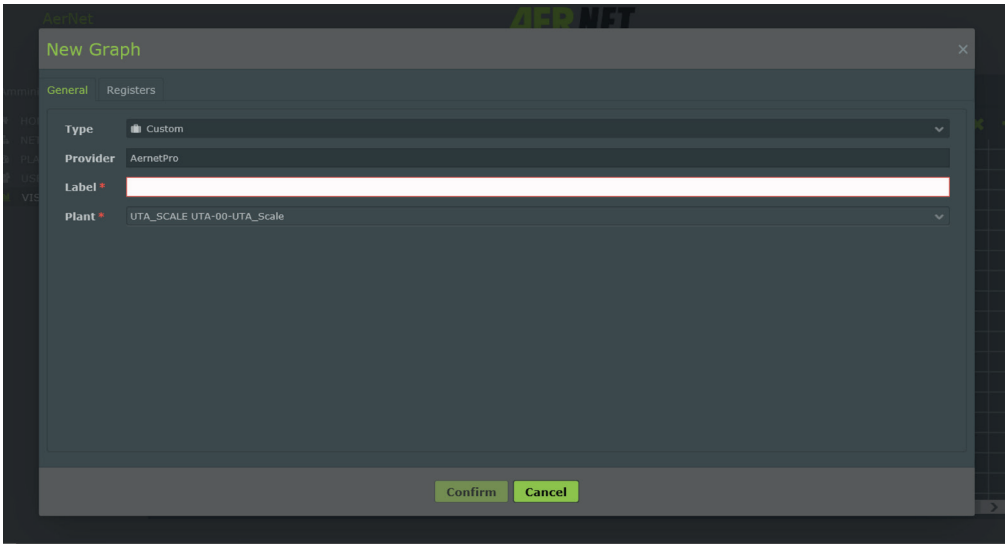


Fig. 107 : AERNET - Aernet Pro - New Graph

The fields settable in the first tab, “Generale” (General), are:
Etichetta (Label): widget label.

Impianto (System): clicking on the bar ❮ allows you to select the Real System from the network on which to set the widget.
By its nature, the widget must be associated with a single network Real System.

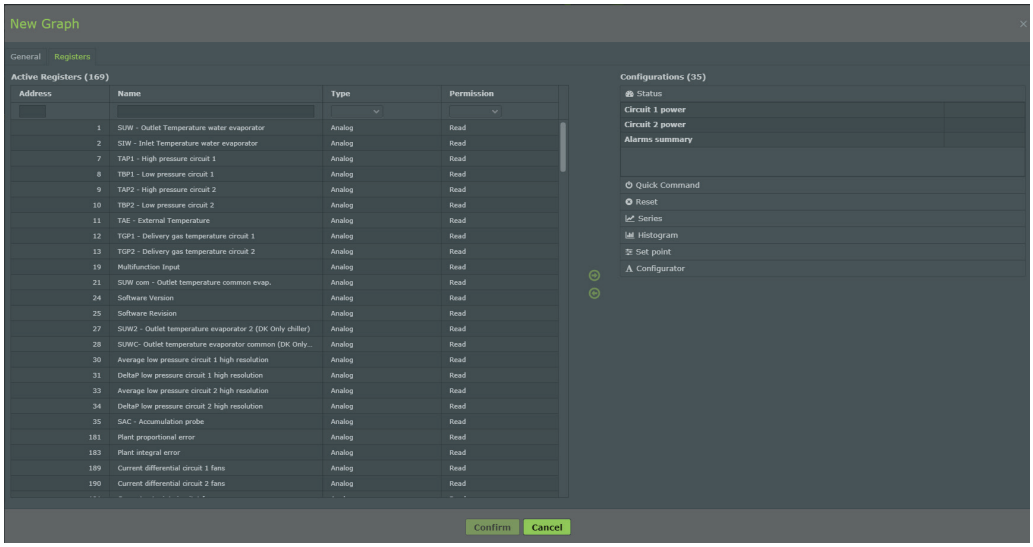


Fig. 108 : AERNET - Aernet Pro - New Graph

The second tab, “Registri” (Registers), is similar to the third step of the wizard “Gestione Famiglie” (Family Management), “Configura Aernet Pro” (Configure Aernet Pro), to which we refer for the widget setting details. In this case also, if, for the Product family of the Real System a setting is already prepared of the Aernet Pro display parameters, this is automatically uploaded. The user can, in this tab, change this setting.

3.8.9.8. Tandem Multi-trace

The "Multitraccia Tandem" (Tandem Multi-trace) widget is a graph where the trends of the values collected by the System of several parameters (up to 10), can be represented as traces.
The graph is similar to the "Multitraccia" (Multi-trace) widget, but differs from this in that it represents the analog parameters and the digital parameters, on two different graphs, aligned.

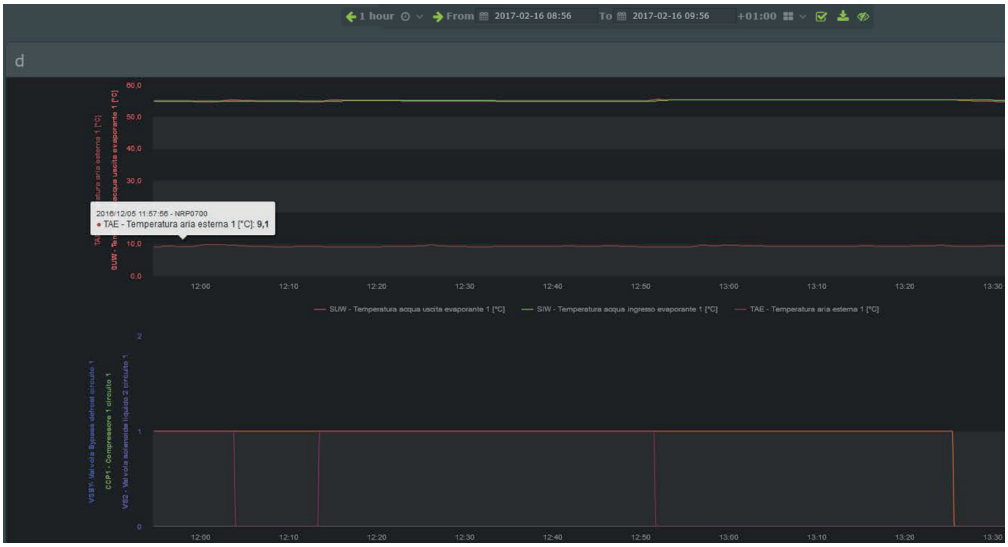


Fig. 109 : AERNET - Tandem Display

The construction of the "Multitraccia Tandem" (Tandem Multi-trace) widget is similar to that of the "Multitraccia" (Multi-trace) widget.

4. "SUPERUSER" INTERFACE

Below is a brief illustration of the functions available to "Super User" type users.

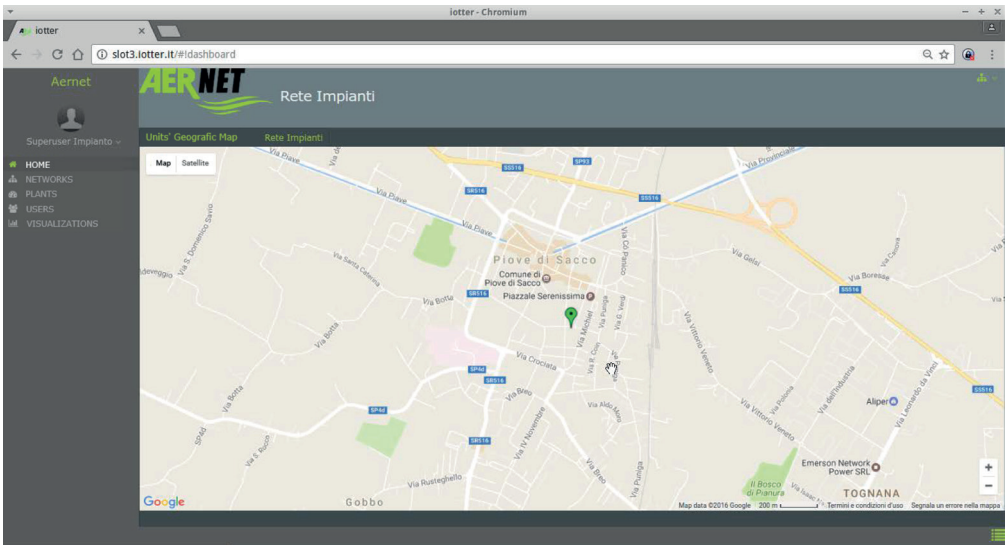


Fig. 110 : AERNET - Superuser

When a "Super User" logs on the System the home page is opened, which is the display of the map of its network.
The functions available are:

- "Home"
- "Systems"
- "Users"
- "Displays"

The "Home" function allows you to go back to the network map. Clicking on a system placeholder, displays on the right shoulder the widget "Device Info". Clicking top-right on the icon switches to display the "list" network with a list of the systems and their significant data.

The "Systems" function allows the user to perform on the network systems (AERNET Router and Real systems), the same functions performed by the administrator. In particular, the superuser can, using the "Gestione Famiglie" (Family Management) function, configure new slaves of a AERNET Router (Real System) or delete them, and edit through the tab "Telecontrollo" (Remote control) the "Read&Write" or "Write" set parameters of a Real System. Whereas, a superuser does not have the function "Attiva Impianto" (Activate System) available.

The "Users" function allows the superuser to view the users of its network, but not to edit the master data of users or create new users.

The "Displays" function allows the superuser to open all displays available on its network. The superuser can create new displays, using the function "Add Display" . The superuser can also edit the features of a display using the function "Edit Display" , or edit the users and systems associated with a display using the function "Associations" , but these two functions are only available on the displays he created.

5. "BASIC USER" INTERFACE

Below is a brief illustration of the functions available to "Basic User" type users.

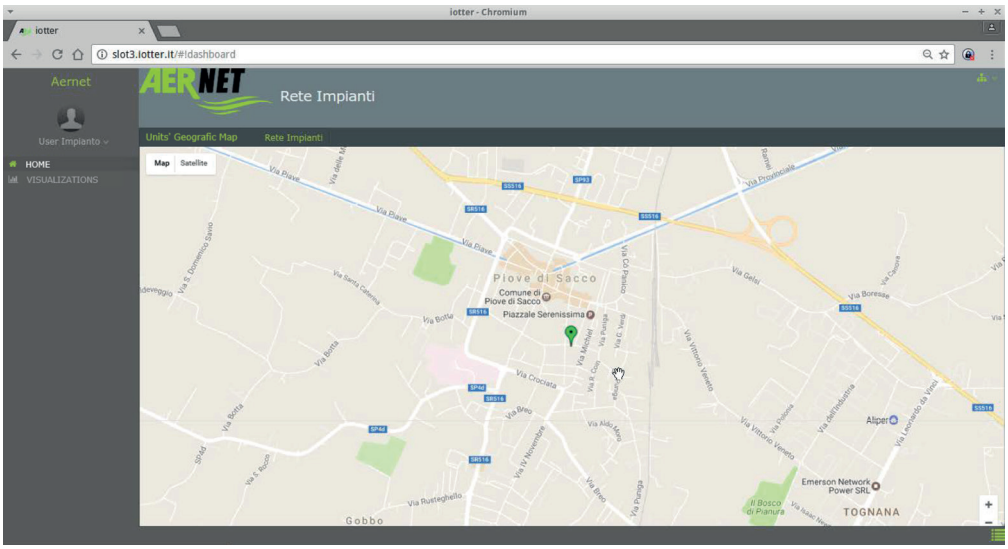


Fig. 111 : AERNET - Basic User

When a "Basic User" logs on the System the home page is opened, which is the display of the map of its network, representing the systems to which he was granted access by the Administrator or by a Super User, associating it with a display.

The functions available are:

- "Home"
- "Displays"

The "Home" function allows you to go back to the network map. Clicking on a system placeholder, displays on the right shoulder the widget "Device Info". Even in the widget, the user finds only the displays to which it is associated. Clicking top-right on the icon switches to display the "list" network with a list of the systems and their significant data.

The "Displays" function lists only the displays to which the user is associated. The user can only open one display.

6. AERNET USE ON SMARTPHONE AND TABLET

The Aernet Administration Web Application can also be opened on a browser of a mobile device (smartphone or tablet).

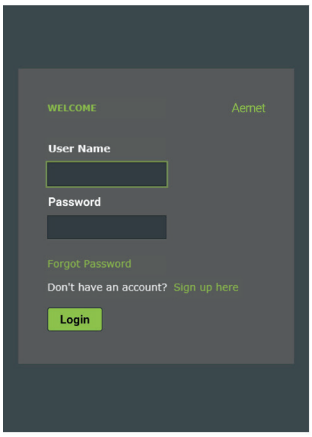


Fig. 112 : Mobile - Login

The user interface is similar in content to the one displayed on the desktop, with some adjustments related to the different screen sizes (responsive web design).
The application also adapts to the different user interaction linked to the gestures available on the touchscreens.
"Click" is replaced by a "tap" on the screen in a given position.
For some functions, such as zooming in on the maps or on graphs, use the "pinch" gesture.
For graphs, both the "zoom in" and "zoom out" work.

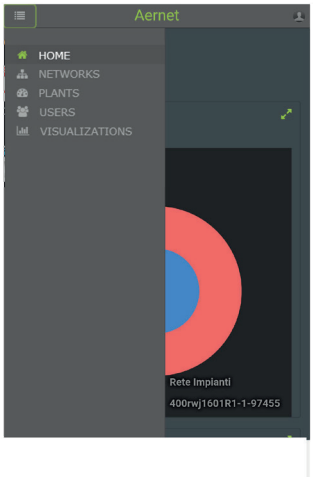


Fig. 113 : Mobile - Home

The applicable menu is available to the user as pop-up by tapping top-left on the icon . To exit the application, the user must tap top-right on the icon .

All contents on the page body are organised in order to better exploit the screen size. Here below are some notes worth highlighting.

The "Device Info" widget:

- in the map display it opens by tapping twice on the system placeholder in the map.
- in the function "Systems" , by selecting a Real System, it opens by tapping on the icon .

The widget opens full page.

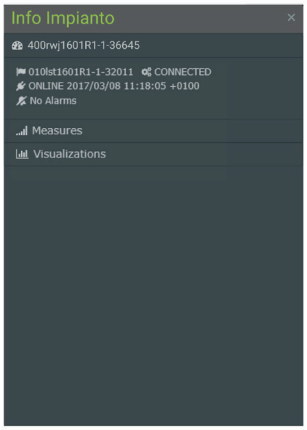


Fig. 114 : Mobile - DeviceInfo

The “Gestione Famiglie” (Family Management) function is accessed from the function “Systems”, by selecting a AERNET Router and tapping on the icon.

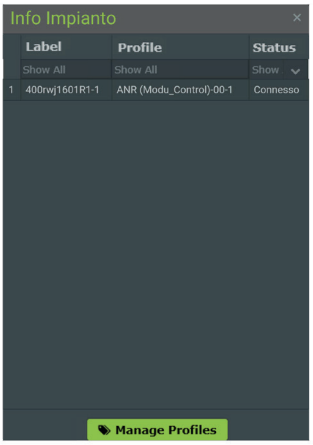


Fig. 115 : Mobile - Fam. Manag.

For the displays of graphs the axes are not drawn on mobile devices.
The different graphic widgets of a display are always shown one after the other.
For the AernetPro display, the two tabs “Riepilogo” (Summary) and “Setpoint” are shown one after the other.

Fig. 116 : Mobile - AernetPro

In the display the "Navigation Bar" opens at the bottom of the page by tapping top-left on the icon ⋮ .

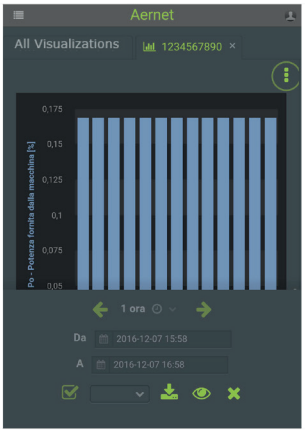


Fig. 117 : Mobile - Nav. Bar

The bar closes by tapping on the icon ✖ .

7. QUICK GUIDE TO AERNET CONTROLS

Section	Function	Control	Control Description	Notes
Login	Login	Login page	Allows users who have "username" and "password" to login	
	Password recovery	Password Recovery Page	Allows an admin user to recover the forgotten password, known his "username"	This function is not available for SuperUser and User whom, if they lose the password, must contact their Administrator
	Registration	Registration page	Allows an unregistered user in possession of an AERNET Router to make the first registration as administrator in the system. The user must have the document «AERNET Codici di Attivazione / AERNET Activation Codes» to activate an AERNET Router	For activation you will require the two 12-alphanumeric character codes Serial Key - corresponds to the serial number of the AERNET Router on the label affixed to the side of the device. Activation Key - unique key for the device that allows its activation.

Section	Function	Control	Control Description	Notes
Users	List of users	Function available when accessing the User section	Function available to the Administrator, who sees all users of its networks, and to the SuperUser, limited to the users of its network	
	Creation	"Add User" (✚)	The Administrator can create users of type: SuperUser or User associated with a Network. Must enter access data (username/password) and mandatory personal data (e-mail, name.surname).	A SuperUser has, within the network in which it is created, access to some Administrator functions. It is entered by default as recipient of all alarm notifications. A User (basic user) can only access the displays of the network in which it is created, that the Administrator has associated to it. Receives only alarm notifications for which the Administrator has included in the notification list
	Edit	"Edit User" (✎)	The administrator can change the user state (active, blocked, expired, suspended), password, personal data.	The user can have the following statuses: Activated - the user can login to the system Suspended - the user cannot login
	Removal	"Remove User"(🗑)	The administrator can remove users with SuperUser or User role This function is available to SuperUsers	

Section	Function	Control	Control Description	Notes
Networks	List of Networks	Function available when accessing the Network section	Function available to the Administrator, who sees all its networks	
	Creation	"Add Network"(✚)	The administrator can create a network defining its name, description and some features: network type. Time Zone. Number of simultaneous users.	A network can be: "Geo-localised" - to the network corresponds a geographic map. "Custom" - to the network corresponds a map based on an image uploaded by the administrator (e.g. the plant of a site) A network can also be set as "Public". In this case the link to the map page can be exported and the page opened directly by a user not stored in the system or, for example, included in another web site
	Edit	"Edit Network"(✎)	The administrator can change all network setting parameters.	The network name can be changed, but it must be unambiguous for the administrator
	Removal	"Remove Network"🗑)	The administrator can remove the network	You can remove a network only if this is not associated with users or systems. Before removing the network, you must remove the users (SuperUser and User) defined in the network and the associations with the system through the function "Migration"
	Edit Map	"Edit Map"(✎)	The function allows defining the map (Geographical or Custom) for the network and position placemarks (pin) of the real network-connected systems.	The function can only be activated if at least one system is associated with the network
	Display Map	"Display Map" (📍) - Map	Map Display - The function allows opening the display of the network map	
	Display Map	"Display Map" (📍) - List	Display as Network list	
	Migration	"Migration" (♻)	The function allows the administrator to associate-disassociate the AERNET Router (therefore, the real systems configured on the router) to the network	When an AERNET Router is removed from a network, all alarm notifications to the basic users set in the Real Systems connected, are lost. Also, the set displays are disassociated from all AERNET Router Real Systems. Except for the AernetPro displays configured with the function Family Management, which always remain associated to their Real System.
	Configuration	"Configurations" (🔧)	Open a special view that allows the Administrator to have two tabs Users, Systems, that select users and systems associated with the network. Therefore, the two tabs contain all functions present in the general sections.	

Section	Function	Control	Control Description	Notes
Systems	List of Systems	Function available when accessing the System section	Function available to the Administrator, who sees all its systems	
	Activation	"Activate System" ( )	The function allows the administrator in possession of the document „AERNET Codici di Attivazione/AERNET Activation Codes" to activate an AERNET Router	The two 12 alphanumeric character codes are required for activation: Serial Key - corresponds to the serial number of the AERNET Router on the label affixed on the side of the device. Activation Key - unique key for the device that allows its activation.
	Edit	"Edit System" ( ) - AERNET Router	For an Aernet Router it allows changing the Label.	
	Family Management	Function available for AERNET Router	Wizard that allows: - Removing a slave (Real system) associated to an AERNET Router - Creating a new slave starting from the profile of a Product family configured by Manufacturer - Configuring the AernetPro display of a system	The removal of a slave (Real system) involves the deletion of all entries on the System, thus the loss of the collected data.
	Edit	Edit System" ( ) - Real System	For a Real System it allows changing: - Label - Position data - Alarm notification and enabling - Remote control of Read&Write and Write parameters. - You can also view the system parameters and last reading	
	Removal	"Remove System"( )	AERNET Router can be removed, only if not associated with networks	The slaves must be removed from family management
	Display Alarms	"Alarms"( )	Displays the last thirty events	
	Export	"Export"( )	Exports the last seven days of raw data, or aggregates	The completion of the export generation is communicated to the user with a pop-up, the export result is downloaded on the user's PC

Section	Function	Control	Control Description	Notes
Displays	List of Displays	Function available when accessing the Display section	Function available to the user who sees all displays available to it	
	Creation	"Add Display"( )	Allows inserting a new display defining: - Display name. - Real Time Activation - Display Network From the function "Add Graph" ( ) you can insert in the display widgets of type: - Multi-trace - Histogram - Table - Numeric Value - Label - Embedded - AemetPro - Tandem	A display can contain the AernetPro Widget. This display behaves like the others, therefore, differently from the AernetPro display associated with a Real System by the "Family Management" function.
	Edit	"Edit Display"( )	Allows changing all features of a display. Functions available for already created widgets: - "Configuration" ( ) - "Information" ( ) - "Delete" ( ) It is also possible to resize and reposition the widgets on the page. Generally available functions: - "Edit" ( ) - "Save Display" ( ) - "Cancel" ( ) - "Add Graph" ( ) that allows you to insert in the display widgets of type: - Multi-trace - Histogram - Table - Numeric Value - Label - Embedded - AernetPro - Tandem	
	Removal	"Remove Display"( )	Removes the display	
	Display	"Display"( )	Opens the display as page card	
	Display (link)	"Display" ( )	Opens the display as link. In case of public network, the link can be used to access the display from a browser page by a user not logged in	
	Associate	"Associations" ( )	Allows associating or disassociating basic users to a display	

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Recycled paper
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