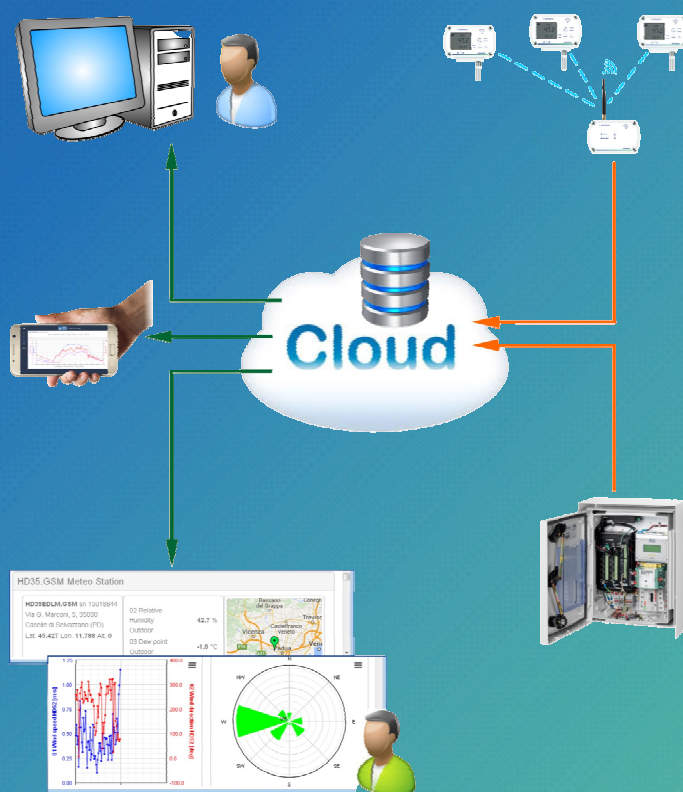


OPERATING MANUAL

Cloud platform



EN
V2.0



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1 Introduction

This document is composed in order to describe our company **CLOUD Platform** to customers having experience with it: due to some still open issues (i.e. customers use conditions), the platform is naturally subject to further enhancement, likewise this Operating Manual is going to be simultaneously updated.

The **CLOUD Platform** is a web application designed to:

- Collect measured data from activated loggers via HTTP or FTP through an Internet connection (e.g. 3G/GSM/GPRS modem or Wi-Fi/Ethernet LAN).
- Allow collected data access from anywhere in the world by web browsing (a default representation is available to immediately show received values).

The **CLOUD Platform** has been developed combining together different basilar elements:

- Standards from the market experience, such as HTTP/HTML5/JavaScript.
- Standard from the enterprise experience, such as Java Enterprise edition.
- Big Data structure, such as scalability, Virtual Server deployment, NoSQL (Cassandra, data storage) and MySQL (user profiles and network management) databases.
- Representational State Transfer (REST) protocol, easy to be implemented on embedded devices and provided with API to enable protocols extension for data collection purposes.
- Platform Services multi-tenancy.
- JSON meta-model, to easily define different devices data structure for measurements collection.

The highest level of flexibility in application accessibility is granted by:

- Compliance with desktop and mobile devices browser.
- Autonomous management of both activated devices assets and user permissions.
- Differentiated user authorization rules.
- Data Visualization Widget for customizable data layout.

Finally, collected data exportation is facilitated by:

- Sophisticated data collection algorithm to aggregate selected data into a standard CSV file format.
- Device and Data Visualization inclusion in external web application.

A great variety of devices can be configured to send their measurements data to the CLOUD Platform: HD35 series wireless datalogger, HD32MT series weather datalogger, sound level meters and any other field instruments connectable through HD61 gateway.

All gathered measurements values (e.g. temperature, relative humidity, dew point, atmospheric pressure, wind speed, direction and other physical quantities) can be displayed in a numerical form and in a graphical form as well (cartesian plots, histogram plots or wind rose plot) along a configurable time interval. Customer can easily aggregate them in subsets, in order to monitor and keep in evidence only the most interesting values.

Devices can be logically grouped to so called "Network", whose layout can show their relative position on a customized background picture or their absolute position on a geographical map. Moreover, a network of devices can be declared as public so that its measurements visualization can be linked in web pages and be accessed without specific permissions.

2 Description

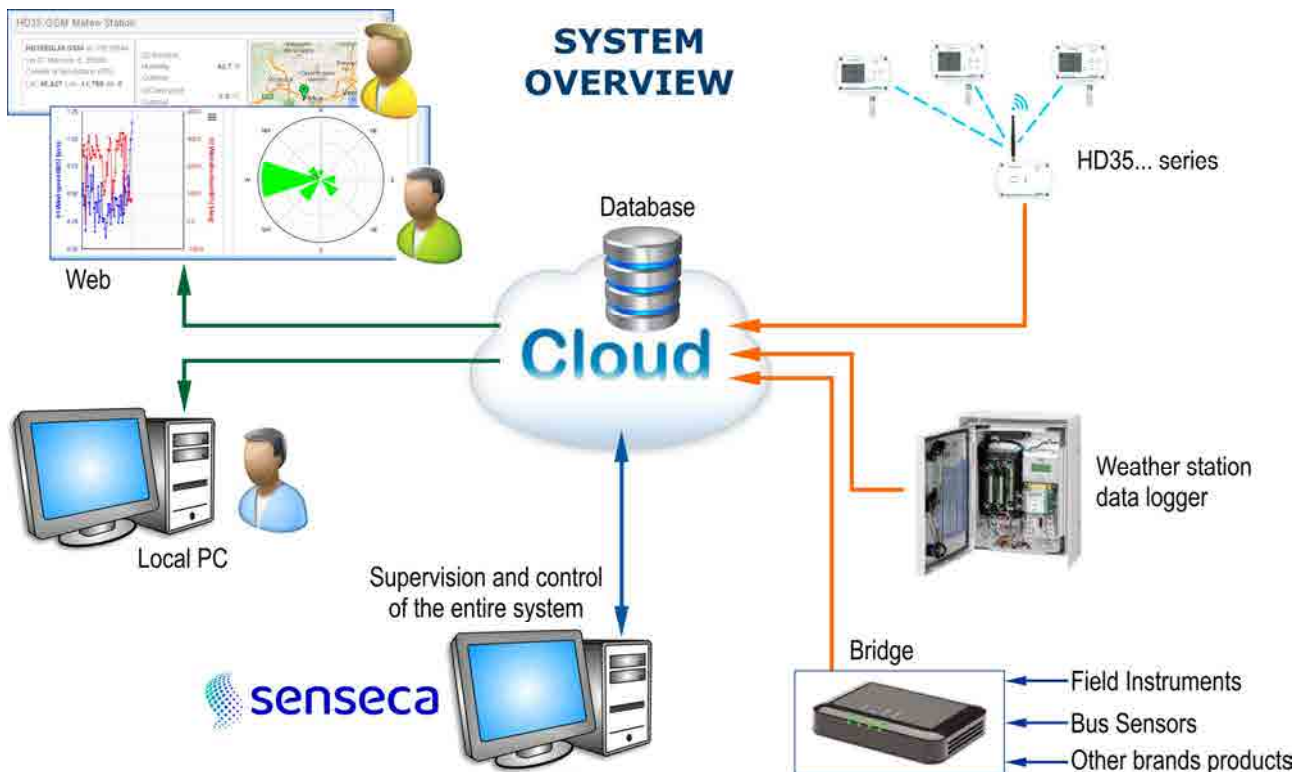


Fig. 1.1: CLOUD Platform description

- 1. HD35 series**, wireless data loggers (temperature, relative humidity, atmospheric and differential pressure, illuminance, irradiance, solar radiation, carbon monoxide, carbon dioxide, rainfall quantity, wind speed and direction, leaf wetness, WBGT index, acceleration, sensors with voltage free contact output or potentiometric output) with 3G/GPRS/Wi-Fi/Ethernet interface.
- 2. HD32MT series**, wired datalogger (sensors with analog voltage output, sensors with analog current output, thermocouple temperature sensors, Pt100/Pt1000/NTC temperature sensors, sensors with digital or analog output for frequency and period counting, resistors and potentiometers, magnetic sensors, solar radiation sensors, open/close contact output sensors, sensors with RS485 output and MODBUS/RTU protocol, HD2003 and HD52 series anemometers) with GPRS/Ethernet interface.
- 3. Field Instruments and Bus Sensors** with wired interface to a HD61 Gateway.
- 4. Database**, designed to store measured data and devices information on one side, users accounts and allowed capabilities on the other.
- 5. Web Interface**, it allows access to measured data visualization and measuring devices information both from desktop PC and mobile devices (i.e. tablet, smartphone, etc.).
- 6. Local PC**, it allows users to operate on Web Interface according to their specific authorization level.
- 7. Supervision and system control**,

3 Preliminary operations

3.1 Customer registration

Once you received your first Cloud device, the following registration procedure needs to be fulfilled in order to be enabled to operate with Cloud platform.

1. Launch your browser and enter "**www.deltaohm.cloud**" in the navigation bar: the welcome page is shown.

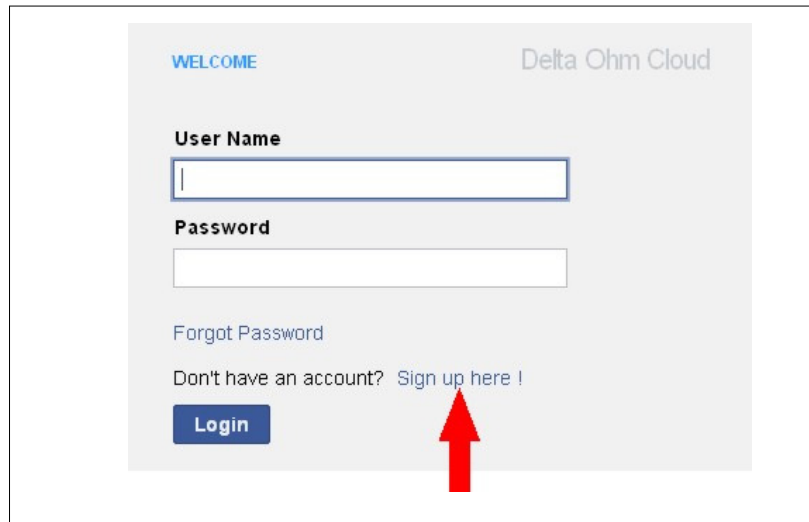


Fig. 3.1.1: Cloud platform Welcome Page

2. Click on "Sign up here!": the registration form is shown.

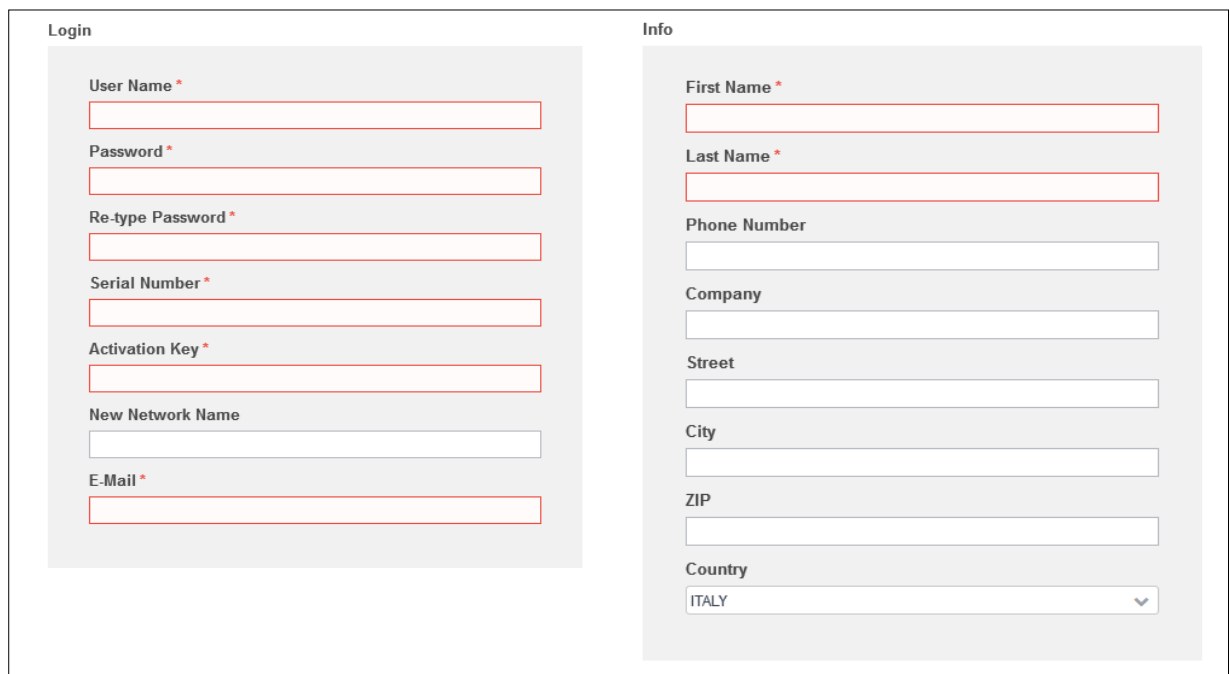
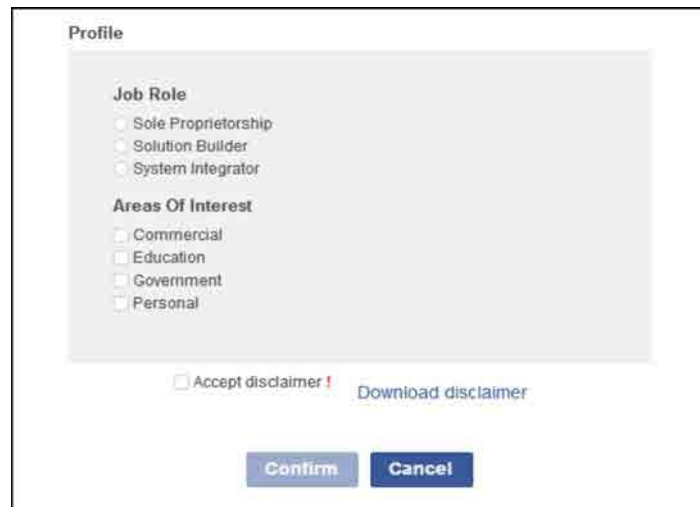


Fig. 3.1.2: Cloud platform Registration Form

3. Fill in the mandatory fields (red bordered) and define the User Name and Password to allow further accesses. The Serial Number can be read on the device identification sticker. The Activation Key has to be requested to Senseca.

4. Specify a valid email address and your job role, then select "Accept disclaimer" and click "Confirm".



The registration form is titled "Profile". It contains two sections: "Job Role" and "Areas Of Interest".

Job Role

- ☐ Sole Proprietorship
- ☐ Solution Builder
- ☐ System Integrator

Areas Of Interest

- ☐ Commercial
- ☐ Education
- ☐ Government
- ☐ Personal

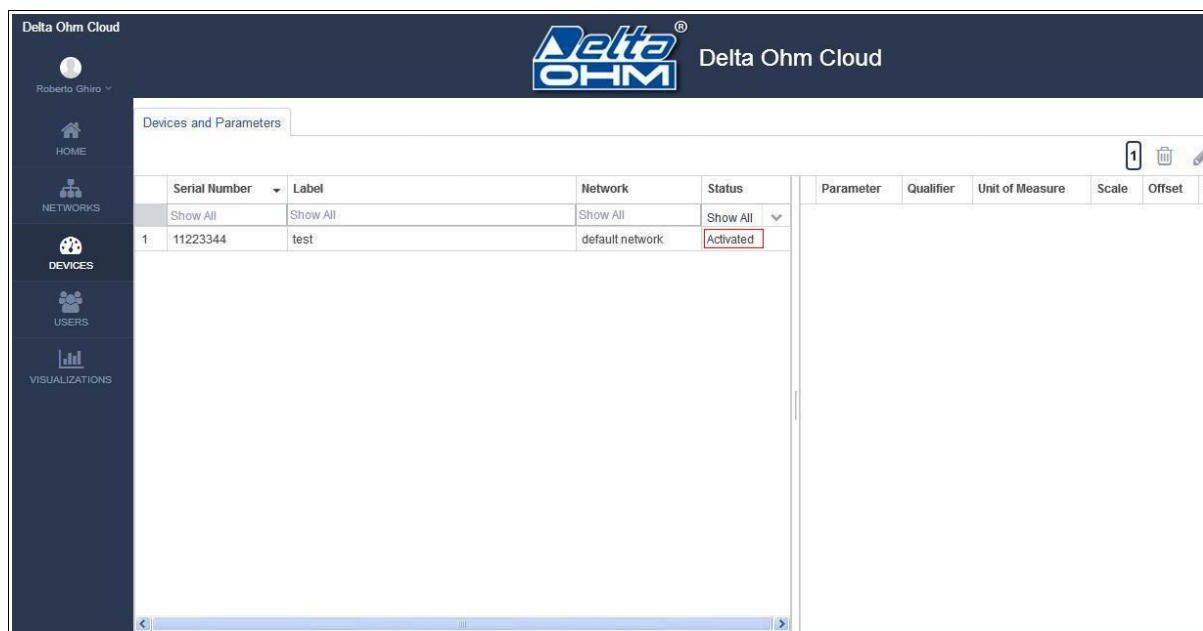
At the bottom, there is a checkbox labeled "Accept disclaimer !" and a link "Download disclaimer". Below these are two buttons: "Confirm" and "Cancel".

Fig. 3.1.3: Cloud platform Registration Form

5. An email with an attached link will be sent to the specified address: once received, click on it to complete the registration.
6. The Administrator user account has been successfully created.
7. Go back to Welcome Page and enter Administrator User Name and Password: the opening Page is shown.

3.2 Opening page

The Cloud opening page is the Devices page, showing the list of all registered devices, described by Serial Number, Label, belonging Network and current operating Status.



The screenshot shows the Delta Ohm Cloud web interface. The top header includes the Delta Ohm logo and the text "Delta Ohm Cloud". The left sidebar contains navigation links: HOME, NETWORKS, DEVICES (selected), USERS, and VISUALIZATIONS. The main content area is titled "Devices and Parameters" and displays a table of registered devices.

	Serial Number	Label	Network	Status	Parameter	Qualifier	Unit of Measure	Scale	Offset
	Show All	Show All	Show All	Show All					
1	11223344	test	default network	Activated					

Fig. 3.2.1: Cloud platform Registration Form

When entering after Administrator user creation, the only Device in the list is the one whose Serial Number and Activation Key have been inserted along the registration:

- In the top right command bar the Counter label is set to "1".
- The just registered device status turns from "Produced" to "Activated".

Once switched on, the registered Device sends its own configuration informations (name, type, measurements quantities list) to the Cloud portal: the Device status turns to "Connected".

Devices and Parameters				
	Serial Number	Label	Network	Status
	Show All	Show All	Show All	Show All
1	11223344	test	default network	Connected

Fig. 3.2.2: Device "Connected" status

To avoid a sudden data traffic increase in the Cloud portal, by default the registered Device starts sending only first parameters measured values: no further settings are required to access the Device measured value default Visualization, with a single trace chart for each selected quantity.

1. Click on the Device row: the measured quantities list appears in the right panel.

Devices and Parameters				
	Serial Num	Label	Network	Status
	Show All	Show All	Show All	Show All
1	14033626	HD32MT3	default network	Connected

Parameter	Qualifier	Unit of Measure	Scale	Offset	For
☒ 01 Vbatt	1 - 0	V	1.0	0.0	3.2
☐ 02 Internal temp.	1 - 0	°C	1.0	0.0	3.1
☐ 03 Internal pressure	1 - 0	hPa	1.0	0.0	3.1
☐ 04 HD52-SOW	1 - 0	m/s	1.0	0.0	3.2
☐ 05 HD52-DIR	1 - 0	deg	1.0	0.0	3.1
☐ 06 HD52-T_PT100	1 - 0	°C	1.0	0.0	3.1
☐ 07 HD52-RH	1 - 0	%	1.0	0.0	3.1
☐ 08 HD52-DEW	1 - 0	°C	1.0	0.0	3.1
☐ 09 PYRA-TEMP	1 - 0	°C	1.0	0.0	3.1
☐ 10 PYRA-RAD	1 - 0	W/m2	1.0	0.0	3.0
☐ 11 LPSD18 Temp.	1 - 0	°C	1.0	0.0	3.1
☐ 12 LPSD18 sun 0/1	1 - 0	bool	1.0	0.0	3.0
☐ 13 LPSD18 Direct Rad	1 - 0	W/m2	1.0	0.0	3.0

Fig. 3.2.3: Device parameters list

2. Click on "View" button at the bottom of the right panel: the Default Visualization window is shown.

☐	13 LPSD18 Direct Rad	1 - 0	W/m2	1.0	0.0	3.0
--------------------------	----------------------	-------	------	-----	-----	-----

☒ View	☐ Save	☐ Select ...
--	-------------------------------	-------------------------------------

Fig. 3.2.4: "View" button to open Default Visualization

3. The Default Visualization shows a linear graph for each selected measured quantity.

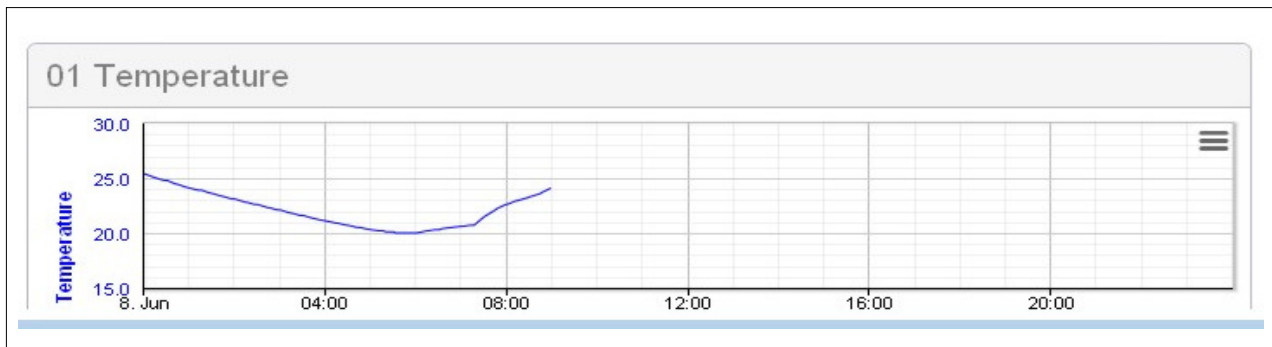


Fig. 3.2.5: Example of measured quantity graph

4. Pass the mouse pointer over the curve to get the sample value information.

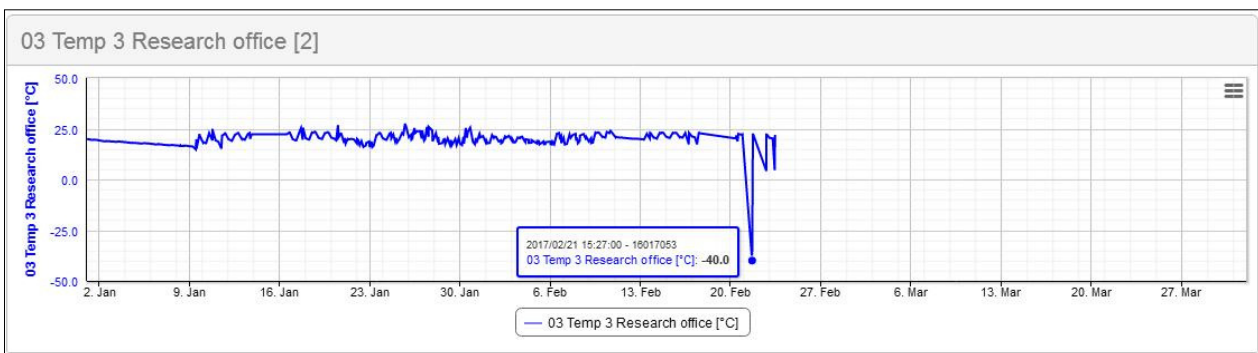


Fig. 3.2.6: Sample information frame

5. Default Visualization features are described in section 4.2.

3.2.1 Main pages buttons

In the left column with blue colored background the main pages button are shown:

1. **Login** button: click on it to open the drop-down menu with "Sign out" item. Select this item to log out.
2. **Home** button: click on it to recall the Cloud Home Page (section 3.3).
3. **Networks** button: click on it to access the settings page for creation and management of Devices logical groups (section 6).
4. **Devices** button: click on it to access the cloud devices list and their measurements quantities default graphical visualization (section 4).
5. **Users** button: click on it to access the cloud users settings page for creation and management of different levels accounts (section 5).
6. **Visualizations** button: click on it to access the Custom Visualizations page for creation and management of desired measurements quantities graphical and numerical view (section 7).

3.3 Home

The Cloud Home page shows a dashboard with:

- 1. Network Data Usage**, a pie chart representing the received amount of data records for each connected Device (external ring) and for each Network (inner circle).
- 2. Network User Access**, a pie chart representing the number of Cloud accesses for each registered User (external ring) and for each Network (inner circle).



Fig. 3.3.1: Cloud home page pie charts

- 3. Device Logging**, a list of significant events described by "Action", "Device" and "Time Stamp" fields:

- Point to the last position in the row header to make appear the "Gear" icon.
- Click on it and the drop down menu appears
- Select/Deselect the desired/undesired row fields by clicking on the corresponding menu item.

		Action	Device	Time Stamp	
1		Device configuration	17032132	Dec 11, 2017 4:11:34 PM	✓ Action ✓ Device ✓ Time Stamp
2		Device configuration	17032132	Dec 11, 2017 4:11:09 PM	
3		Device configuration	17022331	Dec 11, 2017 3:32:48 PM	
4		Device configuration	17022331	Dec 11, 2017 2:18:44 PM	
5		Device configuration	17022331	Dec 11, 2017 2:14:40 PM	

Fig. 3.3.2: Fields selection

- 4. Active Sessions**, a list of all access events described by Login (User Name), Network, Start Date and Last Request.

		Action	Device	Time Stamp
1		Device configuration	14020363	Dec 1, 2017 11:03:25 AM
2				
3				
4				
5				
6				
7				

Login	Network	Start Date	Last Request
Admin_User		Dec 1, 2017 10:24:21 AM	Dec 1, 2017 11:12:57 AM

Fig. 3.3.3: Cloud home page lists

The column width in both Device Logging and Active Sessions lists can be easily adjusted by clicking on the vertical line and drag it to desired position.

Click on the "Expansion Arrows" icon in the top right corner of each frame to make it enlarge to full screen size.



Fig. 3.3.4: "Expansion Arrows" icon

4 Devices

At manufacturing time unique Serial Number and Activation Key are assigned to each CLOUD designed Device. Three Device states are provided:

1. Produced, when available in the portal list and ready to be shipped to customers.
2. Activated, when the customer adds it to its own Device list, by inserting Serial Number and Activation Key at First Registration Time or afterwards.
3. Connected, when its configuration has been received by the portal and it starts receiving the measurements data.

4.1 View Device Parameters

1. If a different page is displayed, click on "Devices" button in the left blue column: "Devices and Parameters" tab is shown.

	Serial Number	Label	Network	Status	Parameter
	Show All	Show All	Show All	Show All	
1	14033626	HD32MT3	default network	Connected	

Fig. 4.1.1: Devices Main Page

2. Click on the Device row: its parameter list appears in the right table.

Serial Num	Label	Network	Status	Parameter	Qualifier	Unit of Measure	Scale	Offset	Form
Show All	Show All	Show All	Show All						
1	14033626	HD32MT3	default network	Connected					

Parameter	Qualifier	Unit of Measure	Scale	Offset	Form
☒ 01 Vbatt	1-0	V	1.0	0.0	3.2
☐ 02 Internal temp.	1-0	*C	1.0	0.0	3.1
☐ 03 Internal pressure	1-0	hPa	1.0	0.0	3.1
☐ 04 HD52-SOW	1-0	m/s	1.0	0.0	3.2
☐ 05 HD52-DIR	1-0	deg	1.0	0.0	3.1
☐ 06 HD52-T_PT100	1-0	*C	1.0	0.0	3.1
☐ 07 HD52-RH	1-0	%	1.0	0.0	3.1
☐ 08 HD52-DEW	1-0	*C	1.0	0.0	3.1
☐ 09 PYRA-TEMP	1-0	*C	1.0	0.0	3.1
☐ 10 PYRA-RAD	1-0	W/m2	1.0	0.0	3.0
☐ 11 LPSD18 Temp.	1-0	*C	1.0	0.0	3.1
☐ 12 LPSD18 sun 0/1	1-0	bool	1.0	0.0	3.0
☐ 13 LPSD18 Direct Rad	1-0	W/m2	1.0	0.0	3.0

Fig. 4.1.2: Device parameters list

3. Select/Deselect the check box paired with the parameters to be included/excluded in the Default Visualization.

Devices and Parameters										
Serial Number	Label	Network	Status		Parameter	Qualifier	Unit of Measure	Scale	Offset	For
14033	Show All	Show All	Show All		☒ 01 Vbatt	1 - 0	V	1.0	0.0	3.2
1	14033626	HD32MT3	default network	Connected	☒ 02 Internal temp.	1 - 0	°C	1.0	0.0	3.1
					☐ 03 Internal pressure	1 - 0	hPa	1.0	0.0	3.1
					☐ 04 HD52-SOW	1 - 0	m/s	1.0	0.0	3.2
					☐ 05 HD52-DIR	1 - 0	deg	1.0	0.0	3.1
					☒ 06 HD52-T_PT100	1 - 0	°C	1.0	0.0	3.1
					☐ 07 HD52-RH	1 - 0	%	1.0	0.0	3.1
					☐ 08 HD52-DEW	1 - 0	°C	1.0	0.0	3.1
					☒ 09 PYRA-TEMP	1 - 0	°C	1.0	0.0	3.1
					☒ 10 PYRA-RAD	1 - 0	W/m2	1.0	0.0	3.0
					☐ 11 LPSD18 Temp.	1 - 0	°C	1.0	0.0	3.1
					☐ 12 LPSD18 sun 0/1	1 - 0	bool	1.0	0.0	3.0
					☐ 13 LPSD18 Direct Rad	1 - 0	W/m2	1.0	0.0	3.0

Fig. 4.1.3: Device parameters selection

4. Click on "Select" button for automatic parameters selection, available options are:
- "All", to select every parameter in the right column, independently from its being active (declared in current configuration) or not (declared in outdated configuration).
 - "Only Active", to select parameters being active.
 - "None", to deselect every parameter.

	Parameter	Qualifier	Unit of Measure	
☐	01 CH1 Temperature PT100 4W USER CODE	2 - 0	°C °F	
☒	01 CH1 Temperature PT100 4W WBGT study	2 - 0	°C °F	
☐	02 Globe temperature USER CODE	2 - 0	°C °F	
☒	02 Globe temperature WBGT study	2 - 0	°C °F	
☐	03 Natural wet bulb USER CODE	2 - 0	°C °F	
☒	03 Natural wet bulb WBGT study	2 - 0	°C °F	
☐	03 Natural wet point USER CODE	2 - 0	°C °F	
☐	04 WBGT indoor USER CODE	2 - 0	°C °F	
☒	04 WBGT indoor WBGT study	2 - 0	°C °F	
☐	05 WBGT outdoor USER CODE	2 - 0	°C °F	
☒	05 WBGT outdoor WBGT study	2 - 0	°C °F	
☐	06 Relative Humidity USER CODE	2 - 0	%	
☒	06 Relative Humidity WBGT study	2 - 0	%	
☐	07 Dew point USER CODE	2 - 0	°C °F	
☒	07 Dew point WBGT study	2 - 0	°C °F	

Fig. 4.1.2: Options for parameters automatic selection

NOTE: Device parameters in the right column could be:

- Green colored, when declared in the current Device configuration.
- Grey colored, when declared in previous and outdated Device configuration.

5. When changing parameters check-boxes, the “View” button gets disabled and the “Save” button gets enabled: click on the “Save” button to apply changes.

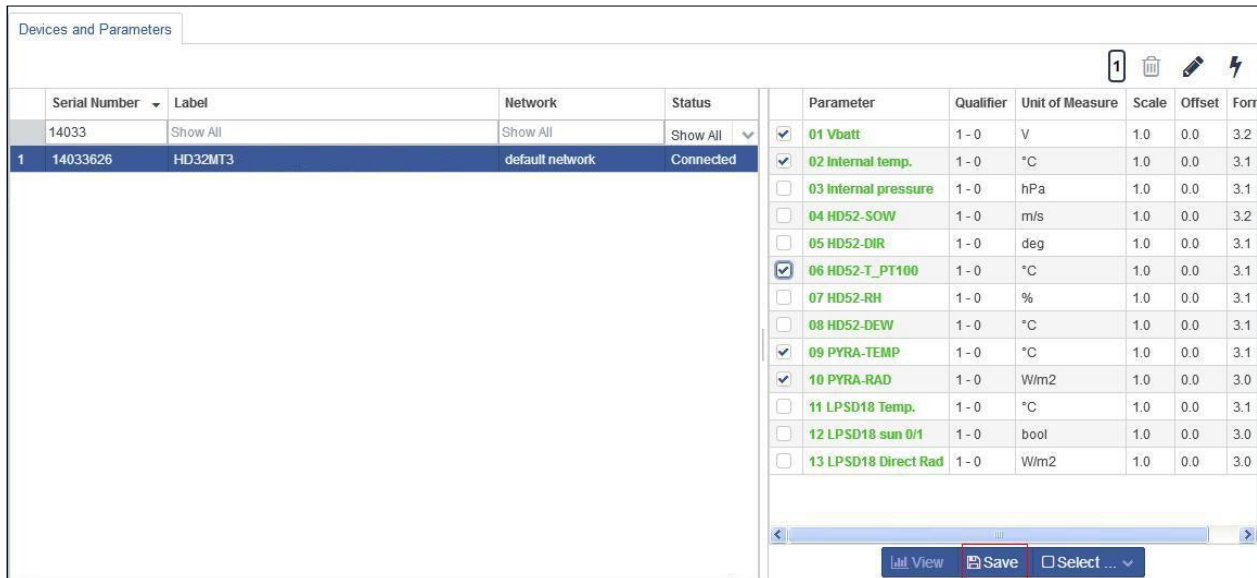


Fig. 4.1.3: Save changes to parameters selection

6. The “View” button gets enabled once again: click on it to the Default Visualization window is shown.

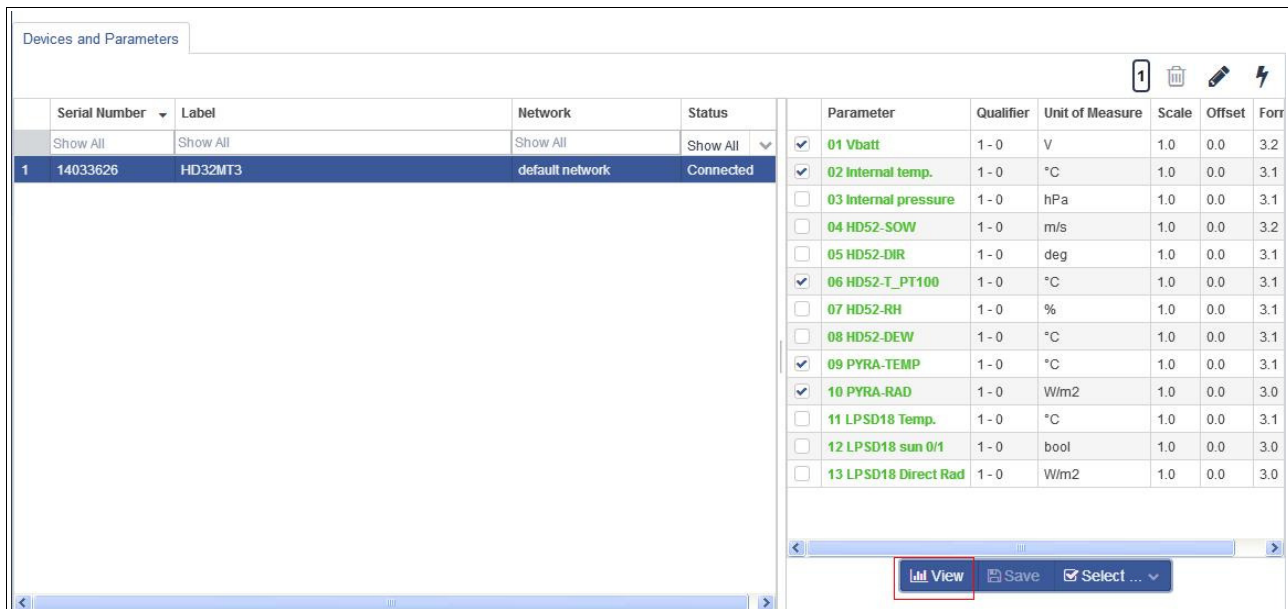


Fig. 4.1.4: Save changes to parameters selection

4.2 Default Visualization window

The Default View shows a graph for each selected measured quantity. Every time the Visualization window appears, the Start date and time are today at 00:00:00 for all the charts.



Fig. 4.2.1: Device parameters Visualisation

The top control bar allows adjusting and applying the following Visualization options to all graphs in the window:

1. Chart Start date and time, Stop date and time manual settings.
2. Chart time interval preset (starting from current hour, day, week, month, year beginning).
3. Chart time interval shift.
4. Chart download.
5. Chart grid, markers and scale.

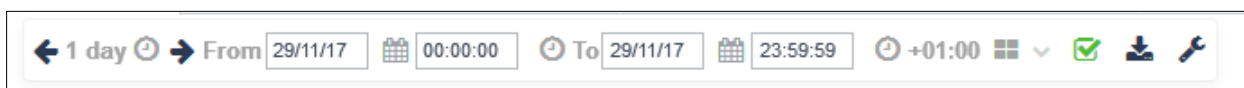


Fig. 4.2.2: Graph control bar

4.2.1 Chart start and stop manual settings

Users can adjust the graph time window through the following steps.

1. Enter date and time to establish graph start ("From" text boxes) and stop ("To" text boxes), then click on the green checked box to apply.



Fig. 4.2.3: Start and Stop graph settings

2. Alternatively click on the "Calendar" icon: a monthly box appears to select the desired day.

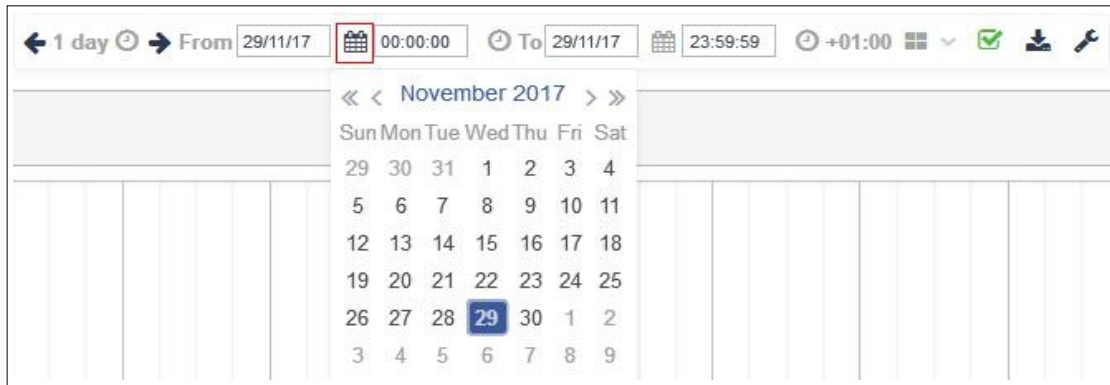


Fig. 4.2.4: Start date selection

3. Then click on the "Clock" icon: a three drop-down boxes frame appears to select the desired time. Confirm the selection by clicking on the check mark in the frame.

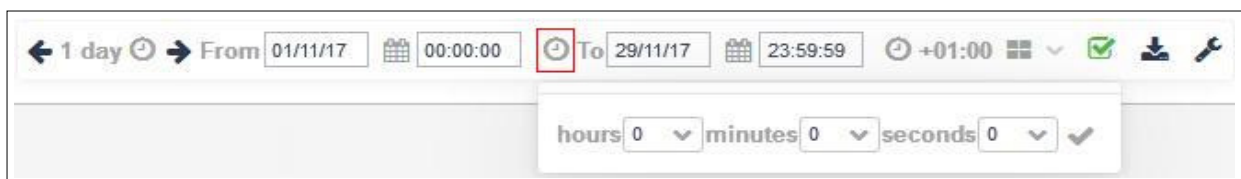


Fig. 4.2.5: Start time selection

4. Repeat steps 2 to 3 on "To" field icons.

Alternatively to manual settings, apply time interval preset as described in the following section.

4.2.2 Chart time interval preset

1. Click on the window icon in the right side of the top command bar: a drop-down menu opens to quickly arrange the graph interval.



Fig. 4.2.6: Graph time interval preset

2. Select the desired item to set the time interval starting from the beginning of:
- The last hour (i.e. from "00" minutes and "00" seconds of current hour to now).
 - Today (i.e. from 00:00:00 the current day to now).
 - This week (i.e. from last Monday 00:00:00 to now).
 - This month (i.e. from 00:00:00 of current month the 1st to now).
 - This year (i.e. from 00:00:00 of current year January the 1st to now).

4.2.3 Chart time interval shift

1. Click on the "clock" icon in the left side of the top command bar: the "Time Scroll" settings box appears.

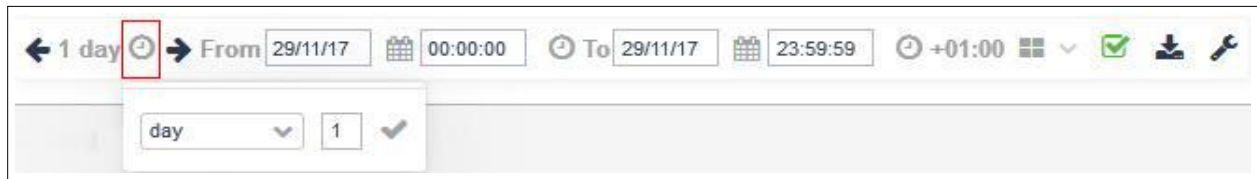


Fig. 4.2.7: "Time Scroll" drop-down menu

2. Click on the drop-down box to choose the desired time unit.

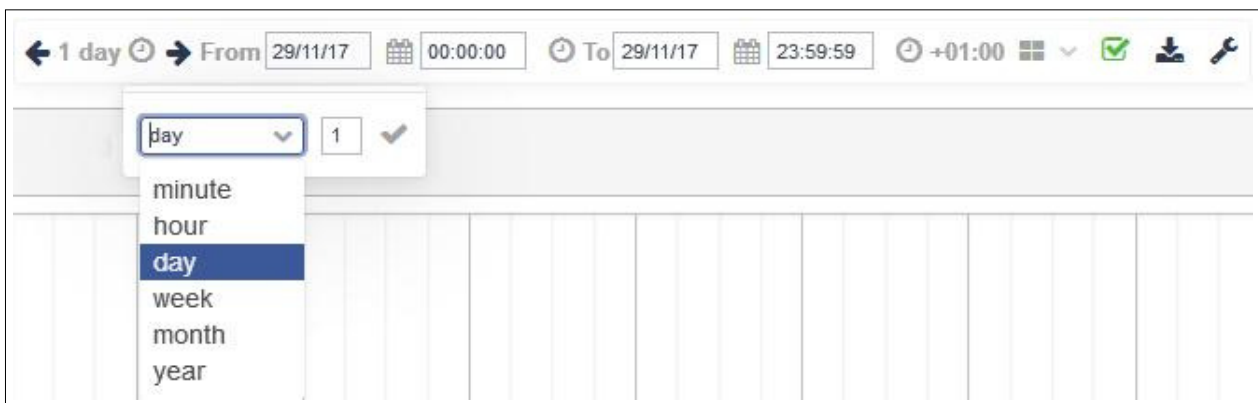


Fig. 4.2.8: "Time Scroll" unit drop-down box

3. Enter the desired number of selected time unit in the text-box.

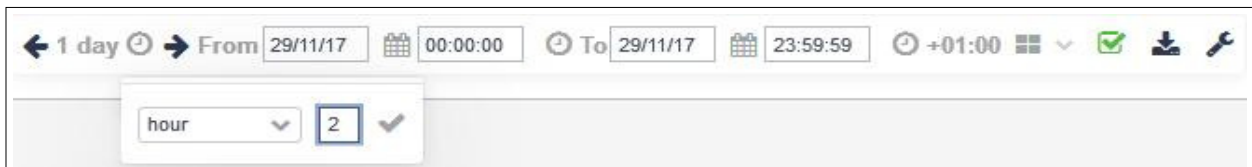


Fig. 4.2.9: "Time Scroll" unit number text-box

4. Click on the check mark to confirm the selection: the Time Scroll interval is updated.



Fig. 4.2.10: "Time Scroll" interval

5. Click on the left or right arrow by the side of "Time Scroll size" to shift the previously set time interval back or forth along the horizontal axis.



Fig. 4.2.11: Graph horizontal scroll application

4.2.4 Chart grid, markers and scale

1. Click on "Wrench" icon to access Graph Options, select them, then click on the "tick" sign:

- Select the check box "Real Time", to have the graph automatically refreshed every time a new set of values is received.
- Select "Show Grid" to have horizontal and vertical divisions depicted on the graph.
- Select "Markers" to have the value points highlighted.
- Select "Raw Data" to view the raw data on the graph.
- Select the combo box "Scale" item to set linear or logarithmic graph scale.

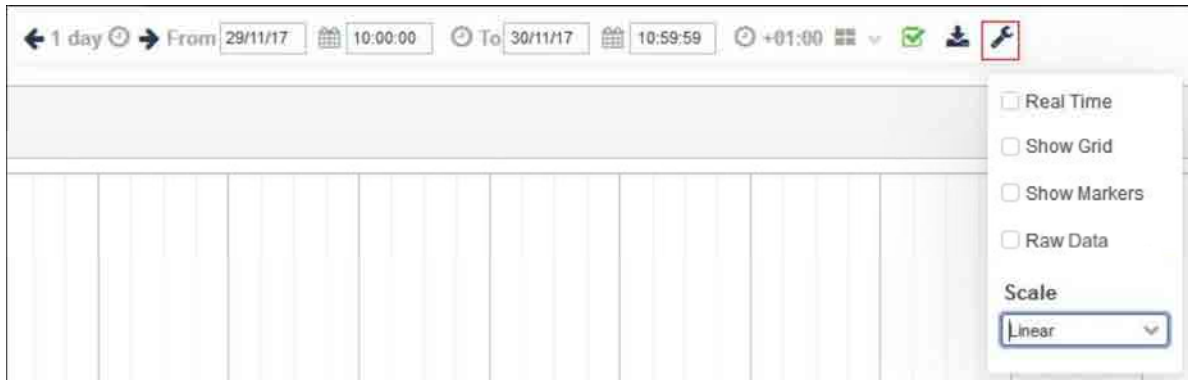


Fig. 4.2.12: Graph Options settings

4.2.5 Data export

The measurements values shown in the graph can also be exported to file format through the following steps.



Fig. 4.2.13: Download icon in the top control bar

Click on the "Download" icon in the top control bar and the Exportation Window appears:

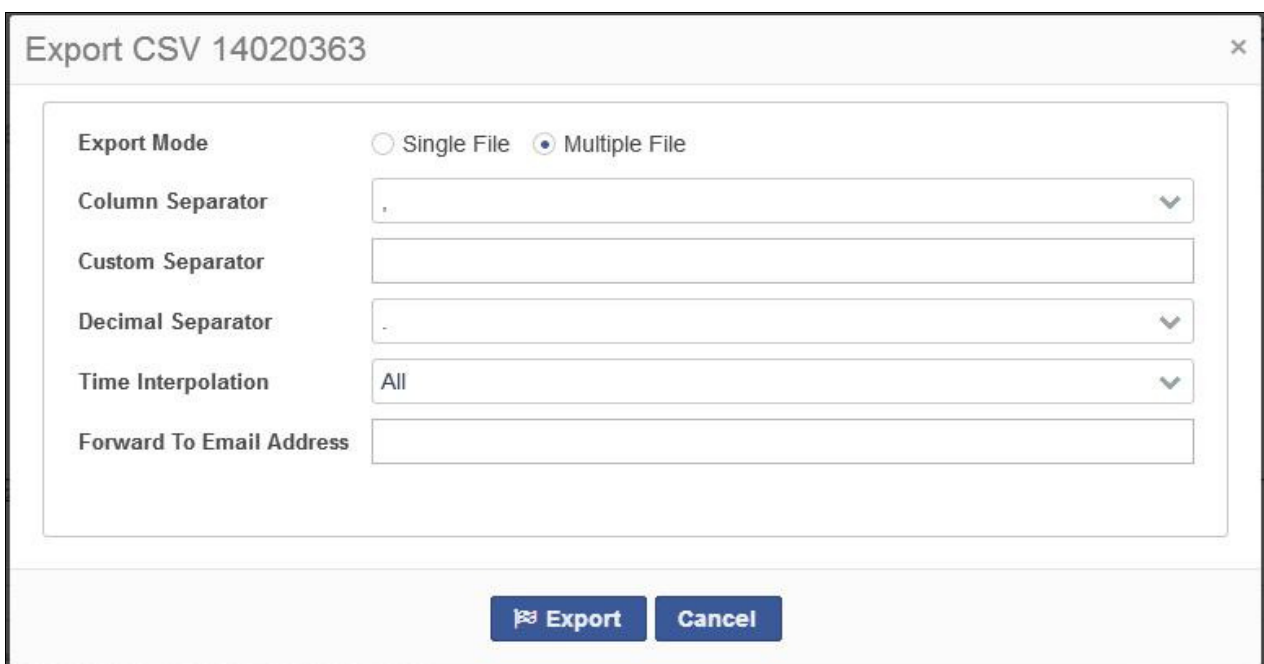


Fig. 4.2.14: Graph Export Window

1. Select "Single File" Export Mode to create one CSV file with all the displayed measurements; select "Multiple File" to create one CSV file for each displayed measurements.
2. Select the desired column and decimal separators from the corresponding combo boxes.
3. Open the "Time Interpolation" combo box and select how many values are to be exported ("All" for every saved value, "15 minutes" for 1 value every 15 minutes, "1 hour" for 1 value every hour).
4. Specify an email address to send exported data as attachment.

Each graph can also be printed or exported as PNG, JPEG, PDF or SVG file:

1. Click on the "List" icon in the top right corner of the interested graph.
2. Select the desired exported format in the drop-down menu.

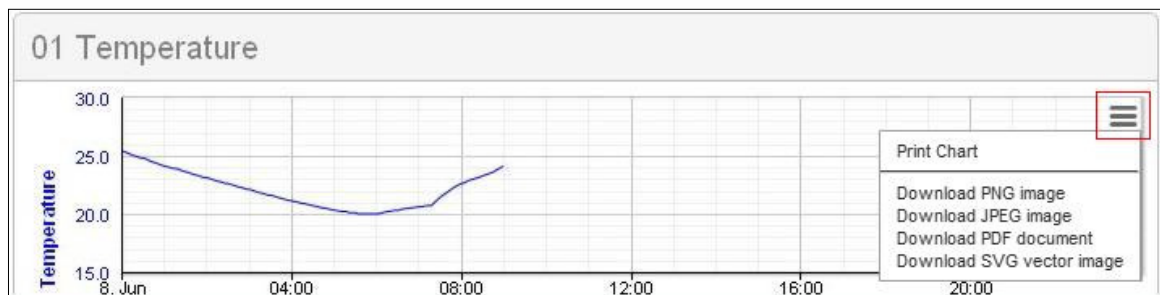


Fig. 4.2.15: Graph Exportation format

4.3 Modify Device informations

Device information are displayed through 5 tabs in "Modify Device" window: Administrator User can read them all, but only some fields are changeable.

1. Click on the device row in the left table: its parameters list appears in the right table.
2. Click on the "Pencil" icon to modify Device information.

Devices and Parameters										
	Serial Num	Label	Network	Status	Parameter	Qualifier	Unit of Measure	Scale	Offset	For
Show All	Show All	Show All	Show All	Show All	01 Vbatt	1-0	V	1.0	0.0	3.2
1	14033626	HD32MT3	default network	Connected	02 Internal temp.	1-0	°C	1.0	0.0	3.1
					03 Internal pressure	1-0	hPa	1.0	0.0	3.1
					04 HD52-SOW	1-0	m/s	1.0	0.0	3.2
					05 HD52-DIR	1-0	deg	1.0	0.0	3.1
					06 HD52-T_PT100	1-0	°C	1.0	0.0	3.1
					07 HD52-RH	1-0	%	1.0	0.0	3.1
					08 HD52-DEW	1-0	°C	1.0	0.0	3.1
					09 PYRA-TEMP	1-0	°C	1.0	0.0	3.1
					10 PYRA-RAD	1-0	W/m2	1.0	0.0	3.0
					11 LPSD18 Temp.	1-0	°C	1.0	0.0	3.1
					12 LPSD18 sun 0/1	1-0	bool	1.0	0.0	3.0
					13 LPSD18 Direct Rad	1-0	W/m2	1.0	0.0	3.0

Fig. 4.3.1: "Device and Parameters" tab, "Pencil" icon

3. The "Modify Device" window appears.

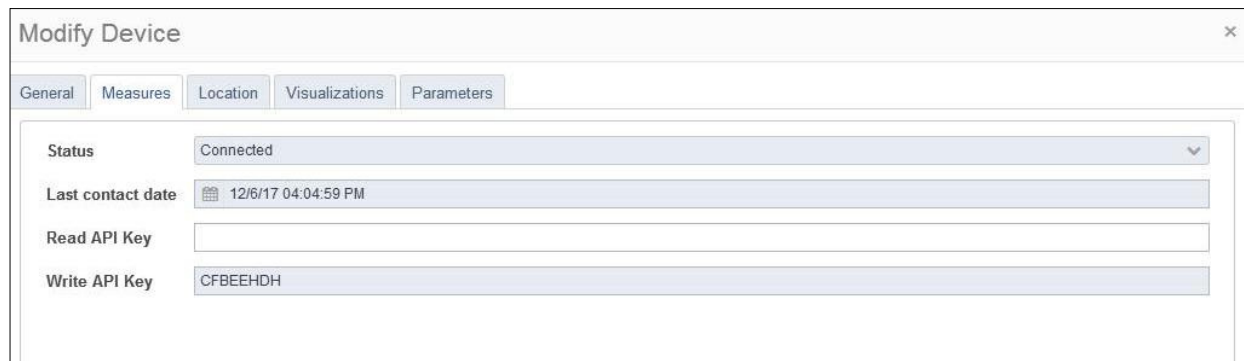
Fig. 4.3.2: "Modify Device" window, "General" tab

4. In the "General" tab there are 6 fields, as described in the following table.

	NAME	DESCRIPTION	STATUS
1	"Serial"	Device serial number	steady
2	"Activation Code"	Numerical sequence needed to take the Device from idle (Produced state) to communicate with CLOUD portal	steady
3	"Label"	String for Device brief description	changeable
4	"Model"	Device technical type identifier	steady
5	"Firmware Version"	Running firmware identifier	steady
6	"Production Date"	Date of Device being ready for shipping	steady

5. Click on "Measures" tab, there are 4 fields, as described in the followin table.

	NAME	DESCRIPTION	STATUS
1	"Status"	Selected Device current state	steady
2	"Last contact date"	Last received data timestamp	steady
3	"Read API Key"	Device identification code for reading operations	changeable
4	"Write API Key"	Device identification code for writing operations	steady



Modify Device

General Measures Location Visualizations Parameters

Status: Connected

Last contact date: 12/6/17 04:04:59 PM

Read API Key:

Write API Key: CFBEEHDH

Fig. 4.3.3: "Modify Device" window, "Measures" tab

6. Click on "Location" tab, there are 4 fields, as described in the following table.

	NAME	DESCRIPTION	STATUS
1	"Address"	Location where selected device has been placed	changeable
2	"Latitude"	Geographical coordinates where selected device has been placed	changeable
3	"Longitude"	Geographical coordinates where selected device has been placed	changeable
4	"Elevation"	Mean Sea Level of selected device location	changeable



Modify Device

General Measures Location Visualizations Parameters

Address: Via Marconi 5, Padua - Italy

Latitude: 45.407001495

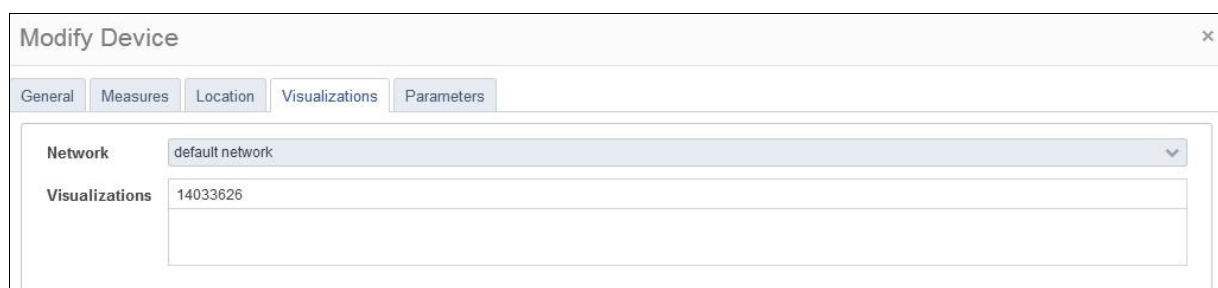
Longitude: 11.819999694

Elevation: 0

Fig. 4.3.4: "Modify Device" window, "Location" tab

7. Click on "Visualizations" tab, there are 2 fields, as described in the following table.

	NAME	DESCRIPTION	STATUS
1	"Network"	The subset selected Device belongs to	steady
2	"Visualizations"	Defined Visualizations involving selected Device measurements	steady



Modify Device

General Measures Location Visualizations Parameters

Network: default network

Visualizations: 14033626

Fig. 4.3.5: "Modify Device" window, "Visualizations" tab

8. Click on "Parameters" tab, all measured quantities are listed by 8 fields, as described in the following table.

	NAME	DESCRIPTION	STATUS
1	"Identifier"	String describing the measured quantity	steady
2	"Qualifier"		steady
3	"Unit of Measure"	Measurement unit label	steady
4	"Scale"	Tilt factor potentially multiplying the translated value (useful for measuring unit transformation, e.g. from Celsius to Fahrenheit degree)	steady
5	"Offset"	Translation Value potentially added to measured value (useful for measuring unit transformation, e.g. from Celsius to Fahrenheit degree)	steady
6	"Format"	Measured value integer digits number and fractional digits number	steady
7	"Activity Interval"	Timestamp of the first received data (last received data timestamp is recorded only in case of reception break)	steady
8	"Id"	Numerical input reference	steady

	Identifier	Qualifier	Unit of Measure	Scale	Offset	Format	Activity Interval	Id
1	03 Internal pressure	1 - 0	hPa	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	03
2	13 LPSP18 Direct Rad	1 - 0	W/m2	1.0	0.0	3.0	[Wed Feb 15 08:19:24 UTC 2017..+∞)	13
3	08 HD52-DEW	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	08
4	02 Internal temp.	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	02
5	06 HD52-T_PT100	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	06
6	05 HD52-DIR	1 - 0	deg	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	05
7	01 Vbatt	1 - 0	V	1.0	0.0	3.2	[Wed Feb 15 08:19:24 UTC 2017..+∞)	01
8	09 PYRA-TEMP	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	09
9	07 HD52-RH	1 - 0	%	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	07
10	10 PYRA-RAD	1 - 0	W/m2	1.0	0.0	3.0	[Wed Feb 15 08:19:24 UTC 2017..+∞)	10
11	12 LPSP18 sun 0/1	1 - 0	bool	1.0	0.0	3.0	[Wed Feb 15 08:19:24 UTC 2017..+∞)	12
12	11 LPSP18 Temp.	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	11
13	04 HD52-SOW	1 - 0	m/s	1.0	0.0	3.2	[Wed Feb 15 08:19:24 UTC 2017..+∞)	04

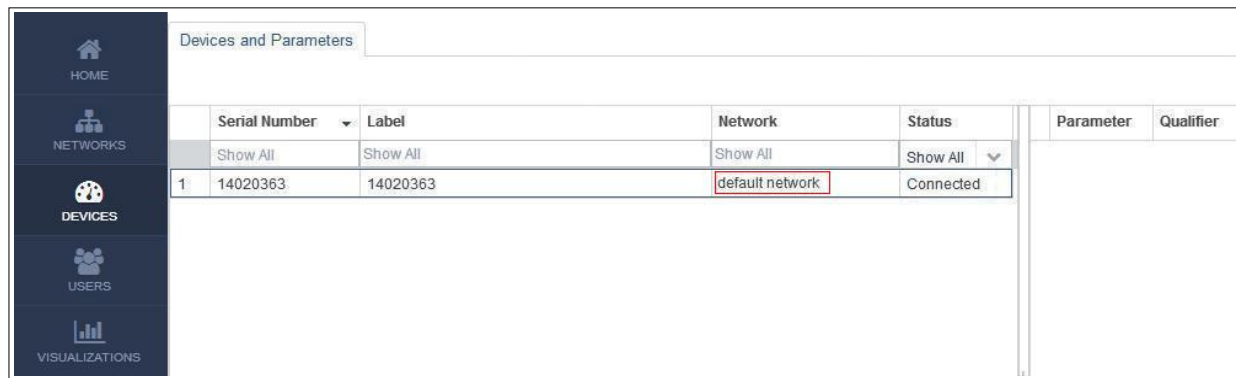
Fig. 4.3.6: "Modify Device" window, "Parameters" tab

Enter any desired changes, then apply by clicking on "Confirm" button or quit by clicking on "Cancel" button.

4.4 Delete a Device

Administrator User can delete a device, meaning that the deleted device is completely and definitively removed from the Portal. The "Waste basket" icon is disabled until the Device is associated to its Network.

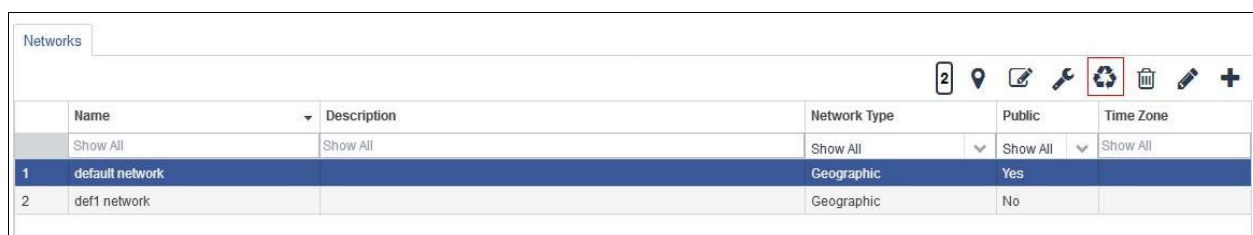
1. Check the Network the Device belongs to.



	Serial Number	Label	Network	Status	Parameter	Qualifier
	Show All	Show All	Show All	Show All		
1	14020363	14020363	default network	Connected		

Fig. 4.4.1: Device Network identification

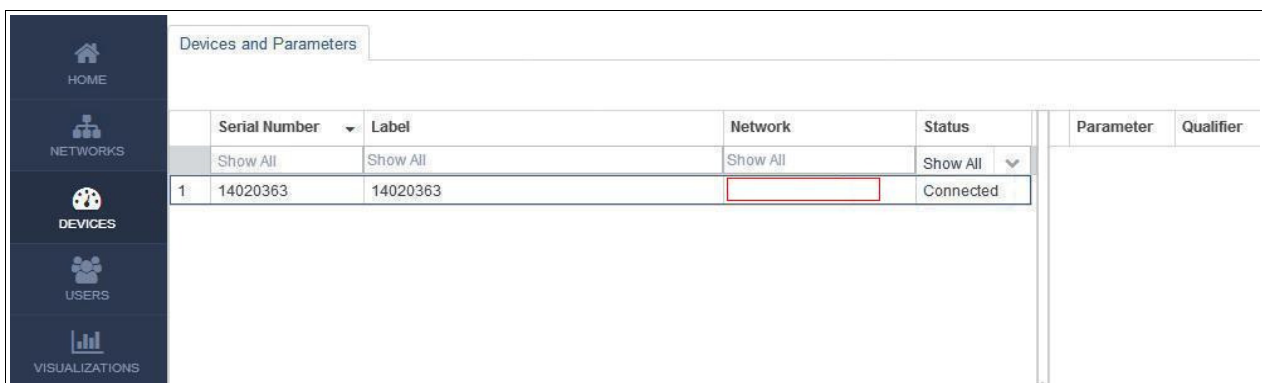
- Click on "Networks" button in the left column: the "Networks" tab appears.
- Select the Device Network, then click on the "Migration" icon.



	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 4.4.2: Network Migration icon

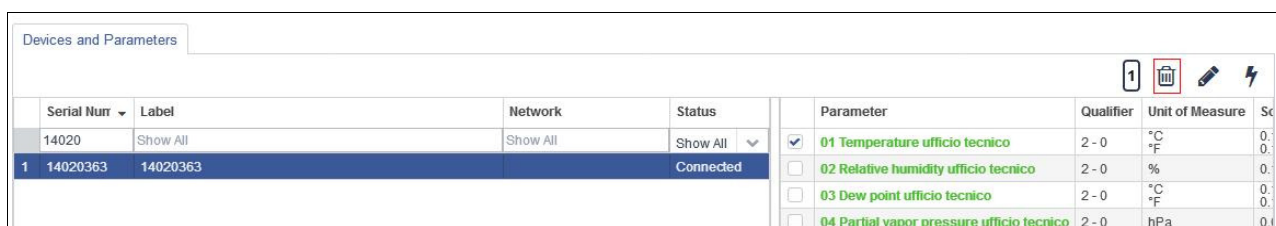
- Execute steps 2 to 3 from section 6.2 to disassociate the Device from the Network.
- Click on "Devices" button in the left column to go back to "Devices and Parameters" tab: the field "Network" in the Device row is now empty.



	Serial Number	Label	Network	Status	Parameter	Qualifier
	Show All	Show All	Show All	Show All		
1	14020363	14020363		Connected		

Fig. 4.4.2: Disassociated Device

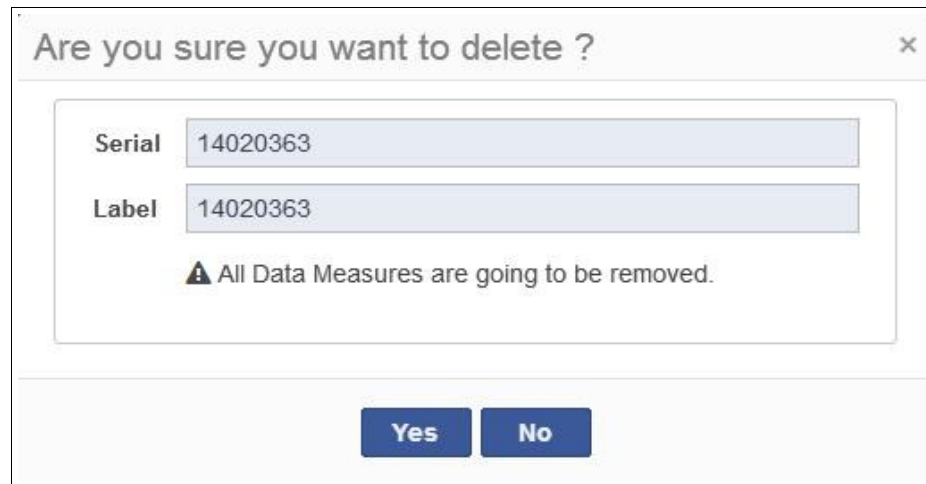
- Select the Device row: the "Waste basket" icon is now enabled in the top command bar.



	Serial Number	Label	Network	Status	Parameter	Qualifier	Unit of Measure	Scale
	14020	Show All	Show All	Show All				
1	14020363	14020363		Connected				

Fig. 4.4.3: "Waste basket" icon

7. Click on it: a confirmation window appears.



A confirmation dialog box titled "Are you sure you want to delete ?" with a close button (X) in the top right corner. The dialog contains two input fields: "Serial" and "Label", both containing the value "14020363". Below these fields is a warning message: "⚠ All Data Measures are going to be removed." At the bottom of the dialog are two buttons: "Yes" and "No".

Fig. 4.4.4: Confirmation window for Device deletion

8. Click on the "Yes" button to finally remove the Device from the Portal and erase all received measured data. Otherwise or click on "No" button to quit

WARNING: A removed Device can NOT be retrieved by the Administrator User. To get the Device in once again, the Administrator User MUST send a request to Senseca Service for Device re-activation.

5 Users

The Cloud Platform is provided for three users accounting level:

1. Administrator account is the one performing the first time registration to the portal; its privileges are:
 - Defining Super-User and User accounts.
 - Adding Devices to the system.
 - Aggregating Devices into Networks.
 - Assigning Networks management to Super-User.
 - Generating measurements Visualizations from all Networks.
 - Associate USER to Visualisations.
2. Super-User account is the supervisor of a single Network, being allowed to:
 - Generate measurement Visualisations from authorized Network.
 - Associate USER to Visualisations from authorized Network.
3. User account allows to:
 - Access to associated measurement Visualisations.

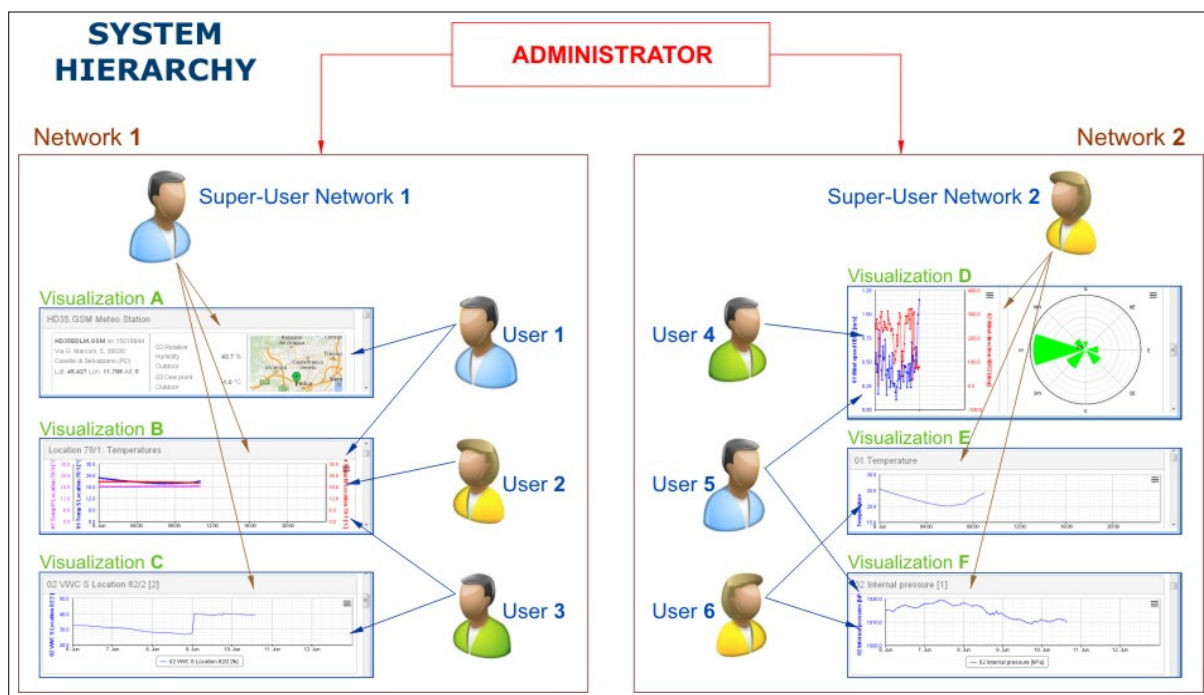


Fig. 5.1: Cloud User Accounts

5.1 Accounts Description

5.1.1 Administrator Account

The Administrator account is created when completing the first time registration by inserting Serial Number and Activation Key of a device in "Produced" state: the device turns to "Activated" state and there is no way to take it back to "Produced".

Administrator user is the only one allowed to:

- Activate Devices and then modify their information and associate/disassociate them to only one Network of its own.
- Create Networks other than Default Network, modify or delete them.
- Create Super-User and User accounts, modify or delete them.
- Permanently associate Super-User and User accounts to one Network only (no way to associate them to a different Network afterwards).

5.1.2 Super-User Account

A Super-User account is permanently associated with one Network only when created. It is allowed to:

- Access to Devices, Visualisations and User accounts associated with its Network.
- Create, modify or delete Visualizations.
- Associate User accounts with Visualizations.

5.1.3 User Account

A User account is permanently associated with one Network only when created. It is allowed to:

- Access to Visualizations it is associated with.

5.2 Create an Account

1. Click on the “Users” button in the left column: the Users main page appears.

	User Name	First Name	Last Name	Email	Roles	Network	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All	Show All
1	Admin_User	John	Smith	john.smith@acne.com	Administrator		Active

Fig. 5.2.1: Cloud User Accounts

2. Click on the “Plus” icon and the “New User” window appears: enter Username and Password in the “Login Info” tab.

New User

Login Info

User Info

Authorizations

Additional Info

Username*

su01

Password*

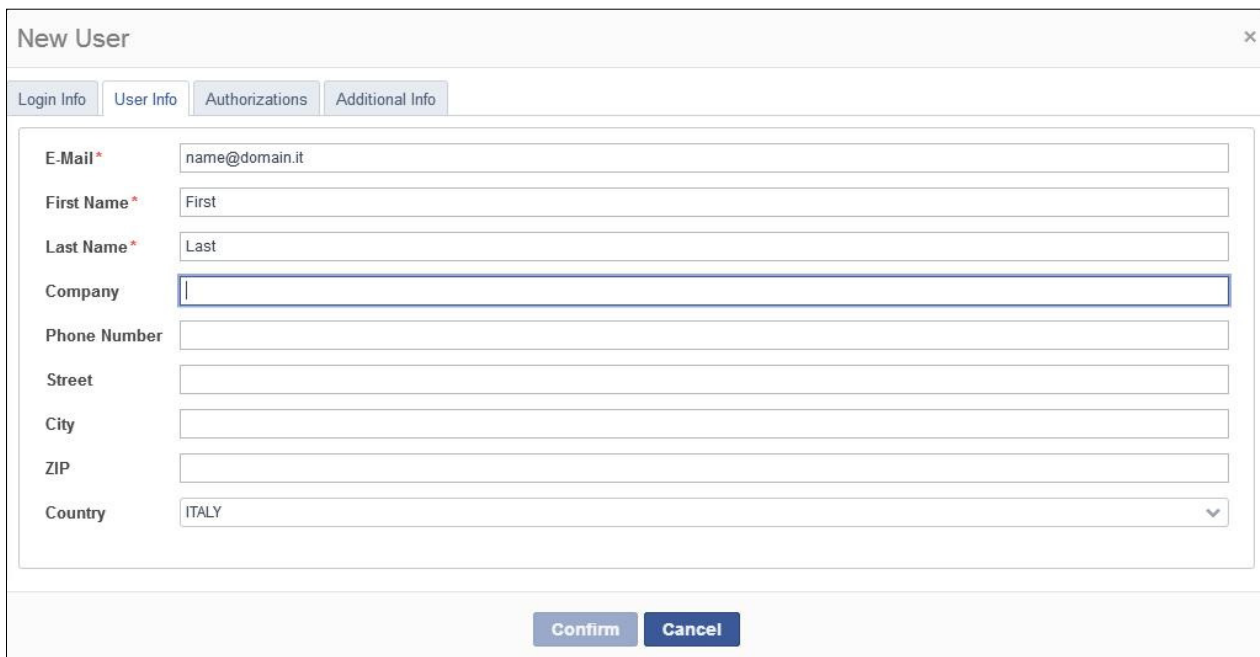
.....

Re-type Password

.....

Fig. 5.2.2: Username and Password definition

3. Click on "User Info" tab and enter user identity information ("E-Mail", "First Name" and "Last Name" mandatory fields).



The "New User" form is shown with the "User Info" tab selected. The form contains the following fields:

- E-Mail *: name@domain.it
- First Name *: First
- Last Name *: Last
- Company: (empty)
- Phone Number: (empty)
- Street: (empty)
- City: (empty)
- ZIP: (empty)
- Country: ITALY (dropdown menu)

At the bottom of the form are "Confirm" and "Cancel" buttons.

Fig. 5.2.3: User identity information

4. Click on "Authorizations" tab, click on "Role" drop-down box and assign account level (Super-User or User).



The "New User" form is shown with the "Authorizations" tab selected. The form contains the following fields:

- Role *: (dropdown menu showing SuperUser and User)
- Network: (empty)
- Visualizations: (empty)

Fig. 5.2.4: User Role assignment

5. Click on "Network" drop-down box and assign an existing Network to allow user creation / access only for that Network Visualizations.



The "New User" form is shown with the "Authorizations" tab selected. The form contains the following fields:

- Role *: SuperUser (dropdown menu)
- Network: def1 network (dropdown menu)
- Visualizations: (empty)

Fig. 5.2.5: User Network assignment

6. Click on "Additional Info" tab and click on radio buttons corresponding to user "Job Role" and "Areas of Interest". Then click on "Confirm" button to save the user profile.

New User [X]

Login Info | **User Info** | Authorizations | Additional Info

Job Role

☐ Sole Proprietorship

☐ Solution Builder

☐ System Integrator

Areas Of Interest

☐ Commercial

☐ Education

☐ Government

☐ Personal

Confirm **Cancel**

Fig. 5.2.6: User Additional Info completion

7. The defined user is now available in the User main page.

	User Name	First Name	Last Name	Email	Roles	Network	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All	Show All
1	Admin_User	John	Smith	john.smith@acme.com	Administrator		Active
2	su01	First	Last	name@domain.it	SuperUser	def1 network	Active

Fig. 5.2.7: User creation completed

8. Select the user row and click on the "Info" icon.

	User Name	First Name	Last Name	Email	Roles	Network	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All	Show All
1	Admin_User	John	Smith	john.smith@acme.com	Administrator		Active
2	su01	First	Last	name@domain.it	SuperUser	def1 network	Active

Fig. 5.2.8: User selection

9. The "User Details" window appears, displaying "First Name", "Last Name" and "Visualizations" fields (read only).

User Details [X]

First Name: First

Last Name: Last

Visualizations:

Close

Fig. 5.2.9: "User Details" window

5.3 Modify an Account

1. Select the user row and click on the "Pencil" icon in the top command bar.



	User Name	First Name	Last Name	Email	Roles	Network	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All	Show All
1	Admin_User	John	Smith	john.smith@acme.com	Administrator		Active
2	su01	First	Last	name@domain.it	SuperUser	def1 network	Active

Fig. 5.3.1: "User Details" window

2. The "Modify User" window appears: click on the "Account Status" drop-down box to select the desired status ("Active", "Expired", "Locked", "Suspended").



Modify User

Login Info | User Info | Authorizations | Additional Info

Username: su01

Account Status*: Active

Password: Active

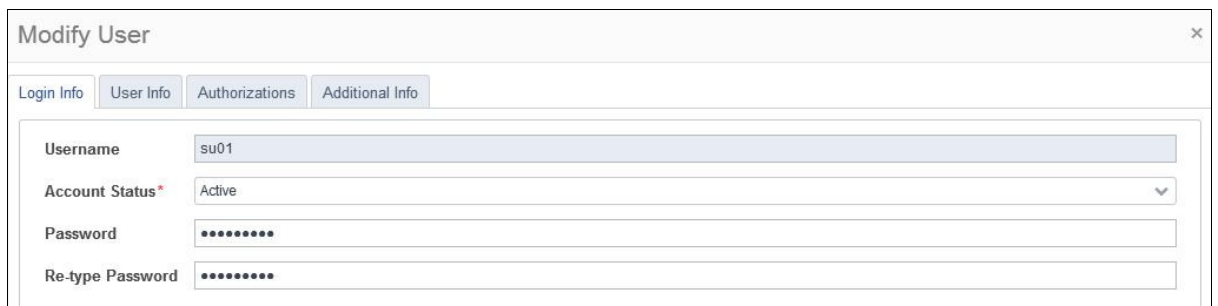
Re-type Password: Expired

Locked

Suspended

Fig. 5.3.2: "Login Info" tab, "Account Status" drop-down menu

3. Change the User Password by typing it in "Password" and "Re-type Password" text boxes.



Modify User

Login Info | User Info | Authorizations | Additional Info

Username: su01

Account Status*: Active

Password:

Re-type Password:

Fig. 5.3.3: "Login Info" tab, "Password" update

4. Click on "User Info" tab to update user identity information.



Modify User

Login Info | User Info | Authorizations | Additional Info

E-Mail*: name@domain.it

First Name*: First

Last Name*: Last

Company:

Phone Number:

Street:

City:

ZIP:

Country: ITALY

Fig. 5.3.4: "User Info" tab

5. Click on "Authorizations" tab to update the reference Network.

Modify User

Login Info User Info **Authorizations** Additional Info

Role: SuperUser

Network: def1 network

Visualizations:

Fig. 5.3.5: "Authorizations" tab

6. Click on "Additional Info" tab to update user job and area of interest information.

Modify User

Login Info User Info Authorizations **Additional Info**

Job Role

☐ Sole Proprietorship

☐ Solution Builder

☐ System Integrator

Areas Of Interest

☐ Commercial

☐ Education

☐ Government

☐ Personal

Confirm **Cancel**

Fig. 5.3.6: "Additional Info" tab

7. Click on "Confirm" button to apply changes.

5.4 Delete an Account

1. Select the user row and click on the "Waste basket" icon in the top command bar.

	User Name	First Name	Last Name	Email	Roles	Network	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All	Show All
1	Admin_User	John	Smith	john.smith@acme.com	Administrator		Active
2	su01	First	Last	name@domain.it	SuperUser	def1 network	Active

Fig. 5.4.1: User selection for deletion

2. The confirmation window appears: click on “Yes” button to delete the account or click on “No” button to quit.



A confirmation dialog box with the title "Are you sure you want to delete ?" and a close button (X) in the top right corner. Inside the dialog, there are two input fields: "First Name" with the value "First" and "Last Name" with the value "Last". At the bottom of the dialog, there are two buttons: "Yes" and "No".

Fig. 5.4.2: Confirmation window before deletion

WARNING: After deletion, the user is no more available.

6 Network

When many devices have been registered to the Cloud, it could be useful to group them in subsets, so called "Network", according to some common characteristics (i.e. position, measurements, timing, etc.).

By clicking on "Network" button in the left column, the "Networks" tab shows the list of existing device groups. At the very beginning only the Default Networks appears in the list.

	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	

Fig. 6.1: "Networks" tab

Each network is described by "Name", "Description", "Network Type", "Public", "Time Zone" fields: column width can be easily adjusted by clicking on the first row vertical line and drag it to desired position.

In the top right position a command bar shows the number of defined Networks together with action icons.

At the very beginning only the Default Networks appears in the list, since every device joins the Default Network when activated.

6.1 Create a Network

Authorized users can then create customized Networks according to the following steps.

1. In the top command bar click on the "Plus" icon: the "New Network" window appears.



Fig. 6.1.1: "Plus" icon to add a Network

2. In "General" tab, enter "Name" (mandatory field) and "Description" of the new Network.

Fig. 6.1.2: "Name" and "Description" fields

3. Scroll down and define the Network Type:

- Select "Geographic" radio button to display Network devices as positioned on an interactive geographical map, using their given latitude and longitude.
- Select "Custom" radio button to display Network devices as positioned on various custom images (layout of a building floor, map of a processing plant,...).
- Select "Public" check-box to allow Network Visualizations access without logging in on the Portal (useful to allow Visualisations being linked in web pages).

Fig. 6.1.3: "Networks Type", "Timezone" and "Concurrent Users" fields

4. Select the specific timing reference from the "Timezone" drop-down menu and set how many users can simultaneously access to the Network in the "Concurrent Users" field.
5. Click on "Confirm" button to apply: the new Network is now in the list.

Networks				
2 📍 📄 🔧 🔄 🗑️ ✎ +				
	Name	Description	Network Type	Public
	Show All	Show All	Show All	Show All
1	def1 network		Geographic	No
2	default network		Geographic	Yes

Fig. 6.1.4: "def1 network" added to "Networks" tab

A new Network is an empty set: after its creation devices needs to be added.

Since a device can belong only to one network, there are two ways to associate a Device to a customized Network:

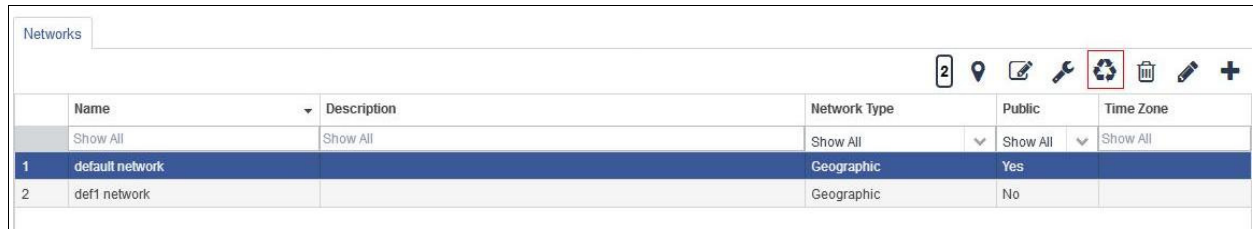
- At Device Activation time, as described in section 6.3.2.
- At any further time, when the Device is connected and already belongs to a Network (at least the Default one), as described below in section 6.2.

6.2 Device migration between Networks

The selected device must be disassociated from the outgoing Network (e.g. Default Network) and then associated to the incoming Network.

NOTE: The migration procedure is designed to preserve the already received data.

1. Select the outgoing network from the list and click on the "Migration" icon in the top command bar.

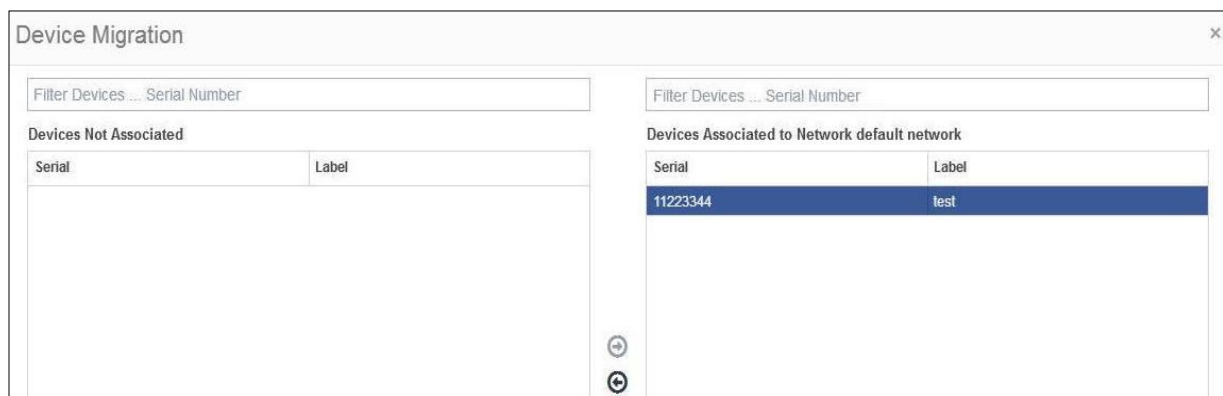


The screenshot shows a table with columns: Name, Description, Network Type, Public, and Time Zone. The first row is highlighted in blue and contains the text '1 default network Geographic Yes'. The second row contains '2 def1 network Geographic No'. In the top right corner, there is a command bar with several icons. The 'Migration' icon, which is a circular arrow, is highlighted with a red box.

	Name	Description	Network Type	Public	Time Zone
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 6.2.1: "Migration" icon in the top command bar

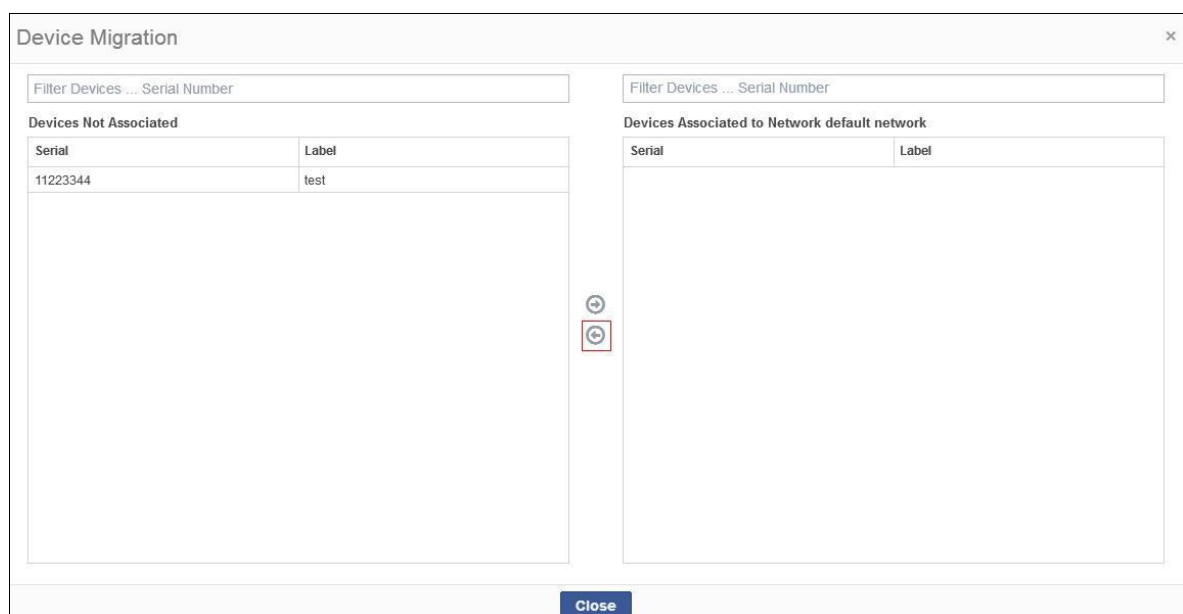
2. The "Device Migration" window appears: select the device to be detached from the list in the right column "Devices associated with the Network default network".



The screenshot shows a window titled 'Device Migration'. It has two main sections: 'Devices Not Associated' on the left and 'Devices Associated to Network default network' on the right. Both sections have a 'Filter Devices ... Serial Number' input field. The 'Devices Associated' section contains a table with one row: '11223344' with label 'test'. Below the tables are two circular arrows: a left arrow and a right arrow. The left arrow is highlighted with a red box.

Fig. 6.2.2: Migrating device selection

3. Click on the "Left arrow" icon and click on the "Yes" button in the confirmation window: the selected device is now available to be associated with the incoming Network.



The screenshot shows the 'Device Migration' window after the device has been detached. The 'Devices Not Associated' section now contains a table with one row: '11223344' with label 'test'. The 'Devices Associated to Network default network' section is empty. The left arrow icon is still highlighted with a red box. At the bottom of the window is a 'Close' button.

Fig. 6.2.3: Device detached from Default Network

4. Click on the "Close" button to go back to "Networks" tab, select the destination network and click on the "Migration" icon again.

Networks					
2					
	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 6.2.4: Destination network selection

5. The "Device Migration" window appears: select the device to be associated from the list in the left column "Devices Not Associated", then click on the "Right arrow" icon.

Device Migration

Filter Devices ... Serial Number

Devices Not Associated

Serial	Label
11223344	test

Filter Devices ... Serial Number

Devices Associated to Network def1 network

Serial	Label
--------	-------

➡

⬅

Fig. 6.2.5: Device ready for association

6. As appears in the right column, the device is finally associated to the Network: click on "Close" button to go back to "Networks" tab.

Device Migration

Filter Devices ... Serial Number

Devices Not Associated

Serial	Label
--------	-------

Filter Devices ... Serial Number

Devices Associated to Network def1 network

Serial	Label
11223344	test

⬅

➡

Close

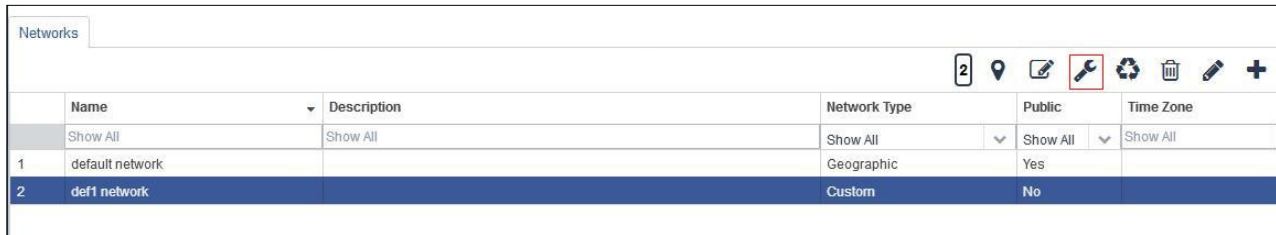
Fig. 6.2.6: Associated device

7. Repeat step 1 to 6 for each device to be associated.

6.3 Network relations

For every defined Network it is possible to access and modify the enabled Users and Devices.

1. Select the interested Network from the list in the "Networks" tab, then click on the "Wrench" icon.



	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Custom	No	

Fig. 6.3.1: Network list

2. The selected Network tab appears, with "Users" and "Devices" sub tabs.



	User Name	First Name	Last Name	Email	Roles	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All
1	su01	First	Last	name@domain.it	SuperUser	Active

Fig. 6.3.2: Network relations sub tabs

6.3.1 Sub tab "User"

The sub tab "Users" lists the user accounts allowed to access the current Network, described by "User Name", "First Name", "Last Name", "Email", "Role" and "Account Status".

In the right top command bar the counter label reports the associated User Accounts number, while the icons are linked to features described in section 5.



	User Name	First Name	Last Name	Email	Roles	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All
1	su01	First	Last	name@domain.it	SuperUser	Active

Fig. 6.3.3: "Plus" icon to create a new user account

1. Click on the "Plus" icon to create one more user account: the "New User" window appears.
2. Execute steps 2 to 6 from section 5.2: the new User account will join the list and will be able to create, modify and delete current Network Visualisations (if Super-User) or access current Network Visualisations (if plain User).
3. Select a User row and click on "Info" icon: the "User Details" window appears.



	User Name	First Name	Last Name	Email	Roles	Account Status
	Show All	Show All	Show All	Show All	Show All	Show All
1	su01	First	Last	name@domain.it	SuperUser	Active

Fig. 6.3.4: "Info" icon to read selected User identity information

4. Execute step 9 in section 5.2 to view selected User account informations.
5. Select a User row and click on "Pencil" icon: the "Modify User" window appears.



	User Name	First Name	Last Name	Email	Roles	Account Status
1	su01	First	Last	name@domain.it	SuperUser	Active

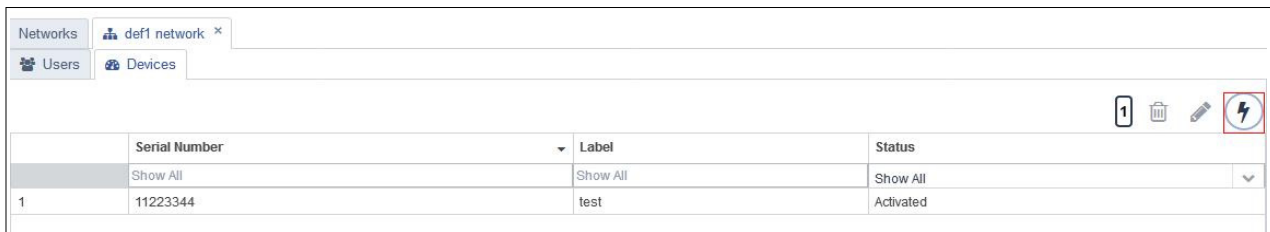
Fig. 6.3.5: "Pencil" icon to modify User profile

6. Execute steps 1 to 7 from section 5.3 and the selected User profile will be updated.
7. Select the User row to be removed from the Portal.
8. Click on "Waste basket" icon: the confirmation window appears as described in step 2, section 5.4.
9. Click on "Yes" button to delete the account or click on "No" button to quit.

WARNING: After deletion, the user is no more available.

6.3.2 Associate a new Device

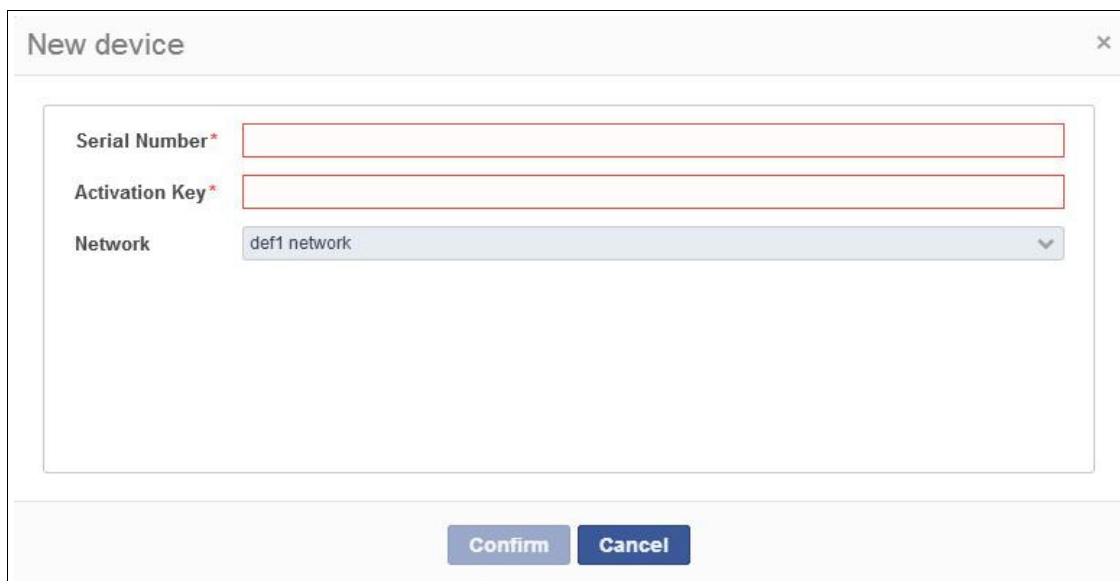
1. Click on "Devices" tab: the list of Network assigned Devices appears.



	Serial Number	Label	Status
1	11223344	test	Activated

Fig. 6.3.5: Network "Devices" tab

2. Click on the "Lightning" icon: the "New Device" window appears.



New device

Serial Number*

Activation Key*

Network def1 network

Fig. 6.3.6: "New Devices" window

3. Enter Device Serial Number and Activation Key. Note that "Network" field is steady, since the new Device is implicitly associated to current Network.
4. Click on "Confirm" button to apply: the new Device will join the list.

6.3.3 Modify a Device

1. Select a Device row and click on the "Pencil" icon: the "Modify Device" window appears.



	Serial Number	Label	Status
Show All	Show All	Show All	Show All
1	11223344	test	Activated

Fig. 6.3.7: "Pencil" icon to modify Device properties

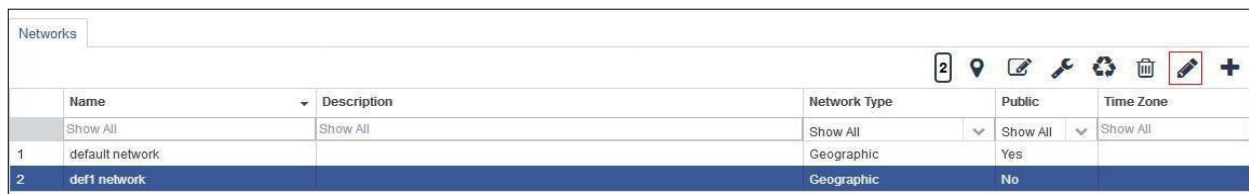
2. Execute steps 1 to 7 from section 4.3 and the selected Device properties will be updated.

NOTE: "Waste basket" icon is not available from this window, because a Device needs to be disassociated from its Network before being deleted.

6.4 Modify Network description

A Network description can be modified at any time.

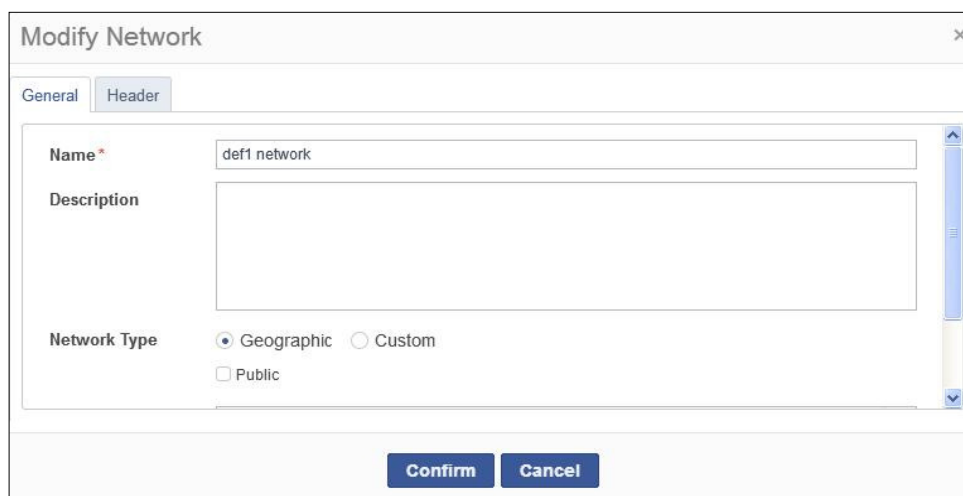
1. Select the interested Network from the list in the "Networks" tab, then click on the "Pencil" icon.



	Name	Description	Network Type	Public	Time Zone
Show All	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 6.4.1: Networks list

2. The "Modify Network" window appears: "Name", "Description", "Network Type", "Timezone" and "Concurrent Users" fields can be updated.



Modify Network

General Header

Name* def1 network

Description

Network Type ☒ Geographic ☐ Custom

☐ Public

Confirm Cancel

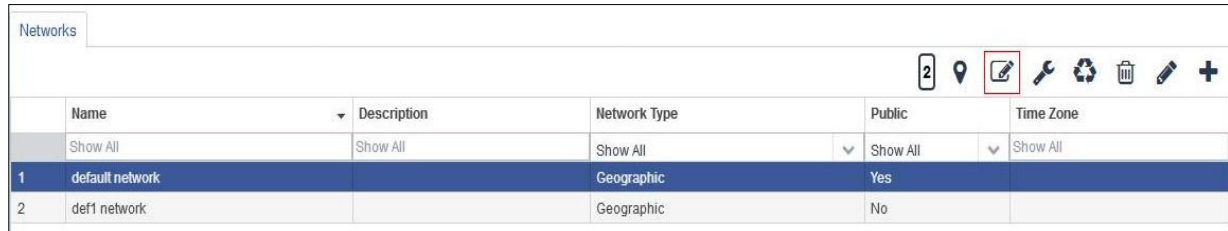
Fig. 6.4.2: "Modify Network" window

3. Click on "Confirm" button to apply or "Cancel" button to quit.

6.5 Geographic Network settings

When a Network is defined as "Geographic" and geo-localized Devices are associated, a geographical map can be linked to Network properties.

1. Select the interested Network from the list in the "Networks" tab, then click on the "Modify Map" icon.



	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 6.5.1: Networks list

2. The "Devices' Geographic Map" tab appears: center the map as desired, zoom in or zoom out, select "Map" or "Satellite" view, then click on "Save" icon. The current tab disappears.

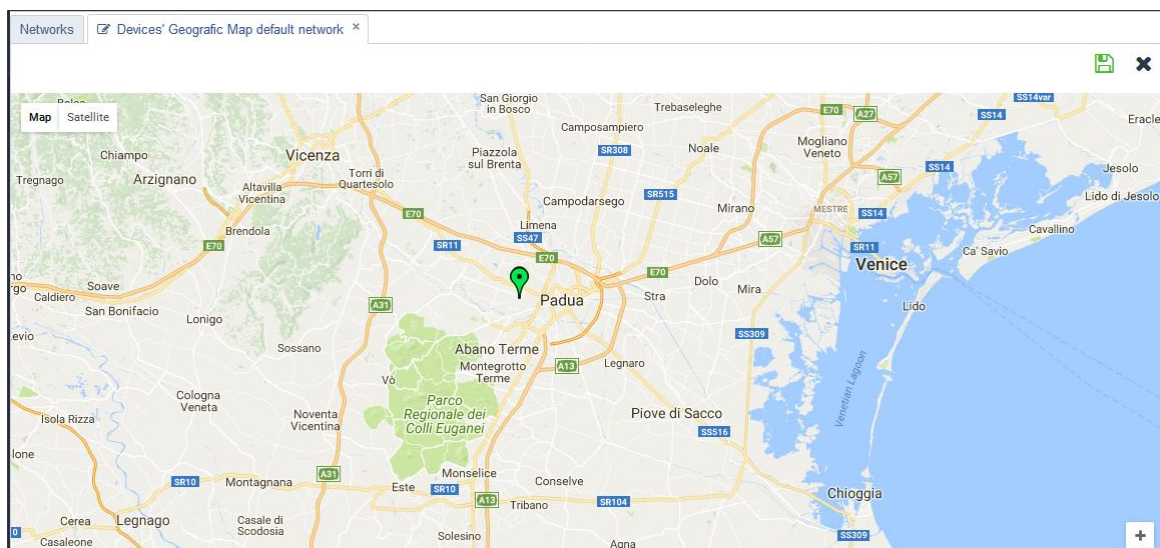
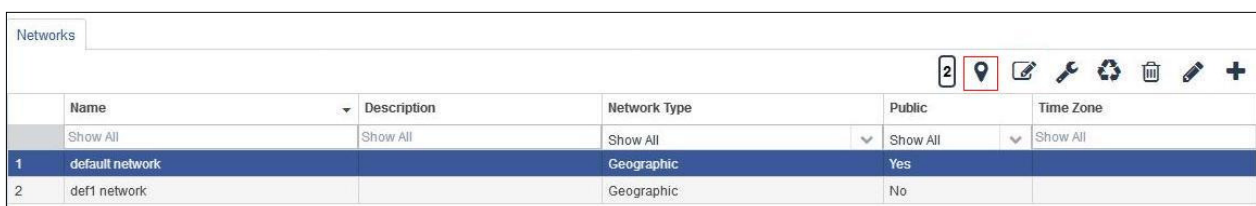


Fig. 6.5.2: Network map settings

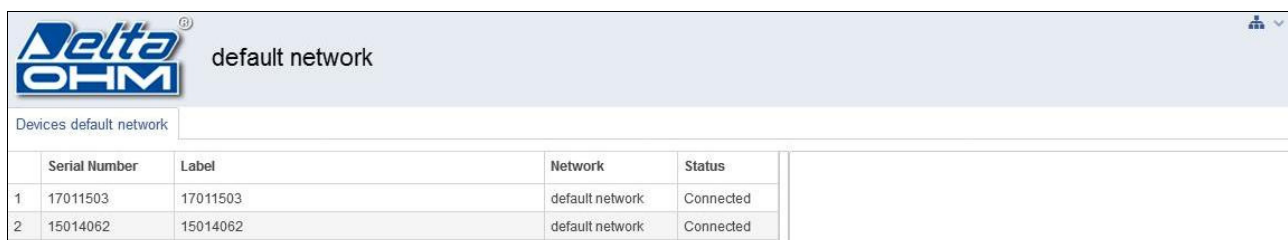
3. In the "Network" tab click on the "View Map" icon.



	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Geographic	No	

Fig. 6.5.3: Network map view

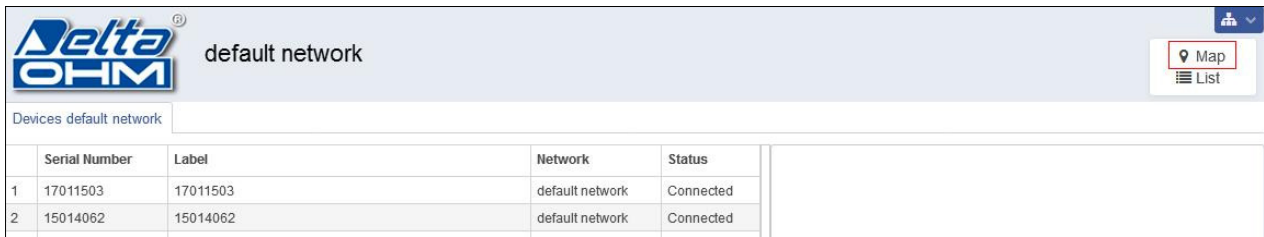
4. The associated "Devices" list appears.



Serial Number		Label	Network	Status
1	17011503	17011503	default network	Connected
2	15014062	15014062	default network	Connected

Fig. 6.5.4: Devices list

5. Click on the "Tree" icon in the top right corner and select the item "Map" from the drop-down menu.



	Serial Number	Label	Network	Status
1	17011503	17011503	default network	Connected
2	15014062	15014062	default network	Connected

Fig. 6.5.5: Map view

6. The previously set map is shown (zoom-in and zoom-out commands are available, but result is not saved).

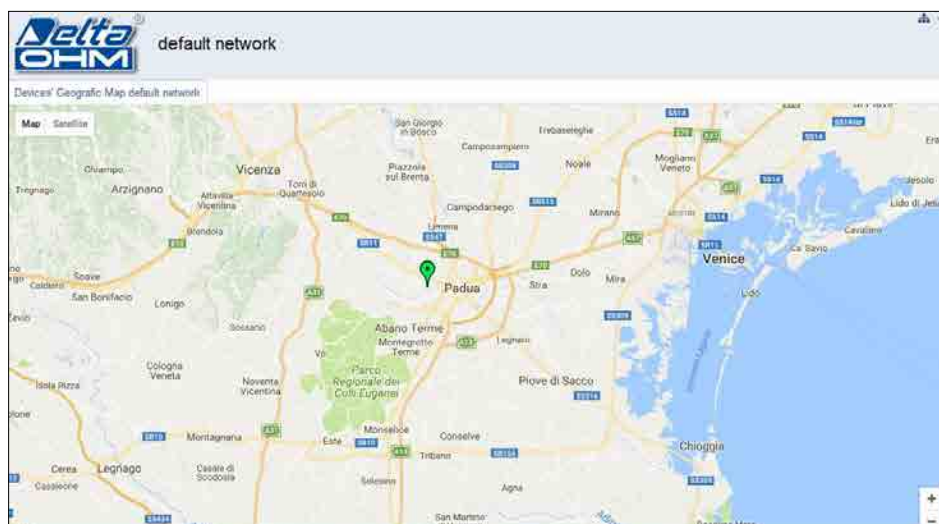


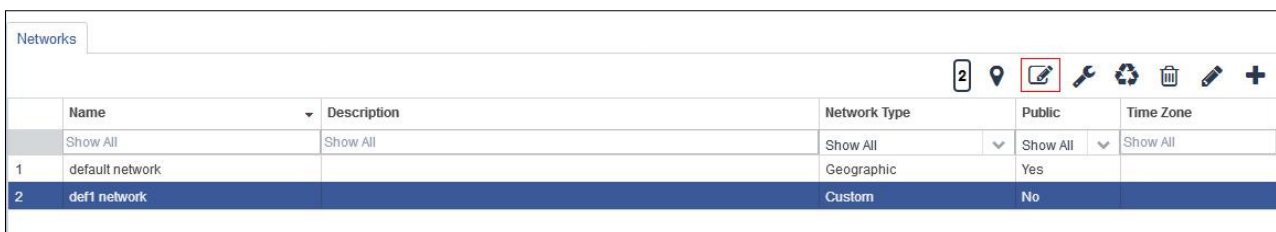
Fig. 6.5.6: Network map

7. Select the item "List" from the drop-down menu to go back to Devices list or click on "Networks" button in the left column to go back to "Networks" tab.

6.6 Custom Network settings

When a Network is defined as "Custom", any picture can be linked to Network properties and appear as background for Devices position.

1. Select the interested Network from the list in the "Networks" tab, then click on the "Modify Map" icon.



	Name	Description	Network Type	Public	Time Zone
1	default network		Geographic	Yes	
2	def1 network		Custom	No	

Fig. 6.6.1: Network list

2. The "Create Map" window appears.

The "Create Map" window is shown with the following fields and controls:

- Map Name ***: An empty text input field.
- Map Markers ***: A section containing two list boxes:
 - Available Devices**: Contains the item "11223344 test".
 - Map's Devices**: An empty list box.
 - Between the two list boxes are two arrow buttons: a right arrow (>) and a left arrow (<).
- Show as Default Map**: A checkbox that is currently unchecked.
- Buttons**: "Confirm" and "Cancel" buttons at the bottom right.

Fig. 6.6.2: "Create Map" window

- Enter the map name in the "Map Name" text box, then select the Network Devices to be shown on the customized map from the "Available Devices" box and click on the "Right arrow" key.

The "Create Map" window is shown with the following changes:

- Map Name ***: Now contains the text "Map1".
- Map Markers ***: The "Available Devices" list box now has "11223344 test" selected (highlighted in blue). The "Map's Devices" list box remains empty.
- The right arrow (>) button is highlighted with a red box, indicating it should be clicked.

Fig. 6.6.3: Device selection

- Selected Devices appear in the "Map's Devices" box.

The "Create Map" window is shown with the following changes:

- Map Name ***: Still contains "Map1".
- Map Markers ***: The "Available Devices" list box is now empty. The "Map's Devices" list box now contains the item "11223344 test".
- The "Map's Devices" list box is highlighted with a blue border, indicating it is the active selection area.

Fig. 6.6.4: Device included in the map

- Select a Device in the "Map's Devices" box and click on "Left arrow" key to exclude them from the map.
- Click on "Confirm" button to terminate: the "name network" tab and sub tab "Custom map" appear.

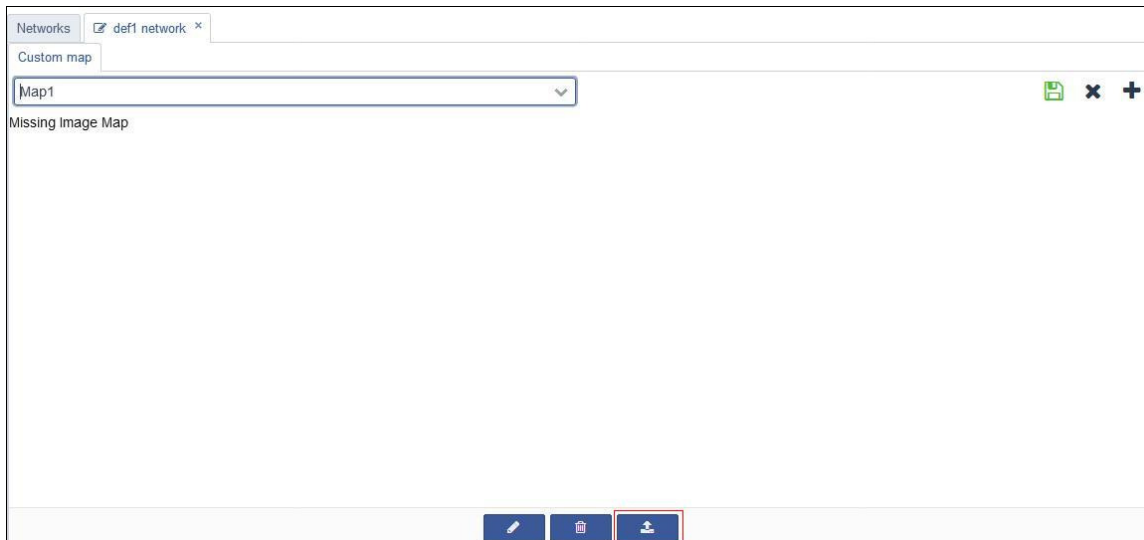


Fig. 6.6.5: "Custom map" sub tab

7. Click on the "Upload" button: the "Upload Map Image" window appears.



Fig. 6.6.6: "Upload Map Image" window

8. Click on the "Sfoggia" button: your File Manager window appears. Find the path to the file you want to use as map, select it and wait for its upload.

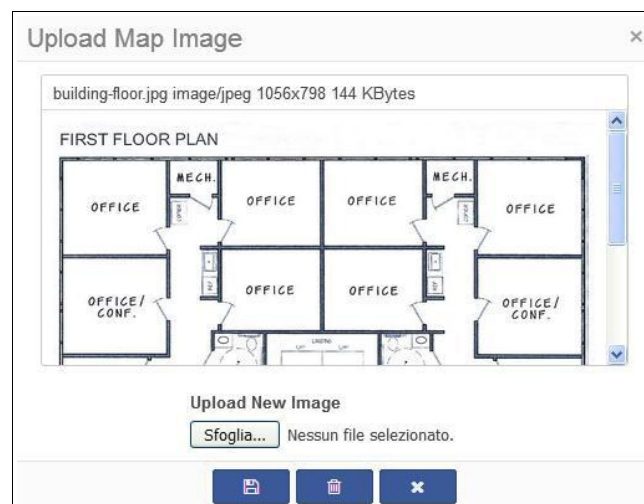


Fig. 6.6.7: Uploaded map

9. Click on "Disk" button to save the uploaded file.



Fig. 6.6.8: Saving button

10. In case of erroneous selection click on "Waste basket" button to remove the uploaded file.



Fig. 6.6.9: Deletion button

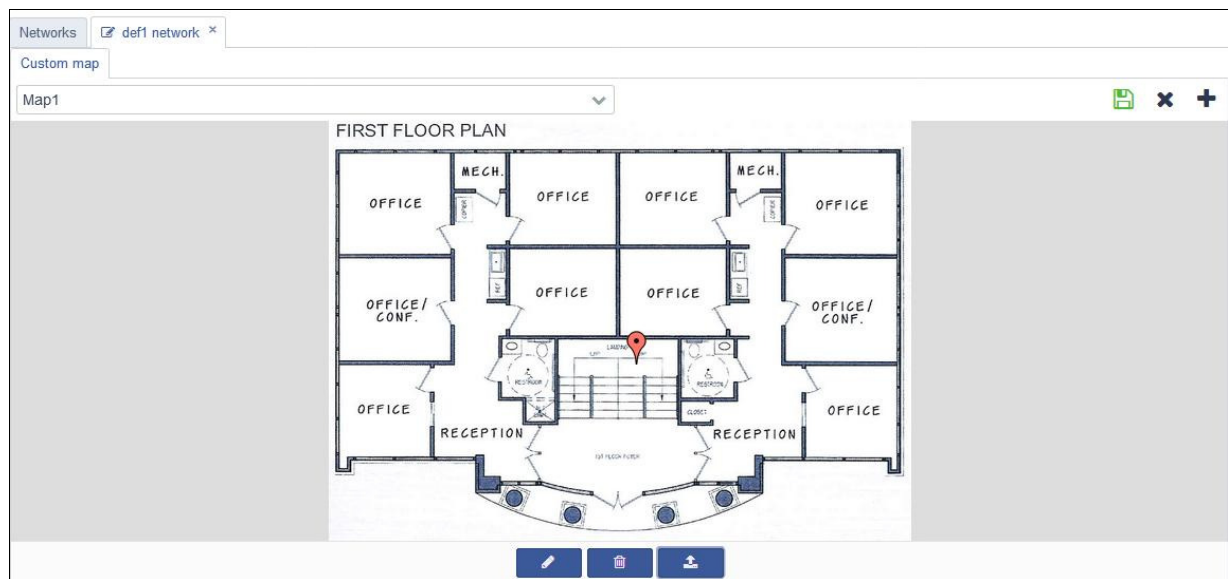


Fig. 6.6.10: Selected map

11. Click on the red position marker: the corresponding Device information summary appears. Click on the map to close the device information summary.

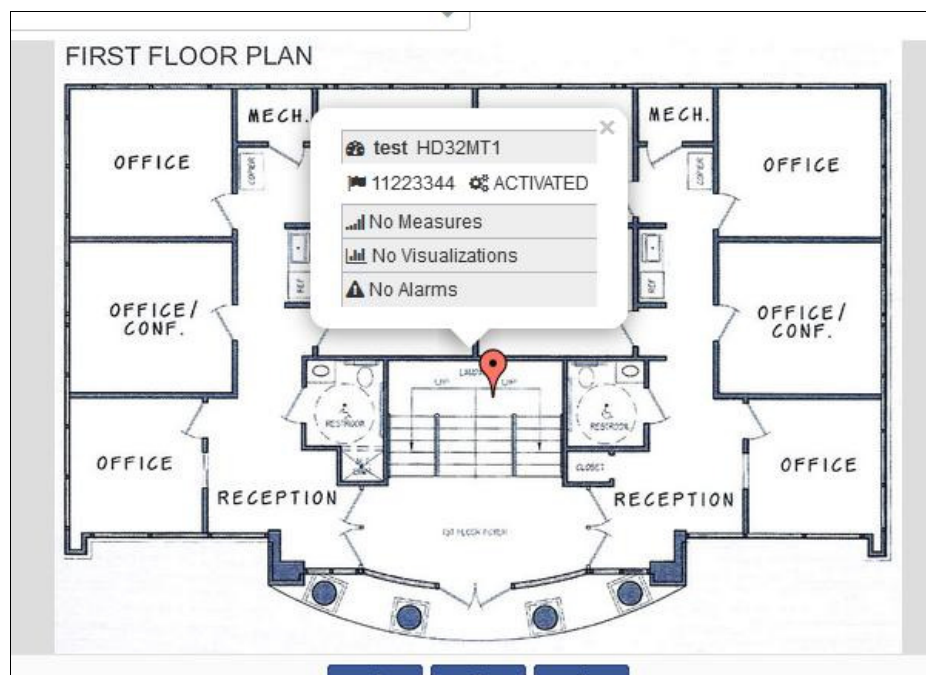


Fig. 6.6.11: Device Information

12. Drag the marker and drop it to the desired position on the map.

13. Click on the "Pencil" button when needing to adjust Network name and add more devices.

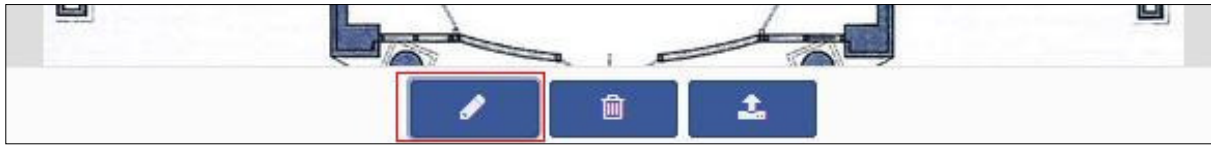


Fig. 6.6.12: "Pencil" button to modify the map

14. The "Modify Map" window appears: repeat steps 3 to 5 according to your requirement.

15. Finally click on the "Disk" icon in the top command bar to save the result and go back to "Networks" tab.

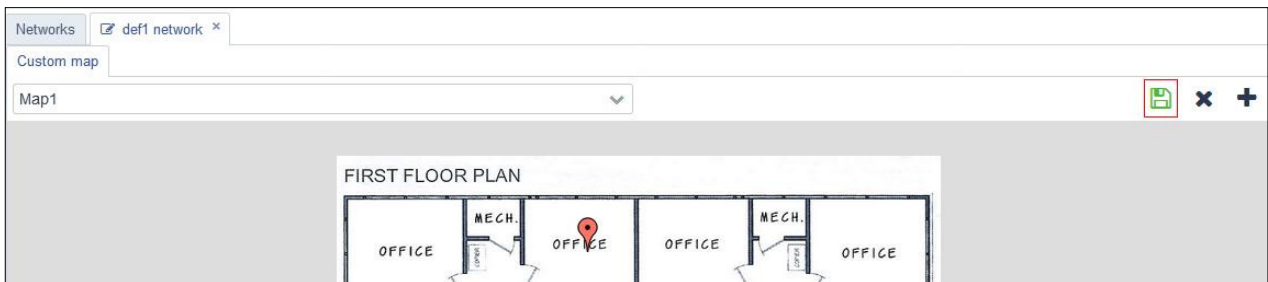


Fig. 6.6.13: Custom Map save

16. Click on the "Plus" icon in the top command bar of the "Custom Map" sub tab in order to add one more custom map: the "Create Map" window appears again, repeat steps 3 to 12.

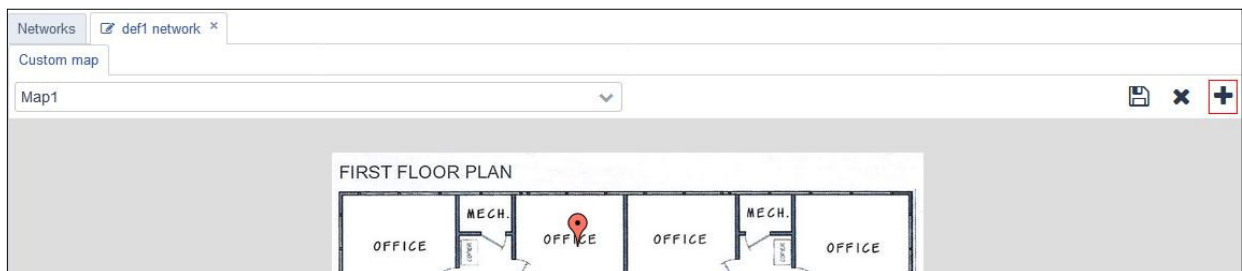


Fig. 6.6.14: "Plus" icon to add one more image

17. Click on the "Waste Basket" button to remove the current custom map: a confirmation window appears.



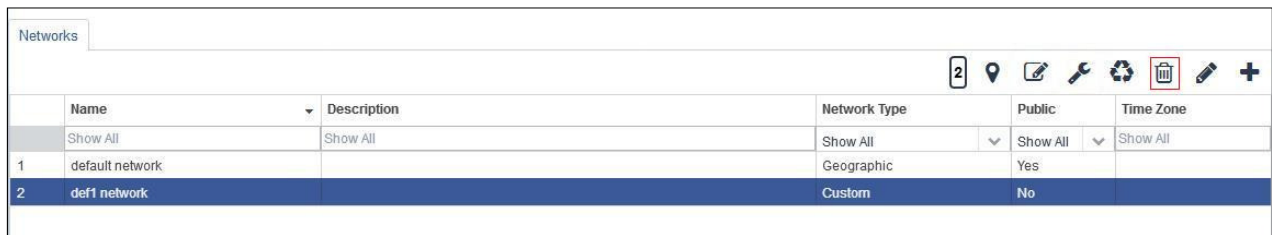
Fig. 6.6.15: Confirmation window for Map deletion

18. Click on "Yes" button to delete the selected map or click on "No" button to quit.

6.7 Delete a network

When a Network is no more usefull or outmoded, it can be removed by the following steps.

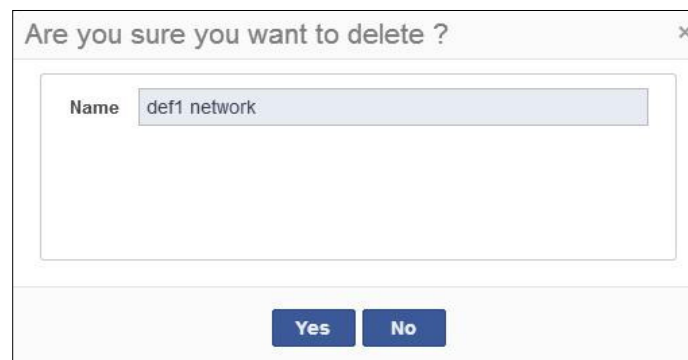
1. Select the Network in the "Networks" tab, then click on the "Waste basket" icon.



Networks					
2 [location] [edit] [wrench] [refresh] [trash] [pencil] [plus]					
	Name	Description	Network Type	Public	Time Zone
	Show All	Show All	Show All	Show All	Show All
1	default network		Geographic	Yes	
2	def1 network		Custom	No	

Fig. 6.7.1: "Waste basket" icon to delete a Network

2. A confirmation window appears.



Are you sure you want to delete ?

Name def1 network

Yes No

Fig. 6.7.2: Confirmation window for Network deletion

3. Click on "Yes" button to delete the selected Network or click on "No" button to quit.

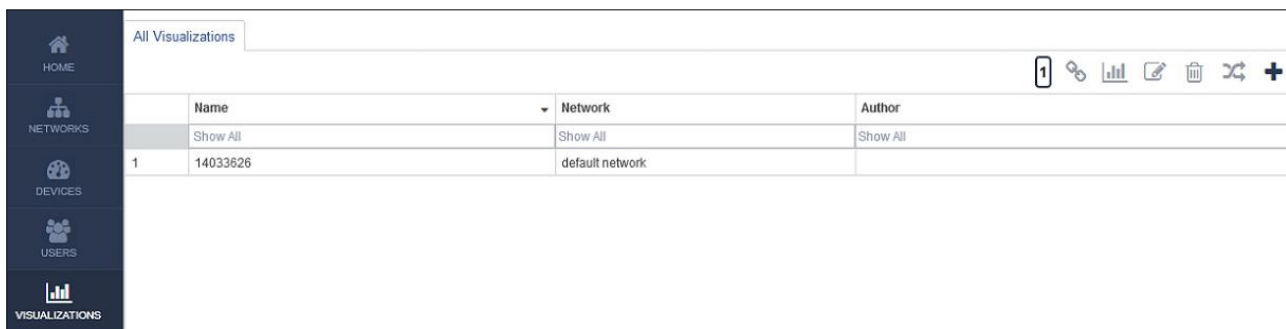
7 Visualizations

As described in section 4.2, a linear charts page is automatically created to plot measurements quantities from each Device turned to "Connected" state: this graphical grouping is named "default Visualization". It is identified by corresponding Device Serial Number.

In addition to this default Visualization Devices measured quantities can be flexibly aggregate in subsets, according to user preferences or needs:

- Administrator User can create, modify or remove Visualizations by all connected Devices.
- Super-User can create, modify or remove Visualizations by its own Network connected Devices.

By clicking on "Visualizations" button in the left column, the "All Visualizations" tab shows the list of existing charts group.



	Name	Network	Author
	Show All	Show All	Show All
1	14033626	default network	

Fig. 7.1: "All Visualizations" tab

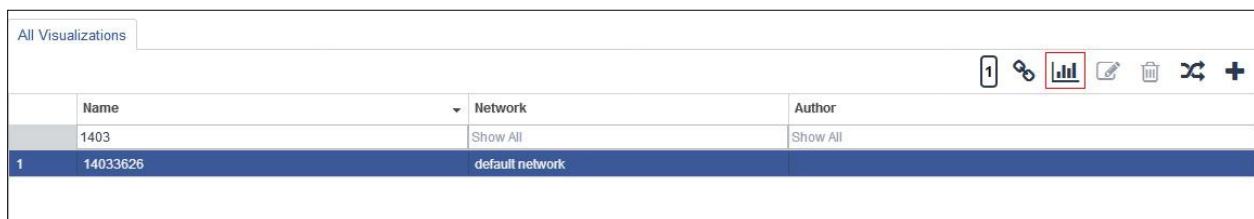
Each Visualization is described by "Name", "Network", "Author" fields: column width can be easily adjusted by clicking on the first row vertical line and drag it to desired position.

In the top right position a command bar shows the number of defined Visualisations together with action icons.

7.1 Default Visualization

To access a default Visualization follow the steps below:

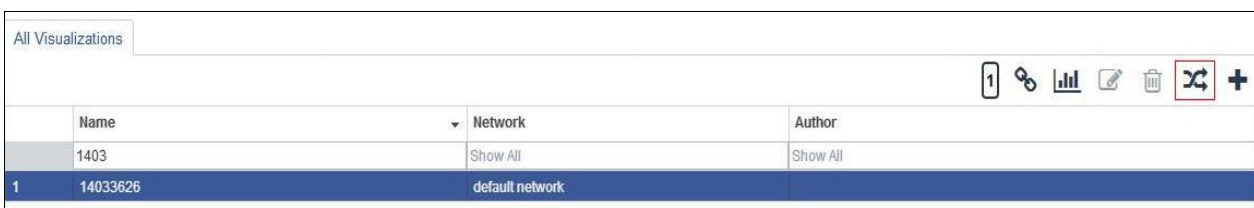
1. Select the default Visualisation row and click on the "Graph" icon.



	Name	Network	Author
	Show All	Show All	Show All
1	14033626	default network	

Fig. 7.1.1: default Visualisation selection

2. The selected Visualization tab appears. Refers to section 4.2 for a detailed description.
3. Close the tab and click on the "Crossed arrows" icon.



	Name	Network	Author
	Show All	Show All	Show All
1	14033626	default network	

Fig. 7.1.2: default Visualisation bindings icon

4. The “Visualization Bindings” window appears, where Users can be authorized to access the current Visualization:

- In the left half of the window User accounts associated to default Network are shown.
- In the right half of the window User accounts choosen for accessing current Visualisation.
- In the bottom right the list of Super-User accounts associated to default Network.

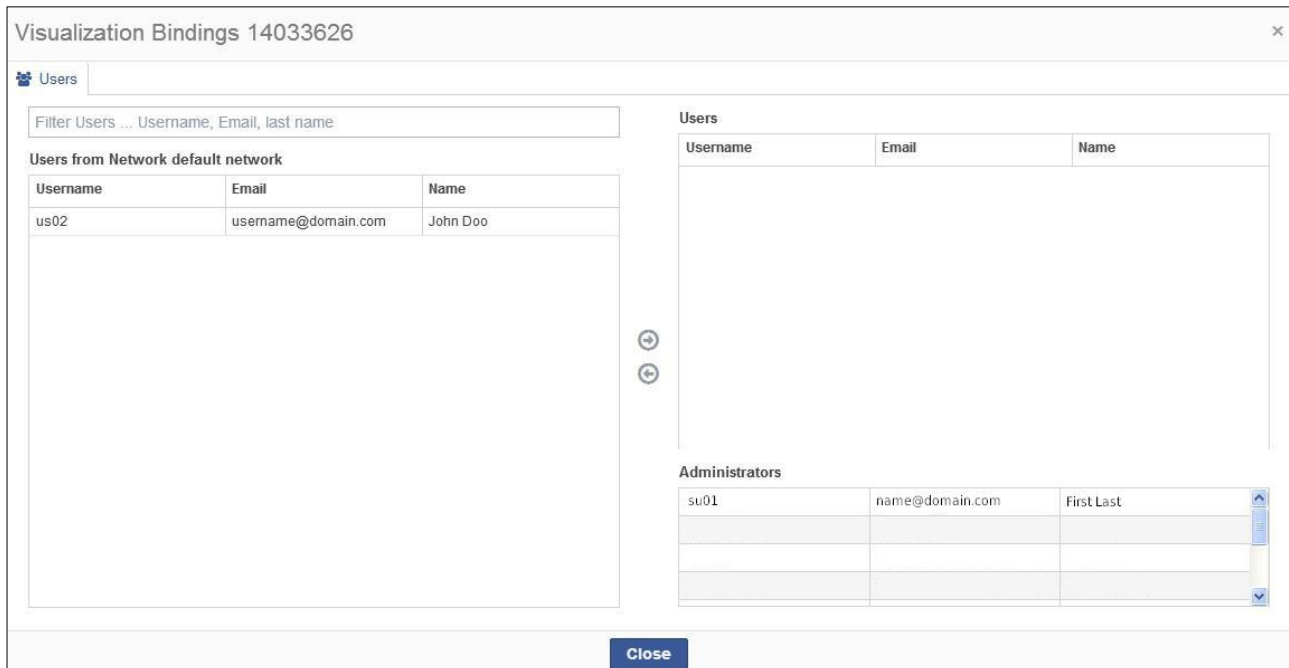


Fig. 7.1.3: Visualisation bindings window

5. Select User account row and click on “Right arrow” key to add it to authorized Users list.

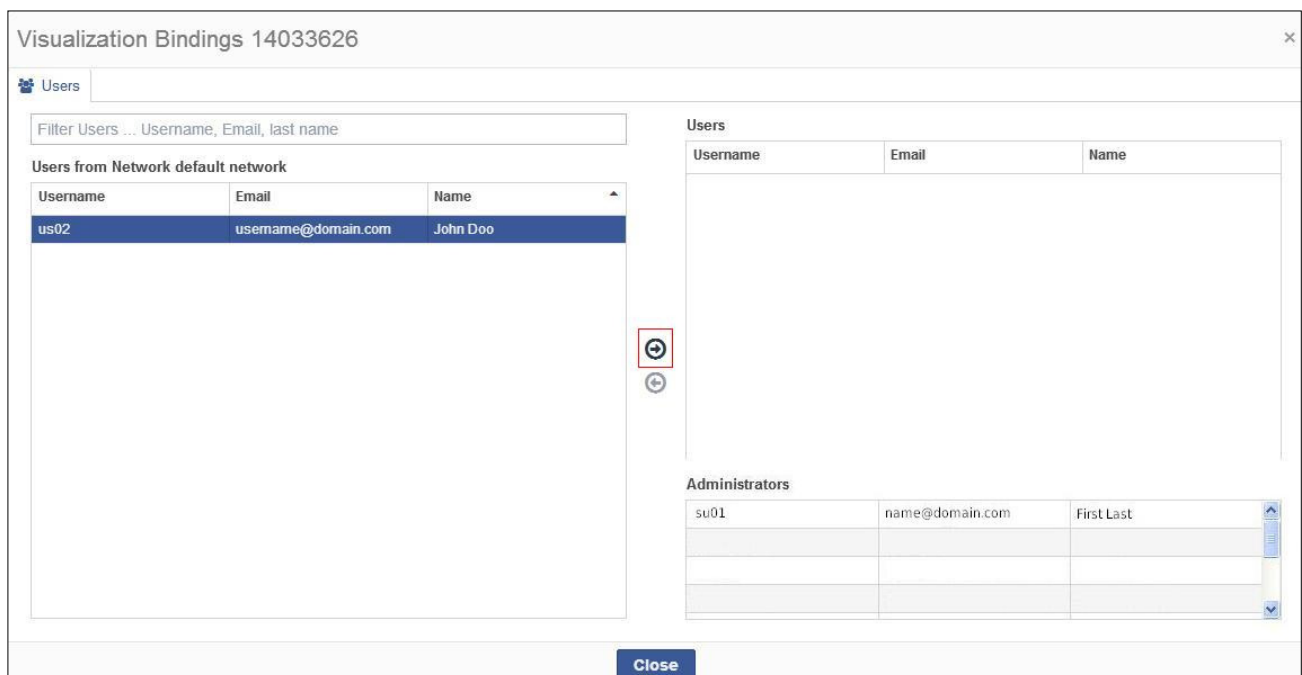


Fig. 7.1.4: Visualisation bindings window

6. The added User account is now in the authorized Users list.

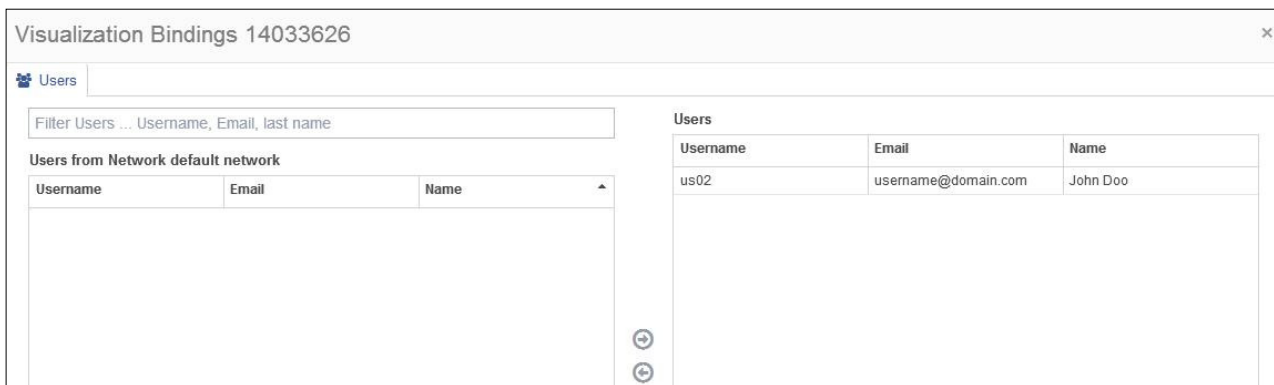


Fig. 7.1.5: Authorized User account

7. Select the User account to be removed from the right section, then click on the "Left arrow" icon and the User account will be no more authorized to access the current Visualisation.
8. Click on the "Close" button when all desired User accounts have been authorized: the "Visualization Bindings" disappeared.

7.2 Customized Visualization

Administrator User can create an advanced Customized Visualization window, where selected measurements quantities can be displayed in numerical and graphical form and can be accessed without authentication.

A Google map can also be inserted, in order to show the Device location.

In the following picture, an example of Customized Visualisation is shown, as included in the company official web site.

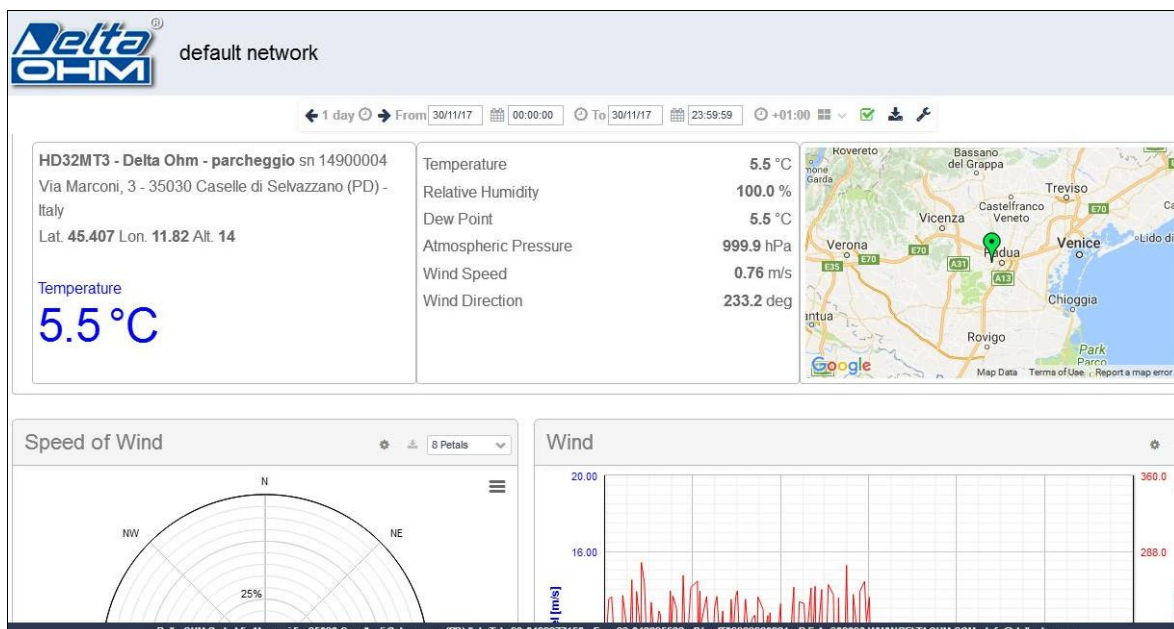


Fig. 7.2.1: Company site Customized View

7.2.1 Create a Custom visualization

Administrator user can create a Custom Visualization Window by the following steps.

1. Click on the "Visualizations" button in the left blue column: "All Visualizations" tab is shown in the right section. When Custom Visualization has previously been defined, the right top command bar reports their number in the counter-label.



Fig. 7.2.2: Visualizations number in the right top bar

2. Click on the "Plus" icon in the right top command bar: the "New Visualization" window appears.



Fig. 7.2.3: "Plus" icon in the right top bar

3. Enter the Custom Visualisation name in the "Name" text box, select the paired Device Network from the "Network" drop box, then click on "Confirm" button.

 A screenshot of the 'New Visualization' dialog box. It contains a 'Name' text box with 'Visualization_1' entered, a 'Network' dropdown menu set to 'default network', and 'Confirm' and 'Cancel' buttons at the bottom.

Fig. 7.2.4: "New Visualization" window

4. The "Visualization Bindings" window appears: in the left half of the "Devices" tab, click on the device to be added to the Visualization, then click on the "Right arrow" key. Repeat until all the desired Devices has been binded.

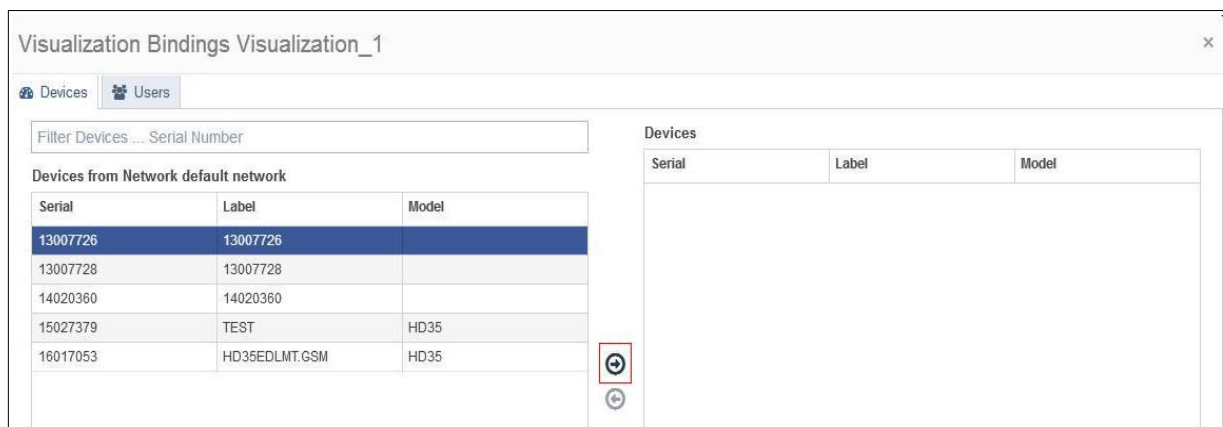


Fig. 7.2.5: "Visualization Bindings" window

5. To delete a Device from the binding list, click on its row in the right half and click on the “Left arrow” key.

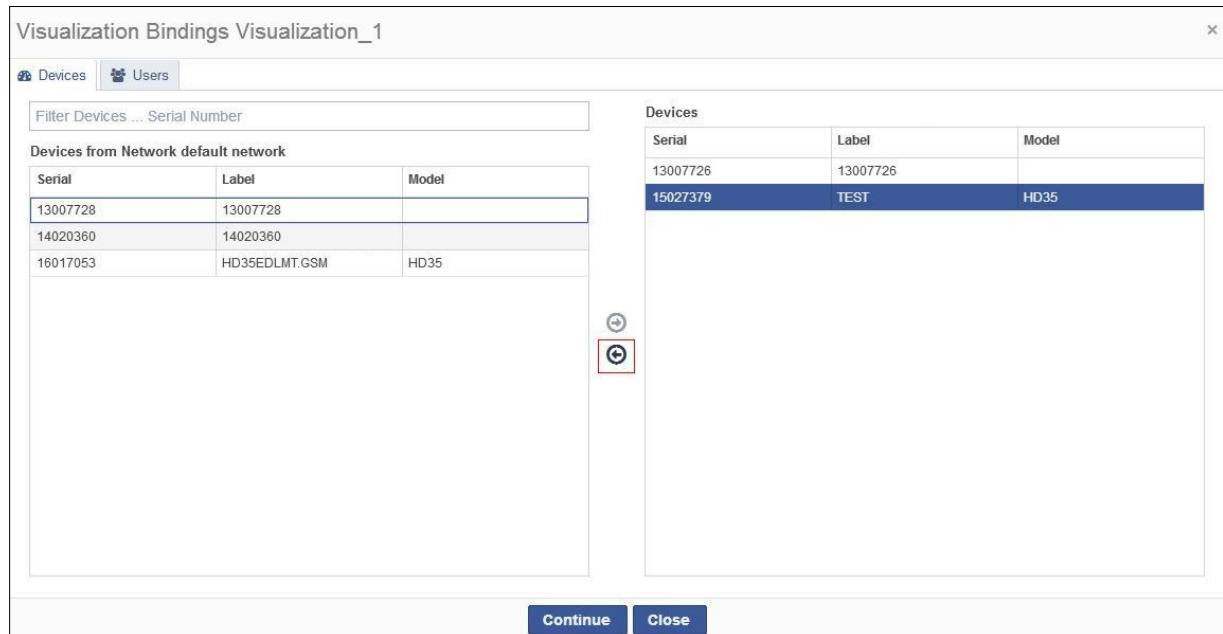


Fig. 7.2.6: Device deletion the from binding list

6. Click on “Continue” button: the “Add Graph” window appears.



Fig. 7.2.7: “Add Graph” window

7. Click on the desired graph model (i.e. “Histogram”): the “Add New Parameters” window appears.

Selected: 0 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection Close

Fig. 7.2.8: "Add New Parameters" window

8. Click on the desired parameter check box, then click on "Add Selection" button.

Selected: 1 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1

Fig. 7.2.9: Parameter selection

9. When more than one Device have been selected, click on Device Serial Number to shrink its parameters list to just one row and simplify other Devices parameters selection.

Selected: 1 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626	☒ 01 Vbatt	1	V	1.0	0.0	3.2

Fig. 7.2.10: Shrunk parameter list

10. When parameters list is long, enter characters of desired Parameter or Measure Unit in "Filter Parameters" or "Filter Measure Unit" text-boxes: the list will be reduced to filter result.

Selected: 1 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1

Fig. 7.2.11: Filter text-boxes

- 11.** When clicked on "Add selection" button, the "New Graph" window appears: enter the chart title in the "Label" text box.

Fig. 7.2.12: "New Graph - General" window

- 12.** Click on the "Show Controls" check box to allow graph local settings, enabled to override global controls, local controls can override global controls.
- 13.** Click on "Parameters" tab: one row is shown for each selected parameter, their number being reported by the counter label. Selected parameters are described by "Device", "Parameter", "Measure unit" and "Color" column.

	Device	Parameter	Measure Unit	Color
1	14033626	O2 Internal temp.	°C	■

Fig. 7.2.13: "New Graph - Parameters" window

- 14.** Select the parameter row and the top command bar is enabled.
- 15.** Click on the "Question mark" icon to access to parameter information.

	Device	Parameter	Measure Unit	Color
1	14033626	O2 Internal temp.	°C	■

Fig. 7.2.14: "Question mark" icon

16. The parameter information window appears.

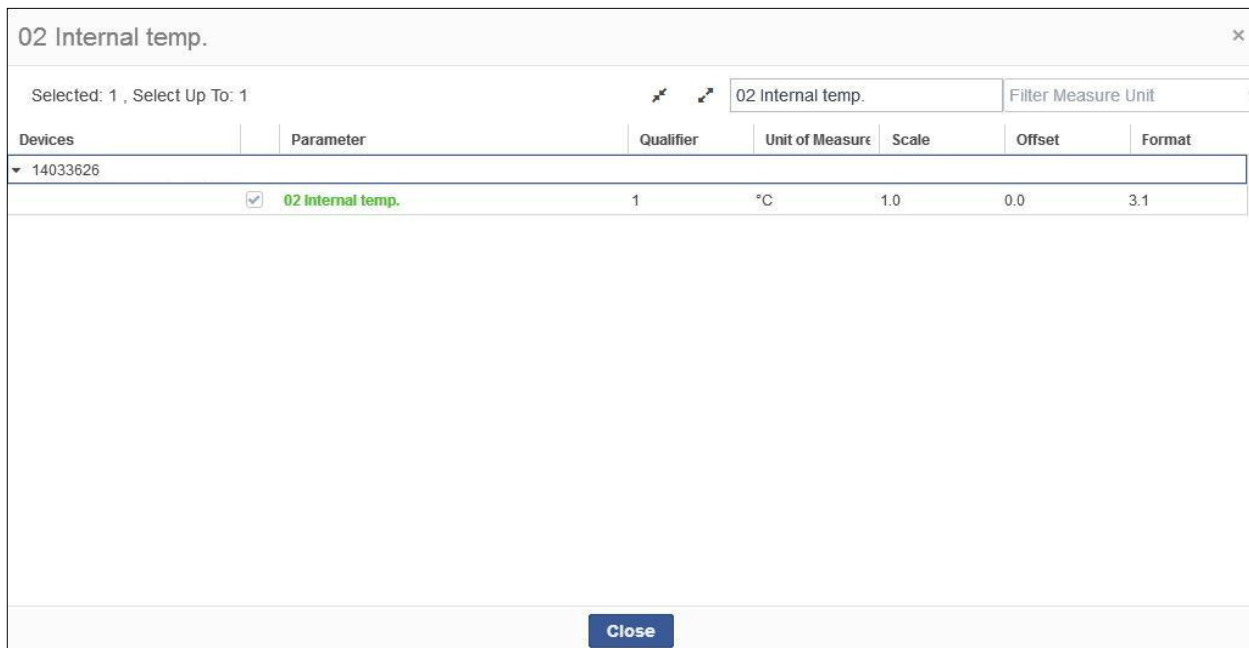


Fig. 7.2.15: Parameters information window

17. Click on "Close" button to go back to "New Graph" window.

18. Click on the "Pencil" icon to adjust parameter settings.

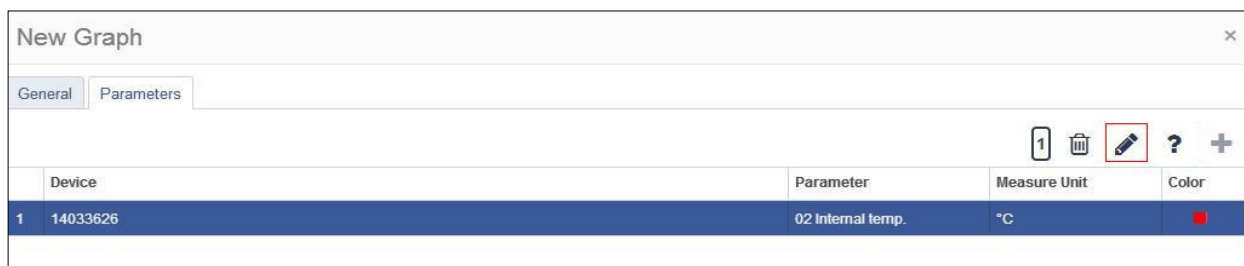


Fig. 7.2.16: "Pencil" icon

19. The "Modify Parameter" window appears.

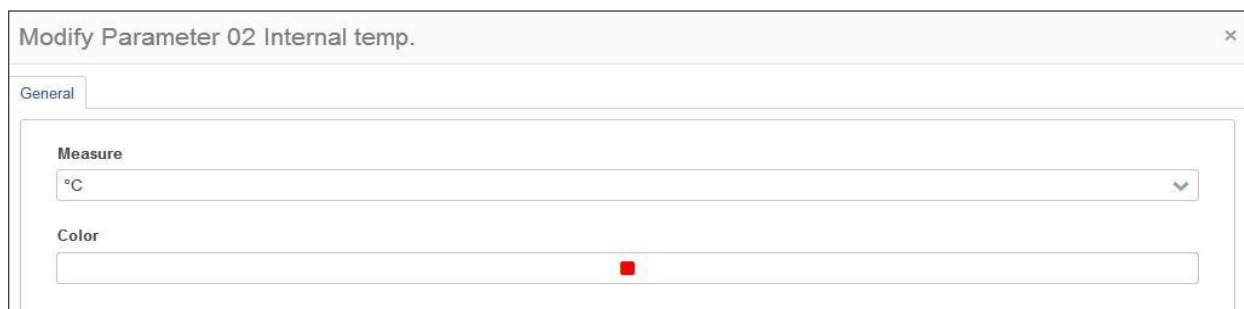


Fig. 7.2.17: "Modify Parameter" window

20. Click on the combo-box "Measure" to change the measure unit.

21. Click on the "Color" box to change the graph color.

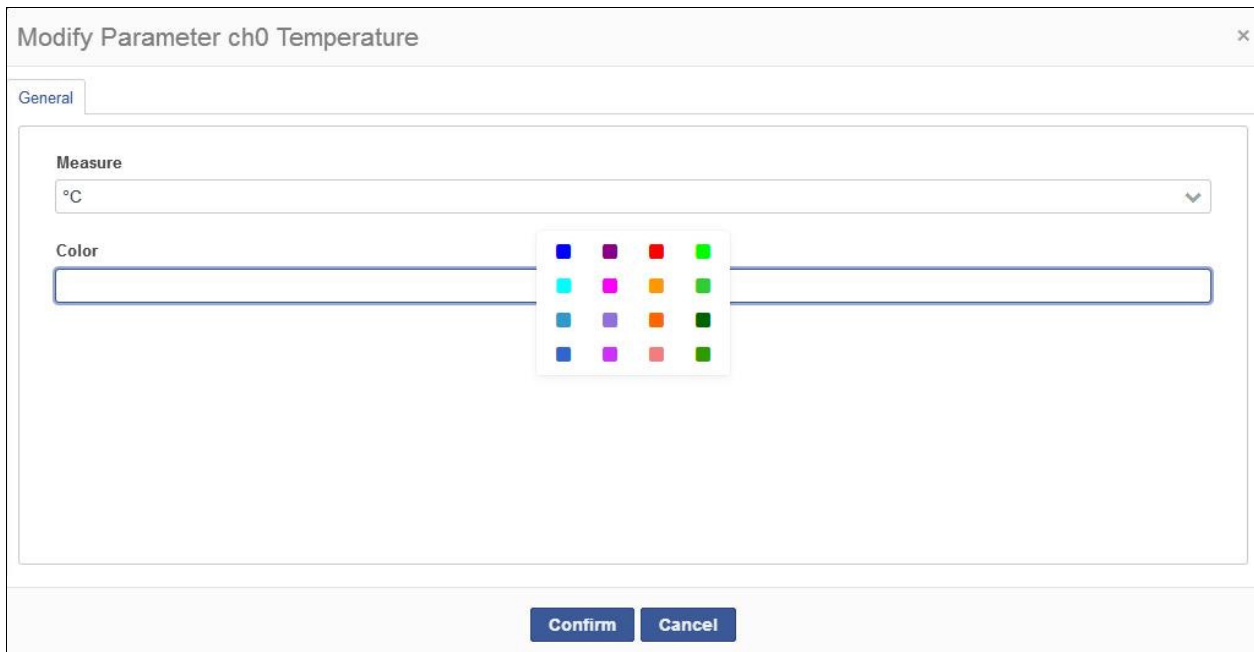


Fig. 7.2.18: "Modify Parameters" window

- 22.** Click on "Confirm" button to save changes, otherwise click on "Cancel" button to discard them.
- 23.** When back to "New Graph – Parameters" tab , according to the selected graph type, more quantities can be selected to be plotted in the same graph, allowing comparison also from different Devices measurements.
- 24.** In case of erroneously inserted quantity, select it and click on "Waste basket" icon: it will be removed from the graph.



Fig. 7.2.19: "Parameters" tab, "Waste basket" icon

- 25.** Click on "General" tab, then click on "Confirm" button to proceed or on "Cancel" button to give up.
- 26.** When clicking on "Confirm" button, the "Modify Visualization" tab appears in the "Custom Visualization" window: click on the chart frame and drag it to the desired position.

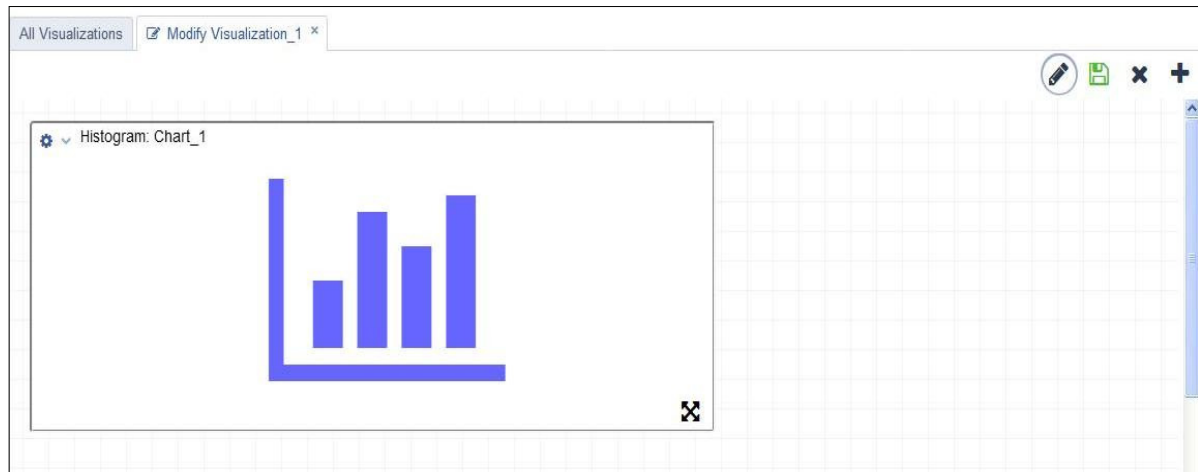


Fig. 7.2.20: "Modify Visualization" window

27. Click on the "Disk" icon: Visualisation is saved and "Modify Visualisation" tab is closed.

28. Click on the "Chart" icon in the right top command bar of the "All Visualization" tab to access the new Visualization.

All Visualizations			1	🔑	📊	✎	🗑️	🔄	+
Name	Network	Author							
Show All	Show All	Show All							
1 Visualization_1	default network	john.smith@acme.com							

Fig. 7.2.21: New Visualization selection

29. The new Visualization is completed.

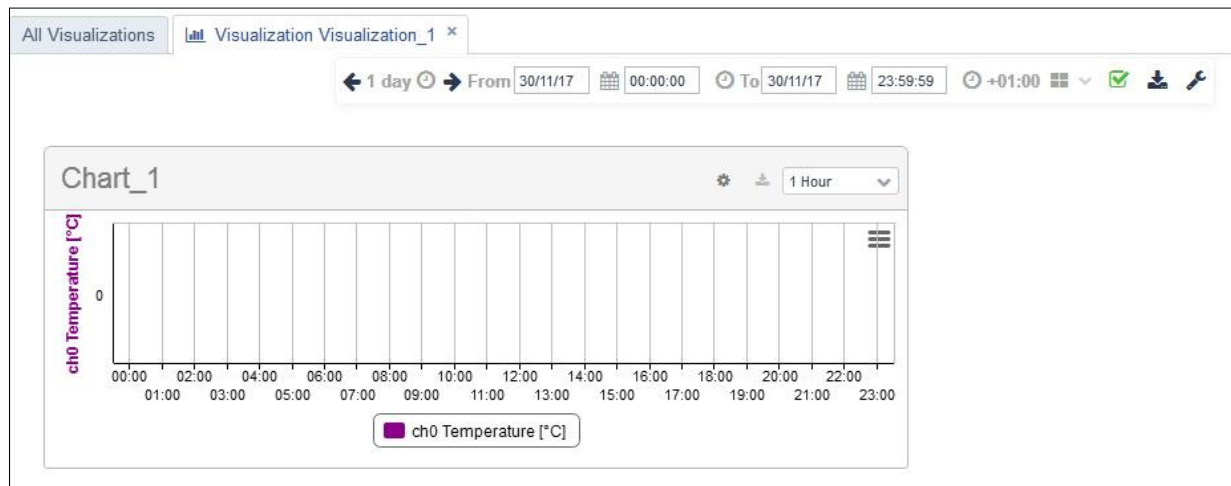


Fig. 7.2.22: New Visualization completed

7.2.2 Multi trace chart

The "Multi Trace" chart allows to create a graph displaying more than one parameter values.

1. Select "Multi Trace" item in the "Add Graph" window (step 6, section **7.2.1**): the "Add New Parameters" window appears.

2. Click on the desired parameters check-boxes, then click on "Add Selection" button.

Add New Parameters

Selected: 3 , Select Up To: 10

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033826 HD32MT3	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☒ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☒ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection **Close**

Fig. 7.2.23: Parameters selection for multi trace chart

3. The "New Graph" window appears: enter the graph name in the "Label" field, select "Linear" or "Logarithmic" item in the "Scale" drop-down menu and select optional check-boxes.

New Graph

General Parameters

Type: Multi Trace

Label*: Voltage - Temperature - Pressure

Scale*: Linear

☐ Show Controls

☐ Enable Grid

Confirm **Cancel**

Fig. 7.2.24: Multi trace chart general informations

4. Click on "Parameters" tab: the selected parameters are listed by 9 fields as described in the following table.

	NAME	DESCRIPTION
1	"Device"	String describing the device the listed parameters belong to.
2	"Parameter"	String describing the measured quantity.
3	"Measure Unit"	String describing the parameter measurement unit.

	NAME	DESCRIPTION
4	"Color"	Square representing the color for parameter curve.
5	"Chart"	String describing the chart type.
6	"Marker"	String describing the figure used to highlight parameter samples.
7	"Dash Style"	String describing the line for parameter curve.
8	"Extremes"	String describing the vertical axis lower and upper values.
9	"Thresholds"	Sequence of defined threshold.

New Graph

General

Parameters

3

?

↑

↓

+

	Device	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	14033626 HD32MT3	02 Internal temp.	°C	■	Linear	Circle	Solid	Auto Scale	
2	14033626 HD32MT3	03 Internal pressure	hPa	■	Linear	Circle	Solid	Auto Scale	
3	14033626 HD32MT3	01 Vbatt	V	■	Linear	Circle	Solid	Auto Scale	

Confirm

Cancel

Fig. 7.2.25: Multi trace chart parameters list

- Click on the "Plus" icon to go back to "Add New Parameters" window and add more parameters (step 2).
- Click on a parameter row to select it: all the top command bar icons are enabled.
- Click on the "Up arrow" or "Down arrow" icon to move the selected parameter up or down along the list.

New Graph

General

Parameters

3

?

↑

↓

+

	Device	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	14033626 HD32MT3	03 Internal pressure	hPa	■	Linear	Circle	Solid	Auto Scale	
2	14033626 HD32MT3	02 Internal temp.	°C	■	Linear	Circle	Solid	Auto Scale	
3	14033626 HD32MT3	01 Vbatt	V	■	Linear	Circle	Solid	Auto Scale	

Fig. 7.2.26: "Move up" / "Move down" icons

- Click on the "Question mark" icon: selected parameter properties appear in a dedicated window. Click on "Close" button to go back to "New Graph" window.

01 Vbatt

Selected: 3, Select Up To: 10

01 Vbatt Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Meas	Scale	Offset	Format
14033626 HD32MT3	☒ 01 Vbatt	-1	V	1.0	0.0	3.2

Close

Fig. 7.2.27: Parameter description

9. Click on the "Pencil" icon to modify parameter graphical features.

New Graph

General Parameters

3 ? ? ? ? ? ? ? ? ? ?

	Device	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	14033626 HD32MT3	03 Internal pressure	hPa	■	Linear	Circle	Solid	Auto Scale	
2	14033626 HD32MT3	02 Internal temp.	°C	■	Linear	Circle	Solid	Auto Scale	
3	14033626 HD32MT3	01 Vbatt	V	■	Linear	Circle	Solid	Auto Scale	

Fig. 7.2.28: "Pencil" icon

10. The "Modify Parameter" window appears.

Modify Parameter 01 Vbatt

General Thresholds

Measure

V

Type Dash Color

Linear Solid

Marker

Circle

☒ Auto Scale

Confirm Cancel

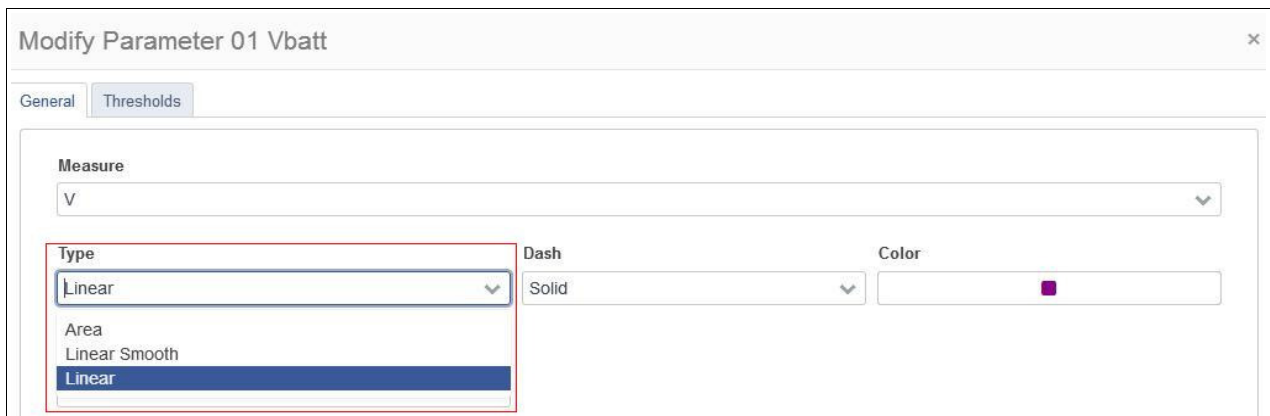
Fig. 7.2.29: "Modify Parameter" window

11. In the “General” tab:

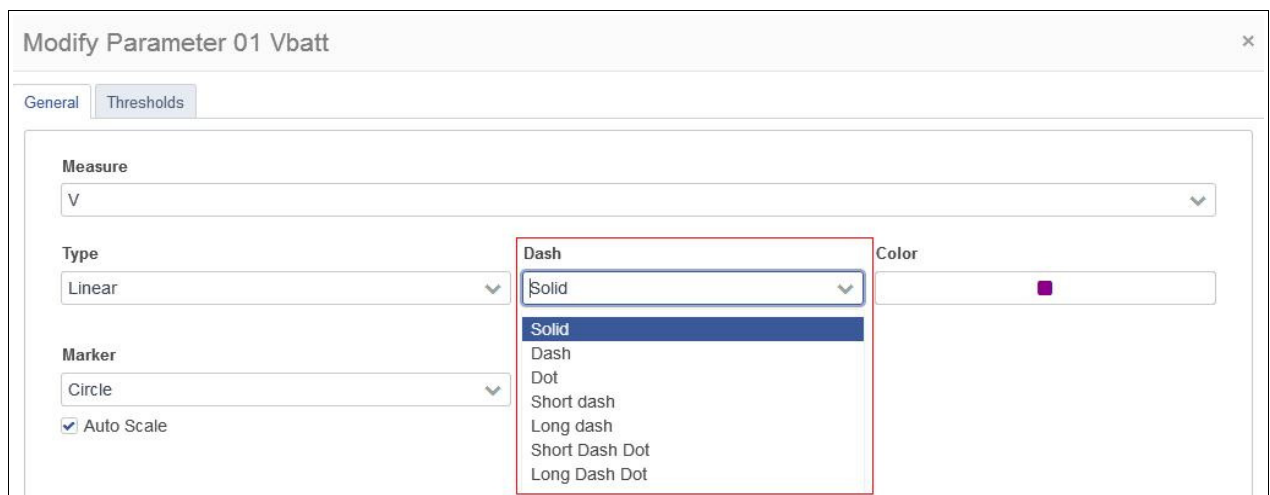
- Click on “Measure” drop-down list to set a different parameter measure unit (if any).

**Fig. 7.2.30: “Measure” drop-down list**

- Click on “Type” drop-down list to set chart feature among “Area”, “Linear Smooth” or “Linear”.

**Fig. 7.2.31: “Type” drop-down list**

- Click on “Dash” drop-down list to set the parameter curve style among “Solid”, “Dash”, “Dot”, “Short Dash”, “Long Dash”, “Short Dash Dot” or “Long Dash Dot”.

**Fig. 7.2.32: “Dash” drop-down list**

- Click on “Color” square to set a different curve color.

Modify Parameter 01 Vbatt

General Thresholds

Measure
V

Type
Linear

Dash
Solid

Marker
Circle

Color

Fig. 7.2.33: "Color" drop-down list

- Click on "Marker" drop-down list to set the value marker shape among "Diamond", "Triangle", "Triangle Down", "Square", "Circle" or "Arrow".

Modify Parameter 01 Vbatt

General Thresholds

Measure
V

Type
Linear

Dash
Solid

Color

Marker

Circle

Diamond

Triangle

Triangle Down

Square

Circle

Arrow

Fig. 7.2.34: "Marker" drop-down list

- Deselect the "Auto Scale" check-box to enter specific Upper and Lower Extremes in the corresponding text-boxes.

Modify Parameter 01 Vbatt

General Thresholds

Measure
V

Type
Linear

Dash
Solid

Color

Marker
Circle

☐ Auto Scale

Lower Extreme

Upper Extreme

Confirm Cancel

Fig. 7.2.35: "Lower Extreme" and "Upper Extreme" text-boxes

12. Click on “Thresholds” tab to create threshold values:

Modify Parameter 01 Vbatt

General Thresholds

Create threshold

Value * Label Color

i.e. 42 [] [Red] [Disk] [X]

Value	Label	Color

Confirm Cancel

Fig. 7.2.36: “Thresholds” tab

- Enter the threshold value in the “Value” text-box, the threshold name in the “Label” text-box.
- Click on the “Color” box and select the desired color.
- Click on the “Cross” icon to quit threshold creation, otherwise click on the “Disk” icon to save the created threshold.

Modify Parameter 01 Vbatt

General Thresholds

Create threshold

Value * Label Color

3 100% charge [Green] [Save] [X]

Value	Label	Color

Fig. 7.2.37: “Save” icon for threshold creation

- The threshold appears in the list below.

Modify Parameter 01 Vbatt

General Thresholds

Create threshold

Value * Label Color

i.e. 42 [] [Purple] [Disk] [X]

Value	Label	Color
3	100% charge	Green

Fig. 7.2.38: Saved threshold

- Selected a defined threshold in the list to update properties ("Value", "Label", "Color") or to delete it (click on "Waste basket" icon).

Modify Parameter 01 Vbatt

General Thresholds

Modify threshold

Value ^{*} 3 Label 100% charge Color    

Value	Label	Color
3	100% charge	

Fig. 7.2.39: "Waste basket" icon for threshold deletion

- 13.** Click on "Confirm" button to apply changes and go back to "New Graph" window: changed features are updated in the selected parameter row.

New Graph

General Parameters

3      

	Device	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	14033626 HD32MT3	03 Internal pressure	hPa		Linear	Circle	Solid	Auto Scale	
2	14033626 HD32MT3	02 Internal temp.	°C		Linear	Circle	Solid	Auto Scale	
3	14033626 HD32MT3	01 Vbatt	V		Linear	Circle	Solid	Auto Scale	3

Confirm Cancel

Fig. 7.2.40: "New Graph" window, updated parameter features

- 14.** Click on the "Waste basket" icon to remove the selected parameter from the chart.

New Graph

General Parameters

3      

	Device	Parameter	Measure Unit	Color	Chart	Marker	Dash Style	Extremes	Thresholds
1	14033626 HD32MT3	03 Internal pressure	hPa		Linear	Circle	Solid	Auto Scale	
2	14033626 HD32MT3	02 Internal temp.	°C		Linear	Circle	Solid	Auto Scale	
3	14033626 HD32MT3	01 Vbatt	V		Linear	Circle	Solid	Auto Scale	

Fig. 7.2.41: "Waste basket" icon for parameter deletion

- 15.** A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

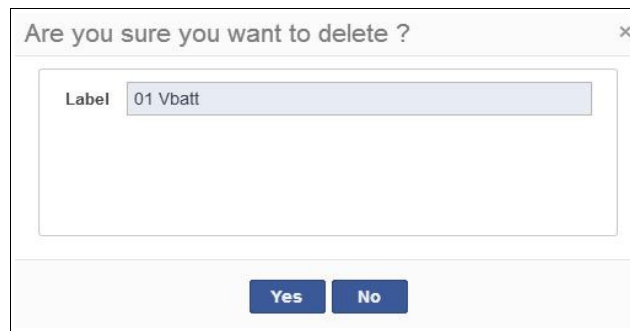


Fig. 7.2.42: Confirmation window for parameter deletion

- 16.** Click on the "Confirm" button in the "New Graph" window to terminate the chart.

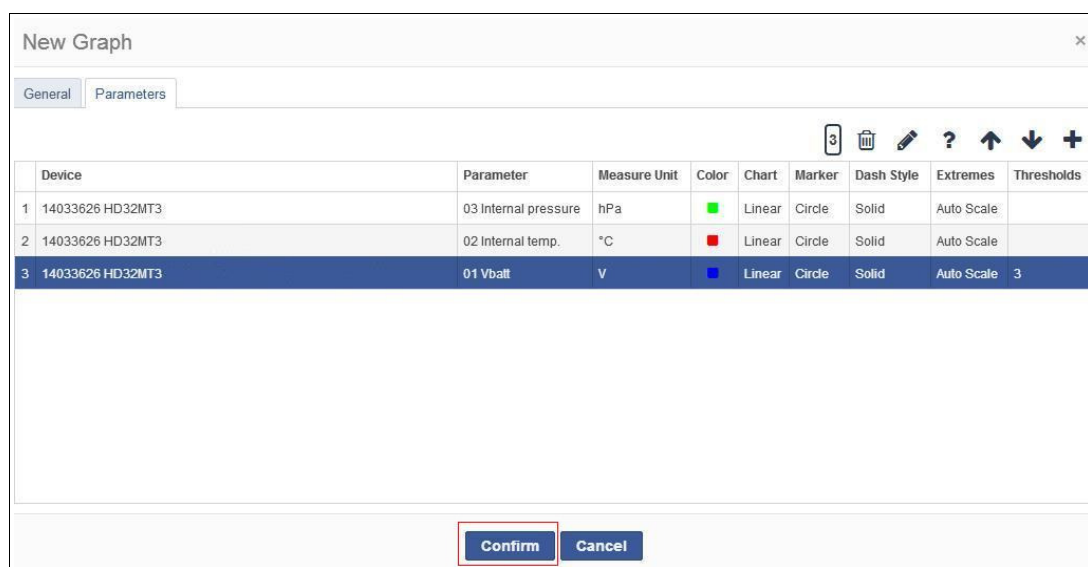


Fig. 7.2.43: "Confirm" button for chart termination

- 17.** The Multi trace chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.

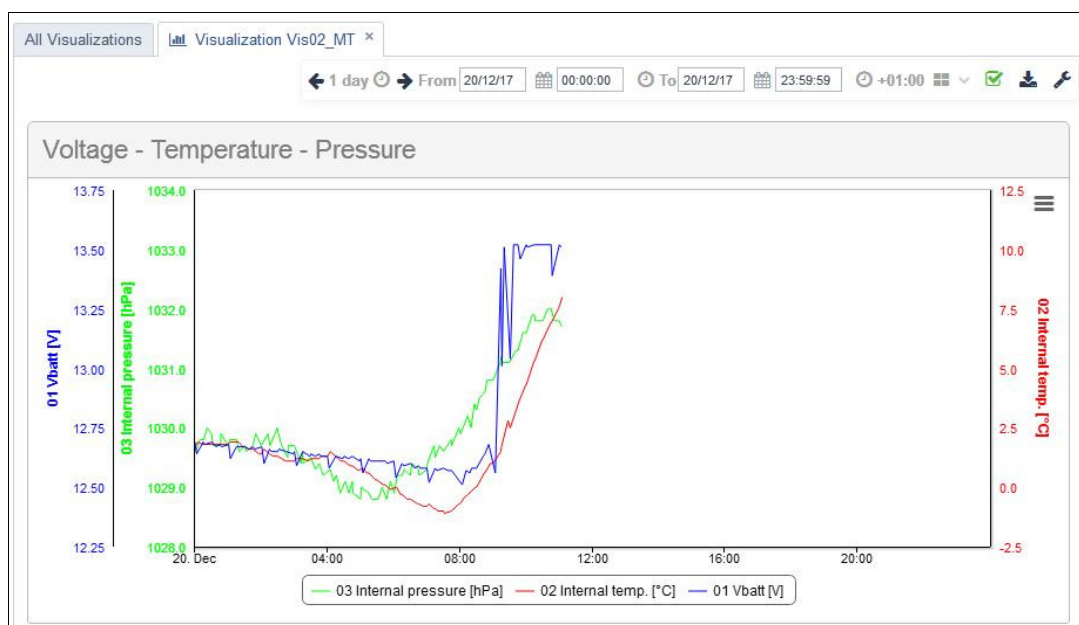
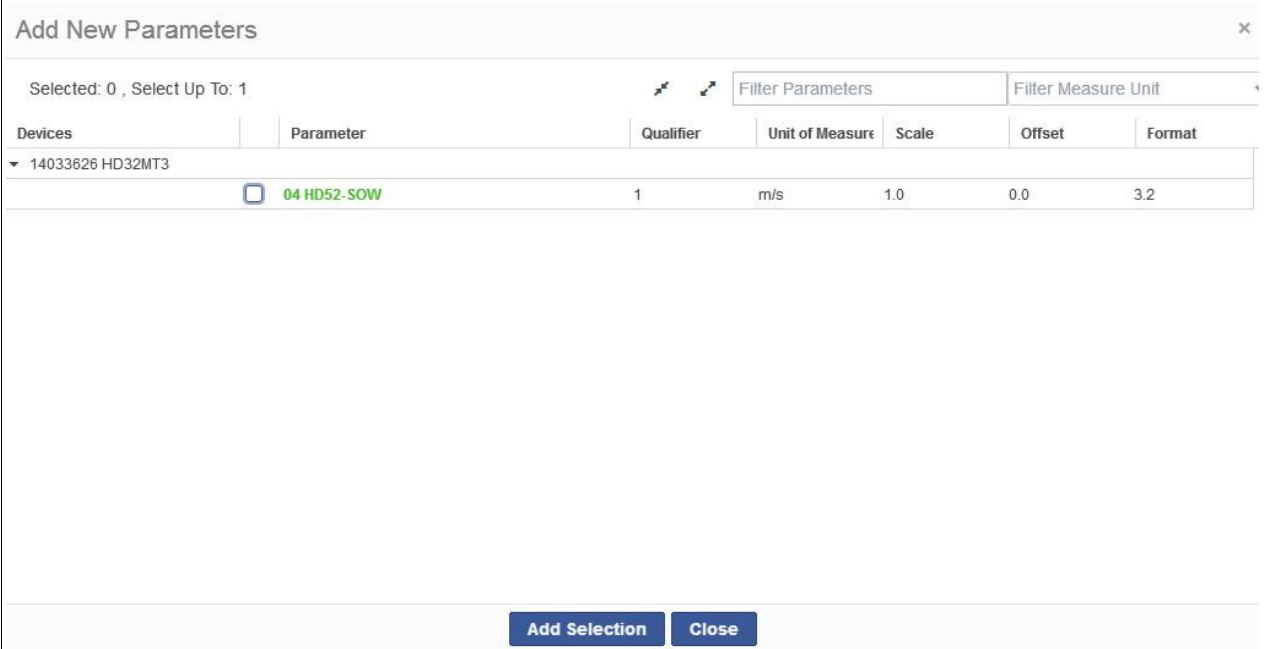


Fig. 7.2.44: Multi trace chart

7.2.3 Wind Rose chart

The “Wind Rose” chart allows creating a graph displaying wind speed and direction distribution.

1. Select “Wind Rose” item in the “Add Graph” window (step 6, section **7.2.1**): the “Add New Parameters” window appears, listing the congruent parameters from previously selected devices.

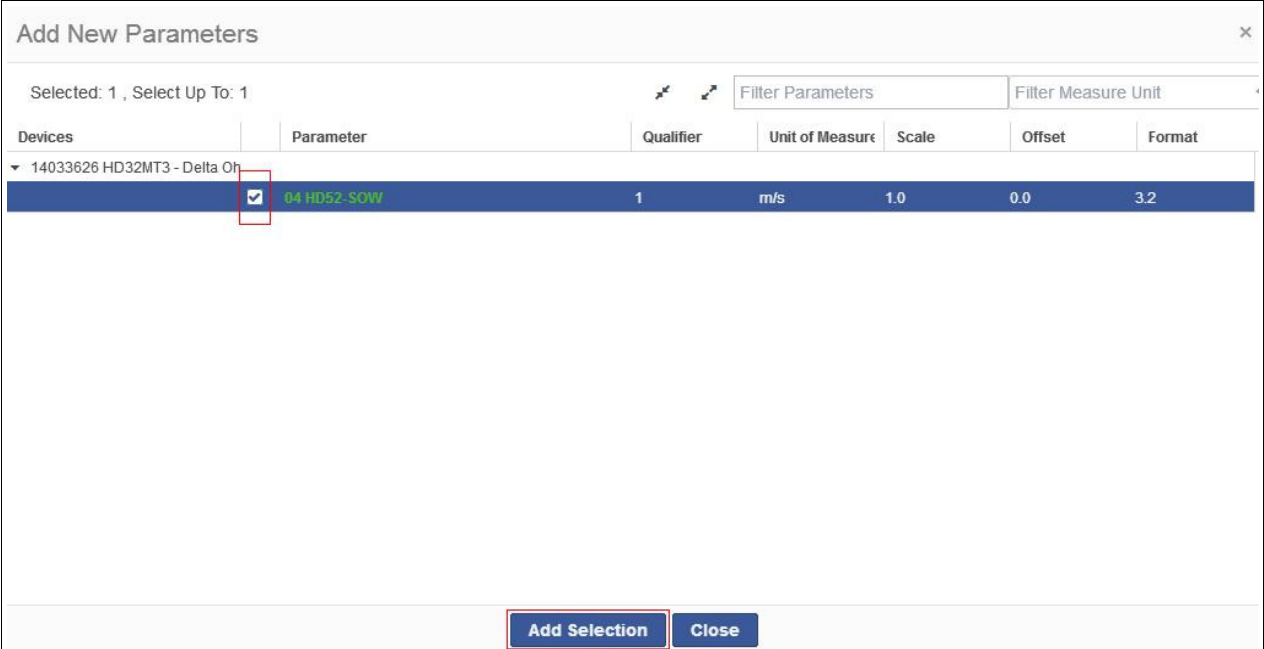


The screenshot shows the "Add New Parameters" window. At the top, it says "Selected: 0 , Select Up To: 1". Below this is a table with columns: Devices, Parameter, Qualifier, Unit of Measure, Scale, Offset, and Format. The table has one row with the following data: Devices: 14033626 HD32MT3, Parameter: 04 HD52-SOW, Qualifier: 1, Unit of Measure: m/s, Scale: 1.0, Offset: 0.0, Format: 3.2. The checkbox for the parameter is unchecked. At the bottom, there are two buttons: "Add Selection" and "Close".

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	04 HD52-SOW	1	m/s	1.0	0.0	3.2

Fig. 7.2.45: “Add New Parameters” window

2. Click on the desired parameters check-boxes, then click on “Add Selection” button.



The screenshot shows the "Add New Parameters" window with the parameter "04 HD52-SOW" selected. The checkbox for this parameter is now checked. The "Add Selection" button is highlighted with a red box. The "Selected: 1 , Select Up To: 1" text is updated. The table data remains the same as in the previous screenshot.

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3 - Delta O	04 HD52-SOW	1	m/s	1.0	0.0	3.2

Fig. 7.2.46: Parameters selection for Wind Rose chart

3. The “New Graph” window appears: enter the graph name in the “Label” field, then select the “Show Controls” check-box to allow a local command bar.

New Graph [X]

General Parameters

Type: Wind Rose

Label*: Speed Point 1

☒ Show Controls

Confirm Cancel

Fig. 7.2.47: “New Graph” window for Wind Rose chart

4. Click on “Parameters” tab: the selected Speed parameters are listed by 4 fields as described in the following table; the selected Direction parameters are listed only by 3 fields.

	NAME	DESCRIPTION
1	“Device”	String describing the device the listed parameters belong to.
2	“Parameter”	String describing the measured quantity.
3	“Measure Unit”	String describing the parameter measurement unit.
4	“Categories”	List of adjacent value intervals.

New Graph [X]

General Parameters

Speed Parameter [1] [trash] [edit] [help] [add]

	Device	Parameter	Measure Unit	Categories
1	14033626 HD32MT3	04 HD52-SOW	m/s	

Direction Parameter [0] [trash] [edit] [help] [add]

	Device	Parameter	Measure Unit
--	--------	-----------	--------------

Confirm Cancel

Fig. 7.2.48: “Parameters” tab for Wind Rose chart

5. The “Plus” icon is enabled in the command bar only if more parameters are available for selection: click on it to add them.



Fig. 7.2.49: Enabled “Plus” icon to add parameters

6. The “Add New Parameters” window appears, showing still unselected parameters.

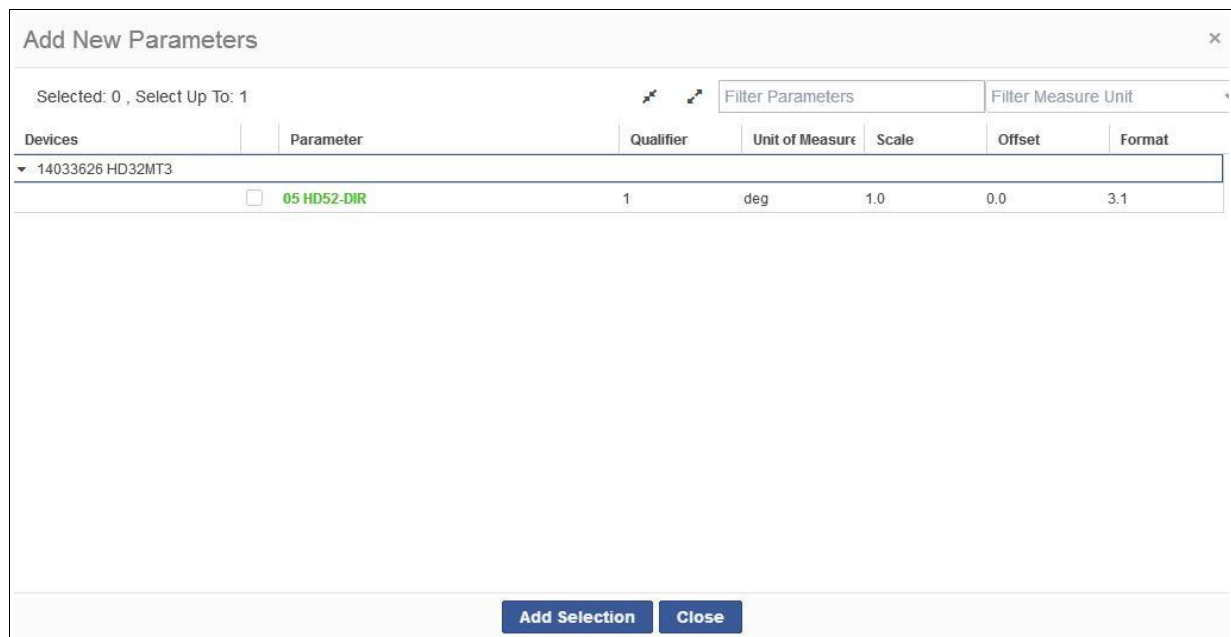


Fig. 7.2.50: Still unselected parameters list

7. Click on the parameter check-box, then click on the “Add Selection” button.

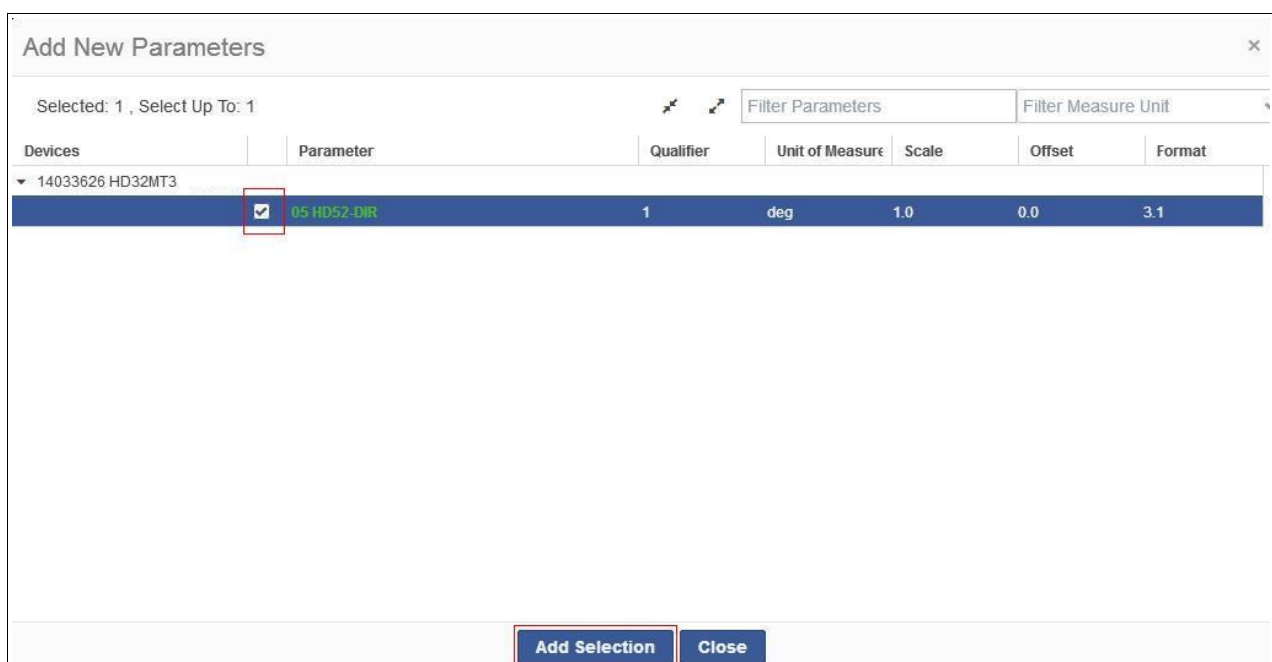


Fig. 7.2.51: Additional parameter selection

8. The “New Graph” window appears back: parameters list and counter label are updated.

The 'New Graph' window has two tabs: 'General' and 'Parameters'. The 'Parameters' tab is active, showing two sections: 'Speed Parameter' and 'Direction Parameter'. Each section contains a table with columns: Device, Parameter, Measure Unit, and Categories. The 'Speed Parameter' table has one row with Device '14033626 HD32MT3', Parameter '04 HD52-SOW', and Measure Unit 'm/s'. The 'Direction Parameter' table has one row with Device '14033626 HD32MT3', Parameter '05 HD52-DIR', and Measure Unit 'deg'. At the bottom are 'Confirm' and 'Cancel' buttons.

Device	Parameter	Measure Unit	Categories
1 14033626 HD32MT3	04 HD52-SOW	m/s	

Device	Parameter	Measure Unit
1 14033626 HD32MT3	05 HD52-DIR	deg

Fig. 7.2.52: Updated parameters list

9. Select a Speed or Direction parameter and click on the “Question mark” icon.

The 'New Graph' window is shown with the 'Parameters' tab active. The 'Speed Parameter' table has one row highlighted in blue. The 'Question mark' icon in the top right corner of the 'Speed Parameter' section is highlighted with a red box.

Device	Parameter	Measure Unit	Categories
1 14033626 HD32MT3	04 HD52-SOW	m/s	

Fig. 7.2.53: “Question mark” icon

10. Selected parameter properties appear in a dedicated window. Click on “Close” button to go back to “New Graph” window.

The '04 HD52-SOW' window shows the selected parameter properties. It includes a 'Selected: 1, Select Up To: 1' indicator, a search bar with '04 HD52-SOW', and a 'Filter Measure Unit' dropdown. Below is a table with columns: Devices, Parameter, Qualifier, Unit of Measure, Scale, Offset, and Format. The table has one row with a checked checkbox, the parameter name '04 HD52-SOW', a qualifier of '1', a unit of 'm/s', a scale of '1.0', an offset of '0.0', and a format of '3.2'. A 'Close' button is at the bottom.

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	04 HD52-SOW	1	m/s	1.0	0.0	3.2

Fig. 7.2.54: Parameter description

11. Click on the “Pencil” icon to modify parameter graphical features.



Fig. 7.2.55: “Pencil” icon

12. The “Modify Parameter” window appears.



Fig. 7.2.56: “Modify Parameter” window

13. In the “General” tab click on “Measure” drop-down list to set a different parameter measure unit (if any).

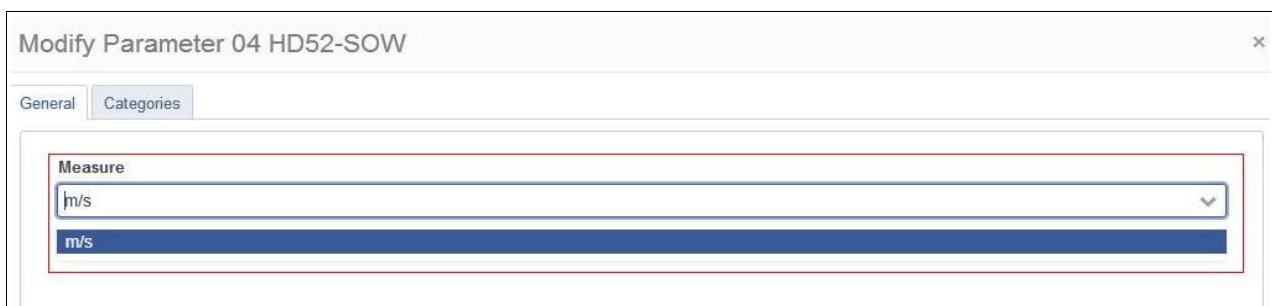


Fig. 7.2.57: “Measure” drop-down list

14. Click on “Categories” tab to define adjacent intervals where parameter values are to be mapped:

- Enter the category value in the “Value” text-box.
- Click on the “Color” box and select the desired color.
- Click on the “Cross” icon to quit category creation, otherwise click on the “Disk” icon to save the created category.

Modify Parameter 04 HD52-SOW

General

Categories

Create category

Value*

i.e. 42

Color

Lower Value

Upper Value

Color

Confirm

Cancel

Fig. 7.2.58: "Categories" tab

Modify Parameter 04 HD52-SOW

General

Categories

Create category

Value*

2

Color

Lower Value

Upper Value

Color

Fig. 7.2.59: "Save" icon for categories creation

15. The category appears in the list below as Lower Value.

Modify Parameter 04 HD52-SOW

General

Categories

Create category

Value*

i.e. 42

Color

Lower Value

Upper Value

Color

2

--

Fig. 7.2.60: Saved category as Lower Value

16. Enter a second value, then click again on the "Disk" icon.

Modify Parameter 04 HD52-SOW

General Categories

Create category

Value * 4 Color   

Lower Value	Upper Value	Color
2	--	

Fig. 7.2.61: "Save" icon for categories creation

17. The category appears in the list below as first interval Upper Value and second interval Lower Value. Repeat until all desired adjacent interval are created.

Modify Parameter 04 HD52-SOW

General Categories

Create category

Value * i.e. 42 Color   

Lower Value	Upper Value	Color
2	4	
4	--	

Fig. 7.2.62: Saved category as Upper Value

18. Selected a defined interval in the list to update properties ("Value", "Color") or to delete it (click on "Waste basket" icon).

Modify Parameter 04 HD52-SOW

General Categories

Modify category

Value * 2 Color    

Lower Value	Upper Value	Color
2	4	
4	--	

Fig. 7.2.63: "Waste basket" icon for interval deletion

19. Click on "Confirm" button to apply changes and go back to "New Graph" window: changed features are updated in the selected parameter row.

New Graph

General Parameters

Speed Parameter

	Device	Parameter	Measure Unit	Categories
1	14033626 HD32MT3	04 HD52-SOW	m/s	2 - 4

Direction Parameter

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	05 HD52-DIR	deg

Confirm Cancel

Fig. 7.2.64: "New Graph" window, updated parameter features

20. Click on the "Waste basket" icon to remove the selected parameter from the chart.

New Graph

General Parameters

Speed Parameter

	Device	Parameter	Measure Unit	Categories
1	14033626 HD32MT3	04 HD52-SOW	m/s	2 - 4

Fig. 7.2.65: "Waste basket" icon for parameter deletion

21. A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

Are you sure you want to delete ?

Label 04 HD52-SOW

Yes No

Fig. 7.2.66: Confirmation window for parameter deletion

22. Click on the “Confirm” button in the “New Graph” window to terminate the chart.

The "New Graph" window has two tabs: "General" and "Parameters". The "Parameters" tab is active, showing two sections: "Speed Parameter" and "Direction Parameter".

Speed Parameter:

	Device	Parameter	Measure Unit	Categories
1	14033626 HD32MT3	04 HD52-SOW	m/s	

Direction Parameter:

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	05 HD52-DIR	deg

At the bottom, there are "Confirm" and "Cancel" buttons. The "Confirm" button is highlighted with a red box.

Fig. 7.2.67: “Confirm” button for chart termination

23. The Multi trace chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.

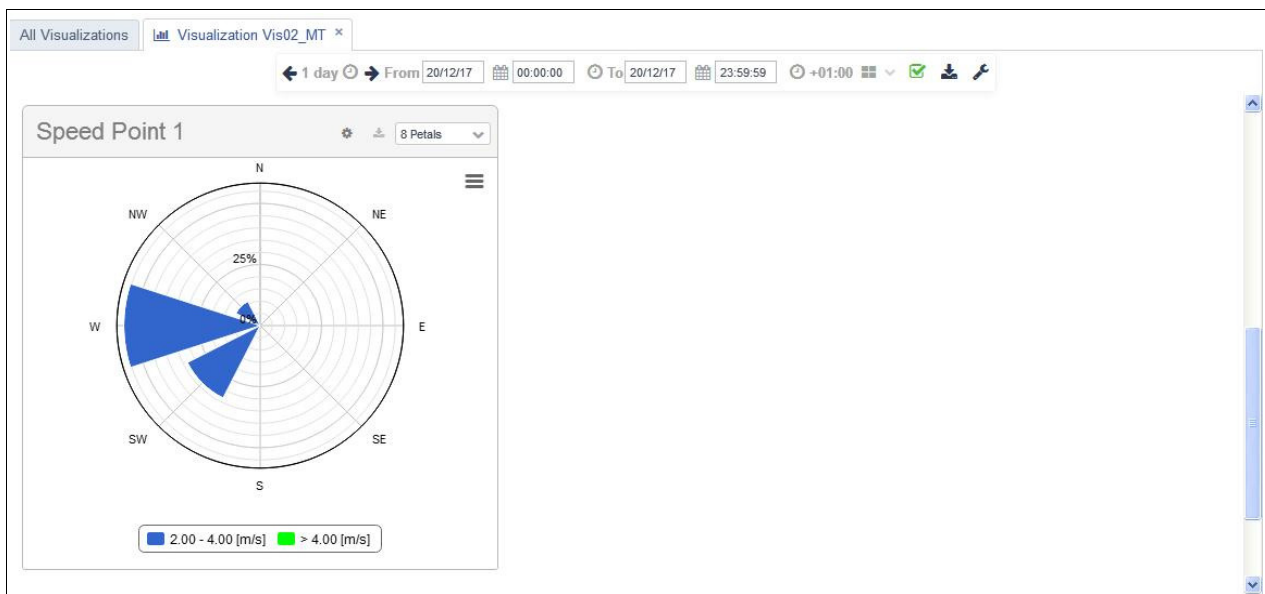


Fig. 7.2.68: “Wind Rose” chart

24. Click on the “Gear” icon in the graph box: the local command bar appears disabled.

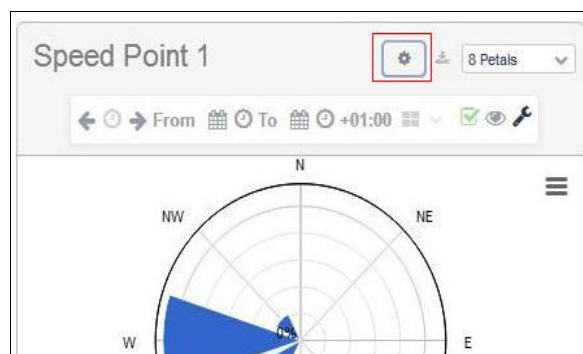


Fig. 7.2.69: “Wind Rose” chart

- 25.** Click on the “Wrench” icon in the local command bar: a drop-down menu appears.
- 26.** Select the “Local” check-box and click on the “Check” icon to enable the local command bar.

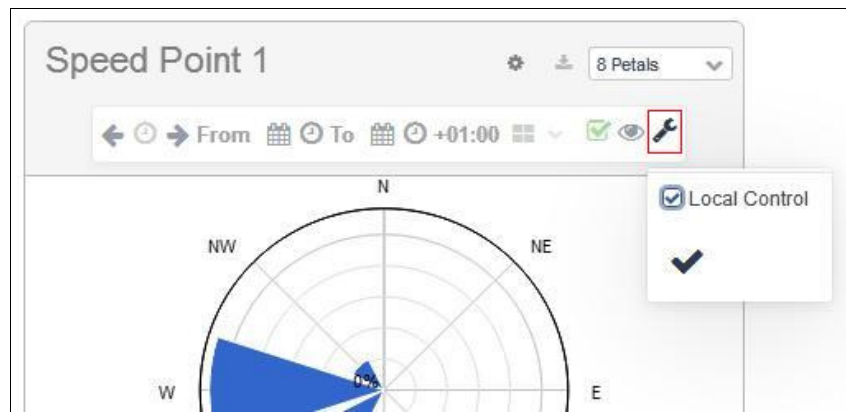


Fig. 7.2.70: “Wrench” icon and its drop-down menu

- 27.** Find command icons description in sections 4.2.1 to 4.2.3
- 28.** Click on the “Eye” icon to display the last received measures.

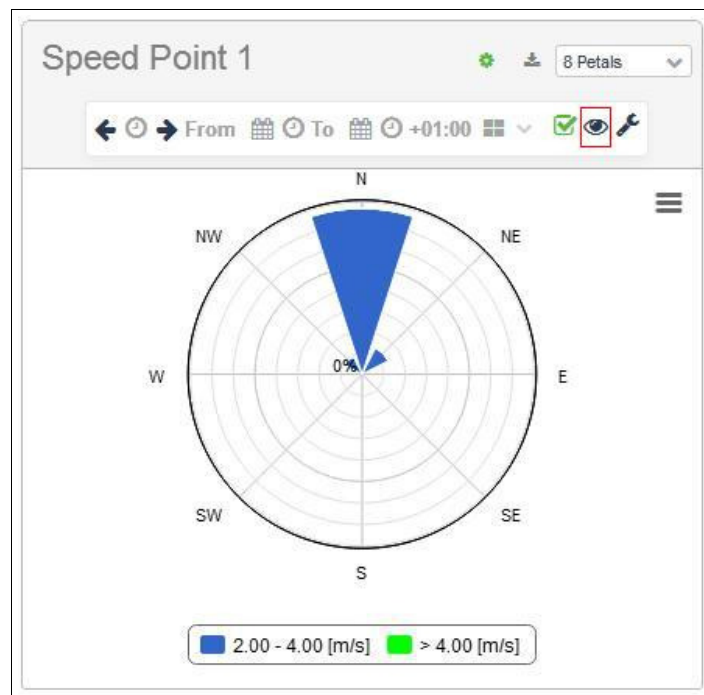


Fig. 7.2.71: “Eye” icon to display last measures

- 29.** Click on the “Download” icon.

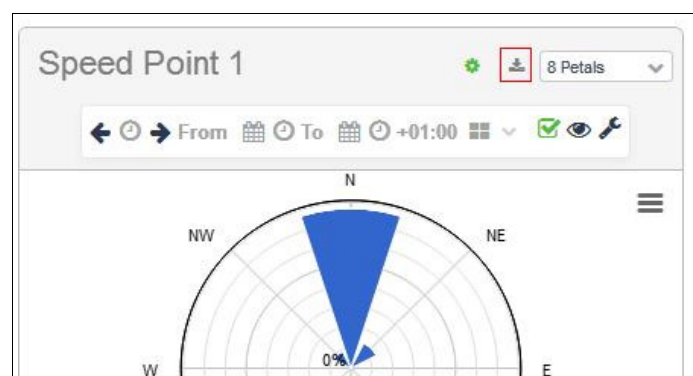


Fig. 7.2.72: “Download” icon for chart exportation to file

30. The "Exportation" window appears: fill the window fields as described in section 4.2.5 (steps 1 to 4), then click on the "Export" button.

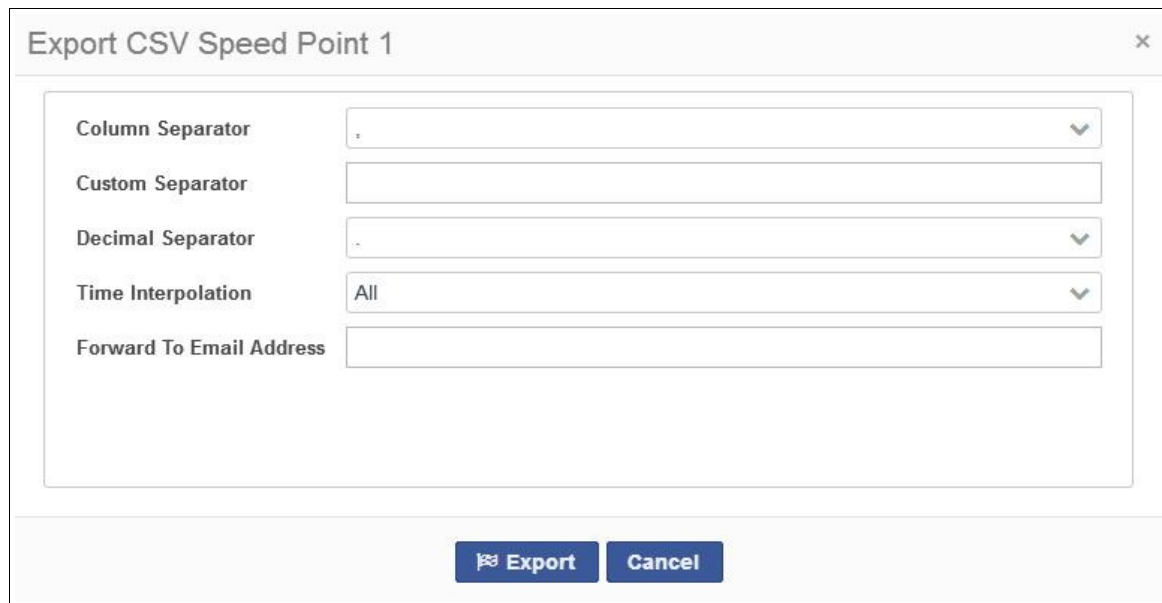


Fig. 7.2.73: "Exportation" window for chart values

31. When the CSV file with measured values is ready, a message window appears: click on the file link and save it on your local PC.

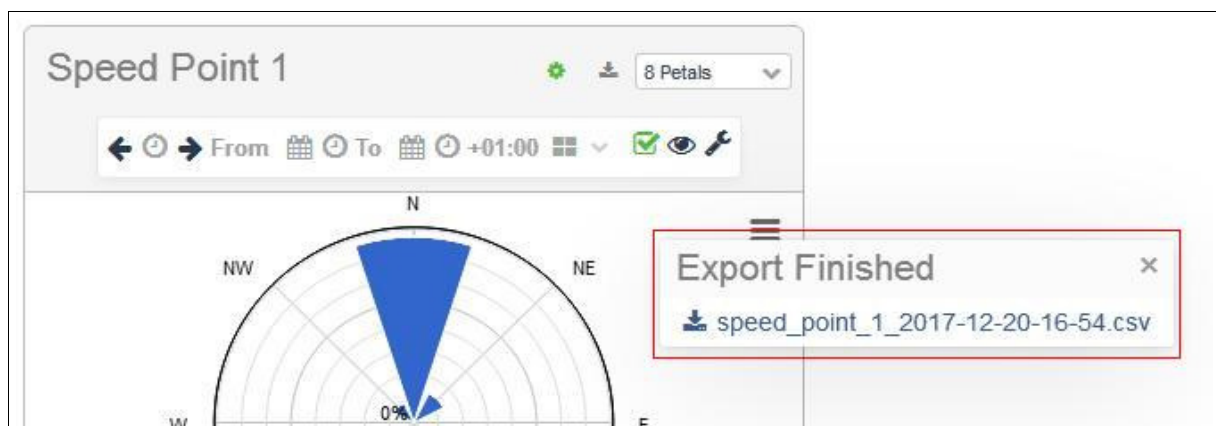


Fig. 7.2.74: Message window with file link

32. Click on the "Petals" box, the drop-down menu appears.

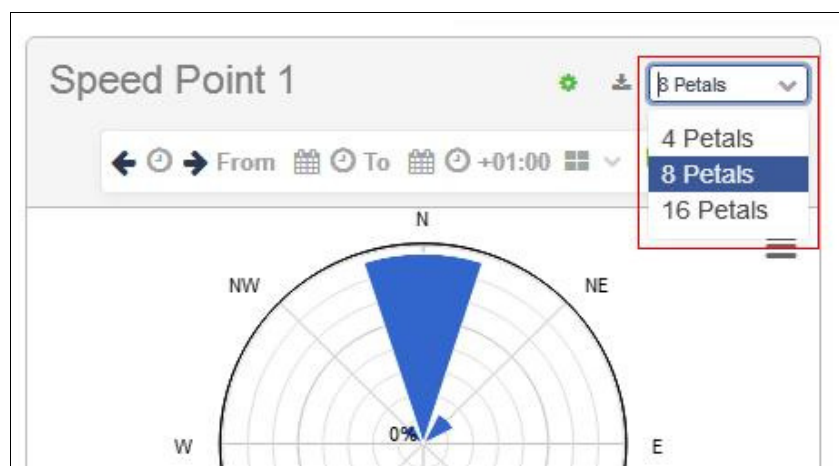


Fig. 7.2.75: "Petals" number drop-down menu

33. Select the desired petals number: the settings is applied to the chart.

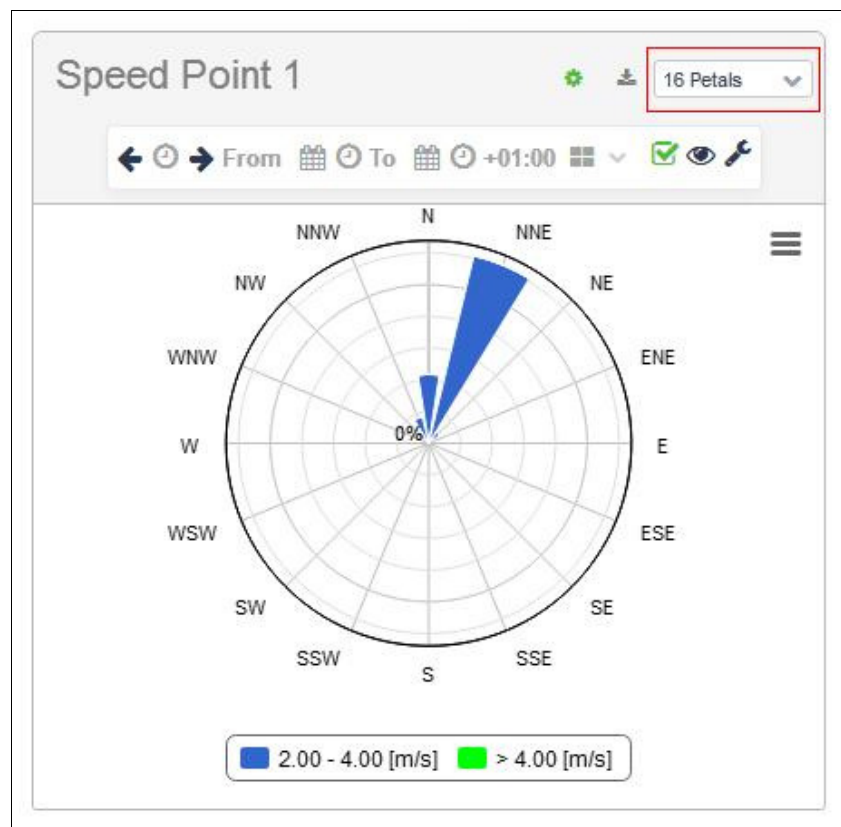


Fig. 7.2.76: "Wind Rose" chart updated

7.2.4 Table

The "Table" chart allows to create a window where selected parameters values are listed with their timestamp.

1. Select "Table" item in the "Add Graph" window (step 6, section **7.2.1**): the "Add New Parameters" window appears.

Add New Parameters

Selected: 0 , Select Up To: 10

Filter Parameters

Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
▼ 14033626 HD32MT3						
☐	01 Vbatt	1	V	1.0	0.0	3.2
☐	02 Internal temp.	1	°C	1.0	0.0	3.1
☐	03 Internal pressure	1	hPa	1.0	0.0	3.1
☐	04 HD52-SOW	1	m/s	1.0	0.0	3.2
☐	05 HD52-DIR	1	deg	1.0	0.0	3.1
☐	06 HD52-T_PT100	1	°C	1.0	0.0	3.1
☐	07 HD52-RH	1	%	1.0	0.0	3.1
☐	08 HD52-DEW	1	°C	1.0	0.0	3.1
☐	09 PYRA-TEMP	1	°C	1.0	0.0	3.1
☐	10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
☐	11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
☐	12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
☐	13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection

Close

2. Click on the desired parameters check-boxes, then click on "Add Selection" button.

Selected: 3 , Select Up To: 10

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☒ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☒ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection **Close**

Fig. 7.2.78: Parameters selection for Table chart

3. The "New Graph" window appears: enter the table name in the "Label" field, then select the "Show Controls" check-box to allow a local command bar.

New Graph

General **Parameters**

Type: Table

Label*: List 1

☒ Show Controls

Confirm **Cancel**

Fig. 7.2.79: "New Graph" window for Table chart

4. Click on "Parameters" tab: the selected parameters are listed by 3 fields.

	NAME	DESCRIPTION
1	"Device"	String describing the device the listed parameters belong to.
2	"Parameter"	String describing the measured quantity.
3	"Measure Unit"	String describing the parameter measurement unit.

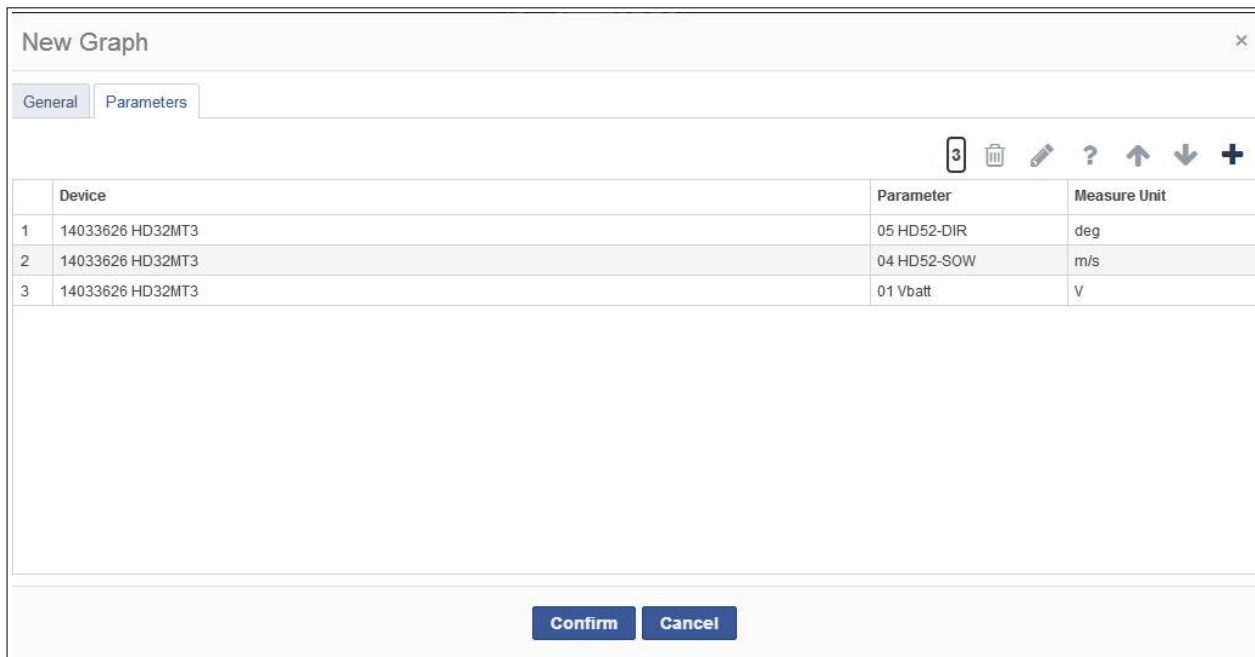


Fig. 7.2.80: "Parameters" tab for Table chart

5. Click on the "Plus" icon to go back to "Add New Parameters" window and add more parameters (step 2).

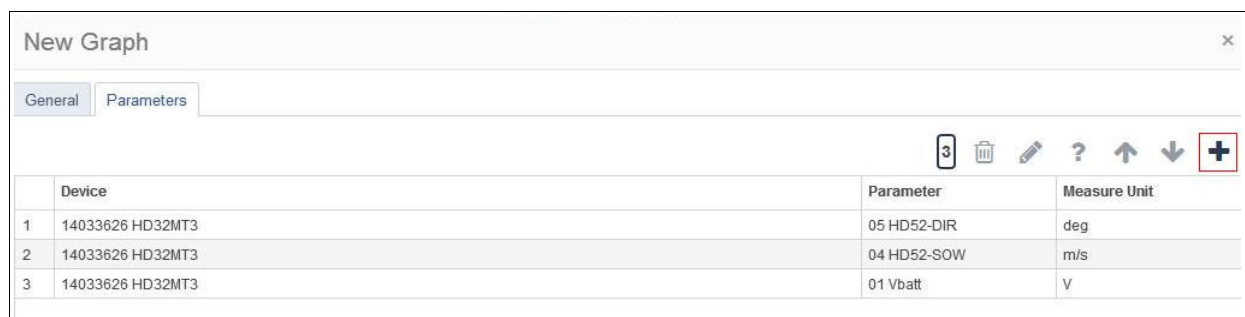


Fig. 7.2.81: "Plus" icon

6. Click on a parameter row to select it: all the top command bar icons are enabled.
7. Click on the "Up arrow" or "Down arrow" icon to move the selected parameter up or down along the list.

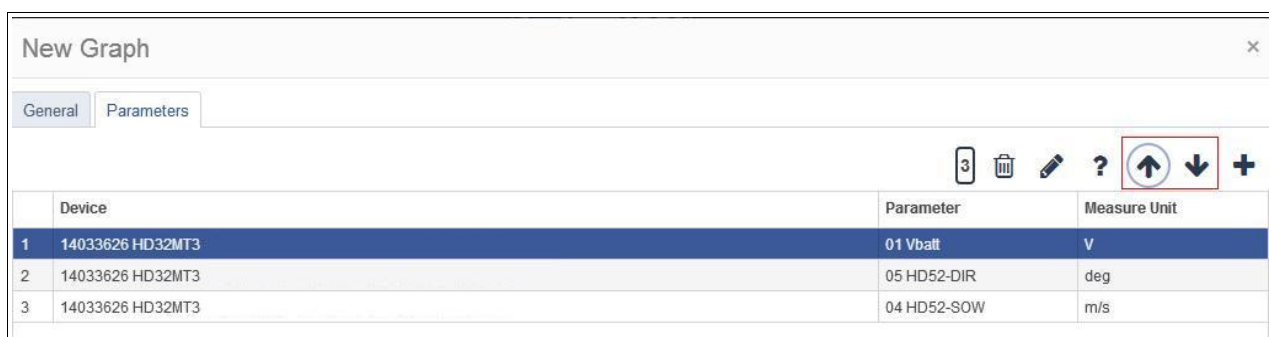


Fig. 7.2.82: "Move up" / "Move down" icons

8. Click on the "Question mark" icon: selected parameter properties appear in a dedicated window. Click on "Close" button to go back to "New Graph" window.

01 Vbatt

Selected: 3 , Select Up To: 10

01 Vbatt Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	01 Vbatt	1	V	1.0	0.0	3.2

Close

Fig. 7.2.83: Parameter description

9. Click on the "Pencil" icon to modify parameter graphical features.

New Graph

General Parameters

3 [trash] [pencil] ? [up] [down] +

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	01 Vbatt	V
2	14033626 HD32MT3	05 HD52-DIR	deg
3	14033626 HD32MT3	04 HD52-SOW	m/s

Fig. 7.2.84: "Pencil" icon

10. The "Modify Parameter" window appears.

Modify Parameter 01 Vbatt

General

Measure

V

Confirm Cancel

Fig. 7.2.85: "Modify Parameter" window

11. Click on "Measure" drop-down list to set a different parameter measure unit (if any).



Fig. 7.2.86: "Measure" drop-down list

12. Click on "Confirm" button to apply changes and go back to "New Graph" window: possibly changed features are updated in the selected parameter row.
13. Click on the "Waste basket" icon to remove the selected parameter from the chart.



Fig. 7.2.87: "Waste basket" icon for parameter deletion

14. A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

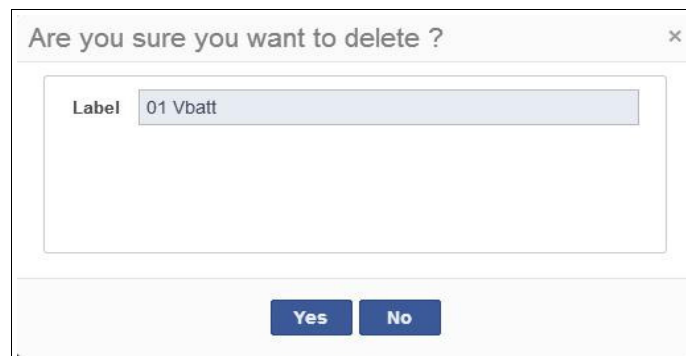


Fig. 7.2.88: Confirmation window for parameter deletion

15. Click on the "Confirm" button in the "New Graph" window to terminate the chart.



Fig. 7.2.89: "Confirm" button for chart termination

- 16.** The “Table” chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.

	Timestamp	01 Vbatt [V] 14033626	05 HD52-DIR [deg] 14033626	04 HD52-SOW [m/s] 14033626
1	2017/12/21 00:00:00 +0100	12.67	293.8	0.91
2	2017/12/21 00:01:00 +0100	12.67	295.2	0.66
3	2017/12/21 00:02:00 +0100	12.63	281.9	1.36
4	2017/12/21 00:03:00 +0100	12.62	320.6	1.02
5	2017/12/21 00:04:00 +0100	12.61	280.6	0.74
6	2017/12/21 00:05:00 +0100	12.63	285.5	0.54
7	2017/12/21 00:06:00 +0100	12.65	329.3	0.50
8	2017/12/21 00:07:00 +0100	12.65	339.1	0.32
9	2017/12/21 00:08:00 +0100	12.65	316.9	0.62
10	2017/12/21 00:09:00 +0100	12.65	291.6	0.41
11	2017/12/21 00:10:00 +0100	12.66	306.6	0.48
12	2017/12/21 00:11:00 +0100	12.66	319.5	0.38

Fig. 7.2.90: “Table” chart

- 17.** Click on the “Wrench” icon in the top right corner of Table box: the chart local command bar appears (icon disabled).

	Timestamp	01 Vbatt [V] 14033626	05 HD52-DIR [deg] 14033626	04 HD52-SOW [m/s] 14033626
1	2017/12/21 00:00:00 +0100	12.67	293.8	0.91
2	2017/12/21 00:01:00 +0100	12.67	295.2	0.66
3	2017/12/21 00:02:00 +0100	12.63	281.9	1.36

Fig. 7.2.91: “Wrench” icon

- 18.** Execute steps 26 to 28 in section 7.2.3 to set Time Interval and Time Scroll.

- 19.** Click on the “Download” icon: the “Exportation” window appears.

	Timestamp	01 Vbatt [V] 14033626	05 HD52-DIR [deg] 14033626	04 HD52-SOW [m/s] 14033626
1	2017/12/21 00:00:00 +0100	12.67	293.8	0.91
2	2017/12/21 00:01:00 +0100	12.67	295.2	0.66
3	2017/12/21 00:02:00 +0100	12.63	281.9	1.36

Fig. 7.2.92: “Download” icon

- 20.** Execute steps 30 to 31 in section 7.2.3 to save listed values to CSV file.

7.2.5 Numeric Value

The “Numeric Value” chart allows creating a box displaying the selected parameter description and current value.

1. Select “Numeric Value” item in the “Add Graph” window (step 6, section 7.2.1): the “Add New Parameters” window appears.

Add New Parameters

Selected: 0 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
▼ 14033626 HD32MT3	☒ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection Close

Fig. 7.2.93: “Add New Parameters” window

2. Click on the desired parameter check-box, then click on “Add Selection” button.

Add New Parameters

Selected: 1 , Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
▼ 14033626 HD32MT3	☐ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☒ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection Close

Fig. 7.2.94: Single parameter selection

3. As declared in the top left corner, only one parameter can be selected: a warning window appears, when clicking on more than one check-box.

Add New Parameters

Selected: 2, Select Up To: 1

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	☐ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR			1.0	0.0	3.1
	☐ 06 HD52-T_PT100			1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☒ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☒ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 DECMR Tamm	1	°C	1.0	0.0	3.1

Too many selected parameters

Fig. 7.2.95: Warning window for excessive selection

4. The “New Graph” window appears: enter the box name in the “Label” field.

New Graph

General Parameters

Type Numeric Value

Label* Radiation Temperature

Fig. 7.2.96: “New Graph” window for Numeric Value chart

5. Click on “Parameters” tab: the selected parameter is listed by 4 fields, as described in the following table.

	NAME	DESCRIPTION
1	“Device”	String describing the device the listed parameters belong to.
2	“Parameter”	String describing the measured quantity.
3	“Measure Unit”	String describing the parameter measurement unit.
4	“Color”	Square representing the color for parameter curve.

New Graph

General Parameters

1 14033626 HD32MT3 09 PYRA-TEMP °C

Confirm Cancel

Fig. 7.2.97: “Parameters” tab for Numeric Value chart

6. Click on the parameter row to select it: all the top command bar icons are enabled, except for "Plus" icon (always disabled since only one parameter can be selected).

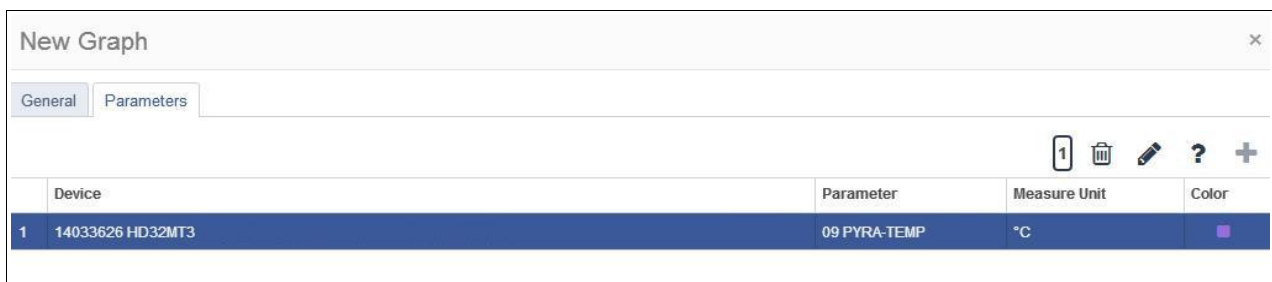


Fig. 7.2.98: "Plus" icon always disabled

7. Click on the "Question mark" icon: selected parameter properties appear in a dedicated window. Click on "Close" button to go back to "New Graph" window.

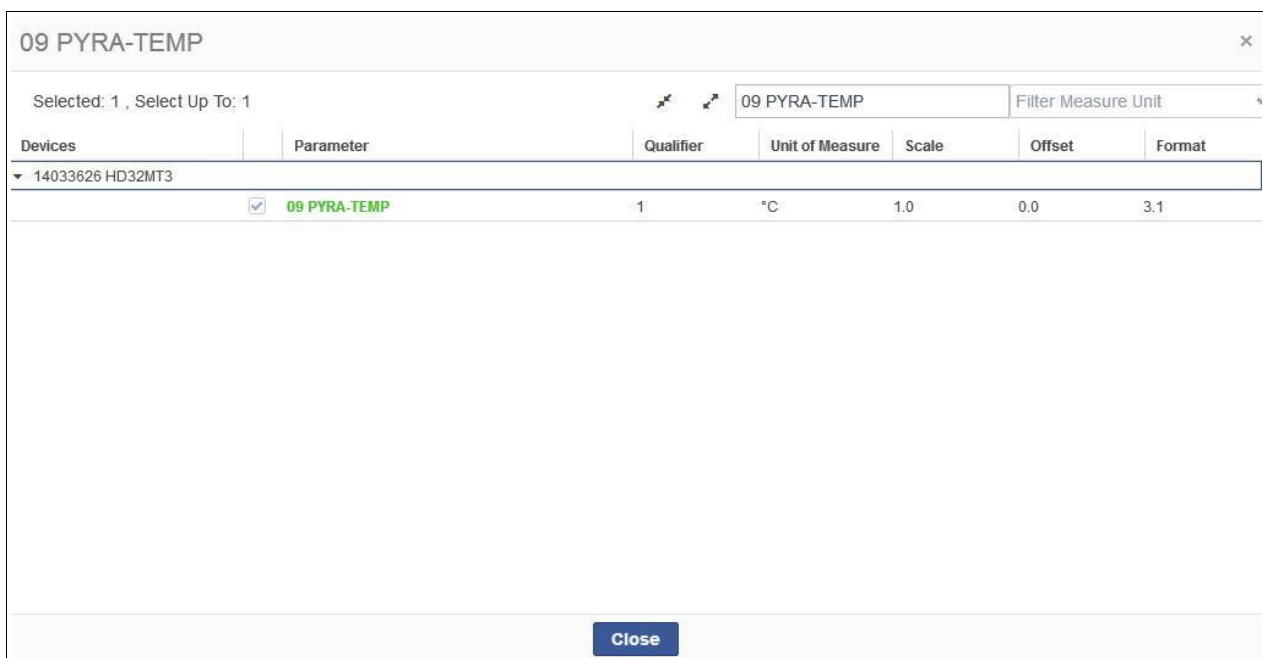


Fig. 7.2.99: Parameter description

8. Click on the "Pencil" icon to modify parameter graphical features.

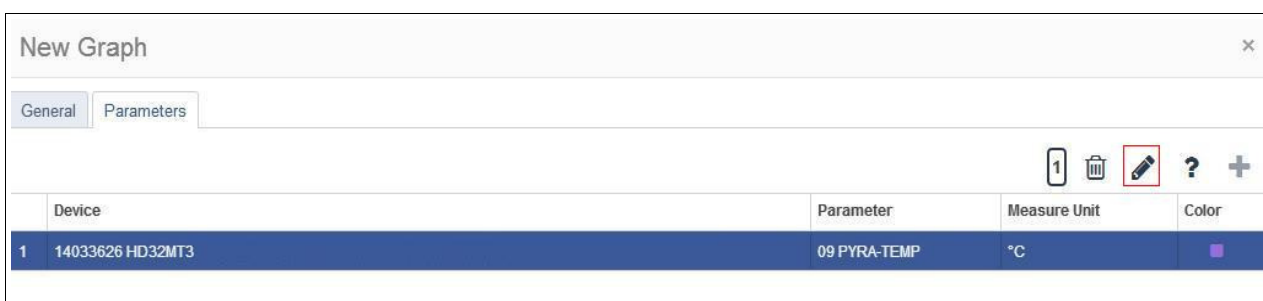


Fig. 7.2.100: "Pencil" icon

9. The “Modify Parameter” window appears.

Fig. 7.2.101: “Modify Parameter” window

10. In the “General” tab:

- Click on “Measure” drop-down list to set a different parameter measure unit (if any).

Fig. 7.2.102: “Measure” drop-down list

- Click on “Label” text-box to modify the parameter description.

Fig. 7.2.103: “Label” text-box

- Click on “Color” square to set a different text color.

Fig. 7.2.104: “Color” drop-box

11. Click on "Confirm" button to apply changes and go back to "New Graph" window: possibly changed features are updated in the selected parameter row.
12. Click on the "Waste basket" icon to remove the selected parameter from the chart.

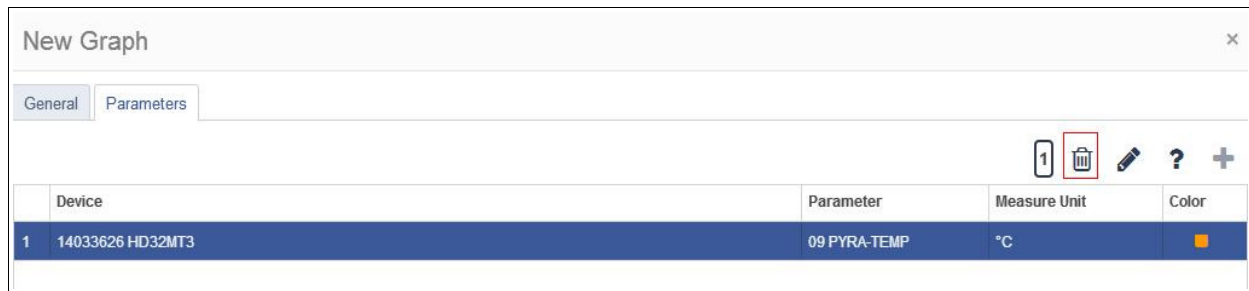


Fig. 7.2.105: "Waste basket" icon for parameter deletion

13. A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

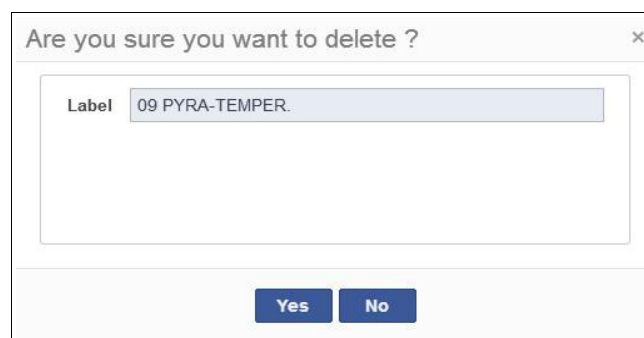


Fig. 7.2.106: Confirmation window for parameter deletion

14. Click on the "Confirm" button in the "New Graph" window to terminate the chart.



Fig. 7.2.107: "Confirm" button for chart termination

15. The "Numeric Value" chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.



Fig. 7.2.108: "Numeric Value" box

7.2.6 Numeric Table

The “Numeric Table” chart allows creating a box displaying the selected parameters description and current value, extending the previous chart to more than one parameter.

1. Select “Numeric Table” item in the “Add Graph” window (step 6, section 7.2.1): the “Add New Parameters” window appears.

Selected: 0 , Select Up To: 10

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	☐ 01 Vbatt	1	V	1.0	0.0	3.2
	☐ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☐ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection Close

Fig. 7.2.109: “Add New Parameters” window

2. Click on the desired parameters check-box, then click on “Add Selection” button.

Selected: 2 , Select Up To: 10

Filter Parameters Filter Measure Unit

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	☐ 01 Vbatt	1	V	1.0	0.0	3.2
	☒ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☐ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☐ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☐ 05 HD52-DIR	1	deg	1.0	0.0	3.1
	☒ 06 HD52-T_PT100	1	°C	1.0	0.0	3.1
	☐ 07 HD52-RH	1	%	1.0	0.0	3.1
	☐ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☐ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☐ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☐ 11 LPSD18 Temp.	1	°C	1.0	0.0	3.1
	☐ 12 LPSD18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LPSD18 Direct Rad	1	W/m2	1.0	0.0	3.0

Add Selection Close

Fig. 7.2.110: Parameters selection

3. As declared in the top left corner, up to 10 parameters can be selected: a warning window appears, when clicking on more than 10 check-boxes.

Devices	Parameter	Qualifier	Unit of Measure	Scale	Offset	Format
14033626 HD32MT3	☐ 01 Vbatt	1	V	1.0	0.0	3.2
	☒ 02 Internal temp.	1	°C	1.0	0.0	3.1
	☒ 03 Internal pressure	1	hPa	1.0	0.0	3.1
	☒ 04 HD52-SOW	1	m/s	1.0	0.0	3.2
	☒ 05 HD52-DIR			1.0	0.0	3.1
	☒ 06 HD52-T_PT100			1.0	0.0	3.1
	☒ 07 HD52-RH	1	%	1.0	0.0	3.1
	☒ 08 HD52-DEW	1	°C	1.0	0.0	3.1
	☒ 09 PYRA-TEMP	1	°C	1.0	0.0	3.1
	☒ 10 PYRA-RAD	1	W/m2	1.0	0.0	3.0
	☒ 11 LP5D18 Temp.	1	°C	1.0	0.0	3.1
	☒ 12 LP5D18 sun 0/1	1	bool	1.0	0.0	3.0
	☐ 13 LP5D18 Direct Rad	1	W/m2	1.0	0.0	3.0

Fig. 7.2.111: Warning window for excessive selection

4. The "New Graph" window appears: enter the box name in the "Label" field.

Fig. 7.2.112: "New Graph" window for Numeric Table chart

5. Click on "Parameters" tab: the selected parameters are listed by 3 fields, as described in the following table.

	NAME	DESCRIPTION
1	"Device"	String describing the device the listed parameters belong to.
2	"Parameter"	String describing the measured quantity.
3	"Measure Unit"	String describing the parameter measurement unit.

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3	06 HD52-T_PT100	°C

Fig. 7.2.113: "Parameters" tab for Numeric Table chart

6. Click on the "Plus" icon to go back to "Add New Parameters" window and add more parameters (step 2).

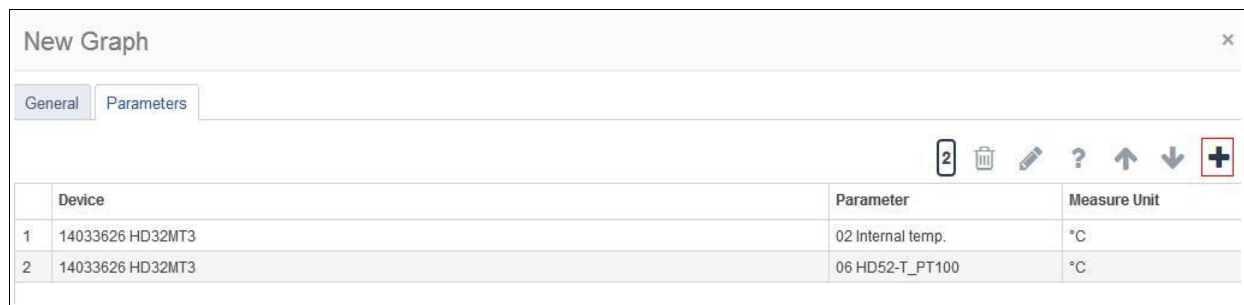


Fig. 7.2.114: "Plus" icon

7. Click on a parameter row to select it: all the top command bar icons are enabled.
8. Click on the "Up arrow" or "Down arrow" icon to move the selected parameter up or down along the list.

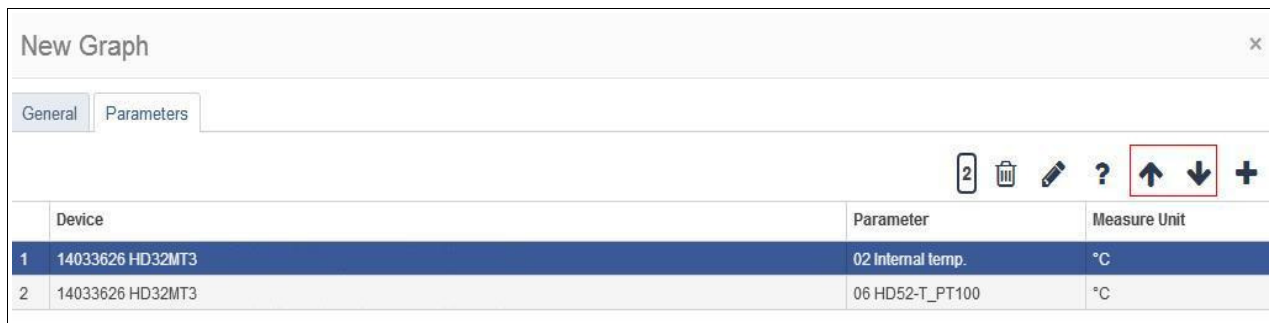


Fig. 7.2.115: "Move up" / "Move down" icons

9. Click on the "Question mark" icon: selected parameter properties appear in a dedicated window. Click on "Close" button to go back to "New Graph" window.

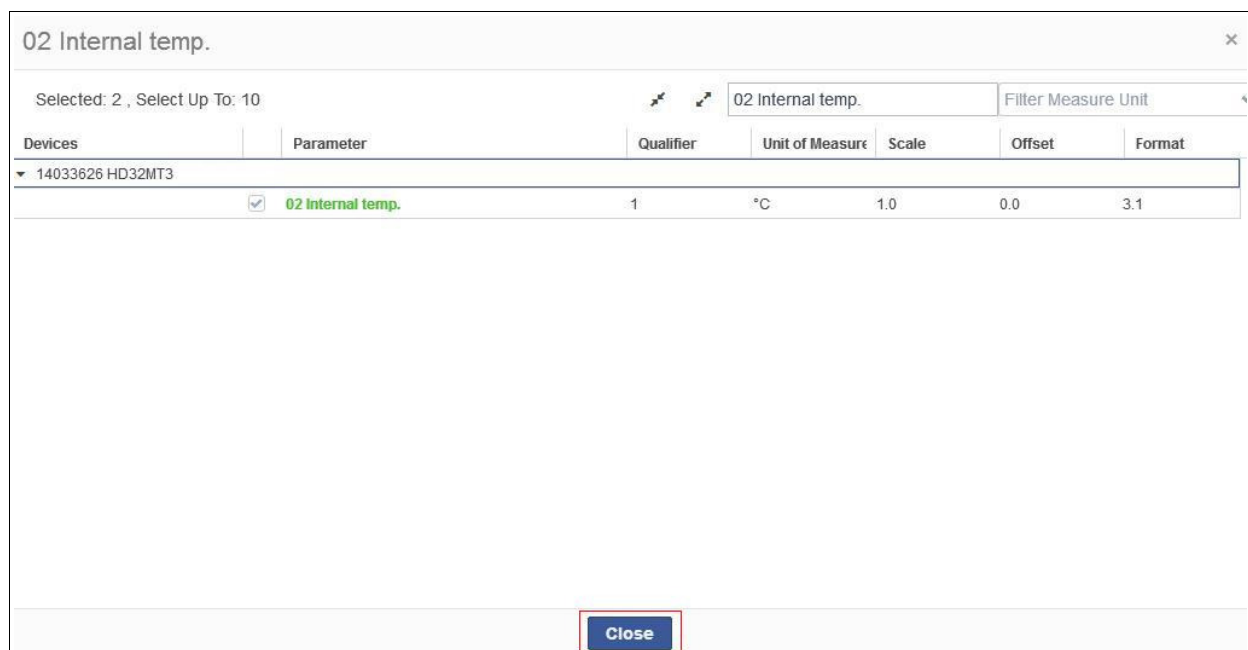
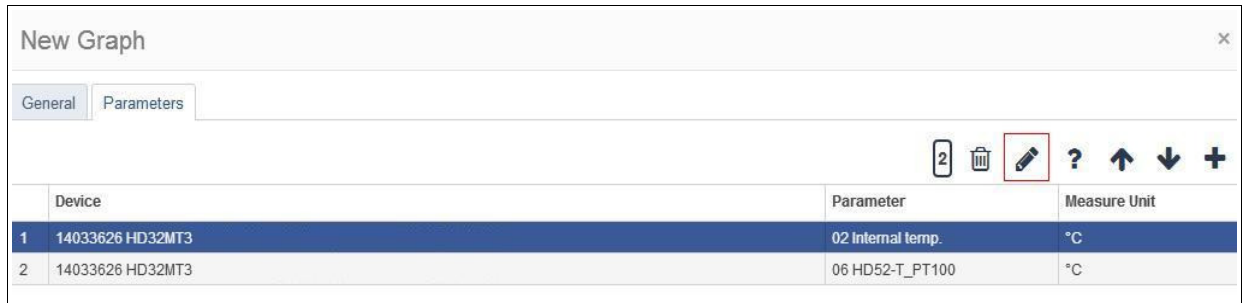


Fig. 7.2.116: Parameter description

10. Click on the “Pencil” icon to modify parameter graphical features.



New Graph

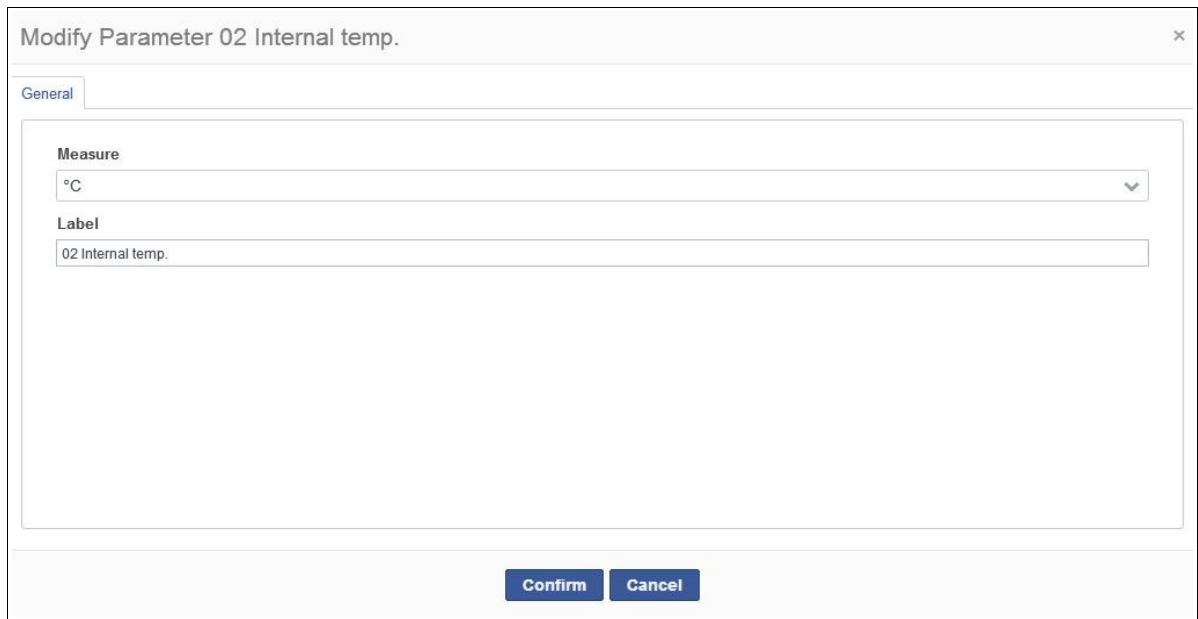
General Parameters

2 [trash] [pencil] [help] [up] [down] [plus]

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3	06 HD52-T_PT100	°C

Fig. 7.2.117: “Pencil” icon

11. The “Modify Parameter” window appears.



Modify Parameter 02 Internal temp.

General

Measure

°C

Label

02 Internal temp.

Confirm Cancel

Fig. 7.2.118: “Modify Parameter” window

12. In the “General” tab:

- Click on “Measure” drop-down list to set a different parameter measure unit (if any).



Modify Parameter 02 Internal temp.

General

Measure

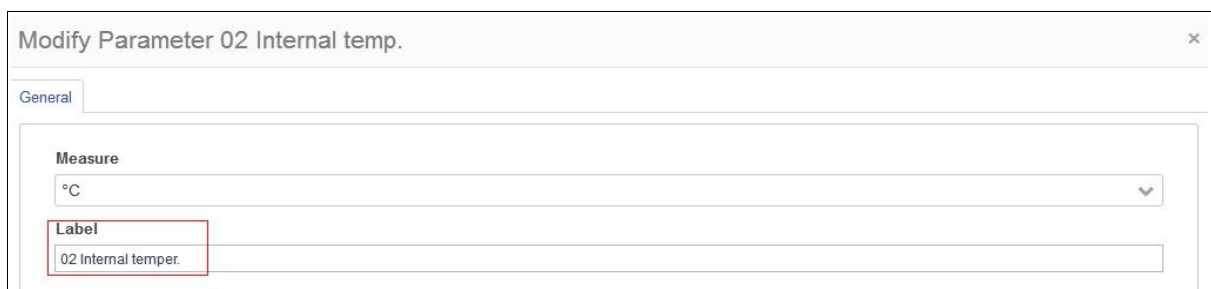
°C

°C

02 Internal temp.

Fig. 7.2.119: “Measure” drop-down list

- Click on “Label” text-box to modify the parameter description.



Modify Parameter 02 Internal temp.

General

Measure

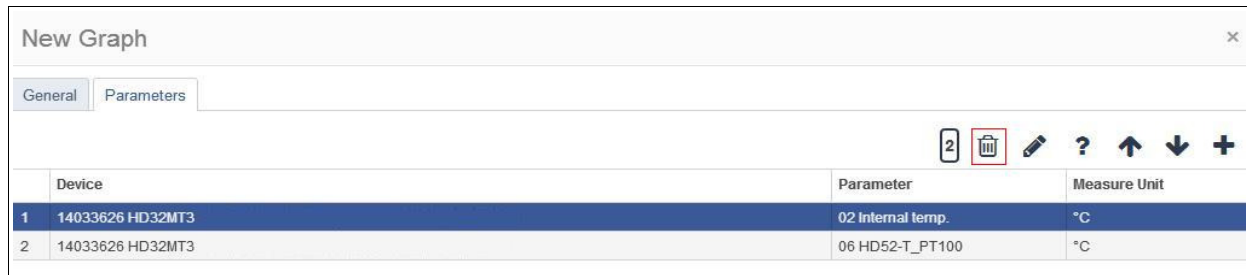
°C

Label

02 Internal temp.

Fig. 7.2.120: “Label” text-box

- 13.** Click on "Confirm" button to apply changes and go back to "New Graph" window: possibly changed features are updated in the selected parameter row.
- 14.** Click on the "Waste basket" icon to remove the selected parameter from the chart.



	Device	Parameter	Measure Unit
1	14033626 HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3	06 HD52-T_PT100	°C

Fig. 7.2.121: "Waste basket" icon for parameter deletion

- 15.** A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.



Are you sure you want to delete ?

Label: 02 Internal temp.

Yes No

Fig. 7.2.122: Confirmation window for parameter deletion

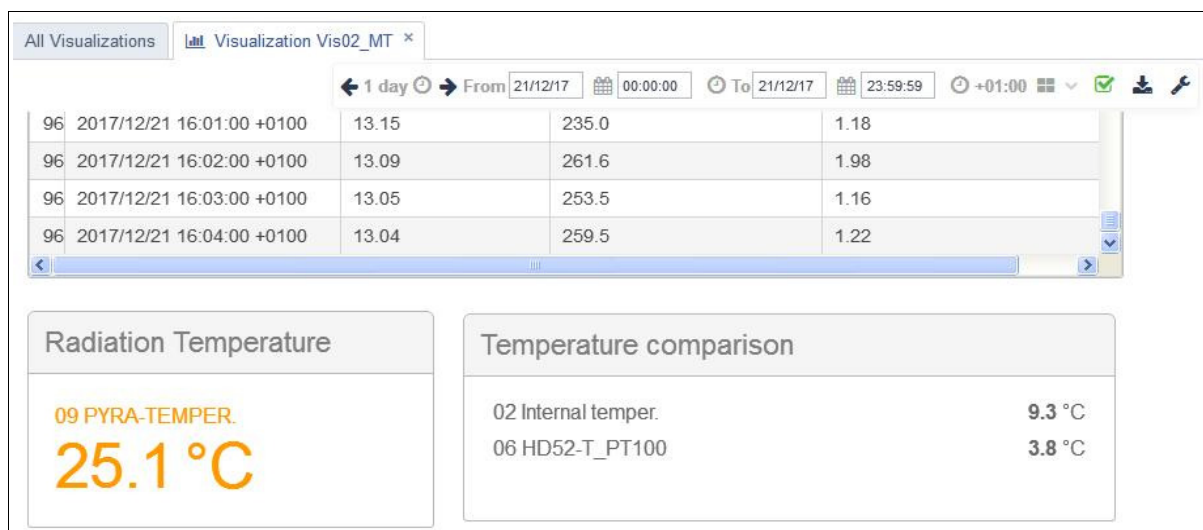
- 16.** Click on the "Confirm" button in the "New Graph" window to terminate the chart.



Confirm Cancel

Fig. 7.2.123: "Confirm" button for chart termination

- 17.** The "Numeric Table" chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.



	Device	Parameter	Measure Unit
96	2017/12/21 16:01:00 +0100	13.15	235.0
96	2017/12/21 16:02:00 +0100	13.09	261.6
96	2017/12/21 16:03:00 +0100	13.05	253.5
96	2017/12/21 16:04:00 +0100	13.04	259.5

Radiation Temperature	
09 PYRA-TEMPER.	25.1 °C

Temperature comparison	
02 Internal temp.	9.3 °C
06 HD52-T_PT100	3.8 °C

Fig. 7.2.124: "Numeric Table" chart

7.2.7 Station

The “Station” chart allows creating an information box about a specific device Serial Number, description, position, main measured quantities and geolocalization on a map.

1. Select “Station” item in the “Add Graph” window (step 6, section 7.2.1): the “New Graph” window appears.

The screenshot shows the 'New Graph' window with the 'Device' tab selected. The 'Type' dropdown menu is set to 'Station'. The 'Label' text box contains the placeholder text 'i.e. Chart's Title'. At the bottom of the window, there are 'Confirm' and 'Cancel' buttons.

Fig. 7.2.125: “New Graph” window

2. In the “General” tab, click on the “Label” text-box and enter the chart name.

The screenshot shows the 'New Graph' window with the 'General' tab selected. The 'Label' text box is highlighted with a red border and contains the text 'Device 1'. The 'Type' dropdown menu is still set to 'Station'.

Fig. 7.2.126: “Label” text-box

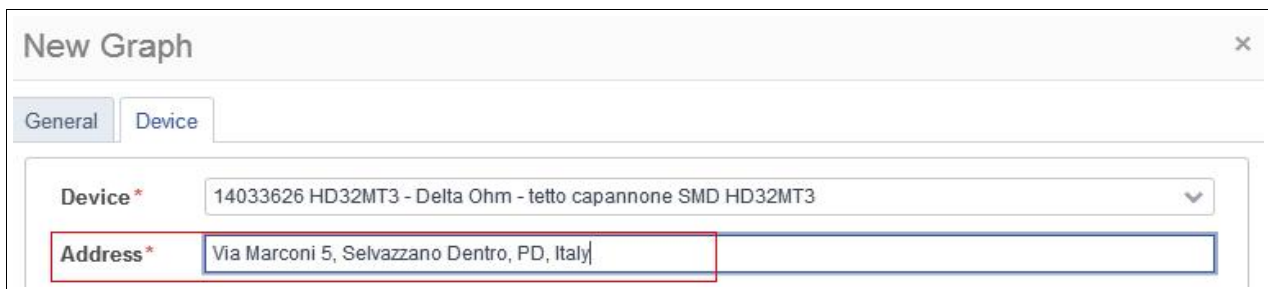
3. In the “Device” tab:

- Click on the “Device” drop-down list to select the desired Device: “Latitude”, “Longitude” and “Elevation” text-boxes are automatically filled, if known.

The screenshot shows the 'New Graph' window with the 'Device' tab selected. The 'Device' dropdown menu is highlighted with a red border. Below it, the 'Address' text box is filled with the value '14033626 HD32MT3'. The 'Latitude' text box is empty.

Fig. 7.2.127: “Device” drop-down list

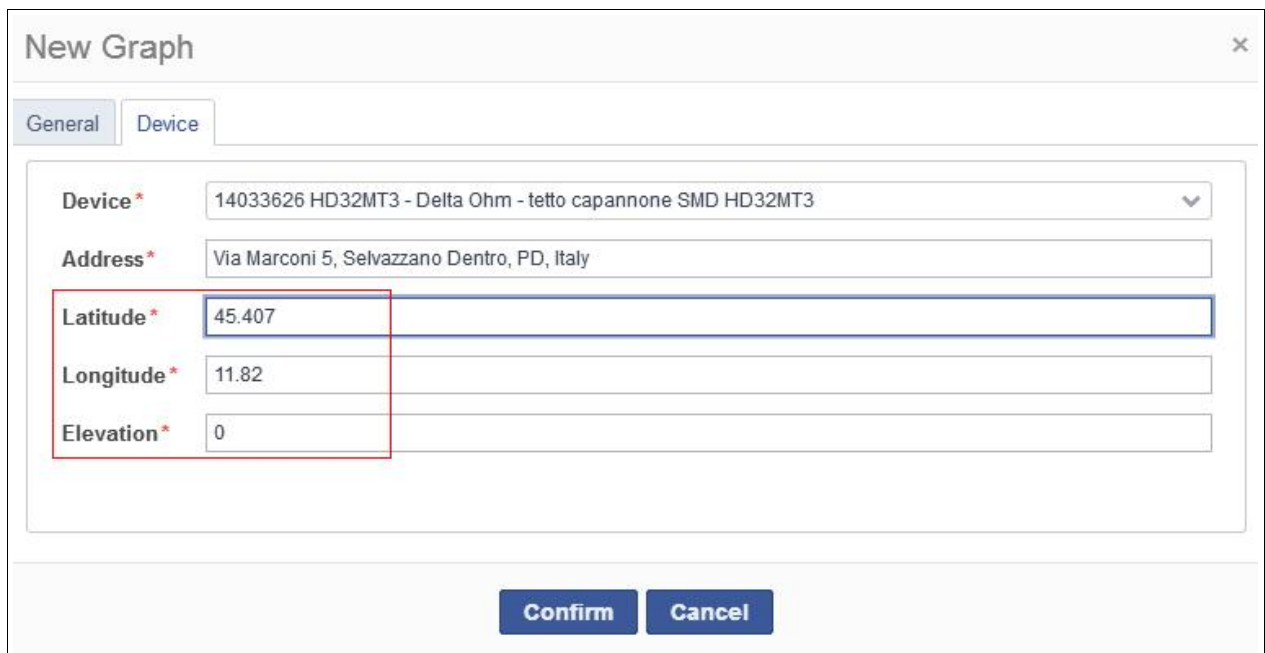
- Click on the "Address" to enter or modify the selected Device civic address.



The screenshot shows the 'New Graph' dialog box with the 'Device' tab selected. The 'Device' dropdown menu is set to '14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3'. The 'Address' text box, which contains 'Via Marconi 5, Selvazzano Dentro, PD, Italy', is highlighted with a red rectangular border. The 'General' tab is also visible on the left.

Fig. 7.2.128: "Address" text-box

- Click on "Latitude", "Longitude" and "Elevation" text-boxes to enter or modify the selected Device geographical coordinates.



The screenshot shows the 'New Graph' dialog box with the 'Device' tab selected. The 'Device' dropdown menu is set to '14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3'. The 'Address' text box contains 'Via Marconi 5, Selvazzano Dentro, PD, Italy'. The 'Latitude' text box contains '45.407', the 'Longitude' text box contains '11.82', and the 'Elevation' text box contains '0'. These three text boxes are highlighted with a red rectangular border. At the bottom, there are 'Confirm' and 'Cancel' buttons.

Fig. 7.2.129: "Latitude", "Longitude", "Elevation" text-boxes

4. Click on "Confirm" button: the "Numeric Table" chart is included in the current Visualization.



Fig. 7.2.130: "Latitude", "Longitude", "Elevation" text-boxes

5. Pass the pointer over the "Gear" icon: a drop-down menu appears.



Fig. 7.2.131: "Gear" icon drop-down menu

6. Click on "Configure" item: the "Modify Graph" window appears.

- In the "General" tab, click on the "Label" text-box to modify the box label.



Fig. 7.2.132: "Modify Graph" window, "General" tab

- In the "Device" tab the "Device" field is steady, while "Address", "Latitude", "Longitude" and "Elevation" fields are changeable.

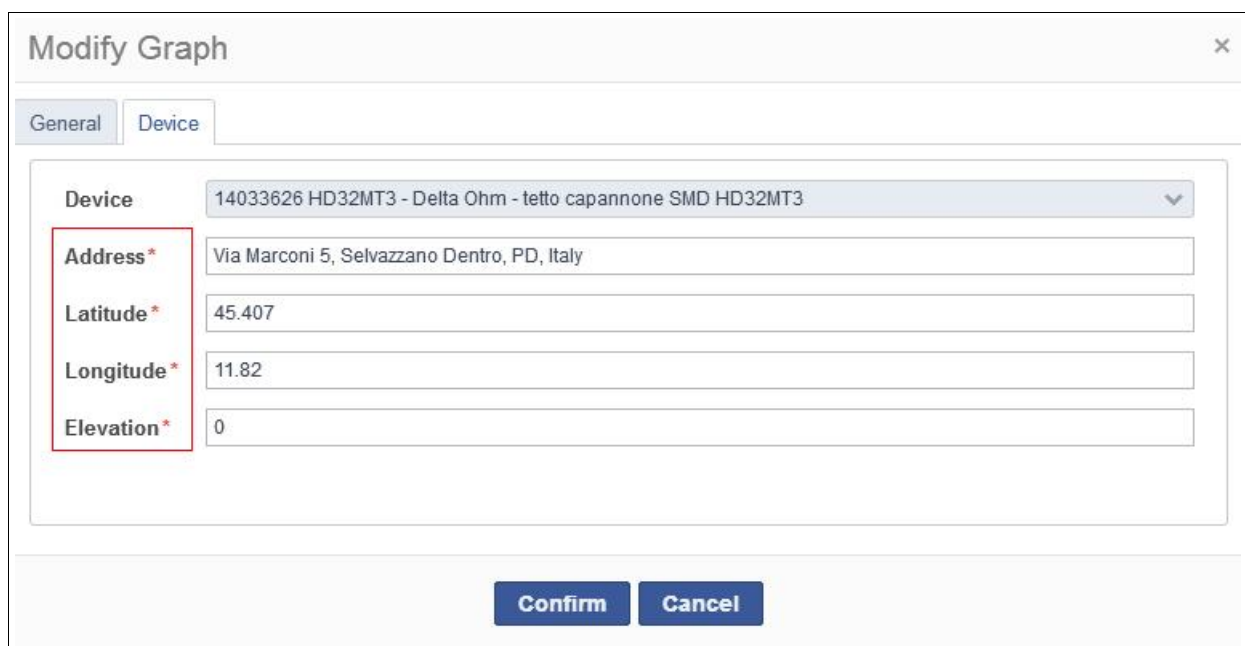


Fig. 7.2.133: "Modify Graph" window, "Device" tab

- Click on the "Confirm" button to save possible changes.

7. Click on "Info" item: the "Device" parameters summary window appears, listing measured quantities by 8 fields, as described in the following table.

	NAME	DESCRIPTION	STATUS
1	"Identifier"	String describing the measured quantity	steady
2	"Qualifier"		steady
3	"Unit of Measure"	Measurement unit label	steady
4	"Scale"	Tilt factor potentially multiplying the translated value (useful for measuring unit transformation, e.g. from Celsius to Fahrenheit degree)	steady
5	"Offset"	Translation Value potentially added to measured value (useful for measuring unit transformation, e.g. from Celsius to Fahrenheit degree)	steady
6	"Format"	Measured value integer digits number and fractional digits number	steady
7	"Activity Interval"	Timestamp of the first received data (last received data timestamp is recorded only in case of reception break)	steady
8	"Id"	Numerical input reference	steady

Device 1								
	Identifier	Qualifier	Unit of Measure	Scale	Offset	Format	Activity Interval	Id
1	01 Vbatt	1 - 0	V	1.0	0.0	3.2	[Wed Feb 15 08:19:24 UTC 2017..+∞)	01
2	02 Internal temp.	1 - 0	°C	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	02
3	03 Internal pressure	1 - 0	hPa	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	03
4	04 HD52-SOW	1 - 0	m/s	1.0	0.0	3.2	[Wed Feb 15 08:19:24 UTC 2017..+∞)	04
5	05 HD52-DIR	1 - 0	deg	1.0	0.0	3.1	[Wed Feb 15 08:19:24 UTC 2017..+∞)	05

Fig. 7.2.134: "Device" parameters information summary

8. Click on "Remove" item: the "Remove Graph" window appears. Click on "Yes" button to delete the "Station" chart or click on "No" button to quit.

Remove Graph

Label

Device 1

Yes

No

Fig. 7.2.135: "Remove Graph" window

9. Click on "Modify Position/Size" item to open the corresponding window:
- Click on the "Coord X" text-box to modify the chart horizontal offset.
 - Click on the "Coord Y" text-box to modify the chart vertical offset.

- Click on the "Width" text-box to modify chart horizontal dimension.
- Click on the "Height" text-box to modify chart vertical dimension.
- Click on "Confirm" button to save changes or click on "Cancel" button to discard them.

Modify Position/Size

Coord X: 5

Coord Y: 1617

Width: 1119

Height: 350

Confirm Cancel

Fig. 7.2.136: "Modify Position/Size" window

10. Click on "Configure Label" item, the "Modify Graph" window appears:

- Click on the "Label" text-box to modify the Device name.

Modify Graph

General

Type: Label

Label*: 14033626 HD32MT3

Fig. 7.2.137: "Modify Graph" window, "Label" text-box

- Click on the "Color" square to see a different text color.

Modify Graph

General

Type: Label

Label*: 14033626 HD32MT3 - Delta Ohm - tetto cap

Color: [Color Selection Palette]

Fig. 7.2.138: "Modify Graph" window, "Color" box

- Click on the "Confirm" button to save changes or click on the "Cancel" button to discard them.



Fig. 7.2.139: "Modify Graph" window, "Confirm" button

- Click on the "Configure Numeric Value" item, the "Modify Graph" window appears.

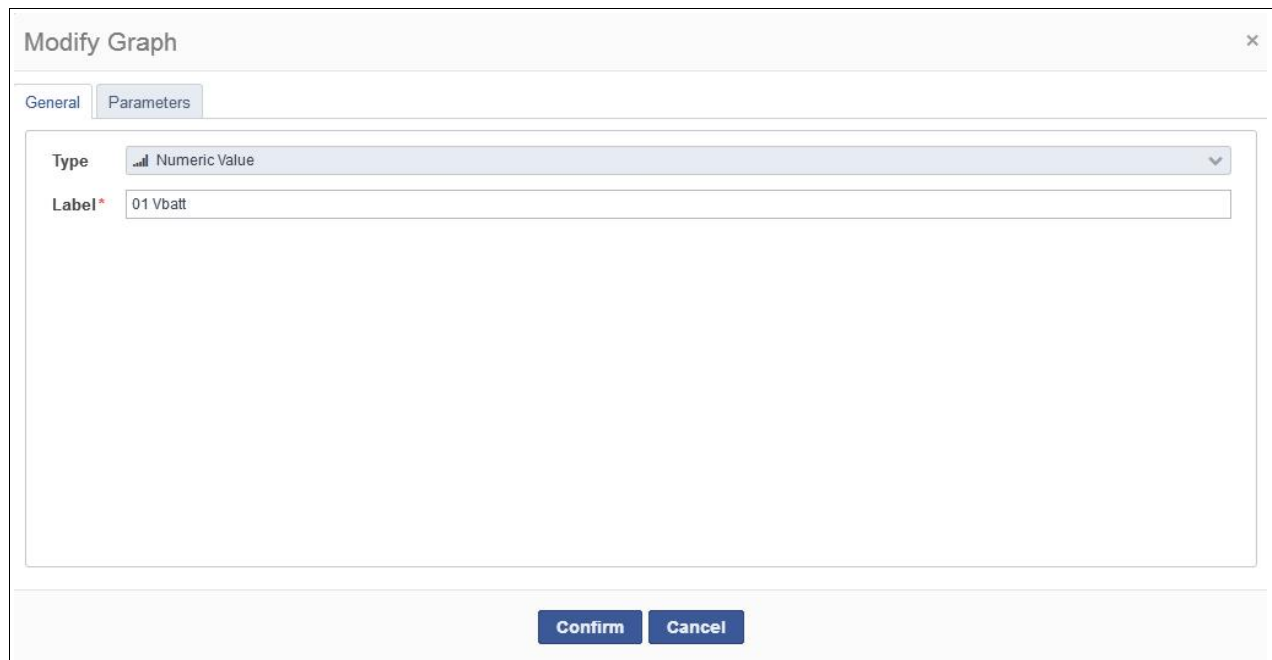


Fig. 7.2.140: "Modify Graph" window for Numeric Value item

- In the "General" tab click on the "Label" text-box to modify the main parameter label.

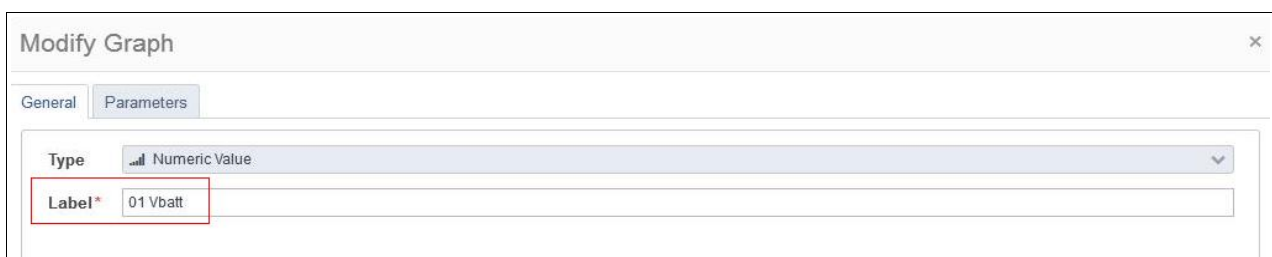


Fig. 7.2.141: "Modify Graph" window, "Label" text-box

- In the "Parameters" tab the main parameter properties are listed by 4 fields, as described in the following table.

	NAME	DESCRIPTION
1	"Device"	String describing the device the listed parameter belong to.
2	"Parameter"	String describing the measured quantity.
3	"Measure Unit"	String describing the parameter measurement unit.
4	"Color"	Square representing the color for parameter value.

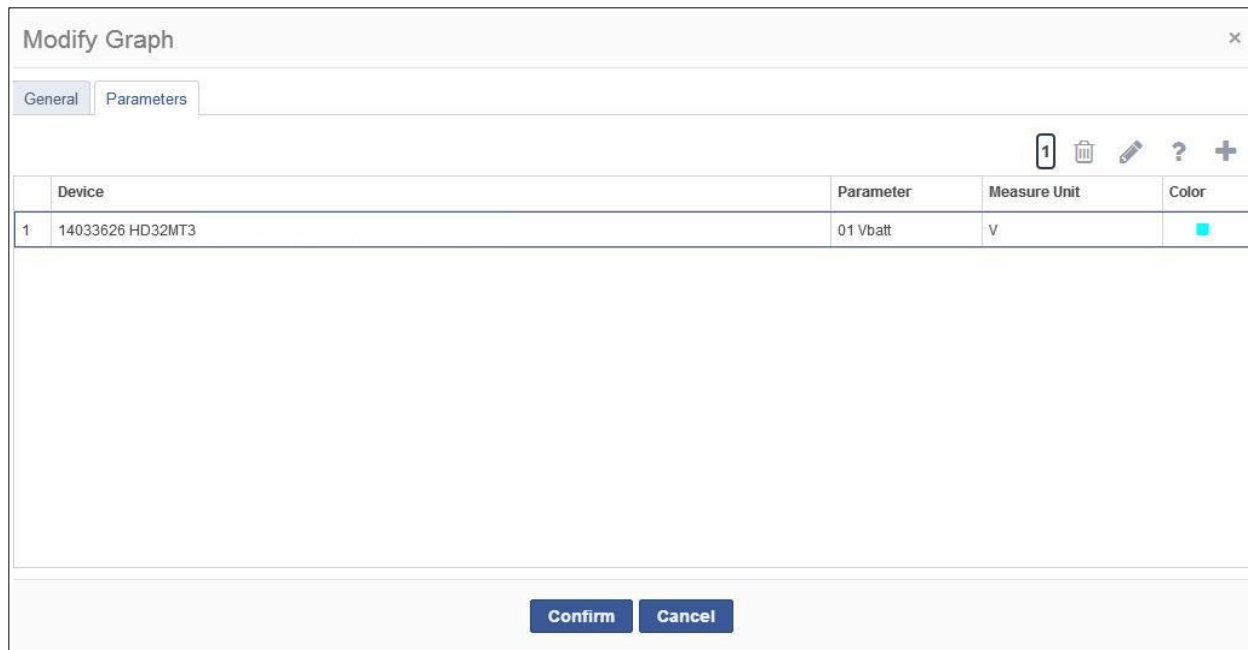


Fig. 7.2.142: "Modify Graph" window, "Parameters" tab

- 14.** Click on the parameter row to select it: all the top command bar icons are enabled, except for "Plus" icon (always disabled).

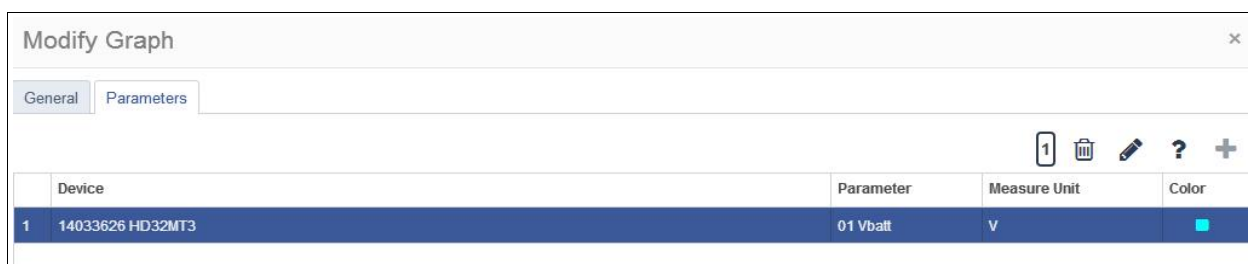


Fig. 7.2.143: "Plus" icon always disabled

- 15.** Click on the "Question mark" icon: main parameter properties appear in a dedicated window. Click on "Close" button to go back to "New Graph" window.

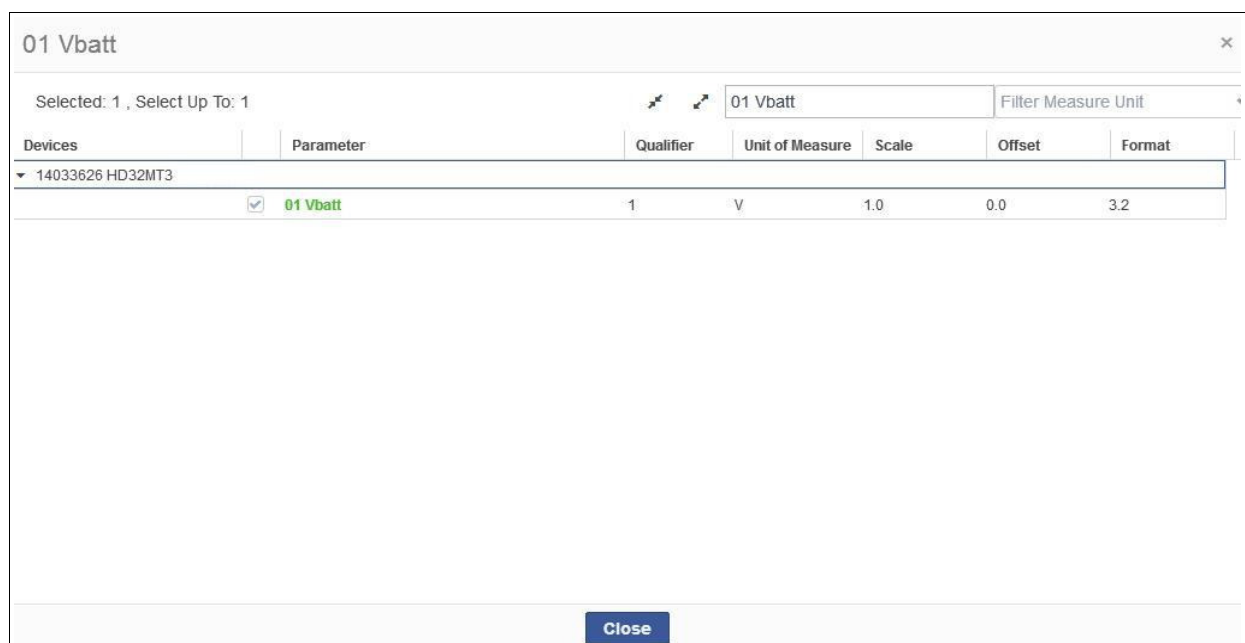


Fig. 7.2.144: Parameter description

16. Click on the "Pencil" icon to modify parameter graphical features.



Fig. 7.2.145: "Pencil" icon

17. The "Modify Parameter" window appears.

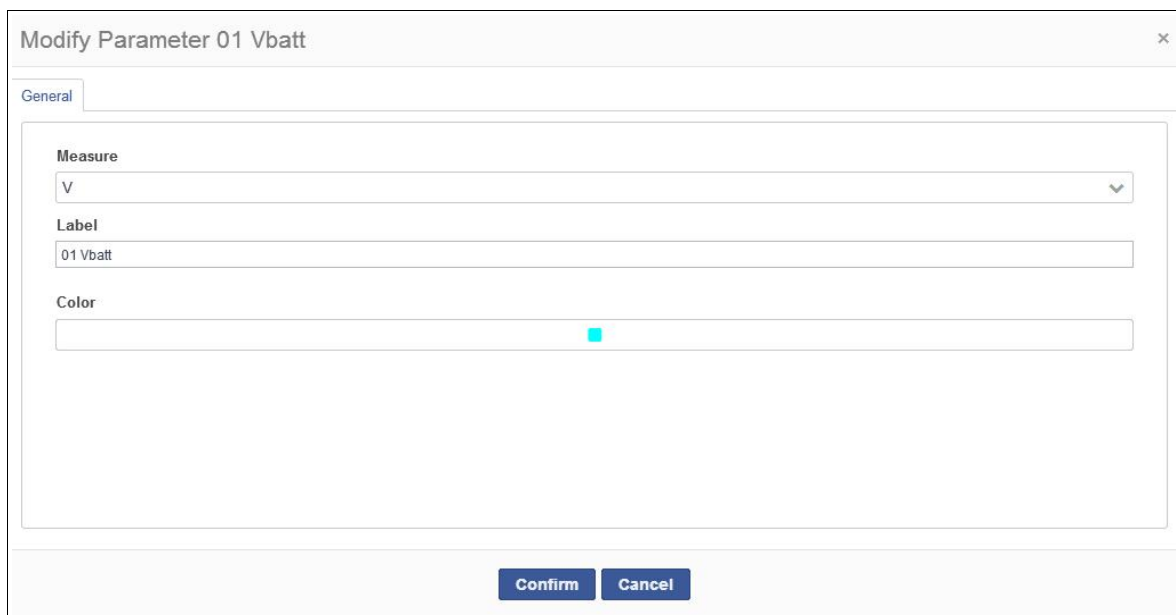


Fig. 7.2.146: "Modify Parameter" window

18. In the "General" tab:

- Click on "Measure" drop-down list to set a different parameter measure unit (if any).



Fig. 7.2.147: "Measure" drop-down list

- Click on "Label" text-box to modify the parameter description.



Fig. 7.2.148: "Label" text-box

- Click on "Color" square to set a different text color.

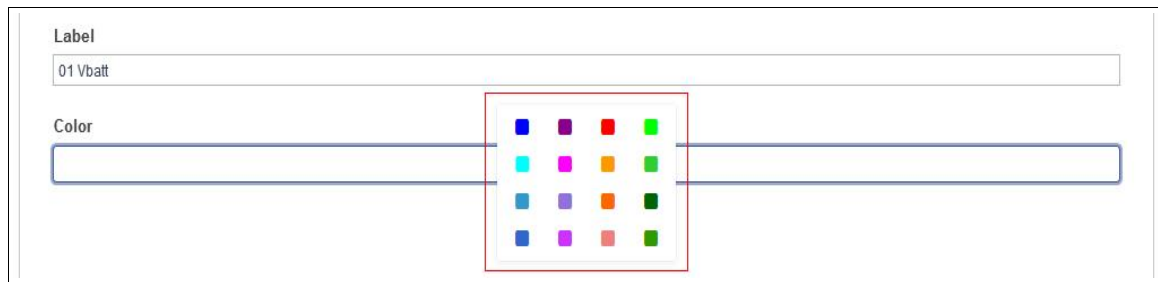


Fig. 7.2.149: "Color" drop-box

- Click on "Confirm" button to apply changes and go back to "Modify Graph" window: possibly changed features are updated in the main parameter row.
- Click on the "Waste basket" icon to remove the selected parameter from the chart.



Fig. 7.2.150: "Waste basket" icon for parameter deletion

- A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

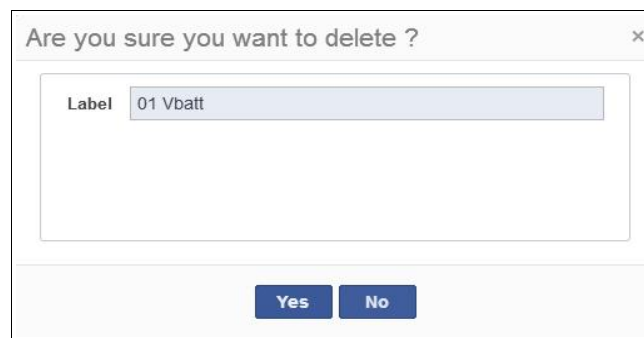


Fig. 7.2.151: Confirmation window for parameter deletion

- Click on the "Confirm" button in the "Modify Graph" window to terminate the chart.



Fig. 7.2.152: "Confirm" button for chart termination

23. Click on the "Configure Numeric Table" item, the "Modify Graph" window appears.

Modify Graph

General Parameters

Type: Numeric Table

Label*: 02 Internal temp. 03 Internal pressure 04 HD52-SOW 05 HD52-DIR

Confirm Cancel

Fig. 7.2.153: "Modify Graph" window for Numeric Table item

24. In the "General" tab click on the "Label" text-box to modify the parameters denomination.

Modify Graph

General Parameters

Type: Numeric Table

Label*: 02 Internal temp. 03 Internal pressure 04 HD52-SOW 05 HD52-DIR

Fig. 7.2.154: "Modify Graph" window, "Label" text-box

25. In the "Parameters" tab the main parameter properties are listed by 3 fields, as described in the following table.

	NAME	DESCRIPTION
1	"Device"	String describing the device the listed parameter belong to.
2	"Parameter"	String describing the measured quantity.
3	"Measure Unit"	String describing the parameter measurement unit.

Modify Graph

General Parameters

4 [Icons: delete, edit, help, up, down, add]

	Device	Parameter	Measure Unit
1	14033626 HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3	03 Internal pressure	hPa
3	14033626 HD32MT3	04 HD52-SOW	m/s
4	14033626 HD32MT3	05 HD52-DIR	deg

Fig. 7.2.155: "Modify Graph" window, "Parameter" tab

- 26.** Click on the “Plus” icon to open the “Add New Parameters” window and add more parameters (step 2 in section 7.2.6).



Fig. 7.2.156: “Plus” icon

- 27.** Click on a parameter row to select it: all the top command bar icons are enabled.
- 28.** Click on the “Up arrow” or “Down arrow” icon to move the selected parameter up or down along the list.

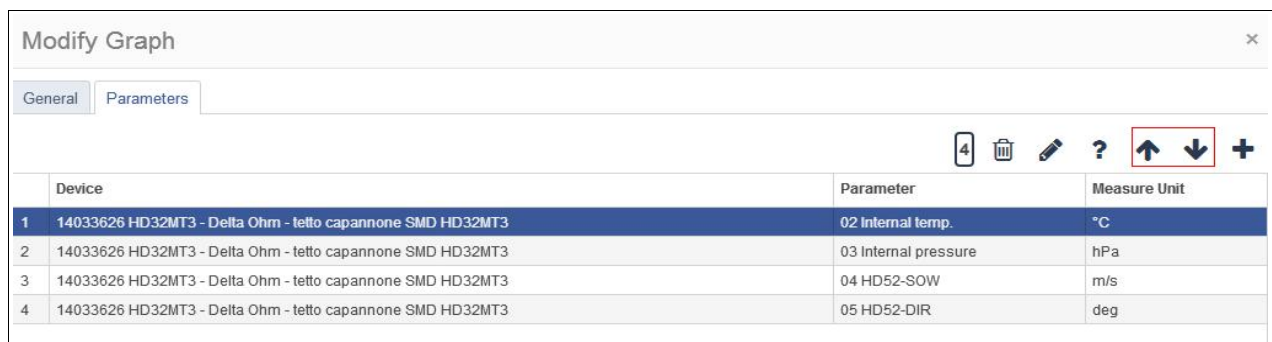


Fig. 7.2.157: “Move up” / “Move down” icons

- 29.** Click on the “Question mark” icon: selected parameter properties appear in a dedicated window. Click on “Close” button to go back to “Modify Graph” window.

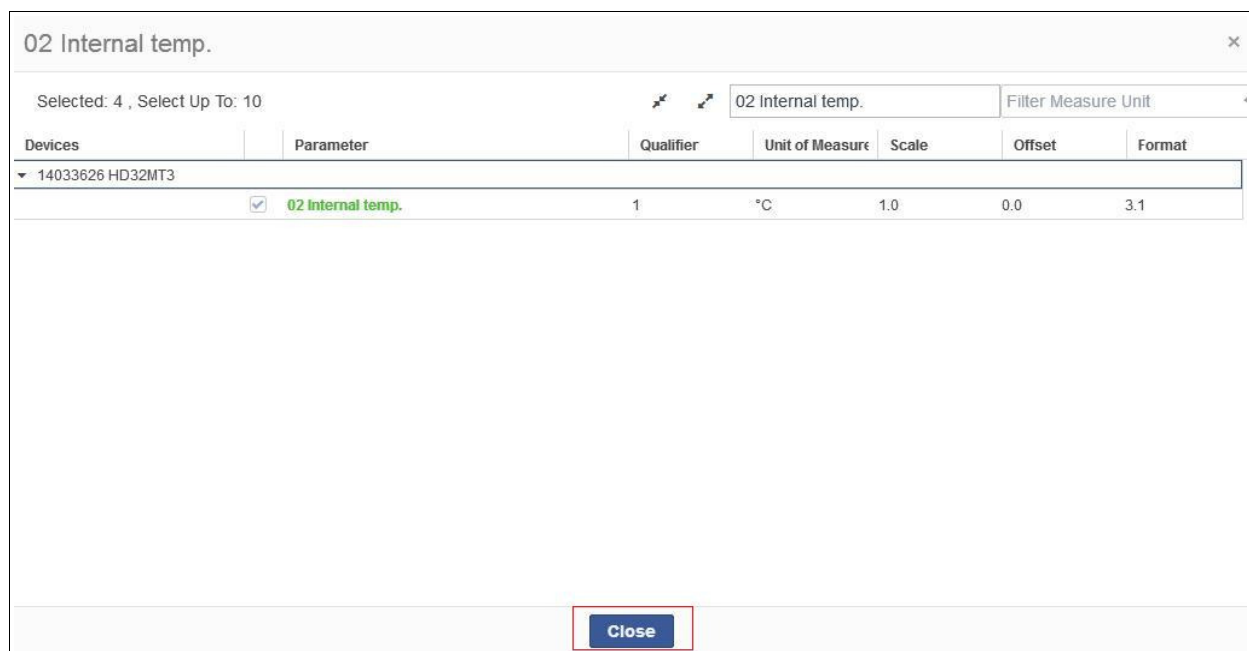


Fig. 7.2.158: Parameter description

30. Click on the “Pencil” icon to modify parameter graphical features.



Modify Graph

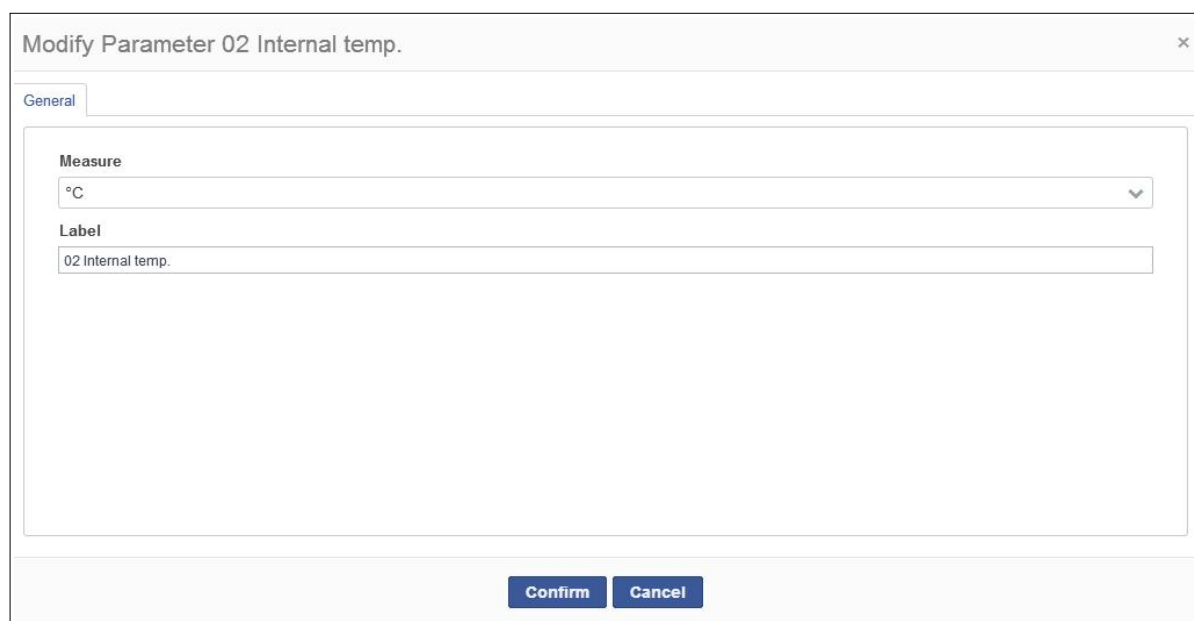
General Parameters

4 [Pencil icon] ? ↑ ↓ +

	Device	Parameter	Measure Unit
1	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	03 Internal pressure	hPa
3	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	04 HD52-SOW	m/s
4	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	05 HD52-DIR	deg

Fig. 7.2.159: “Pencil” icon

31. The “Modify Parameter” window appears.



Modify Parameter 02 Internal temp.

General

Measure

°C

Label

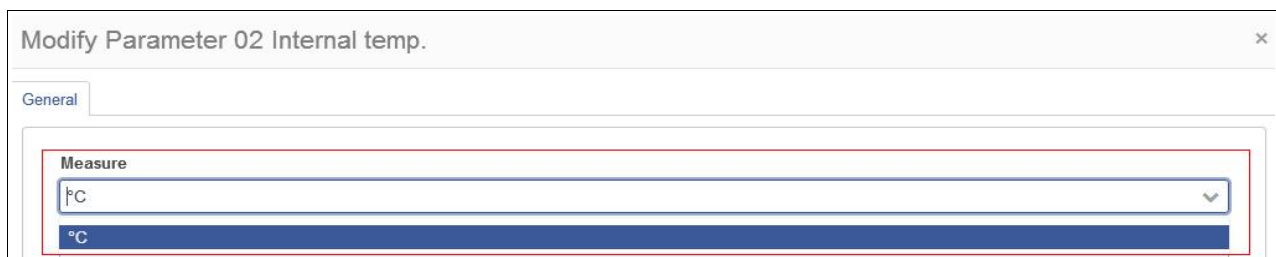
02 Internal temp.

Confirm Cancel

Fig. 7.2.160: “Modify Parameter” window

32. In the “General” tab:

- Click on the “Measure” drop-down list to set a different Measure Unit (if any)



Modify Parameter 02 Internal temp.

General

Measure

°C

°C

Fig. 7.2.161: “Measure” drop-down list

- Click on the “Label” text-box to modify the parameter denomination.

Modify Parameter 02 Internal temp.

General

Measure
°C

Label
02 Internal temp.

Confirm Cancel

Fig. 7.2.162: "Label" text-box

- Click on "Confirm" button to save changes or click on "Cancel" button to discard them.

33. Click on the "Waste basket" icon to remove the selected parameter from the chart.

Modify Graph

General Parameters

4 [Waste basket icon] [Pencil icon] [Question mark] [Up arrow] [Down arrow] [Plus icon]

	Device	Parameter	Measure Unit
1	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	02 Internal temp.	°C
2	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	03 Internal pressure	hPa
3	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	04 HD52-SOW	m/s
4	14033626 HD32MT3 - Delta Ohm - tetto capannone SMD HD32MT3	05 HD52-DIR	deg

Fig. 7.2.163: "Waste basket" icon for parameter deletion

34. A confirmation window appears: click on "Yes" button to actually remove the selected parameter, otherwise click on "No" button to quit.

Are you sure you want to delete ?

Label 02 Internal temp.

Yes No

Fig. 7.2.164: Confirmation window for parameter deletion

35. Click on the “Confirm” button in the “Modify Graph” window to terminate the chart.



Fig. 7.2.165: “Confirm” button for chart termination

36. Click on the “Disk” icon: the “Modify Visualization” window closes.



Fig. 7.2.166: “Disk” icon for “Station” chart

37. The “Station” chart is included in the current Visualization: execute steps 26 to 28 from section 7.2.1 to save and check the result.

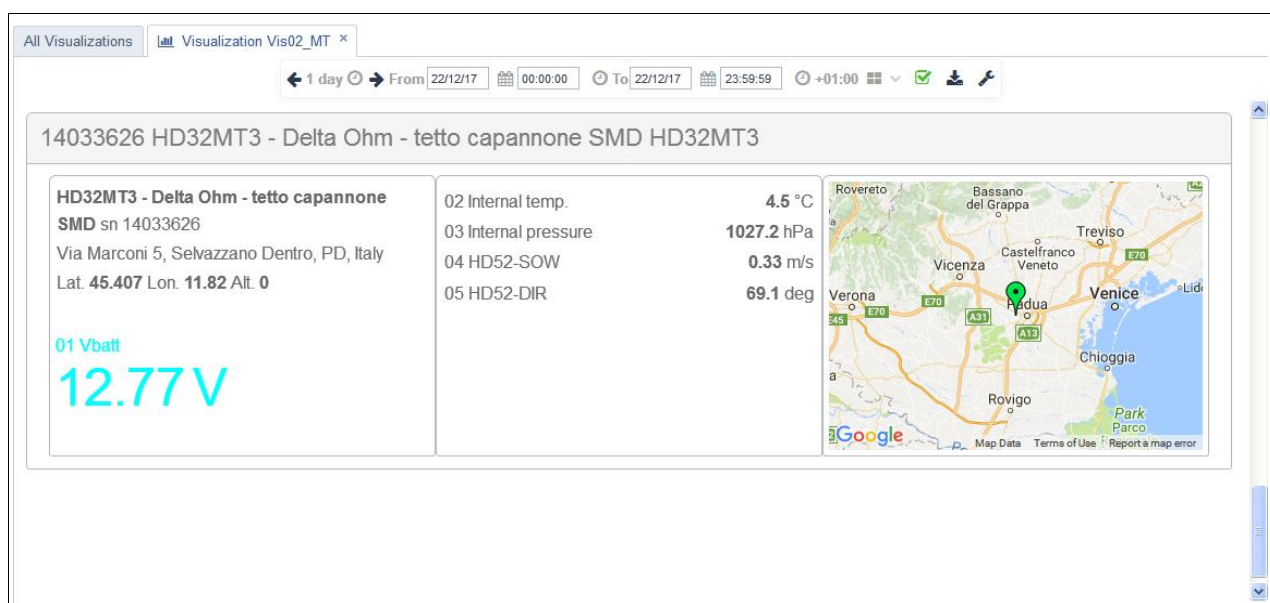


Fig. 7.2.167: “Station” chart

7.2.8 Label

The “Label” chart allows to create a text-box displaying a string.

1. Select “Label” item in the “Add Graph” window (step 6, section 7.2.1).
2. The “New Graph” window appears:

The screenshot shows the 'New Graph' dialog box with the 'General' tab selected. The 'Type' dropdown menu is set to 'Label'. Below it, the 'Label*' text input field contains the text 'Measure Tables' and is highlighted with a red rectangular border. To the right of the text input is a 'Color' field, which currently displays a small green square. At the bottom of the dialog, there are two buttons: 'Confirm' and 'Cancel'.

- Click on the “Label” text-box to enter the text.

Fig. 7.2.168: “Label” text-box

This screenshot shows the same 'New Graph' dialog box. The 'Label*' text box still contains 'Measure Tables'. The 'Color' field is now highlighted with a red rectangular border, and a color selection palette is open over it. The palette consists of a 4x4 grid of 16 different colored squares. The 'Confirm' and 'Cancel' buttons are still visible at the bottom.

- Click on the “Color” square to set a different text color

Fig. 7.2.169: “Color” drop-box

3. Click on “Confirm” button, the “Modify Visualization” tab appears in the “Custom Visualization” window: click on the chart frame and drag it to the desired position.

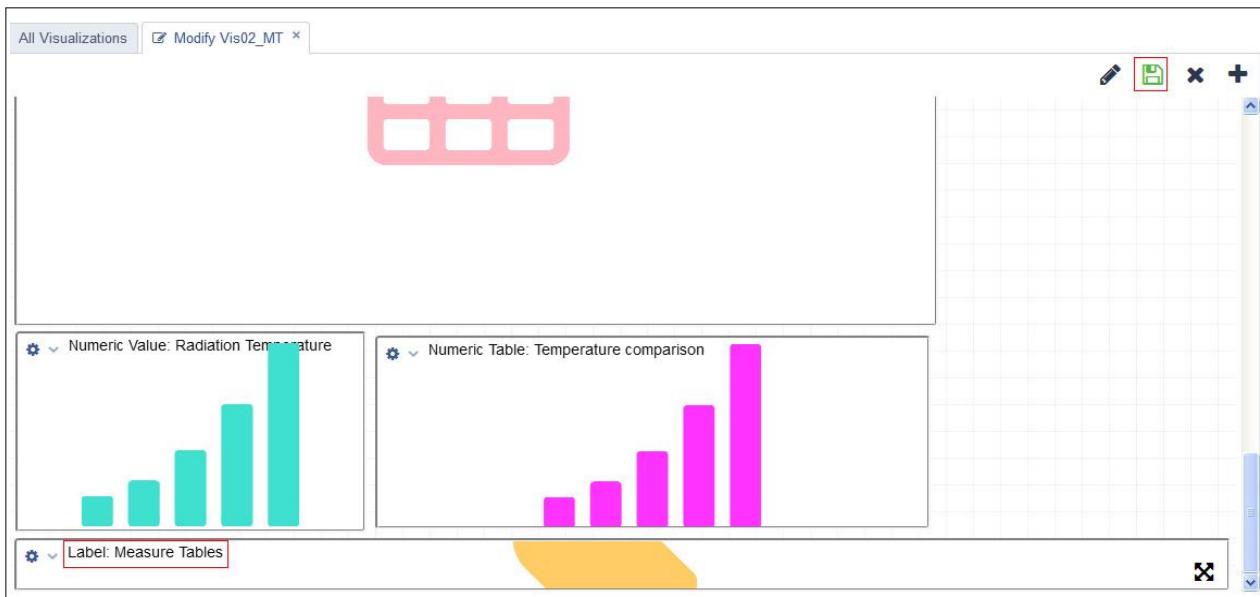


Fig. 7.2.170: “Modify” Visualization window

4. Click on the "Disk" icon: Visualisation is saved and "Modify Visualisation" tab is closed.
5. Click on the "Chart" icon in the right top command bar of the "All Visualization" tab to access the new Visualization.



Fig. 7.2.171: Visualization selection

- 6.** The “Label” chart is included in the current Visualization.

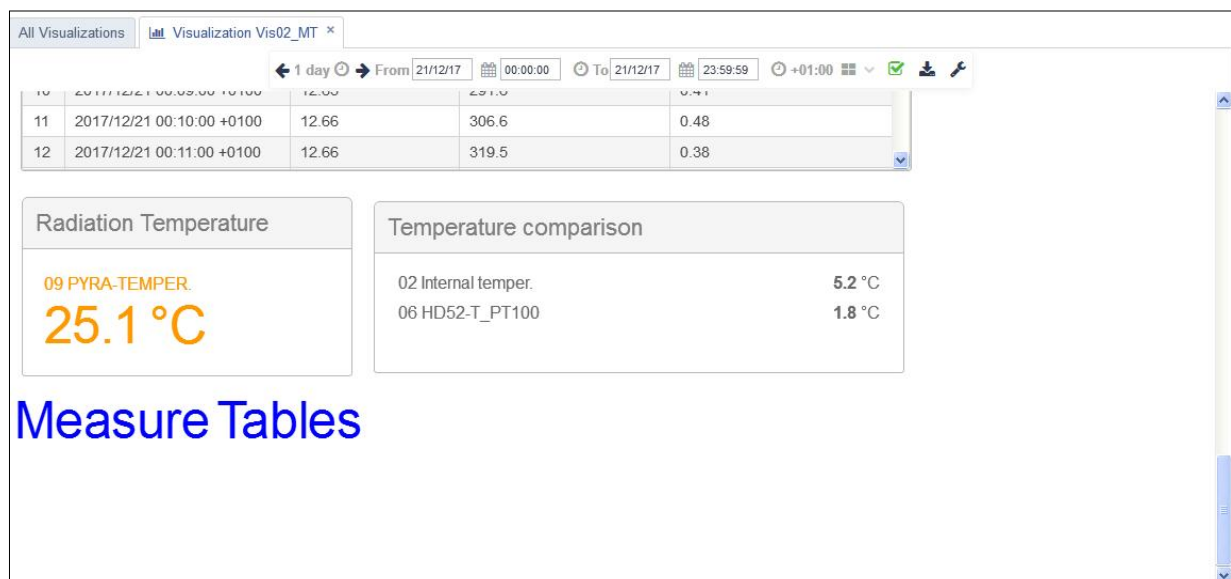
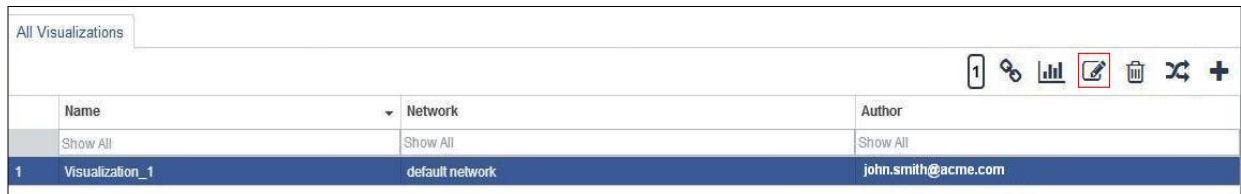


Fig. 7.2.172: “Label” chart in the Visualization view

7.2.9 Modify a Custom visualization

A Custom Visualization can be modified by its author User (Administrator or Super-user) through the following steps.

1. Click on the "Visualizations" button in the left blue column: "All Visualizations" tab is shown in the right section and the list of previously defined Visualizations appears (the counter label in the right top command bar reports their number).
2. Click on the row of the Visualization to be modified, then click on the "Pencil" icon in the right top command bar.



	Name	Network	Author
Show All	Show All	Show All	Show All
1	Visualization_1	default network	john.smith@acme.com

Fig. 7.2.173: Visualization selection to change appearance

3. The "Modify Visualization" tab appears in the window. Click on the "Gear" icon to open the drop down menu with available actions on the chart:
 - Click on "Configure" item to open back the "Modify Graph" window.
 - Click on "Info" item to access to Visualization and Devices quantities information.
 - Click on "Remove" item to delete the chart from the Visualisation window.
 - Click on "Modify Position/Size" to set graph coordinates, width and height.

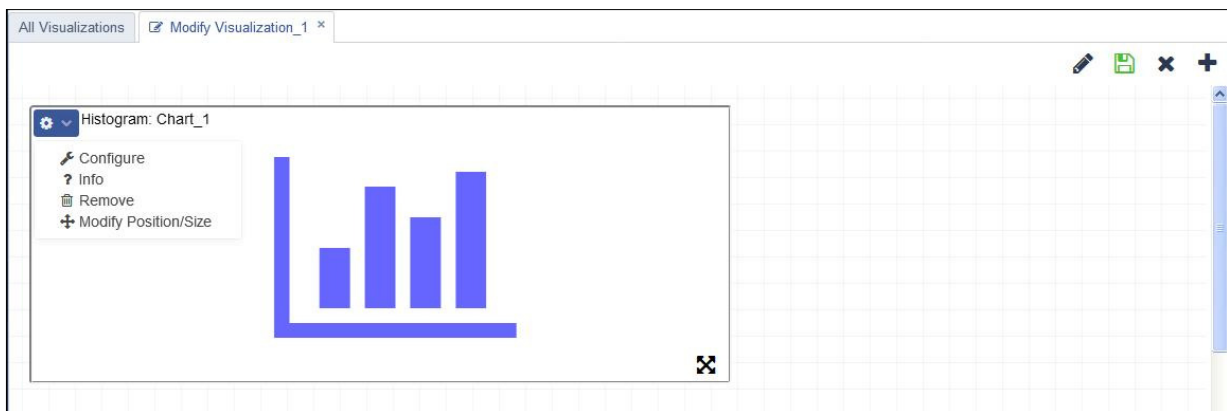


Fig. 7.2.174: Chart drop down menu

4. In the right top command bar click on:

- The "Pencil" icon to modify the current Visualization name.
- The "Plus" icon to add a new chart.
- The "Cross" icon to cancel the current Visualization.
- The "Disk" icon to save the current Visualization and close the "Modify" tab.



Fig. 7.2.175: Chart right top bar

5. The “All Visualizations” tab is back.

6. Click again on the row of the Visualization to be modified, then click on the “Twisted Arrows” icon in the right top command bar: the “Visualization Bindings” window appears.



	Name	Network	Author
Show All	Show All	Show All	Show All
1	Visualization_1	default network	john.smith@acme.com

Fig. 7.2.176: Visualization selection to change bindings

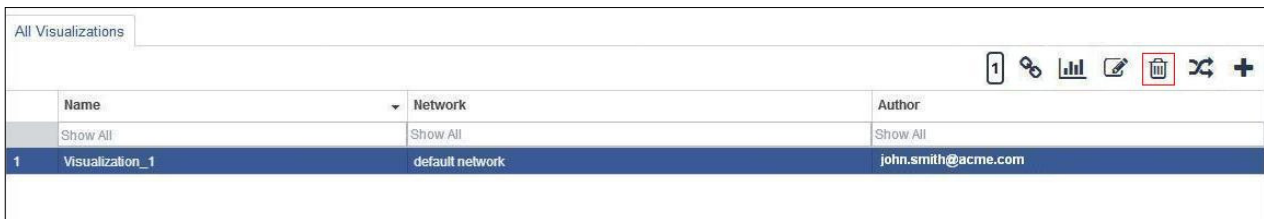
7. As detailed in section 7.2.1 (steps 4 to 6), Network devices can be joined to the current Visualization. Joined device can be removed as well.

8. Click on “Continue” button to enter “Modify Visualization” tab and save the applied changes.

7.2.10 Delete a Custom visualization

Administrator user and associated Super-User can remove a Visualization as described below.

1. Select the Visualisation to be deleted, then click on the “Waste basket” icon in the right top command bar.



	Name	Network	Author
Show All	Show All	Show All	Show All
1	Visualization_1	default network	john.smith@acme.com

Fig. 7.2.177: Visualization selection for deletion

2. A confirmation window appears: click on “Yes” button to delete the selected Visualisation or click on “No” button to quit.



Are you sure you want to delete ?

Name Visualization_1

Yes No

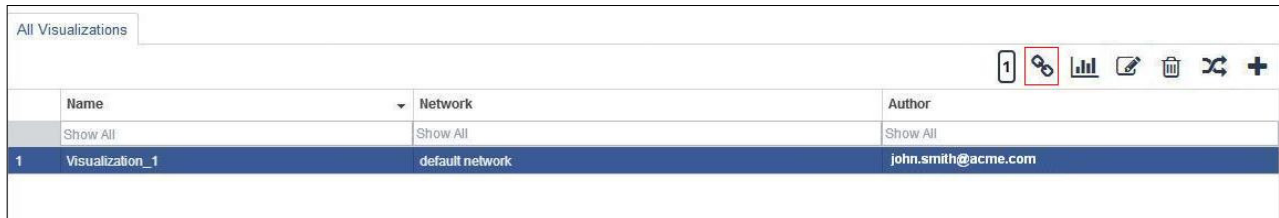
Fig. 7.2.178: Confirmation window for Visualization deletion

3. When clicked on “Yes” button, the deleted Visualisation disappeared from the list.

7.3 Generate Visualisation public url

A Visualisation window (either default or custom) can be viewed by a customer web page with no need for access permissions: its public URL can be generated through the following steps.

1. Select the desired Visualization row, then click on the "Glasses" icon in the right top command bar.



All Visualizations		
Name	Network	Author
Show All	Show All	Show All
1 Visualization_1	default network	john.smith@acme.com

Fig. 7.3.1: Visualization selection to generate URL

2. The selected Visualization is displayed in the browser window: copy the URL from the address bar to the customized web page html code.

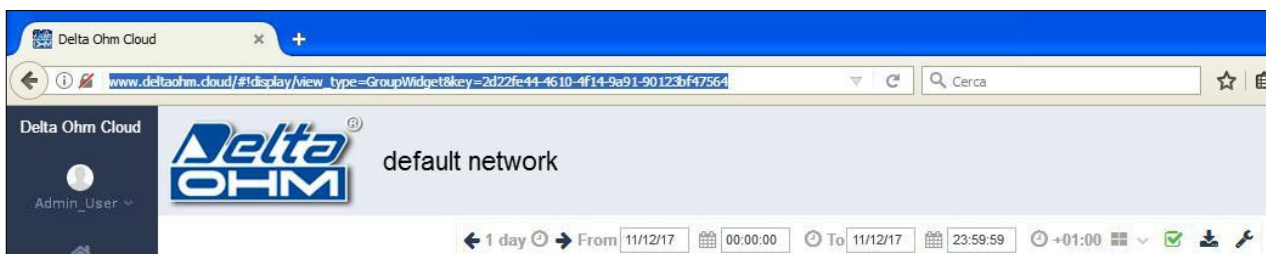
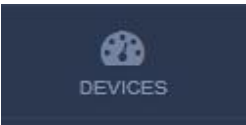


Fig. 7.3.2: URL to be pointed

8 Commands summary

Icon	Command	Description
	HOME	Button in the left vertical menu: access to Portal Home Dashboard, where graphical information about Networks usage and access are painted and Devices logging and User sessions are listed.
	NETWORKS	Button in the left vertical menu: access to Networks list to add, modify, remove Networks, to change maps, to modify users authorizations.
	DEVICES	Button in the left vertical menu: access to Devices list to add, modify, remove registered Devices.
	USERS	Button in the left vertical menu: access to Users list to add, check, modify, remove profile informations.
	VISUALIZATIONS	Button in the left vertical menu: access to Visualizations list to add, view, modify, delete a Visualisation, to change Users and Devices bindings, to generate the public web link.
	COUNTER LABEL	Indicator in the top right command bar: number of elements in the current list (Networks, Users, Devices, Visualizations).
	SHOW MAP	Icon in the top right command bar: access to selected Network list of Devices and their positioning on the map (if any).
	MODIFY	Icon in the top right command bar: access to selected Network map settings or to selected Visualization new element definition.
	RELATIONS	Icon in the top right command bar: access to Devices and Users list related to selected Network.
	MIGRATIONS	Icon in the top right command bar: access to selected Network Devices to associate/disassociate them.

Icon	Command	Description
	REMOVE	Icon in the top right command bar: remove selected Network, User or Visualization.
	MODIFY	Icon in the top right command bar: access to settings window for selected Network, Device or User.
	ADD	Icon in the top right command bar: define a new Network, User or Visualisation.
	ADD	Icon in the top right command bar: activate a new Device.
	SAVE	Icon in the top right command bar: save changes to Network map or Visualisation.
	CANCEL	Icon in the top right command bar: quit from Network map changes without saving.
	DETAILS	Icon in the top right command bar: access to User details window.
	VIEW	Icon in the top right command bar: generate a Visualisation window with public URL to be included in web pages.
	VIEW	Icon in the top right command bar: display Visualisation window.
	BINDINGS	Icon in the top right command bar: access to Devices and Users list to associate/disassociate them to selected Visualisation.
	CALENDAR	Icon in the graph top command bar: access to start/stop date selection.
	CLOCK	Icon in the graph top command bar: access to start/stop time o scroll time interval selection.

9 Appendix A

9.1 HD35..., HD33... and HD50... devices communication

In this appendix we provide a short guide to allow communication of HD35AP..., HD33... and HD50... devices with **www.deltaohm.cloud**. Please notice that communication with cloud application is available for devices with Wi-Fi, Ethernet or 4G/3G/GSM/GPRS connectivity.

Please notice that HD35AP... devices automatically handle the transmission of configurations and data measurements for all devices belonging to their wireless network.

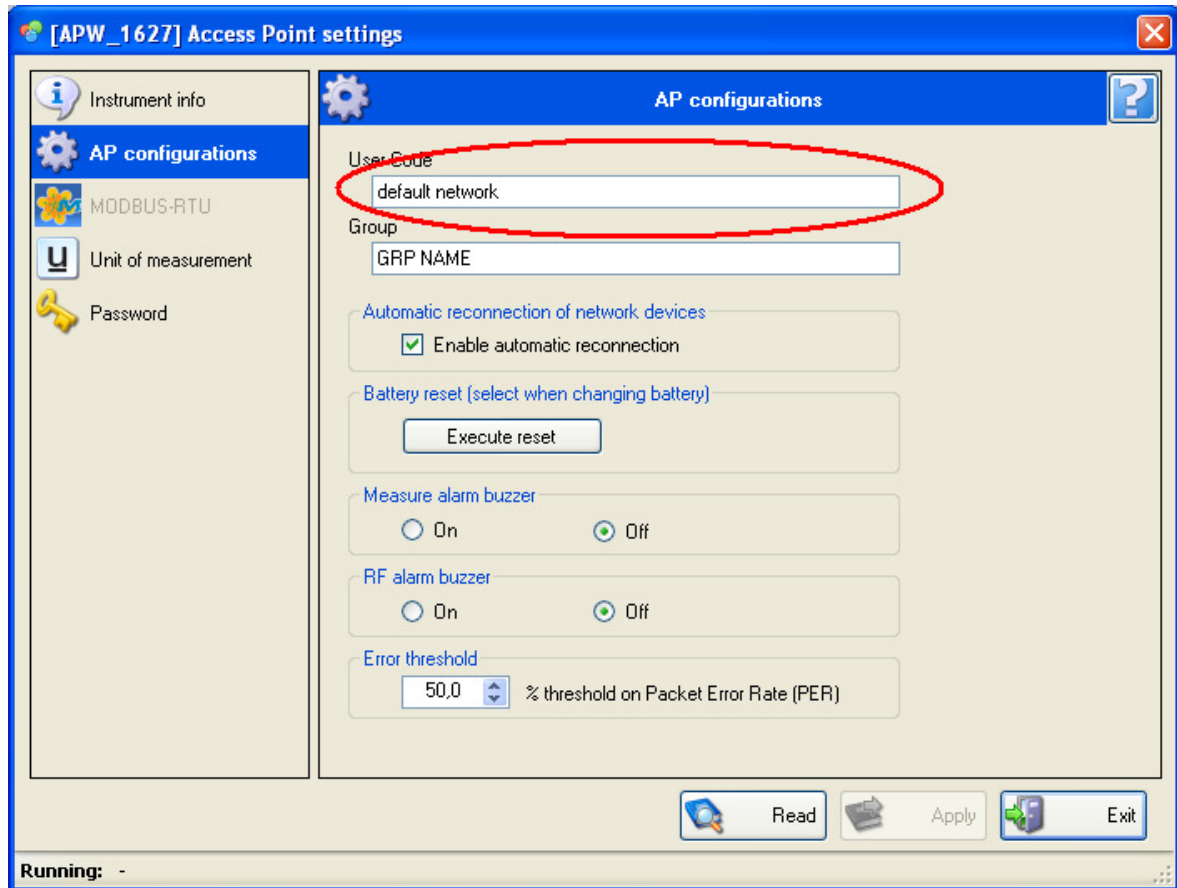
9.2 Device preliminary settings

In this section we list the preliminary steps to allow communication of devices with **www.deltaohm.cloud** in case of first registration or creation of new administrator.

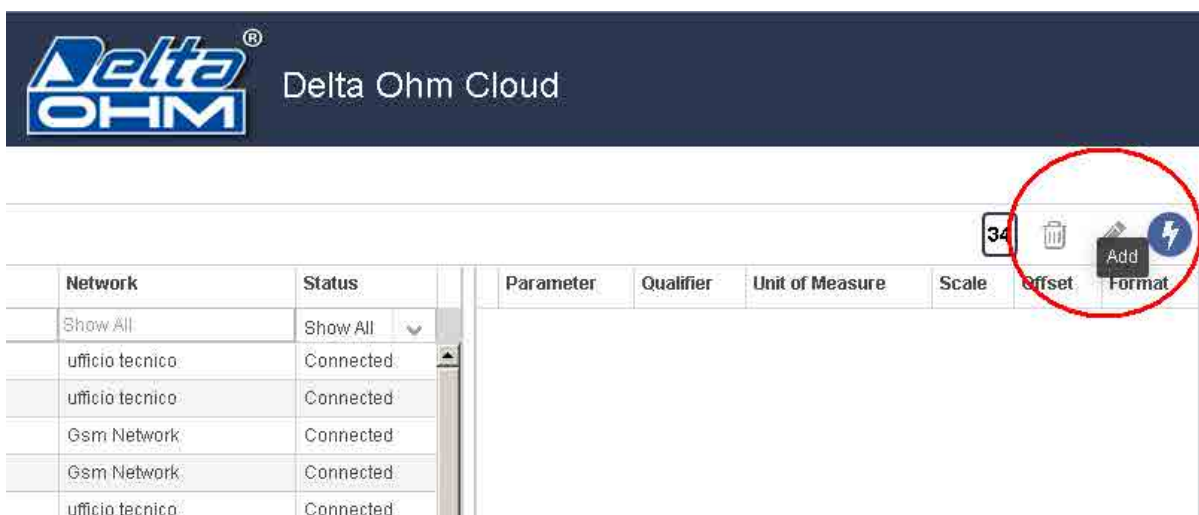
1. Update the firmware of the device in order to support HTTP client protocol. Please notice that communication with cloud application is supported starting from the following firmware versions:
 - HD35APW, HD35APxG, HD35APR, HD35APxGMT with firmware version greater than or equal to 0.181
 - HD33[L]M.2, HD33[L]MT.x with firmware version greater than or equal to 0.233
 - HD50 does not require updating, cloud application is supported from first released firmware version
2. The cloud application allows the grouping of devices inside different "Networks". The specification of this parameter is also required when you try to activate a new device. When not specified the default value is "default network".
3. In case you first connect to the Cloud or you want to create a new administrator you have to fill in this web form where it is requested to insert the serial number, the activation key and the network name of the new device to add.

The screenshot shows a web browser window with the address bar displaying 'www.deltaohm.cloud/#register'. The page header features the Delta Ohm logo and the text 'Delta Ohm Cloud'. The main heading is 'Registration For Admin'. Below this, there is a 'Login' section with a form containing the following fields: 'User Name *', 'Password *', 'Re-type Password *', 'Serial Number *', 'Activation Key *', 'New Network Name' (highlighted with a red circle), and 'E-mail *'. At the bottom of the page, there is a footer with contact information for Delta Ohm S.r.l. and copyright details for 2014.

In case you are activating a new HD35 access point please configure its user code with the same network name used in device activation (e.g. default network). Please notice that when AP transmits its first configuration to the cloud application all devices belonging to its wireless network will be associated to the same network name (e.g. default network). In general AP user code should always be equal to its network name in cloud application. For AP user code configuration please follow: Instruments Setup-> Access point settings -> AP configurations -> User Code.



4. In case you already have an administrator account on **www.deltaohm.cloud** and you simply want to activate a new device, login on cloud application as administrator and activate a new device following "Add" button.



5. The devices use UTC time to send measurements data to cloud application. Please configure your device time zone properly following Instruments setup -> Setting of date and time -> Time Zone. Please notice that devices provided with 4G/3G/GSM/GPRS modem (e.g. HD35APxG..., HD33[L]M.2, HD33[L]MT.x) support both "Automatic date and time" and "Automatic time zone"; differently, the devices with Ethernet/WiFi connectivity (e.g. HD35APW, HD35APR, HD50...) support only "Automatic date and time" but not "Automatic time zone".

Set date time

☐ Automatic time zone
Use time zone supplied by the network

☐ Automatic date and time
Use time supplied by the network

Time zone: +02.00 [v] [Apply]

Check automatic date-time [Check]

Set automatic date-time [Set]

Instrument Date-Time: YYYY/MM/DD HH.mm.ss
2016/08/02 09.23.28

Set Date-Time: 02/08/16 [v] 9.23.43 [v]

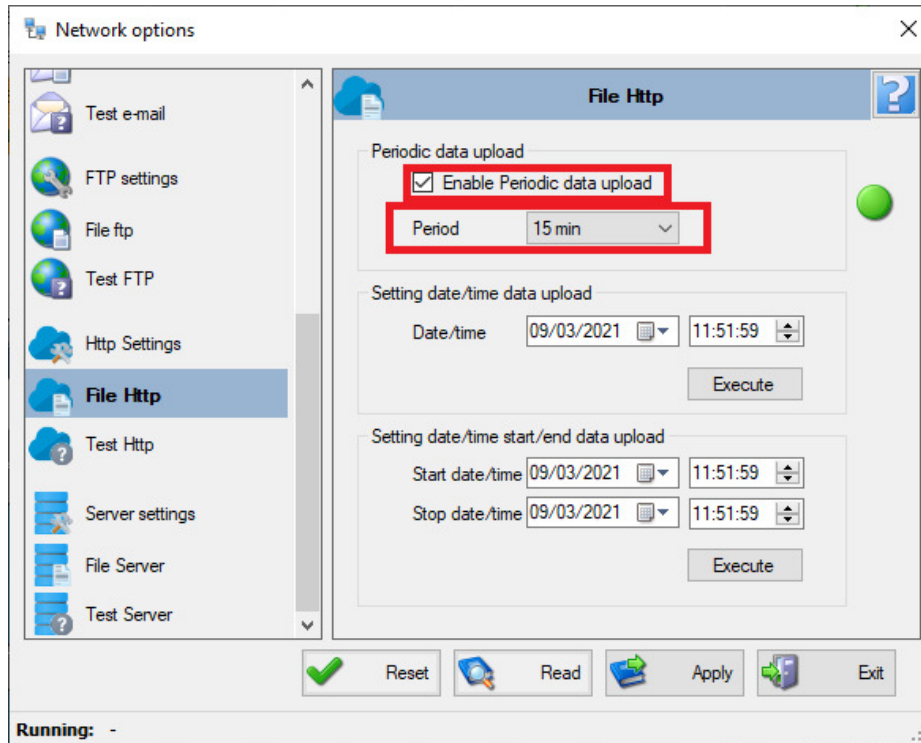
☐ Synchronize date and time of the instrument with the computer [Apply]

[Read] [Exit]

Running: -

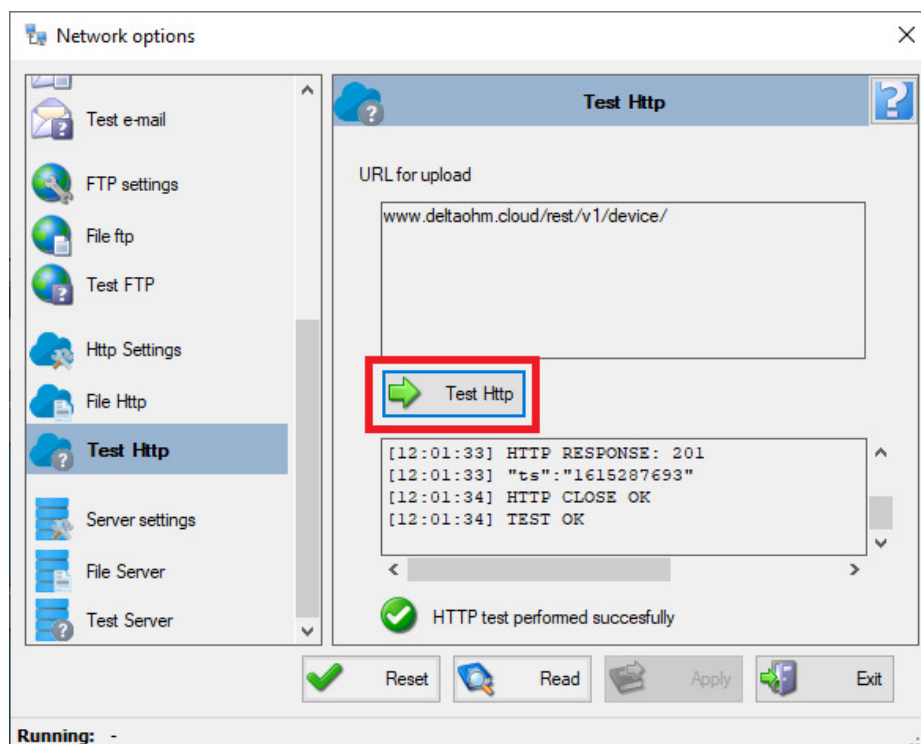
9.3 Communication with Cloud application

At datalogger side to activate HTTP client communication with **www.deltaohm.cloud** it is possible to use HD35AP-S (for HD35/HD33/HD50) or embedded web server for HD50. With HD35AP-S, in devices with Ethernet/WiFi connectivity follow Instruments Setup -> Network options -> File Http and "Enable Periodic data upload" with desired transmission period. The default transmission period is 15 minutes.



In devices with cellular connectivity the same configuration can be done following Instruments Setup -> GSM Options -> File Http.

Prior to activating periodic data transmission, it is suggested to follow Test Http and verify if data-logger can successfully communicate with **www.deltaohm.cloud** pushing "Test Http" button.



In HD50 devices, the activation and test of communication with cloud platform can be carried out even through the embedded web server following CONNECTIVITY -> CLOUD.

The screenshot displays the 'HD50 Web Datalogger' interface. The top navigation bar includes 'Home', 'DeltaOhm Cloud', 'info@deltaohm.com', and 'Contacts'. Below this, a secondary navigation bar has 'SETTINGS', 'MONITOR', 'CONNECTIVITY', and 'FILES'. The 'CONNECTIVITY' tab is active, showing sub-tabs for 'NETWORK', 'WIFI', 'EMAIL', 'FTP', 'CLOUD', 'SERVER', and 'CLOCK'. The 'CLOUD' sub-tab is selected, revealing a configuration panel. This panel is divided into two main sections: 'URL' and 'Data'. The 'URL' section contains fields for 'Host Address' (set to 'www.deltaohm.cloud'), 'Host Port' (a dropdown menu), and 'Absolute Link' (set to 'rest/v1/device/'). Below these is a 'Test' section with 'Run' and 'Test OK' buttons. The 'Data' section includes a 'Periodic Upload' checkbox (checked), a 'Period' dropdown (set to '15 min'), a 'Date/Time Upload' field (set to '2021/03/09 12:04:05'), and an 'Execute' button. Below this are 'Start Date/Time' and 'Stop Date/Time' fields, both set to '2021/03/09 12:04:05', with another 'Execute' button. At the bottom of the panel is an 'Apply' button. The footer of the interface contains copyright information: '© 2020 Ver 0.15 - Graphics, layout and texts are exclusive property of Delta Ohm S.r.l. a socio unico - Member of GHM Group Caselle di Selvazzano (PD) ITALY Notes and legal information'.

After these steps the Cloud application automatically creates a default visualization for each device. You can immediately see your data just logging in **www.deltaohm.cloud**.

senseca.com



Senseca Italy S.r.l.

Via Marconi, 5

35030 Selvazzano Dentro (PD)

ITALY

info@senseca.com

