

# POLARIS WEB CONTROL

Polaris 01

Latitude: 45.40866  
Longitude: 23.37028

Part of group:  
Airport 1

VIEW GROUP



DELETE

STATUS  
Online  
91% 

LAMP CONTROL

OFF

1%

3%

10%

30%

100%

Operating mode

STEADY

FLASHING

## Introduction

POLARIS WEB CONTROL is a lightweight, fully-featured, quick and easy to use web interface for controlling and monitoring hardware activity of an entire air eld (or other medium to high range spatial distribution facility) lighting system. It requires no installation or special system requirements, and only needs a modern web browser to provide full capabilities, on any desktop, laptop, tablet or mobile device.

It relies on a fully functional hardware setup provided by the lighting system manufacturer (please consult hardware and network setup documentation), and the local network infrastructure of the facility.

It enables full system monitoring in real-time, of the entire spatial distribution of the hardware in the eld, and their individual status, operation mode and problems, as well as individual, group, and overall system control of the hardware in the eld. It also provides automatic system control and schedule, based on time events or lighting conditions in the eld.

## System access

Open your browser and point it to [https://\[polaris\\_server\]](https://[polaris_server]), where [polaris\_server], depending on your network setup and your current location (inside or outside the local network of the target facility) may be the IP assigned to the polaris server hardware in your local network, the host name assigned to the polaris server hardware in your local network, or the public domain name assigned in the internet DNS, pointing to the polaris server on your local network, through a port opened on your internet gateway.

If a security warning blocks you from accessing the application on the first attempt, please click "Advanced" in your browser, and manually override the security warning by clicking "Proceed to [polaris server] (unsafe)". This will only be needed on the first run (provided your polaris server address does not change).

If the browser cannot access the application, please make sure your hardware and network setup are complete, and your polaris server is up and running. Also if accessing from the internet (outside the local network), make sure that polaris server is accessible through an open port in your internet gateway.

<b>User login</b>	<p>Once you are done with any possible initial security warnings, you will be automatically directed to the login page, as the entire application is protected by user / password authentication.</p> <p>Please enter the default POLARIS WEB CONTROL username and password, as provided in the hardware and network setup documentation. If for some reason your credentials are not accepted, follow the steps in the hardware and network setup documentation to reset your password</p>
<b>First run</b>	<p>Once you have successfully logged in, you will be automatically directed to the main POLARIS WEB CONTROL application page. Unless your system came pre-configured, you will need to perform some initial setup for the application to become fully functional.</p> <p>You will need to edit and save some system settings as described below, and then sign out and log back into the application for the changes to take effect.</p>
<b>Admin settings</b>	<p>Go to "SETTINGS" in the application's main navigation bar, then open the "Admin" tab.</p> <p>First, please make sure to update your application password, to a strong password of your choice. The default password will not provide adequate security for your system.</p> <p>Enter the default password in the "Old Password" field, then enter your new password twice in the "New Password" fields. Click "Change", and if you provided valid password information, your POLARIS WEB CONTROL system password will be updated accordingly.</p> <p>Next, you can optionally change the main application logo (displayed in the left section of the main navigation bar), to personalize your POLARIS WEB CONTROL application.</p> <p>Choose an appropriate image file from your system, then click "Upload". If you provided a valid new logo image, it will take effect on the next application load. If you want to dismiss the logo changes, and revert to the default application logo, click "Reset" in the "Change Logo" section.</p>

	<p>Finally, and most important, you must provide a valid Google Maps API Key in order for your application to become fully functional. The main display of the hardware layout in the field, as well as the main way to access each individual hardware unit for monitoring and control, is through the Google Maps main section of the main (MAP) view.</p> <p>If you do not own a Google Maps API Key, please follow the steps in Google's official documentation for obtaining an API Key: <a href="#">Get an API Key</a>. Once you have your API Key, please paste it in the Google Maps API Key field, and click "Save".</p> <p>You should now be ready to fully use the POLARIS WEB CONTROL application. Please "SIGN OUT" and then log back into the application.</p>
<b>Sign out</b>	<p>Go and click the "SIGN OUT" link in the application's main navigation bar. This action is needed whenever updating Admin Settings.</p> <p>This action will automatically clear your session token for your current user credentials, and redirect you to the application's Login page. You will not be able to access the POLARIS WEB CONTROL application until you enter valid credentials again through the Login page.</p> <p>It is recommended that you Sign Out from the application whenever not in use, as a security measure against unauthorized access. Your user's session token which enables access to the application will automatically be reset after a predefined server interval, and you will be automatically logged off, for security reasons.</p> <p>Whenever manually or automatically signed out of the application, or when a critical communication error occurs, which presents an appropriate modal alert to the user, you need to reload the application.</p> <p>If your session token has not expired, you can just refresh / reload (F5 in most browsers) the current application page, and it will automatically reload full system data and continue operation.</p> <p>If the session token has expired or has been reset, you will be automatically redirected to the Login page, and then to the main application page, with full data and control, once you provide valid credentials.</p>

## Main (Map) view

The main (MAP) view holds all the relevant information of the real-time overall system and individual hardware status, as well as the controls to access and control the system, device groups, and individual hardware units.

The major parts of the user interface and controls are outlined and described below.

### 1. Main Application Navigation Bar

Allows navigation between the Main (Map) View of the application, and other secondary sections, like SETTINGS, HELP, ABOUT, and functionality like SIGN OUT; always visible, holds the application logo. Application always loads and starts in Main (MAP) View, navigating to other sections won't close or stop the main view operation.

### 2. Application Status Bar

Displays critical summary information on the current system and hardware status (a), current system operation mode (b), and allow overall system control of the hardware (c) like switching On / Off, setting lighting level, enabling and disabling auto / scheduler functions. Clicking on the status bar will expand / collapse the Notification Area below.

### 3. System Notification Area

Scrollable and collapsible area that presents all current / actual system and hardware notifications, either informational, warning messages, or operational errors. Errors that have been reviewed can be manually dismissed / removed from the system here. The overall color of the status and notification areas is determined by the type of notifications present in the queue. Default / no issues is green, when only some warnings are present it is yellow, and when errors are present it is red.

### 4. Device Details Pane

The main area that presents the current status and details of an individual hardware device (a), as well as presenting operational status and allowing individual control (b), and presenting group operational status and allowing group control (c). This always presents information for the device currently selected on the Map View, and all the details and operational status are in real-time synchronization with the actual hardware status in the field. All the operational commands to the devices / groups are also sent from this view.

##### 5. Application Map Area

This is the main view of the application, containing a Google Maps control, on which all the hardware devices (a) are placed according to their real-time reported location from their GPS sensors. The currently selected device has an additional Info Popup open (b), presenting all its reported field data, besides being shown in the Details Pane. All the hardware devices registered with the system are initially visible on the map, all usual maps operations like zooming, panning, etc. plus additional device group filtering, device error highlighting, etc. are available and described below.

#### Map area

The Map Area is a fully featured Google Maps area, hosting all the hardware devices currently registered in the system, in their respective locations as reported by their GPS sensors. It is the application's main access point for selecting hardware devices for monitoring and control.

Upon application startup and initialization, the Google Maps control is automatically centered and zoomed in the current devices location, such as all currently present devices will fit in the initial map boundaries.

Initially the map is in Satellite mode, but the user can interact with it as with any Google Map, alter its mode and layers, zoom level, scroll and pan, etc. The application will remember the last used map mode (Map / Satellite / Terrain, etc.) on subsequent runs / loads and between browser sessions, but will always center and zoom on startup on the current devices location.

At higher zoom levels (near detail) each device will also display its name label under its map marker. At lower zoom levels the device name labels are hidden from the map to avoid cluttering the map. User can freely zoom the map in and out, pan, scroll, maximize, change view and mode, etc. using normal Google Maps controls.

When no devices are reported by the system at application startup and initialization, the map will be initially centered in a neutral location, at (0,0) latitude / longitude, in the middle of the ocean. However, when the first device is detected / registered by the system, the map will automatically re-center on its location.

Each hardware device will be represented by a single marker symbol on the map, having the exact graphical representation of the actual device in the field. When selected, an Info Popup window opens from that device marker, displaying all the relevant information reported by the device from the field. The Info Popup can be closed when no longer needed by clicking its close marker, or by clicking anywhere else on the map. It will close automatically when another device is selected.

When a device is selected on the map, all its technical, logical and operational details are displayed in the Details pane adjacent to the Map Area. All further monitoring and operational tasks are performed from that device detail view. The Map Area only provides an overall system view, some field information, and the main access point to select individual devices / groups for further tasks.

Device markers on the map, besides signaling the lamp type by their graphic, also signal the current hardware status:

- a device functioning normally, part of a valid group, will be just a steady graphical representation of the device in the field.
- a device registered with the system, that is currently offline / undetected by the system, will be a steady grayed out graphical representation.
- a device functioning normally, that is not part of any group, will be a steady graphical representation, with an exclamation mark in a red dot.
- a device that reported warnings or errors will also display the exclamation mark in a red dot, but will also continuously bounce on the map to draw attention on the error condition.

Error conditions can be further inspected and resolved by selecting the respective red dot / exclamation mark /bouncing markers, reviewing and clearing their notifications, etc.

## Details pane

The Details Pane contains all the relevant device information, monitoring data, and operational controls for the selected hardware device and its parent group.

1. Selected device name / group's devices list. The main function is to always display the selected device name. You can also use this control to change the selected device from the drop-down list of devices. The drop-down devices list is controlled by the currently selected group from the group drop-down selection list below (only contains devices of the current group).

2. Selected device coordinates. Displays the GPS coordinates of the device in the field, as reported by its GPS sensor. These are the base of positioning the device marker on the adjacent Map Area. Without a valid set of coordinates from the device, the device marker cannot be placed on map, so it would not be accessible from the Map Area, but it would still be accessible by selecting its Group and its Device Name from the Device / Groups drop-down lists.

3. Selected device parent group. Each device should be part of a logical group of devices. All devices that are not assigned to a group, are automatically assigned to the (no group) entity which holds all ungrouped devices. This displays the current device group, and also allows selecting another group from the drop-down list of groups defined in the system. When selecting another group, the selected device is automatically changed to the first device in the newly selected group.

4. "View Group" / "View All" button. This button allows filtering the system devices for easier view and analysis per group in Notifications and Map Areas. When clicking "View Group" all devices not belonging to current group will be removed from the map and the map will be re-centered and zoomed to display only the current group. Also, the notifications in the Notification area will only display those belonging to devices assigned to the current group. The button will change to "View All", and when clicked again, will remove the current group filters and display full system information again in Notifications and Map Areas.

5. Selected device graphic and info. This displays the current device's graphic representation, similar to the map marker, but at a much larger and visible scale. Also, when hovering over this graphic, it will display the selected device type name and capabilities. When clicked, it will center the current device marker on map, and open its Info Popup, outlining its location and selection status.

6. "Delete" button. This button will completely remove and unregister the selected hardware device from the system. After requesting confirmation for the action, it will send a request to the underlying infrastructure to unregister the device from the system, and if successful, device will completely disappear from the UI and all further interactions, monitoring, notifications from it will be gone. This should only be used to remove permanently unavailable / damaged devices from the system. There is a special Group documented below where devices can be parked temporarily when only temporarily unavailable.

7. Warning / Error flashing icon. This is only visible (and flashing) when the selected device has pending warnings or errors (accessible in the Notification Area). When visible, you can click this flashing icon, and it will automatically expand the Notifications Area filtering out all other notifications, and showing only the notifications of the selected device. This will make it easy to identify, review, and dismiss if decided so, specific errors and warnings reported by any device. Once the Notifications Area expanded by this operation is closed (by clicking on its header / System Status), the notifications filter by device will be removed, and all the system's notifications will be restored in the Notifications Area.

8. Device Status text. This displays a short text message summarizing the current status of the device. Common options are ONLINE and OFFLINE, but other statuses are possible. This is just a concise human readable representation of the current device status, as reported by the hardware in the field.



9. Battery Level status. This displays the current battery level in percentage, as reported by the hardware device in the field. The battery level text also signals the low / warning / normal level. When the level is above the level set in System Settings for Eco Mode, the text is green. When the level is below that, but above the level set in System Settings for Low Battery, the text is yellow. When the level is below that, it is red.

10. Lamp Control operational status and controls. This area both displays the current operational status of the selected device (ON / OFF), its dimming level (1% / 3% / 10% / 30%, 100%, as and if supported), operation mode (STEADY / FLASHING if supported), as well as allows control of these device states and operation modes. The current operation mode and status is outlined in blue, while the other possible states and modes are dark grey. You can control the device status, dimming state, operation mode, by clicking on any of these individual controls, which sends an appropriate command to the hardware device in the field.

Please note that due to implementation specific reasons of the lora-wan long-distance communication, and depending on conditions in the field, number of devices, etc. the command may not always execute instantaneously. There is also the possibility that due to communication failure or other network or hardware specific issues, the device state / operation mode will revert to the previous state after a while, when the unsuccessful command was permanently aborted.

When a device is OFFLINE, this entire area is disabled, since it cannot receive operational commands, and its status reflects the last-known status saved in the system.

11. Group Control operational status and controls. This area both displays the current operational status of the selected group (ON / OFF), its dimming level (1% / 3% / 10% / 30%, 100%), operation mode (STEADY / FLASHING), as well as allows control of these group states and operation modes. The current operation mode and status is outlined in blue, while the other possible states and modes are dark grey. You can control the group status, dimming state, operation mode, by clicking on any of these individual controls, which sends an appropriate command to ALL the hardware devices members of the selected group.

Please note that due to implementation specific reasons of the lora-wan long-distance communication, and depending on conditions in the field, number of devices, etc. the command may not always execute instantaneously, and group commands may take even longer. There is also the possibility that due to communication failure or other network or hardware specific issues, some member device state / operation mode will revert to the previous state after a while, when the unsuccessful command was permanently aborted.

Also please note that because a group can host different device types, with different hardware capabilities, all possible commands are possible on a group (i.e. all levels of dimming, flashing, etc.), but not all member devices necessarily support all these commands (some members may not support dimming, some may not support flashing, etc.). In this case, the respective commands will be ignored by hardware that does not support it. This, along with the possibility of individual device control, means that current device state / mode can be out of sync with its parent group. When a device is not a member of any group (un-grouped, part of the (no-group) collection), this entire area is disabled as it cannot be used.

12. Group Control flashing frequency status / slider. This controls the flashing frequency of the flashing devices in the current group, and displays the currently set flashing frequency for the selected group. This control only exists at the group level because the group is responsible for synchronizing all the members flashing on the same clock. If you need to set flashing frequency on an individual device, you need to place it in a group of its own, then set the desired flashing frequency on that group.

Several examples of possible hardware devices and logical groups states and modes below:

FLOODLIGHT device ONLINE with warning (WARNING was clicked, opening the Notifications Area for this individual device only), not supporting flashing (disabled STEADY / FLASHING controls), only supporting 10% / 30% / 100% dimming, currently ON with 10% dimming.

ELEVAT FATO device with error, currently OFFLINE (last time it was ONLINE it was flashing at 100% dimming), "VIEW GROUP" active (only current group displayed on map, button now displaying "VIEW ALL" to revert to full system view). Group is set to FLASHING at 30 flashes / minute, at 10% dimming.

POLARIS RWE device ONLINE with no errors or warnings, currently working STEADY at 30% dimming, also supporting FLASHING. Devices drop-down selection list is open, allowing selection of another device from the group if desired. Group is set to OFF currently, which means this device was individually turned on after the last group command was issued. If a new group command is issued now to turn all group ON at 100%, that will override the individual lamp control and set all its members to 100%.

FLOODLIGHT device ONLINE with no errors or warnings (no flashing error or warning icon on Details Pane, no bouncing map marker, the red dot / exclamation mark indicate only that the device is not yet part of any group), currently OFF, not supporting FLASHING (controls disabled), with LOW BATTERY. Groups drop-down selection list is open, allowing selection of another group from the system if desired. Group controls are disabled, as the device is not part of any group (as (no group) indicates).

## Notifications area

The Notifications Area lists all currently active notifications in the system, as an expandable and scrollable list of online items, below the System Status bar. It is normally hidden / collapsed to preserve space and maintain focus, as notifications can pile up and keep coming and scrolling in real time. The Notifications Area expands / becomes visible by clicking anywhere on the System Status bar (except for the special System Control buttons in the right section of the bar), and hides / collapses the same way.

Each notification is made up of up to 4 components:

1. The individual delete / close control. Clicking on this will request the system to permanently remove the notification from the system. If successful, the notification will be cleared from the system and the Notifications Area. It is recommended that you only clear unimportant notifications, or important notifications only after you've fixed the root cause that triggered them.
2. Notification date/time / timestamp. The system recorded timestamp when the notification event has happened. Notifications Area lists notifications in order from the newest (most recent) on top to the oldest at the bottom by this timestamp.
3. Notification device link. Notifications can originate from different areas of the system (client errors, server errors, network / communication errors, hardware errors, etc.). If and only if the notification comes from a specific device registered in the system, then this device link is present in the notification body. This can be used to immediately locate and select the respective device. By clicking this device link, the respective device is centered on the Map Area and selected, its Info Popup opens, and it is selected and displayed in all details in the Details Pane.
4. Notification message. This is the human readable section of the notification. Depending on the originating area of the notification, and the message text, you can decide what actions to take to fix the conditions that triggered the notification (if needed). Some notifications have only information value and need no actions taken.

Notifications have 3 severity levels: info, warning, and error. The entire color of the System Status and Notifications Area sections is given by the most severe notification currently on display. If no warning and error notifications are present, the color is green. If no error notifications are present, but only some warnings, the color is yellow. If at least an error notification is present, the color is red. That logic applies only to notifications currently displayed, the color of the area can change only based on filtering the notifications by group ("View Group" button) or device (device warning / error flashing icon).

## Status bar

The Status Bar displays critical overall system status and mode, and hosts controls for issuing hardware device commands to the entire system at once (overriding all current groups and devices operational statuses), as well as enabling / disabling some automatic modes defined in System Settings. The status bar also serves as the opening / expanding and closing / collapsing control for the Notifications Area below.

The Status Bar consists of 3 main areas:

1. The System / Group / Device Status. Normally this section holds the overall System status, listing the total number of registered devices and notifications received from the system. When group filtering is active ("View Group" button selected for a particular group in Details Pane), this holds the overall groups status, listing the number of registered devices and notifications received for the current group only. When device filtering is active ( flashing warning / error icon selected on a device in Details Pane), this only lists the selected device with number of notifications for that particular device only.

2. The System Mode displays the currently active System Mode. This is normally Eco or Performance, and is affected by the options in System Settings. In Performance mode devices are not allowed to automatically dim to preserve battery power. In Eco mode, devices dim automatically when battery level falls below a threshold, also controlled from System Settings.

3. The System Control area has 2 sub-sections with buttons that control overall system by issuing global command to all registered devices or enabling / disabling automatic / scheduled running modes. ON / OFF and 10% / 30% / 100% buttons issue immediate commands to all devices registered with the system to switch Off or On at the selected dimming level. TIMER / LIGHT enable / disable automatic / scheduled system modes that control all devices on the system based on logic defined in System Settings.

ON - sends Power On command to all devices registered with the system. The dimming level will be the one selected in the adjacent radio button group (10% / 30% / 100%). This will try to override all current device states. Depending on the number of devices in the field, distance, weather and other local conditions, due to the specifics of lora-wan-communication, it may take a while until all device statuses are updated accordingly in application after such a global command.

OFF - sends Power Off command to all devices registered with the system. The dimming level will not be reset, and will remain as selected in the adjacent radio button group (10% / 30% / 100%), so the next global Power On cycle will use the same setting, unless explicitly changed. This will try to override all current device states. Depending on the number of devices in the field, distance, weather and other local conditions, due to the specifics of lora-wan communication, it may take a while until all device statuses are updated accordingly in application after such a global command.

10% / 30% / 100% - when System is in ON mode, it sends the respective dimming command to all devices registered with the system. This will try to override all current device states. Depending on the number of devices in the field, distance, weather and other local conditions, due to the specifics of lora-wan communication, it may take a while until all device statuses are updated accordingly in application after such a global command.

	<p>10% / 30% / 100% - when System is in OFF mode, it just saves that respective dimming setting for future use when the System will be turned ON again.</p> <p>TIMER - enables automatic running of the entire system based on the schedule / time events defined in System Settings. This automatically sets predefined dimming levels between 0%(OFF) and 100% to all devices registered in the system, at predefined time events.</p> <p>LIGHT - enables automatic running of the entire system based on the ambient light intensity thresholds, as read by sensors deployed with the hardware in the field, and defined in System Settings. This automatically sets predefined dimming levels between 0%(OFF) and 100% to all devices registered in the system, at predefined light intensity thresholds.</p>
<b>System settings</b>	<p>The System Settings tab contains settings that control overall system functioning in automatic mode (without direct user intervention). These settings work in close relation with the System Control buttons in the System Status bar.</p> <p>The System Settings tab consists of 4 main areas:</p> <p>Auto Time Control : defines a free series of events (any number of events can be defined, from none to as many as needed), that set a specific dimming level (Intensity) to ALL devices registered in the system, at predefined times. You can add a new Time Control Event using the "Add" button, then set the Time and Intensity level in the Edit section, then "Save", and the new event will be added to the list of Events. You can edit any existing event in the list of Events by selecting it, then editing Time and/or Intensity in the Edit section, then clicking "Save". You can delete any existing event in the list of Events by selecting it, then clicking "Delete". Events will always be ordered by time in the Events list. They will work 24/7 when the System is in "TIMER" mode from the System Status bar, each event dimming level being set until the next time event is defined, around the clock.</p> <p>Light Sensor Control : defines two light intensity thresholds, in lux, as measured by ambient light sensors deployed with the hardware devices in the field, at which a specific dimming level (Intensity) command is sent to ALL devices registered with the system. The first one sets the Day light sensor threshold, at which the predefined Day dimming level is set on ALL devices. The second one sets the Night light sensor threshold, at which the predefined Night dimming level is set on ALL devices. You can edit these values in the allowed range, then save them, so they will be used when the System is in "LIGHT" mode from the System Status bar, each Day / Night dimming level being set until the other threshold ambient light intensity is reached, around the clock.</p>

	<p>System Mode : radio button group that can be in one of two modes: Eco or Performance. The currently active one is outlined in blue, while the inactive one is dark grey. When in Eco mode, the battery level thresholds and dimming levels defined in the section below "Battery Level Control" are being automatically observed by the system and ALL devices are placed in that maximum dimming setting when the battery level threshold is reached. when in Performance mode, the "Battery Level Control" settings below are disregarded (and disabled) and hardware devices will always light up at their manually or automatically, globally or individually set level, with no economy dimming to preserve battery.</p> <p>Battery Level Control : defines two battery level thresholds, in percentage, at which a specific economy mode dimming level (Intensity) command is sent to ALL devices registered with the system. The first one sets the Eco Mode battery level threshold, at which the predefined Eco Mode dimming level is set on ALL devices that exceed that dimming level. The second one sets the Low Battery battery level threshold, at which the predefined Battery Level dimming level is set on ALL devices that exceed that dimming level. You can edit these values in the allowed range, then save them, so they will be used when the System is in "ECO" mode from the System Mode setting above. When the System is in "PERFORMANCE" mode from the System Mode setting above, the "Battery Level Control" section settings are disregarded by the system, and hardware devices will always light up at their manually or automatically, globally or individually set level, with no economy dimming to preserve battery.</p> <p>Below all these sections there is the "Save All" button. After any changes in the System Settings, for them to be persisted and take effect immediately, you must click the "Save All" button, otherwise any changes you have done will not be effective and will be lost.</p>
<b>Groups settings</b>	<p>The Groups Settings tab allows full control over the grouping and ungrouping of devices into logical groups. Logical groups are very important for more consistent and efficient communication with entire device groups instead of individual devices, so all system devices should be grouped as dictated by logic and needs, into one to as many as needed groups.</p> <p>The Groups Settings tabs lists all the system registered groups and devices, on 2 separate columns, allowing free moving of devices between different groups selected on the 2 columns, as well as free creation and deletion of groups. Each column consists primarily of a Group selection drop-down list, and a Group's Devices list. Allowed operations are described below:</p> <p>Create - opens a modal dialog allowing a new group name entry. Upon providing a valid new group name and clicking "Create" again in the dialog, a new group will be created and immediately available for placing devices into it. Please make sure to provide a unique new name for the new group to be created.</p>

Delete - opens a modal dialog to confirm deletion of the group currently selected in the first column's drop-down list of groups. If no group is selected in the first column's drop-down list of groups, the button is disabled. Upon successful operation, the group is completely removed from the system, and any devices it contained are placed under (no-group) placeholder. Please note there are special groups that cannot be deleted.

Select All - Selects all devices in the device list above, belonging to the currently selected group in the groups dropdown selection control above. This helps prepare for a bulk move of devices from one group to another.

Select None - Clears any individual or bulk selection of devices in the device list above, belonging to the currently selected group in the groups drop-down selection control above.

>> - Moves all devices, selected or not, from the left hand group to the right hand group.

> - Moves only selected device or devices, from the left hand group to the right hand group.

< - Moves only selected device or devices, from the right hand group to the left hand group.

<< - Moves all devices, selected or not, from the right hand group to the left hand group.

Save Changes - Saves any and all changes on groups components in this tab. Please make sure you always click "Save Changes" after performing any change in the Groups Settings tab, otherwise your changes will not take effect and will be lost.

All controls described above are automatically enabled / disabled based on current data / selections. For example, if both left hand side and right hand side drop-down group selection controls have the same group selected, all the 4 buttons for moving devices between groups are automatically disabled. This helps prevent any unwanted or unauthorized user operations and errors. However, any errors that might occur during the actual transactions with groups data, will be printed below the main controls area in this tab, and will not fatally affect the data.

In order to allow disabling / hiding from view / avoiding receiving notifications / temporarily hiding disabled devices registered with the system, there is a special Group [Disabled devices], available in the Groups Settings drop-down selection controls. This group cannot be created or deleted from the application, as it is defined server-side, but can be used just like any other group to hold any devices you chose. However, this group is not available in the Main (MAP) View, and all its devices are hidden / not visible on the map.



The [Disabled devices] group and its devices are not available for selection in Details Pane drop-down selection lists either, and any notifications linked to its devices are also hidden from the Notifications Area. As such, this group can be used as a "Soft Delete", to completely hide any temporarily disabled, unavailable or otherwise unwanted devices from the application. The main difference between this and the actual device "Delete" operation, is that this can easily be undone by removing the device from the [Disabled devices] group at any time, through the Groups Settings tab.

## Final notes

The system supports any number of simultaneously running instances of the application. They will all be kept in sync in real-time with the entire system data, hardware device status, logical groups and system settings. Any changes into one instance of the application will be reflected in real time in all other instances (allowing the minimum time needed for the network propagation of messages to and from all hardware devices). It is recommended though to avoid simultaneous changes, updates or commands in the same area from multiple connected applications, as they could collide, overwrite or override each-other, and produce unexpected results (i.e. simultaneous commands to the same device / group, simultaneous groups or settings editing, etc.).

Due to the slower nature of the lora-wan long-distance radio communication between the system and the registered devices, it is recommended to allow some seconds for the system to settle in the new status, and confirmation on the new status to be received from all the affected devices, especially on large groups commands. It is recommended to avoid too quick, cascades of commands which might result in even slower reaction times by flooding the network, and unexpected system behavior / undefined entities status.

Critical error conditions will prompt for an application reload / refresh which will refresh all system data and should resolve such situations. Should the problem persist, please review your System Notifications Area, and as last resort the browser's console, which might provide some useful debugging or troubleshooting information.





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