sat-nms Software User Manual

Web-UI User Manual

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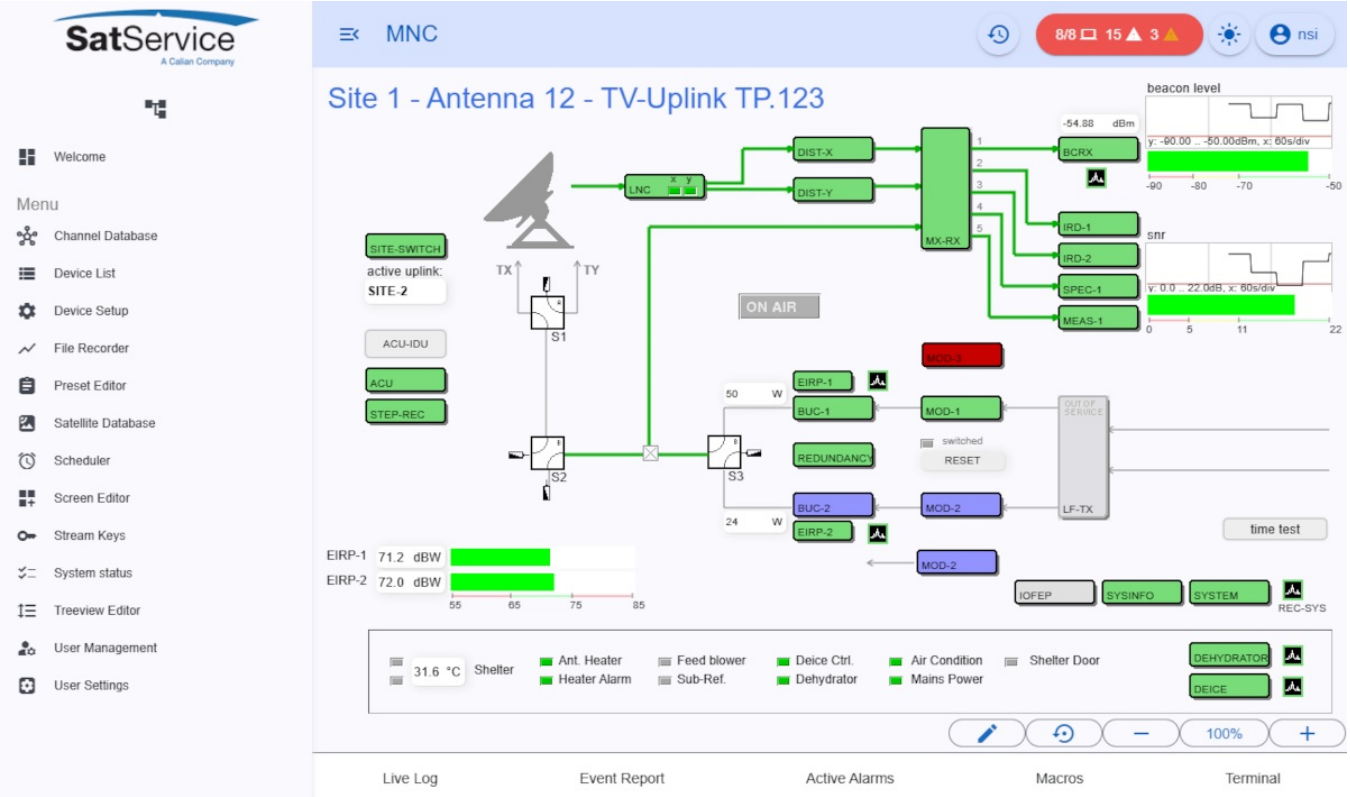
Table of Contents

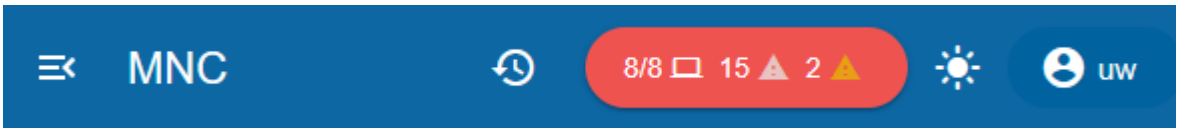
1 M&C web-client

This section describes the functionality and the usage of the sat-nms M&C software when operated with the web-client. The following chapters of the manual describe each function and each user interface screen in detail.



Quick access links to the main sections of the document:

1.1 Top toolbar



Located on top of the page and permanently visible and it provides quick access to the user menu, MNC notifications etc. It can change the color from blue to red if you have configured that in user-settings warning section to show the fault state of the system.

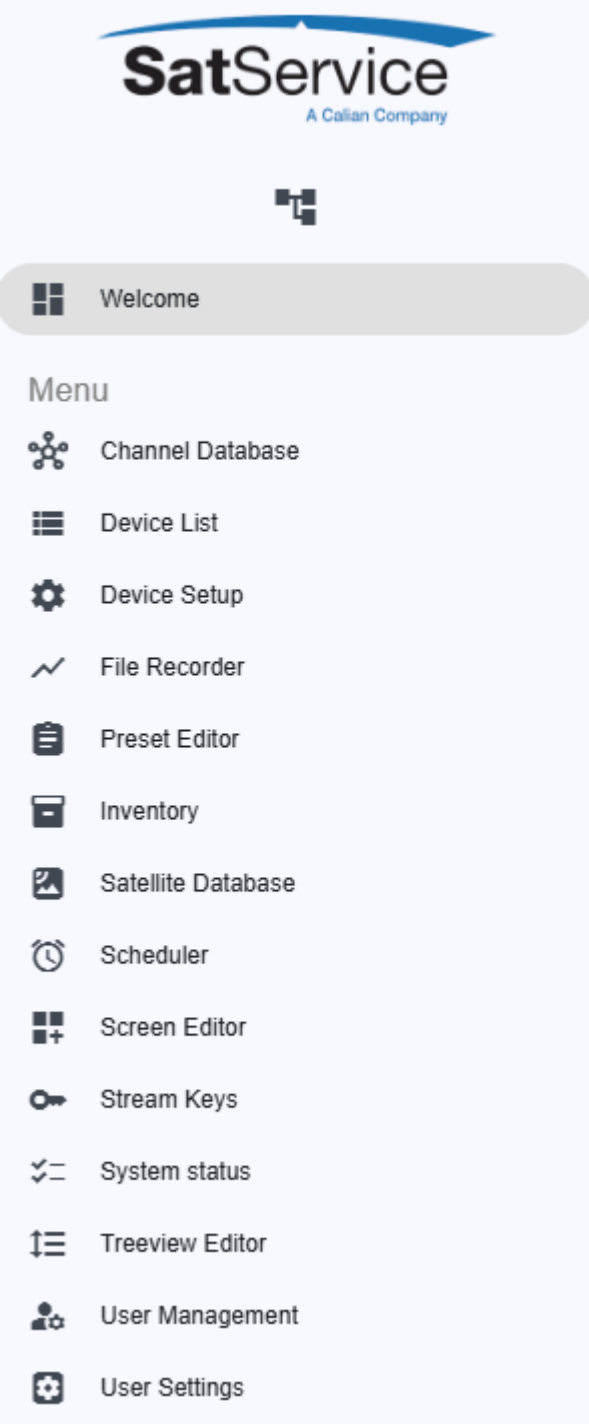
The following functions are available by clicking on the elements:

icon	description
	toggles visibility of sidebar (main menu) on the left
	shows the page history
notification area	show list of MNCs and active faults
	switch UI theme (dark mode)
	opens the user menu

1.1.1 Sidebar / main menu

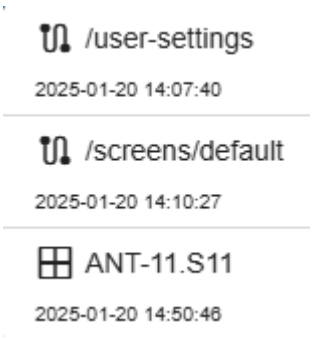
The side bar provide shortcuts to the different functions of the***sat-nms*** MNC system. It a kind of menu menu which gives you quick access to key areas and can be find on the left hand side. All menus are explained in the separates chapters.

You can hide the sidebar by clicking on the button in top toolbar



1.1.2 History

Clicking on the history button opens the list with your navigation history. If you click on a list entry you jump directly back to the listed page. This could be page from the main menu, a user screen or a device window.



Each list entry show the type (by icon), the name of the page (URL) or the name of the device. The timestamp in UTC corresponds to the time when the item was visited.

icon	description
	jump to a page or user screen (URL)
	opens specified device window

Remark: After reloading the page, the history is deleted.

1.1.3 Notification area

It gives you a clear view to the state of all connected servers and devices. Starting from left: The background color shows the summary fault state of the complete installation. The color is priorized in the following order (from low to high):

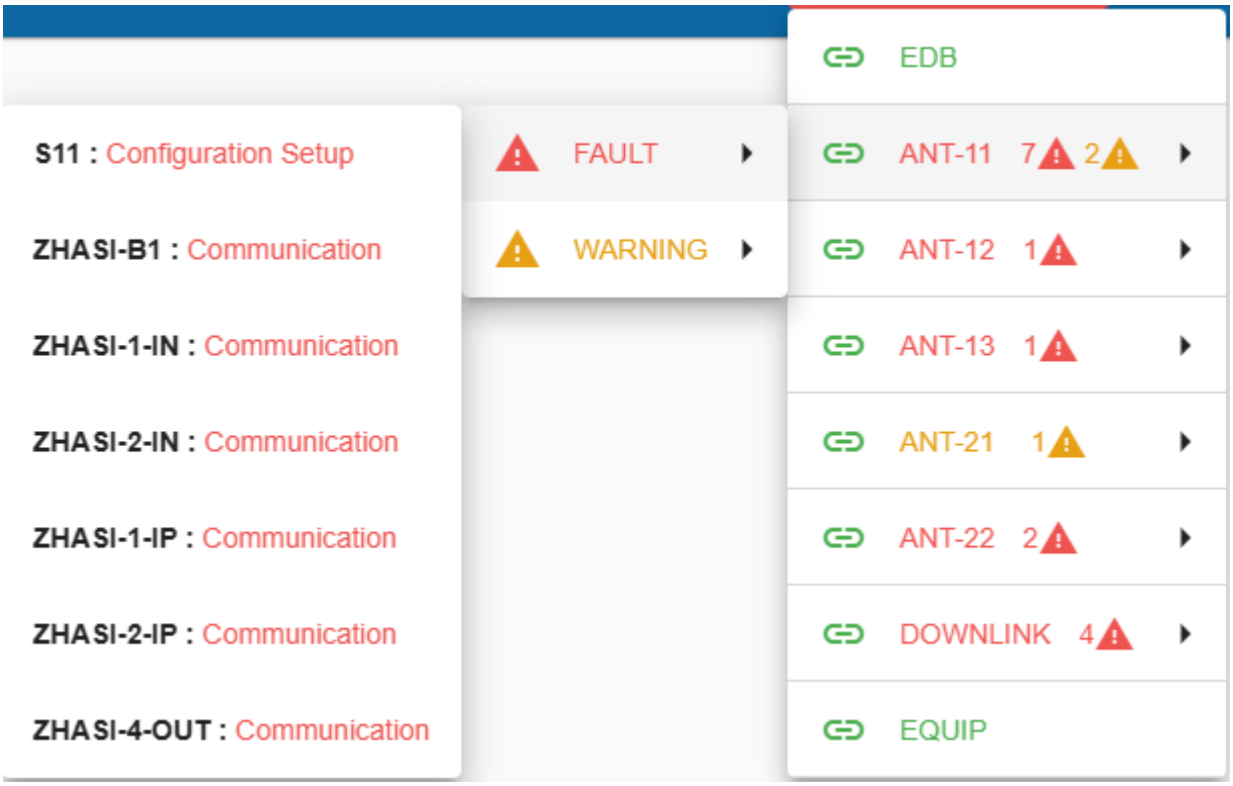
- **green**: no active alarm or warning
- **orange**: at least one device is in warning state
- **red**: at least one device is in fault/alarm state

The number inside the notification represents the following information:

- **MNC count**: number of MNC servers is displayed on the left-hand side of the computer icon
  - left number: currently connected/reachable MNCs
  - right number: total number of MNCs
  - e.g. 6/10 means 6 of 10 MNC services are currently reachable
- **Alarm count**: total number of active alarms
- **Faults**: total number of active faults
- **Warnings**: total number of active warning

If there is a new fault arriving, the corresponding symbol will be start blinking. Clicking on it will stop blinking and/or stop alarm tone.

On click it shows a dropdown list with MNC names with details about MNCs and active faults



The first level of this drop down menu show the list of configured MNC services. Clicking on such an entry will open the default user screen associated with this MNC (if configured)

- **Status indication (Icons)**
  - **Green link icon**: The MNC is connected.
  - **Red link off icon**: The MNC is disconnected.
- **Green name**: MNC have no alarms, faults and warnings.
- **Red name**: MNC have alarm(s) or fault(s).
- **Yellow name**: MNC have warning(s).
- Numbers beside each MNC name indicate the total of alarms (red), faults (red) and warnings (yellow).

When a MNC has alarms, faults or warnings, a secondary dropdown appears with the following options:

- **Alarms/Fault/Warning** per MNC
  - **ALARMS**: Displays a list of devices with alarms.
  - **FAULT**: Displays a list of devices with faults.
  - **WARNING**: Displays a list of devices with warnings.

Selecting the error type opens the 3rd level with a list of affected devices. Clicking on an entry will open the matching device in the device details panel.

After selecting the type `ALARMS`, `FAULT` or `WARNING` a list of affected devices is shown along with a brief error description

1.1.4 Theme

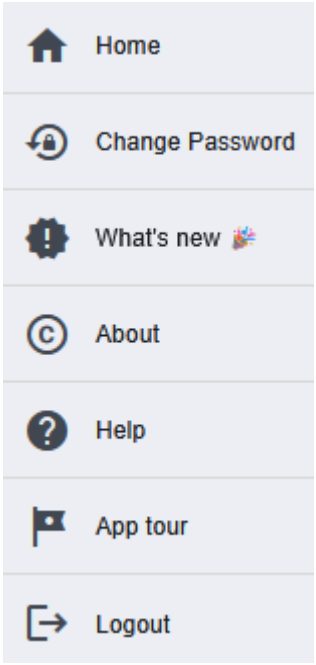
This icon shows current theme of this app. On clicking shows the following options:

- **Auto**: App will adapt the system theme.
- **Dark**: Activates dark mode.
- **Light**: Activates light mode.

1.1.5 User menu

Near the profile icon is the logged-in username. By clicking on name the user menu expands and provides the following options:

- **Home**: navigate to the default page.
- **Change password**: open the dialog to change the password.
- **What's new**: new features and improvements are listed in this sections. It's open a panel on right hand side with details.
- **About**: open about page. It contains app information like company name, address, app version etc.
- **App tour**: start the app tour and navigates through the app and it's features.
- **Logout**: logout the current user.



1.2 Main Content Window

The Main Window is the central area of the application where all content and pages are displayed. It serves as the primary **workspace** where users interact with the application’s functionality. Whether it's data views, editors, user-screens, or any other content, everything is presented within this section.

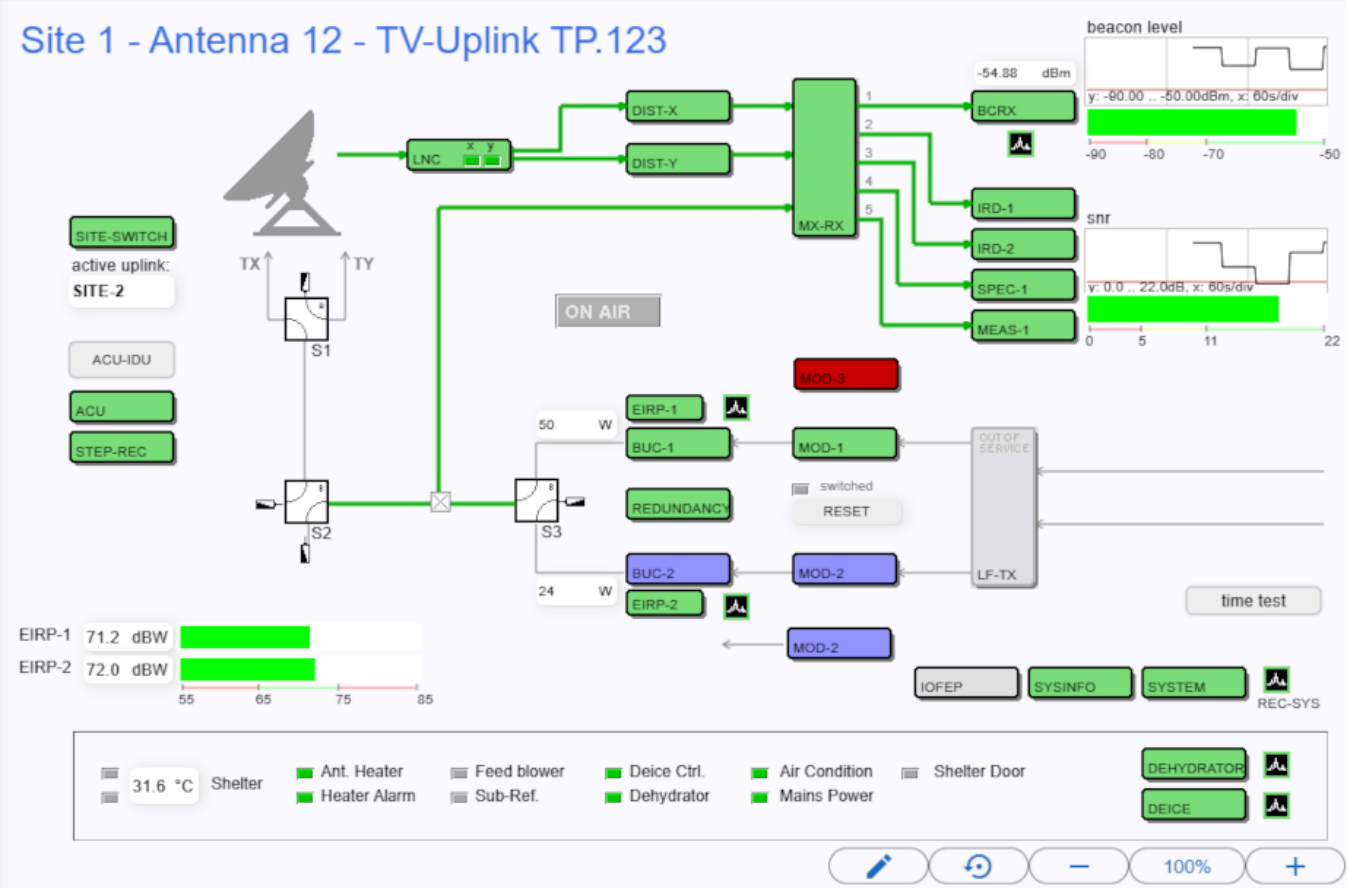
- The Main Window adapts dynamically based on the selected page or action.
- It works together with the top toolbar, the sidebar and the bottom toolbar to ensure a seamless user experience.
- Users can navigate between different sections using the sidebar menu or other navigation controls, and the content in the Main Window updates accordingly.

Following content types are shown in the Main Window:

- sidebar menus functions (expect tree view)
- user screens
- device windows
- all dialogs

1.2.1 User screens

The User Screens are the screens that are configured withthe screen editor. You can interact with the user screen (zoom in or out, scroll vertically or horizontally, reposition the entire screen) and the elements (depending on the element). You do not have to reload page to get the actual values. The values of the elements are always updated. If you move the mouse over an element, details about this element are displayed on left bottom corner of main window. However, you must activate this setting in the user settings under 'Debug mode'.



In the bottom right-hand corner of themain window there is a toolbar with the following

functions:

Function	Icon	Description
edit screen		open the screen editor with the active user screen
Reset position		resets the position of the user screen
Zoom out		zoom out, scale down the elements inside of the page
Current zoom		display the current zoom of the user screen. Clicking on it works like a button and resets the zoom to the default setting.
Zoom in		zoom in, scale up the elements inside of the page

User screens shortcuts

- **Zooming**
  - ctrl + + to zoom in.
  - ctrl + - to zoom out.
  - ctrl + 0 to rest zoom.
  - ctrl + mouse wheel to zoom in and out.
- **Scrolling**
  - Mouse wheel for vertical scroll.
  - shift + mouse wheel for horizontal scroll.
- **Drag and drop**
  - Space + hold mouse left click + mouse move to drag and drop the user screen on desired position.

1.2.2 Display elements

This section described briefly all the display elements e.g. interaction, state behavior, disable type etc. If you want to check the display element properties please check the element properties in Screen Editor chapter.

Category	Element	Readonly	Interaction	Dynamic update	Update data
Static	Text	□	□	□	□
	Frame	□	□	□	□
Dynamic non-interactive	Display (Readonly)	□	□	□	□
	Icon	□	□	□	□

Category	Element	Readonly	Interaction	Dynamic update	Update data
	Arrow	□	□	□	□
	Rect	□	□	□	□
	Gauge	□	□	□	□
	Thumbnail	□	□	□	□
Interactive	Parameter	□	□	□	□
	Parameter button	□	□	□	□
	Latching button	□	□	□	□
	Radio button	□	□	□	□
	Button	□	□	□	□
	Device icon	□	□	□	□
	Switch icon	□	□	□	□
	Chart	□	□	□	□
	XY chart	□	□	□	□
	AzEl	□	□	□	□
	Spectrum	□	□	□	□
	Target list	□	□	□	□

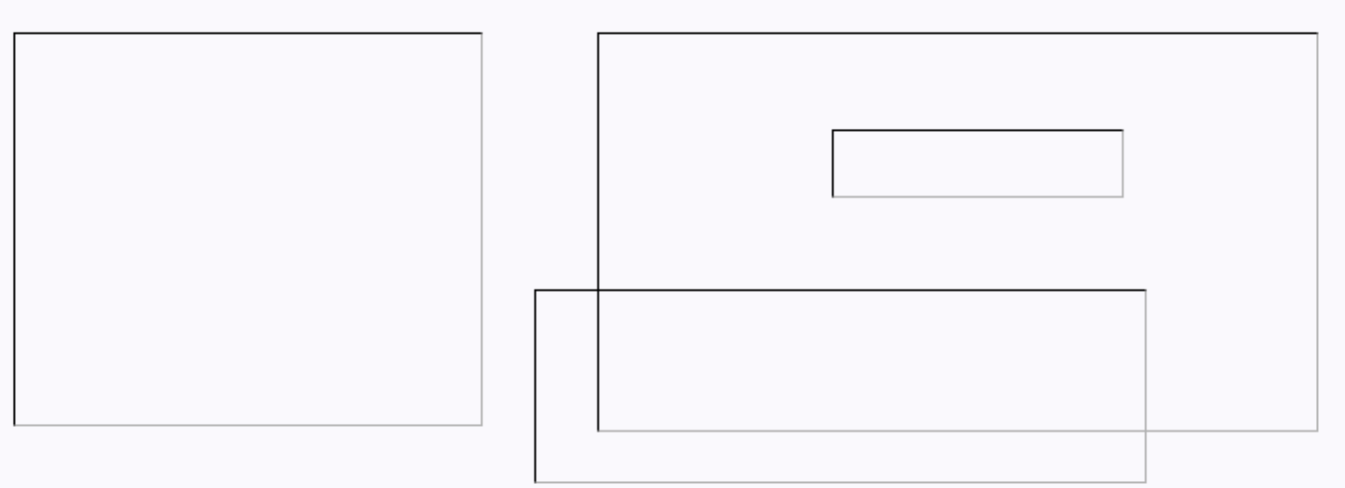
- □ : Yes
- □: No
- □: Element can be restricted with the privilege level.

1.2.2.1 Text element

The text (label) element is an static type of element and can not change their values until you changed it from Screen-Editor. It can have different color, font-style and font-size.

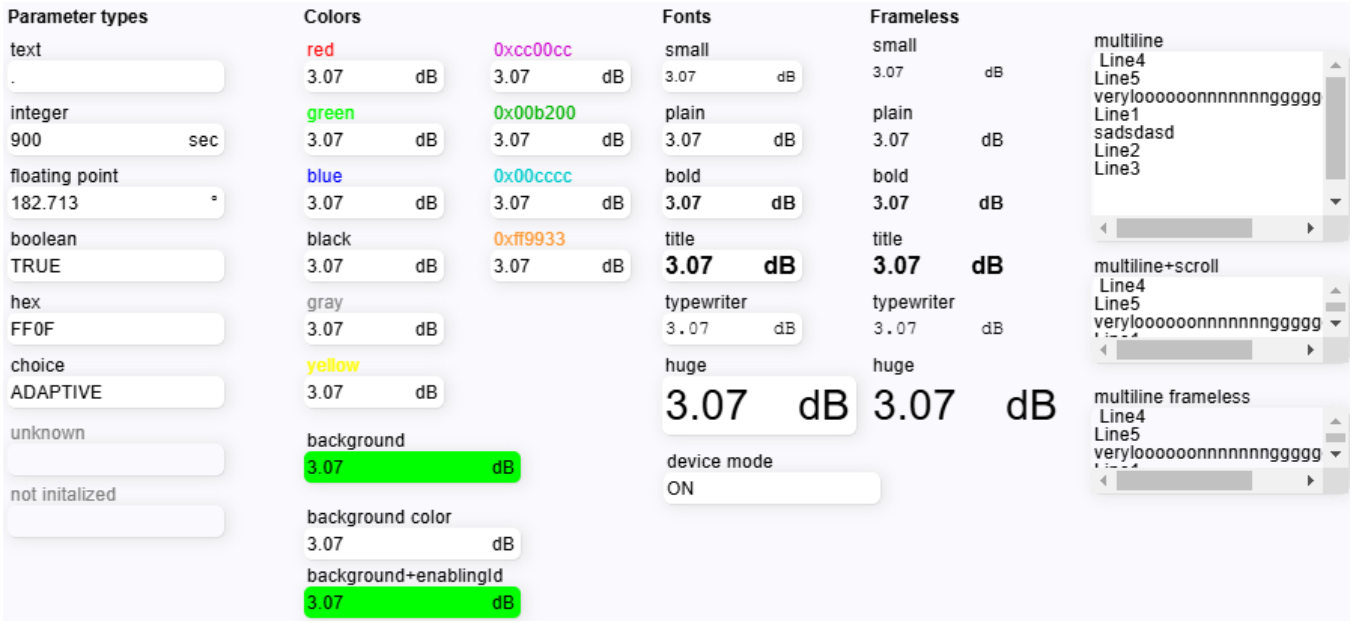
1.2.2.2 Frame element

The Frame element is an static type of element and draws a sunken 3D frame, which is intended to be used to group other elements.



1.2.2.3 Display element

This display element also called read-only element is an dynamic non-interactive element. That means you can not interact with the element to edit or send values. But it still get's updated value. This element is most like parameter element only with the difference that you can not interact with it.

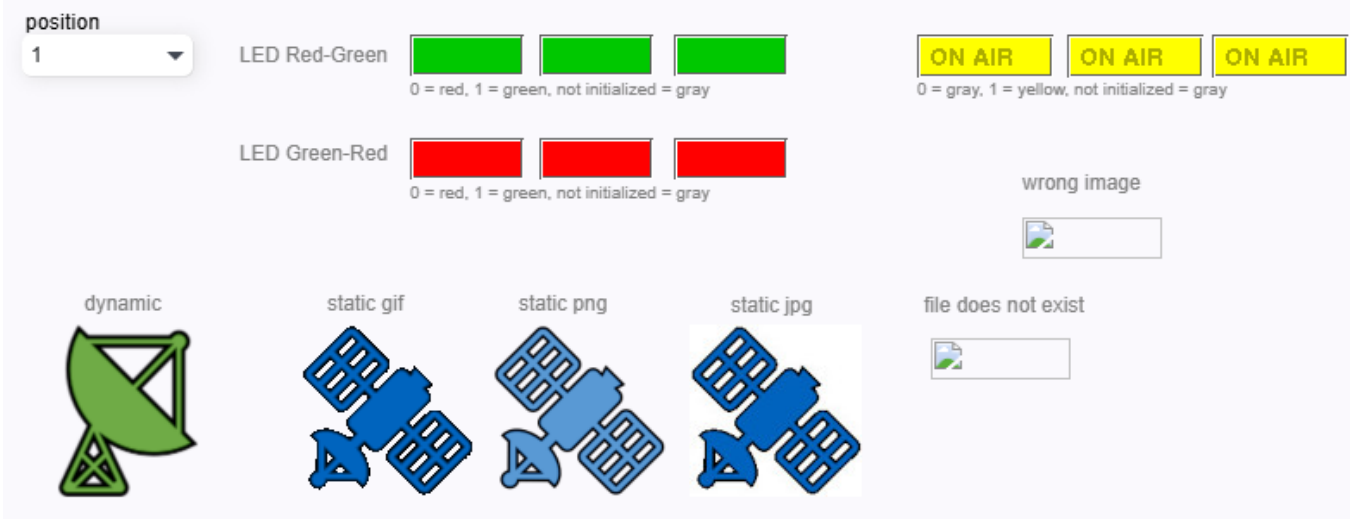


The image above shows the different types of color, fonts, types, background etc. to get an overview of possible looks of the display element (readonly element). Additional colors or background colors can be configured in the element properties in the screen editor.

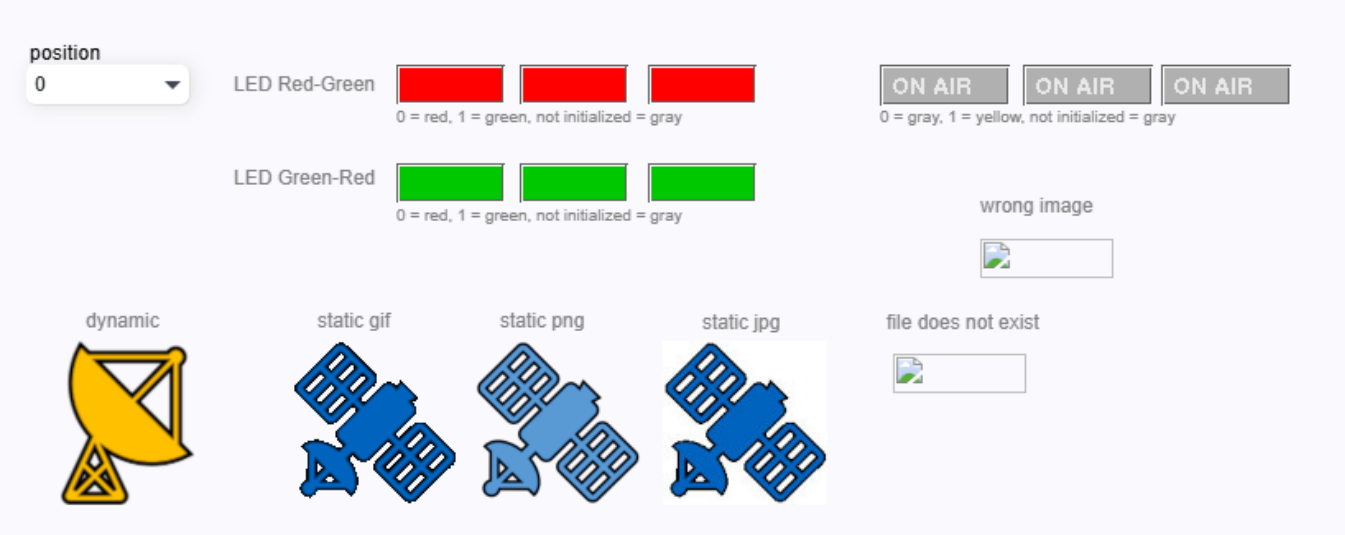
1.2.2.4 Icon element

The icon element works as a dynamic non-interactive element and also as a static element. If message ID in the element properties configured, it will works like an static element type, otherwise it works like dynamic non-interactive element.

The images below shows static and dynamic icons.



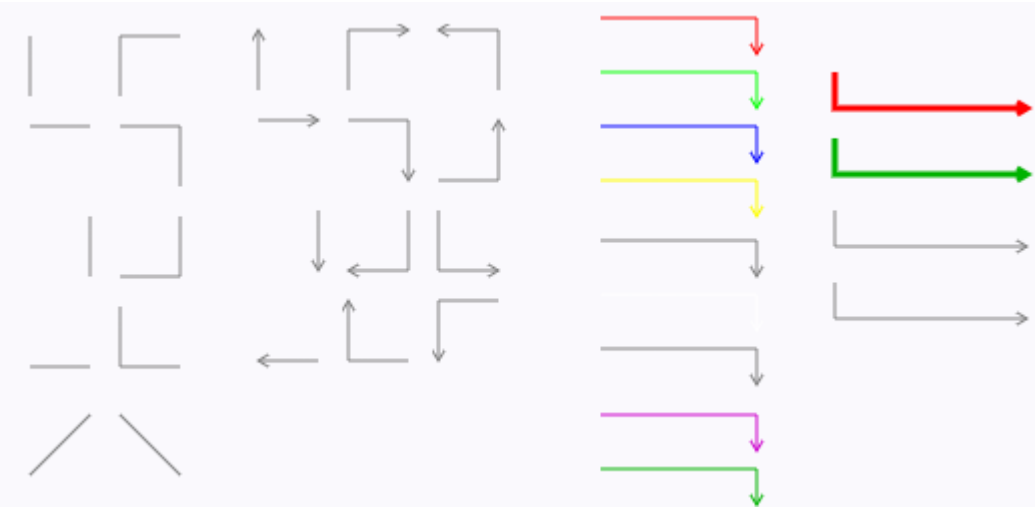
Dynamic icons are bind with position parameter element.



NOTE: Please be careful on selecting an icon with message ID. Wrong image heading in above image is better example of this. Some of the icons contain the name of 0, 1, on or off. For example in above page parameter value can be between 0 and 1. The icon will be changed to parameter value.

1.2.2.5 Arrow element

The Arrow element work as a dynamic non-interactive element and also as a static element. It draws a horizontal and/or a vertical line and optionally an arrowhead. The arrow/line's color is selectable, also may follow a parameter value. You can configure the element properties in the screen-editor.



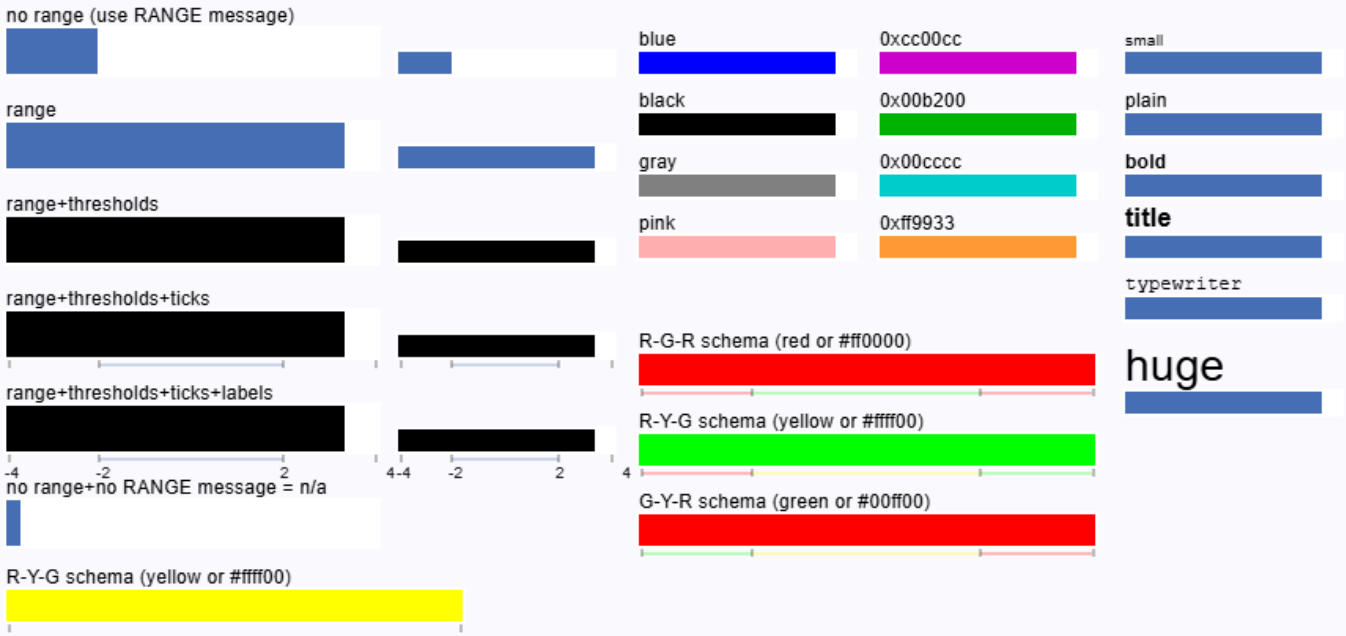
1.2.2.6 Rect element

The Arrow element work as a dynamic non-interactive element and also as a static element. It draws a rectangle with a selectable color. The element may listen to a parameter value and change the color of the rectangle according to the parameter value.

1.2.2.7 Gauge element

The gauge element is an non interactive element and shows a numeric parameter value as a horizontal bar in an entry field like frame. The gauge element is capable to adjust the scale factor for the gauge automatically from the parameter's range definition. Alternatively the scale parameters may set explicitly.

Image below shows the gauge elements with different type of element properties.

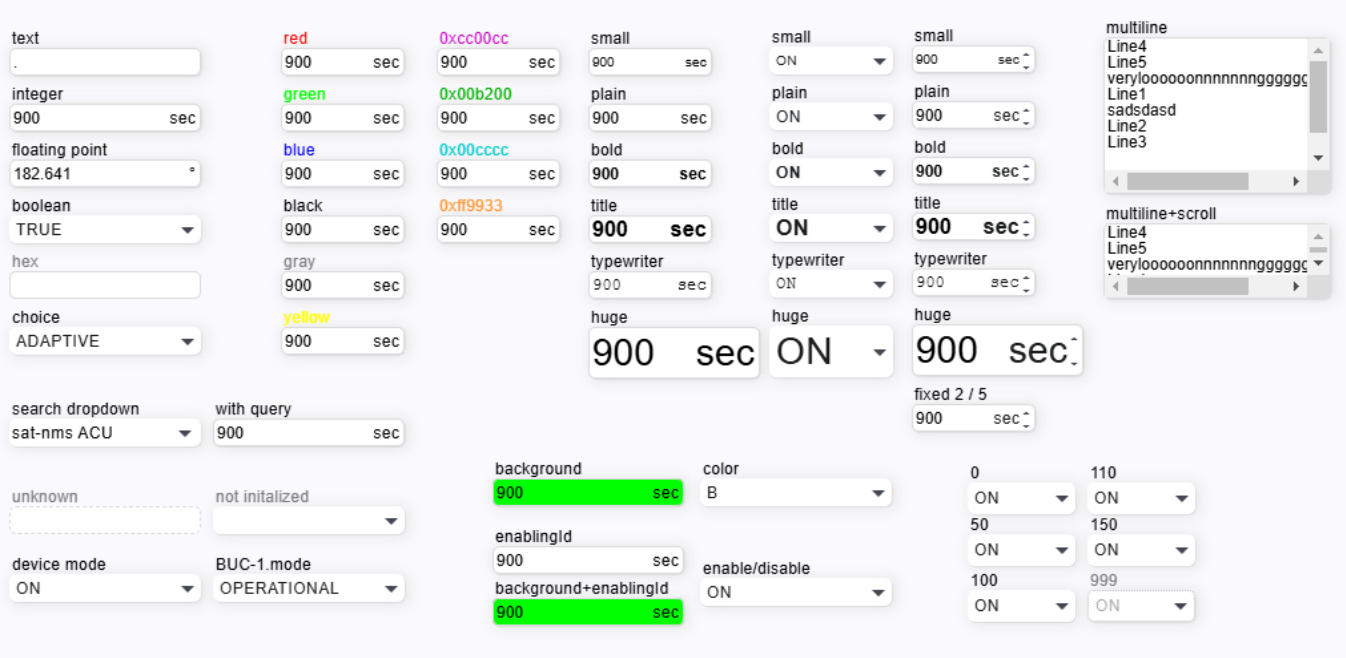


1.2.2.8 Thumbnail element

1.2.2.9 Parameter element

The ParameterElement is the common component to display and edit most types of M&C parameters. Depending on the data type of the parameter (the data type is detected automatically) the parameter elements appears as textual / numeric entry field, choice box or as display field for read only parameters.

In the image below are the all variants of parameter element.



Widget Variants: Depending on the type of parameter and on the*height* parameter there are different widget types associated with the ParameterElement. As the parameter type is not known at the time the screen definition is read, the decision what widget type shall be used must be done after the parameter type description has been received from the server.

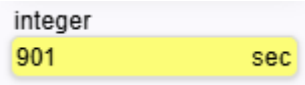
Parameter Type	***height < 40***	***height >= 40***
Text	single line entry field	multi line entry field, scrollable if text does not fit into the field
Numeric	single line entry field	single line entry field
Enum/Choice	drop down or combo box	scrollable list selection
r/o Text	single line display	multi line display, scrollable if text does not fit into the field
r/o Numeric	single line display	single line display
r/o Enum/Choice	single line display	single line display

Spin Buttons: With *useSpinButtons* set 'true', the ParameterElement shows spin buttons with editable numeric values. The spin buttons allow to increment/decrement the value by clicking on them. By default, a spin button click increments or decrements the lowest significant digit

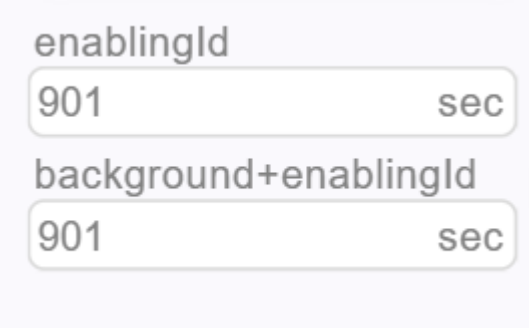
shown in the entry field. With the shift key hold down, the effective increment is x10. The above applies if the *spinSmallIncrement* / *spinLargeIncrement* properties are empty. If set, these values override the defaults.

Unsaved changes

If you have changed the value of any parameter element, the background of the input field turns yellow. As soon as you have saved the changes by pressing the Enter key or leaving the input field, the background color of the input field returns to normal.



Element disabled

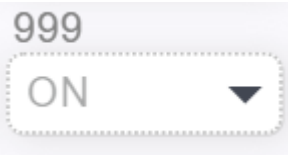


Element readonly

Readonly elements is displayed with dashed border with grey text color.

Element disabled because of low privilege level

Elements is displayed with dotted border with grey text color.



1.2.2.10 Parameter button element

The parameter button element is an interactive element and a button which sends a parameter value if pressed. A frequently used application for the parameter button is a RF-OFF button which sends a "tx.on=OFF" to a certain device. Beside this, a parameter button also may be programmed to play a parameter setting macro.

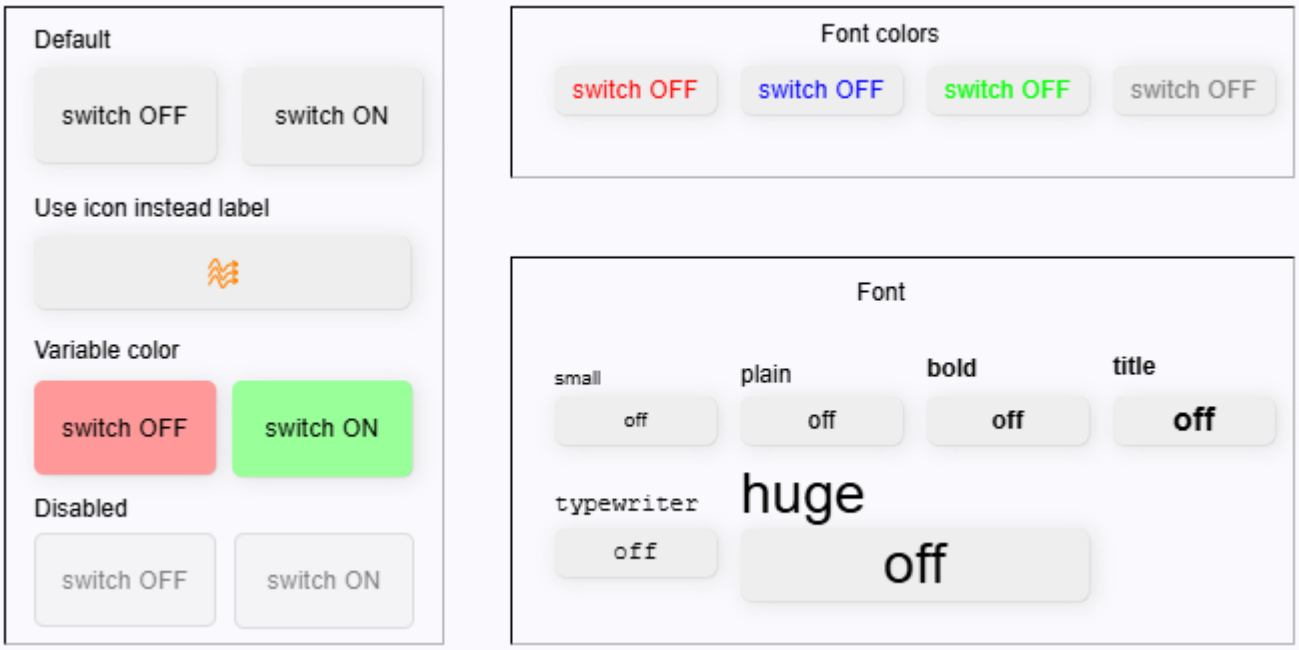
The parameter button element never uses a button label and an icon at the same time. Either

icon or label is an empty string.

If no parameter value is set, the parameter button element sends the button label or the icon name as the parameter value when clicked.

Macro Buttons

The MacroButton is a special version of the parameter button element. A*isMacroButton = true* marks a parameter button element to be a MacroButton. In this case the 'id' field contains the name of the M&C where to play the macro and the macro name in this case, separated by a period.



1.2.2.11 Latching button element

The latching button element works much like the[parameter button element](#) described earlier in this document, but is specialized to show and control an enumeration parameter which knows exactly two states (e.g. on/off or true/false).

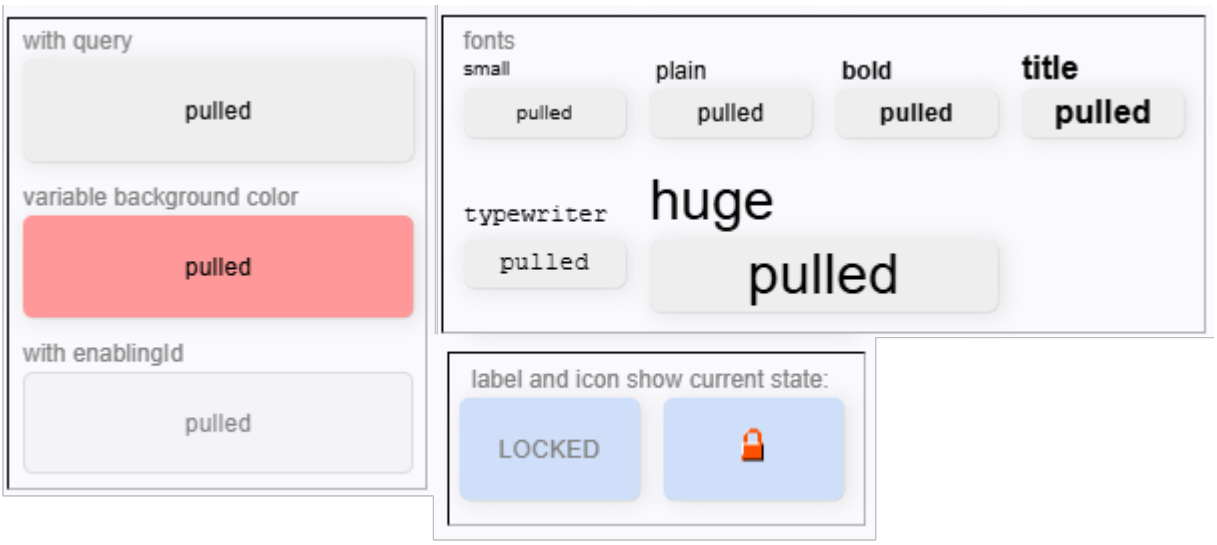
When the operator changes the state of the button by clicking it once, the latching button sends the 'other' parameter value to the device. On the other hand, if some other instance in the system changes the parameter state, the latching button recognizes this and changes the up/down state of the button accordingly.

Like the parameter button, the latching button may be labeled with text or an image. To reflect the actual state, the latching button always is configured with two text string or two image names which are shown according to the actual parameter value.

The latching button element never uses a button label and an icon at the same time. Either iconUp / iconDown or labelUp / labelDown contain empty strings.

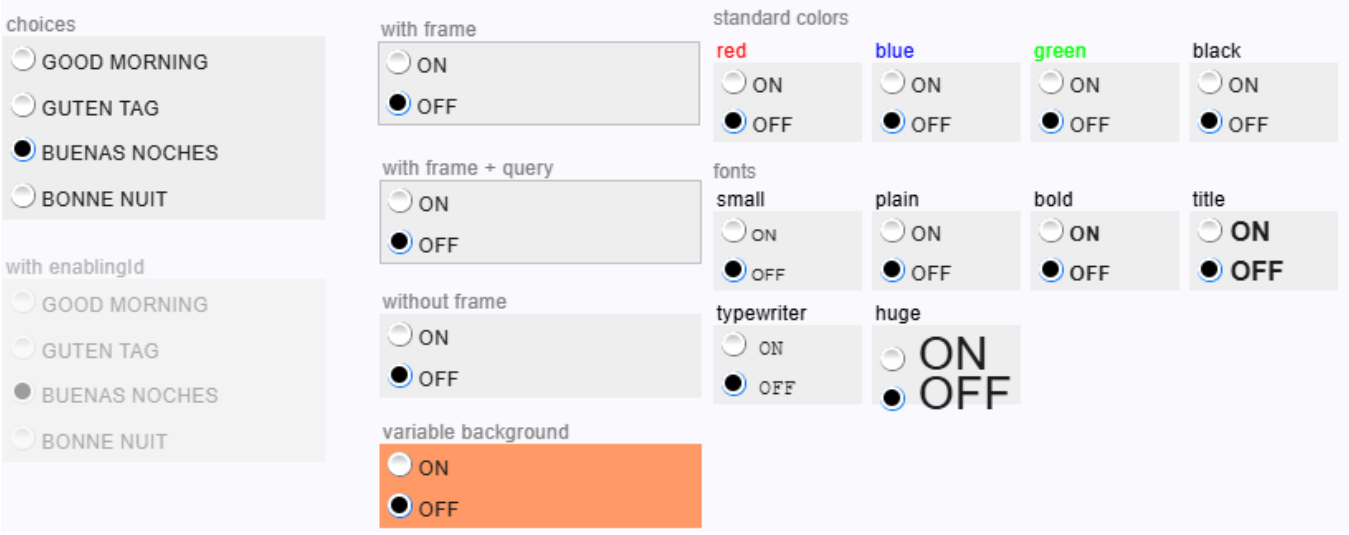
The valueUp and valueDown values are not only sent when the button is pressed or released.

They also are used to set the button state when a parameter value is received though id: If the value matches valueDown the button goes to 'pressed' state, in all other cases the button gets released. Labels or icons change an this moment according to the new state.



1.2.2.12 Radio button element

The radio button element is a component to display and edit CHOICE type M&C parameters as a number of radio buttons. Depending on the height of the element, radio buttons are positioned in a row or in a column (height<=40 means position horizontally). The radio buttons are labeled with the choices of the parameter, there are as many radio buttons as choices in the parameter range.



1.2.2.13 Button element

The button element creates a button which launches another user interface screen if pressed. The screen to be launched may be another user defined screen or a predefined one.

The *action* field of the ButtonElement defines what the button will do when clicked by the operator. The list below shows all known values for *action*, the meaning of this and a description of the parameters *par1* and *par2* which will have different meanings for particular action.

CHILD-SCREEN

Launches a new browser tab or window showing the user screen referenced with*par1*.

- *par1:* The name of the user screen to show.
- *par2:* null
- *par3:* null

REPLACE-SCREEN

Replaces the actual user screen by the one referenced with*par1*.

- *par1:* The name of the user screen to show.
- *par2:* null
- *par3:* null

LOAD-PRESET

Launches a "Load Preset" dialog which lets the operator select and apply a device preset from a list of presets which are defined for this particular type of device. Device presets are local to each M&C instance, have to be loaded and applied from there.

- *par1:* The name of the device to which the preset shall be applied to. The device name has the name of the M&C prepended where it is controlled. Example: `MYMNC.MYDEVICE` (must be set in the screen editor this way).
- *par2:* The name of the driver of this device.
- *par3:* An option search pattern to filter the list of displayed presets. All presets containing the given string (not case sensitive compare) shall be shown. If *par3* is null, all preset for the given device / driver combination shall be shown.

FREC-VIEW

Launches a File-Recorder view window. This window shows the data recorded by the File-Recorder device referenced with *par1* or the live data provided by this device.

- *par1:* The name of the File-Recorder device. The device name has the name of the M&C prepended where it is controlled. Example: `MYMNC.MY-FREC` (must be set in the screen editor this way). In the device screen of the file recorder, the special device name "." denotes *this* device.
- *par2:* The file recorder view preset number (0..7) to be applied. May be null, in this case no stored settings are applied.
- *par3:* null

SPECTR-VIEW

Launches a Spectrum Display window. This window in fact is a device screen of the CSM-Spectrum-Analyzer device.

- *par1:* The name of the spectrum analyzer device. The device name has the name of the M&C prepended where it is controlled. Example: `MYMNC.MY-FREC` (must be set in the screen editor this way).
- *par2:* A comma separated list of message-id/value pairs. Within each pair the message-id is separated from the value by one space character. Message ids are fully qualified, starting with the M&C name (must be set in the screen editor this way). The Spectrum Display window shall parse this list and send every message defined in the list with a poke call to the backend. This macro-like function is used to initialize the spectrum analyzer or to switch its input when the window is launched.
- *par3:* null

BROWSER-VIEW

Opens a new Browser window and displays a given URL in this window. This function is used to invoke the sat-nms online help and to launch the Web-GUI of certain devices.

- *par1:* The URL to show. Before launching the browser window, some replacements have to be done on the URL string:
  - If *par1* is a string consisting only of 4 decimal digits, this is a sat-nms online help topic number and the string must be expanded to the full URL from where this topic can be loaded by the browser.
  - If the ButtonElement is part of a device screen and the URL contains '@' characters, they have to be replaced with the (IP-) address of the device. A double '@@' escapes this behavior and gets replaced by a single '@' in the URL string.
- *par2:* null
- *par3:* null

TREE-NAVIGATE

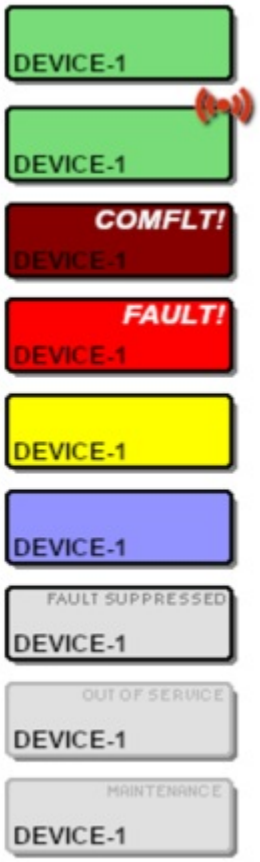
In a tree view UI this button navigates in the tree to the tree path referenced with *par1*. As the tree view UI with the WebUI is still t.b.d., this description should be considered as preliminary.

- *par1:* The tree view path to navigate to.
- *par2:* null
- *par3:* null

1.2.2.14 Device element

The device icon display element represents a device in the M&C user interface. It displays the status of the device by it's color/shape and gives access to the device details panel panel for this particular device by a mouse click.

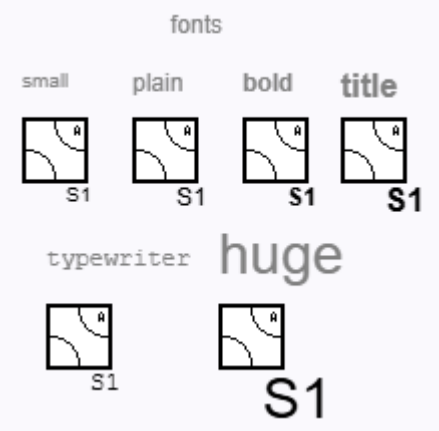
- Operational – ok
  - Device polling active, no alarm/fault
- Operational – ok, transmitting
  - Operational + ok and TX on
- Operational – CommFlt
  - No response from equipment
- Operational – fault
  - Device polling active, alarm/fault active
- Operational – warning
  - Device polling active, warning active
- Redundant unit
  - Operational + ok, Standby unit in a redundancy setup
- Fault-Suppressed
  - Device polling active, faults will be ignored
- Out-Of-Service
  - No polling, no controlling possible
- Maintenance
  - No polling, no controlling possible



(User defined device icons set with different color schemes are available)

1.2.2.15 Switch element

The switch element is a special version of the device element which may be used to visualize the position of a switch in a user interface screen designed as a block diagram. The switch icon has all capabilities of a plain device icon display element. The device details panel opens an you can toggle the position of switch.



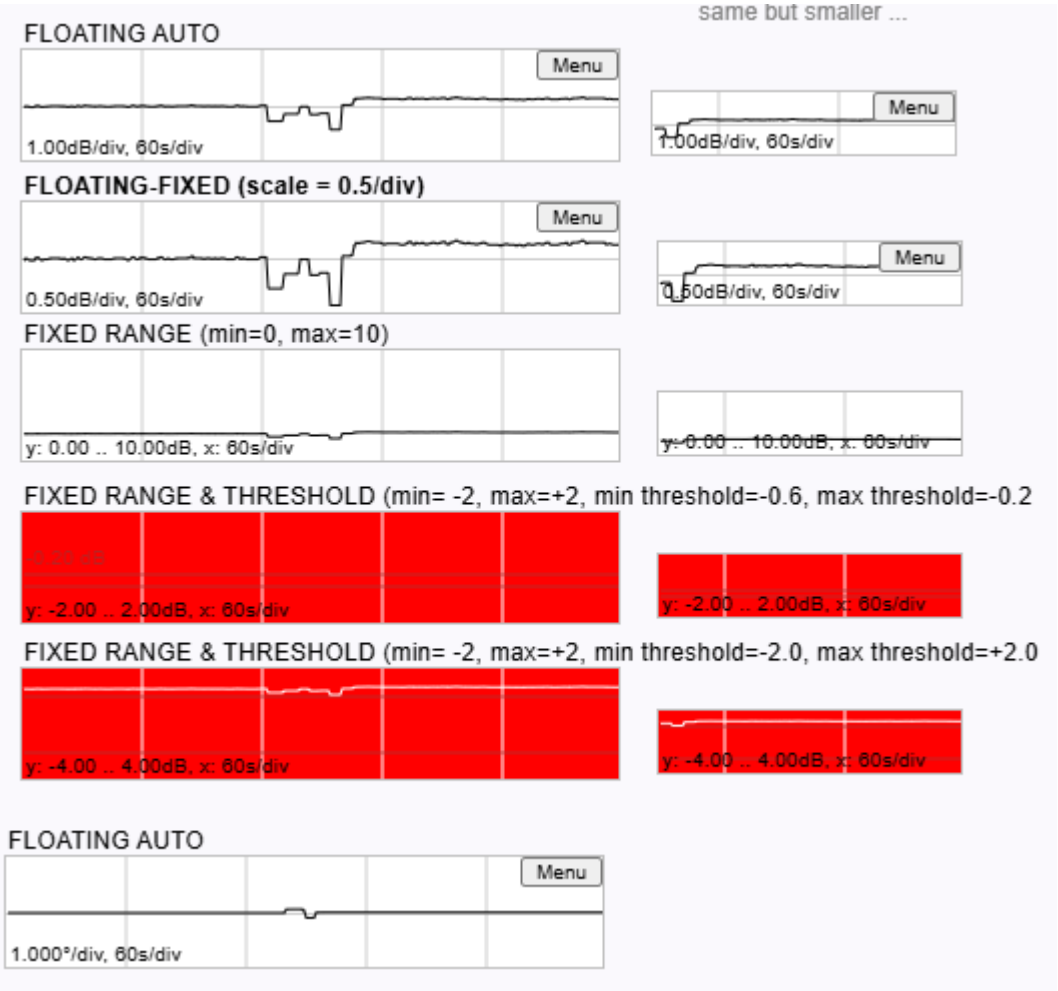
Icon Selection

The switch element displays one icon of a given set depending on the switch position and the state of the switch device. For this the SwitchElement appends a '-' character, a 2-character status code and the suffix '.png' to the icon name given in *icon* in order to ge the file name to load / display:

1.2.2.16 Chart element

The chart element shows a strip chart of a numeric parameter. The chart element keeps a local history of the received values, advances with a constant speed of 1 pixel / second. The default y-scale is 1/division but may be changed by clicking to the chart with the right mouse button.

By default, the strip chart element lets the y-scale offset follow the displayed value that the recent measurement samples are shown in the diagram. This behavior is optimized for applications where the strip chart shall indicate a 'trend' for the displayed value, using an element height of only 50 pixels or less.



Display Modes

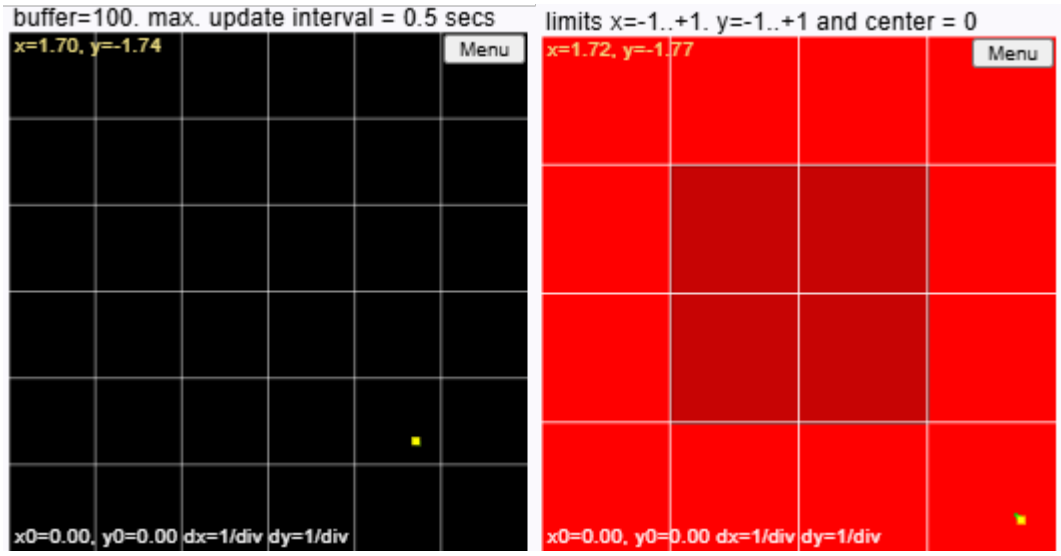
The ChartElement uses different display and scaling modes, depending on the display mode defined in *mode*. The table below lists the defined display modes an their behavior.

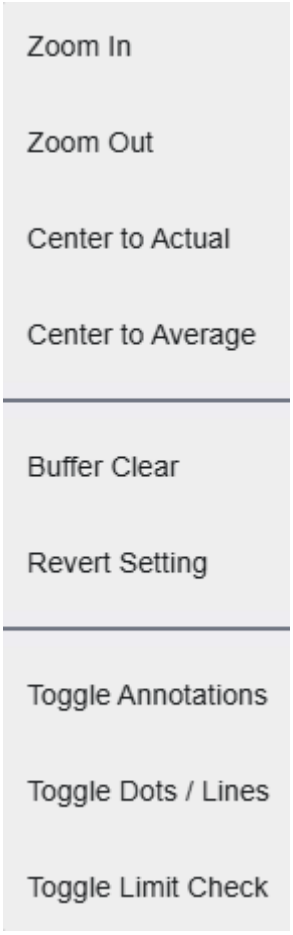
mode	**Description**
FLOATING-AUTO	Does a full autoscale. The y-offset of the strip chart is set that the newest value displayed appers at the middle of the y axis. The chart y-scale is evaluated in a 1-2-5 raster to the finest scale that allows all points in the history to be displayed in the chart area. All scaling parameters are ignored.
FLOATING-FIXED	Evaluates the y-offset like in **FLOATING-AUTO**, but applies a fixed y-scale as defined in *scale*. The *scale* value is 1/div and chart height is assumed as 2 divisions. So, the top line of the chart corresponds to y-offset + *scale*, the bottom line to y-offset -*scale*.
FIXED	Sets a fixed y-range from the *minValue* / *maxValue* parameters.

mode	**Description**
FIXED-THRESHOLD	Like **FIXED**, but also checks every new value against the *minThreshold* / *maxThreshold* limits. If outside the limits, the chart background turns to red.

1.2.2.17 XY chart element

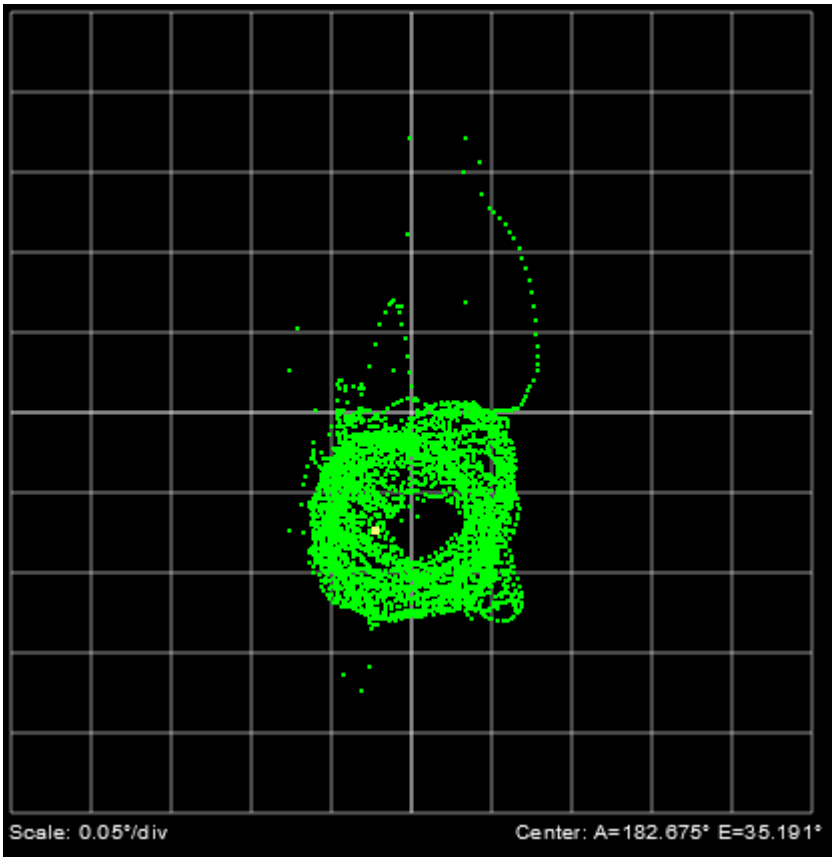
This element shows the relation of two numeric variables in an X/Y diagram, featuring a 'trace' which shows the recent history of the values with a configurable depth. The update rate, the diagram scaling and much more is configurable with this screen element.

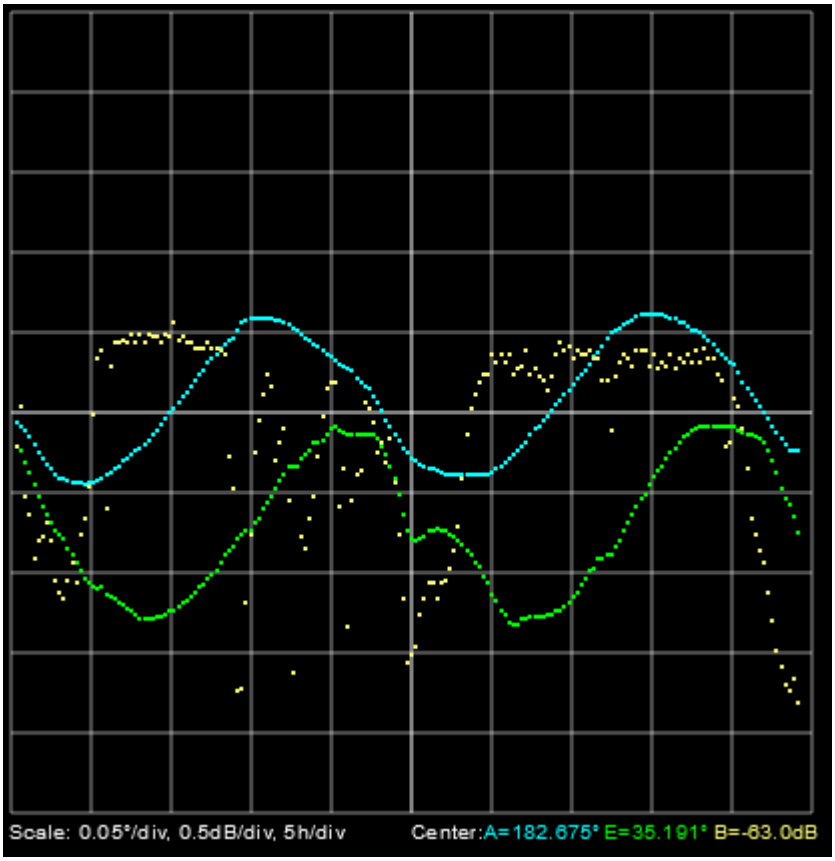




1.2.2.18 AzEl element

The AzElElement shows the tracking history of an antenna controller as a cloud of points in a elevation over azimuth coordinate system. Actually only SatService antenna controllers provide the tracking history data for this screen element.


Scale: 0.05°/div
Center: A=182.675° E=35.191°

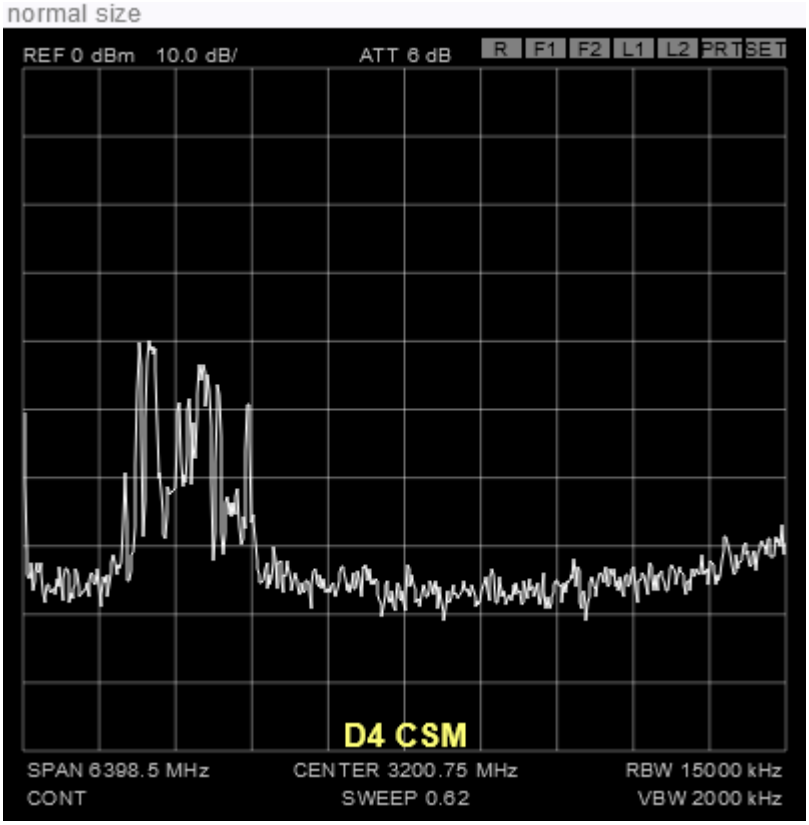

Scale: 0.05°/div, 0.5dB/div, 5h/div
Center:A=182.675° E=35.191° B=-63.0dB

1.2.2.19 Spectrum element

The spectrum element embeds the spectrum display of a spectrum analyzer device in the screen. Actually, only the CSM-Spectrum-Analyzer device may be used with the spectrum element.

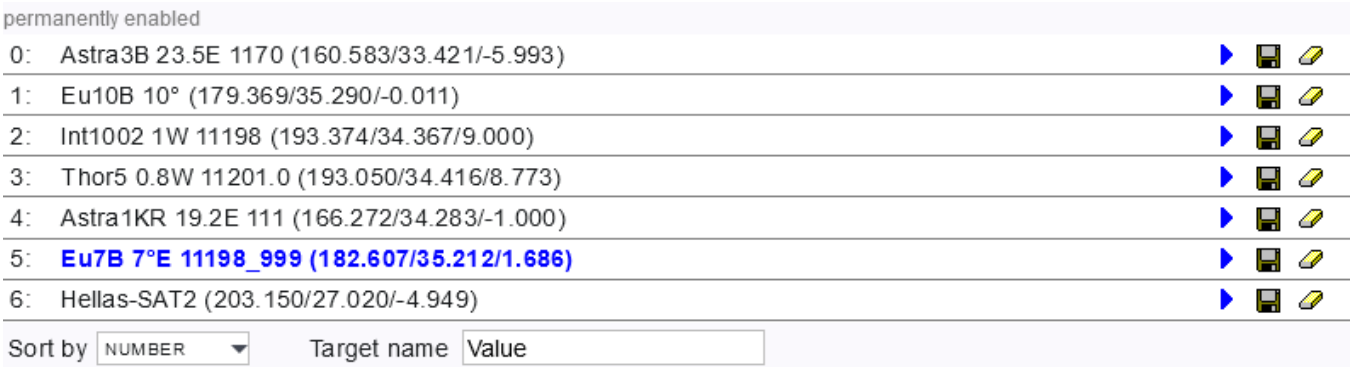
The spectrum element subscribes for a variety of parameter of the spectrum analyzer device to display its settings in the diagram area. It also permits to command some aspects of the spectrum analyzer device like the marker position. The spectrum data itself is read by subscribing for the 'trace' parameter of the device. This returns the spectrum data as a SpectrumTrace with each sweep of the spectrum analyzer. A complete description of the function of the spectrum element is given in a separate document.

normal size



1.2.2.20 Target list element

The target list element embeds the list of targets of a SatService-ACU-ODM antenna controller in the screen. Targets may be recalled (which moves the antenna to the stored position and sets the tracking parameters associated with this target), saved or deleted.



Device Name Indirection

The *id* parameter is interpreted differently depending on the context where the ODM Target List screen element resides:

- When placed in a user defined screen or in the main screen of the application, *id* is the name of the ODM device it shall refer to.
- When placed in the device screen of another device which defines a configuration variable with the antenna controller's device name, *id* is the name of this configuration variable and the name of the ODM device is derived from the content of this variable.
- Finally, when used in the device screen of the ODM device itself, *id* is '@'.

Target List Parsing

The target list element gets its information from a parameter 'target.list' the ODM device provides for this purpose. This variable contains the target list as a one line string with the target definitions appearing at fixed character positions.

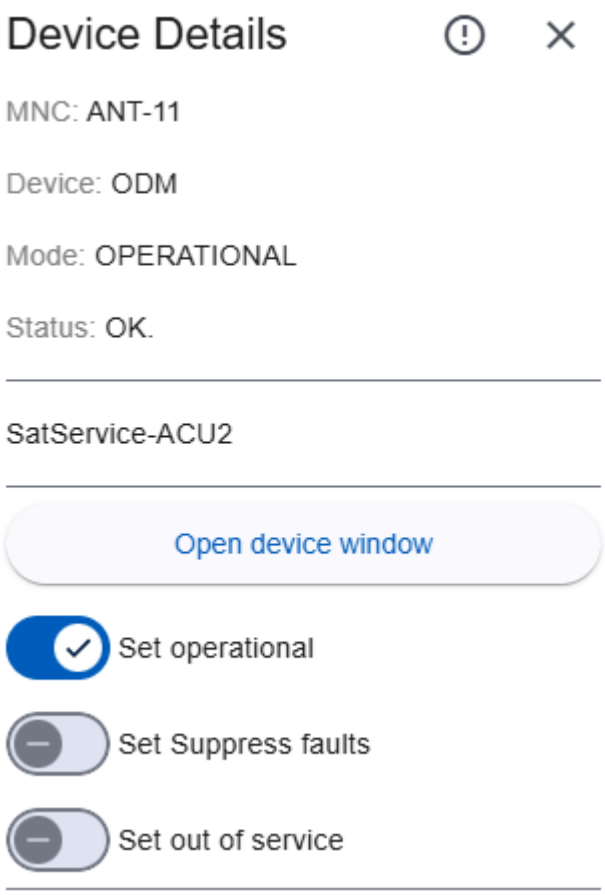
Each target definition contains the target name and the azimuth / elevation / polarization angles. The target number is defined implicitly from the position of the target in the complete string. The format of each target definition is as follows:

```
target name (azimuth/elevation/polarization)
```

This string is padded with spaces to 45 characters length. With target numbers starting at 0, you can access a particular target in the string at position *n*45* with a length of 45 characters.

1.2.3 Device details panel

The device details panel shows you the device information for a device. It is displayed on the right-hand side of the window on clicking e.g. on display element device icon. You can also perform some quick actions here, e.g. put the device into operational or out of service mode.



This panel will open if:

- click on switch icon from main screen
- clicking device in the treeview
- selecting a device from the notification panel
- selection a device from the device list page

In the title of this panel the following icons are available:

icon	description
	Click opens directly the fault page of the device. If there is any fault or warning the icon color will be red (alarm or fault) or yellow (warning) otherwise it will be gray.
	Close the device panel. You can also click outside the panel to close the panel.

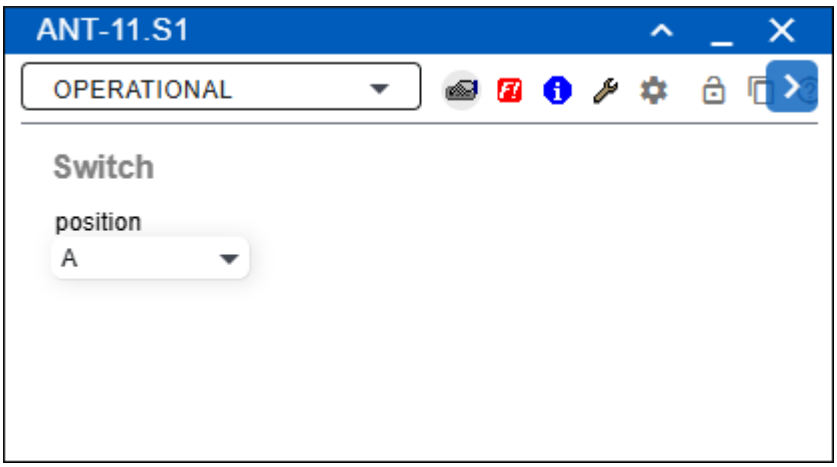
Details

- **MNC**: name of MNC where the device belongs to
- **Device**: name of the device
- **Mode**: current operations mode of the device
- **Status**: Current summary status of the device (`MNC.DEVICE.fault`)

    - **NO.**: No fault
    - **Summary FAULT**: text displayed in red color.
    - **WARNING**: text displayed in yellow color.
- **Driver name**: name of the device driver
- **Comment**: shows the device comment if set in the device config page and available for this kind of driver (`MNC.DEVICE.config.deviceComment`)
- **On Air state** shows `ON AIR` if the a devices provides this information (`MNC.DEVICE.info.signal.on`)
- **Open device window**: open device window for the device
- **Change mode switches**: change the operation mode, select between
    - OPERATIONAL: enable communcation between MNC and equipment
    - FAULT-SUPPRESSED: suppresses summary fault or warning, but stays operational
    - OUT-OF-SERVICE: disables the communication between MNC and equipment
    - MAINTENANCE: disables the communication between MNC and equipment and marks the device to be in maintenance. This triggers the inventory system if enabled.
- **Toggle switch**: If the selected device is a switch element, a toggle button is displayed. You can toggle the position of the switch `A -> B` or `B -> A`

1.3 Device window

The M&C offers a device window for each type of equipment it supports. Device windows can be launched by device details panel, device list. It shows all parameters read from the device and permits to alter each writable parameter. For clearance, the parameters are grouped to pages, you can switch between the pages using the tool-bar.



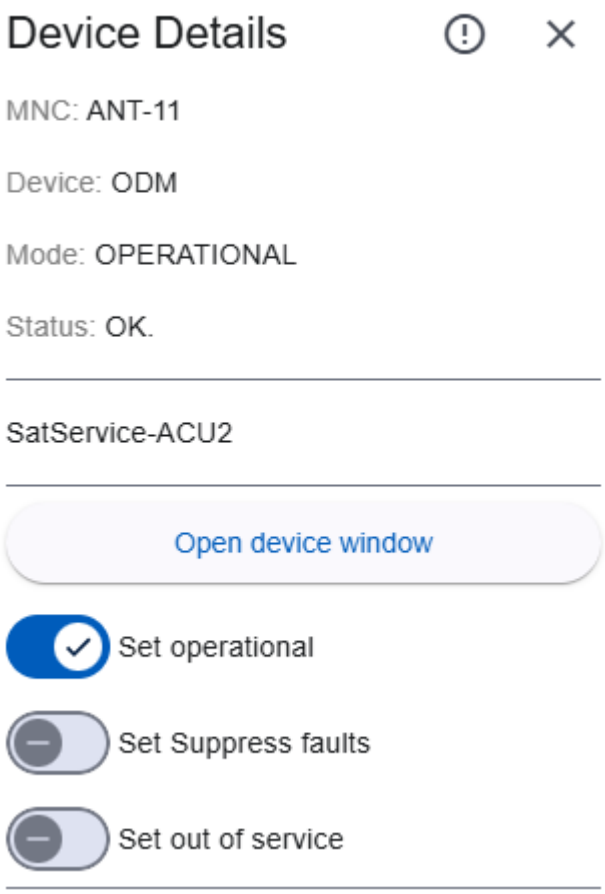
Functionality

- **Drag and drop**: Device window can be dragged from header and dropped anywhere in browser window.
- **Resize device window**: You can resize the window from every side expect top and top corners.
- **Scroll buttons**: If the toolbar menu is larger than the device window, the scroll button is displayed on the right or left side, depending on where the content is hidden.

- **Duplicate window**: The same device window can also be duplicated, which means it could be opened more the one time.
- **Debug info**: On mouse hover element details are displayed on bottom left side corner. It should be activated from 'User setting'
- **Navigates through pages**: Different type of page can be open from toolbar. Details of device window are described under 'Device window'.

1.3.1 Device details panel

The device details panel shows you the device information for a device. It is displayed on the right-hand side of the window on clicking e.g. on display element device icon. You can also perform some quick actions here, e.g. put the device into operational or out of service mode.



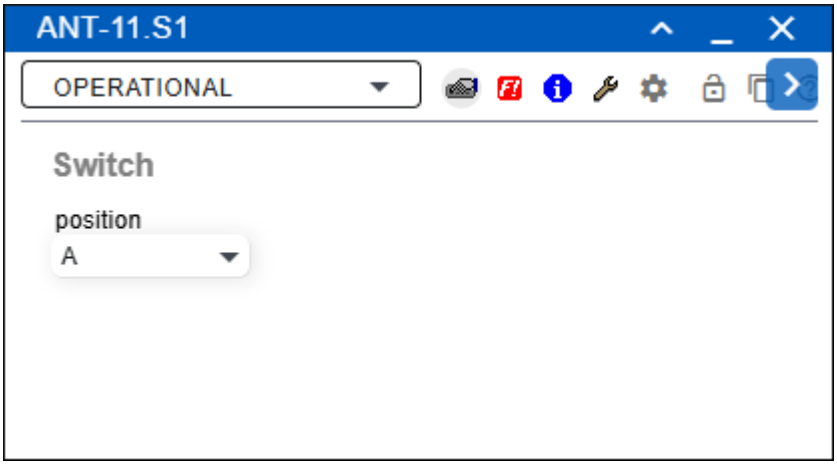
Top

- **Device details**: Title of the panel.
- **Info icon**: On click it opens a device window directly by Faults page. If there is any fault or warning the icon color will be red (alarm or fault) or yellow (warning) otherwise it will be black.
- **Close**: Close the device panel. You can also click outside the panel to close the panel.

Details

- **MNC**: The MNC name of the device.
- **Device**: The name of the device.
- **Mode**: Current mode of the device.
- **Status**: Current status (fault) of the device. "MNC.Devicename.fault" is used in this case.
  - **NO.**: No fault
  - **Summary FAULT**: Text displayed in red color.
  - **WARNING**: Text displayed in yellow color.
- **Device comment**: A device comment saved the device.
- **Open device window**: Open device window for the device.
- **Change mode switches**: By clicking on the mode set the device to the selected mode.
- **Toggle switch**: If the selected device is a display switch element, a toggle button is displayed. You can toggle the position of the switch (A -> B or B -> A)

1.3.2 Device window



The device window is a floating window, i.e. you can drag it from the header and drop it anywhere in the browser window. It has 3 main components:

Header

If the color of the header is blue, as shown in the image above, the device has no errors. If the device has an fault, the fault description (fault, warning, etc.) is displayed next to the header title and the background color of the header is also changed according to the fault (dark red on fault value "UNDEF!" and "COMFLT!", yellow on "Summary FAULT" and light red on "FAULT").

- **Title**: MNC name and device name of the device is displayed on right side of device window.
- **Roll up or down**: It roll up or down the window.
- **Minimize or Maximize window**: It minimizes the window in the bottom right-hand corner of the browser window and if window is minimized it maximizes the window to the last known position.
- **Close**: Close the device window.

Toolbar: Various devices have different options for the toolbar, but most have the common options.

- **Mode selector dropdown**: The operation mode selector displays and sets the device operation mode. Device operation modes are:
  - **OPERATIONAL**: This is the normal operation mode.
  - **FAULT-SUPPRESSED**: The M&C server normally polls and controls the device, but does not generate a device summary fault if the is a fault condition with this unit.
  - **OUT-OF-SERVICE** The M&C server does not try to communicate with the device at all. If you alter parameters of a device in this mode, this has no effect.
- : Opens a Load Device Preset dialog which lets you select a formerly stored device preset and apply the stored setting to the device. The chapter 'Preset editor' gives more information about device presets and how to handle them.
- : Click on *save* icon opens a Store Device Preset dialog which lets you store the actual device settings at the server for later retrieval.
- : Switches the window to the 'faults' page. This page displays all fault flags the software knows about this device.
- : Switches the window to the 'info' page. This page gives some information about the type of equipment controlled.
- : Switches the window to the 'maintenance' page. This page lets you set some configuration parameters and gives access to the 'low level interface' of the device.
- : Config page can be open by *settings* icon from toolbar.
- : Locks the operation of the device (through lock icon) that no other user can change device settings. See paragraph device locking below for details. If locked, the button shows a red lock.
- : Duplicates / clones this window. This is useful if you want to have more than one instance of a device window open at a time.
- **Help**: Launches the web browser with the help page for this individual device type. For a list of device types supported by the software see the 'Device Driver Reference'.

Device locking

Clicking the *settings* icon button once locks the operation of the device. The button icon changes it's color to red . If the device is locked, no other user may change devices settings. Locking is done along the user name, hence if you are logged in a second time an another place, you can operate the device from there as well.

A second click to the lock button releases the lock. Only the operator who set the lock may release it. This need not to be done at the same place where the lock was set bot you must be logged in with the same user name.

Administrators (with a privilege level of 150 or above) may release the lock in any case, also a restart of the sat-nms M&C server releases all pending device locks.

Content

Writable parameters are shown below the toolbar, read only parameters appear with the standard gray background of the window. Choice parameters are changed immediately when you alter the selection. If you edit a text parameter, the field is shown with a yellow background. Once you press ENTER or you leave the field, the changed value gets transferred

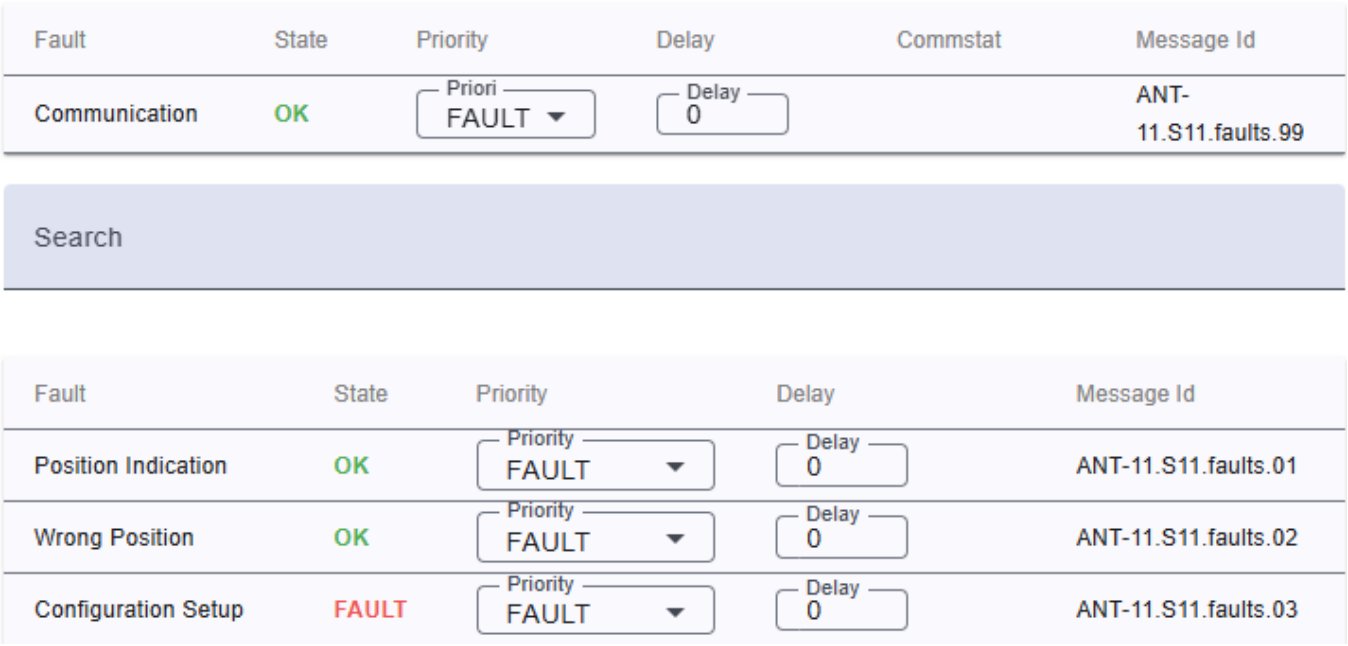
to the device. To cancel a parameter setting press ESC. The old value gets restored in the field and the background color returns to light gray. No parameter value is sent to the device in this case.

1.3.2.1 Device window pages

For a list of device types supported by the software see the'Device Driver Reference'.

- Fault page
- Info page
- Maintenance page
- Config page

1.3.2.1.1 Fault page



Moreover, you can view and change the event priority for each particular fault flag:

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

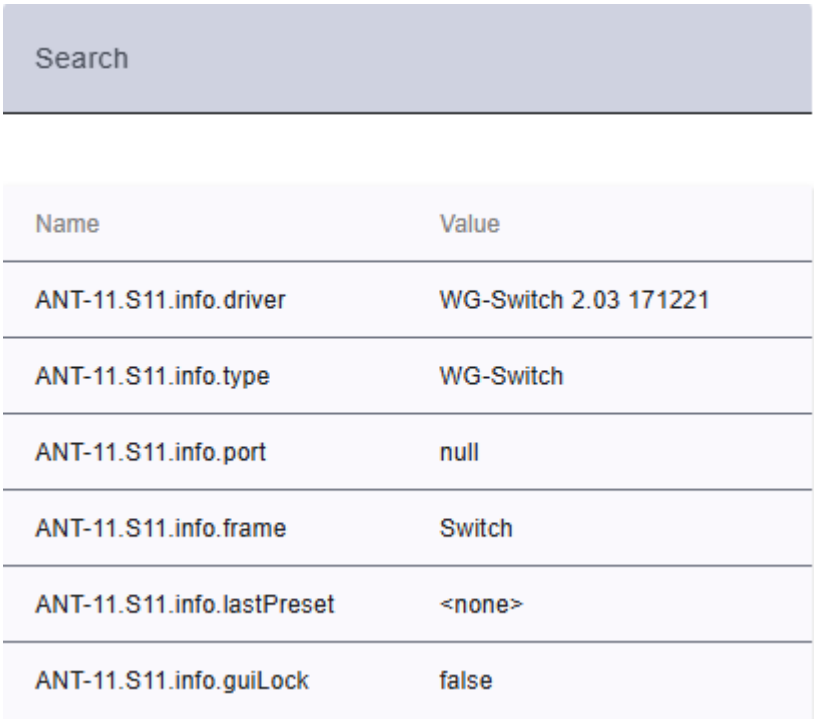
- **Fault**: The name of the fault.
- **State**: State or fault of device.
- **Priority**: Priority of the fault.
  - **OFF**: This flag is completely suppressed.

    - **INFO**: This flag is signaled as an 'informational' event.
    - **WARNING**: This flag is signaled as a 'warning' event.
    - **FAULT**: This flag is signaled as a 'fault' event.
    - **ALARM**: This flag is signaled as an 'alarm' event.
- **Delay**: Delay on trigger alarm.
- **Commstat**: (Communication status) shows if the description of fault.
- **Message id**: Message id or fault flags.

Search bar: Allows users to filter events by keywords.

1.3.2.1.2 Info page

This page gives information about the device. It is readonly page.



Search bar: Allows users to filter events by keywords.

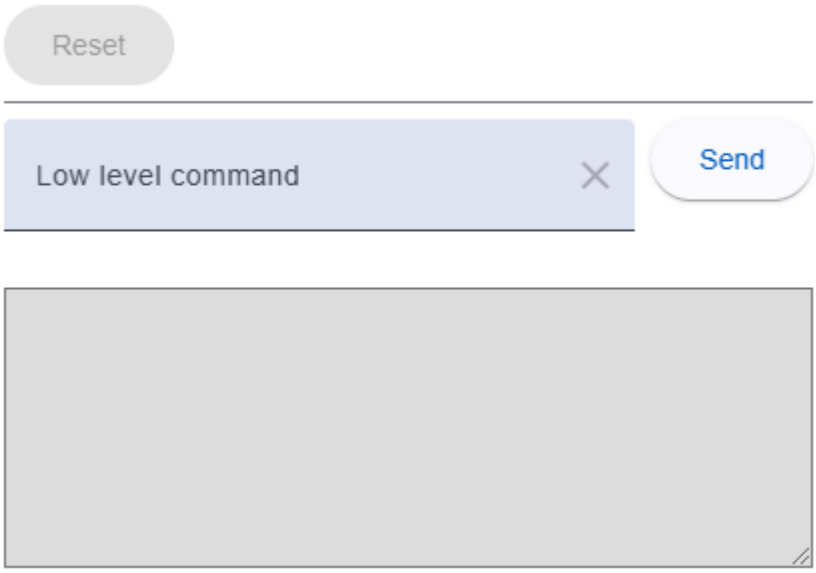
Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Name**: Message id or variables defined by this device driver.
- **Value**: Value of message id or variables defined by this device driver.

1.3.2.1.3 Maintenance page



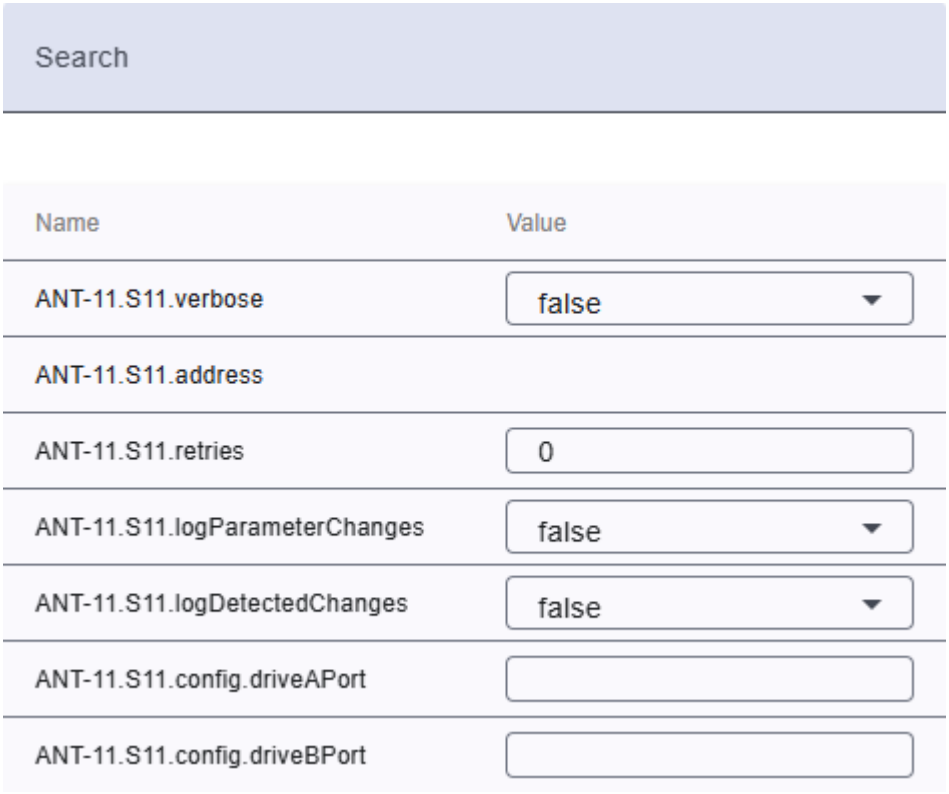
Reset: Resets the device.

Low level command: Command to check check the value.

Send: Send the low level command.

Text area: Shows the returned value of command.

1.3.2.1.4 Config page



Search bar: Allows users to filter events by keywords.

Header row

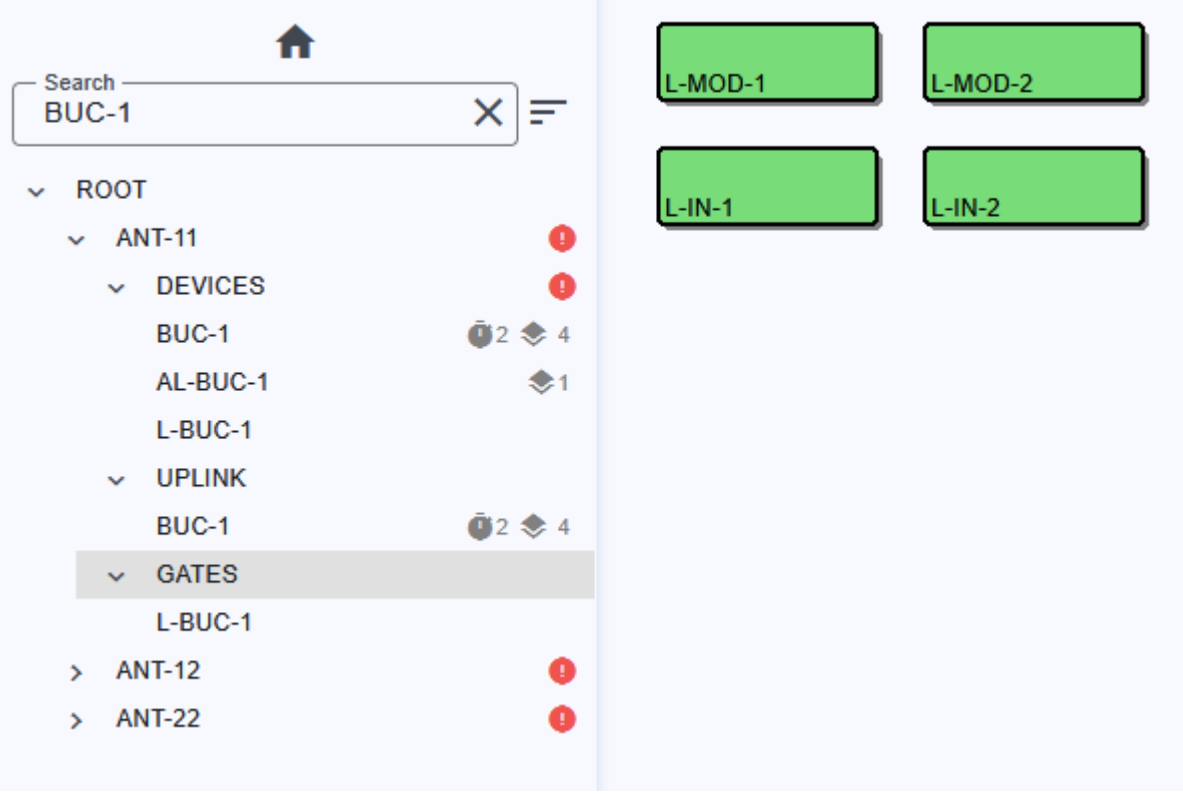
- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Name**: Configurable parameters.
- **Value**: Value of the parameters. The values can be changed by clicking on input fields. After you have changed the value in the input fields, simply press the `enter` key or click with the mouse outside the input field to send the values. Press the `esc` key to discard or undo changes. It works only with input fields not with dropdowns

1.4 Treeview

The so call Treeview provides a list of devices of all connected MNC system organized in a tree. It can be accessed from the sidebar *tree icon* below the logo. You can arrange the devices and sub-trees in the Treeview Editor



- **Home icon**: Hide the treeview.
- **Search**: filter devices by name
- **Sort**: Tree can be sorted by

    - ascending device name
    - descending device name
    - default: as definded in TreeView Editor (natural order)

The tree shows all connected MNC's as top node and the configured subsystems. Each node can have one or more devices attached.

Each device node is marked with its fault state with icons

- no icon: ok
- grey icon: state cannot be determined
- yellow icon: device summary state is warning
- red icon: device summary state is fault or alarm

Subsystem nodes inherit the fault state from the subordinate elements, summed up from the devices and subsystems.

Devices with **masked** or **delayed** faults will additionally show the count of these faults.

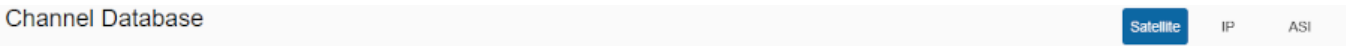
Functionality

- **>** : Expand the node.
- **<** : Collapse the node.
- **Click on node**: expands the node and will be load configured screen. If no screen for this subsystem is defined it shows device icons of all devices which belongs to the subsystem.
- **Click on device**: Opens device details panel on right hand side

1.5 Channel database

The Channel Database is a central store for receive and transmit channels. These settings are used to configure equipment for receiving or transmitting to a satellite or on an IP network (streaming).

The title bar provides access to the three different channel types:



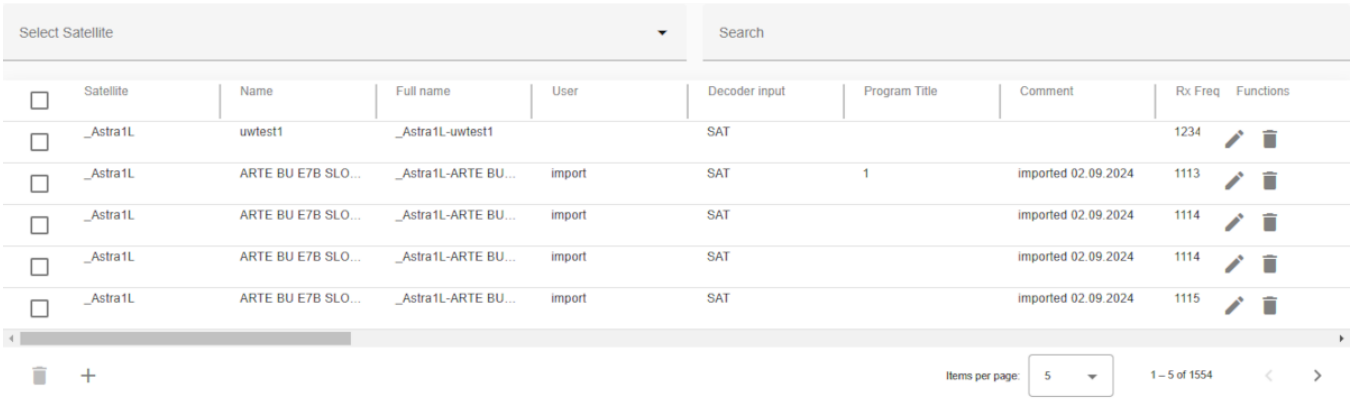
- Satellite channels (default)
    - satellite channels include parameters like frequency, modulation type
    - transmit and receiving via satellite is supported
    - basic audio/video settings are also part of these channels
- IP/Streaming channels
    - IP channels support various network streaming protocols like UDP or RTP
    - transmit and receiving via network is supported
    - basic audio/video settings are also part of these channels
- ASI channels
    - basically ASI channels are only to address the ASI inputs of IRDs
    - there are no specific settings on the ASI interface needed
    - basic audio/video settings are also part of these channels

You can choose which type of channels you want by clicking on the buttons at the top of this page.

On a system without installed SatDB or if the PostgreSQL Database is not reachable an error message will be display: Error DB not reachable. In this case, please check your database installation.

1.5.1 Satellite channels

The list of all satellite channels in the database. The table can be scrolled horizontally. Satellite and functions row are sticky.



Satellite channels define the common paramaters of receive equipment (e.g. IRDs, Demodulator) and transmit equipment (e.g. Modulators) for satellite transmission. Typically used for the contribution of newsfeeds or TV over satellite but not limited to. Each channel belongs to a satellite which needs to be configured in the Satellite Database.

To use this database you have to configure the corresponding Channel-Devices on the MNC server(s) which controlls the equipment.

For receive applications the following logical devices are available:

- RX-Channel-ByChannel
- RX-Channel-BySatellite
- RX-Channel-ActivationBased

For transmit applications the following logical devices are available:

- TX-Channel-ByChannel
- TX-Channel-BySatellite

These logical devices will retrieve the channel information directly from the central database. Please refer to the linked documentation for details how to setup and use the RX and TX Channel devices.

Search bars

- Located at the top of the table.

- Allows users to filter by:
  - *Satellite*: select one satellite from the list to display all related channels
  - *Keywords*: full-text search over all channels and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.
- You can arrange the width of an row by `click + hold + drag` near from the header name (grey border)

Table columns

The first column located at the far left of the table provides a checkbox to select one or more channels (rows) and perform the same operation on all selected channels.

- **Single Selection**: Click on a single checkbox to select an individual channel
- **Multiple Selection**: Click multiple checkboxes to select multiple channels.
- **Select all**: The checkbox in the header row allows you to select or deselect all channels on all pages.

The following function(s) are available:

Function	Icon	Description
delete		delete the selected channels from the database

The last column located at the far right of the tables provides buttons to run actions on the corresponding channel.

The following functions for managing a channel are `available` :

Function	Icon	Description
Delete		to delete the channel
Edit		modify/edit channel

The following buttons for global function(s) are available at the the bottom of the table:

Function	Icon	Description
Add		add a new channel

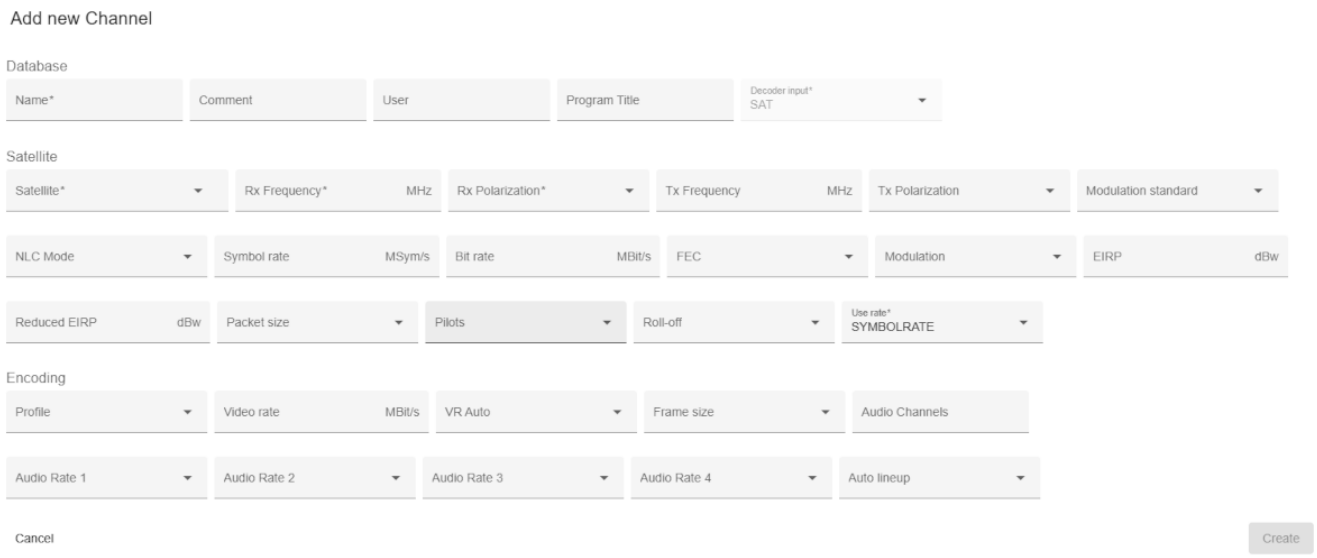
Function	Icon	Description
Delete		to delete all selected the channels
Page	Pagination controls	set the number of items displayed per page (e.g., 5, 10, or 25) and navigate between pages

The satellite channel table contains the following columns:

Column name	Description
Satellite	name of satellite
Name	user defined channel name
Full name	automatically generated full name (`satellite's name` + `-` + `Name`)
User	free text to enter a user name which is responsible for this database entry
Program title	name of the program transmitted or received with this channel
Comment	one line comment describing this satellite channel
Rx frequency	receive frequency in MHz.
Rx pol.	receive polarization
Tx frequency	transmit frequency in MHz
Tx pol.	transmit polarization
Mode	modulation standard
NLC mode	NLC (Non Linear Constellation) mode for NS4 modulation
Symbol rate	symbol rate in MSym/sec
FEC	FEC rate
Modulation	modulation type
Roll-off	roll off factor
Pilots	pilots on/off switch
Bit rate	data rate in MBit/sec
Use rate	selects the way the data rate is specified

Column name	Description
Packet size	packet size
Frame size	frame size
Video rate	video data rate in MBit/sec
VR auto	video rate auto switch
Profile	video encoding profile
EIRP	transmit EIRP in dBW
Reduced EIRP	reduced EIRP for line up in dBW
Auto lineup	configures automatic line up
Audio rate 1	audio channel 1 data rate
Audio rate 2	audio channel 2 data rate
Audio rate 3	audio channel 3 data rate
Audio rate 4	audio channel 4 data rate
Audio channels	Number of audio channels.

1.5.1.1 Add/Edit satellite channel dialog



The Add or Edit satellite channel dialog shows up on

- click on + button on the bottom toolbar
- click on  in the channel row

The dialog title clearly indicates whether you are creating a new channel or editing an existing one, ensuring clarity in the action being performed.

Required fields are marked with an asterisk `*`. Fields which you don't plan to use in your installation (e.g. TX settings if you only receive channels) can be can remain empty or on defaults. Certain setting will anyway only be applied to equipment if this is configured in the RX/TX-Channel devices.

Field	Description
Name*	user defined channel name, must be unique
Comment	describe this satellite channel
User	free text to enter a user name which is responsible for this database entry, must not match to a username of this M&C system
Program title	name of the program transmitted or received with this channel
Decoder input	*read-only* channel type
Satellite*	select a satellite name to which this channel belongs to
Rx frequency*	receive frequency in MHz (3 digits precision)
Rx polarization*	receive polarization, one of `X` (Horizontal), `Y` (Vertical), `L` (LHCP) or `R` (RHCP)
Tx frequency	transmit frequency in MHz (3 digits precision).
Tx polarization	transmit polarization, one of `X` (Horizontal), `Y` (Vertical), `L` (LHCP) or `R` (RHCP)
Modulation standard	DVB mode should be one of the option from the drop-down list.
NLC mode	enable (`ON`) or disable (`OFF`) NLC mode for NS4 modulations
Symbol rate	symbol rate in MSym/sec (4 digits precision)
Bit rate	data rate in MBit/sec (4 digits precision)
FEC	select FEC rate from drop-down list

Field	Description
Modulation	select modulation from drop-down list
EIRP	transmit EIRP in dBW (2 digits precision)
Reduced EIRP	reduced EIRP for line-up in dBW (2 digits precision)
Packet size	packet size, one of `188` or `204`
Pilots	enable (`ON`) or disable (`OFF`) pilots
Roll-off	select roll off factor from drop-down list
Use rate	selects the way the data rate is specified: by `SYMBOLRATE` (default) or by `BITRATE` . Make sure that the corresponding rate is also stored with this channel.
Profile	select video encoding profile from drop-down list
Video rate	video data rate in MBit/sec (4 digits precision)
VR auto	video rate auto switch, one of `FIXED` or `AUTO`
Frame size	frame size, one of `SHORT` or `NORMAL`
Audio channels	number of audio channels between 1-4
Audio rate 1	audio channel 1 data rate select from drop-down list
Audio rate 2	audio channel 2 data rate select from drop-down list
Audio rate 3	audio channel 3 data rate select from drop-down list
Audio rate 4	audio channel 4 data rate select from drop-down list
Auto lineup	enable (`ON`) or disable (`OFF`) automatic line up

The following actions are `available` :

Function	Description
Create	For new channel, this creates the channel with the provided details
Save	For existing channel, this saves modifications.
Cancel	Closes the dialog without saving

The form tests the input fields for validity and display hints in red in each field with wrong

input. If an error occurs in the input fields, the button Create/Save button is deactivated.

1.5.1.2 On delete confirmation dialog

The Delete confirmation dialog shows up on

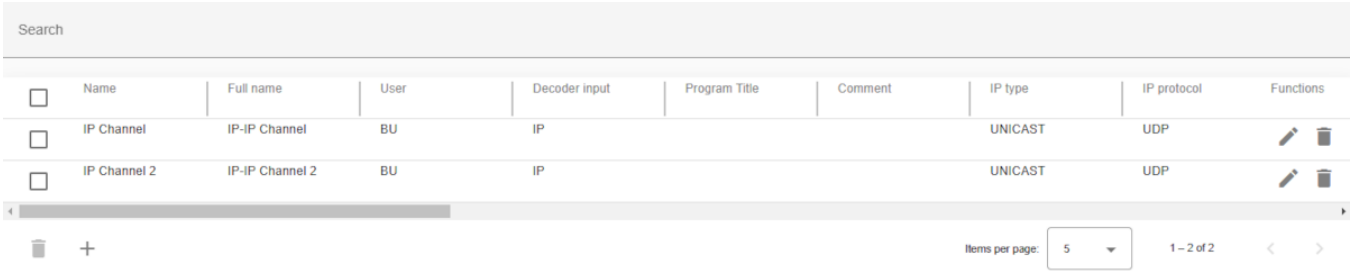
- click on in the table row on the bottom toolbar

The following actions are `available` :

Function	Description
Yes	Deletes the channel(s) permanently
Cancel	Cancels the deletion action

1.5.2 IP channels

The list of all IP / Streaming channels in the database. The table can be scrolled horizontally. Name and functions row are sticky.



IP channels define the common parameters for receiving and transmitting IP streams. Typically used in news contribution over Internet but not limited to. Each channel contains source and/or destination addresses and information of the used streaming protocol.

To use this database you have to configure the corresponding Channel-Devices on the MNC server(s) which controlls the equipment.

For receive applications the following logical devices are available:

- RX-Channel-ByChannel
- RX-Channel-BySatellite
- RX-Channel-ActivationBased

For transmit applications the following logical devices are available:

- TX-Channel-ByChannel
- TX-Channel-BySatellite

These logical devices will retrieve the channel information directly from the central database.

Please refer to the linked documentation for details how to setup and use the RX and TX Channel devices.

Search bars

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all channels and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.
- You can arrange the width of an row by `click + hold + drag` near from the header name (grey border)

Table columns

The first column located at the far left of the table provides a checkbox to select one or more channels (rows) and perform the same operation on all selected channels.

- **Single Selection**: Click on a single checkbox to select an individual channel
- **Multiple Selection**: Click multiple checkboxes to select multiple channels.
- **Select all**: The checkbox in the header row allows you to select or deselect all channels on all pages.

The following function(s) are available:

Function	Icon	Description
delete		delete the selected channels from the database

The last column located at the far right of the tables provides buttons to run actions on the corresponding channel.

The following functions for managing a channel are `available` :

Function	Icon	Description
Delete		to delete the channel
Edit		modify/edit channel

The following buttons for global function(s) are available at the the bottom of the table:

Function	Icon	Description

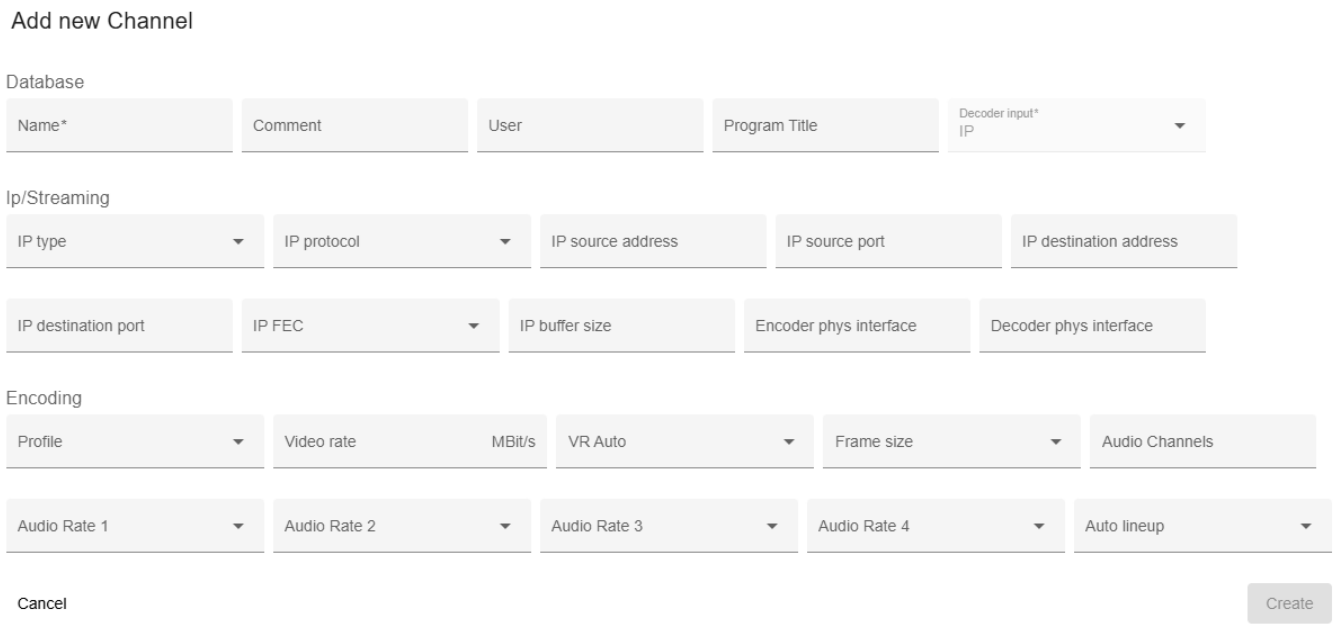
Function	Icon	Description
Add	+	add a new channel
Delete	🗑	to delete all selected the channels
Page	Pagination controls	set the number of items displayed per page (e.g., 5, 10, or 25) and navigate between pages

The IP channel table contains the following columns:

Column name	Description
Name	user defined channel name
Full name	automatically generated full name (IP + - + Name)
User	free text to enter a user name which is responsible for this database entry
Program title	name of the program transmitted or received with this channel
Comment	one line comment describing this satellite channel
IP type	IP addressing type
IP protocol	IP streaming protocol
IP source address	Source IP address
IP source port	Source port number
IP destination address	Destination IP address
IP destination port	Destination port number
IP FEC	IP FEC selection
IP buffer size	Buffer size
Encoder phys.int	Encoder physical output number
Decoder phys.int.	Decoder physical input number
Frame size	The frame size
Video rate	video data rate in MBit/sec
VR auto	video rate auto switch
Profile	video encoding profile

Column name	Description
Auto lineup	configures automatic line up
Audio rate 1	audio channel 1 data rate
Audio rate 2	audio channel 2 data rate
Audio rate 3	audio channel 3 data rate
Audio rate 4	audio channel 4 data rate
Audio channels	Number of audio channels.

1.5.2.1 Add/Edit IP channel dialog**



The Add or Edit IP channel dialog shows up on

- click on + button on the bottom toolbar
- click on ✎ in the channel row

The dialog title clearly indicates whether you are creating a new channel or editing an existing one, ensuring clarity in the action being performed.

Required fields are marked with an asterisk `*`. Fields which you don't plan to use in your installation (e.g. TX settings if you only receive channels) can be can remain empty or on defaults. Certain setting will anyway only be applied to equipment if this is configured in the RX/TX-Channel devices.

Field	Description

Field	Description
Name*	user defined channel name, must be unique
Comment	describe this IP channel
User	free text to enter a user name which is responsible for this database entry, must not match to a username of this M&C system
Program title	name of the program transmitted or received with this channel.
Decoder input	*read-only* channel type
IP type	IP addressing type, one of `UNICAST` or `MULTICAST`
IP protocol	IP protocol, one of `UDP`, `RTP`, `TCP` or `ZIXI`
IP source address	source IP address in dotted quad notation
IP source port	source port number `0-65535`
IP destination address	destination IP address in dotted quad notation
IP destination port	destination port number `0-65535`
IP FEC	IP FEC selection, one of `OFF` or `ON`
IP buffer size port	buffer size
Encoder phys.int.	encoder physical output number (1-4)
Decoder phys.int.	decoder physical input number (1-4)
Profile	select video encoding profile from drop-down list
Video rate	video data rate in MBit/sec (4 digits precision)
VR auto	video rate auto switch, one of `FIXED` or `AUTO`
Frame size	frame size, one of `SHORT` or `NORMAL`

Field	Description
Audio channels	number of audio channels should be between 1-4
Audio rate 1	audio channel 1 data rate select from drop-down list
Audio rate 2	audio channel 2 data rate select from drop-down list
Audio rate 3	audio channel 3 data rate select from drop-down list
Audio rate 4	audio channel 4 data rate select from drop-down list

The following actions are `available` :

Function	Description
Create	For new channel, this creates the channel with the provided details
Save	For existing channel, this saves modifications.
Cancel	Closes the dialog without saving

The form tests the input fields for validity and display hints in red in each field with wrong input. If an error occurs in the input fields, the button Create/Save button is deactivated.

1.5.2.2 On delete confirmation dialog

The Delete confirmation dialog shows up on

- click on  in the table row on the bottom toolbar

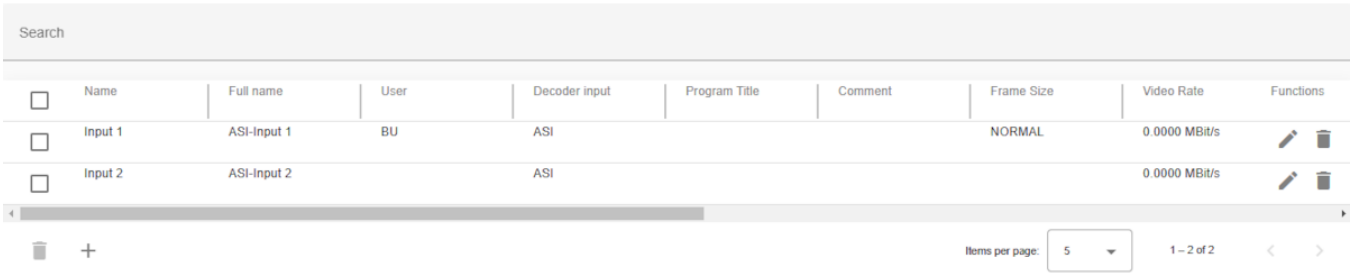
The following actions are `available` :

Function	Description
Yes	Deletes the channel(s) permanently
Cancel	Cancels the deletion action

1.5.3 ASI channels

The list of all ASI channel records in the database. The table can be scrolled horizontally. Name

and functions row are sticky.



Some receives (e.g. IRDs) provides between Satellite- and IP-Inputs also plain ASI inputs. In this mode no configuration of the input is required, you just have to switch to ASI input. Therefore the related channels are used in most cases as placeholder and to setup encoding (audio,video settings) in case that the receiver get a signal to ASI input. Nevertheless these channel type is available to allow a consistent operation with all input methods.

For receive applications the following logical devices are available:

- RX-Channel-ByChannel
- RX-Channel-BySatellite
- RX-Channel-ActivationBased

For transmit applications the following logical devices are available:

- TX-Channel-ByChannel
- TX-Channel-BySatellite

These logical devices will retrieve the channel information directly from the central database. Please refer to the linked documentation for details how to setup and use the RX and TX Channel devices.

Search bars

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all channels and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.
- You can arrange the width of an row by `click + hold + drag` near from the header name (grey border)

Table columns

The first column located at the far left of the table provides a checkbox to select one or more channels (rows) and perform the same operation on all selected channels.

- **Single Selection**: Click on a single checkbox to select an individual channel
- **Multiple Selection**: Click multiple checkboxes to select multiple channels.
- **Select all**: The checkbox in the header row allows you to select or deselect all channels on all pages.

Function	Icon	Description
delete		delete the selected channels from the database

The last column located at the far right of the tables provides buttons to run actions on the corresponding channel.

The following functions for managing a channel are `available` :

Function	Icon	Description
Delete		to delete the channel
Edit		modify/edit channel

The following buttons for global function(s) are available at the the bottom of the table:

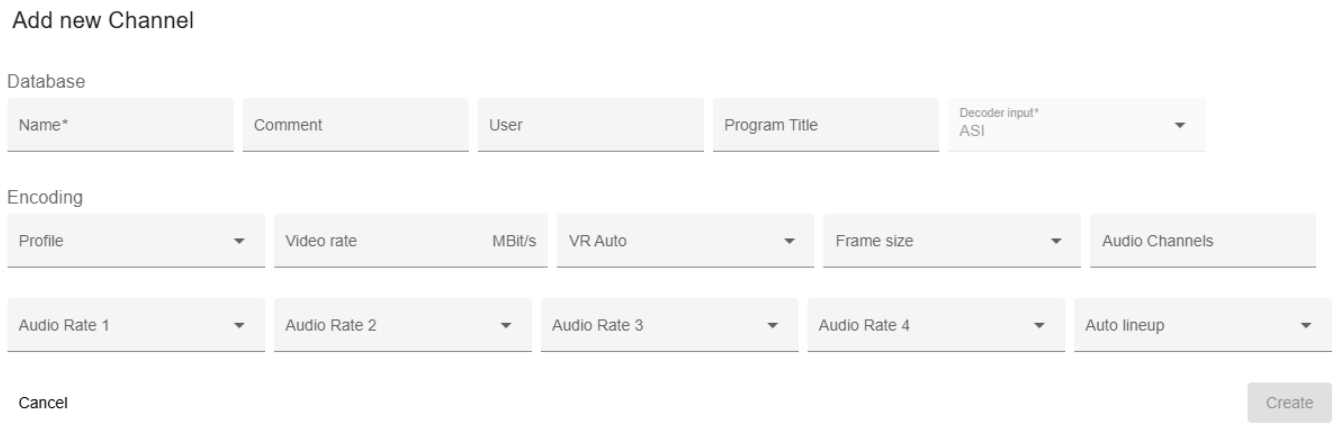
Function	Icon	Description
Add		add a new channel
Delete		to delete all selected the channels
Page	Pagination controls	set the number of items displayed per page (e.g., 5, 10, or 25) and navigate between pages

The ASI channel table contains the following columns:

Column name	Description
Name	user defined channel name
Fullname	automatically generated full name (`IP` + `-` + `Name`)
User	name of the user who lastly edited the channel
Program title	name of the program transmitted or received with this channel
Comment	one line comment describing this satellite channel
Frame size	frame size

Column name	Description
Video rate	video data rate in MBit/sec
VR auto	video rate auto switch
Profile	video encoding profile
Audio channels	number of audio channels between 1-4
Audio rate 1	audio channel 1 data rate select from drop-down list
Audio rate 2	audio channel 2 data rate select from drop-down list
Audio rate 3	audio channel 3 data rate select from drop-down list
Audio rate 4	audio channel 4 data rate select from drop-down list

1.5.3.1 Add/edit ASI channel dialog**



The Add or Edit ASI channel dialog shows up on

- click on + button on the bottom toolbar
- click on ✎ in the channel row

The dialog title clearly indicates whether you are creating a new channel or editing an existing one, ensuring clarity in the action being performed.

Required fields are marked with an asterisk `*`. Fields which you don't plan to use in your installation (e.g. TX settings if you only receive channels) can be can remain empty or on defaults. Certain setting will anyway only be applied to equipment if this is configured in the RX/TX-Channel devices.

Field	Description
Name*	user defined channel name, must be unique

Field	Description
Comment	describe this IP channel
User	free text to enter a user name which is responsible for this database entry, must not match to a username of this M&C system
Program title	name of the program transmitted or received with this channel.
Decoder input	*read-only* channel type
Profile	select video encoding profile from drop-down list
Video rate	video data rate in MBit/sec (4 digits precision)
VR auto	video rate auto switch, one of `FIXED` or `AUTO`
Frame size	frame size, one of `SHORT` or `NORMAL`
Audio channels	number of audio channels should be between 1-4
Audio rate 1	audio channel 1 data rate select from drop-down list
Audio rate 2	audio channel 2 data rate select from drop-down list
Audio rate 3	audio channel 3 data rate select from drop-down list
Audio rate 4	audio channel 4 data rate select from drop-down list

The following actions are `available` :

Function	Description
Create	For new channel, this creates the channel with the provided details
Save	For existing channel, this saves modifications.
Cancel	Closes the dialog without saving

The form tests the input fields for validity and display hints in red in each field with wrong

input. If an error occurs in the input fields, the button Create/Save button is deactivated.

1.5.3.2 On delete confirmation dialog

The Delete confirmation dialog shows up on

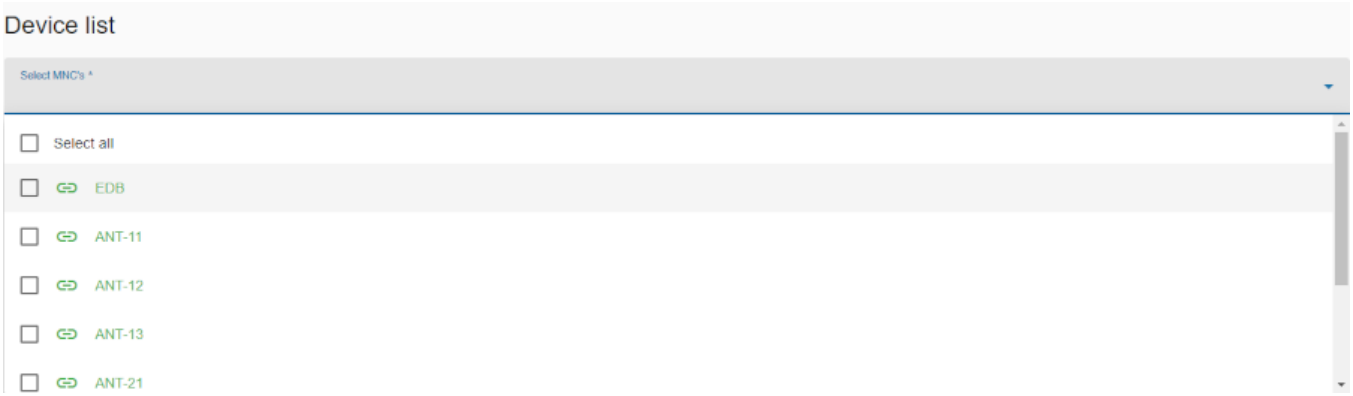
- click on  in the table row on the bottom toolbar

The following actions are `available` :

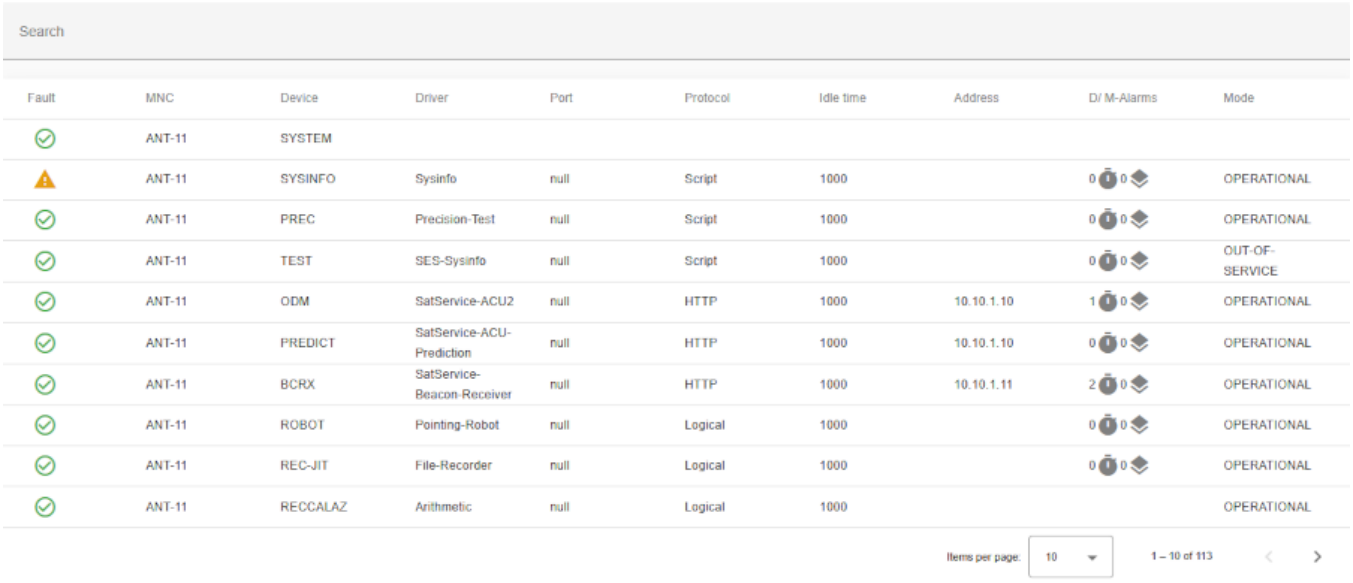
Function	Description
Yes	Deletes the channel(s) permanently
Cancel	Cancels the deletion action

1.6 Device list

The device list page shows different type of information about installed devices. For example driver name, protocol, mode or fault state. You can choose one or multiple MNCs to search and list devices.



In the first step select one or more MNCs from the drop down list below the heading. The page will show a table of alle devices.



Search bar

- Located at the top of the table.
- Allows users to filter device list
- The search pattern will be used for a full text search in all columns of the table.

Header row

- You can sort rows in ascending or descending order by clicking on the column header (e.g. MNC, device, etc.).
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is indicated by an arrow or icon near the column name.

Table columns

- **Fault**: Current fault of device on MNC. If there is no fault, a green*check icon* appears, if there is a warning, an orange *warning icon* appears and if there is a summary fault, a red *error icon* appears.
  - **Functionality**: On mouse hover on fault icons gives you detailed information.
- **MNC**: MNC name.
- **Device**: Device name.
- **Driver**: Device driver.
- **Port**: The communication port/interface.
- **Protocol**: The used protocol type.
- **Idle time**: The idle time in milliseconds.
- **Address**: Address.
- **D/M-alarms**: Delayed alarms are labelled with a clock icon and masked alarm with layers icon
- **Mode**: Current mode of device.
  - **Functionality**: On click on mode row, open device details panel.

Bottom toolbar

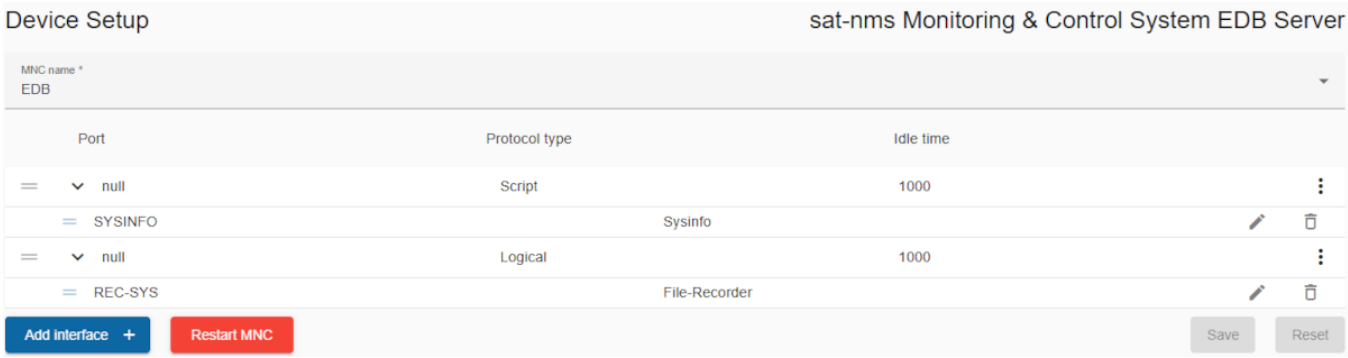
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

Functionality

- **Open device window**: On click on row expect on mode column opensdevice window.
- **Open device panel**: On click on mode row, opendevice details panel.

1.7 Device setup

With the ***sat-nms*** M&C software, the assignment which type of device is controlled by which communication interface and which driver is free configurable. The user interface of the software provides a configuration window which enables the authorized operator to setup devices.



When an operator is going to configure an MNC first it is important to understand, that with the ***sat-nms*** software each interface is bound to a communication protocol. The communication protocol used for a certain device is not unchangeably linked to the device driver. This is to support multiple devices being controlled via a single interface. Devices using a common 'multi drop' capable protocol may be connected to the MNC with a serial but like RS485.

Once an interface (serial port or network) has been included into the setup and got a communication protocol assigned to it, within the setup devices can be attached to this interface. With the device definition, the device gets a name and a device driver assigned to it. The device's name acts as an address within the software where to send at commands (equipment settings) to, the device driver tells the software how to treat the device at a low communication level.

To configure device first select the MNC:

MNC name: Select an MNC to load devices and start editing.

This will show a list of all already configured interface and their attached devices.

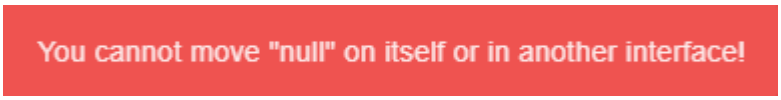
The first level of this tree represents the interface.

- **Port**: Displays the name of the port or node.

- **Protocol** Type: Indicates the protocol associated with the entry.
- **Idle Time**: Shows the idle time for the specific entry (in milliseconds).

One or more devices can be attached to one interface.

- **Parent node/Interface** These are the primary entries that may have child nodes/devices nested under them. Parent nodes or interfaces are identified by a dropdown arrow (▼) on the left side of the row, allowing you to expand or collapse their child nodes.
- **Drag Handles**: Located on the left of each row (indicated by the three horizontal lines). Users can drag and drop rows to rearrange the list dynamically. But parent nodes/interfaces cannot be moved into another interface. At the bottom of the page, the snack bar (error) would be displayed with the description of the error, as shown below.



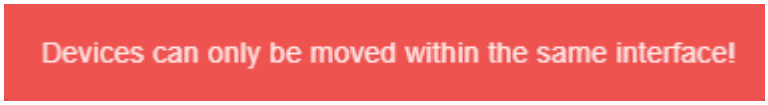
Expandable/Collapsible Rows = Interfaces

Rows with sub-items have a toggle arrow on the left side. Clicking the arrow expands or collapses the child node or devices.

- **Context Menu**: Accessible via the three-dot icon on the right of each row, provides the following options:
  - **Add Interface Below**: Inserts a new interface directly below the selected interface.
  - **Add Device**: Adds a new device as a child node under the selected interface.
  - **Edit Interface**: Opens a dialog to modify the details of the selected interface.
  - **Delete Interface**: Removes the selected interface and all its devices from the list.

Child Nodes = Devices These are nested entries directly associated with a parent node or interface. Child nodes or devices are indented beneath their respective parent node or interface to visually indicate the hierarchy.

- **Drag Handles**: Located on the left of each row (indicated by the three horizontal lines). Users can drag and drop rows to rearrange the list dynamically. However, devices cannot be moved from one interface to another interface. At the bottom of the page, the snack bar (error) would be displayed with the description of the error, as shown below.

- **Device name**: Name of the near the drag handel
- **Device driver**: Next to device name is device driver.
- **Edit device**: If you click on the *pencil icon* on the right-hand side, you can edit the device details.
- **Delete device**: Click the *trash icon* on the right hand side to delete an device from list.

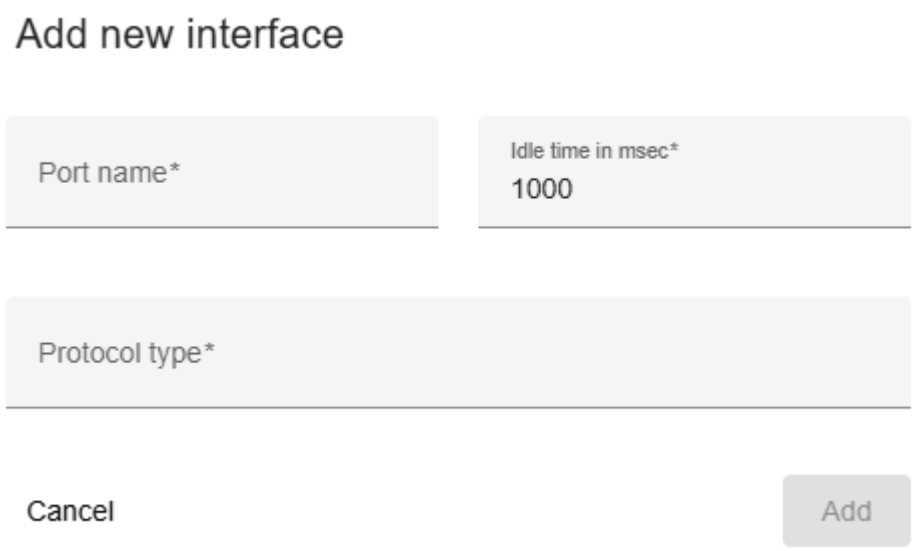
Functions

- **Add interface**: Found at the bottom left of the editor. Clicking this opens a dialog to add

a new interface to the list.
- **Restart MNC**: Clicking this button will restarts the selected MNC. Of course only after your confirmation via dialog. You must do this, to make the target system use a modified equipment setup.
- **Save**: Saves all changes made in the editor. If you have not saved the changes and accidentally leave the editor, a confirmation dialog will appear in which you must give your consent to leave the editor/page.
- **Reset**: Discards all unsaved changes and reverts to the first loading state.

1.7.1 Dialogs

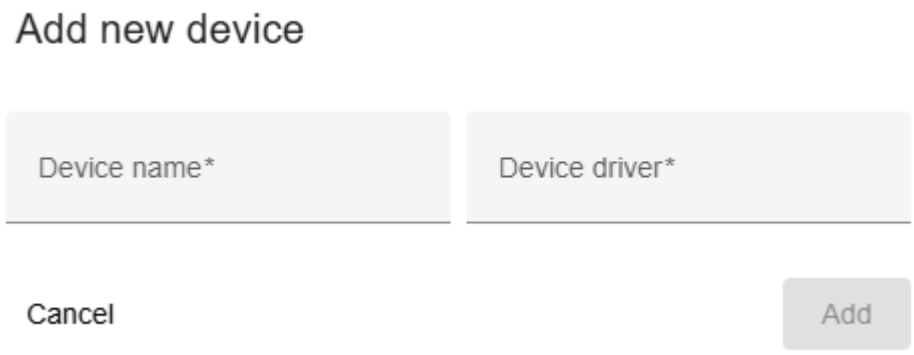
Add/edit interface



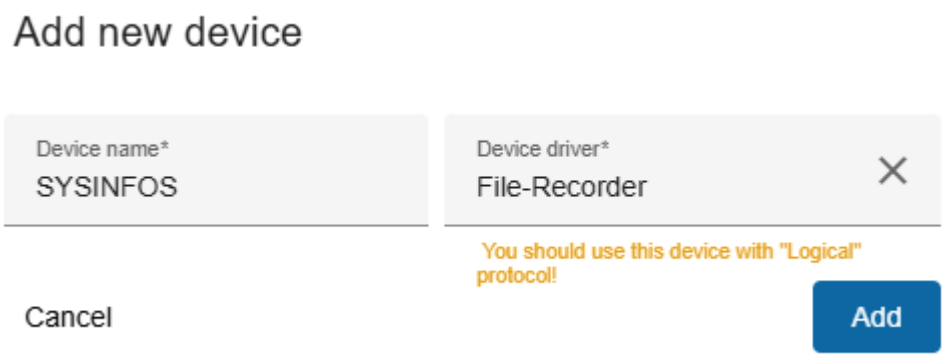
- **Trigger**:
  - when you click on the "Add interface +" button on the bottom to create new interface or
  - an on *pencil icon* to edit from context menu or
  - on *down arrow Add interface below*to add interface from context menu
  - The dialog title clearly indicates whether you are creating a new interface, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Port name**: The communication port / interface that thread should use.
    - **null**: The null interface is used by all logical devices. In every M&C system there is exactly one null interface running the Logical protocol. All logical devices are connected to this (physically not existent) interface.
  - **Idle time in msec**: The idle time of thread (msec).
  - **Protocol type**: The protocol for thread. It should be one of drop-down options.
- **Actions**:
  - **Add/Save**:
    - For new interface, this creates the interface with the provided details.

        - For existing interface, this saves modifications.
        - If an error occurs in the input fields, the button is deactivated.
    - **Cancel**: Closes the dialog without saving.

Add/edit device



- **Trigger**:
    - when you click on *Add device +* to add device from context menu or
    - an on *pencil icon* to edit from device from row or
    - The dialog title clearly indicates whether you are creating a new interface, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
    - **Device name**: The name of the device. It must be unique.
    - **Device driver**: The device driver. It should be one of the option from the drop-down list. If you select the wrong device driver for the interface protocol, a warning is displayed and it is displays which protocol you should use for this device like in image below.



- **Actions**:
    - **Add/Save**:

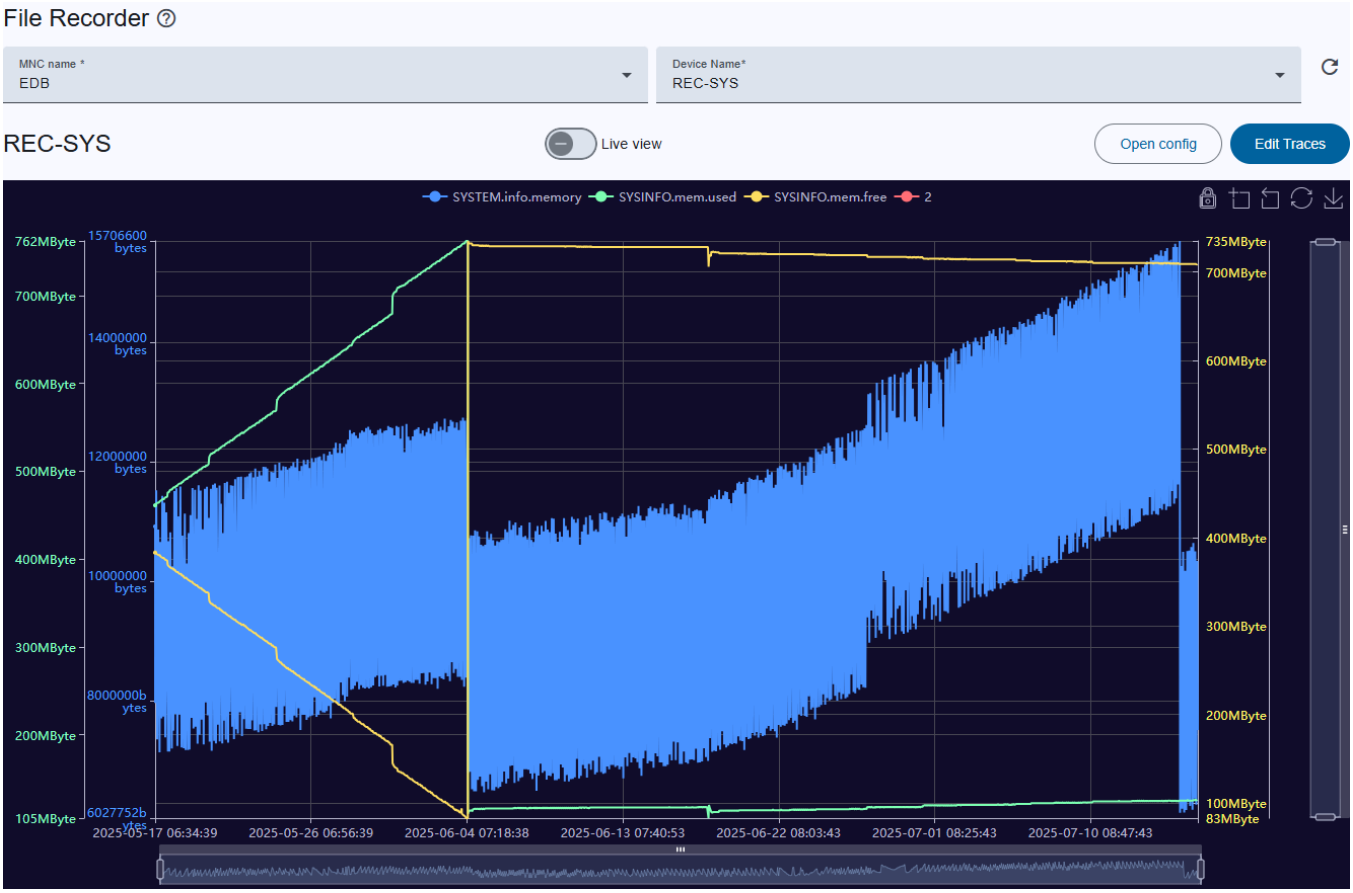
        - For new device, this creates the device with the provided details.
        - For existing device, this saves modifications.
        - If an error occurs in the input fields, the button is deactivated.
    - **Cancel**: Closes the dialog without saving.

Confirmation dialog

- **Trigger**: Opens when you click the
    - Trash icon for an device from menu column
    - Trash icon from bottom toolbar.
    - Reset button
    - Leaving the page if there are unsaved changes.
- **Content**: Asks the user to confirm the action, depending on where you trigger the dialog.
- **Actions**:
    - **Yes**: Confirm the action.
    - **Cancel**: Cancels the action.

1.8 File recorder

The sat-nms M&C software provides a facility (a logical device) called File-Recorder which is capable to record arbitrary data like levels, antenna pointing etc. into a disc file. The File recorder page is the user interface to inspect such files. The page can be accessed either from the side toolbar File-Recorder menu or can be configured in user-screens on button-element as File-Recorder action.



Top toolbar

- **MNC name**: A dropdown to select the available MNC from drop-down.
- **Device name**: A dropdown to select the available file-recorder devices from drop-down.
- **Reload**: A button to reload the file-record data.

Title, live view, and configuration buttons

- **Title**: Displays the currently selected device name (e.g., "REC-SYS").
- **Live view toggle**: Beside for viewing stored log files, the File recorder Viewer can be used to display the logged data as it is acquired with an automated display update. By pressing the "live view" toggle button, the viewer changes to live view mode. In this mode the viewer shows up to 400 recent data points, automatically updated with an interval that is configurable separately from the standard interval at the device window setup (open config button).
- **Configuration buttons**:
  - **Open config**: Opens a device window allowing users to view or modify settings.
  - **Edit traces**: Opens a dialog for customizing or editing trace parameters, such as specific trace name and their units.

Graph

- **Legends**:
    - Positioned at the top of the graph, legends display the names of the traces.
    - **Interactive Features**: Clicking on a legend hides or shows the corresponding trace line on the graph for better visualization.
- **Zoom actions**: *Described below under zoom control buttons (near the legend)*
- **Graph lines and axes**:
    - **Graph lines**: Display the traces values over time, represented in different colors as per the legend.
    - **Y-axis**:
        - **Left**: Displays the primary value ranges for the traces.
        - **Right**: Displays secondary value ranges for specific traces.
    - **X-axis (bottom)**: Represents the timeline of the data being monitored.
- **Zooming**
    - **Lock Y-Axis**: By clicking on the lock symbol, the y-axis is locked and the user can interact with the diagram without scaling.
    - **Scrolling in and out**: Use the scroll wheel to zoom in or out horizontally along the timeline (X-axis).
    - **Vertical zoom (y-axis right side)**: Adjusts the zoom level vertically, allowing focus on specific Y-axis value ranges.
    - **Horizontal zoom (x-axis bottom)**: Slider enables horizontal zooming along the timeline, allowing you to focus on specific time intervals.
    - **Zoom control buttons (near the legend)**:
        - **Zoom brush (left)**: Enables manual zooming by selecting an area on the graph.
        - **Undo zoom**: Resets the graph to the previous zoom level.
        - **Restore**: Resets the graph to its default view (original scale).
        - **Save as image**: Exports the current graph as an image file.

1.8.1 Functionality

Graph interaction

- **Zooming**
    - **Sliders**: A slider bar (bottom and right) is provided, on which coordinate systems can be zoomed or roamed by mouse dragging.
- **Scroll**: Scrolling inside zooms in on the graph and scrolling out zooms out on the graph.

Tooltip: Displaying data reference to line and axis value under mouse pointer.

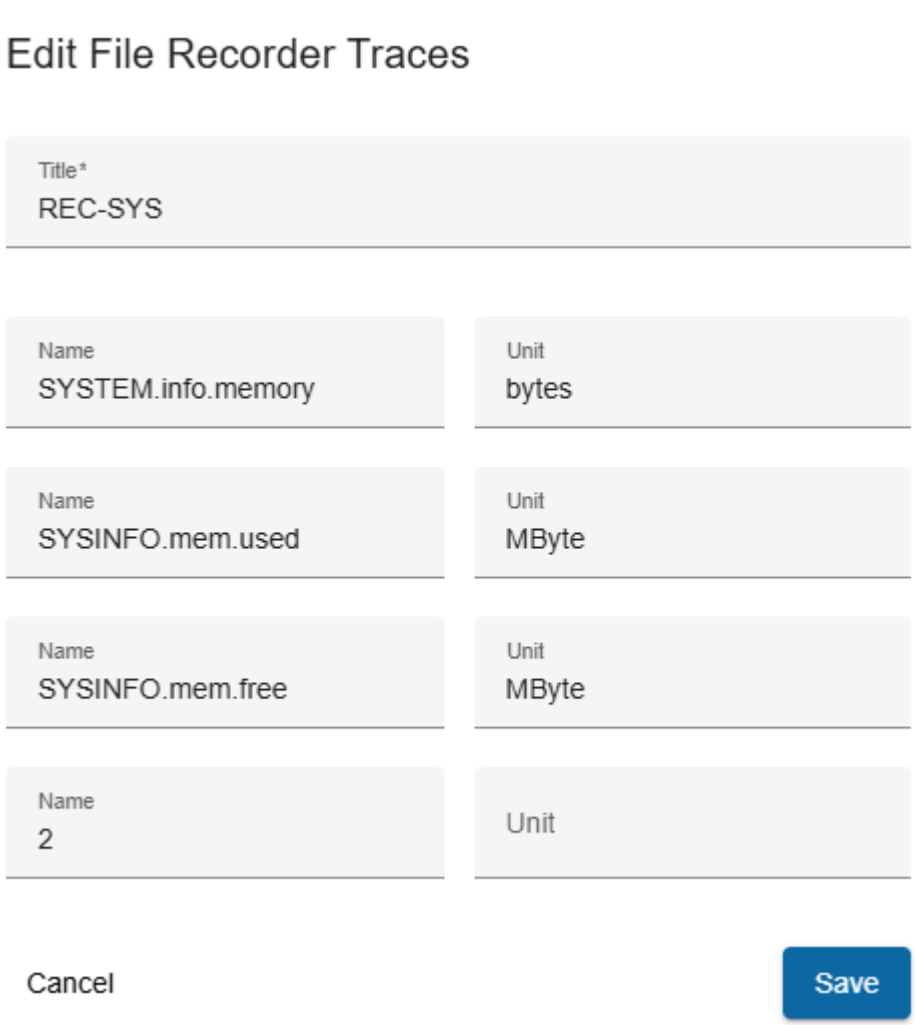
Legends: Clicking on a legend hides or shows the corresponding trace line on the graph for

better visualization.

1.8.2 Dialogs

Open config: Opens a device window config page.

Configure traces



- **Trigger**: when you click on the *Edit traces* button.
- **Fields**:
  - **Title**: The title of selected file-recorder device. *NOTE*: This is differ from device name.
  - **Name**: Free text to set trace name.
  - **Unit**: The unit of trace.
- **Actions**:
  - **Save**:
    - Saves modifications.
    - If an error occurs in the input fields, the button is deactivated.

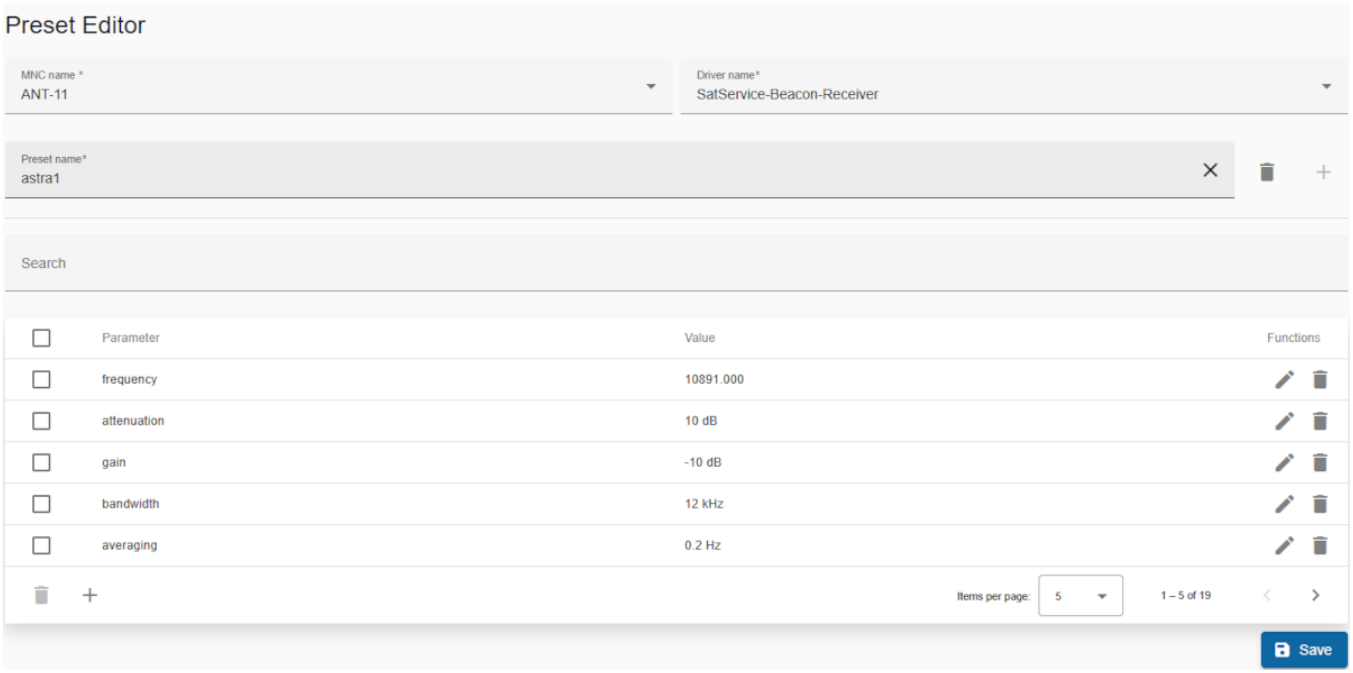
- **Cancel**: Closes the dialog without saving.

1.9 Preset editor

Most sat-nms device drivers allow you to save a snapshot of the device settings in*device preset files* so that the operator can restore these settings at a later time.

The presets are stored on the server that your client programme connects to. In an M&C environment this is the M&C server, in an NMS environment this is the central NMS server. This means that in the latter case, a preset can be saved when operating a VLC and can later be applied to a device on another VLC.

Presets are always assigned to the device type (driver) with which they were recorded. This is because it makes no sense to transfer the settings of a beacon receiver to a DVB encoder. The target device does not *know* what to do with the receiver settings. Even with similar devices (e.g. two IRDs from different manufacturers), there may be differences in the number and type of settings that the devices understand. The software therefore saves the preset files in a structure *by device driver*.



Title: Title of this page.

MNC name: Below the title, you must select an option from the drop-down list.

Driver name: A dropdown with all driver names. Just select from dropdown.

Preset name: Also a dropdown list of preset file names with the search function.

- **Delete**: A *trash can icon* can be used to delete selected preset file.
- **Add preset**: A + button can be used to add Prest. To activate the + button when it is deactivated, simply delete the input of the preset name.

To load a stored preset first you have to select MNC name, then driver name and then preset name. After selection, a table with the saved presets would de displayed, as shown in the image above.

Search bar

- Located at the top of the table.
- Allows users to filter events by keywords.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
    - **Location**: The checkbox column is located at the far left of the table.
    - **Purpose**: Allows users to select one or multiple rows for delete row(s).
    - **Functionality**:
        - **Single Selection**: Click on a single checkbox to select an individual row.
        - **Multiple Selection**: Click multiple checkboxes to select multiple rows at once.
        - **Select all**: The checkbox in the header row allows you to select or deselect all rows on all pages.
        - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **Parameter**: Stored parameter for the preset.
- **Value**: Stored value of parameter.
- **Functions**: Action icons for managing the parameter:
    - **Edit**: Pencil icon to modify/edit the parameter.
    - **Delete**: Trash can icon to delete the parameter.

Bottom toolbar

- **Delete selected rows**: A button to delete selected rows from checkbox column.
- **Create**: + button is used to create new parameter.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

Save: Saves all modifications. *NOTE: You must save the changes before leaving the editor, otherwise the changes will be lost.*

1.9.1 Functionality

Create preset

- Click the + button near the delete icon and preset name input to add a new preset.
- Input the required details.

Create parameter

- Click the + button at the bottom of the table to add a new parameter.
- Input the required details.

Edit parameter

- Click the *pencil icon* in the Functions column to modify parameter details.
- Adjust the settings and save.

Delete preset

- Click the *trash icon* near the preset name input to delete the preset.
- Confirm the action in the pop-up dialog to delete the parameter.

Delete parameter

- Click the *trash icon* in the Functions column to delete an parameter.
- Confirm the action in the pop-up dialog to delete the parameter.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.9.2 Dialogs

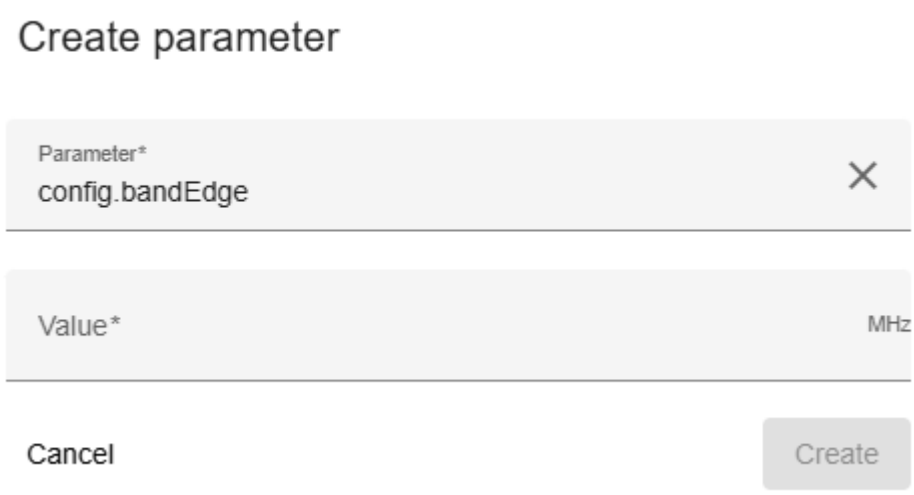
Add preset dialog

- **Trigger**: When you click on the "+" near the delete icon and preset name input to add a

new preset create new preset.

- **Fields**:
  - **Name**: The user defined name of preset. Name must be unique compared to other presets.
- **Actions**:
  - **Add**: Adds the new preset.
  - **Cancel**: Closes the dialog without saving.

Add/edit parameter



- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new parameter or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new parameter, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Parameter**: Parameter should be selected from dropdown list. As soon as you have selected a parameter value, the value input will be displayed.
  - **Value**: The parameter value van be added.
- **Actions**:
  - **Create/Save**:
    - For new parameter, this creates the parameter with the provided details.
    - For existing parameter, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

Confirmation dialog

- **Trigger**: Opens when you click the
  - delete preset
  - delete parameter
- **Content**: Asks the user to confirm the action, depending on where you trigger the dialog.
- **Actions**:
  - **Yes**: Confirm the action.
  - **Cancel**: Cancels the action.

1.10 Inventory database

The inventory database provides a structured view of the drivers, so that the user can easily track their state and documents that upload by the user.

The title bar provides access to the two different datasets:

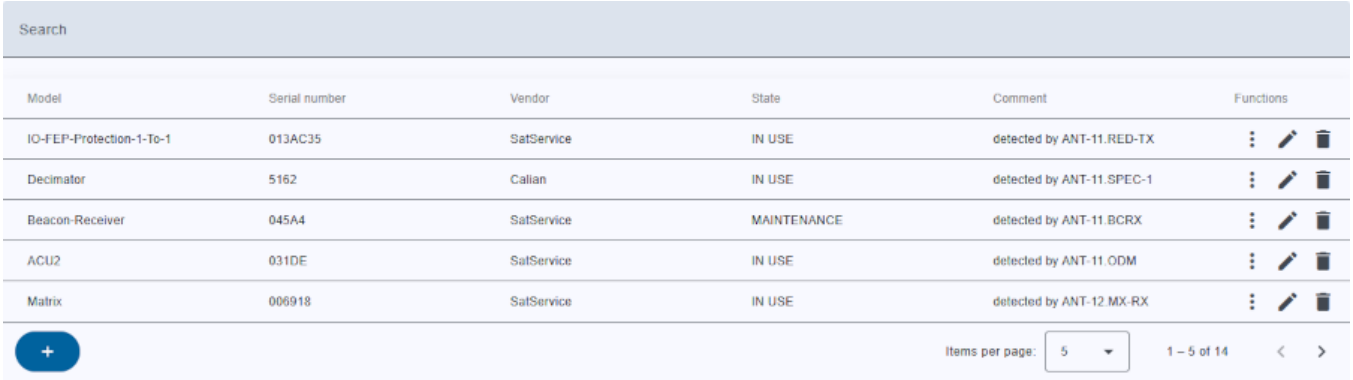
- Inventory (default)
  - displays the list of inventory drivers
- Documents
  - upload document
  - list of uploaded documents

You can switch between these different tables by clicking on the buttons at the top of this page.

On a system without installed SatDB or if the PostgreSQL Database is not reachable an error message will be display: Error DB not reachable. In this case, please check your database installation.

1.10.1 Inventory

The inventory table provides a structured view of the drivers automatically found by M&C or added by the user, so that the user can easily track their state.



To enable the Inventory configure a following in the filevlc.properties with:

- *db.inventory.enabled=true*
- *db.inventory.debug=false*

When the inventory is activated, the M&C automatically recognizes the drivers for whom the serial number has been recognized by M&C and automatically adds them to the database. Non-Recognized driver should be added by the user.

Inventory items are stored by there vendor and model name. For this reason, the item should only exist once.

The Inventory list also contains devices and logs.

- Driver recognized by M&C also check for the devices that are configured on the driver and add to database. If not user can also add manually.
- Logs are also added automatically if M&C has recognized the driver. However, the user can also add the log entry manually. For example, when adding a device that M&C has not recognized automatically. You can see device(s) and logs by clicking on the row of the inventory table.

Search bar

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all list and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

The inventory table contains the following columns:

Column name	Description
Model	name of model
Serial number	Serial number of driver
Vendor	name of vendor
State	State of driver
Comment	Free text describing the situation

The last column located at the far right of the tables provides buttons to run actions on the

corresponding inventory item.

The following functions for inventory are `available` :

Function	Icon	Description
Drop down		Go directs to documents page with selected action.
Edit		modify/edit inventory item
Delete		to delete the inventory item. A confirmation dialog will appear to confirms the action.

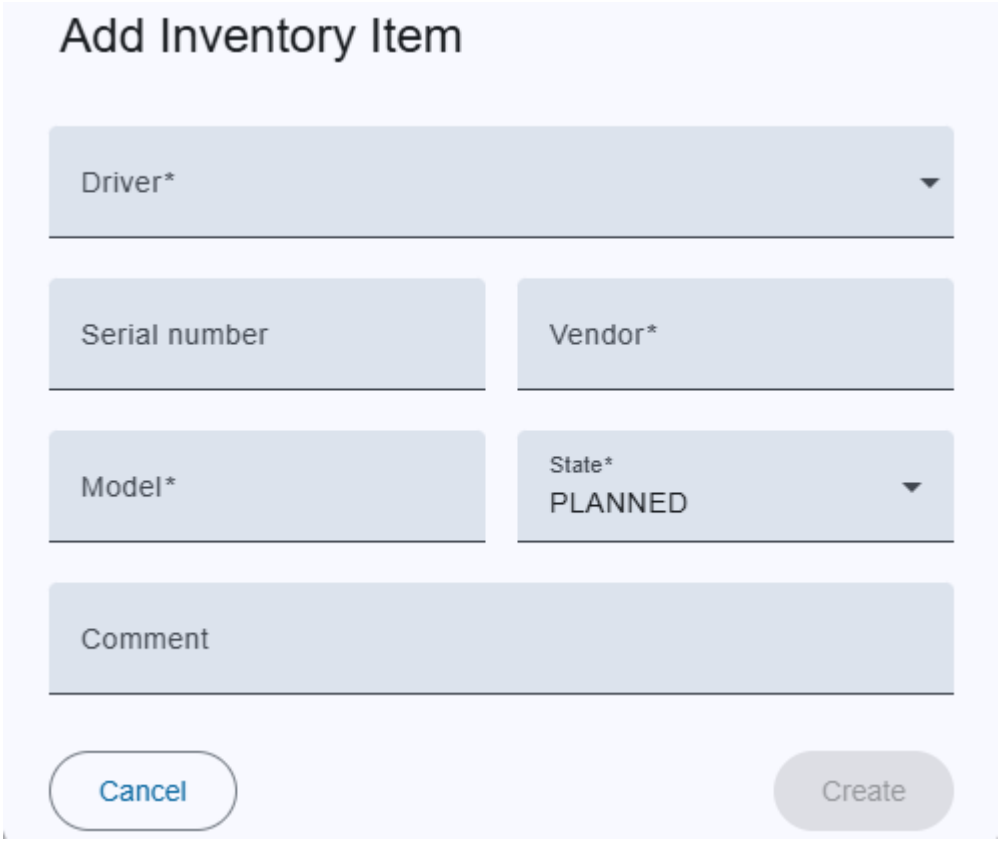
Clicking on a inventory item row shows other relatives tables:

- Devices
- Logs

Bottom toolbar

- **Create**: + button is used to create new inventory item.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

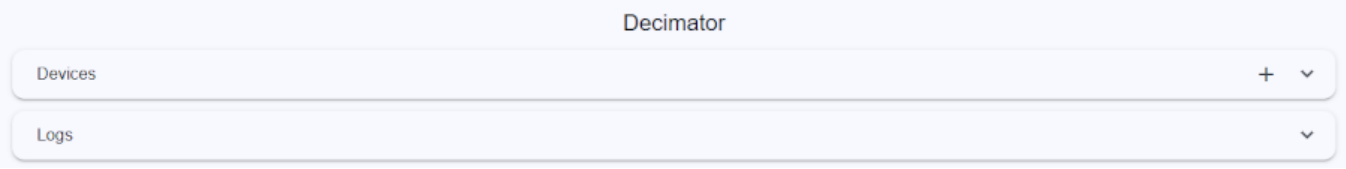
1.10.1.1 Add/edit inventory dialog



- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new inventory item or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new inventory item, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Driver**: An drop down with available drivers. Already exists driver in inventory list option is disabled.
  - **Serial number**: Serial number of driver
  - **Vendor**: Manufacture name. Automatically filled if you select an driver but it can also changes.
  - **Model**: Model is driver name.Automatically filled if you select an driver but it can also changes.
  - **State**: State of the driver.
  - **Comment**: Free text for providing some information.
- **Actions**:
  - **Create/Save**:
    - For new inventory item, this creates the inventory item with the provided details.

        - For existing inventory item, this saves modifications.
        - If an error occurs in the input fields, the button is deactivated.
    - **Cancel**: Closes the dialog without saving.

1.10.2 Inventory related tables



Toolbar (top)

- **Title**:
    - Model name
- **Tables**:
    - Devices
    - Logs
    - **Functionality**: Clicking on title or + or arrow to downside expands the table.

1.10.2.1 Devices table

Devices table show the list of devices that are configured on the selected inventory driver. Driver recognized by M&C check for the devices that are configured, add to database. By non-recognized driver devices should be added manually.

Top

- Left-side title of table.
- Plus (+) button to create new device.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon

near the column name.

Table columns

The devices table contains the following columns:

Column name	Description
MNC	Name of M&C in which the device is configured.
Device name	Device name
Online	State of device. If device have an communication fault state will be false else true.

The last column located at the far right of the tables provides buttons to run actions on the corresponding device.

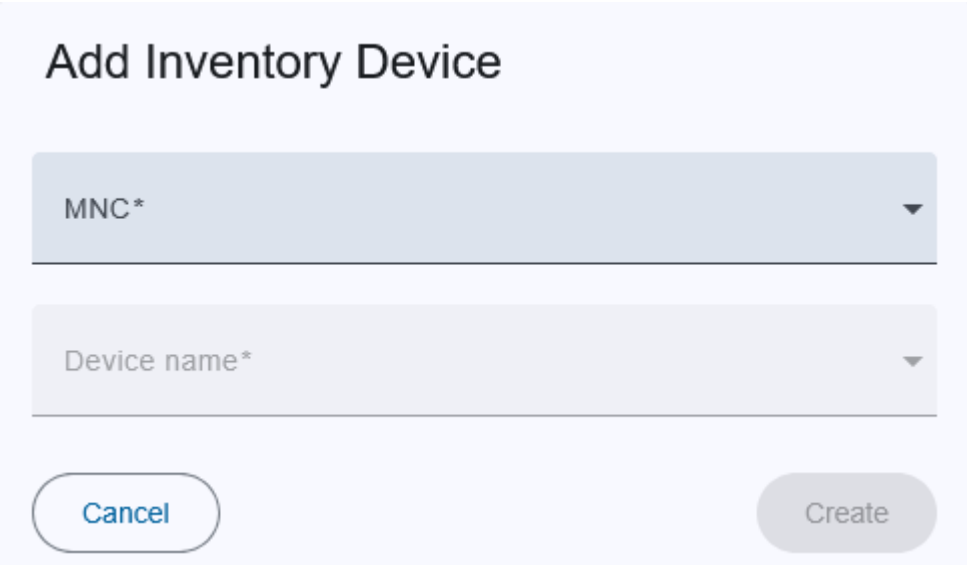
The following functions for device are `available` :

Function	Icon	Description
Edit		modify/edit device
Add log		Opens Add Inventory Log dialog with prefilled data to add a log in inventory database.
Delete		to delete the device. A confirmation dialog will appear to confirms the action.

Bottom toolbar

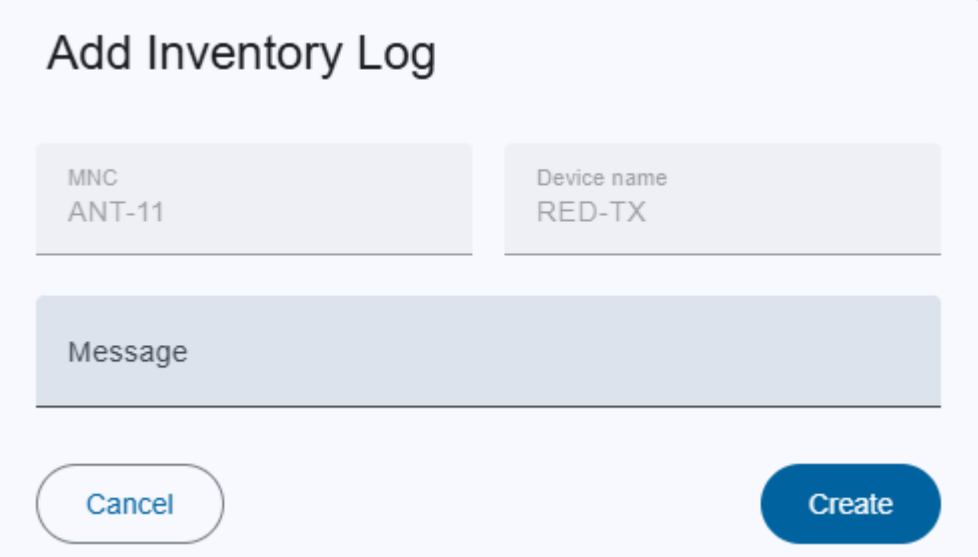
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.10.2.2 Add/edit device dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit device in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **MNC**: Name of the M&C.
  - **Device name**: Once you selected the M&C device list will be available on behalf of selected M&C and selected Driver of inventory item.
- **Actions**:
  - **Create/Save**:
    - For new device, this creates the device with the provided details.
    - For existing device, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

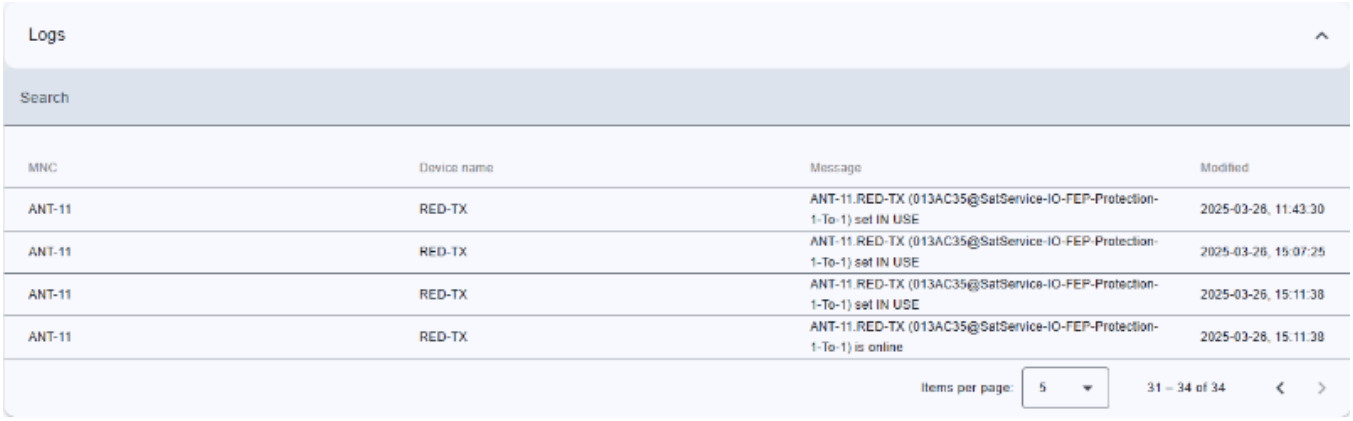
1.10.2.3 Add log dialog



- **Trigger**:
  - when you click on the button on the device column
- **Fields**:
  - **MNC**: Name of the M&C.
  - **Device name**: Device name.
  - **Message**: A short message that shows the purpose of this log.
- **Actions**:
  - **Create**:
    - this created a new log.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

1.10.2.4 Logs table

The logs helps to trace the activities of device(s) and driver. Logs are also added automatically if M&C has recognized the driver. However, the user can also add the log entry manually. For example, when adding a device that M&C has not recognized automatically.



Top

- Left-side title of table.
- Icon button to expand or collapse table

Search bar

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all list and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

The Logs table contains the following columns:

Column name	Description
MNC	Name of M&C.
Device name	Device name.
Message	Purpose of this log.
Modified	Date of added log.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.11 Documents

In Inventory database you can also upload documents and download documents. Documents can be attached to M&C, Driver or Globally.

Expand All: Expand all category tables.

Import file: Import file trigger *Upload document* dialog.

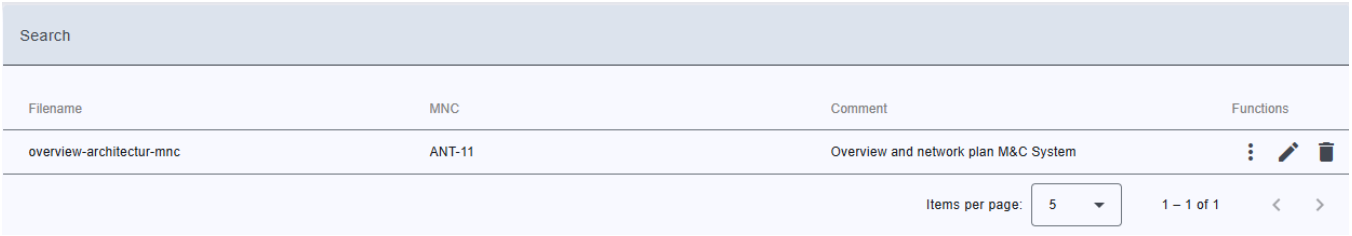
Global : If the document is uploaded without M&C or driver name, it belongs to Global category.

MNC : If the document is uploaded with, it belongs to MNC category.

Driver : If the document is uploaded with driver name, it belongs to Driver category.

Tables

The tables for Global, MNC and Driver are identical.



Search bars

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all list and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

The document table contains the following columns:

Column name	Description
Filename	Name of M&C.
MNC/Driver	Depending which section you expanded MNC/Driver will shown.
Comment	Purpose of document.

The last column located at the far right of the tables provides buttons to run actions on the corresponding inventory item.

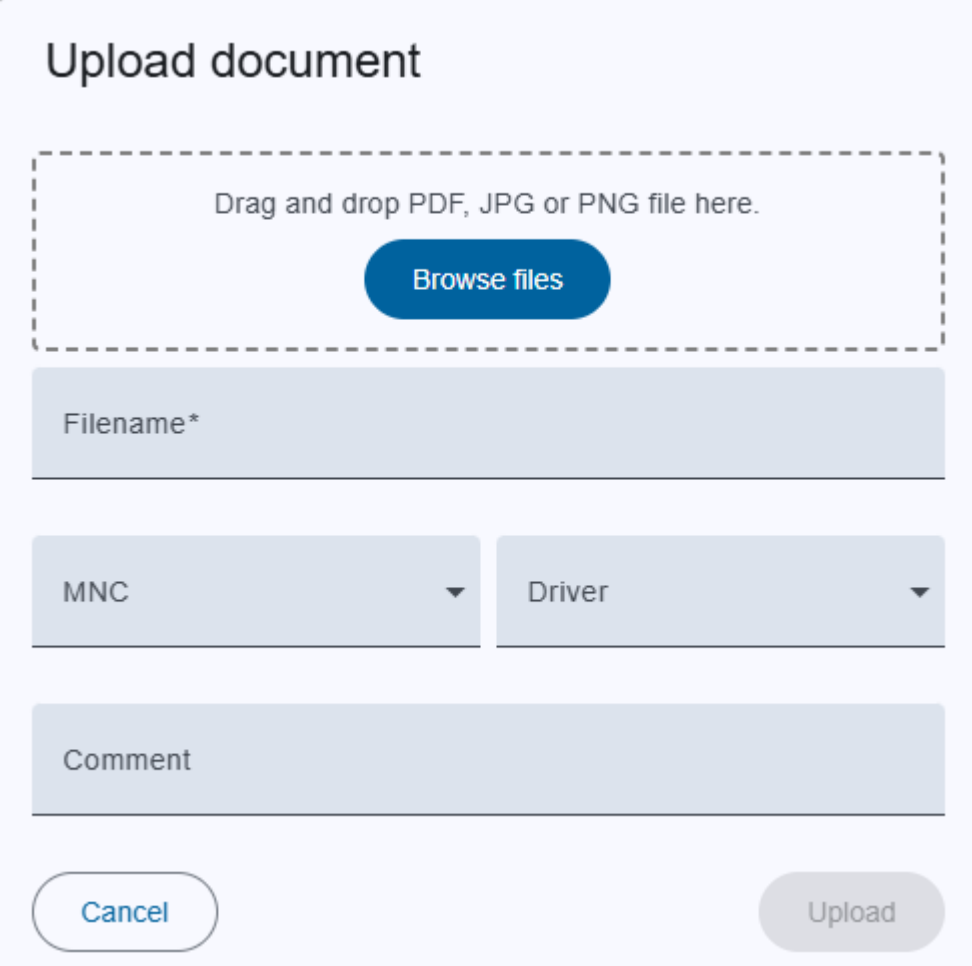
The following functions for inventory are `available` :

Function	Icon	Description
Drop down		Shows the option to download document or open document in new tab.
Edit		modify/edit document item
Delete		to delete the document. A confirmation dialog will appear to confirms the action.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.11.1 Upload/edit document



- **Trigger**:
  - when you click on the "upload" button on the top toolbar to upload or
  - from drop down ⋮ "Upload file" or
  - an on *pencil icon* to edit document in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **File**: You can just drop the file in section or just browse the files by clicking on "Browse files". Supported format are *pdf, png, jpg*.
  - **Filename**: Once you selected the file or dropped the file, filename will be taken from dropped file. Can also be changed.
  - **MNC**: M&C name to whom document belongs. If driver name is selected M&C input will be disabled.
  - **Driver**: Driver name to whom document belongs. If M&C name is selected M&driver input will be disabled.
  - **Comment**: Some information about document.

NOTE: If M&C and Driver fields are empty, the document will belongs to*Global Category*.

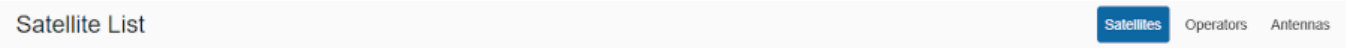
Edit document: If you want to change the document properties but do not want to upload the document, you do not need to drop or browse the "File" section.

- **Actions**:
  - **Upload**:
    - this upload document.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

1.12 Satellite database

The Satellite database provides a structured view of satellites, operators, and antennas. Each category is represented by a distinct table. Users can navigate between these tables using the menu options and access additional details for a selected satellite.

The title bar provides access to the three different datasets:



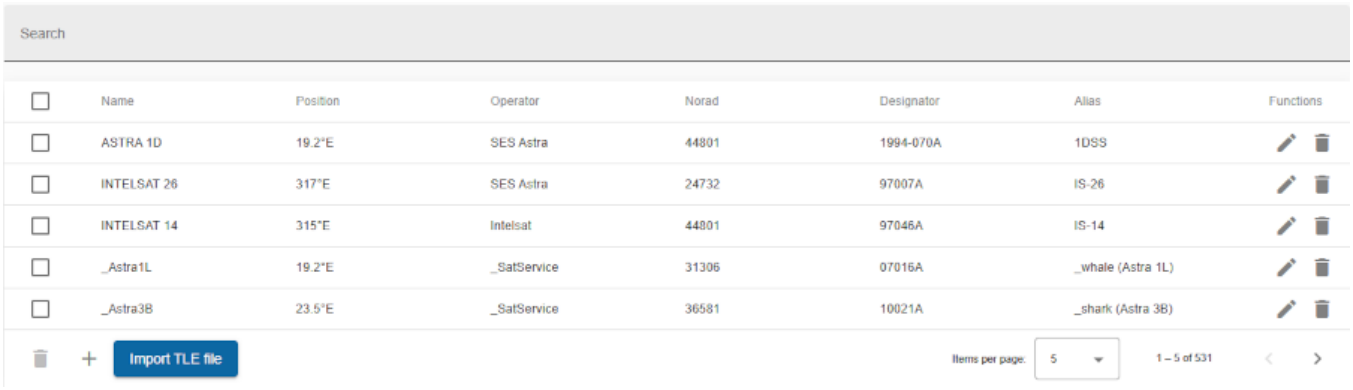
- Satellites (default)
  - displays the list of satellites stored in the database
- Satellite operators
  - each satellite belongs to an satellite operator
  - here you can store for example contact information for line-ups
- Antennas
  - list of configured antennas (and the related devices) which should use the database
  - here you defined the satellite positions an antenna can use to point to a satellite

You can switch between these different tables by clicking on the buttons at the top of this page.

On a system without installed SatDB or if the PostgreSQL Database is not reachable an error message will be display: Error DB not reachable. In this case, please check your database installation.

1.12.1 Satellite list

This shows the list of all satellites in the database.



Satellites are stored by there unique name. We recommend to use the names used by CelesTrak, because this allowes easy bulk import of TLE (two-Line elements). If you prefere deferent name, use the optional Alias field.

The satellite list itself does not contain any satellite position because they depends on the individual antenna. These positions can be found on the Antenna list page.

To use this satellites to move antennas you have to configure the corresponding Antenna Management Devices on the MNC server(s) which controlls the ACU (antenna control unit):

- Antenna-Management

Search bars

- Located at the top of the table.
- Allows users to filter by:
  - *Keywords*: full-text search over all channels and all columns

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

The first column located at the far left of the table provides a checkbox to select one or more channels (rows) and perform the same operation on all selected channels.

- **Single Selection**: Click on a single checkbox to select an individual satellite
- **Multiple Selection**: Click multiple checkboxes to select multiple satellite.
- **Select all**: The checkbox in the header row allows you to select or deselect all satellites on all pages.

The following function(s) are available:

Function	Icon	Description

Function	Icon	Description
delete		delete the selected satellite from the database

The last column located at the far right of the tables provides buttons to run actions on the corresponding satellite.

The following functions for managing a satellite are `available` :

Function	Icon	Description
Delete		to delete the satellite
Edit		modify/edit satellite

The following buttons for global function(s) are available at the the bottom of the table:

Function	Icon	Description
Add		add a new satellite
Delete		to delete all selected the satellite
Import	Import TLE file	[import TLE] data from file
Page	Pagination controls	set the number of items displayed per page (e.g., 5, 10, or 25) and navigate between pages

The satellite table contains the following columns:

Column name	Description
Name	name of satellite
Position	satellite orbit position in degrees
Operator	name of satellite operator
Norad number	NORAD Catalog Number
Designator	International Designator
Alias	Customized alias name

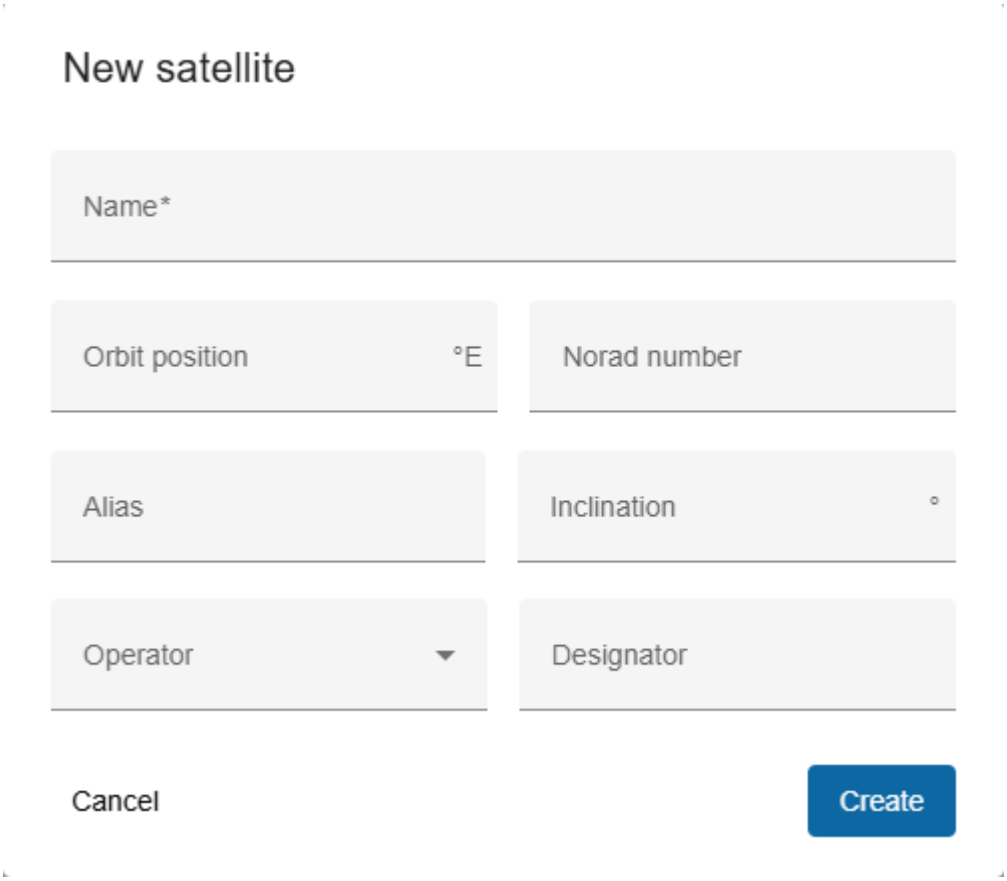
Clicking on a satellite row shows other relatives tables:

- Satellite position
- I11
- Beacons
- TC channels
- TM channels of selected row

Bottom toolbar

- **Create**: + button is used to create new satellite.
- **Import TLE file**: Opens a dialog to import TLE parameters.

1.12.2 Add/edit satellite dialog



- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new satellite or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new satellite, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Name**: The user defined name of this satellite.
  - **Orbit position**: Satellite orbit position in degrees.

- **Norad number**: unique name (world wide standardized)
- **Alias**: This can be used by customer to add own name.
- **Inclination**: Satellite inclination in degrees.
- **Operator**: Add satellite operator.
- **Designator**: Unique name (world wide standardized).

- **Actions**:
  - **Create/Save**:
    - For new satellite, this creates the satellite with the provided details.
    - For existing satellite, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

1.12.2.1 On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column or trash icon from bottom toolbar.
- **Content**: Asks the user to confirm whether they want to delete the selected satellite(s).
- **Actions**:
  - **Yes**: Deletes the satellite(s) permanently.
  - **Cancel**: Cancels the deletion action.

1.12.3 Satellite related tables

Toolbar (top)

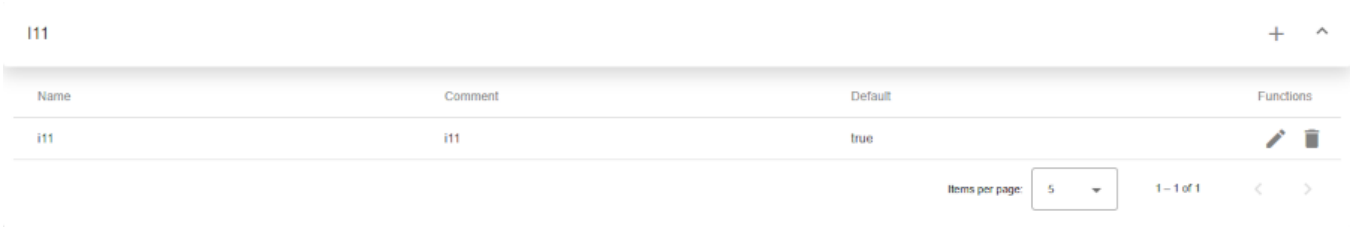
- **Title**:
  - Satellite name
  - Satellite alias
- **Edit NORAD TLE**: Trigger dialog to modify NORAD TLE.

Tables:

- I11 table
- Beacons
- TC channels
- TM channels
- **Functionality**: Clicking on title or + or arrow to downside expands the table.

1.12.3.1 I11 table

Intelsat 11 elements describing the satellite path for a given time. It is comparable to TLE (Two-Line Elements) but it is possible to have multiple I11 elements per satellite for the same time but with different accuracy. It may be useful to store very accurate I11 elements but they are only valid for a short time and in case that you are not able to update regularly, you can store a long term I11 in the database to be prepared if the short term element is expired.



Top

- Left-side title of table.
- Plus (+) button to create new i11.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Name**: The name of the satellite as stated in the original I11 parameter set.
- **Default**: True means this is the default I11 dataset for this satellite.
- **Comment**: Describing the purpose of this dataset.
- **Functions**: Action icons for managing the key:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.12.3.1.1 Functionality

Create i11

- Click the + button at the top of the table to add a new i11.
- Input the required details.

Edit i11

- Click the *pencil icon* in the Functions column to modify i11 details.
- Adjust the settings and save.

Delete i11

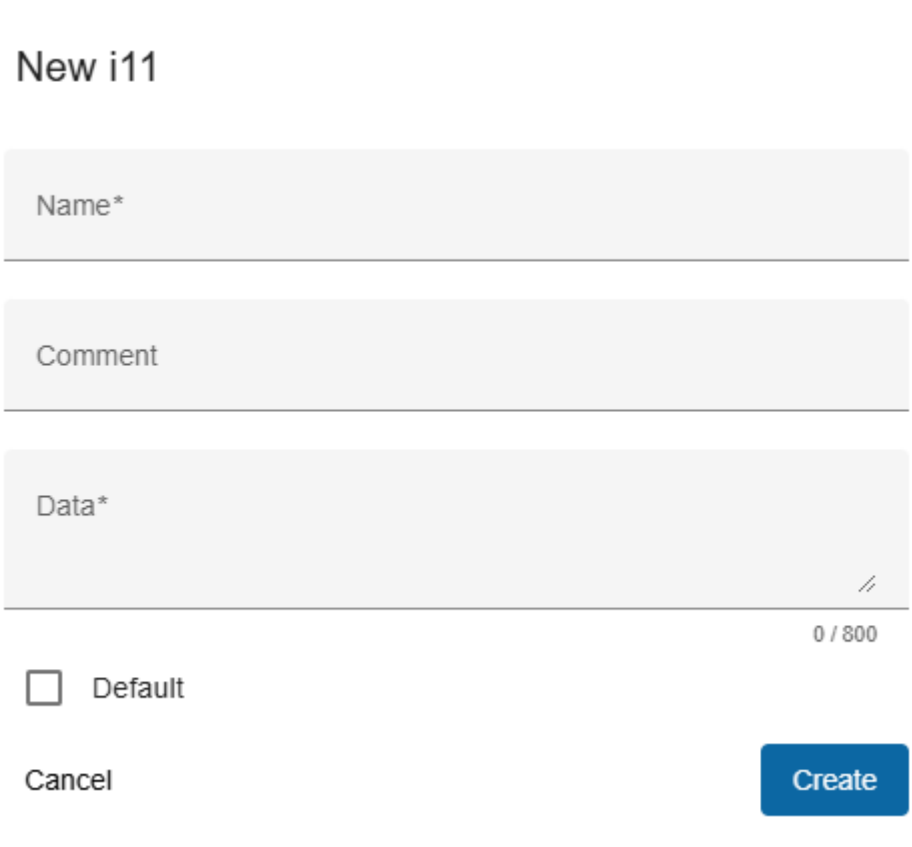
- Click the *trash icon* in the Functions column to delete an i11.
- Confirm the action in the pop-up dialog to delete the i11.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.12.3.1.2 Dialogs

Add/edit i11 dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit i11 in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:

- **Name**: The name of the satellite as stated in the original I11 parameter set.
- **Comment**: Free text describing the purpose of this dataset.
- **Norad number**: unique name (world wide standardized)
- **Data**: The 11 ephemeris parameters, floating point, separated by semicolon characters.
- **Default**: Set i11 as default.

- **Actions**:

  - **Create/Save**:
    - For new i11, this creates the satellite with the provided details.
    - For existing i11, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected i11.
- **Actions**:
  - **Yes**: Deletes the i11 permanently.
  - **Cancel**: Cancels the deletion action.

1.12.3.2 Beacons table

Satellite beacons are used to track satellites. Each satellite can have more than one beacon, usually there are at least one beacons on every polarization. The preferred beacon can be marked as default in the database. It will be used if the operator does not select a specific beacon for Step-Track.

Top

- Left-side title of table.
- Plus (+) button to create new beacon.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Frequency**: Beacon frequency, floating point, MHz.
- **Polarization**: This is an enumeration.
- **Comment**: Describing the purpose of this beacon.
- **Default**: True means this is the default beacon dataset for this satellite. .**Attenuation**: Modify attenuation value stored in the database for one particular pair of antenna and beacon. Opens beacon-attenuation dialog.
- **Functions**: Action icons for managing the key:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.12.3.2.1 Functionality

Create beacon

- Click the + button at the top of the table to add a new beacon.
- Input the required details.

Edit beacon

- Click the *pencil icon* in the Functions column to modify beacon details.
- Adjust the settings and save.

Attenuation

- Click *pencil outlined* in the row under attenuation. Modify value stored in the database for one particular pair of antenna and beacon. Opens beacon-attenuation dialog.

Delete beacon

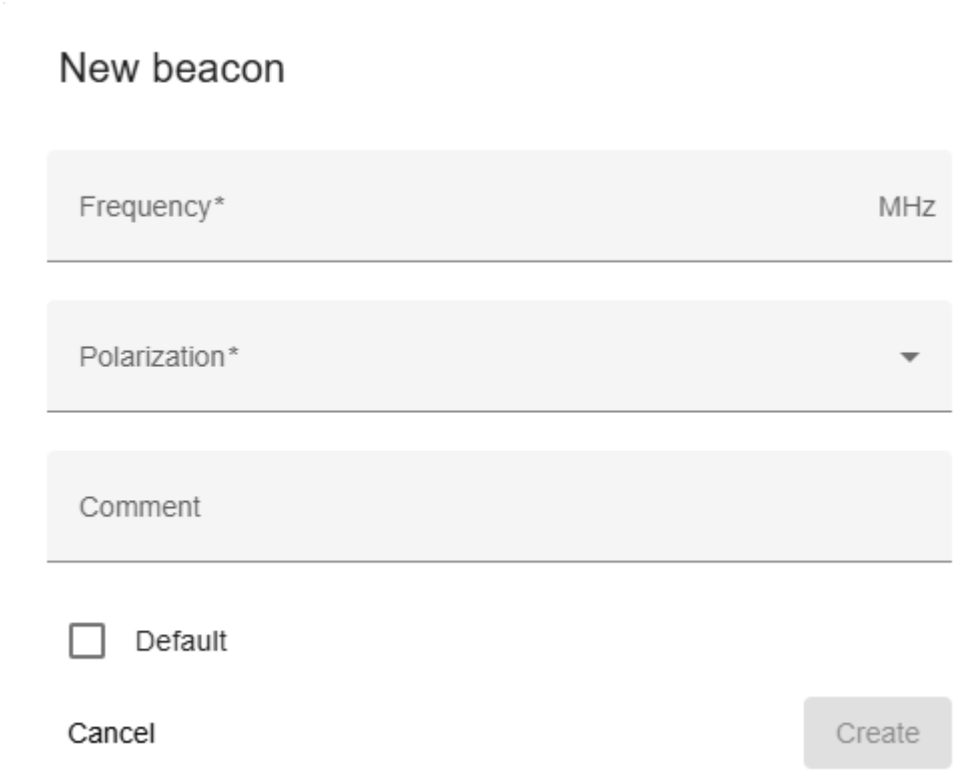
- Click the *trash icon* in the Functions column to delete an beacon.
- Confirm the action in the pop-up dialog to delete the beacon.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.12.3.2.2 Dialogs

Add/edit beacon dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit beacon in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Frequency**: Beacon frequency, floating point, MHz.
  - **Polarization**: An enumeration, one of "H", "V", "RHCP" or "LHCP".
  - **Comment**: Free text describing the purpose of this dataset.
  - **Default**: Set beacon as default.
- **Actions**:
  - **Create/Save**:
    - For new beacon, this creates the beacon with the provided details.
    - For existing beacon, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

Modify beacon attenuation

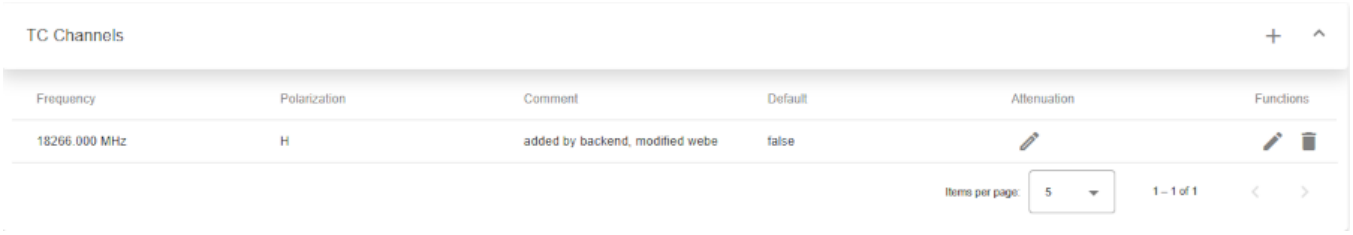
- **Trigger**: Click on the *pencil outlined* button in the row under *attenuation*
- **Fields**:
  - **Select antenna**: Drop-down to select antenna.
  - **Attenuation**: Receiver attenuation, floating point, dB.
- **Actions**:
  - **Save**:
    - Saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected beacon.
- **Actions**:
  - **Yes**: Deletes the beacon permanently.
  - **Cancel**: Cancels the deletion action.

1.12.3.3 TC channel table

Tele-Command (TC) channels defining communcation channels used to send commands to a satellite.



Top

- Left-side title of table.
- Plus (+) button to create new TC channel.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Frequency**: TC channel frequency, floating point, MHz.
- **Polarization**: This is an enumeration.
- **Comment**: Describing the purpose of this beacon.
- **Default**: True means this is the default beacon dataset for this satellite. .**Attenuation**: Modify attenuation value stored in the database for one particular pair of antenna and TC channel. Opens TC-Attenuation dialog.
- **Functions**: Action icons for managing the key:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.12.3.3.1 Functionality

Create TC channel

- Click the + button at the top of the table to add a new TC channel.
- Input the required details.

Edit TC channel

- Click the *pencil icon* in the Functions column to modify TC channel details.
- Adjust the settings and save.

Attenuation

- Click *pencil outlined* in the row under attenuation. Modify value stored in the database for one particular pair of antenna and TC channel. Opens beacon-attenuation dialog.

Delete TC channel

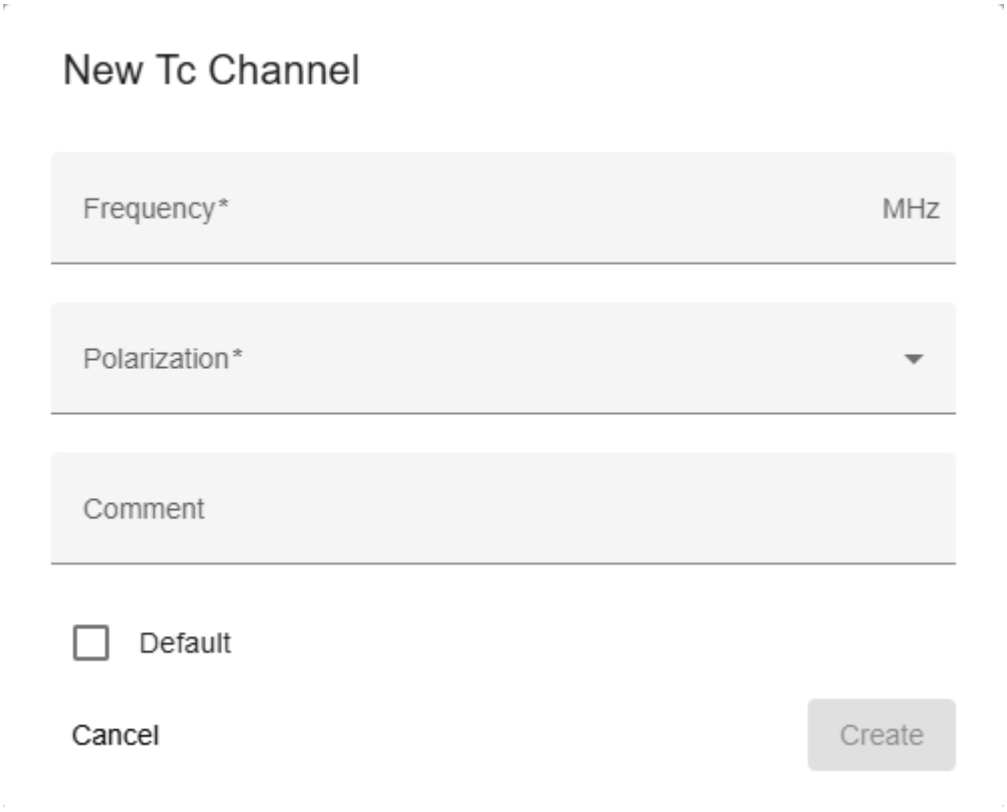
- Click the *trash icon* in the Functions column to delete an TC channel.
- Confirm the action in the pop-up dialog to delete the TC channel.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.12.3.3.2 Dialogs

Add/edit TC channel dialog

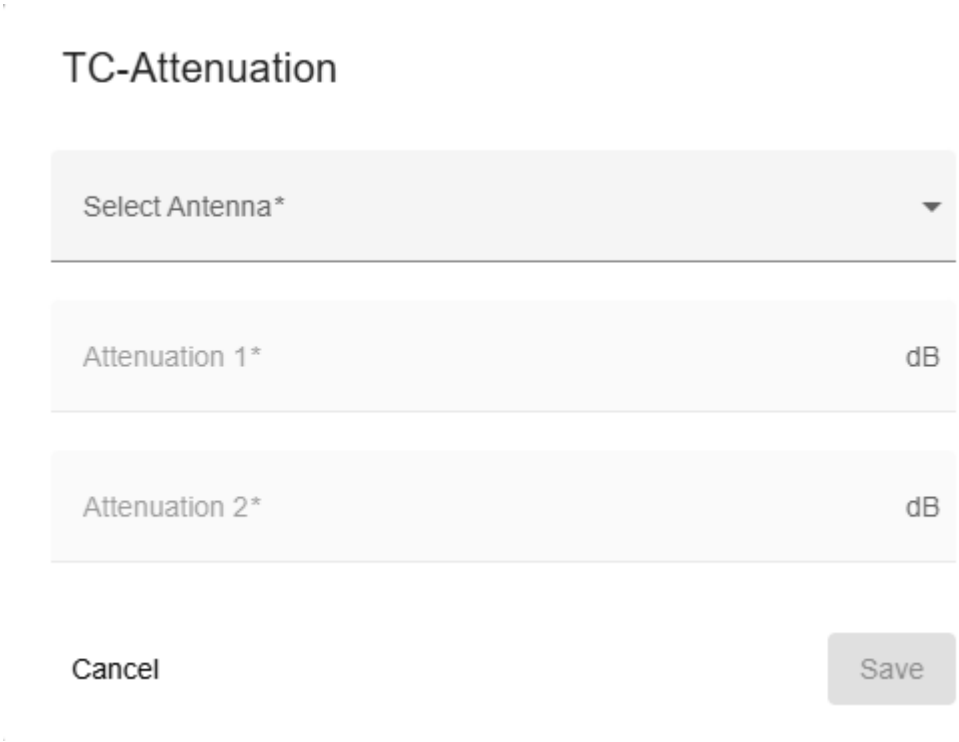


- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit TC channel in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:

- **Frequency**: TC channel frequency, floating point, MHz.
- **Polarization**: An enumeration, one of "H", "V", "RHCP" or "LHCP".
- **Comment**: Free text describing the purpose of this dataset.
- **Default**: Set TC channel as default.

- **Actions**:
  - **Create/Save**:
    - For new TC channel, this creates the TC channel with the provided details.
    - For existing TC channel, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

Modify TC channel attenuation



- **Trigger**: Click on the *pencil outlined* button in the row under *attenuation*
- **Fields**:
  - **Select antenna**: Drop-down to select antenna.
  - **Attenuation 1**: Transmit attenuation1, floating point, dB.
  - **Attenuation 2**: Transmit attenuation2, floating point, dB.
- **Actions**:
  - **Save**:
    - Saves modifications.
    - If an error occurs in the input fields, the button is deactivated.

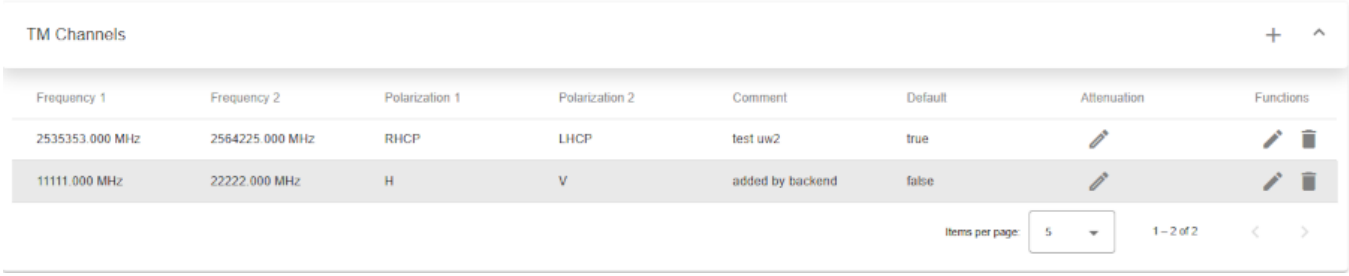
- **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected TC channel.
- **Actions**:
  - **Yes**: Deletes the TC channel permanently.
  - **Cancel**: Cancels the deletion action.

1.12.3.4 TM channel table

Telemetry (TM) channels defining communcation channels used to receive status and measurement data from satellites.



Top

- Left-side title of table.
- Plus (+) button to create new TM channel.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Frequency 1**: Primary receive frequency, floating point, MHz.
- **Frequency 2**: Secondary receive frequency, floating point, MHz.
- **Polarization 1**: This is an enumeration.
- **Polarization 2**: This is an enumeration.
- **Comment**: Describing the purpose of this beacon.
- **Default**: True means this is the default TM channel dataset for this satellite. .
  Attenuation: Modify attenuation value stored in the database for one particular pair of antenna and TM channel. Opens TC-Attenuation dialog.
- **Functions**: Action icons for managing the key:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.12.3.4.1 Functionality

Create TM channel

- Click the + button at the top of the table to add a new TM channel.
- Input the required details.

Edit TC channel

- Click the *pencil icon* in the Functions column to modify TC channel details.
- Adjust the settings and save.

Attenuation

- Click *pencil outlined* in the row under attenuation. Modify value stored in the database for one particular pair of antenna and TC channel. Opens beacon-attenuation dialog.

Delete TC channel

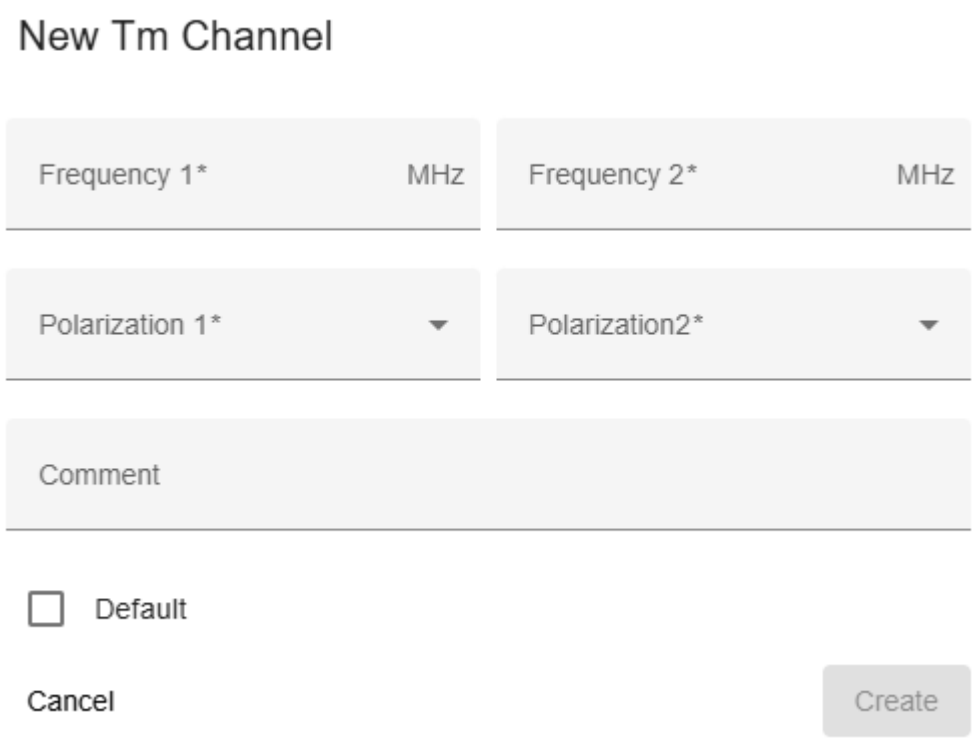
- Click the *trash icon* in the Functions column to delete an TC channel.
- Confirm the action in the pop-up dialog to delete the TC channel.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

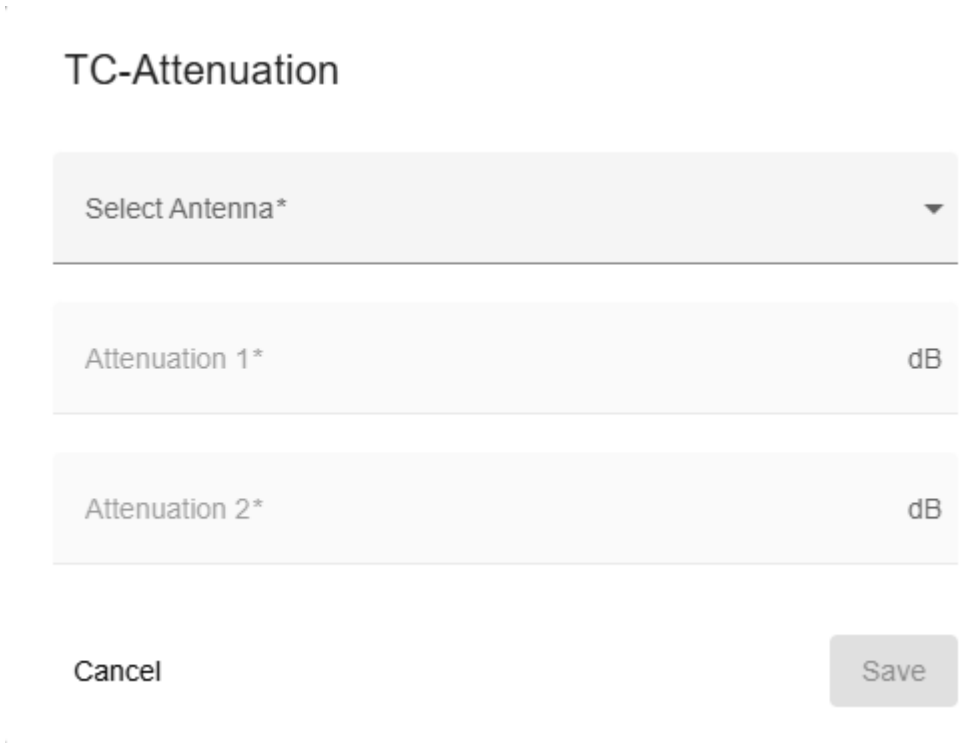
1.12.3.4.2 Dialogs

Add/edit TC channel dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit TC channel in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Frequency 1**: Primary receive frequency, floating point, MHz.
  - **Frequency 2**: Secondary receive frequency, floating point, MHz.
  - **Polarization 1**: This is an enumeration.
  - **Polarization 2**: This is an enumeration.
  - **Comment**: Free text describing the purpose of this dataset.
  - **Default**: Set TM channel as default.
- **Actions**:
  - **Create/Save**:
    - For new TM channel, this creates the TC channel with the provided details.
    - For existing TM channel, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

Modify TM channel attenuation



- **Trigger**: Click on the *pencil outlined* button in the row under *attenuation*
- **Fields**:
  - **Select antenna**: Drop-down to select antenna.
  - **Attenuation 1**: Transmit attenuation1, floating point, dB.
  - **Attenuation 2**: Transmit attenuation2, floating point, dB.
- **Actions**:
  - **Save**:
    - Saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

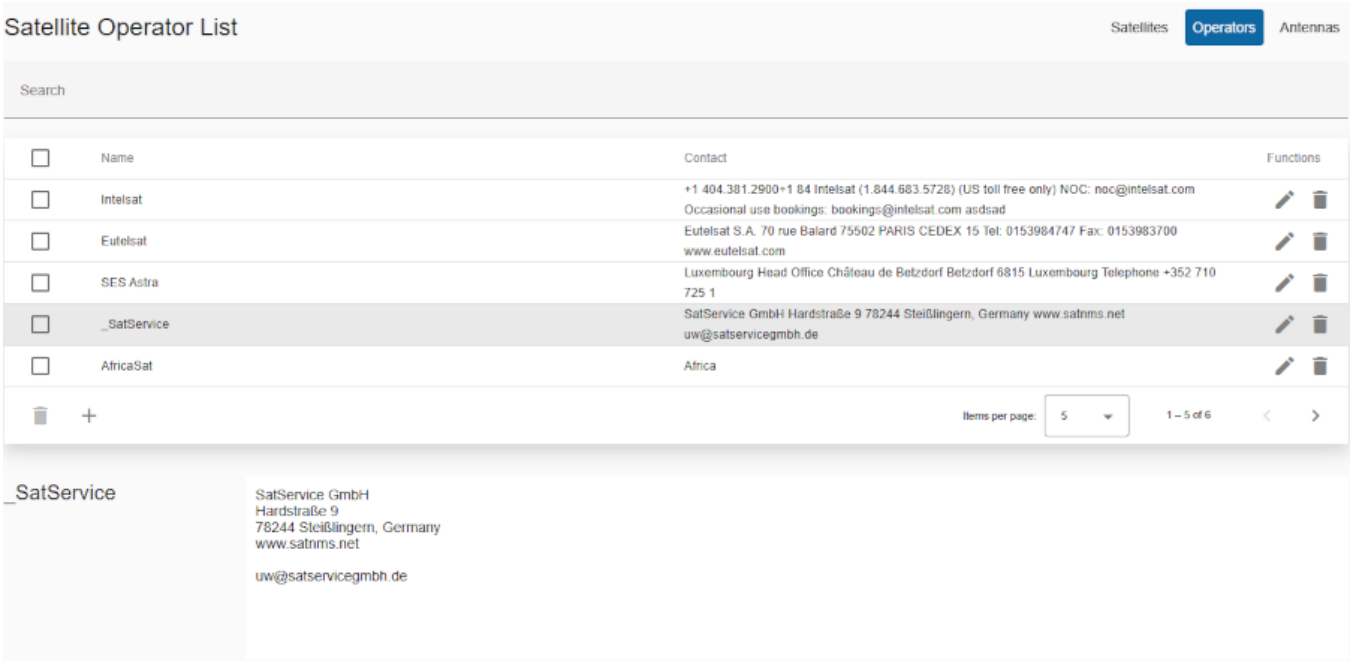
On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected TC channel.
- **Actions**:
  - **Yes**: Deletes the TC channel permanently.
  - **Cancel**: Cancels the deletion action.

1.13 Satellite operator list

All satellites operators known to system. You need to define a satellite operator before you can create an new satellite.

This list is also useful to store contact information of an satellite operator, e.g to perform a line-up before your start a transmission.



Title: Title of selected table (e.g. Operator list).

Menu options:

- **Satellites**: Displays the table of satellites.
- **Operators**: Displays the table of operators. The selected option has background color.
- **Antennas**: Displays the table of antennas.

Search bar

- Located at the top of the table.
- Allows users to filter events by keywords.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
  - **Location**: The checkbox column is located at the far left of the table.
  - **Purpose**: Allows users to select one or multiple rows for delete row(s).
  - **Functionality**:
    - **Single Selection**: Click on a single checkbox to select an individual row.
    - **Multiple Selection**: Click multiple checkboxes to select multiple rows at

once.
    - **Select all**: The checkbox in the header row allows you to select or deselect all rows on all pages.
    - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **Name**: The name of operator.
- **Contact**: Contact details of operator.
- **Functions**: Action icons for managing the operator:
    - **Edit**: Pencil icon to modify/edit the operator.
    - **Delete**: Trash can icon to delete the operator.

Rows: Clicking on operator row shows details of selected row (operator).

Bottom toolbar

- **Delete selected rows**: A button to delete selected rows from checkbox column.
- **Create**: + button is used to create new operator.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

Details of selected operator:

- Name of operator
- Contact details of operator

1.13.1 Functionality

Create operator

- Click the + button at the bottom of the table to add a new operator.
- Input the required details.

Edit operator

- Click the *pencil icon* in the Functions column to modify operator details.
- Adjust the settings and save.

Delete operator

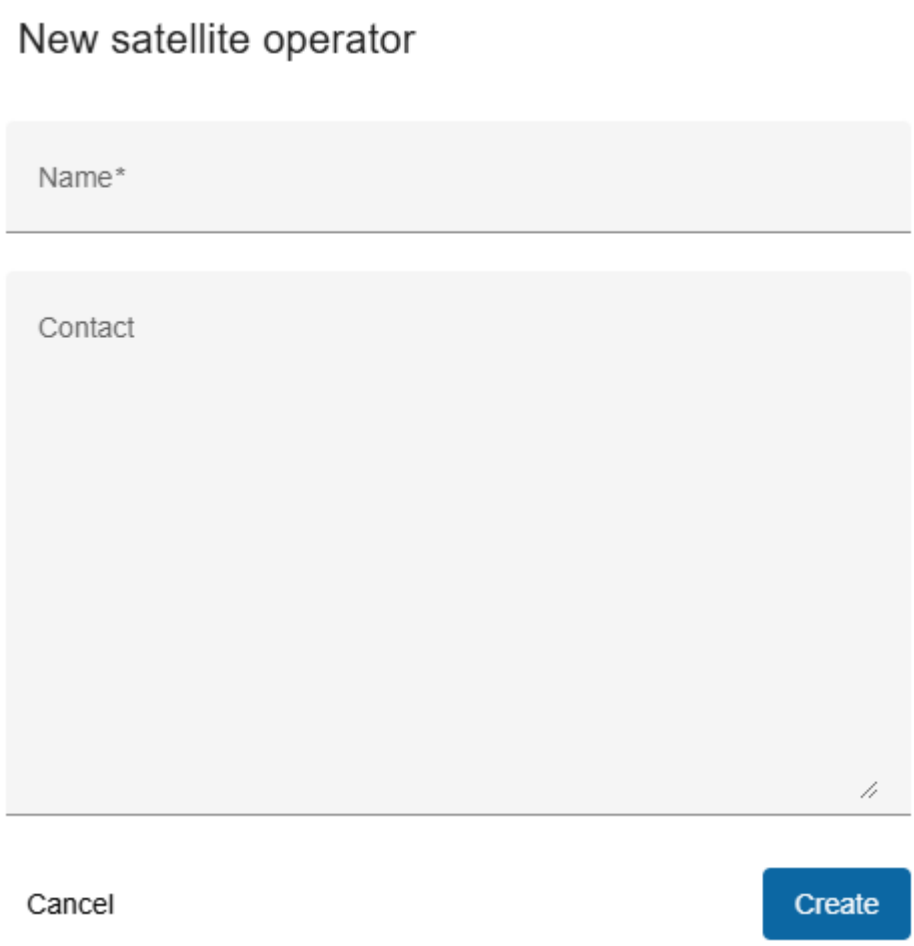
- Click the *trash icon* in the Functions column to delete an operator.
- Confirm the action in the pop-up dialog to delete the operator.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.13.2 Dialogs

Add/edit satellite dialog



- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new operator or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new operator, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Name**: The user defined name of this operator.
  - **Contact**: Contact details of operator.
- **Actions**:
  - **Create/Save**:
    - For new operator, this creates the operator with the provided details.
    - For existing operator, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

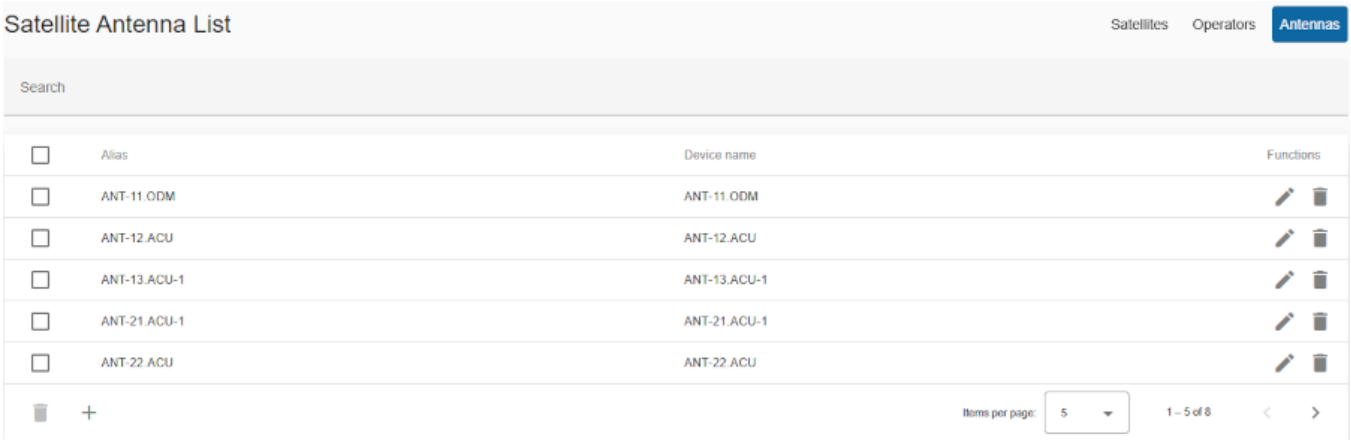
- **Trigger**: Opens when you click the trash icon for an operator from menu column or trash icon from bottom toolbar .
- **Content**: Asks the user to confirm whether they want to delete the selected operator(s).
- **Actions**:
  - **Yes**: Deletes the operator(s) permanently.
  - **Cancel**: Cancels the deletion action.

1.14 Antenna list

All saved antenna in database.

The position of a satellite (Azimuth, Elevation, Polarization) depends on the geographically location of the antenna and structural conditions of the antenna. Therefore a satellite position is different for every antenna.

With this list you define all antennas managed by this M&C system and which satellites are reachable with this antenna. To add a new satellite, your have to create the satellite before you can add here the position.



Title: Title of selected table (e.g. Antenna list).

Menu options:

- **Satellites**: Displays the table of satellites.
- **Operators**: Displays the table of operators.
- **Antennas**: Displays the table of antennas. The selected option has background color.

Search bar

- Located at the top of the table.
- Allows users to filter events by keywords.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.

- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
  - **Location**: The checkbox column is located at the far left of the table.
  - **Purpose**: Allows users to select one or multiple rows for delete row(s).
  - **Functionality**:
    - **Single Selection**: Click on a single checkbox to select an individual row.
    - **Multiple Selection**: Click multiple checkboxes to select multiple rows at once.
    - **Select all**: The checkbox in the header row allows you to select or deselect all rows on all pages.
    - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **Alias**: Alias of antenna.
- **Device name**: Device name from the MNC system.
- **Functions**: Action icons for managing the antenna:
  - **Edit**: Pencil icon to modify/edit the antenna.
  - **Delete**: Trash can icon to delete the antenna.

Rows: Clicking on antenna row shows other relatives tables likeSatellite positions and Tracks of selected row.

Bottom toolbar

- **Delete selected rows**: A button to delete selected rows from checkbox column.
- **Create**: + button is used to create new antenna.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.14.1 Functionality

Create antenna

- Click the + button at the bottom of the table to add a new antenna.
- Input the required details.

Edit antenna

- Click the *pencil icon* in the Functions column to modify antenna details.
- Adjust the settings and save.

Delete antenna

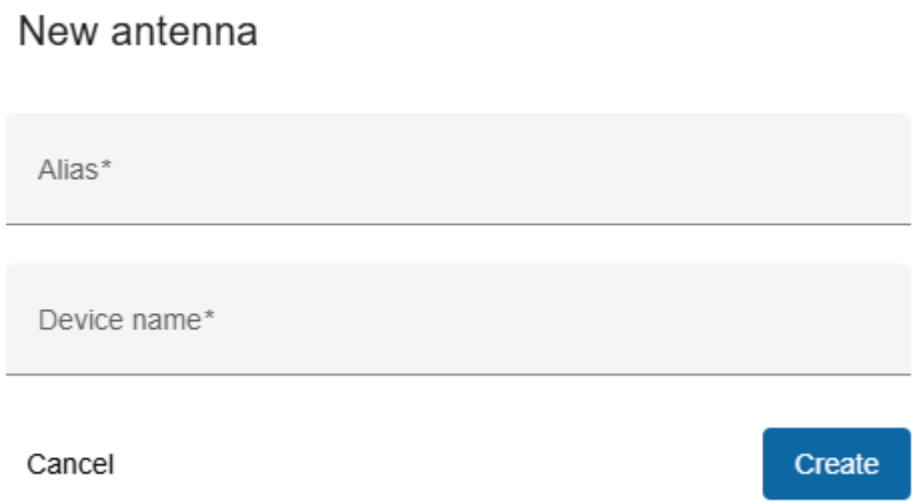
- Click the *trash icon* in the Functions column to delete an antenna.
- Confirm the action in the pop-up dialog to delete the antenna.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.14.2 Dialogs

Add/edit satellite dialog



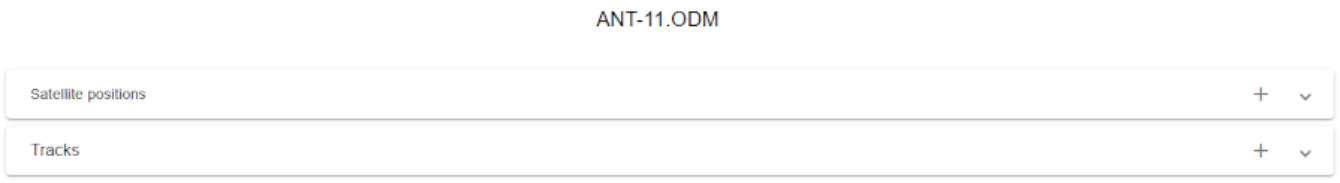
- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new antenna or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new antenna, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Alias**: Free text, can be used by user to add own name.
  - **Device name**: Free text, device name from the MNC system.
- **Actions**:
  - **Create/Save**:
    - For new antenna, this creates the antenna with the provided details.
    - For existing antenna, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an antenna from menu column or trash icon from bottom toolbar .
- **Content**: Asks the user to confirm whether they want to delete the selected antenna(s).
- **Actions**:
  - **Yes**: Deletes the antenna(s) permanently.

- **Cancel**: Cancels the deletion action.

1.14.3 Antenna related tables



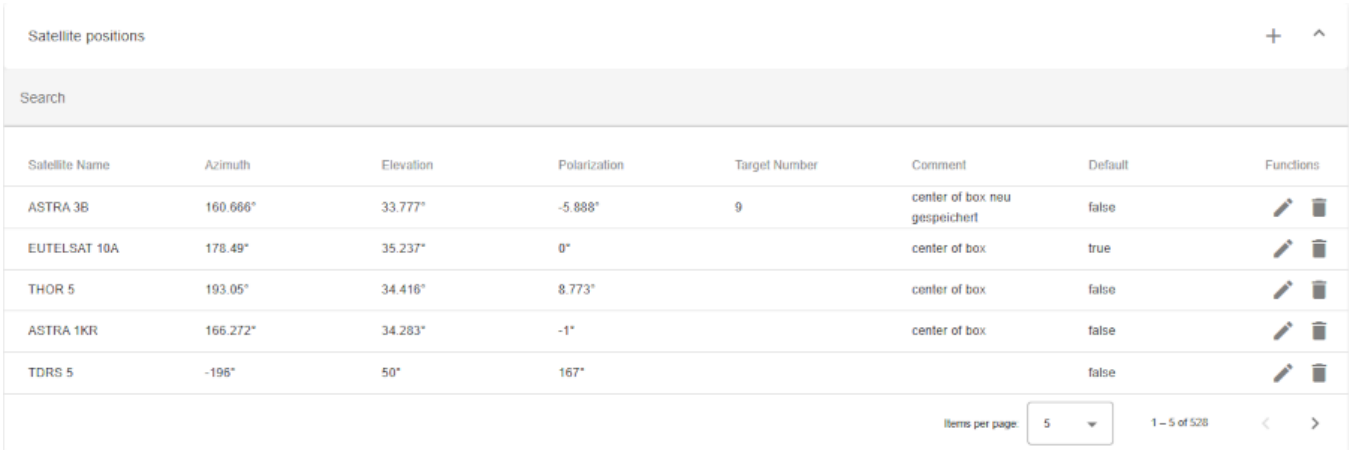
Title: Antenna name

Tables:

- Satellite position
- Tracks
- Import targets from Antenna Controller
- **Functionality**: Clicking on title or + or arrow to downside expands the table.

1.14.3.1 Satellite position table

The list of all satellite positions for the given antenna.



Top

- Left-side title of table.
- Plus (+) button to create new satellite position.
- Icon button to expand or collapse table

Search bar

- Located at the top of the table.
- Allows users to filter events by keywords.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

Accessing the table from satellites page:

- **Device name**: Device name from the MNC system.
- **Alias**: Alias of antenna.

Accessing the table from antennas page:

- **Satellite name**: The name of the satellite to which this data set relates.

Common columns:

- **Azimuth**: Antenna azimuth pointing angle in degrees (floating point).
- **Elevation**: Antenna elevation pointing angle in degrees (floating point).
- **Polarization**: Antenna polarization pointing angle in degrees (floating point).
- **Target number**: Saved target number at antenna controllers.
- **Comment**: Text describing the purpose of this database entry.
- **Default**: Default position for selected antenna. Excluded from satellite page
- **Functions**: Action icons for managing the satellite position:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.14.3.1.1 Functionality

Create satellite position

- Click the + button at the top of the table to add a new satellite position.
- Input the required details.

Edit satellite position

- Click the *pencil icon* in the Functions column to modify satellite position details.
- Adjust the settings and save.

Delete satellite position

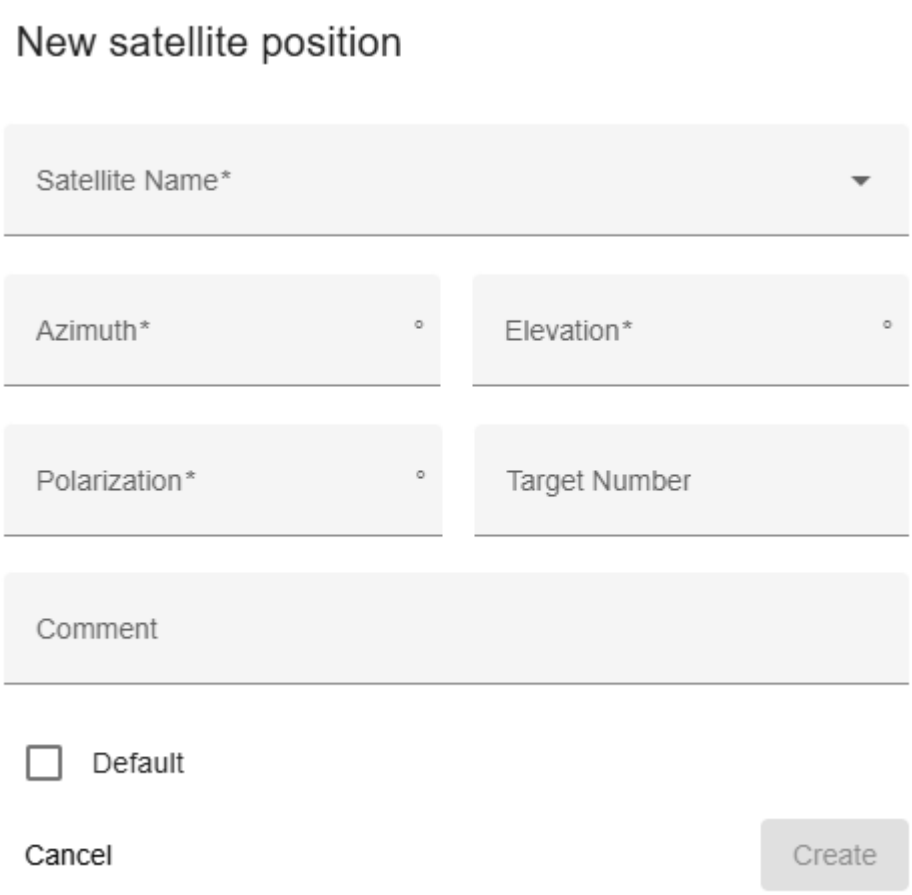
- Click the *trash icon* in the Functions column to delete an satellite position.
- Confirm the action in the pop-up dialog to delete the satellite position.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.14.3.1.2 Dialogs

Add/edit satellite position dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit satellite position in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Satellite name**: Select an satellite name from drop-down to which the data set should refer.
  - **Filename**: The name of the data file containing the position data of the satellite.
  - **Comment**: Free text describing the purpose of this dataset.
  - **Default**: Set position as default.

- **Functions**: Action icons for managing the track:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

- **Actions**:

  - **Create/Save**:
    - For new position, this creates the satellite position with the provided details.
    - For existing position, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an satellite position from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected satellite position.
- **Actions**:
  - **Yes**: Deletes the satellite position permanently.
  - **Cancel**: Cancels the deletion action.

1.14.3.2 Tracks table

Especially for fast moving satellites or satellites in a transition phase it may be necessary to move the antenna with a pre-calculate list of satellite postions. These list is called a track. Files with tracks are usually created by satellite operators. These files have one line per step with: timestand, azimuth, elevation and polarization.

Top

- Left-side title of table.
- Plus (+) button to create new track.
- Icon button to expand or collapse table

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon

near the column name.

Table columns

- **Satellite name**: The name of the satellite to which this data set relates.
- **Filename**: Saved name of the data file containing the position data of the satellite.
- **Comment**: Text describing the purpose of this database entry.
- **Default**: Default track for selected antenna.
- **Functions**: Action icons for managing the track:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.14.3.2.1 Functionality

Create track

- Click the + button at the top of the table to add a new track.
- Input the required details.

Edit track

- Click the *pencil icon* in the Functions column to modify track details.
- Adjust the settings and save.

Delete track

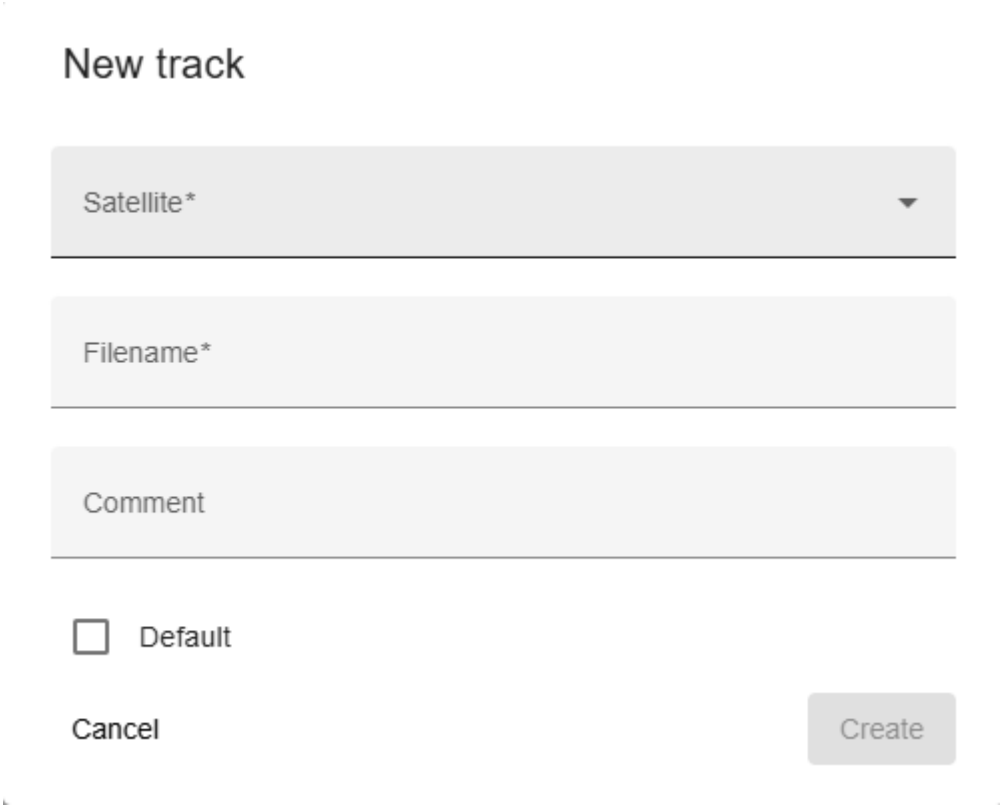
- Click the *trash icon* in the Functions column to delete an track.
- Confirm the action in the pop-up dialog to delete the track.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.14.3.2.2 Dialogs

Add/edit track dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit track in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Satellite name**: Select an satellite name from drop-down to which the data set should refer.
  - **Filename**: The name of the data file containing the position data of the satellite.
  - **Target number**: A target number to be set at some antenna controllers.
  - **Comment**: Free text describing the purpose of this dataset.
  - **Default**: Set track as default.
- **Actions**:
  - **Create/Save**:
    - For new track, this creates the track with the provided details.
    - For existing track, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an track from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected track.
- **Actions**:
  - **Yes**: Deletes the track permanently.

- **Cancel**: Cancels the deletion action.

1.14.3.3 Imports table

This tables contains the target list read from an ACU device.

Top

- Left-side title of table.
- Icon button to expand or collapse table

Search bar

- Located at the top of the table.
- Allows users to filter events by keywords.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Satellite name**: The name of the satellite to which this data set relates.
- **Azimuth**: Antenna azimuth pointing angle in degrees (floating point).
- **Elevation**: Antenna elevation pointing angle in degrees (floating point).
- **Polarization**: Antenna polarization pointing angle in degrees (floating point).
- **Target number**: Saved target number at antenna controllers.
- **Functions**: Action icons for managing the ACU-Target:
  - **Import**: Open a dialog to perform action.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and

navigate between pages.

1.14.3.3.1 Functionality

Import satellite position

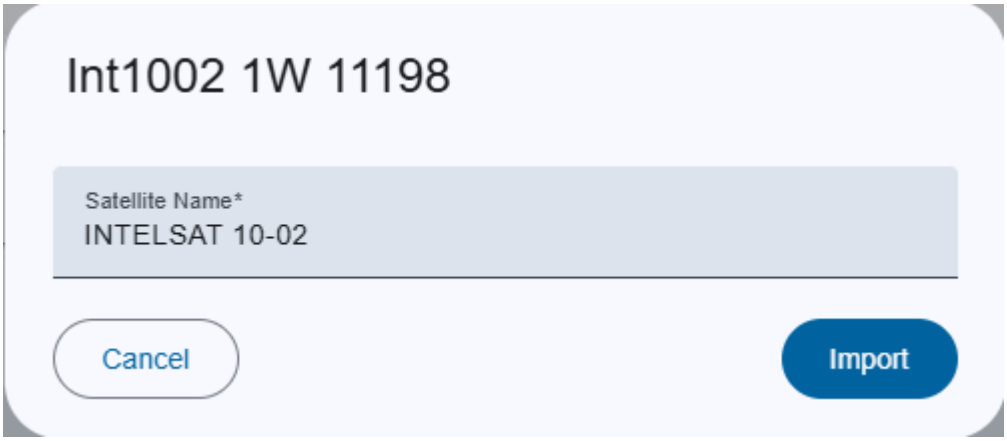
- Click the icon opens a dialog to import values.

Pagination

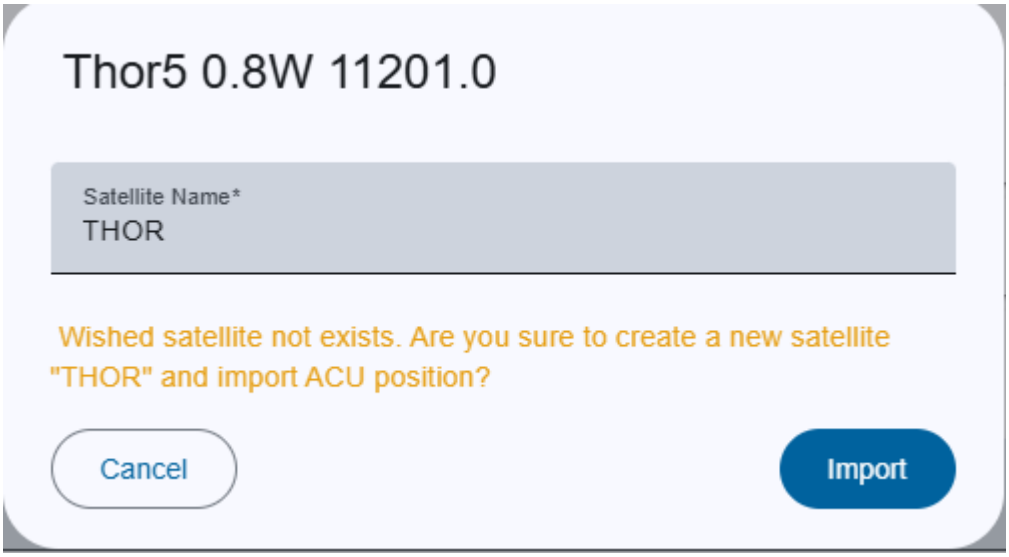
- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.14.3.3.2 Dialogs

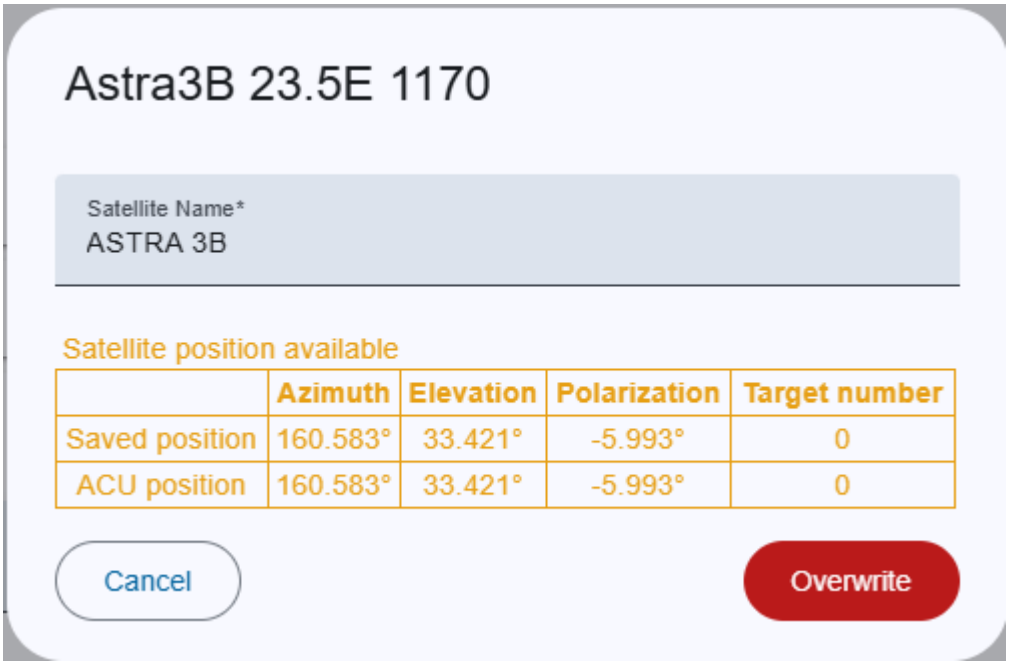
Import satellite position



- **Trigger**:
  - when you click on the icon to import values
  - The dialog title clearly indicates the name of "Satellite name" saved on ACU Target list
- **Fields**:
  - **Satellite name**: Select an satellite name from drop-down to which the data set should refer.
  - **Warnings**:
    - If the specified satellite is not saved



- If the satellite position is exists, the values of both are displayed to show the difference.



- **Actions**:
  - **Import/Overwrite**:
    - For new satellite or satellite position, this creates the satellite or satellite position with ACU-Target values.
    - For existing position, this overwrites with ACU-Target values.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

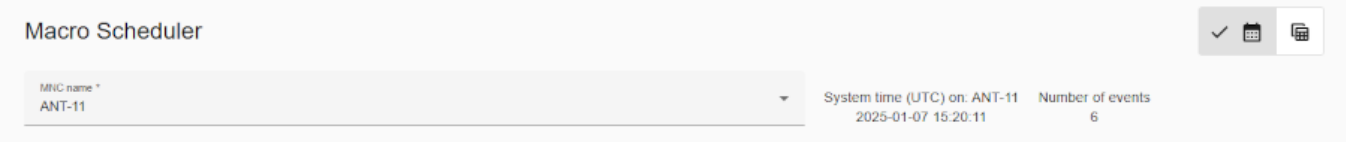
1.15 The Macro Scheduler

The Macro scheduler included in the sat-nms M&C software lets you execute macros at planned times. You access the macro scheduler from the main window by clicking to the toolbar icon which shows a alarm icon.

The Macro scheduler supports events which are executed once at a given time as well as repeated events on a daily, weekly, monthly or yearly base. Repeated events are executed in the planned was up to a given end date. Monthly repeated events are executed every month at the programmed day of month. If you program a monthly event for 29.-31. of a month, it will be executed at the last day of a month which is shorter.

The Macro scheduler page shows a list (in calender- or table-view) of planned events and provides controls to add, edit or delete events. Like with the macro/event management window, you may either select the recorded/stored macro you want to be played at the event's time or enter the commands manually.

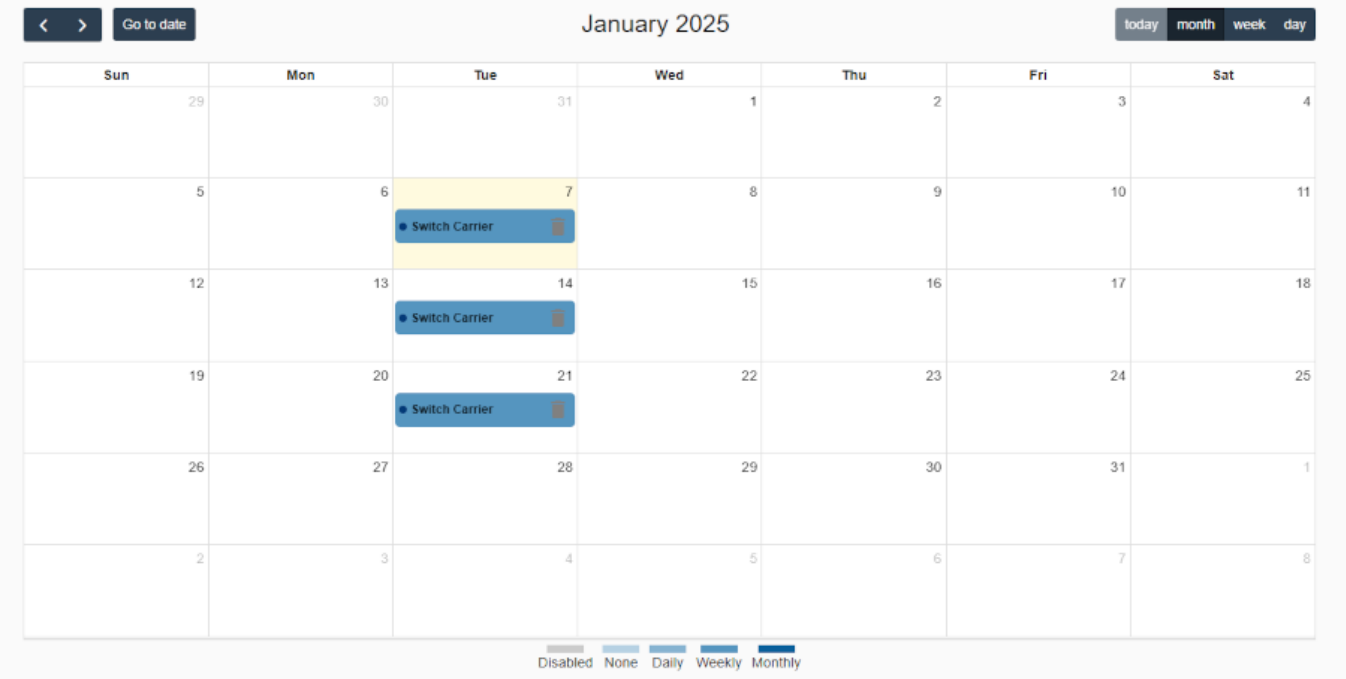
1.15.1 Scheduler



1. **Title**: Title of scheduler page.
2. **View options**: At the top right of the page are view options.
   - Calendar view (default)
   - Table view
3. **Select an MNC**: Below the heading and the view option, you must select an MNC from the drop-down list.
4. **Current system time**: After selecting the MNC near the drop-down list, the current system time in UTC is displayed.
5. **Total events**: Total number of events of the selected MNC is displayed.

1.15.2 Calender view

The Calendar View provides an interactive interface to visualize, create, manage, and track events based on different time frames (day, week, month). Users can navigate between dates, create new events, edit existing ones, reschedule an event by drag and drop, and distinguish events using a color-coded legend.



Navigation bar (top)

- **Left and right Arrows**: Use these arrows to navigate to the previous or next time-frame (month, week, or day, depending on the selected view).
- **Go to date button**: Click to open a dialog where you can select a specific year and month to navigate directly.

Current date

- In the middle, there is a heading displaying the current month and year. If you select a view other than the month, it will show the date range for the week or, for the day view, the specific month, day, and year.

View selection buttons

- Located in the top-right corner:
    - **Today**: If the current date is already displayed, the button is disabled. Otherwise, clicking the button takes you directly current date.
    - **Month**: Displays the calendar in a monthly view (default).
    - **Week**: Switches the calendar to a weekly view.
    - **Day**: Displays the calendar in a daily view.

Calender

- In the middle is the calendar view, displaying the selected view. Clicking on an event allows you to edit it, and clicking on the delete icon lets you delete the event. If you click on an empty date, you can create a new event. You can also reschedule an event by dragging and dropping it to a different date. A pop-up will appear to confirm the changes.
- Once an event is scheduled, the calendar will display it only on the set date. If the event

is set to repeat weekly, it will appear every week until it expires, and similarly for yearly or monthly or daily recurring events.

Color-coded legend (bottom)

- Clarification of the calendar colors, explaining what each color represents.

1.15.2.1 Features

Create event

- Click on an empty date to open the event creation dialog.
- Specify event details, including title, start date, end date, and recurrence type.

Edit event

- Click on an event to modify its details.
- Adjust the event date, recurrence, or other settings.

Delete event

- Use the trash icon within an event to delete it.
- Confirm the action in the pop-up dialog to delete the event.

Drag and drop rescheduling

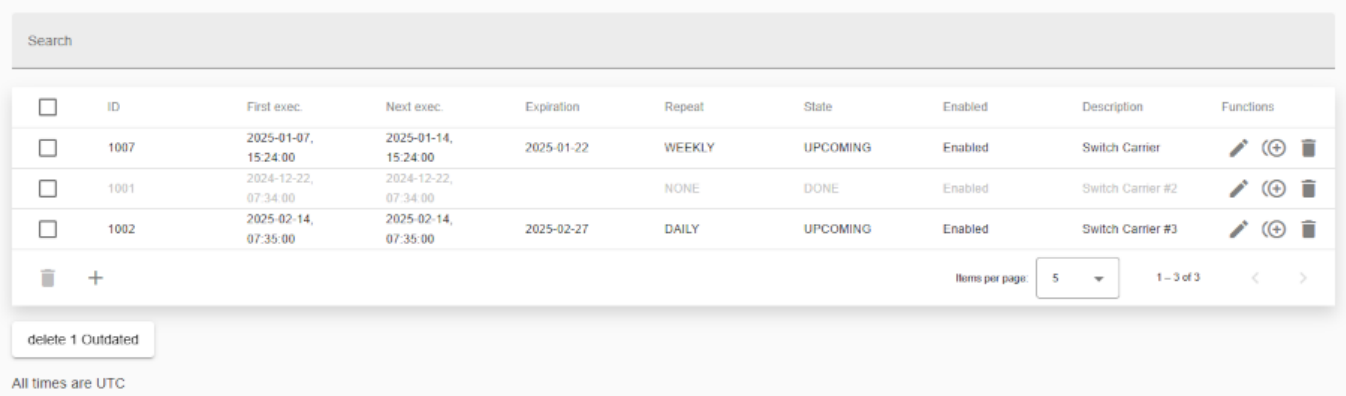
- Drag an event from one date to another to reschedule it.
- A confirmation dialog will appear to validate the changes.

Time frame navigation

- Navigate seamlessly using the arrows or the *Go to Date* button to jump to specific months, weeks, or days.

1.15.3 Table view

The Scheduler Table View provides a detailed interface to manage and monitor scheduled events. It allows users to view, edit, delete, and create events efficiently. All times displayed are in UTC.



Search bar

- Located at the top of the table.
- Allows users to filter events by keywords, such as ID, description, repeat type, etc.

Header row

- You can sort rows in ascending or descending order by clicking on the column header (e.g., ID, First Exec., Next Exec., etc.).
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
  - **Location**: The checkbox column is located at the far left of the table.
  - **Purpose**: Allows users to select one or multiple events for delete event.
  - **Functionality**:
    - **Single Selection**: Click on a single checkbox to select an individual event.
    - **Multiple Selection**: Click multiple checkboxes to select multiple events at once.
    - **Select All**: The checkbox in the header row allows you to select or deselect all events on all pages.
    - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **ID**: Unique identifier for each scheduled event.
- **First exec.**: The date and time when the event is scheduled to execute for the first time.
- **Next exec**.: The next scheduled execution date and time for the event.
- **Expiration**: The date when the event is set to expire and stop repeating.
- **Repeat**: Indicates the recurrence type of the event:
  - **NONE**: The event does not repeat.
  - **DAILY**: The event repeats every day until expiration.
  - **WEEKLY**: The event repeats weekly until expiration.
  - **YEARLY**: The event repeats yearly until expiration.
- **State**: Displays the current state of the event:
  - **UPCOMING**: The event is scheduled for a future execution.
  - **DONE**: The event has been executed.
- **Enabled**: Shows whether the event is active or disabled.
- **Description**: A brief description of the event.
- **Functions**: Action icons for managing the event:
  - **Edit**: Pencil icon to modify the event.
  - **Delete**: Trash can icon to remove the event.
  - **Duplicate**: Circular arrow icon to duplicate the same event.

Bottom toolbar

- **Delete selected events**: A button to delete selected events/rows from checkbox

column.
- **Create event**: + button is used to create new event.
- **Delete outdated**: A button to delete outdated events from the list.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.
- **UTC notice**: A reminder that all times displayed are in Coordinated Universal Time (UTC).

1.15.3.1 Features

Create event

- Click the + button at the bottom of the table to add a new event.
- Input the required details, such as execution time, expiration, recurrence type, etc..

Edit event

- Click the *pencil icon* in the Functions column to modify event details.
- Adjust the settings and save.

Duplicate event

- Click the *circular arrow* icon to duplicate an event.
- A dialog will appear with same settings (you can change some settings too).
- Click on save to preform action

Delete event

- Click the *trash icon* in the Functions column to delete an event.
- Confirm the action in the pop-up dialog to delete the event.

Delete outdated events

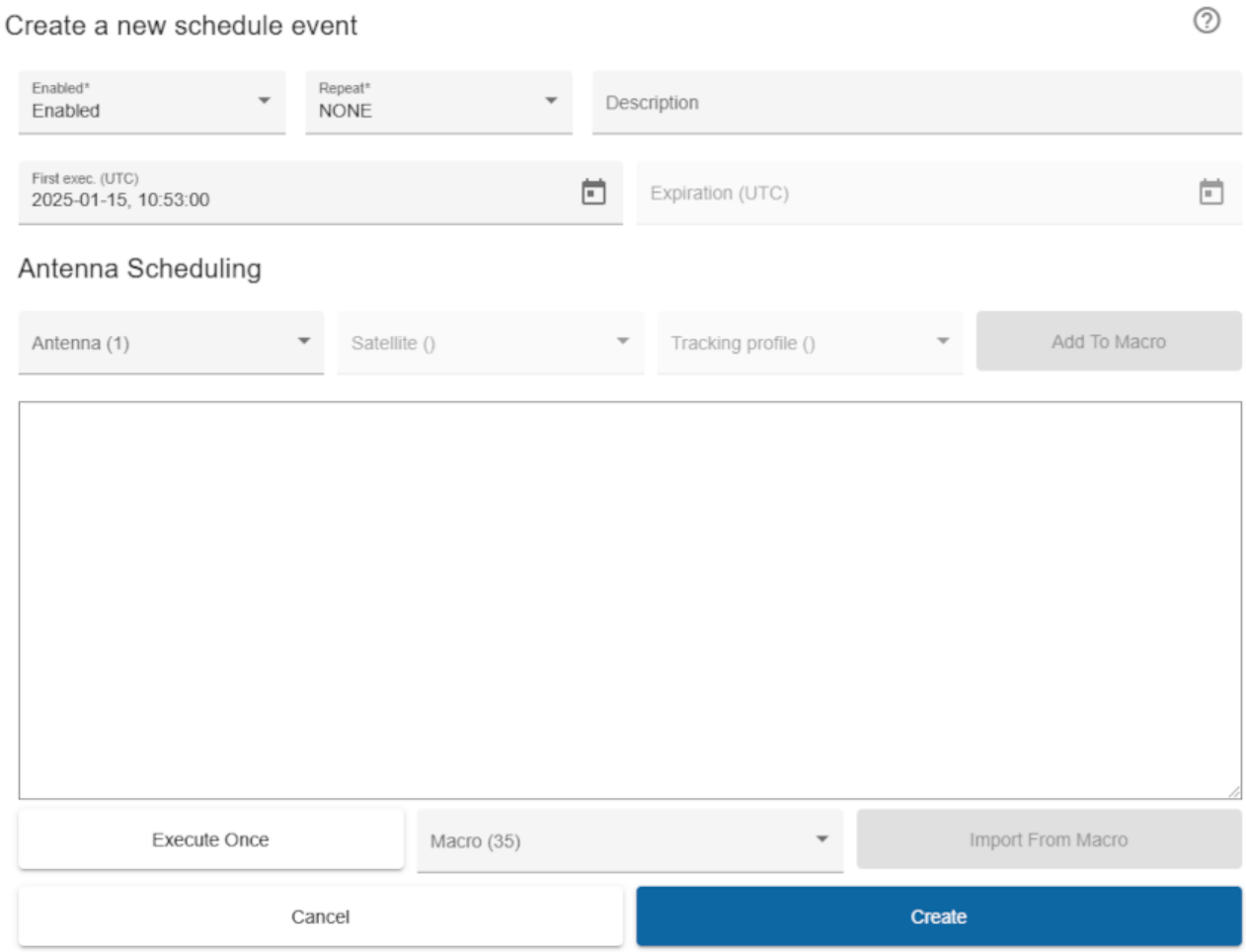
- Use the *Delete Outdated* button to remove all events that are no longer relevant or expired.
- Number shows that how much outdated events are there.
- A confirmation dialog will appear to with outdated event(s) details to perform action.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.15.4 Unified dialogs

Schedule-event dialog



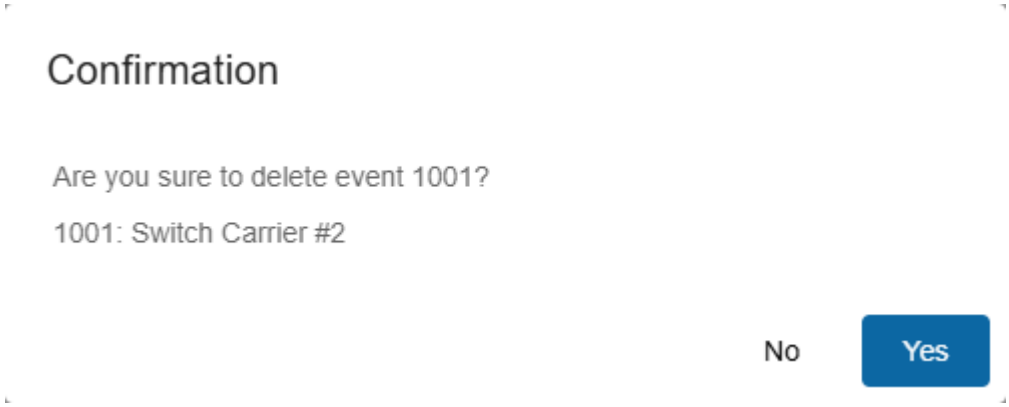
- **Trigger**:
  - when you click on an empty date in the Calendar View or the "+" button in the Table View (to create a new event) or
  - an existing event (to edit) in either the Calendar View on click on an event or in the Table View on *pencil icon* (to edit) or *circular arrow* (to duplicate) in the Functions column
  - The dialog title clearly indicates whether you are creating a new event, editing or duplicating an existing one, ensuring clarity in the action being performed.
  - There is a help button on the right-hand side that leads directly to the scheduler documentation.
- **Fields**:
  - **Enabled**: If enabled, the event is enabled. An enabled event will execute its macro at due time, a disabled event will skip this
  - **Repeat**: The repeat mode for the event. This may be one of:
    - **NONE**: The event is executed once at the date and time specified in "first execution".

        - **DAILY**: The event is executed first at the date and time specified in "first execution", then at all following days at the same time but not beyond the day given in "last execution" below.
        - **WEEKLY**: The event is executed first at the date and time specified in "first execution", then every seven days at the same time but not beyond the day given in "last execution" below.
        - **MONTHLY**: The event is executed first at the date and time specified in "first execution", then every month at the same day of month and time but not beyond the day given in "last execution" below. If you program a monthly event for 29.-31. of a month, it will be executed at the very last day of any month which is shorter.
    - **First exec. (UTC)**: The date and time of the first execution of the event (for repeated events) or simply the time of execution for an event executed only once. Click into the calender icon in field to open a pop up calendar widget which assists you entering the date. *NOTE: You have to enter time manually.*
    - **Description**: A brief description of the event.
    - **Expiration (UTC)**: The day of the last execution of the event.
    - **Antenna scheduling**: The Macro Scheduler provies a function to create easily a macro to start tracking at avert in antenna. The antenna scheduler function is only available for antennas which are managed by Antenna-Management devices. If there are no such devices configured in the M&C, the fields assigned to the antenna scheduler function appear disabled.
        - **Antenna**: Select an antenna from drop-down.
        - **Satellite**: Select an satellite from drop-down.
        - **Tracking profile**: Select an tracking profile from drop-down.
        - **Add to macro**: Replaces the macro text with a fragment which sets up the antenna for the selected satellite and tracking mode and starts tracking on it. Additional commands / parameter settings may be added to the macro (below this button in text field) before the schedule event gets saved.
        - **Macro text**: Brief description of an macro to be saved. It is also editable.
    - **Macro**: Select an recorder macro from drop-down list.

- **Actions**:

    - **Execute Once**: To execute the macro once. Useful for testing the macro.
    - **Import From Macro**: It imports the selected macro and displays the details in the free area above it.
    - **Create/Save**:
        - For new events, this creates the event with the provided details.
        - For existing events, this saves any modifications.
    - **Cancel**: Closes the dialog without saving.

On delete event confirmation dialog

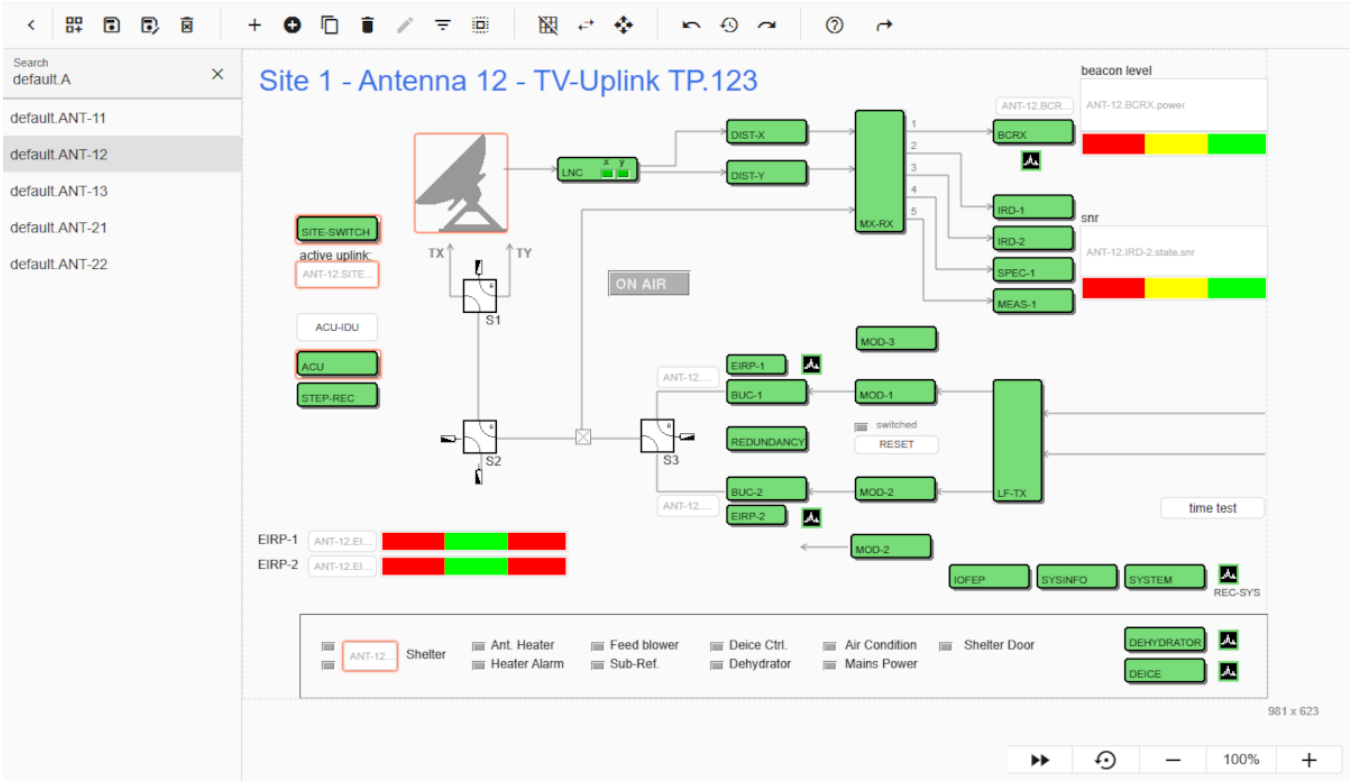


- **Trigger**: Opens when you click the trash icon for an event in either view or click delete outdated in table view.
- **Content**: Asks the user to confirm whether they want to delete the selected/outdated event(s).
- **Actions**:
  - **Yes**: Deletes the event(s) permanently.
  - **Cancel**: Cancels the deletion action.

1.16 Screen editor

The Screen editor is used to layout or configure the M&C windows called user screens used in the M&C user interface.

The Screen Editor works like a simple drawing program. Each M&C user screen contains a number of objects (elements) which may be placed, sized and edited using the screen Editor.

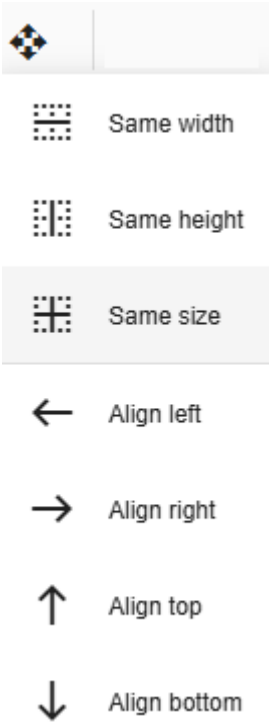


Toolbar

The toolbar options and their functions are described below. If you move the mouse pointer over the icon, the tooltip is displayed with a brief description.

- **Toggle screen list**: Clicking on arrow to left (<, >) toggle the screen list.
- **Create new screen**: Opens a create new screen dialog.
- **Save screen**: Save the modifications.
- **Save screen as**: Save the selected screen under other name.
- **Delete screen**: Delete the selected screen.
- **Add element**: Opens a panel on the right side to add an element.
- **Insert screen**: This option is used to insert an other user screen elements to selected screen.
- **Duplicate element(s)**: Duplicates the selected element(s) with there properties. The new element(s) appears on top of existing one.
- **Delete element**: Deletes the selected element(s). You can also use backspace or delete key to perform this action.
- **Edit element**: Opens a element properties panel on right side of selected element. You can also use double click to edit element.

- **Select element type**: This option is used to select all elements according to their type. If you click on this option, an input field would be displayed. When you start typing, the element list is filtered and you can select an option. All elements with the type you have selected from the option will be selected.
- **Select all elements**: Select all elements. You can also use `ctrl + a` .
- **Grid positioning**: Elements are placed along a invisible 3 x 3 pixel grid if they are moved while this options in on.
- **Push element to background**: Moves the selected element to the back so it does not cover any other element.
- **Alignment**: Aligning a group of elements. The first selected element is the parent element, i.e. the properties are transferred from the parent element to the child elements.



  - **Same width**: It is used to have the same width as the parent element.
  - **Same height**: It is used to have the same height as the parent element.
  - **Same size**: It is used to have the same width and height as the parent element.
  - **Align left**: Align the elements to the left of parent element.
  - **Align right**: Align the elements to the right of parent element.
  - **Align top**: Align the elements to the top of parent element.
  - **Align bottom**: Align the elements to the bottom of parent element.
- **Undo**: To go to previous change. Can also be used with `ctrl + z` .
- **History**: All changes made by a user are saved in the history. If you click on the clock

symbol, a list of all changes is displayed with the number and date-time (1: yyy-mm-dd HH:mm:ss). If you click on an option, you will be taken to this specific change.

- **Redo**: To go to forward change. Can also be used with `ctrl + y` .
- **Help**: Bring you to help page of screen-editor.
- **Shortcuts**: List of all key combinations.

Screen List

List of all saved screens on the server. Select the name of the screen you wish to edit.

Editing area

After selecting the screen, the screen elements are loaded into the editing area on the right-hand side like in image above. If you look closely, some elements have a *light red* border, which means they are selected. You can simply start dragging, resizing, etc. to perform functions. The functionality is described next in functionality section.

- There is a small toolbar on the bottom right-hand side of the editor. The functions are there:
  - **Jump to user-screen**: You can go direct jump to the user-screen.
  - **Reset position**: If you click on this button, the position of the screen editor is reset.
  - **Zoom out**
  - **Current zoom**: Displays the current zoom of the screen monitor. Clicking on the number restores the standard zoom (100%).
  - **Zoom in**

1.16.1 Functionality

Double click: Double click on an element to edit the element properties.

Resize element: Once you have selected the element, you can change the size of the element in any direction from the corner of the element. If you move the mouse over it, the mouse pointer changes from the standard pointer to the corresponding direction pointer.

Select multiple elements: Just hold down hte `ctrl` key and click on that element you want to select.

Reposition element(s): Once you have selected an element(s), you can drag it to the desired location and drop it there.

Edit element properties: You can edit the element properties in the *Element properties* panel. This is displayed on right hand side of editor when you double-click on the element or click *pencil icon* to edit the selected element in the toolbar.**Duplicate element(s)**: Duplicates the selected element(s) with there properties. The new element(s) appears on top of existing one. **Delete element**: Deletes the selected element(s). You can also use backspace or delete key to perform this action. **Zooming**:

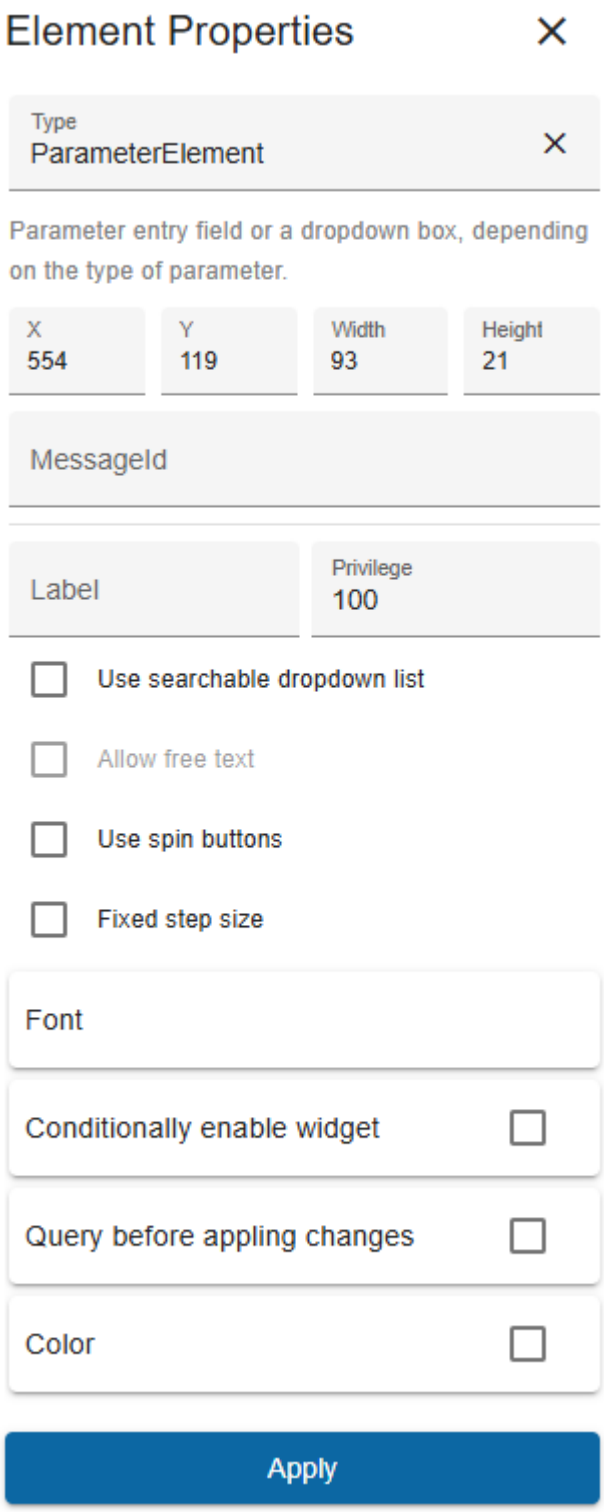
- **Key combinations**
  - **Zoom in**: By hold down `ctrl` key and pressing `+` key.
  - **Zoom out**: By hold down `ctrl` key and pressing `-` key.
  - **Default zoom (100%)**: By hold down `ctrl` key and pressing `0` key.
- **Mouse and key combination**: Simply hold down `ctrl` key and scroll with `mouse wheel`

Move screen: By hold down `space` key and hold down `mouse click` and then move the mouse, the screen will move in the direction in which the mouse is moving.

Horizontal scroll: By hold down `shift` key and scroll with `mouse wheel`

1.16.2 Element properties

The window for the properties of a screen element is used to define the properties of a display element within the screen editor. The screen editor uses the same window with the element properties for all elements. If you click on another element in the editor window, the available properties of this element are loaded into the properties window, which may contain different fields/information depending on the type of screen element. The element properties for the general *parameter element* are shown below as an example:



Each element has the properties type, x, y, width and height.

1. **X**: X location of the element in the user screen.
2. **Y**: Y location of the element in the user screen.
3. **Width**: Width of the element's bounding box.

4. **Height**: Height of the element's bounding box.
5. **Type**: The type of the element. When you add a new element, ParameterElement is the default value. When editing an element, the type of element will be selected element type.

NOTE: All sections like *Font or Color* are expandable sections. Just click on that section to expand or collapse.

1.16.2.1 Display element types and their properties

The table below shows the types of display elements the screen editor supports. A detailed description of the individual element types is given on the following pages.

Type	Description
Arrow element	Draws a horizontal/vertical line or arrow.
AzEl element	A chart showing the tracking history of an antenna controller as a point cloud in an elevation over azimuth coordinate system.
Button element	Defines a button which launches another screen, e.g. for detail views.
Chart element	A chart element, displaying a numeric parameter as an y/t diagram that automatically advances with 1 pixel / second.
Device icon element	Places an icon into the screen which represents a device. This icon will display the device's operating/fault state by it's color / shape.
Display element	A parameter display field in which the parameter cannot be edited.
Frame element	Draws a sunken 3D frame, may be used to group parameters.
Gauge element	A gauge element, displaying a numeric parameter as a horizontal bar.
Icon element	Places an icon (GIF or JPG image) into the screen. Optionally the icon can be programmed to change with a parameter value.
Latching button element	A button which displays/controls a 2-state parameter using it's pressed state.
Parameter button element	A button which sends a certain parameter value when pressed.

Type	Description
Parameter element	A parameter entry field.
Radio button element	A parameter entry field specially for **Choice** parameters.
Rect element	Draws a rectangle.
Spectrum element	The spectrum display element integrates the spectrum display of a spectrum analyzer device in a user screen.
Switch element	Like the device icon. but additionally displays the actual position of a switch (Meant to be used for block diagrams showing the true signal path).
Target list element	The ODM Target List element shows the list of targets of a SatService-ACU-ODM antenna controller device. It permits to recall, save or delete target definitions of this type of antenna controller. It is specialized to this antenna controller, does not support other types.
Text element	Displays a line of text.
Thumbnail icon element	A screen element to show thumbnail images from the video processed by an encoder / decoder / gateway device which supports this feature.
XY chart element	This element shows the relation of two numeric variables in an X/Y diagram, featuring a trace which shows the recent history of the values with a configurable depth. The update rate, the diagram scaling and much more is configurable with this screen element.

1.16.2.1.1 Button element

The button (frame) display element creates a button which launches another user interface screen if pressed. The screen to be launched may be another user defined screen or a predefined one.

The attributes listed below may be configured to customize a display element of this type:

- **Label**: The label text is drawn on the button.
- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to higher privilege levels, limiting the group of operators permitted to change the parameter.

- **Use icon instead of label**: Check this checkbox in order to make the button show an icon instead of a label text.
- **Icon**: Provides a list of all available icons / images on the sat-nms server.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Button action**: with this field you select the function of the button. The available functions are listed below. The meaning of the parameters right beside the function selector changes with the function selected.
  - **BROWSER-VIEW**: Launches the platform's standard web browser and shows the given URL. URL must be entered.
  - **CHILD-SCREEN**: Launches a new screen in a separate window. Screen name must be entered.
  - **FREC-VIEW**: Launches a graphical presentation screen for data recorded with a File-Recorder logical device. MNC.device name must be provided (e.g. ANT-11.REC-SYS).
  - **LOAD-PRESET**: Launches a dialog to select and apply a preset to a given device. MNC.device name must be provided (e.g. ANT-11.REC-SYS). You can also set driver and search pattern. Search pattern field with this value. Only presets containing the pattern string (character case doesn't matter) will appear in the list.
  - **REPLACE-SCREEN**: Replaces the actual screen by another one, re-uses the same window.
  - **SPECTR-VIEW**: Launches the device window of a spectrum analyzer and optionally sets an arbitrary number of parameters. MNC.device name must be provided (e.g. ANT-11.REC-SYS). *An optional macro list*: This may contain zero or more parameter ID - value pairs. These settings may be used to preset the spectrum analyzer certain settings but also to control switches or other devices in the signal path. Example: S03=B, SA1.center=12345.666 If the operator clicks to this button, the switch S03 is commanded to position B, the spectrum analyzer SA1 is set for a center frequency of 12345.666 MHz and the spectrum analyzer window gets opened.
  - **TRACK-VIEW**: Launches a tracking report window for the Antenna-Tracking logical device. The tracking report window shows azimuth or elevation together with the beacon level over the recent 48 hours. MNC name and ACU driver must be provided. Typically this is the "state.mode4" Parameter of an Antenna-Tracking or a SatService-ACU-ODM device.
  - **TREE-NAVIGATE**: This button used to navigate to tree devices as user screen. Tree path must be MNC.Subsystem (e.g. ANT-11.GATES)

- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.

    - **Enable ID**: This field defines the ID for the enabling parameter.
    - **Enable value**: The value belonging to the parameter above. The actual value of the parameter

- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.

    - **Color ID**: The message ID of the parameter which controls the background color of this element.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Value**: The parameter value of the actually selected table entry.
    - **Bold**: Draws the text bold if the parameter value matches.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
    - **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.2 Parameter element

The *Parameter* display element is the common component to display and edit most types of M&C parameters. Depending on the data type of the parameter (the data type is detected automatically) the parameter elements appears as textual / numeric entry field, choice box or as display field for read only parameters. In the screen editor, the parameter element is shown as a sunken rectangle.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.

- **Label**: The label text is drawn above the element.

- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to

higher privilege levels, limiting the group of operators permitted to change the parameter.

- **Use searchable dropdown list**: Checking this mark changes the type of drop down list to be used with a choice parameter. Enumerated values normally are shown as a dropdown list which pops up if you click into the field and can be filtered if you start typing. You always have to select the value with the mouse click or keyboard arrows and then enter key. *If the widget is configured for a height of 40 pixels or more, it appears as a scrollable list rather than as a dropdown*. Checking *Use searchable dropdown lis* also enables the *Allow free text*.

- **Allow free text**: This is also a drop-down list as a searchable drop-down list. In addition, you do not have to select from the dropdown options, but can simply enter any text and save it with the Enter key.

- **Use spin buttons**: Checking this mark enables "spin buttons" for numeric entry fields. Clicking these small arrow symbols at the right edge of the entry field increases/decreases the value by a certain amount. clicking them with the right mouse button increases/decreases by a larger amount.Enabling spin buttons with automatic step size automatically enabled the "Fixed step size".

- **Fixed step size**: Checking this mark permits to set user defined increment values for the spin buttons. If not checked, the spin button increment is derived from the least significant digit shown in the field, the large (right mouse button) increment is ten time that.

    - **Small steps**: The spin button increment value to be applied with left mouse button clicks.
    - **Large steps**: The right mouse button spin button increment. The program assumes 10 times the small steps if the large steps field is left empty.

- **Font**: Font contains two options:

    - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
    - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.

- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.

    - **Enable ID**: This field defines the ID for the enabling parameter.
    - **Enable value**: The value belonging to the parameter above. The actual value of

the parameter

- **Query before applying changes**: Check this mark to make the element show a query before a parameter gets actually commanded.
    - **Query text**: The query text to be shown in the pop-up window. You may leave this field empty, the program uses a standard query text in this case.In the question text, placeholders may used for two values: Any occurrences of the pattern `$P` get replaced by the parameter name (message ID). Any occurrences of the pattern `$V` get replaced by the new value to set.
- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.
    - **Color ID**: The message ID of the parameter which controls the background color of this element.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Value**: The parameter value of the actually selected table entry.
    - **Bold**: Draws the text bold if the parameter value matches.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
    - **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

NOTE

- The options "use spin buttons" (automatic step size) and "use editable drop down list" internally use the same use the same property of the screen element. Hence, these options are linked in way that if you enable one of these options, the other one is selected as well. This is done to maintain compatibility to older versions of the software. This linkage means no limitation, as a parameter element never can be a numeric entry field and a choice list at the same time.
- If you enlarge the height for a choice parameter widget to more than 40 pixels, the software uses a list widget with scroll bars rather than a drop down selection box.
- If you enlarge the height for a entry field to more than 50 pixels, the software uses a multi line entry field widget. Multi line entry fields are useful only for very few types of parameters, they are not recommended for general use.

1.16.2.1.3 Display element

The display element also known as read-only-parameter element is used to display M&C parameters as read-only. It looks much alike the parameter element, but never allows to

change the parameter it displays.

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label**: The label text is drawn above the element.
- **Draw frameless with transparent background**: Activate this option so that the element is drawn without an input field frame and with a transparent background. With this option, the read-only parameter element can be used as a label that changes its text with the value of a variable. Please note that you cannot use the *color (Variable background color)* option (described below) together with the frameless / transparent background option.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.
  - **Enable ID**: This field defines the ID for the enabling parameter.
  - **Enable value**: The value belonging to the parameter above. The actual value of the parameter
- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.
  - **Color ID**: The message ID of the parameter which controls the background color of this element.
  - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
  - **Value**: The parameter value of the actually selected table entry.

- **Bold**: Draws the text bold if the parameter value matches.
- **Add**: To add a new value / color pair to the list, fill the value and color fields.
- **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
- **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.4 Radio button element

The radio buttons display element is a component for displaying and editing M&C parameters of the CHOICE type in the form of a row of radio buttons. Depending on the height of the element, the radio buttons are arranged in a row or in a column. In the screen editor, the parameter element is displayed as a simple rectangle.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label**: The label text is drawn above the element.
- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to higher privilege levels, limiting the group of operators permitted to change the parameter.
- **Draw frame**: Checking this checkbox makes the element show a rectangular frame around the radio buttons.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.
  - **Enable ID**: This field defines the ID for the enabling parameter.
  - **Enable value**: The value belonging to the parameter above. The actual value of

the parameter

- **Query before applying changes**: Check this mark to make the element show a query before a parameter gets actually commanded.
    - **Query text**: The query text to be shown in the pop-up window. You may leave this field empty, the program uses a standard query text in this case.In the question text, placeholders may used for two values: Any occurrences of the pattern `$P` get replaced by the parameter name (message ID). Any occurrences of the pattern `$V` get replaced by the new value to set.
- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.
    - **Color ID**: The message ID of the parameter which controls the background color of this element.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Value**: The parameter value of the actually selected table entry.
    - **Bold**: Draws the text bold if the parameter value matches.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
    - **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.5 Text element

The text display element shows a label (a one line text string) with a selectable font / color.

The attributes listed below may be configured to customize a display element of this type:

- **Label**: The label text is drawn above the element.
- **Font**: Font contains two options:
    - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
    - **color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.

1.16.2.1.6 Frame element

The Frame display element draws a sunken 3D frame, which is intended to be used to group other elements. *Beside the position in the window there are no user configurable attributes to set.*

NOTE

- The 3D frame's inside area is transparent, it does not conceal the screen elements it encloses. In the screen editor, however the 3D frame grabs all mouse clicks, so you might not be able to mode the elements which are inside the frame. In this case move the 3D frame to the back by pressing *push element to background* while the frame element is selected. The other elements are now "on top" of the frame element and may be addressed by the mouse independently.

1.16.2.1.7 Rect element

The rect (rectangle) display element draws a rectangle with a selectable color.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Color**: The color to be used to draw the rectangle unless a variable line color is specified. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Filled rectangle**: If this checkbox is checked, a solid rectangle is drawn. The*raw bold* property in the color translation table has no effect when the rectangle is drawn solid.
- **Use variable line color**: Check this checkbox to let draw the rectangle with a color specified by the value of the variable specified by 'message ID'. Unless you check the mark 'use color translation table'
- **Use color translation table**: Checking this checkbox enables a color translation table which works much like the variable background color feature for entry elements. Depending on the actual value of the variable addressed by 'message ID', the element's line color and thickness is set using the translation table shown in the lower left corner of the dialog. If the actual value of the variable does not match any of the table entries or if no message ID is specified, the first color in the list is used to draw the element's background.
    - **Value**: The parameter value of the actually selected table entry.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Bold**: Specifies the line width of the currently selected table entry. If the checkmark is checked, the line is drawn 3 pixels wide, if the checkbox is not checked, the line width is 1 pixel.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.

- **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.8 Arrow element

The arrow display element draws a horizontal or a vertical line and optionally an arrowhead. The line's color is selectable. Strictly speaking the Line / Arrow element is a rectangle with only one or two sides drawn.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Color**: The color to be used to draw the line unless a*use variable line color*is specified. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Arrows and lines**: You can choose the arrow or line from options. Simply click the option.
- **Use variable line color**: Check this checkbox to let draw the line with a color specified by the value of the variable specified by 'message ID'. Unless you check the mark 'use color translation table'.
- **Use color translation table**: Checking this checkbox enables a color translation table which works much like the variable background color feature for entry elements. Depending on the actual value of the variable addressed by 'message ID', the element's line color and thickness is set using the translation table shown in the lower left corner of the dialog. If the actual value of the variable does not match any of the table entries or if no message ID is specified, the first color in the list is used to draw the element's background.
  - **Value**: The parameter value of the actually selected table entry.
  - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
  - **Bold**: Specifies the line width of the currently selected table entry. If the checkmark is checked, the line is drawn 3 pixels wide, if the checkbox is not checked, the line width is 1 pixel.
  - **Add**: To add a new value / color pair to the list, fill the value and color fields.
  - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
  - **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.9 Icon element

The icon display element shows an arbitrary GIF/JPEG picture. The image file must reside in the ./images directory on the M&C/NMS server.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Icon**: Selects the name of the image/ icon from dropdown list. Once you selected the icon preview will be displayed below the icon input field.

Using an icon to display a parameter

If you specify a message ID with the element properties of an Icon , the image displayed will change with the parameter value addressed by the message identifier.

You must supply one image file for each value the parameter may have. The parameter value must appear in the file name just in front of the gif/jpg suffix, enclosed in dots. All images used for one parameter should be of the same size. If the Icon element receives a parameter value it does not find an image file for, a black rectangle is displayed instead of an image.

Example: Let's assume you want to visualize a TX ON/OFF switch with an antenna symbol changing it's color with the position of the switch. Supply two images called "transmission.ON.gif" and "transmission.OFF.gif" which symbolize these states as you want. Notice that the ON/OFF keywords in the file names exactly reflect the possible values of this parameter and that the file names only differ in this point. Select one of image files for the icon element and enter the message Id of the TX-ON/OFF parameter into the appropriate field.

The mechanism used to select the image file to display mostly limits the usage of dynamically changing icons to CHOICE parameters. Merely numeric (integer) parameters with a very limited number of possible values come into question, too.

Using an icon to display a device summary fault

With device summary faults ("DEVICENAME.fault"), and subsystem faults ("SUBSYSTEM. ... .fault") the Icon element translates the fault state to "true" for FAULT and "false" for "OK.". This is because the sat-nms software provides the individual fault flags in a device driver as boolean values, the summary fault however is represented by a text which can be one of "OK.", "WARNING" and "Summary FAULT". Translating the OK/FAULT values lets you use the same image files for individual and summary fault states.

To display a device summary fault as an color changing icon, you have to provide three image files, for example:

MyIcon.false.gif for the "OK" state **MyIcon.WARNING.gif** for the "WARNING" state **MyIcon.true.gif** for the "FAULT" state

1.16.2.1.10 Device icon element

The device icon display element represents a device in the M&C user interface. It displays the status of the device by it's color/shape and gives access to the *device details panel* panel for this particular device by a mouse click.

The attributes listed below may be configured to customize a display element of this type:

- **Device name**: The name of the device this element stands for.
- **Icon**: Selects the device icon / image from dropdown list to display. Once you selected the icon preview will be displayed below the icon input field. The sat-nms software at least provides three predefined icons for this purpose:
  -  : device-rectangle.gif
  -  : device-square.gif
  -  : device-minirect.gif
- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to higher privilege levels, limiting the group of operators permitted to change the parameter.
- **Show device name**: Check this checkbox to display the name of the device as a label in the icon. Unchecked can be useful if very small icons are used in which the label would not fit, or if a label is to be used that is different from the name of the device.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Signal if device actually is redundant**: Check this checkbox to apply a special coloring for devices which are in the redundant signal path of a redundancy switching facility.
  - **Redundancy signal ID**: The message ID of a parameter which gives the information if the device actually operates as the redundant one or if it is operational. For a 1:1 TWTA redundancy this could be the position parameter of the waveguide switch which selects the signal from the two TWTAs
  - **Redundancy signal value**: If the value of the parameter addressed by above message ID matches the value given in this field, the device icon is shown as "redundant" (depends in the icon set used, the factory icon sets use a blue background color for this).

Using customized images

You may supply your own images for the device icon display element. To do so, place seven images into the *./images* directory named "xxxxx.gif", "xxxxx-F.gif" (fault), "xxxxx-C.gif" (communication fault), "xxxxx-S.gif (fault suppressed)", "xxxxx-R.gif" (redundant), "xxxxx-O.gif" (out of service) and "xxxxx-M.gif" (maintenance). You should consider the following:

- All images should be of the same size.
- The software places the device name at the lower left corner of the image using the selected font and color. All four images should use appropriate colors in this area to keep the device name visible.
- Beside GIF-images the software also accepts PNG images (file extension .png) and JPG images (file extension .jpg). All images of a set must be of the same type (GIF/PNG/JPG).

Using a customized 'transmitting' emblem

For devices which provide the 'info.signal.on' parameter to report that the device is actually transmitting or receiving, the device icon shows an emblem at it's upper right corner. The software uses the 'signal-on-emblem.png' image as a default for this.

You may define individual emblems for each image set by placing a "xxxxx-X.gif" (or .png/.jpg) image in the ./images folder with xxxxx being the base name of the device icon. The software will use this file for the transmitting emblem of this particular icon set. The file extension of the emblem must match the extension of the base icon image.

1.16.2.1.11 Parameter button element

The Parameter Button display element is a button which sends a parameter value if pressed. A frequently used application for the parameter button is a RF-OFF button which sends a "tx.on=OFF" to a certain device. Beside this, a parameter button also may be programmed to play a parameter setting macro.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label**: The label text is drawn above the element.
- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to higher privilege levels, limiting the group of operators permitted to change the parameter.
- **Start macro**: Selects if the button shall start a macro (checked) or send a certain parameter (unchecked).
- **Use icon instead of label**: Check this checkbox in order to make the button show an icon instead of a label text.
    - **Icon**: Provides a list of all available icons / images on the sat-nms server.
- **Specify values to send**: Checking this checkbox let you define the parameter value to be sent with a button click. Without this option the button sends the label text as a parameter value:

    - **Parameter value**: The value to be sent when the button is clicked.

- **Font**: Font contains two options:

    - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
    - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.

- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.

    - **Enable ID**: This field defines the ID for the enabling parameter.
    - **Enable value**: The value belonging to the parameter above. The actual value of the parameter

- **Query before applying changes**: Check this mark to make the element show a query before a parameter gets actually commanded.

    - **Query text**: The query text to be shown in the pop-up window. You may leave this field empty, the program uses a standard query text in this case.In the question text, placeholders may used for two values: Any occurrences of the pattern `$P` get replaced by the parameter name (message ID). Any occurrences of the pattern `$V` get replaced by the new value to set.

- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.

    - **Color ID**: The message ID of the parameter which controls the background color of this element.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Value**: The parameter value of the actually selected table entry.
    - **Bold**: Draws the text bold if the parameter value matches.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
    - **Delete**: To delete a value / color pair from the list, first select the table entry then

click delete.

1.16.2.1.12 Latching button element

The Latching Button display element works much like the Parameter Button element described in the previous chapter, but specialized to show and control an enumeration parameter which knows exactly two states (e.g. on/off or true/false).

When the operator changes the state of the button by clicking it once, the latching button sends the 'other' parameter value to the device. On the other hand, if some other instance in the system changes the parameter state, the latching button recognizes this and changes the up/down state of the button accordingly.

Like the parameter button, the latching button may be labeled with text or an image. To reflect the actual state, the latching button always is configured with two text string or two image names which are shown according to the actual parameter value.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label up**: This label text is drawn on the button in "up" state.
- **Label down**: This label text is drawn on the button in "down" state..
- **Value up**: The value to be sent when the button is clicked an changes to "up" state.
- **Value down**: The value to be sent when the button is clicked an changes to "down" state.
- **Privilege level**: The privilege level necessary to change this parameter. The predefined screens of the software use 100. In your own screens you may set certain parameters to higher privilege levels, limiting the group of operators permitted to change the parameter.
- **Use icon instead of label**: Check this checkbox in order to make the button show an icon instead of a label text.
    - **Icon up**: The name of the icon to be shown in "up" state of the button. The field provides a list of all available icons / images on the sat-nms server.
    - **Icon down**: he name of the icon to be shown in "down" state of the button. The field provides a list of all available icons / images on the sat-nms server.
- **Font**: Font contains two options:
    - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except

the smallest one. In the latter case the label is drawn using this small font size, too.
    - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.

- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.

    - **Enable ID**: This field defines the ID for the enabling parameter.
    - **Enable value**: The value belonging to the parameter above. The actual value of the parameter

- **Query before applying changes**: Check this mark to make the element show a query before a parameter gets actually commanded.

    - **Query text**: The query text to be shown in the pop-up window. You may leave this field empty, the program uses a standard query text in this case.In the question text, placeholders may used for two values: Any occurrences of the pattern `$P` get replaced by the parameter name (message ID). Any occurrences of the pattern `$V` get replaced by the new value to set.

- **Color**: Checking this mark enables the variable background color feature for this screen element. Depending on the actual value of the variable addressed by *color id*, the element's background is set using the translation table. If the actual value of the color id variable does not match any of the table entries or if no color id is specified, the first color in the list is used to draw the element's background.The buttons Add/Set/Delete along with the value and color fields are used to edit the color translation table.

    - **Color ID**: The message ID of the parameter which controls the background color of this element.
    - **Color**: The color specification of the actually selected table entry. Clicking to this opens a color chooser dialog which lets you select/compose the the color to your needs.
    - **Value**: The parameter value of the actually selected table entry.
    - **Bold**: Draws the text bold if the parameter value matches.
    - **Add**: To add a new value / color pair to the list, fill the value and color fields.
    - **Set**: To change the color assigned to a given parameter value, first select the table entry of interest, change the color value.
    - **Delete**: To delete a value / color pair from the list, first select the table entry then click delete.

1.16.2.1.13 Gauge element

The Gauge display element shows a numeric parameter value as a horizontal bar in an entry field like frame. The gauge element is capable to adjust the scale factor for the gauge

automatically from the parameter's range definition. Alternatively the scale parameters may set explicitly.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label**: The label text is drawn above the element.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Specify range**: Check this checkbox to define the range which is displayed by the gauge element.
  - **min value**: The minimum value of the displayed range.
  - **max value**: The maximum value of the displayed range.
- **Specify thresholds**: Check this checkbox to define the threshold values which are used for RGR and GYR color schemes.
  - **min thresholds**: The minimum value of the threshold range.
  - **max thresholds**: The maximum value of the threshold range.
- **Graph color**: The gauge element knows three color schemes, allowing to change the bar color dynamically with the monitored value. *Please note, unless you specify min/max thresholds for the monitored value, only the fixed color mode is available.*
  - **Fixed**: The bar is displayed with the color defined with in the above color filed.
  - **R-G-R (red, green, red)**: The bar is displayed green while the value is between the minimum and maximum thresholds. If the value is outside the limits, the bar is displayed red.
  - **R-Y-G (red, yellow, green)**: The bar is displayed red while the value is below the minimum threshold value. It changes to yellow if the value is between the minimum and maximum thresholds. If the value exceeds the maximum threshold, the bar color changes to green.
  - **G-Y-R (green, yellow, red)**: The bar is displayed green while the value is below the minimum threshold value. It changes to yellow if the value is between the minimum and maximum thresholds. If the value exceeds the maximum threshold, the bar color changes to red.
- **show ticks**: check this to make the element show scale ticks vor the min/max and threshold values below the gauge.
- **show ticks with labels**: With this mark checked, below the gauge element labeled ticks are shown for the min/max and threshold values. (requires "show ticks"). Bar graph elements with this option enabled should be configured with a width that is sufficient to

show the scale labels without overlap.

1.16.2.1.14 Chart element

The (strip) Chart display element shows a strip chart of a numeric parameter. The chart advances with a constant speed of 1 pixel / second. The default y-scale is 1/division but may be changed by clicking to the menu button in the chart on top right corner.

By default, the strip chart element lets the y-scale offset follow the displayed value that the recent measurement samples are shown in the diagram. This behavior is optimized for applications where the strip chart shall indicate a 'trend' for the displayed value, using an element height of only 50 pixels or less.

Optionally you may disable this variable scaling by defining fixed scale values in the 'Text / Image Name' field. With this fixed y-axis scaling an additional threshold check may be added, turning the chart background to red if the actual value exceeds the defined limits. When used with limit checking, the height of the chart should be at least 100 pixels.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.
- **Label**: The label text is drawn above the element.
- **Font**: Font contains two options:
    - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
    - **Color**: The color attribute of a parameter element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Mode**: Selects the display mode of the chart element. Four modes are available:
    - **Auto scale**: This is the standard display mode. The strip chart aligns the reference value (the medium display line) in a way that every new display point is shown on this line. The initial scale is 1 unit/div.
    - **Fixed scale**: Works like the auto scale mode, but the scale value gets initialized with a user defined value.
        - **Scale**: The initial scale value used with the 'floating, fixed scale' mode.
    - **Fixed range**: The min/max values to display are defined explicitly, there is no

automatic reference level alignment with this mode.

- **min value**: The minimum value to display for the fixed range display modes.
- **max value**: The maximum value to display for the fixed range display modes.

- **Fixed thresholds**: It is like the above mode, but additionally there are min/max thresholds defined. If the actual value of the monitored parameter, the display background changes to red.

  - **min value**: The minimum value to display for the fixed range display modes.
  - **max value**: The maximum value to display for the fixed range display modes.
  - **min threshold**: The lower threshold value for the "fixed range & thresholds" mode.
  - **max threshold**: The upper threshold value for the "fixed range & thresholds" mode.

1.16.2.1.15 Spectrum element

The Spectrum Display element embeds the spectrum display of a spectrum analyzer device in the screen. The display may be scaled to an almost arbitrary size, however the following limitations apply:

- The annotation labels which reflect the actual spectrum analyzer settings are not scaled with the display element. If the element is very small, the labels may overlap and become unreadable.
- Resizing the spectrum display element is only possible in certain steps, the grid behind the spectrum curve is always made up of 10*n + 11 pixels in one dimension. The screen editor software knows about this, snaps the size of the element to the next (smaller) valid size after you release the mouse button.

The attributes listed below may be configured to customize a display element of this type:

- **Device name**: The name of the spectrum analyzer device with MNC name (MNC.devicename) to operate.
- **Label**: The label text is drawn above the element.
- **Privilege level**: The privilege level necessary to operate the spectrum analyzer device.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
  - **Color**: The color attribute of a element sets the color of the label shown above the entry field. The text in the parameter field itself always is shown in the default text color of the selected look & feel. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.

1.16.2.1.16 Target list element

The Target List screen element lets you embed the list of targets of a SatService-ACU-ODM

antenna controller in the screen. Targets may be recalled (which moves the antenna to the stored position and sets the tracking parameters associated with this target), saved or deleted.

Please note, that the ODM Target List screen element only works with SatService-ACU-ODM antenna controller device type, other antenna controllers are not supported.

The attributes listed below may be configured to customize a display element of this type:

- **Device name**: This parameter is interpreted differently depending on the context where the ODM Target List screen element resides:
  - When placed in a user defined screen or in the main screen of the application, 'device name' must be set to the name of the ODM device it shall refer to.
  - When placed in the device screen of another device which defines a configuration variable with the antenna controller device name, the name of this configuration variable must be entered as the 'device name'. Finally, when used in the device screen of the ODM device itself, 'device name' must de set to '@'
- **Privilege level**: The privilege level necessary to operate the target list device.
- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.
  - **Enable ID**: This field defines the ID for the enabling parameter.
  - **Enable value**: The value belonging to the parameter above. The actual value of the parameter

1.16.2.1.17 XY chart element

This element shows the relation of two numeric variables in an X/Y diagram, featuring a 'track' which shows the recent history of the values with a configurable depth. The update rate, the diagram scaling and much more is configurable with this screen element.

The X/Y chart display may be scaled to an almost arbitrary size, however the following limitations apply:

- The annotation labels which reflect the actual display settings are not scaled with the display element. If the element is very small, the labels may overlap and become unreadable.
- Resizing the X/Y chart display element is only possible in certain steps, the grid behind the curve is always made up of a number pixels in one dimension which is divisible by the configured number of diagram divisions without remainder. The screen editor software knows about this, snaps the size of the element to the next (smaller) valid size after you release the mouse button.

The attributes listed below may be configured to customize a display element of this type:

- **MessageID(x) message ID (y)**: The message IDs of the parameters to show.
- **Label**: The annotation label displayed above the X/Y chart.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the text shown in the parameter field itself. The

label text is shown with the standard ("plain") font size for all font selections except the smallest one. In the latter case the label is drawn using this small font size, too.
    - **Color**: The color of the label displayed above the X/Y chart. Colors may be specified by using a hexadecimal RGB notation. You may click to the color example field in order to open a color chooser dialog and select the color from there.
- **Chart settings**
    - **Divisions**: The number of divisions shown in the diagram for both directions. You may enter arbitrary values here, but to achieve some readability, you are encouraged to us common values like 2 ('hair cross'), 4 or 10.
    - **Interval**: The update time interval for the display in seconds. 0.1 means to add every 100msec a new value to the display and remove the oldest value from the buffer at the same time.
    - **Buffer size**: The display maintains a "first in first out" buffer of a size defined with this parameter. The buffer provides a short time memory the display shows as a trace of past values. Values in the range 100-300 are a good choice, larger values may slow down the client application. Please note, that the buffer gets cleared when the window is closed.
- **Origin and scale**
    - **x origin y origin**: The origin values refer to the center of the diagram. Using an even number of divisions helps to identify the diagram center as the cross point of the middle grid lines
    - **x scale y scale**: The scale values are per division. with x origin = 0.0 and x scale = 1.0 an x value of 1.0 gets displayed one division right of the diagram center.
- **Monitor limits**: With this checked, the display monitors the actual X/Y values to be within the limits defined below. The limit values are shown as a dark red rectangle. When the while the actual X/Y values exceed the limits, the diagram background becomes red.
    - **min x value, max x value, min y value and max y value**: The limit values for X and Y to be checked.

1.16.2.1.18 Thumbnail icon element

The Thumbnail Icon element lets you display a thumbnail of the video actually processed by a device like a an encoder, decoder or gateway. The displayed icon is a static image, updated every couple of seconds.

The attributes listed below may be configured to customize a display element of this type:

- **Image URL**: The URL where to fetch the image.
- **Reload time**: The interval when the image shall be reloaded (seconds)
- **URL type**: One of PLAIN or ADVANCED. With PLAIN the URL is used as it is, with ADVANCED CGI parameters for the actual time and the image width and height are appended to the URL.

REMARKS

- The device to get the thumbnail images from must support this feature.
- The device to get the thumbnail images from must be accessible in the network from the client's point of view.

- Thumbnail Icons are - when resized by mouse drag in the GUI editor - forced to 16:9 ratio. If another image ratio is required, image width and height must be entered in the dialog shown above. in PLAIN mode, the image received from the device gets scaled to fit the screen element size, in ADVANCED mode no scaling is done as the software queries the image already in the correct size from the device.

1.16.2.1.19 Switch element

The Switch Icon display element is a special version of the Device Icon element which may be used to visualize the position of a switch in a user interface screen designed as a block diagram. The switch icon has all capabilities of a plain device icon display element. The context menu shown with this right mouse button additionally contains an option to toggle the switch position. The switch icon element -- unlike the plain device icon element -- does not support user defined images.

The attributes listed below may be configured to customize a display element of this type:

- **Device name**: The name of the device this element stands for. You also may enter the complete ID of the parameter which controls the switch position for devices which manage more than one switch or use a non-standard switch position parameter name.
- **Icon**: Select the shape of the icon from the given switch symbols or a user defined switch. .ts user defined switchThe (base-) name of a set of userdefined switch icons. See below how to use your own switch icons.
- **Privilege level**: The privilege level necessary to toggle the switch position. To change the device mode (OPERATIONAL, OUT-OF-SERVICE), at least a privilege of 100 is necessary, or the value set here if this is higher.
- **Touch screen mode**: Selecting this option makes the switch icon behave differently, optimized for touch screen usage. You may toggle the switch position by touching the icon twice. This first time you touch it, the icon shows a turquoise ball in the upper left corner. This ball disappears after 2 seconds. If you touch the icon a second time before the turquoise ball disappears, the switch is actuated. There is no right mouse button context menu in this mode, no way to go into the device screen or set the device OUT-OF-SERVICE.
- **Font**: Font contains two options:
  - **Font**: The font attribute applies to the device name, too.
  - **Color**: The color attribute of a parameter element sets the color of the device name shown with the icon.
- **Conditionally enable widget**: Parameter fields may be locked to read only state unless another parameter matches a given value. For instance, changing the position of a wave guide switch may be inhibited while the carrier is switched on. Check this to activate this feature.
  - **Enable ID**: This field defines the ID for the enabling parameter.
  - **Enable value**: The value belonging to the parameter above. The actual value of the parameter
- **Query before toggling switch**: Check this mark to make the element show a query before a parameter gets actually commanded.
  - **Query text**: The query text to be shown in the pop-up window. You may leave this

field empty, the program uses a standard query text in this case. In the question text, placeholders may used for two values: Any occurrences of the pattern `$P` get replaced by the parameter name (message ID). Any occurrences of the pattern `$V` get replaced by the new value to set.

Remarks

Configuring a confirmation question as described above, only affects the 'Toggle position' function provided by the switch icon's right mouse context menu. Setting the switch position from the device dialog always works without a confirmation request.

User defined switch icons

The sat-nms software comes with 6 predefined switch icons. You may add your own icons if none of the predefined switches matches your needs.

For a user defined switch you have to create a set of ten PNG image files / icons. Each icon shows one combination of switch position and device state. All icons of a set must be of the same size, the files must be located in the *images* subdirectory of the sat-nms server installation and they must follow the naming scheme described below.

The file name of a switch icon consists of the user defined name, followed by a dash and a 2-character status code. All switch icons must be PNG images and end with the file suffix ".png" (lower case). The first character of the status code reflects the switch position, the second one the device's fault/operation state. The following codes are defined:

pos.	character	description
1	A	switch is in position A (or OFF)
1	B	switch is in position B (or ON)
2	N	switch device is in normal operation, no fault is pending
2	W	switch device shows a warning
2	F	switch device shows a fault
2	S	switch device is set FAULT-SUPPRESSED
2	O	switch device is set OUT-OF-SERVICE

Combining the two switch positions with five device status codes results in totally 10 icons which show all possible states of a switch. If you create a switch named "myswitch", the files would be:

myswitch-AN.png myswitch-AW.png myswitch-AF.png myswitch-AS.png myswitch-AO.png myswitch-BN.png myswitch-BW.png myswitch-BF.png myswitch-BS.png myswitch-BO.png

Replacing the predefined icons

In in your sat-nms installation mostly user defined switch symbols are used, you may replace some or all of the predefined switch symbols offered by the Switch Icon dialog with your favorite icons. To configure this, edit the file "client.properties" in the base directory of the sat-nms server installation and add some or all lines of the following:

gui.editor.predefinedSwitch.1=myswitch1 (replace myswitch1 by the name of the icon set to use) **gui.editor.predefinedSwitch.2=myswitch2 gui.editor.predefinedSwitch.3=myswitch3 gui.editor.predefinedSwitch.4=myswitch4 gui.editor.predefinedSwitch.5=myswitch5 gui.editor.predefinedSwitch.6=myswitch6**

Please note, this does not replace / delete the factory icons. Screens which make use of the factory switches will still use them as before and you are still able to edit screens with factory switch icons by explicitly define their names in the *user defined switch* field. The names of the factory switch icons are *wgswitch* , *wgswitch-mirrored* , *cxswitch* , *cxswitch-mirrored* , *lswitch* and *rswitch* .

User defined switch icons may be of any size, even larger than the factory icons. When used as predefined switch icons, such large icons will show up in the dialog with their upper left corner only. In the screen the icons gets displayed with it's full size.

1.16.2.1.20 AzEl element

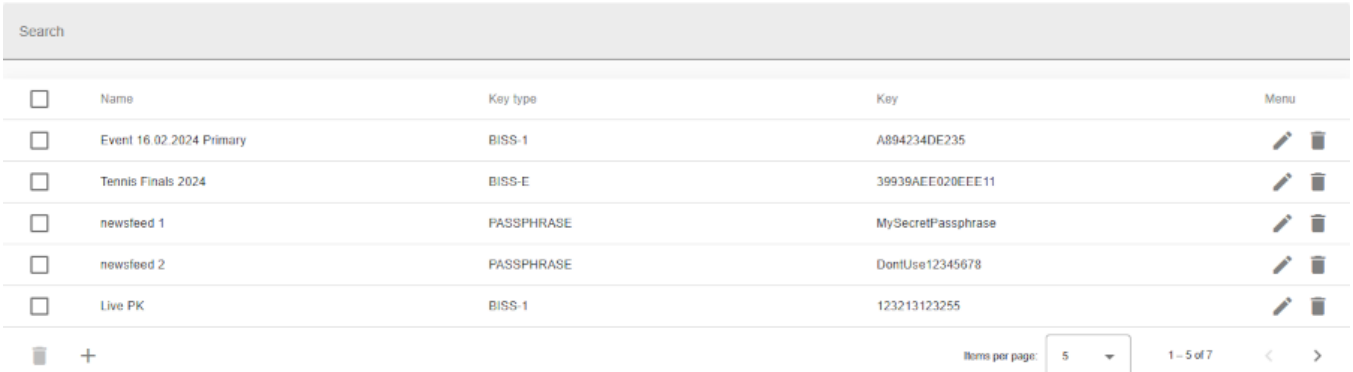
The AzElElement shows the tracking history of an antenna controller as a cloud of points in a elevation over azimuth coordinate system. Actually only SatService antenna controllers provide the tracking history data for this screen element.

The attributes listed below may be configured to customize a display element of this type:

- **Message ID**: The message ID addresses the parameter the element shall display or edit. The message ID consists of the MNC name, device name followed by a colon and the name of the parameter.ANT.11.XMIT-1.tx.on for example addresses the variable tx.on at a device named XMIT-1 at MNC.

1.17 Stream keys

The Stream key is record holds the information about one BISS or SRT key in the database. The Table provides a detailed interface to manage keys. It allows users to view, edit, delete, and create key efficiently.



Search bar

- Located at the top of the table.
- Allows users to filter keys by keywords, such as name, key type and key.

Header row

- You can sort rows in ascending or descending order by clicking on the column header (e.g. name, key, etc.).
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
  - **Location**: The checkbox column is located at the far left of the table.
  - **Purpose**: Allows users to select one or multiple keys for delete key(s).
  - **Functionality**:
    - **Single Selection**: Click on a single checkbox to select an individual row.
    - **Multiple Selection**: Click multiple checkboxes to select multiple rows at once.
    - **Select All**: The checkbox in the header row allows you to select or deselect all rows on all pages.
    - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **Name**: The user defined unique name of stream key.
- **Key type**: The key type, one of 'BISS-1', 'BISS-E' or 'PASSPHRASE'.
- **Key**: The stored key in database.
- **Functions**: Action icons for managing the key:
  - **Edit**: Pencil icon to modify/edit the key.
  - **Delete**: Trash can icon to delete the key.

Bottom toolbar

- **Delete selected keys**: A button to delete selected keys/rows from checkbox column.
- **Create key**: + button is used to create new stream key.
- **Pagination controls**: Allows users to set the number of items displayed per page and

navigate between pages.

1.17.1 Features

Create key

- Click the + button at the bottom of the table to add a new event.
- Input the required details.

Edit key

- Click the *pencil icon* in the Functions column to modify key details.
- Adjust the settings and save.

Delete event

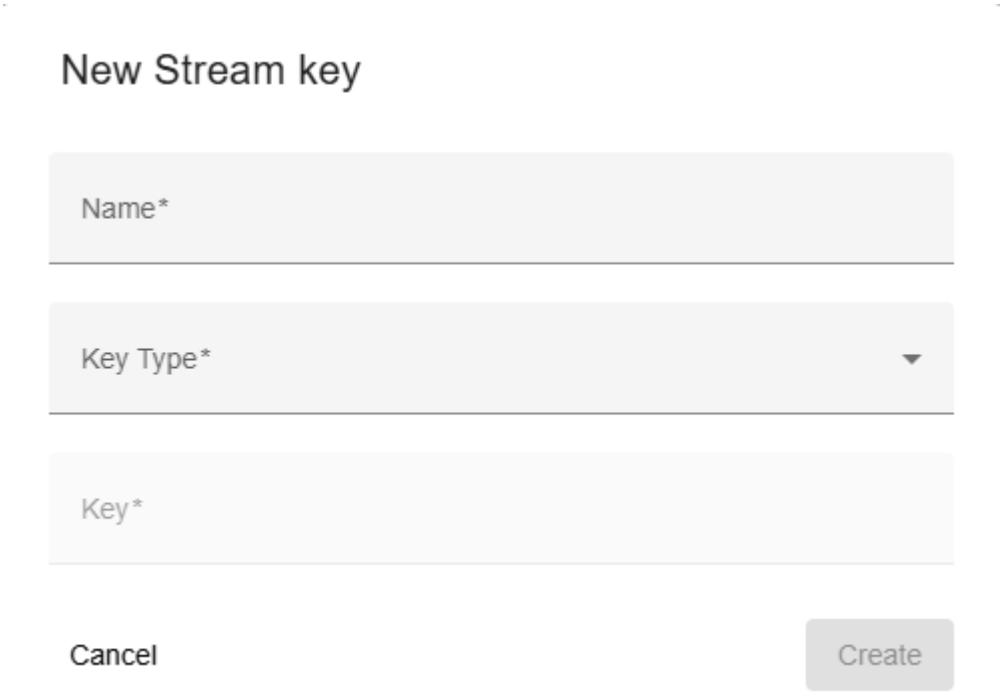
- Click the *trash icon* in the Functions column to delete an key.
- Confirm the action in the pop-up dialog to delete the key.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.17.2 Dialogs

Stream key add/edit dialog



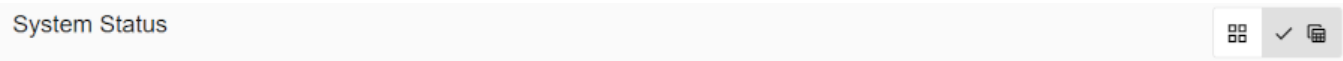
- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new key or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new stream key, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Name**: The user defined name of this stream key. This name must be unique, as the operator selects the key according to this name.
  - **Key type**: The key type, one of *BISS-1*, *BISS-E* or *PASSPHRASE*.
  - **Key**: The key value associated with the id and name in this record. For *biss* keys this is a string entirely consisting of the hexadecimal characters 0123456789ABCDEF and it is either 12 or 16 characters long. For other key types, the key is a free text.
- **Actions**:
  - **Create/Save**:
    - For new stream key, this creates the event with the provided details.
    - For existing keys, this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete kex confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column or trash icon from bottom toolbar .
- **Content**: Asks the user to confirm whether they want to delete the selected event(s).
- **Actions**:
  - **Yes**: Deletes the event(s) permanently.
  - **Cancel**: Cancels the deletion action.

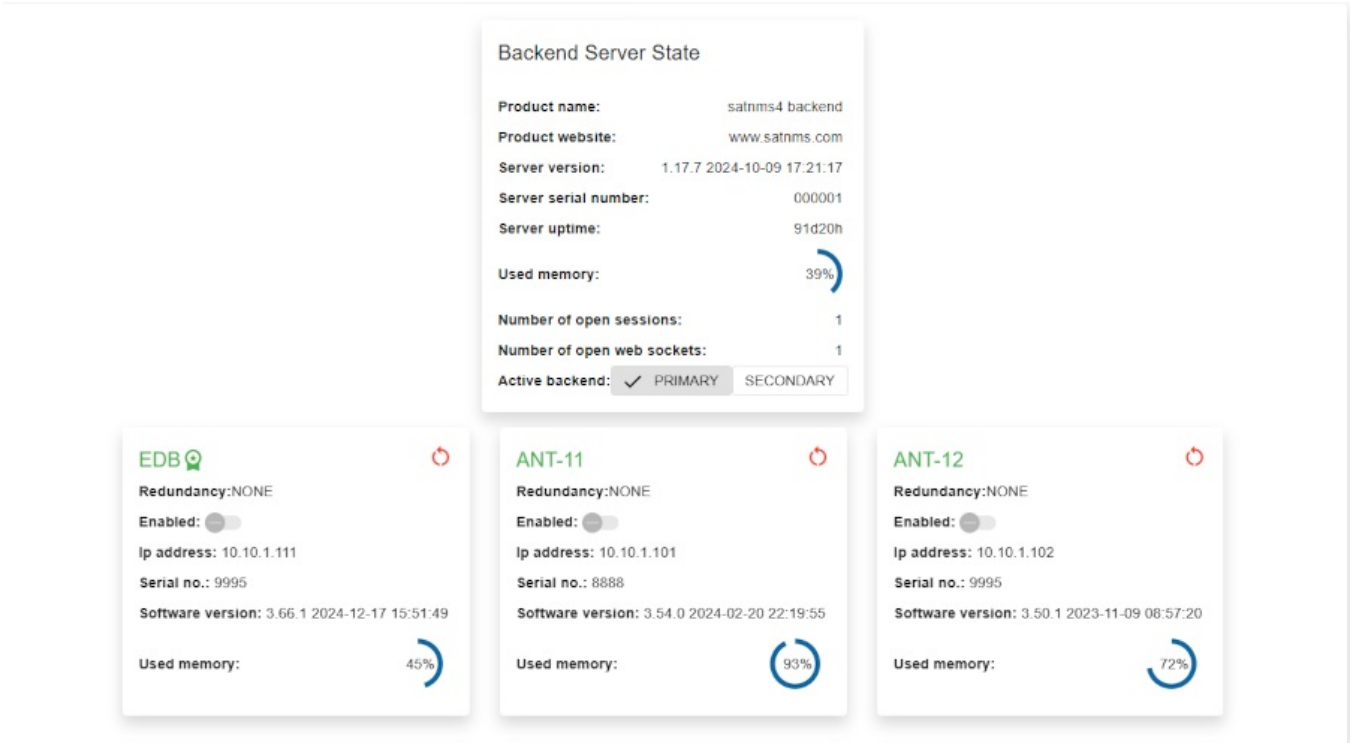
1.18 System status

This page gives you status information about the backend server.

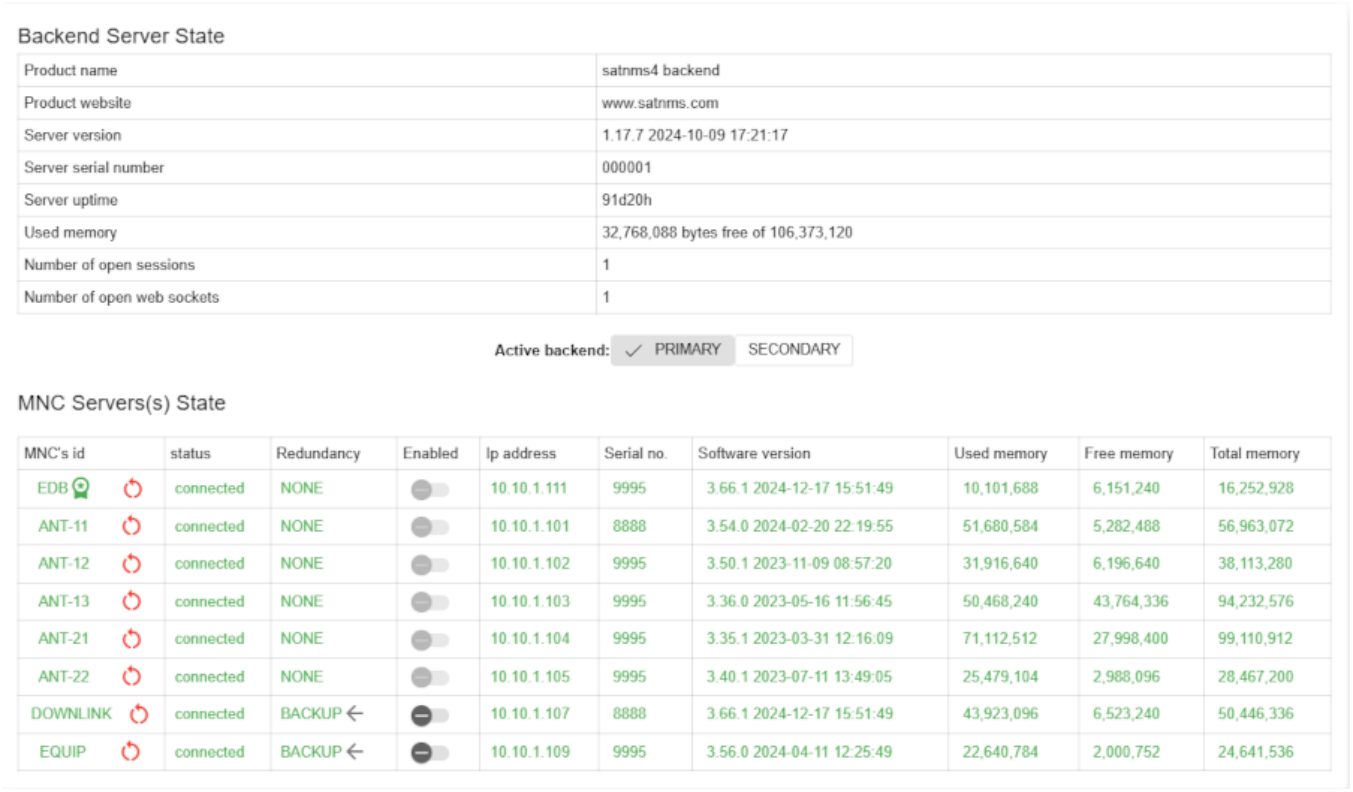


1. **Title**: Title of page.
2. **View options**: At the top right of the page are view options.
   - Grid view (default)
   - Table view.

1.18.1 Grid view



1.18.2 Table view



Backend Server State

Product name	satnms4 backend
Product website	www.satnms.com
Server version	1.17.7 2024-10-09 17:21:17
Server serial number	000001
Server uptime	91d20h
Used memory	32,768,088 bytes free of 106,373,120
Number of open sessions	1
Number of open web sockets	1

Active backend: PRIMARY SECONDARY

MNC Servers(s) State

MNC's id	status	Redundancy	Enabled	Ip address	Serial no.	Software version	Used memory	Free memory	Total memory
EDB	connected	NONE		10.10.1.111	9995	3.66.1 2024-12-17 15:51:49	10,101,688	6,151,240	16,252,928
ANT-11	connected	NONE		10.10.1.101	8888	3.54.0 2024-02-20 22:19:55	51,680,584	5,282,488	56,963,072
ANT-12	connected	NONE		10.10.1.102	9995	3.50.1 2023-11-09 08:57:20	31,916,640	6,196,640	38,113,280
ANT-13	connected	NONE		10.10.1.103	9995	3.36.0 2023-05-16 11:56:45	50,468,240	43,764,336	94,232,576
ANT-21	connected	NONE		10.10.1.104	9995	3.35.1 2023-03-31 12:16:09	71,112,512	27,998,400	99,110,912
ANT-22	connected	NONE		10.10.1.105	9995	3.40.1 2023-07-11 13:49:05	25,479,104	2,988,096	28,467,200
DOWNLINK	connected	BACKUP ←		10.10.1.107	8888	3.66.1 2024-12-17 15:51:49	43,923,096	6,523,240	50,446,336
EQUIP	connected	BACKUP ←		10.10.1.109	9995	3.56.0 2024-04-11 12:25:49	22,640,784	2,000,752	24,641,536

1.18.3 Common functions and details

Backend server state

- **Product name**: The name of product.
- **Product website**: The SatService website URL.
- **Server version**: The software version actually running.
- **Server serial no.**: The software serial number.
- **Server uptime**: The server uptime.
- **Used memory**: The memory usage of the backend.
- **Number of open sessions**: The number of open sessions.
- **Number of open web sockets**: The number of open (message) websocket connections.
- **Active backend**:
  - The name of the backend which actively controls M&C redundancy switching in a redundant backend configuration.
  - **Functionality**: Clicking on name will change the active backend.

MNC information

Below you will find information about MNC.

- **MNC name**:
  - The name of the M&C.
  - If there is a medal icon that means that MNC is an primary MNC (e.g. EDB)
  - **Restart MNC**: On the right hand side you can restart an MNC by clicking on red reload button.
- **Redundancy**:
  - Shows the state of the redundancy control for this M&C.
  - **Functionality**: Switch from main to backup or backup to main
- **Enabled**: Flag if this redundancy is enabled or not.
- **Ip address**: The IP address of the M&C server as defined in the backend configuration file.
- **Serial no.**: The software serial number.
- **Server version**: The software version actually running.
- **Used memory**:
  - The memory used by MNC.
  - On hover it shows total-, used- and free-memory.

1.18.4 Features

Restart MNC

- Clicking on the red reload button (grid or table view) restarts the MNC.

Active backend

- If you click on the backend name below or near the active backend text, the active backend name is changed.

Switch to main/backup

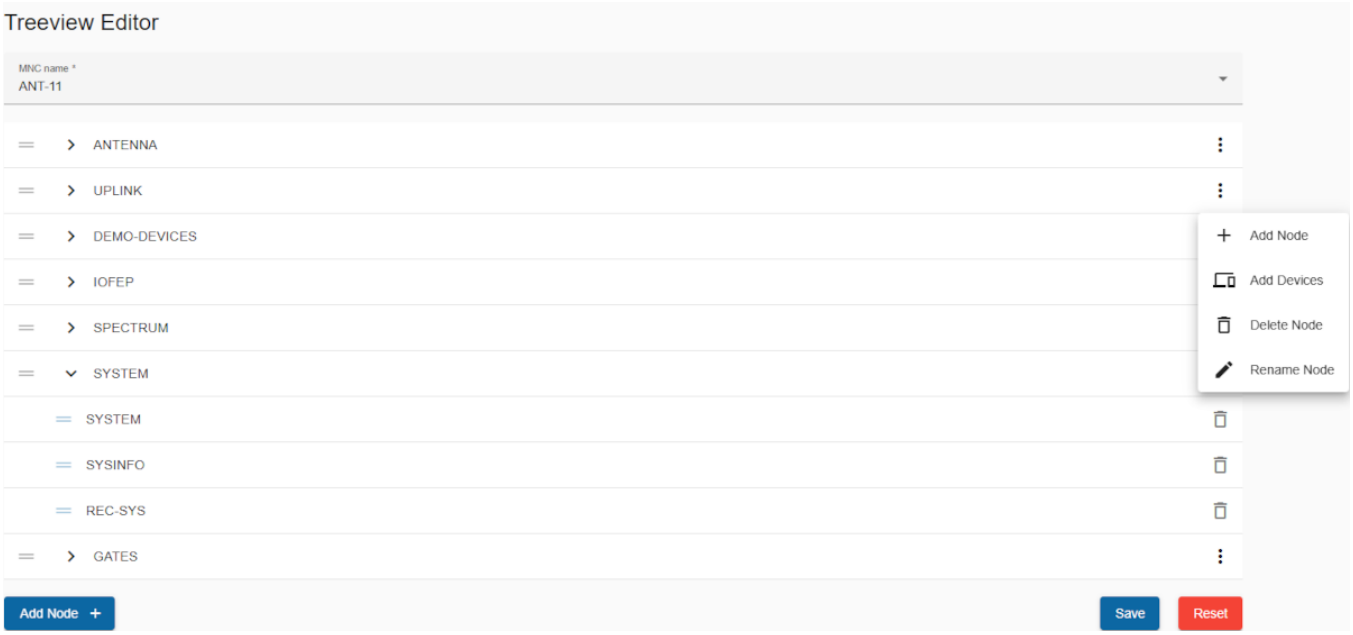
- Click on the arrow buttons (left or right) next to *Redundancy* to change MNC from *Backup to Main or Main to Backup*.

Toggle redundancy

- You can activate or deactivate redundancy using the slider under *Enabled*.

1.19 Treeview editor

The Treeview editor lets you define or modify the tree / subsystem hierarchy used by the M&C Tree View.



Title: Title of page.

MNC name: Below the title, you must select an option from the drop-down list to start editing.

Tree structure

- **Subsystem/Parent node**: are displayed as the top-level entries in the tree. Each parent node can have child nodes nested underneath. Subsystem/Parent nodes can be expanded (▼) or collapsed (►) to hide or reveal their child nodes.
    - **Drag handel**: Appears to the left of the subsystem/parent node name, allowing the node to be reordered or moved into another subsystem/parent node.
    - **Node name**: Displays the name of the subsystem/parent node.
    - **Context-menu (⋮)**: Located to the right of the node name, this menu provides the following options:
        - **Add Node**: Create a new subsystem node under the selected node.
        - **Add Devices**: Attach specific devices to the selected node.
        - **Rename Node**: Change the name of the selected subsystem/parent node.
        - **Delete Node**: Remove the subsystem/parent node and all its children.

- **Device/Child node**: are displayed indented beneath their respective subsystems or parent nodes and cannot exist at the top level (as subsystem). They must always belong to a subsystem.
    - **Drag handel**: Appears to the left of the device/child node name, allowing the node to be reordered within the same subsystem/ parent or moved into another subsystem/parent node.
    - **Node name**: Displays the name of the device/child node.
    - **Delete button**: A trash bin icon on the right allows for quick deletion of the device/child node.
- **Drag and Drop**: Subsystem/Parent nodes and devices/child nodes can be dragged and dropped using the drag handles:
    - **Reordering**: Rearrange nodes within the same subsystem/parent.
    - **Moving**: Move nodes between different subsystems/parents.
    - **Error**: If something is not correct, the snack bar (error) would be displayed with the description of the error at bottom of the page.

Bottom toolbar actions

The Save and reset button is deactivated if no changes have been made.

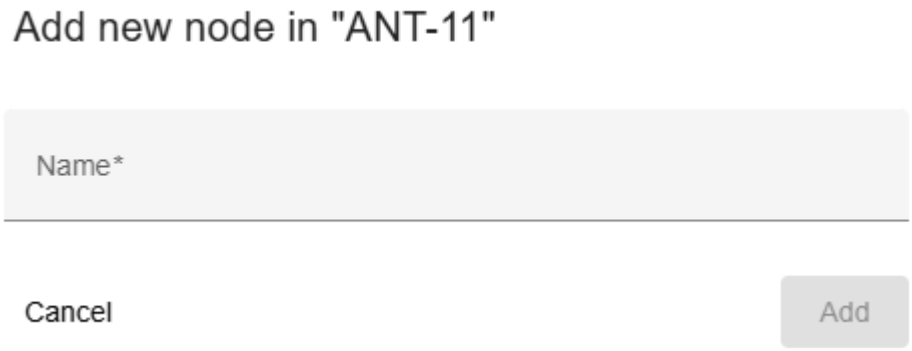
- **Add node**: Use the *Add Node +* button at the bottom of the editor opens a dialog to quickly add a new subsystem/parent node to the tree.
- **Save**: Saves all changes made in the editor. If you have not saved the changes and accidentally leave the editor, a confirmation dialog will appear in which you must give your consent to leave the editor/page.
- **Reset**: Revert the tree structure to its original state.

1.19.1 Functionality

1. **Drag-and-Drop**: Users can drag and drop rows to rearrange the hierarchy dynamically.
2. **Reset changes**: If you made a mistake and want to have old state just click on reset changes to start again from first state.
3. **Unsaved changes**: If you have not saved the changes and accidentally leave the editor, a confirmation dialog will appear in which you must give your consent to leave the editor/page.

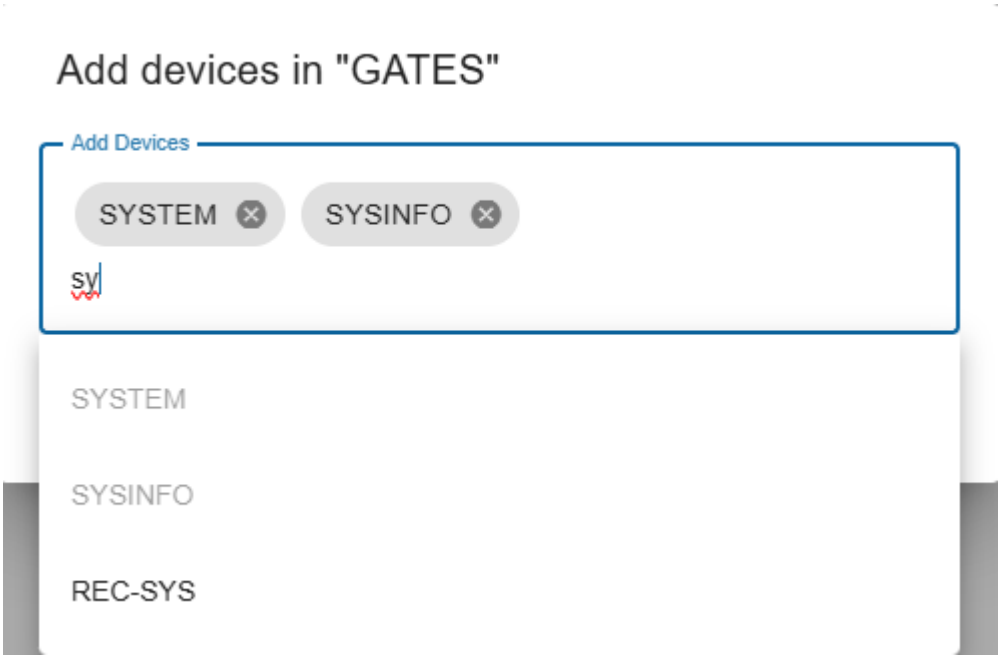
1.19.2 Dialogs

Add/rename node/subsystem



- **Trigger**:
  - when you click on the "Add node +" button on the bottom to create new subsystem/parent node or
  - an on *pencil icon* to rename node from context menu
  - The dialog title clearly indicates whether you are creating a new node on top level or under other node, renaming an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Name**: The name of the subsystem or node. It must be unique compared to other subsystem/node names.
- **Actions**:
  - **Add/Rename**:
    - For new node, this creates the node with the provided name and add devices dialog will be open.
    - For existing node, this renames subsystem/node.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

Add devices



- **Trigger**:
  - when you click on the "Add devices" button from context menu of selected subsystem/parent node.
  - The title of the dialog clearly indicates in which subsystem/parent node you are adding devices to provide clarity about the action being performed.
- **Fields**:
  - **Add devices**:
    - **Device filtering**: The input field includes a dropdown that shows a list of available devices. As the user types in the input field, the list is automatically filtered to match the entered text. Once you have completed the device selection, simply click outside the dialog to hide the dropdown.
    - **Adding Devices**: When a device is selected from the dropdown, it appears as a small tag (chip) displayed above the input field. Users can continue selecting multiple devices, with each device added as a separate tag. Selected device(s) are disabled for the clarity. Each tag includes a small *close (×) icon*. Clicking on the close icon removes the corresponding device from the selection.
- **Actions**:
  - **Add**: Add device(s) to the selected subsystem/parent node.
  - **Cancel**: Closes the dialog without saving.

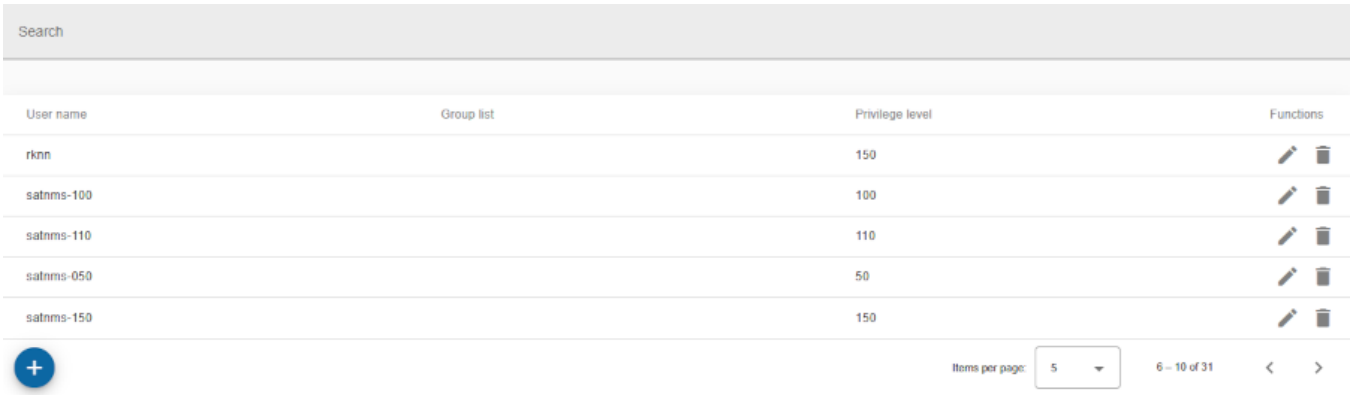
Confirmation dialog

- **Trigger**: Opens when you click the
  - delete node from context menu
  - Trash icon from device/child node.
  - Reset button
  - Leaving the page if there are unsaved changes.
- **Content**: Asks the user to confirm the action, depending on where you trigger the dialog.

- **Actions**:
  - **Yes**: Confirm the action.
  - **Cancel**: Cancels the action.

1.20 User management

The user management lets you manage the list of users which are allowed to operate the software. You need to be a administrator with privilege level 150 or higher to access the user management page.



Search bar

- Located at the top of the table.
- Allows users to filter keys by keywords, such as name, key type and key.

Header row

- You can sort rows in ascending or descending order by clicking on the column header.
- Sorting is applied to the entire dataset, not just the current page.
- The active sort order (ascending or descending) is typically indicated by an arrow or icon near the column name.

Table columns

- **Checkbox column**:
  - **Location**: The checkbox column is located at the far left of the table.
  - **Purpose**: Allows users to select one or multiple rows for delete row(s).
  - **Functionality**:
    - **Single Selection**: Click on a single checkbox to select an individual row.
    - **Multiple Selection**: Click multiple checkboxes to select multiple rows at once.
    - **Select all**: The checkbox in the header row allows you to select or deselect all rows on all pages.
    - **Delete**: After selecting events, delete action on bottom toolbar can be performed for all selected items.
- **Username**: The login name of the user.
- **Group list**: Group list in which is user assigned.

- **Privilege level**: The privilege level level determines whether a user is only allowed to control some basic aspects of the M&C system or whether the operator is allowed to change everything. Higher numbers mean higher privileges or more comprehensive control.
- **Functions**: Action icons for managing the user:
  - **Edit**: Pencil icon to modify/edit the user.
  - **Delete**: Trash can icon to delete the user.

Bottom toolbar

- **Delete selected users**: A button to delete selected users/rows from checkbox column.
- **Create user**: + button is used to create new user.
- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.20.1 Functionality

Create user

- Click the + button at the bottom of the table to add a new user.
- Input the required details.

Edit user

- Click the *pencil icon* in the Functions column to modify user details.
- Adjust the settings and save.

Delete user

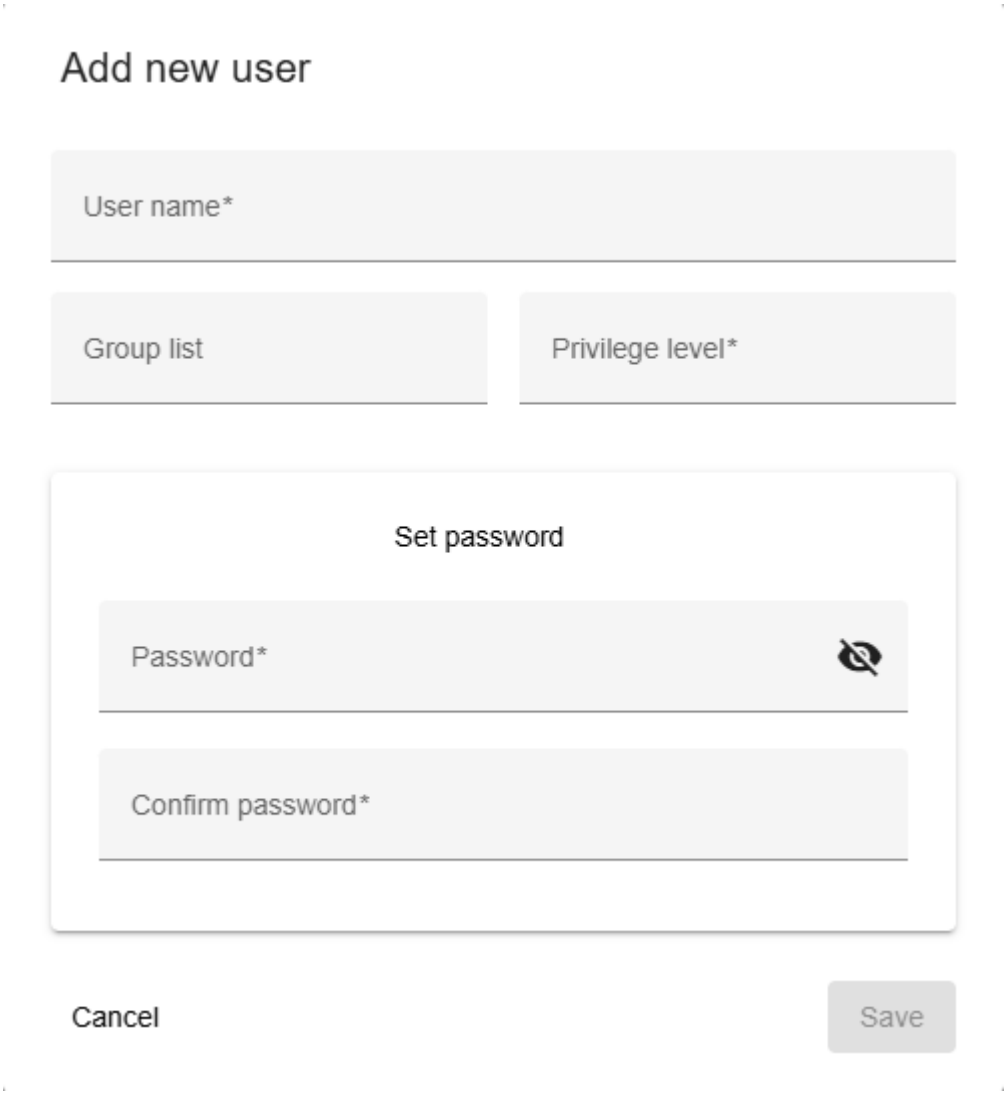
- Click the *trash icon* in the Functions column to delete an user.
- Confirm the action in the pop-up dialog to delete the user.

Pagination

- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.20.2 Dialogs

Add/edit user dialog



- **Trigger**:
  - when you click on the "+" button on the bottom toolbar to create new user or
  - an on *pencil icon* to edit in the menu column
  - The dialog title clearly indicates whether you are creating a new user, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Username**: The login name of the user with which the user log in.
  - **Group list**: User group list.
  - **Privilege level**: Set privilege level for controlling user access. Must be greater then 1.
  - **Set password/ Change password**: If you want to edit or reset an existing user password, change the password displayed instead of *Set password* and simply expand it to change password.
    - **Password**: Set use password.
      - **Show password**: Click on visibility/eye icon to show or hide (default) password.
    - **Confirm password**: Confirm password.

- **Actions**:
  - **Save**:
    - This saves modifications.
    - If an error occurs in the input fields, the button is deactivated.
  - **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column or trash icon from bottom toolbar.
- **Content**: Asks the user to confirm whether they want to delete the selected user(s).
- **Actions**:
  - **Yes**: Deletes the user(s) permanently.
  - **Cancel**: Cancels the deletion action.

1.21 User settings

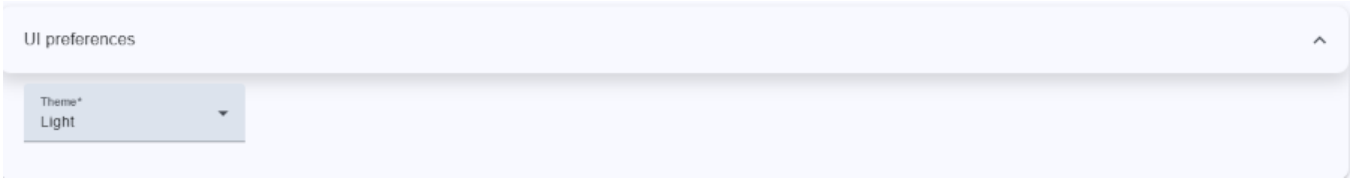
The User Settings page allows users to customize their experience and configure preferences. All changes made on this page are saved directly in the browser's storage or in the Database, ensuring personalized settings persist across sessions.

Title: Title of page.

Save mode: You can save your settings in the browser cache (default) or in the database.*The database or default settings specified by the admin (unless the setting is locked) are overwritten if the user has saved settings in the browser cache.* **Global settings**: Navigate to Global settings (admins only) **Key features**: Clicking on title will expand that section

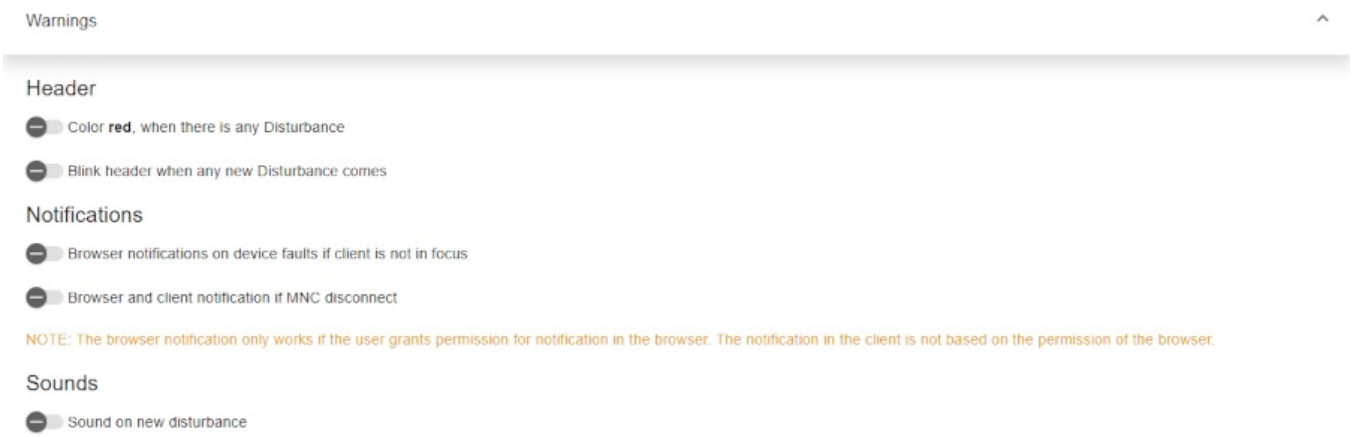
- UI preferences
- Warnings
- Edit take mode
- User screen
- Navigation
- Menu shortcuts
- Table settings

1.21.1 UI preferences



Theme: It an drop-down to choose between light, dark or automatic. Automatic option will adapt your system theme.

1.21.2 Warnings



Top

- Section title
- Icon to expand or collapse section

Header

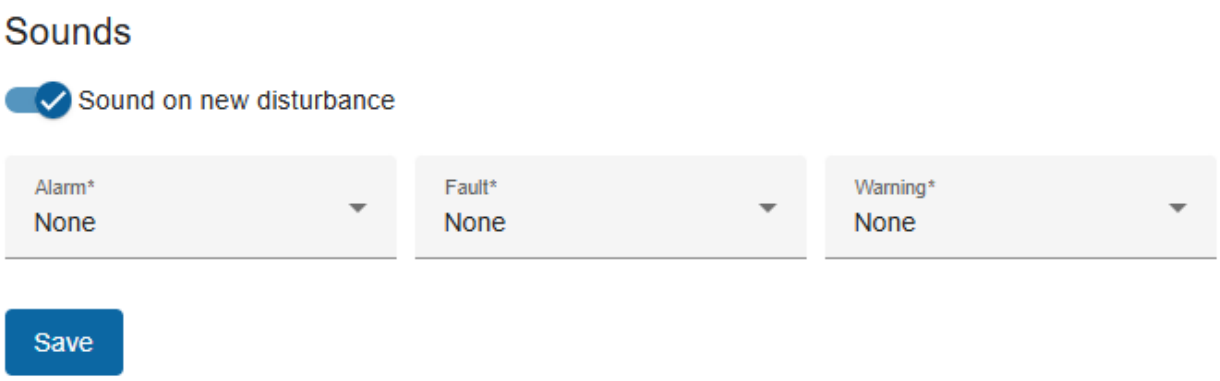
- Color red, when there is any Disturbance
- Blink header when any new Disturbance comes

Notifications

- Browser notifications on device faults if client is not in focus
  - If user client is not in focus or user find hisself in other tab, a notification will informs you. *NOTE: will not work on tablet or phone*
- Browser and client notification if MNC disconnect
  - If an MNC got disconnected you will be informed either with web browser notification or with snackbar.

Sounds

- Sound on new disturbance

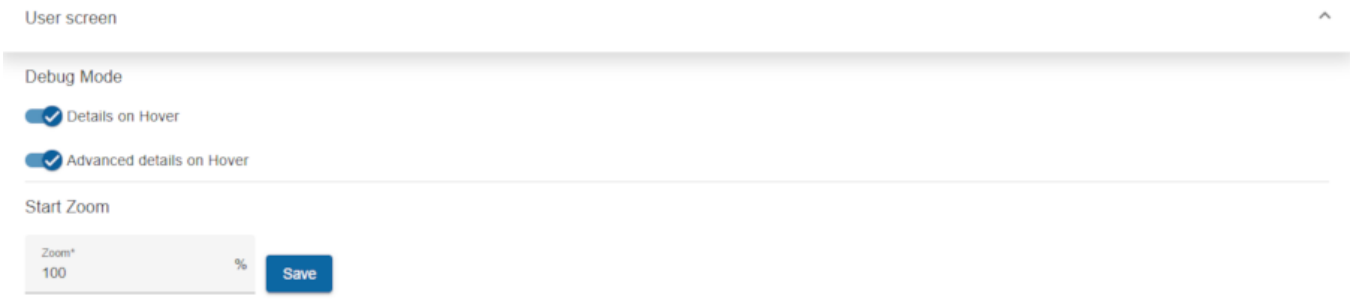


- If checked you can set different sounds for different warnings.
- **Save**: To save settings.

1.21.3 Edit take mode

Configure the edit take mode for device windows. If turns on, device window parameters are disabled. You can click on edit button to start editing parameters on device window and clicking on take button will save the edited values.

1.21.4 User screen



Debug mode

Enables additional debugging features, such as hovering over elements to display detailed information for debugging purposes.

- **Details on hover**: display some information in the bottom left corner when the mouse pointer is moved (hovered) over a display element (e.g. display element type, messageId, value and device mode) on the user screen-
- **Advanced details on hover**: same as *Details on hover*, but this displays more information.

Start zoom

Users can define a custom zoom level (in %) for the user screens. Once set, the user screen

will always display at the specified zoom level.

- **Zoom**: Type wished value. Default is 100%.

Save: Will save the zoom level.

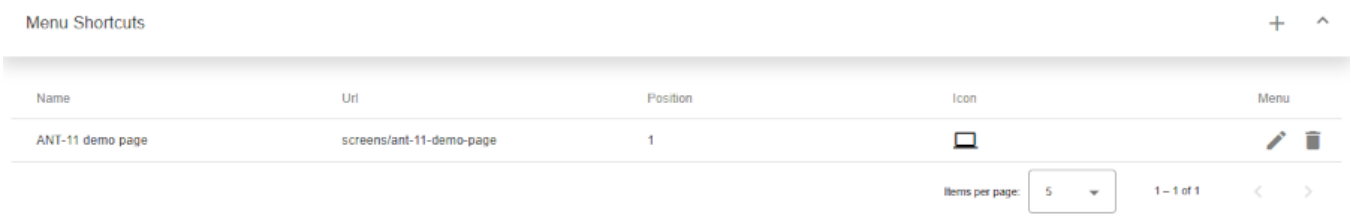
1.21.5 Navigation

Provides the option to set a specific page as the home page for easier navigation after user successfully logged in.

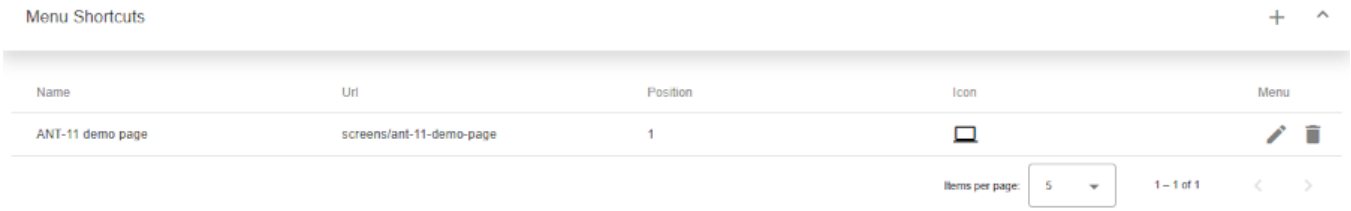
Set default url: Just type your whished url.

Save: Will save the url

1.21.6 Menu shortcuts



Allows users to add custom links under *Shortcuts* in the sidebar with other menus for quick access (in the image above) to frequently used pages or resources.



Top

- Left-side title of table.
- Plus (+) button to create new shortcut.
- Icon button to expand or collapse table

Table columns

- **Name**: The name of the created shortcut.
- **Url**: Saved url of shortcut.

- **Position**: Position of the shortcut.
- **Icon**: Shortcut icon.
- **Functions**: Action icons for managing the shortcut:
  - **Edit**: Pencil icon to modify/edit.
  - **Delete**: Trash can icon to delete.

Bottom toolbar

- **Pagination controls**: Allows users to set the number of items displayed per page and navigate between pages.

1.21.6.1 Functionality

Create shortcut

- Click the + button at the top of the table to add a new shortcut.
- Input the required details.

Edit shortcut

- Click the *pencil icon* in the Functions column to modify shortcut details.
- Adjust the settings and save.

Delete shortcut

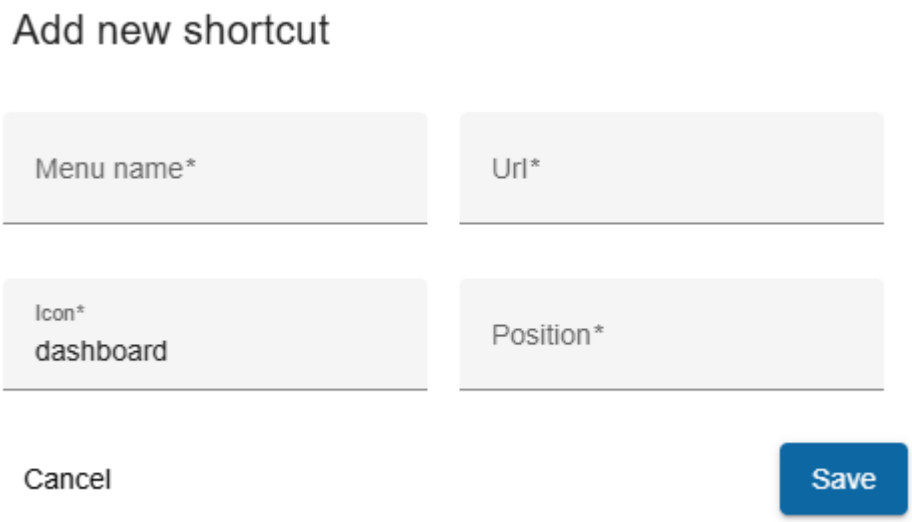
- Click the *trash icon* in the Functions column to delete an shortcut.
- Confirm the action in the pop-up dialog to delete the shortcut.

Pagination

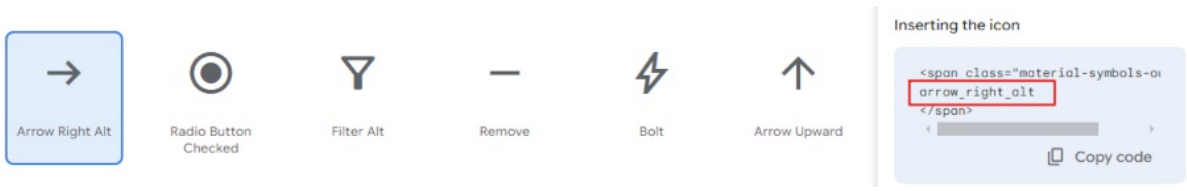
- Adjust the number of rows displayed per page using the dropdown menu (e.g., 5, 10, or 25).
- Use the navigation arrows to move between pages of the table.

1.21.6.2 Dialogs

Add/edit shortcut dialog



- **Trigger**:
  - when you click on the "+" button on the top toolbar to create new or
  - an on *pencil icon* to edit shortcut in the menu column
  - The dialog title clearly indicates whether you are creating a new, editing an existing one, ensuring clarity in the action being performed.
- **Fields**:
  - **Menu name**: The name of the menu a user want to have.
  - **Url**: A url on which user want to have quick access.
  - **Icon**: The icon name can be chosen from *Google icons* and should be entered (lower case).



    - As soon as you have selected a icon, a window with the details appears on the right-hand side. Select or write the name of the icon in the *Inserting the icon* area, as in the example above with the red frame.
    - If the icon is not displayed after saving the shortcut, this means that the icon is not available.
  - **Position**: Enter the position of shortcut to have the shortcut in right order.
- **Actions**:
  - **Save**:
    - this saves modifications.
    - If an error occurs in the input fields, the button is deactivated.

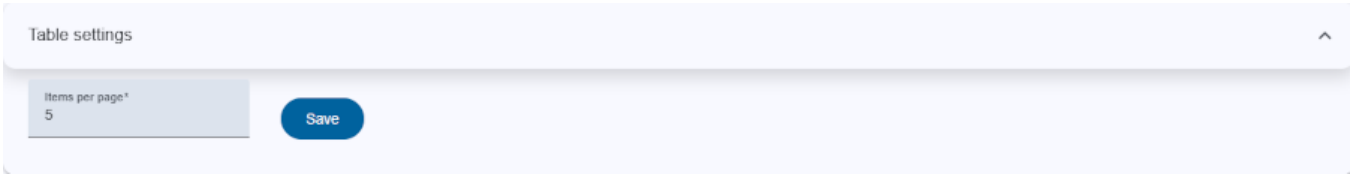
- **Cancel**: Closes the dialog without saving.

On delete confirmation dialog

- **Trigger**: Opens when you click the trash icon for an key from menu column.
- **Content**: Asks the user to confirm whether they want to delete the selected shortcut.
- **Actions**:
  - **Yes**: Deletes the shortcut permanently.
  - **Cancel**: Cancels the deletion action.

1.21.7 Table settings

Provides the option to set settings on tables of the app.



Items per page: Set number items that table should show.

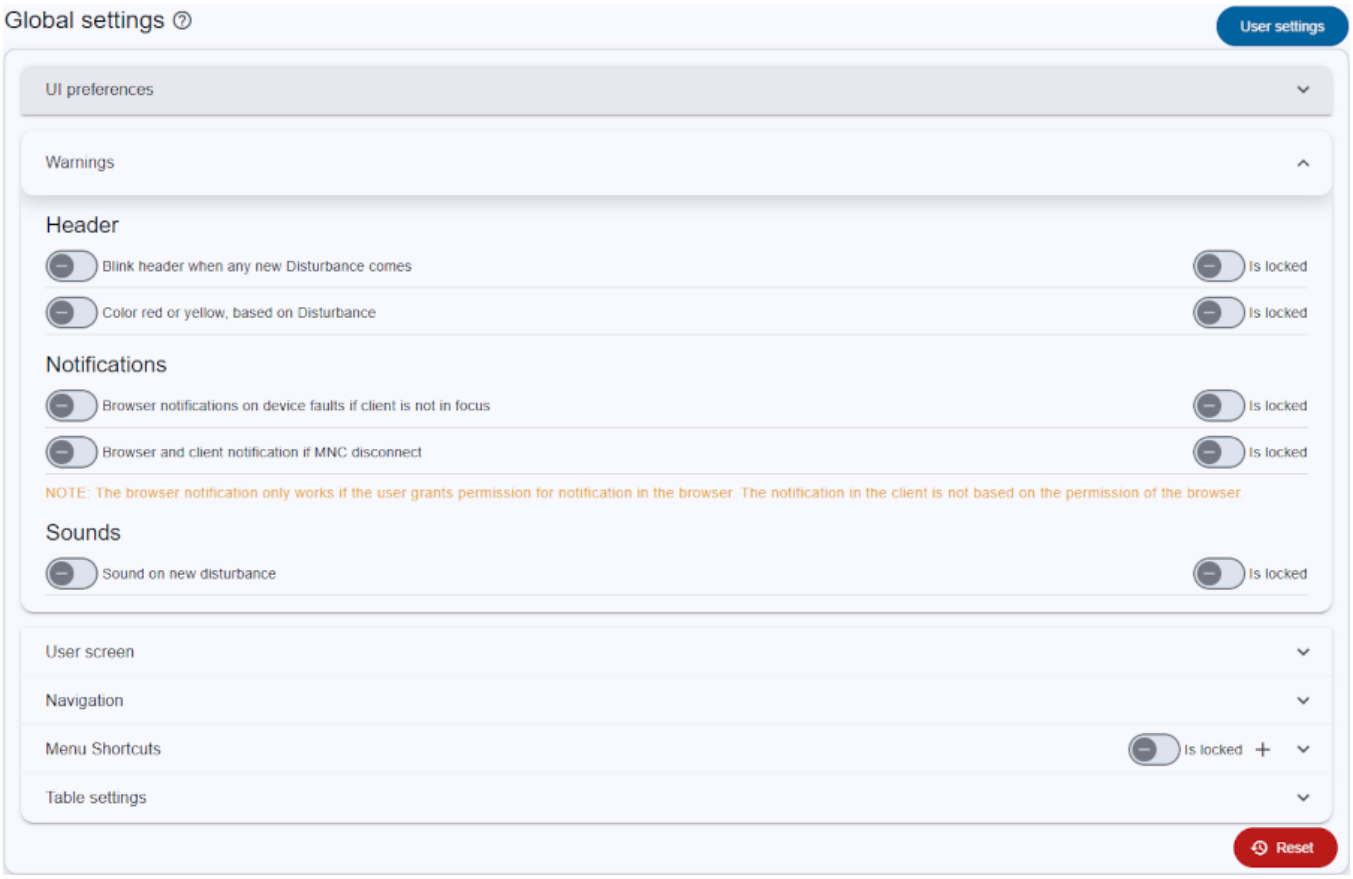
Save: Will save the setting.

1.21.8 Reset

1.22 Global settings

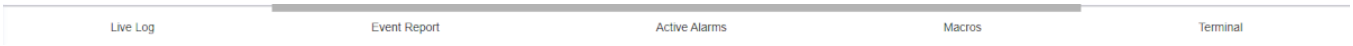
The Global Settings Page allows administrators to define and enforce default configurations across all users in the application. It shares the same structure and layout as the User settings, providing a familiar interface with the added ability to lock specific settings. Only users with administrative privileges can access this page.

Settings configured here act as defaults for users who haven’t explicitly saved their own preferences. Each setting includes a lock toggle. When a setting is locked, users cannot modify it in their personal settings, and the locked value is automatically applied by the application.



1.23 Bottom panel

The bottom section of the webpage, referred to as the Bottom Toolbar, offers quick access to essential features and logs for system monitoring and interaction. The Bottom Toolbar is available throughout the application, ensuring users can quickly interact with features at all times. The bottom toolbar is expandable with selected tab.



It contains the following tabs:

- **Live log**: displays real-time logs and M&C activity.
- **Event report**: Shows a detailed report of recent events in the system.
- **Active Alarms**: Lists all currently active alarms or notifications.
- **Macros**: Provides access to automated scripts or macros.
- **Terminal**: Offers a direct terminal interface for advanced system commands.

1.23.1 Interaction features

Persistent accessibility

- The bottom toolbar is always present and can be accessed from any page in the app.
- Simply hover on the bottom toolbar to reveal the toolbar's resize handle.

Resize handle

- **Drag to resize**: Once the handle is visible, click and drag it upwards to expand the toolbar or downwards to minimize it.
- **Double-Click**: Double-clicking the resize handle will instantly expand the toolbar to full screen and by full screen double-clicking the resize handle minimize the toolbar instantly.

1.23.2 Live log

The Live Event Log window shows the recent event messages as they are received from one of the M&Cs. The Live Event Log window shows the messages in the order of their arrival at the M&C. The window can be resized, scrolled and always shows the last 25 messages.

The sort order of the event list (newest first / oldest first) may be toggled using the*Sort by* dropdown on the right hand side. The default sort order is determined from a parameter set in the "client.properties" file located at the M&C server. Setting the key "gui.eventSortOrder" to "true" or "false" defines the default behavior of the live event log window.

Table columns

- **ID**: The event ID. This is a unique number the software assigns to each event which arrives at the M&C.
- **TIME**: The time stamp when the event was originated
- **NAK**: The 'need acknowledgment' mark. Messages showing a red exclamation mark in this column are fault messages which need to be acknowledged by the operator.
- **PRIO**: The message priority. The message priority decides on the urgency, the message gets delivered from the M&C to the client. It also is a search criteria in the Event Report window. The following priority symbols may appear:
  - : This is an informational message (lowest priority)
  - : This is a fault message (medium priority)
  - : This is an alarm message (highest priority, the MNC tries to deliver this immediately, regardless of the dial timing settings)
- **SOURCE**: The primary message source. This usually is the ID of the MNC which issued the message. Messages marked with 'USER' or 'MNC' in this column.
- **DEVICE**: The secondary message source. This gives a more detailed information about the source of the message. It may be the name of the device in a MNC which caused the event.

- **MESSAGE**: The message text.

Right side toolbar

- **Sort table**: The table content can sort by descending and ascending.
- **Acknowledge all faults**: Acknowledge all faults marked with the red exclamation mark.
- **Acknowledge fault**: This button may appear if you want to acknowledge messages marked with the red exclamation mark. Simply select the row with red exclamation mark with mouse click. The exclamation mark will then disappear and a confirmation message will be added at the end of the log.

1.23.3 Event report

The Event Report window lets you generate filtered reports from the event database maintained by the NMS. This database contains all event (fault) messages issued by the MNCs during the last months (the exact depth of event storage is configurable during system installation).

The event report shown in the table gets automatically updated when you change the time range or apply other filter to display or the sort order. This lets you combine various filter specifications without being interrupted by the generation of intermediate reports.

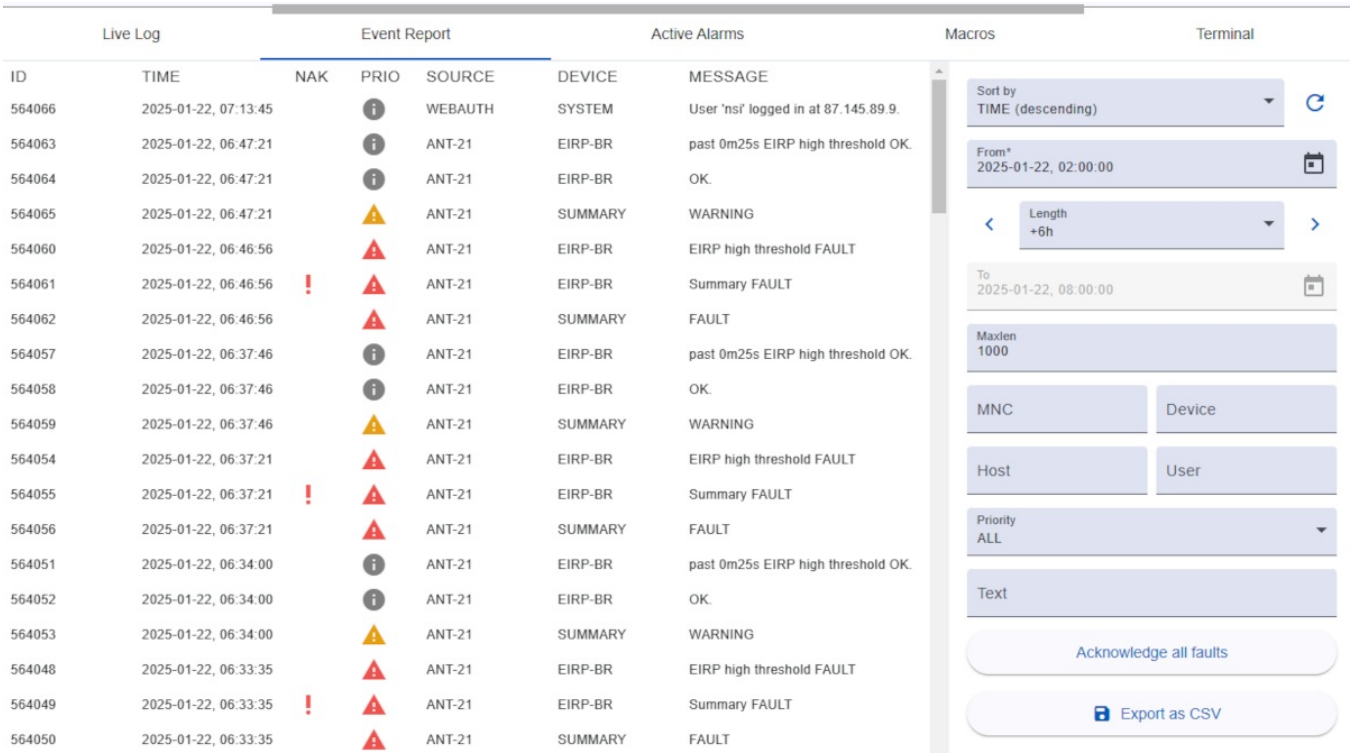


Table columns

- **ID**: The event ID. This is a unique number the software assigns to each event which arrives at the M&C.
- **TIME**: The time stamp when the event was originated

- **NAK**: The 'need acknowledgment' mark. Messages showing a red exclamation mark in this column are fault messages which need to be acknowledged by the operator.
- **PRIO**: The message priority. The message priority decides on the urgency, the message gets delivered from the M&C to the client. It also is a search criteria in the Event Report window. The following priority symbols may appear:
  -  : This is an informational message (lowest priority)
  -  : This is a fault message (medium priority)
  -  : This is an alarm message (highest priority, the MNC tries to deliver this immediately, regardless of the dial timing settings)
- **SOURCE**: The primary message source. This usually is the ID of the MNC which issued the message. Messages marked with 'USER' or 'MNC' in this column.
- **DEVICE**: The secondary message source. This gives a more detailed information about the source of the message. It may be the name of the device in a MNC which caused the event.
- **MESSAGE**: The message text.

Filter functions

Located on the right side of event report tab. All filter can be combined with each other.

- **Sort by**: The table content can sort by descending and ascending of it's time.
- **Reload button**: Reload the table content to get latest data.
- **From**: Define the start time. If you click on the calendar icon on the right-hand side, a calendar view for selecting the date is displayed. The time must be entered manually.
- **Length**: The length is a drop-down menu that allows you to select duration. If you click on the arrow button on the right or left, the hours are added (on right arrow) to or subtracted (on left arrow) from the start time.
- **To**: Define the end time. Normally this input field is disabled to activate, please select 'select end time' from length dropdown.
- **Maxlen**: Define the maximum number of events that a report may contain. There is a default value for this (1000 in most cases), which represents a good compromise between performance and the number of events displayed simultaneously. You can change this limit according to your needs, but remember: reports with millions of events can take some time.
- **MNC**: This filter lets you filter with the M&C name.
- **Device**: This filter lets you filter messages along their device (secondary source) which caused the message.
- **Host**: The host name filter lets you restrict the report to messages originated from a certain client PC. Login messages and messages logging the active change of a parameter are stored with the origin (hostname or IP4 address) of the event.
- **User**: Lets you restrict the report to messages originated by a certain user. Login messages and messages logging the active change of a parameter are stored with the name of the user who is responsible for this event.
- **Priority**: The priority selector defines the priority (or type) that an event must have in order to be listed in the report. The selection *ALL* shows all events. *FAULT* contains events that have at least fault priority. *ALARM* only shows alarm messages (see the description

of alarm priorities above). The NOT ACK selection shows all messages that (still) need to be acknowledged.
- **Text**: Filter with the message text.
- **Acknowledge all faults**: Acknowledge all faults marked with the red exclamation mark.
- **Acknowledge fault**: This button may appear if you want to acknowledge messages marked with the red exclamation mark. Simply select the row with red exclamation mark with mouse click. The exclamation mark will then disappear and a confirmation message will be added at the end of the log.
- **Export as CSV**: This button downloads the current event report, as displayed in the table, as a CSV file.

1.23.4 Active alarms

The Active alarms tab lists all actually pending faults and warnings in the M&C. The Table automatically updates its content as the faults appear or disappear.

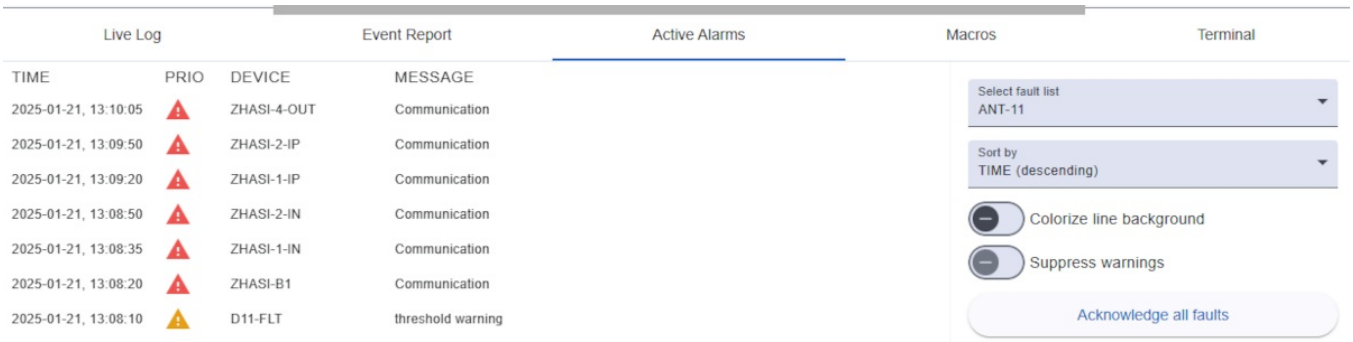


Table columns

- **TIME**: The time stamp when the event was originated
- **PRIO**: The message priority. The message priority decides on the urgency, the message gets delivered from the M&C to the client. It also is a search criteria in the Event Report window. The following priority symbols may appear:
  - : This is an informational message (lowest priority)
  - : This is a fault message (medium priority)
  - : This is an alarm message (highest priority, the MNC tries to deliver this immediately, regardless of the dial timing settings)
- **DEVICE**: The secondary message source. This gives a more detailed information about the source of the message. It may be the name of the device in a MNC which caused the event.
- **MESSAGE**: The message text.

Right toolbar

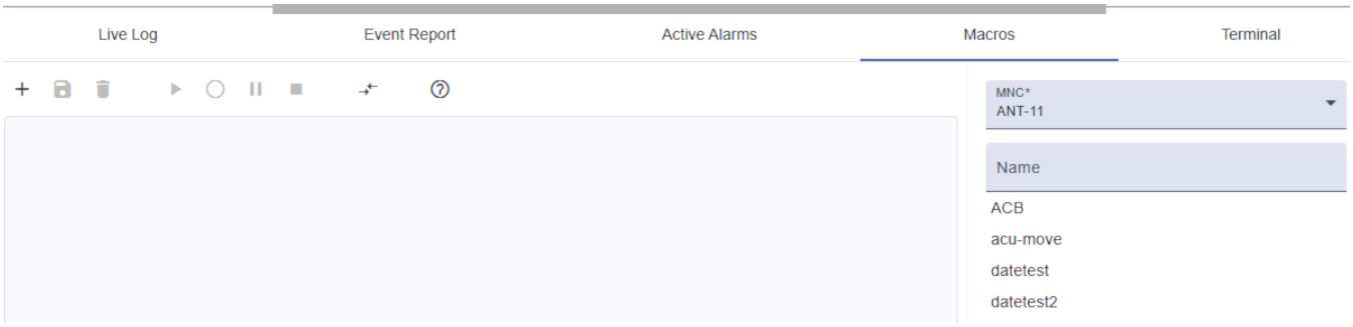
The toolbar buttons of the window let you select how the fault list displays the active faults:

- **Select fault list**: Select an MNC name from the drop-down list for which you want to check faults. Primary M&C is selected as default.

- **Sort by**: The table content can sort by descending and ascending of it's time.
- **Colorized the background**: If checked, the background of each line gets background color as the icon red for faults, yellow for warnings.
- **Suppress warnings**: If checked, the table content suppresses all warnings and show only faults only. Otherwise faults and warnings are displayed.
- **Acknowledge all faults**: Acknowledge all faults marked with the red exclamation mark.

1.23.5 Macros

The sat-nms software includes a powerful macro recording and playback feature which lets you automate complex equipment settings to one mouse click. The following chapters describe the user interface which give access to this feature.



Top toolbar

You must select an M&C from the right side toolbar, so that this toolbar can be displayed.

- **Add macro**: On click on + button you can create the new macro.
- **Save macro**: If you made some modifications you can save by clicking on this button.
- **Delete macro**: Selected macro can be deleted.
- **Play macro**: Play the selected macro.
- **Record macro**: You can start recording the macro. On toolbar of app the record icon will be displayed.
- **Pause/resume recording**: You can pause or resume recording.
- **Stop recording**: Stop the macro recording.
- **Compare macros**: To compare macros, please select macros from the macro list on the right-hand side. Both macros are displayed next to each other. The “Compare” button is displayed at the bottom of the window. It triggers a dialog that displays a better comparison. Clicking again on button will disable compare mode.

Right side toolbar

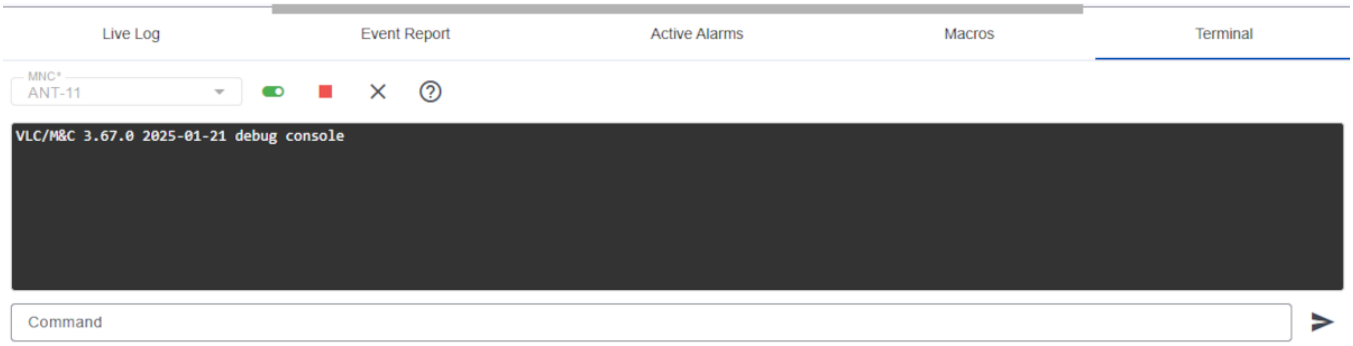
- **MNC**: Select an M&C to load all stored macros or perform other actions.
- **Name**: On creating new macro name should be entered, otherwise it works as a filter also. You can type the name of the macro to find the saved macro.
- **Macro list**: Once you selected an M&C, a macro list will be displayed under the name field. Simply select macro to perform actions described in above toolbar section.

Editing area: The macro editing area is located under the top toolbar. You can also edit the

saved macro by simply typing as you would in a text editor. This area is also used to compare macros.

1.23.6 Terminal

The terminal tab gives you access to the debug console of a M&C system. This is a valuable tool to inspect the low level communication to devices which are controlled by the M&C.



The terminal window consists of a display area which shows the debug output of the M&C and a command entry field at the bottom of the window. The tool bar at the top gives you access to the following functions:

1. **MNC**: Select an M&C to which you want to start the terminal connection.
2. **Switch**: After selecting an M&C you have to toggle this switch to start connect or disconnect the terminal connection. Green means terminal is connected.
3. **Stop/play icon**: It pauses or resumes the terminal session.
4. **Close icon**: It's clear the terminal display area.

After the terminal display area there are 'Command' input and 'send' icon. You can just type in command input and press 'enter' key to send command.

Debug commands

At the entry line at the bottom of the window you can enter a number of debugging commands which may help to test e.g. new device drivers. The following commands may be entered:

- get <msg-id> --- Get the current value of an parameter with the ID <msg-id>
- set <msg-id> <v> --- Set parameter with the ID <msg-id> to a value as it would entered by the user
- loop <msg-id> <v> --- Set parameter with the ID <msg-id> to a value as it would read from the device
- touch <msg-id> --- Force the parameter with <msg-id> to be read from the device with the next driver cycle
- threads --- Show a comprehensive list of device threads
- thread <n> --- Show details of thread number <n>
- peers --- Show peers / list of connected clients
- peer <n> (view|verbose|silent|kill) --- Details and functions of peer number <n>
- restart --- Restart MNC service (same as restart button in client)
- shutdown --- Stops MNC service. Attention: service has to be restarted on the command

line

- limit / nolimit --- make the 'debug.log' file unlimited or limited in size. The MNC always starts with the 'debug.log' file limited in size.
- csm-debug --- toggles the debug output of**all** CSM spectrum analyzers ON/OFF. The debug output appears in the `.panic.log` file. Remarks:
  - Be careful to switch csm-debug off again after using it. It remains on when the debug terminal window is closed unless it has been switched off before. This may cause a large amount data in the `.panic.log` file.
  - Using csm-debug only gives meaningful information if there is only one spectrum analyzer running in the system. If you have multiple spectrum analyzers configured, be sure to set all but the one you want to debug to OUT-OF-SERVICE.