NXperience

INSTRUCTION MANUAL V1.0x D

1. INTRODUCTION

The **NXperience** software is the main tool for configuration, data download and analysis for **NOVUS** line of wireless transmitters and data loggers. It allows exploring all the features of the devices by communicating through its USB and TCP-IP interfaces and **NOVUS Cloud** resource.

It is also a complete tool for managing data downloaded by data loggers, allowing graphical analysis of multiple data, alarm processing, positioning map visualization, mathematical calculations and reporting and export of multiple formats. It also has diagnostic and commissioning tools specific to each device, making it easier to detect problems and perform various tests.

The software also enables you to create and manage a **NOVUS Cloud** account, the data storage portal of your **NOVUS** devices.

NXperience is a complete configuration tool for **NOVUS's** new line of devices.
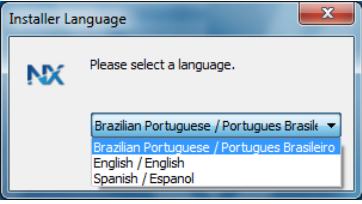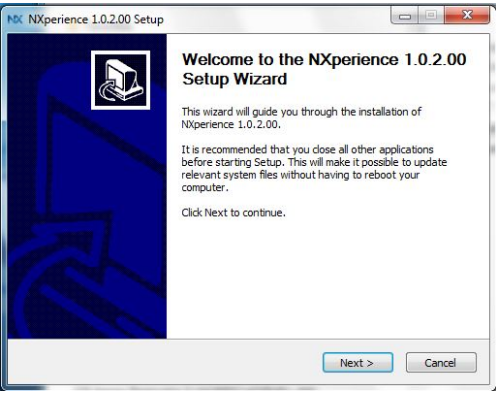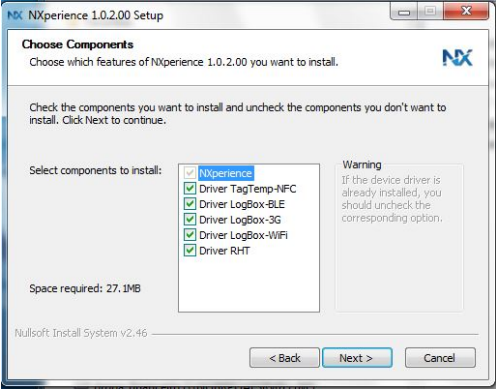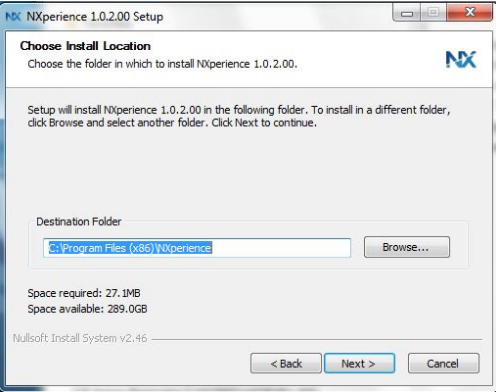
This manual describes generic software features. For instructions on configuring devices, please refer to the specific operating manual.
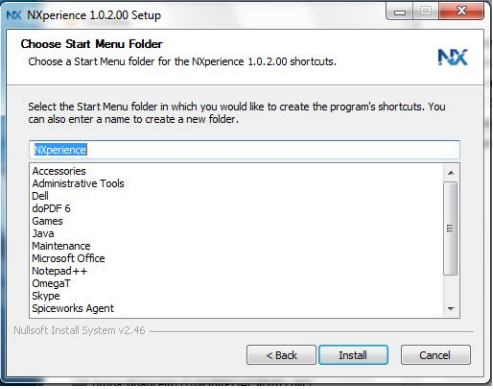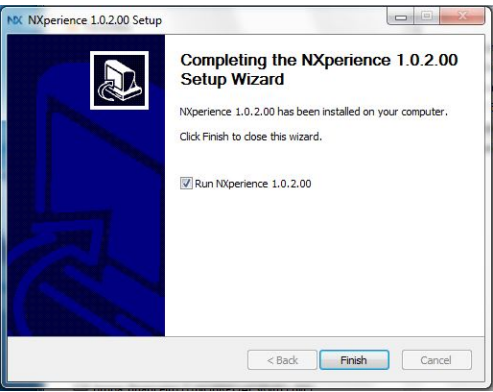
The software can be downloaded free of charge from our website www.novusautomation.com, in the Downloads area.

2. INSTALLATION AND REQUIREMENTS

2.1 INSTALLATION

To install **NXperience**, just execute the *NxSoftwareSetup.exe* file, available from our website, and follow the step-by-step instructions below:

	Step 1: Select the preferred language.
	Step 2: Click on **OK** to proceed.
	Step 3: Click on **Next**.
	Step 4: Select the device to install.
	Step 5: Click on **Next**.

	Step 6: Click on **Install**.

Step 7: Install the device drivers. Click on **Next** to perform the installations and **Finish** to finish them.

Step 8: Click on **Install** when a Windows Security screen is open.

	Step 9: Click on **Finish** to finish the installation.
	Step 10: Ready. The **NXperience** software was installed and the home screen will be displayed!

To communicate with the software, the device needs to be connected to the computer with USB drivers previously installed.
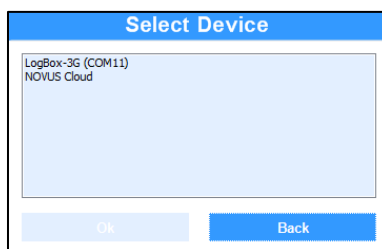
Fig. 01 – Select Device Screen

2.2   MINIMUM SYSTEM REQUIREMENTS

- Computer with 2-GHz processor or superior;
- 2 GB of RAM memory (4 GB recommended);
- Monitor and video card with 800 x 600 minimum resolution;
- 512 MB of hard drive space;
- Windows XP or better Operating System (Windows 7 or later recommended);
- USB Port;
- Network interface (for access to software features that require Internet access).

3.   STARTING UP NXPERIENCE

3.1   HOME SCREEN

Once started, **NXperience** shows three options on the home screen, related to the three features that the software offers: **Logs Download**, **Device Configuration** and   **Monitoring**. Following is a brief explanation about each of these features:
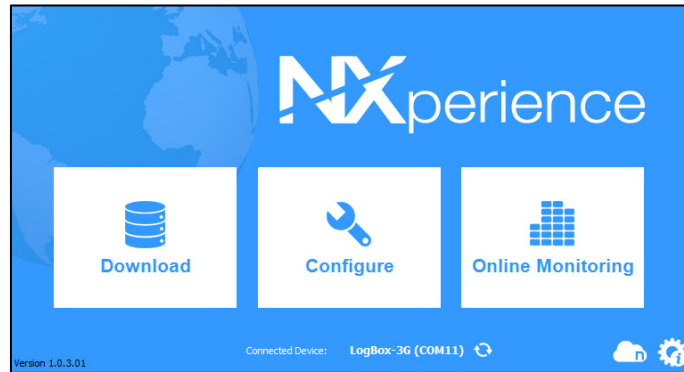
Fig. 02 – Home Screen

Download: This option makes it possible to download data from data loggers to which the software provides support or open downloaded files previously saved by the software.

After a download is completed or while a downloaded file is open, the user is taken to the download screen, which offers several customization options, exports to other formats, report generation, formula application, sending data to the **NOVUS Cloud**, among other features that will be explained in the DOWNLOAD LOGS AND TREATMENT chapter.
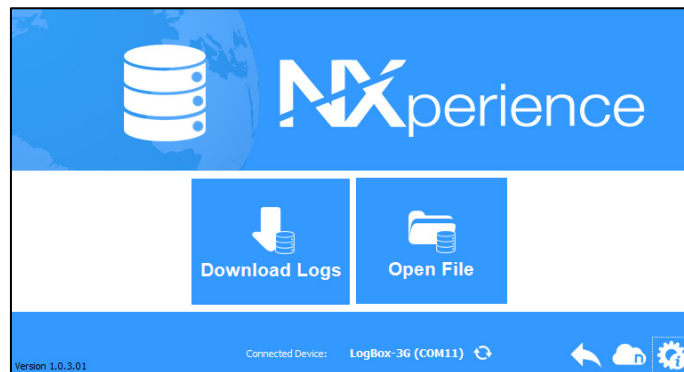
Fig. 03 – Download Screen

Configure: This option provides the **Read Device** feature for devices the software supports and the **Create Configuration** feature for devices, which can be saved to the file for later use. It also allows for opening previously saved configuration files.

Each device has an exclusive configuration screen, with its respective specificities. This feature is explained in detail in the manual for each device that the software supports.
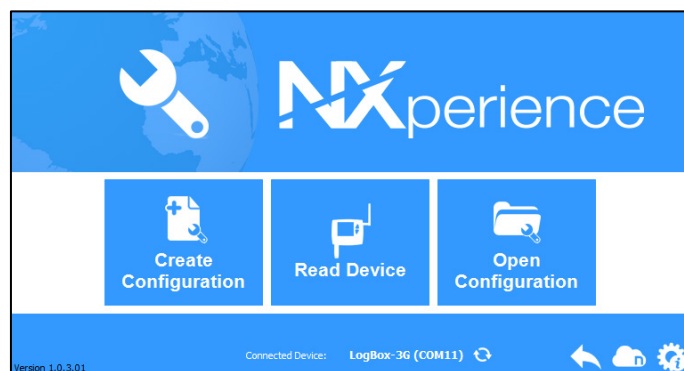
Fig. 04 – Configuration Screen

Monitor: With this option it is possible to monitor indefinitely and locally a device connected to the computer USB port or remotely a device registered in **NOVUS Cloud**. When selected, the user is taken to a screen where the device channel values are monitored, showing notifications about alarm statuses and calculating minimum, maximum and mean values from each channel for the monitored period.

This feature is described in detail in the DEVICE MONITORING chapter.

4. NOVUS CLOUD MANAGER

NOVUS Cloud is a portal in the cloud that allows you to manage the downloaded logs and make remote configurations on the registered devices. Check the specific **NOVUS Cloud** manual for more precise information on how it works.

4.1 PREREQUISITES TO SENDING LOGS TO NOVUS CLOUD

- Active Internet connection.
- Connection without security restrictions that could block the software's access to the network.

4.2 NOVUS CLOUD MANAGER

In the lower right corner of the **NXperience** home screen is located the button , which allows, once the user is logged in, to reactivate, remove or add a device to **NOVUS Cloud**.

Fig. 05 – NOVUS Cloud Manager

If you do not have an account, you can create it by clicking on the **Click here to sign up now** option. The link will guide you to **NOVUS Cloud** registration page, which will be accessed through the user's default browser:
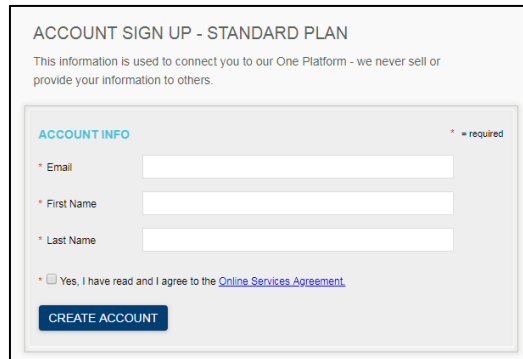
Fig. 06 – NOVUS Cloud Sign Up

On the registration page you will need to fill in the email, the first and last name of the user for whom the registration will be created and agree to the terms of service before clicking the **Create Account** button.
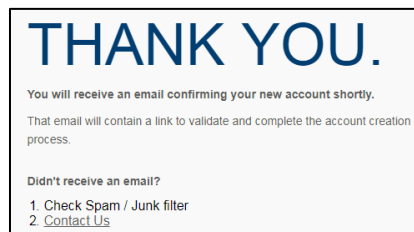
Fig. 07 – Successful registration

Once the account is created, the user will automatically receive a confirmation email, informing an activation link and a temporary password for the previously created account:
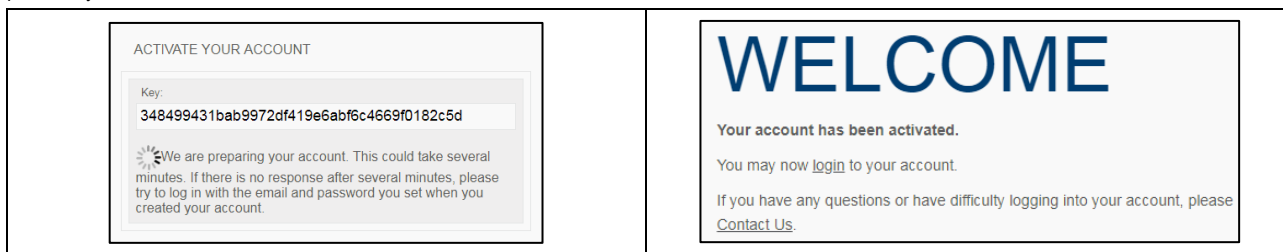
Fig. 08 – Account activation

For more information on how to access your **NOVUS Cloud** account directly through the browser, check the **NOVUS Cloud** manual.

Once logged in, the **NOVUS Cloud Manager** home screen will display information about the name, model, serial number, status and CIK of the devices already registered, as well as allow them to be removed or reactivated, being they have expired or inactive status. You will also be able to add new devices to the manager.

To do so, just click the **Add** button. The **Add** button will generate a pop-up, called **Device Information**, that requests data from the device to be registered, as can be seen in the image below:

Fig. 09 – Device information to add

To add a device to the **NOVUS Cloud Manager**, you must provide your serial number and your IMEI or MAC in addition to a name for the device to be registered. The **Device Name** field can support up to 30 characters. The device model, however, will be automatically recognized by the software.

Once the device has been registered, it will appear on the screen of the **NOVUS Cloud** manager, as can be seen below:

Fig. 10 – Registering a device

The standard of **NOVUS** free accounts includes a single Portal, which serves to separate the devices into blocks according to the user's needs. To hire more than one portal, contact the **NOVUS** business sector for more accurate information about the service.

Although an account is capable of multiple devices, each device can only be registered in a single account. Attempting to register a device previously registered in another account will generate the following popup:
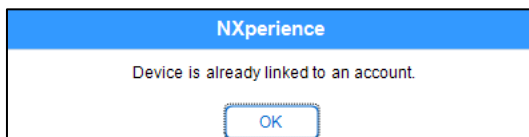
Fig. 11 – Device already linked

A device added to **NOVUS Cloud Manager** will remain Inactive until it is activated. To activate a device, the user has 24 hours after the registration to make the device communicate with **NOVUS Cloud**. If communication with **NOVUS Cloud** does not occur, the status will change to Expired and the user will need to reactivate the device to perform the process.

To re-enable it, simply click on the **Reactivate** button and confirm its reactivation:
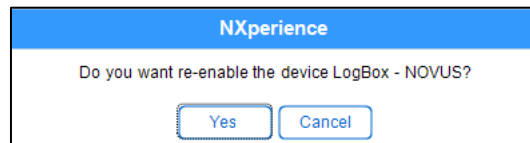
Fig. 12 – Re-enable the device

As can be seen below, reactivating a device, however, can result in a delay of up to five minutes for reading and obtaining your new status.
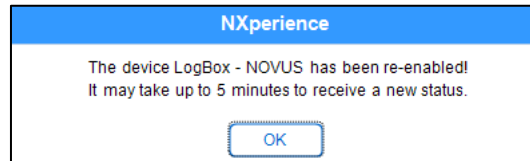
Fig. 13 – Re-enable the device: 5 minutes delay

If there is no longer any interest in keeping the device registered to a particular account or if it is in the interest of registering the device in another account, it is possible to delete it from the **NOVUS Cloud Manager**. It is necessary to select the device to be removed with a simple click on it and click on the **Remove** button, confirming the exclusion:
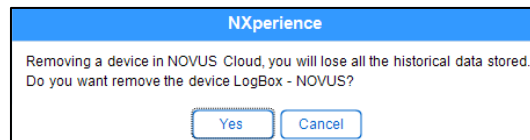
Fig. 14 – Delete a device

4.3   SELECTING NOVUS CLOUD IN THE SELECT DEVICE GUIDE

NXperience also allows remote access to devices previously registered and linked to **NOVUS Cloud** by selecting the option **NOVUS Cloud**:
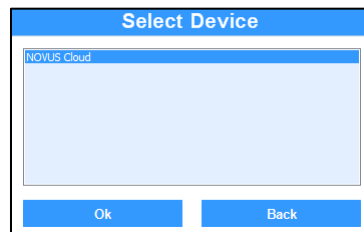
Fig. 15 – Select a device: NOVUS Cloud

Selecting **NOVUS Cloud** will ask you to log in your **NOVUS Cloud** account, as you can see in the image below:
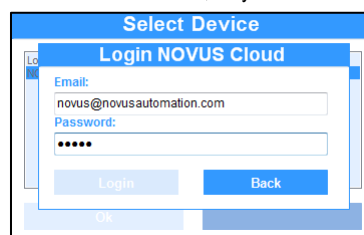
Fig. 16 – NOVUS Cloud login

Once you made **NOVUS Cloud** login, the devices registered in **NOVUS Cloud** will appear as follows, the first tag corresponding to your model, the second tag corresponding to the user's given name and the third tag corresponding to the serial number of the device registered:
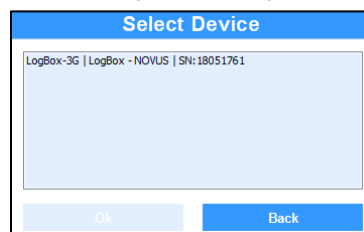
Fig. 17 – NOVUS Cloud Tags

Logging in with the device through **NOVUS Cloud** will offer the same functionality as with the USB interface, but there may be a short period of time to assimilate the implemented updates.

5. SOFTWARE PREFERENCES

A button located in the lower right corner of the **NXperience** home screen ⚙ leads to the software preferences screen. This screen has the following features available:
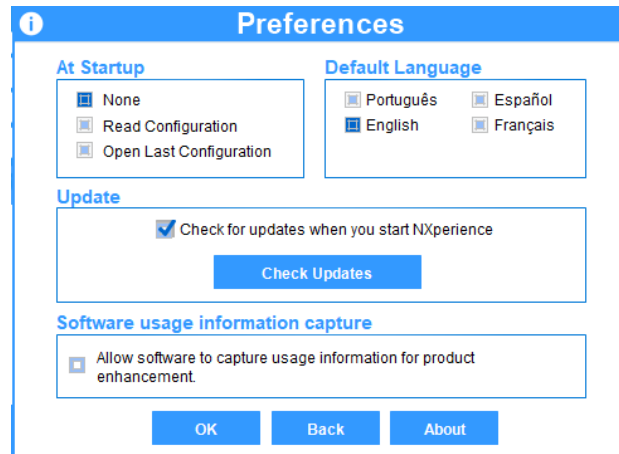
Fig. 18 – Preferences Screen

5.1 PREFERENCES SCREEN

- **At Startup:** This option makes the software perform the selected option on startup. Below we have the following options:
  - **None**: The software launches normally and takes no action.
  - **Read configuration:** When open, the software reads the configuration of the device connected to the USB port (if it is supported by the software).
  - **Open last configuration**: When open, the software opens the last saved configuration file.
- **Default Language:** The software has four language options: Portuguese, English, Spanish, and French.
- **Software Update**: The user can check for updates to the software or allow the program to do this automatically every time it is started. This feature requires an active Internet connection as the software needs to communicate with the update server. For more information, check the 5.2 section.
- **Software usage information capture:** Users can allow software usage information to be sent to the manufacturer in order to improve future usability and product enhancement. No private data is collected, only information about the most used features of **NXperience** and its related configured products.
- **About**: Provides information about the software, such as version, license type, etc.

5.2 SOFTWARE UPDATE VIA NXPERIENCE

You can check for updates by clicking the **Check Updates** button or by selecting the "Check for updates when you start NXperience" option, which allows you to scan and download the new version automatically whenever the software is initialized.

When there are updates, the software will pop up, informing you of news and corrections of the new version:
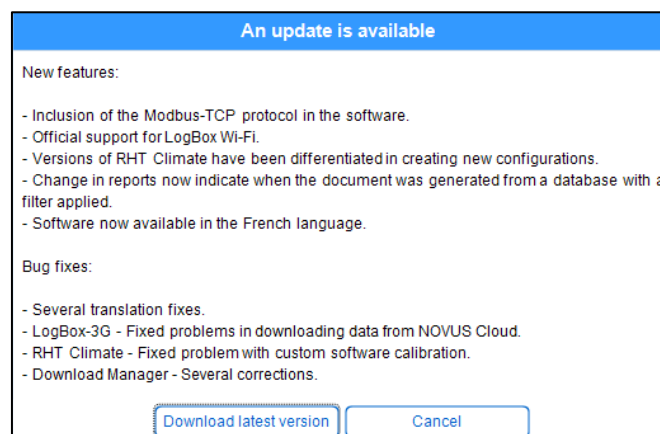
Fig. 19 – An update is available

Clicking the **Download Latest Version** button will allow automatic download of the new version, which must be manually installed. Clicking the **Cancel** button will close the popup, allowing you to return to normal **NXperience** navigation.

When there are no updates, the software will initialize normally. Clicking the **Check Updates** button in the **Preferences** screen will display a popup saying that it has already been updated:
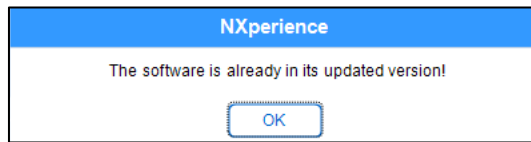
Fig. 20 – Updated software

If there is no Internet connection, required to download any available updates, the software will display the following popup:
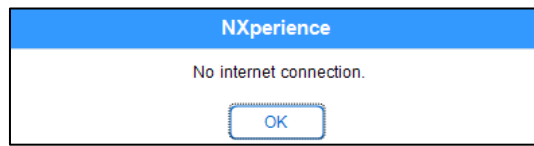
Fig. 21 – No Internet connection

6. DOWNLOAD LOGS AND TREATMENT

On this screen, the user will download data from the devices. Each download is separated into a graph with data that can be worked with to extract the information required and desired by the user. For example, the user can generate new graphs, selecting only the channels related to the measurements of each device, from there generating a complete report about the humidity status of a location.

In the case of devices that have the GPS interface and once the functionality has been enabled in its configuration, it is possible to generate a map of the route made by them, relating it to the values downloaded by the enabled channels, and offering information about the latitude and the length of each log in memory, which will be portrayed by a small red circle.

On this screen it is also possible to send the downloaded data to the **NOVUS Cloud** or export them to the user's preferred format, save customizations made without a file, and apply predefined formulas to the downloaded data, among other functions that will be explained more specifically throughout this manual.

6.1 DATA GRAPH, MAP AND TABLE

6.1.1 DATA GRAPH FEATURES
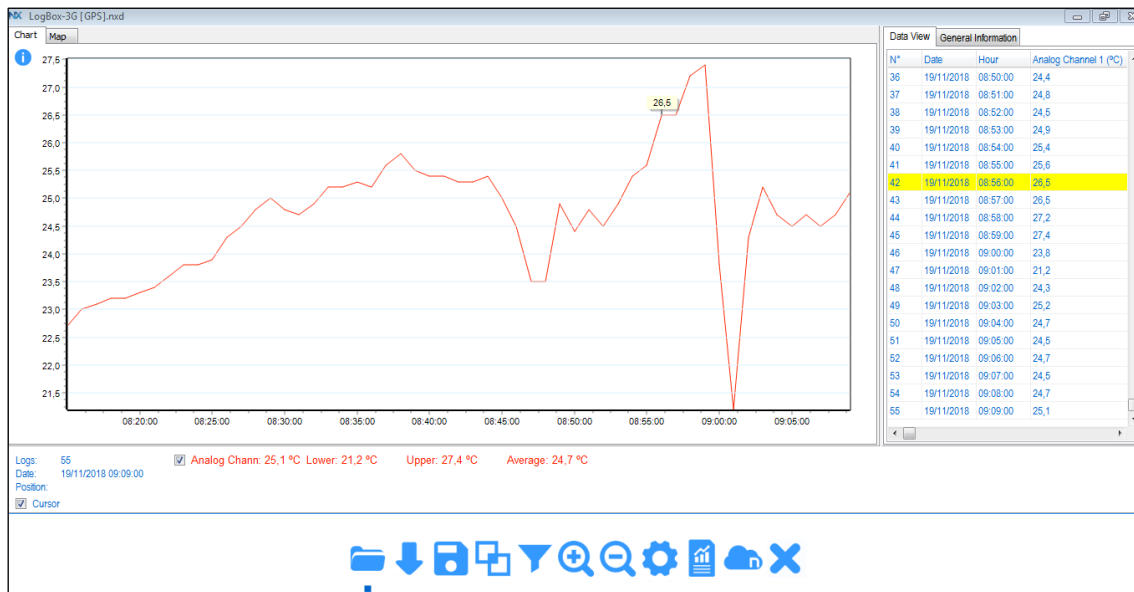
Fig. 22 – Input Screen

- **Cursor**: By marking this option (which already comes selected by default), a cross is shown on the graph, indicating where the mouse cursor is located.

- **Enable/Disable Channels**: This option makes it possible to display a channel or not on the graph. Disabled channels are not shown in reports or exports to other formats.

- **Enable/Disable Alarms**: Each channel can have defined alarm values. If they exist, lines can be displayed representing the alarm ranges on the graph.

- **Enable/Disable Formulas**: This option will only be displayed if a formula is linked to a channel. By enabling this option, the formula will be applied to each channel point on the graph and table.

- **Double click on a temperature of a line on the table**: By double clicking on a temperature of a line with acquisition on the table, a mark is shown at the respective point on the graph. To make it disappear, just press the Ctrl key and double click on the graph.

- **Double click on the graph**: By double clicking on a valid point on the graph, marks are displayed with the value of each channel, at the double click point. To make them disappear, just press the Ctrl key and double click on the graph.

- **Add Text Marks**: By pressing Ctrl+Shift and clicking on a line for a channel on the graph, a custom text mark can be inserted at that point. To do so, the Properties screen is opened. Follow the steps described in the item 5.3 to add a text mark.

- **Zoom**: By pressing the left mouse button and dragging it diagonally from left to right, a zoom is applied to the graph. By moving in the opposite direction, diagonally from right to left, the zoom is removed.

6.2.1 MAP FEATURES

This feature is only available for devices that contain the GPS interface, and, in order to function, you must first be enabled it when performing device configuration through **NXperience**.

Each log will have its position marked by latitude and length, which can be visualized in the parameter "Position", located below the map, and will be indicated by a point in red. Selecting a specific point in the course will cause the icon to change to a red diamond and highlight yellow in the **Data View** table.

Moving the mouse over the map will inform the geographic position of the map, even if the cursor is outside the route performed by the device.
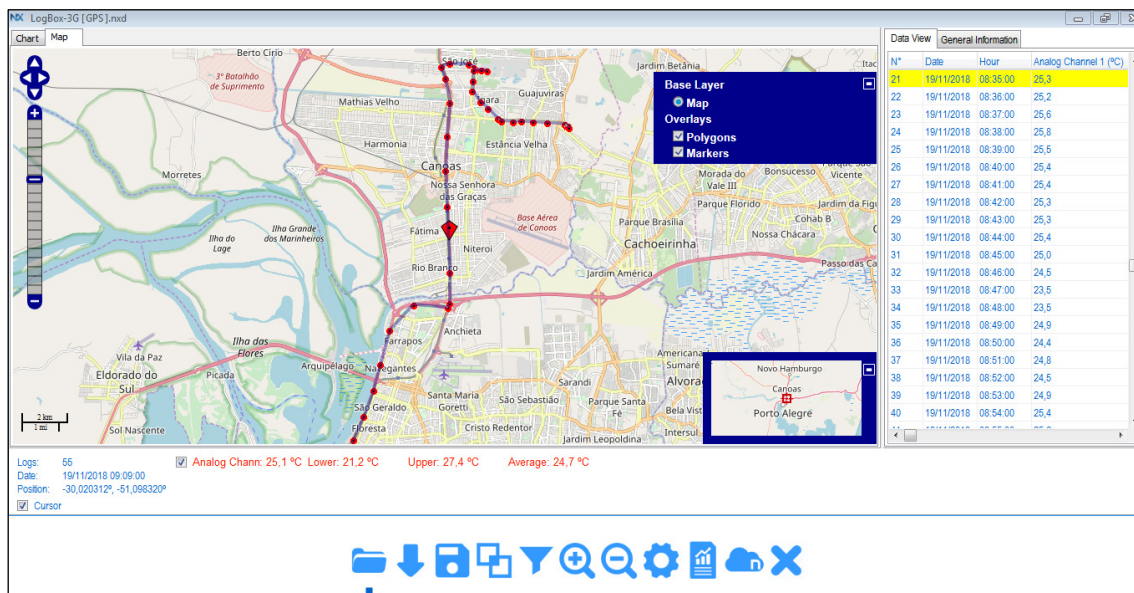
Fig. 23 – Maps

- **Double click on the map:** A double click on a point of the route performed by the device on the map will show the marks with the value of each channel.

- **Double-click on the latitude and longitude on a line in the Data View Table:** When you double-click on latitude and longitude on a line with acquisition in the table, a mark is shown on its graph point.

- **Zoom:** Click the ⊕ and ⊖ buttons to zoom the map.

- **Moving:** Click the △, ▽, ◁ and ▷ buttons to move along the map extension.

- **Overlays:** Clicking the ⊕ button on the right side of the map will expand a tab, which allows you to define the type of marker to be used to delineate the route taken by the device on the map: **Polygons**, which will demarcate the route taken by the device, or **Markers**, which will show time and location of each log, as can be seen in **Fig. 24**.

Fig. 24 – Overlays

- **Map:** Clicking the ⊕ button on the right side of the map will expand a more comprehensive map of the route, as can be seen in **Fig. 25**.

Fig. 25 – Map

6.3.1 INFORMATION FIELDS

- **Logs**: Shows the acquisition number where the graph cursor is located when over the graph.

- **Date**: Shows the date of the point where the mouse cursor is located.

- **Position:** Shows the geographic position, consisting of latitude and longitude, of the time of acquisition if a red marker has been selected or the geographical location of the location where the mouse cursor is when it is on the map.

- **Lower, Upper and Average Values**: Shows the respective values for each channel.

- **Data View Tab:** Shows information about the logs downloaded by the device.

- **General Information Tab**: Shows varied information about the device from which the data were downloaded.

- **Events Tab**: For certain devices, this tab is displayed when a download occurs. This screen shows all digital events that were recorded in the device's memory.

6.2   OPEN FILE, DOWNLOAD, SAVE TO FILE

Features accessed by clicking on the buttons with the same names on the **Download** screen.

Fig. 26 – Buttons

- **Open File**   : Files in .nxd (NX Data File) format can be opened with this button. Upon selecting a file in this format, all graphs saved in that file will be opened with all data and customizations. Files in .nxd format can be opened by dragging the files into the **Download** screen.

- **Download Logs**   : Data can be downloaded from a device compatible with **NXperience** and connected to the PC. A status bar will be displayed while the software is downloading data.

- **Save File**   : The selected graph can be saved to a file, along with all customizations and formulas (if any). If the graph is a junction, the graphs that generated this junction will be saved to the same file.

6.3   GRAPH PROPERTIES

Feature accessed when clicking the **Properties** button   on the **Download** screen. It provides various customizations allowing the user to personalize a graph and its rows, as well as inserting marks to indicate important events.

Fig. 27 – Graph Properties

6.3.1   DEFAULT GRAPH PROPERTIES FUNCTION

By clicking the **Properties** button on the **Download** screen toolbar, the **Properties** tab will open, loading the properties of the graph in focus. If it is open and the user wants to take the focus to another graph, its properties will be loaded.

- **Style - Line type**: Changes the channel line type. **Simple Line** represents a solid line. With the **Trace** type, the lines on the graph will be dashed. Finally, with the **Trace Point Point** type, the graph lines will be drawn with a dash followed by two dots.

- **Increment of Y Axis**: The increment determines the value range between Y-axis values. For example, if the increment is 5, the Y-axis grid lines will be shown 5 by 5.

- **Style - Y Grade and X Grade**: Determines whether the grid lines for both axes will be shown. Any combination can be selected: just Y Axis, just X Axis, both, or neither.

- **Style - 3D Graph**: Changes the graph view to a 3D model.

- **Data - Date/Time Format**: Changes the Date/Time format shown on the graph. The formats are represented by acronyms indicating each part of a date and time: dd - day, mm - month, yyyy - year, hh - hour, mm - minutes, ss - seconds.

- **Reference Lines**: Up to two lines can be inserted to serve as reference in the graph. These lines are a straight line running through the whole viewing range of the graph.
- **Text Mark**: Inserts a text mark at the selected point. To mark a point on the graph, hold the Shift key and click on some point of a channel line on the graph. The **Text Mark** box will thus show the Date/Time of the point, its value and the channel name. Following are the customizable fields:
  - Next to the name of the channel is a text box where text that the user wants to show at that point should be inserted. The field accepts up to 30 characters.
  - **Color**: Allows for choosing the text mark color.
  - **Font**: Allows for changing the font of the text inserted at the mark, as well as its formatting.
  - To change a text mark, it needs to be selected again (Shift + click) to make the necessary edits and click on the **Apply** button.
  - To remove a text mark, it needs to be selected again (Shift + click) to delete the edit field and click on the **Apply** button.
  - The user can add as many text marks as desired.
- After selecting the desired customizations, the user should press the **Apply** button to apply the changes.

6.3.2   ASSUMPTIONS AND LIMITATIONS

- All customizations will be saved when the user saves the graph to a file.
- All customizations will be shown in the reports.
- There are report templates that show a detailed explanation for each text mark.
- When a formula is applied to a channel with text marks, all marks will disappear.
- When a formula is applied to a graph, all text marks will disappear.

6.4   FILTER LOG

Feature accessed by clicking the **Filter** button   on the **Download** screen. It allows the user to filter data from one or more channels. Data can be filtered by Value (Y-Axis) or by Date (X-Axis).
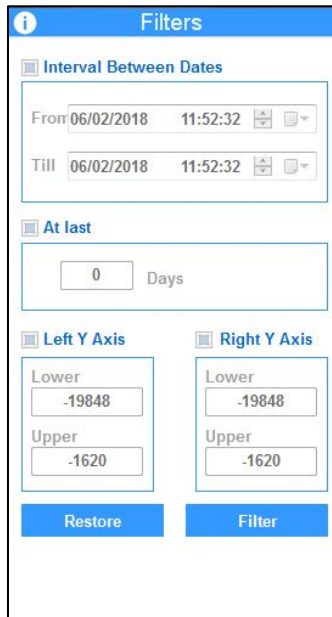
Fig. 28 – Data Filter

6.4.1   DEFAULT FILTER LOG OPERATION

- **Interval between Dates**: By selecting the start date (from) and then the end date (to), the data filter can be run between them. The data filter can be run between any two dates by selecting the start date (from) and then selecting the end date (to).
  - The end date may not be earlier than the start date.
  - If the period between selected dates is outside the data acquisition period, no data will be displayed from a channel on the graph or on the table.
- **In the Last**: With this filter, data will be displayed from X days before the time when the filter is applied, where X is the number of days.
  - If there are no data in the period of X days before the time of download, no data will be shown on the graph or on the table.
- **Y Left and Y Right**: These refer to the filters applied on the Y-axes of a graph, meaning the filter will be applied to the values of acquisitions. In the case of a temperature channel, for example, if a filter is applied between 20 and 30 °C, only acquisitions between the selected range will be shown.

- One filter may be chosen for the X-Axis (Date) and one filter for the Y-Axis (Value).
- **Filter**: Applies the filters configured on the graph.
- **Restore**: Resets the graph with the original data from each channel.

6.4.2 ASSUMPTIONS AND LIMITATIONS

- Unlike the zoom, which just draws visually closer to point of the graph, the data filter narrows the scope of the acquisitions. Data that are outside this filter will be excluded from the graph and table.
- By applying a filter, minimum, mean and maximum values for a channel are recalculated.
- Saving a graph with a filter to file doesn't just save the filtered information, but also all original data from each channel.
- Reports can be created for channels with filters applied.
- It is possible to send only the filtered data to **NOVUS Cloud**.
- By applying a formula to a channel with a filter applied, this formula is applied to all channel points, including those that are outside the filter.

6.5 CHART JUNCTION

Feature accessed when clicking the **Chart Junction** button on the **Download** screen. Allows for merging variables from two or more graphs into just one, facilitating analyses and comparisons between variable values, report creation, etc.

Fig. 29 – Junction Graphs

6.5.1 DEFAULT FUNCTIONING OF A JUNCTION

- Two or more graphs need to be open on the **Download** screen to perform a graph junction.
- Open the **Chart Junction** tab by clicking the button with the same name on the **Download** screen.
- Enter a name for the junction in the **Junction Name** field.
- The **Channel Selection** filed has two lists. On the left side is the list of open graphs. By clicking the name of one of the graphs on this list, the channels list will be filled out with the channels existing on the chosen graph.
- On the channels list, the user can select which channels should be included in the junction. When a channel is selected, the number of merged channels is increased by one. There can be up to eight channels in one junction.
- By selecting another graph from the list, the channels from that graph will be displayed.
- A channel junction of up to eight different graphs is possible.
- Click the **Junction** button to junction the selected channels. A new graph will thus be created with all selected channels.

6.5.2 ASSUMPTIONS AND LIMITATIONS FOR A JUNCTION

- A junction can have up to eight channels.
- A junction can be created from up to eight different graphs.
- Junctions cannot be created from other junctions. Thus, graphs that are junctions do not appear on the list of graphs for creating new junctions.
- You cannot join two positions on the map.
- When channels from different graphs have the same name, the second channel with the same name gains a suffix (1). When there are three channels with the same name, the third channel gains the suffix (2), and so on.
- Text marks and any types of formatting made to a graph are not imported to a merged graph.
- A graph generated from a junction does not have the **General Information** tab, just the **Data View Table** tab.

6.5.3 SAVING AND OPENING FILES WITH GRAPH JUNCTIONS

- To save a merged graph, just select it on the **Download** screen and click the **Save File** button.

- When a merged graph is saved to file, all graphs that generated the junction will be saved to the same file.

- When a merged graph file is opened, all graphs from which the merged graph originated will be opened as well.

6.6   REPORTS AND EXPORTING LOGS

Feature accessed by clicking the **Reports/Data Export** button on the **Download** screen. This allows for issuing reports with data downloaded from devices, as well as exporting data to known formats, such as .pdf, .xls, .csv, etc.

Fig. 30 – Reports

6.6.1   STEPS TO CREATE A REPORT

- Fill out the editable fields **Responsible**, **Title**, **Organization** and **Description**, which are optional.

- Inserting a logo image is optional. To do so, click on the **NXperience** logo image and replace it with the image to be used.

- After filling out the fields in **Fig. 30**, click the **Generate Report** button.

- After creating a report, all fields in **Fig. 30**, and the logo image, if selected, will be saved by the software.

6.6.2   PARAMETERS OF A REPORT

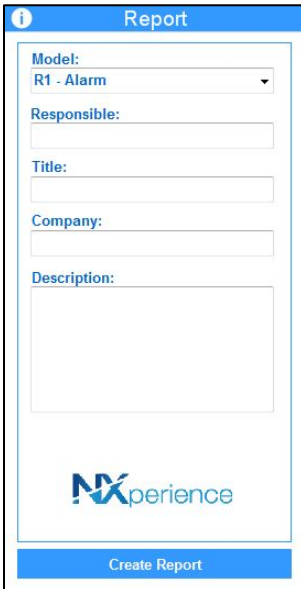- **Template**: Parameter that determines the type of report to be created. By selecting the **Export** option, the software will open the interface for exporting to other formats, which will be further detailed in section 5 of this chapter.

- **Responsible**: Field for inserting the name of the author or party responsible for the process/device/database that will serve as the basis for generating the report. The field accepts up to 30 characters.

- **Title**: Field for entering the report title. The field accepts up to 40 characters.

- **Organization**: Field for entering the name of the Company, Organization, mediation storage location, etc., where the device that is the source of downloaded data is located. The field accepts up to 40 characters.

- **Description:** Field for describing a little about the process or reason for downloaded data, events occurred in the period displayed on the report graph, among other things. The field accepts up to 250 characters.

- **Mean Kinetic Temperature (MKT)**: MKT is a fixed calculated temperature which simulates the effects of temperature variations in the product over a period of time. It expresses the accumulated thermal stress experienced by a product at varying temperatures during storage, and is widely used in the pharmaceutical industry.

  o   Parameter available only for the **Graph**, **Graph + Table** and **One Channel** report templates.

6.6.3 TYPES OF REPORTS

Fig. 31 – Report Types

6.6.3.1 R1 - ALARMS

Gathers detailed information about alarm events for up to four channels.

- **Status of alarms**: Visual indication to facilitate viewing of alarms that occur. It marks high and low alarms for the four channels.

- **Description:** Field for describing a little about the process or reason for downloaded data, events occurred in the period displayed on the report graph, among other things. The field accepts up to 250 characters.

- **Channel information**: Line that shows information about the channel, such as channel tag, GMT, device and serial number to which the channel belongs.

- **Records column**: Detailed information about the records downloaded from each channel, such as first and last acquisition, total number of records, and lowest and highest values.

- **High and low events**: Column that provides detailed information about the alarms of each channel, such as alarm set point, first and last occurrence, total occurrences, total period in that type of alarm and total period of records in alarm state.

- **Graph**: Copy of the graph that generated the report. The alarm set points are mandatorily displayed in the report, even if they have been disabled by the user on the original graph.

- **Signature**: Field for inserting the responsible party's signature.

6.6.3.2 R2 - GRAPH

Template that shows less detailed information from up to eight channels, with the following fields:

- **General information**: This contains information such as Report Title, Responsible Party, and the first and last acquisition on the graph, not necessarily from the same channel.

- **Description:** Field for describing a little about the process or reason for downloaded data, events occurred in the period displayed on the report graph, among other things. The field accepts up to 250 characters.

- **Graph**: Copy of the original graph, accompanied by the key for distinguishing channels.

- **Information about channels**: Information from up to eight channels, such as channel tag, GMT, device and serial number, minimum, mean and maximum value, and MKT (optional) for each channel.

- **Marks**: Description of the text marks inserted onto the graph. This provides information such as color, time stamp, value of the point where the mark was inserted, and its text.

6.6.3.3 R3 - GRAPH + TABLE

The same as item 6.6.3.2, but it accompanies a tabulated list of all records from each channel.

- All items in the graph template are present in this template.

- **Data list:** Tabulated list of all records from each channel. Records that correspond to inferior alarm events are inserted in blue. Records that correspond to higher alarm events are inserted in red.

6.6.3.4 R4 - ONE CHANNEL

Template with detailed information about the data downloaded from one specific channel, its device, its configurations and the records downloaded by it.

- Same as item **Status of alarms**, but it applies to just one channel.

- **Description:** Field for describing a little about the process or reason for downloaded data, events occurred in the period displayed on the report graph, among other things. The field accepts up to 250 characters.

- **Device Information:** Details about the device to which the channel belongs and about the channel itself. It offers information such as model, firmware version, serial number, memory capacity, channel input type, memory mode, GMT, and configured Offset.

- **Channel information**: Line that shows information about the channel. It also includes the mean value and the MKT of data represented in the report.

- **Graph**: Copy of the original graph, accompanied by the key for distinguishing channels.

- **Marks**: Description of the text marks inserted onto the graph. This provides information such as color, time stamp, value of the point where the mark was inserted, and its text.

- **Data list:** Tabulated list of all records from the channel. Records that correspond to inferior alarm events are inserted in blue. Records that correspond to higher alarm events are inserted in red. This report shows records in three columns per page.

- **Signature**: Field for inserting the responsible party's signature.

6.6.3.1 R5 and R6: EVENTS and ONE ALARM EVENTS

These are two report templates for alarm events. They support the independent alarms of LogBox 3G and LogBox WI-FI, gathering detailed information about the alarm events that occurred within the period of time covered by the downloaded data. Model R5 shows analytical data of up to 10 configured alarms from a LogBox. Besides showing analytical data of 1 specific alarm, model R6 also shows a list of all logs where events of the configured alarm have occurred.

- **Description**: Field for describing important details about the process, about the downloaded data or about events occurred within the period of time displayed on the report chart, among other things. This field can accept up to 250 characters.

- **Device Information:** It offers information such as device model, firmware version, serial number, GMT, total downloaded logs and start and end logging date.

- **Alarm Information:** it shows information of the configured alarms, like the number of alarm occurrences, first and last alarm occurrence, smallest and biggest value in alarm and the longest period of time in an alarm condition.

- **List of Logs**: Shows detailed information about the logs in alarm state from a downloaded set of data. It has the time stamp and its correspondent value.

6.6.3.2 R7: TOTALIZATION

Report model that show a totalization of the values logged within a selected period of time. All logged values of a channel in a time window are added and the sum is showed on the report. It is possible to select periods of 1 hour, 8 hours, 1 day, 1 week or 1 month. The option "closed period" will define whether it will work in an absolute time period (e.g.: 01:00 am to 01:59 am in a weekly basis starting every Sunday at midnight and stopping every Saturday at 11:59:59 pm) or in a time period that is relative to the first log (e.g.: weekly basis starting in the first log time stamp which is Wednesday at 01:00 pm and stops next Wednesday at 12:59:59 pm).

- **Description**: Field for describing important details about the process, about the downloaded data or about events occurred within the period of time displayed on the report chart, among other things. This field can accept up to 250 characters.

- **General Information:** It offers information such as device model, firmware version, serial number, GMT, total downloaded logs and start and end logging date.

- **Totalized Histogram:** A bargraph is created to every channel with its totalized value within the configured period of time.

- **List of Totalization Periods:** for each channel, a list of totalization periods is shown below the chart with start time stamp, the final time stamp and the totalized value.

6.6.4 REPORT VIEWING SCREEN

When a report is generated, a preview is shown on a special screen, making some functions available:

Fig. 32 – Report viewing screen

- **Print**: Sends the report to be printed.

- **Export to PDF**: Exports the report to a document in .pdf format.

- **Find**: Scans the document to find a value, word or text.

- **Zoom**: Increases or decreases the zoom in the document. When zooming out, several pages can be viewed on the same screen.

- **Full screen**: Shows the document in full screen, without the toolbar.

- **Thumbnails**: To the left, it shows the document pages for quick access.

- **Page properties**: Configures the document's page properties.

- **Page forward or backward**: Moves forward or backward to previous pages. The page number can be entered to jump directly to the desired page.
- **Close**: Closes the document screen and returns to **NXperience**.

6.6.5 EXPORT TO OTHER FORMATS

By selecting the **Export** item in the Template field, a new interface opens on the screen. There the user can choose the file format to which data are to be exported.

- The data are exported in tabulated form. The first column corresponds to the time stamp of each record. The others show the value of each channel at that respective time stamp.
- Data from up to eight channels can be exported to the same file.
- The formats available for exporting are:
  - *Extensible Style Language* (.xls);
  - *Portable Document Format* (.pdf);
  - *Comma-separated values* (.csv);
  - *Rich Text Format* (.rtf);
  - *Hyper Text Markup Language* (.html).

6.7 SENDING DATA TO THE CLOUD

Feature accessed when clicking the **NOVUS Cloud** button on the **Download** screen. Allows you to send the downloaded logs to a **NOVUS Cloud** account.
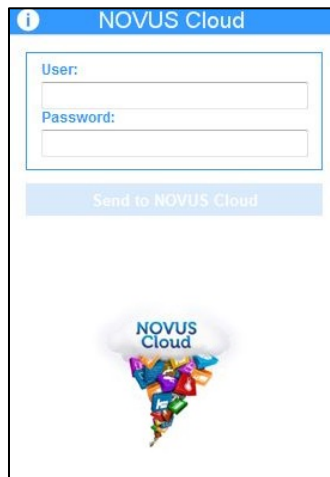

Fig. 33 – NOVUS Cloud

To send the downloaded logs to **NOVUS Cloud**, it is necessary to fill in the **User** and **Password** fields in the **NOVUS Cloud** screen of the download manager. The **User** field allows up to 60 characters. The **Password** field allows up to 30 characters.

Once you have completed the above parameters, simply click on the **Send for NOVUS Cloud** button.

All records for each selected channel will be sent in order. If there is an error in sending a channel, the software will continue to send the other channels. It does not abort the operation.

6.7.1 ASSUMPTIONS AND RESTRICTIONS FOR SENDING DATA TO NOVUS CLOUD

- Any data volume that belongs to a default channel on a device compatible with **NOVUS Cloud**.
- Data from channels with a formula applied. In this case, a channel should be pre-registered for the device in question on **NOVUS Cloud,** with the alias equal to the name of the channel with the formula applied. For more information on how to register new variables on **NOVUS Cloud**, refer to the product documentation.
- Having a graph active on the **Download** screen, with data from devices compatible with **NOVUS Cloud**.
- Having at least one channel selected on the active graph.
- Data can be sent from graphs that are a junction of other graphs.
- Data can be sent from a graph with some filter applied. In this case, only data within the configured filter should be sent.
- Data are always sent to **NOVUS Cloud** in UTC (GMT-0).

6.1 DOWNLOAD LOGS BY NOVUS CLOUD

You can download logs from devices linked to **NOVUS Cloud** by selecting the **NOVUS Cloud** option from the **Download** screen:
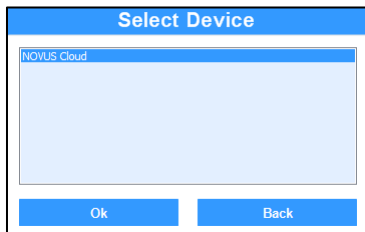
Fig. 34 – Select a device: NOVUS Cloud

Selecting **NOVUS Cloud** will ask you to log in your **NOVUS Cloud** account, as you can see in the image below:
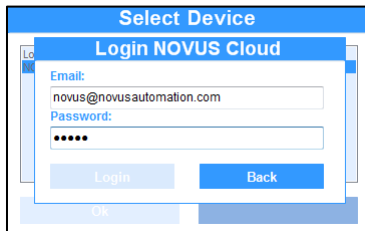

Fig. 35 –NOVUS Cloud login

Once you made **NOVUS Cloud** login, the devices registered in **NOVUS Cloud** will appear as follows, the first tag corresponding to your model, the second tag corresponding to the user's given name and the third tag corresponding to the serial number of the device registered:
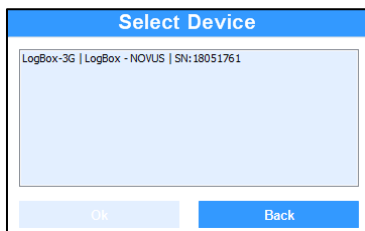

Fig. 36 – NOVUS Cloud tags

Once you have selected the device for which you want to download, simply select the period of logs to be downloaded:
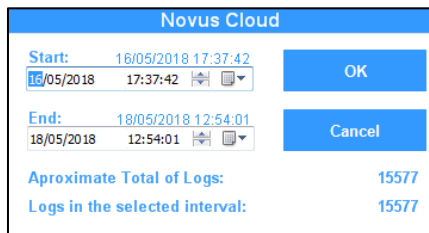

Fig. 37 – Download: NOVUS Cloud

7. CUSTOMIZED CHANNEL CALIBRATION

Feature that allows for customized channel calibration, inserting up to X customization points, where X depends on the device for which the channel is being configured.

Fig. 38 – Customized Calibration Screen

7.1 DEFAULT CUSTOMIZED CALIBRATION FUNCTIONING

- Whenever the user wants to access the customized calibration screen for a channel, the current software configuration will need to be sent to the device. After this, the software will reread all configurations, to find out the device configuration.

- There are certain channel parameters that, when altered, lead to the loss of calibration points, if existing. The following message is displayed: "Channel X has a customized calibration. What do you want to do?" In this case, the user has three options:

  o **Recalibrate**: The calibration screen will open and the user should redefine the calibration.

  o **Delete channel calibration**: Delete all configured calibration points.

  o **Restore channel**: Reset channel configurations to the status when the device was read.

- If the user chooses to calibrate or recalibrate, the calibration screen will be shown.

- The calibration points already configured in the device, if any, should be shown on the table of points when the screen is shown.

- Each device allows a different number of calibrations for each channel. For more details, refer to the device documentation.

- The user can read the device channel, or type in read and desired values.

- After the points are configured, just click on the **Apply** button to send the points' configuration to the device.

- Calibration points will be sent when the **Apply** button is clicked. The **Send Configuration** button on the device configuration screen is only used for sending other channel configurations.

7.2 CUSTOMIZED CALIBRATION INTERFACE FOR CHANNELS

The customized calibration screen has the following features:

- **Read Channel**: Take reading of the channel. The read value is entered in the **Measured** field.

- **Measured**: Field where the value measured at the calibration point is entered. When the device takes a reading of the channel and the value is equal to this value, it will be replaced by the desired value.

  o The field accepts only numbers, commas and periods.

  o The field accepts values with X decimal places, where X is the number of decimal places configured for the channel.

- **Desired**: Field where the desired value is inserted. Thus, when the device reads from the sensor and the read value is equal to the measured value, the device will show the desired value.

  o The field accepts only numbers, commas and periods.

  o The field accepts values with X decimal places, where X is the number of decimal places configured for the channel.

- **Add**: Add the measured value and the desired value to the table of calibration points.

  o The **Measured** and **Desired** fields should be filled out for this button to be enabled.

- **Table of calibration points:** Table showing the already entered calibration points. Each set of measured and desired values is entered on this table when the **Add** button is pressed.

- **Organize**: Organizes values in ascending order on the table, using the **Measured** column as base.

- **Delete Line**: Deletes a calibration point that should be selected on the table.

  o When the button is pressed and no item is selected on the table, a message will be displayed. It order to be deleted, a calibration needs to be selected on the table.

- **Delete All**: Clears the table of calibration points.

  o To remove all calibration points for a channel, the **Apply** button needs to be pressed to clear points on the device.

- **Apply**: Applies all calibration points entered on the points table.

  o If any error occurs when sending calibration points to the device, a message will be displayed to the user.

- **Cancel**: Discard all points entered on the table and returns to the default device configuration screen.

8. DEVICE MONITORING

Functionality that allows to monitor the channels of the devices. Monitoring provides visual tools for displaying values in graph, LED panel, bar graph form, among other features that we will see in this chapter.

8.1 DEFAULT MONITORING FUNCTIONING

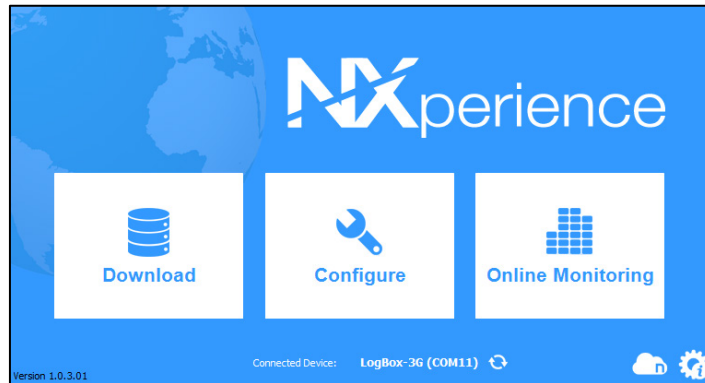- On the **NXperience** home screen, click the **Online Monitoring** button.

Fig. 39 – Home Screen (Monitor)

If there is more than one device plugged into the PC, the software will ask the user to select which device to monitor.

The user will see the welcome screen, where some of the software features will be described briefly. On this screen, the user should define the interval for refreshing monitored variables.
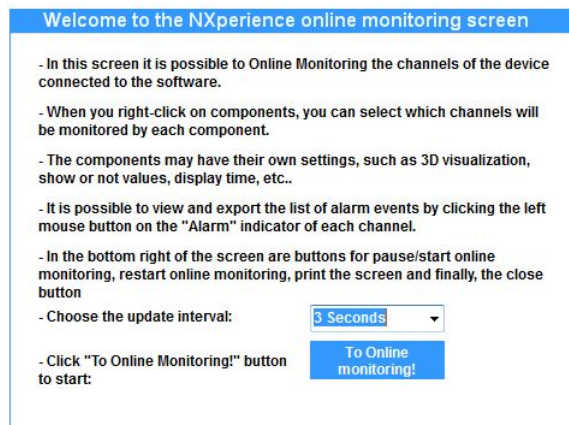

Fig. 40 - Welcome Screen

Click the **To Online Monitoring!** button to begin. The monitoring screen will be shown.

8.2 VISUAL FIELDS ON THE MONITORING SCREEN

The monitoring screen has four monitoring tools: a dot plot graph, a bar graph, bar meters for the alarms, and finally the values of each channel on a LED panel.
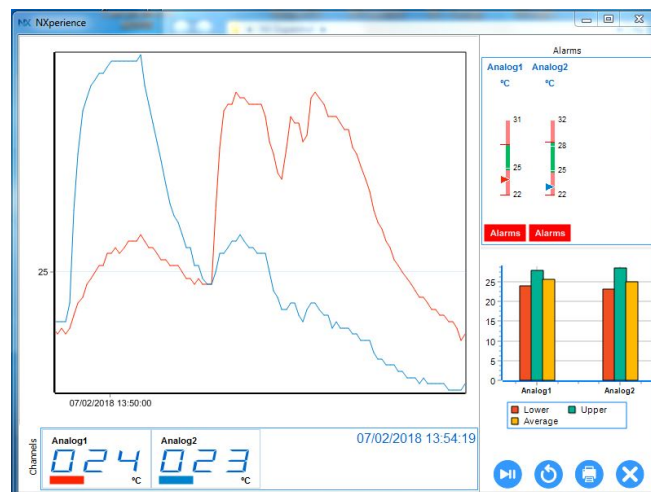

Fig. 41 – Visual Fields on the Monitoring Screen

8.2.1 DOT CHART GRAPH

With each reading, the values read from each channel will be entered on its respective line. This graph can cover up to eight channels.

- Channel error values will be displayed on the graph.

- The graph uses an automatic scale. Depending on the channel values (if there is a big difference between minimum and maximum values), these values may be at the edges and visually not appear.

- By right-clicking over the graph, the **Properties** option will be shown. When clicked, the following fields will be displayed:
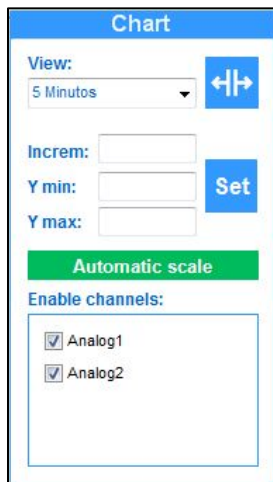

Fig. 42 – Graph Properties (Chart)

- o **View**: Corresponds to the range of time shown on the graph with options between 1 minute and 8 hours, this parameter determines what will be viewed by the user. By just changing the value, the graph will alter the view.

- o **Total view**: This button changes the graph viewing range between the total acquisitions in the period and the period determined in the **View** parameter.

- o **Increm**: Parameter that defines the increment between values on the Y-Axis. For example, if the scale is defined from 0 to 100 and there are 10 ranges between the minimum and maximum, the increment is 10.

- o **Y min and Y max**: Fields for entering the minimum and maximum visual limit of the Y-Axis.

- o **Set**: Apply the **increm**, **Y min** and **Y max** configurations on the graph:

- o **Automatic Scale**: By clicking this button, all defined parameters (except for the **View** parameter) in the options above will be discarded. The software automatically controls these limits.

- o **Enabled Channels**: This field allows for selecting which channels will be displayed on the graph.

- To exit the options screen, just click on the bar graph area.

8.2.2 BAR GRAPH

With each reading, this graph shows the minimum, maximum and mean value for each channel (up to eight channels).

- Read error values are ignored in the minimum, maximum and mean calculation.

- The bar graph uses an automatic scale for showing values.

- By right-clicking over the graph, the **Properties** option will be shown. When clicked, the following fields will be displayed:
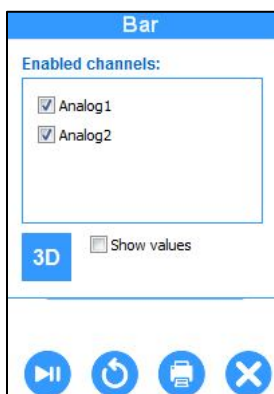

Fig. 43 – Graph Properties (Bar)

- o **Enabled channels**: This field allows for selecting which channels will be displayed on the bar graph.

- o **3D**: This button visually changes the graph between a flat view (2D) and an isometric view (3D).

- o **Show Values**: If this option is selected, the current values of each variable are displayed on the graph. If many channels are displayed, the view may be a bit polluted due to the information on many values.

- To exit the options screen, just click on the bar graph area.

8.2.3 ALARMS

With each reading, the channel values are shown on bar meters, informing whether they are in alarm state or not or whether some type of alarm has occurred.

- Read error values are displayed on the bar meters.

- The channel name should be displayed over each bar meter, and the unit for each channel should be shown below the channel name.

- Bar meters use an automatic scale to display values.

- The range shown in green on meters is the range in which there are no alarm occurrences.

- The ranges shown in red on the meters are determined by the minimum and maximum alarm setpoint value.

- Below each bar meter is a status indicator informing whether an alarm has been triggered on the channel since the monitoring began.

Fig. 44 – Status Indicator

 o If the channel has experienced an alarm, this button will be red and will be available to click. A new screen will therefore be shown with a table of all acquisitions in which high or low alarms have occurred.

Fig. 45 – Alarm Events

 o On the table, we have information such as type of event, value, and time stamp when the alarm event occurred.

 o All alarm events can be cleared from a given channel by clicking the **Clear Events** button on this screen.

 o Data from the table can be exported to an Excel file by clicking the **Export** button on this screen.

 o To close the Alarm Events screen, just click the **Close** button.

 o High-level events are shown in red on the table, and low-level events are shown in blue.

> ⚠️ **The alarms panel works only for those devices whose alarms are directly attached to each channel. For devices like LogBox-3G and LogBox WI-FI, whose alarms are independent from each channel, this panel will stay blank since it is not applicable.**

8.2.4 LED PANEL

Panel located at the bottom of the monitoring screen, where a digital LED is shown for each read channel.

- Read error values are displayed on the digital LED panel.

- The channel name should be showed above each digital LED.

- The line color representing the channel on the graph should be shown next to the channel name.

- The unit for each channel should be shown below the digital LED.

- By right-clicking over the LED panel, the **Properties** option will be shown. When clicked, the following fields will be displayed:

Fig. 46 – LED Panel

- o **Enabling channels**: The user can select which channels should be shown on the LED panel.
- o To close the **Properties** screen, just left-click on the LED panel.
- The upper right corner of the LED panel shows the time stamp of the last reading.

8.3 COMPONENT RESIZING

- Three components on the monitoring screen can be resized: the graph, the bar meters and the bar graph.
- These components can be resized by placing the mouse right at the borders of each component. The mouse icon will thus change into the default Windows expand icon. Then just hold down the left mouse button and move the border of the components left or right or up or down, in the case of the Bar Meter or Bar Graph component.
- The LED panel cannot be resized vertically. When the monitoring screen is maximized, it expands horizontally and automatically.
- We recommend using software monitoring with the screen maximized.

8.4 CONTROL BUTTONS

Buttons located in the lower right corner of the monitoring screen. Each has a respective function:

Fig. 47 – Control Buttons

- **Monitoring/Pause** : Pauses a monitoring in progress. When clicked again, the monitoring will be restarted.
- **Restart Online Monitoring** : Restarts a monitoring. All alarm events, minimum, maximum and mean values will be reset, and the graph curves will be erased.
- **Print** : Prints the current screen status.
- **Close** : Concludes monitoring, closes the software monitoring screen and returns to the home screen.

9. CONFIGURATION DEVICE

Settings on the **Configure** screen vary from device to device and should be check in each device's separate manual.