
GRID AUTOMATION PRODUCTS

MicroSCADA X SYS600 10.2

Operation Manual for Workplace X





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Section 1 Introduction

This manual describes how to supervise and control the power process with the SYS600 Workplace X user interface. The manual also describes how to work with Workplace X (for example, start, login, link windows, view layouts, and logout).

The supervision and control are done by means of process picture, event/alarm lists, and history. The manual also describes the basic customizing possibilities of the user interface.

This manual is intended for the SYS600 Workplace X users.

1.1 Document conventions

The following document conventions are used for the presentation of material:

- The words in the screen element names (for example, the title in the title bar of a window, the label for a field of a dialog box, and so on) are initially capitalized.
- Upper case is being used for the name of a keyboard key if labeled on the keyboard. For example, the ENTER key. Lower case letters are used for the name of a keyboard key that is not labeled on the keyboard. For example, the space bar and the comma key.
- Press CTRL+C, this indicates that CTRL key must be pressed before pressing the C key (to copy a selected object in this case).
- Press ESC, this key has several actions, for example, abort for cancel an operation.
- The names of push and toggle buttons are presented in bold. For example, click **OK**.
- The names of menus and menu items are presented in bold. For example, the **File** menu.
- The following convention is used for menu operations: Menu Name/Menu Item/Cascaded Menu Item. For example: select **File/New /Type**.
- Start menu always refers to the Start menu on the Windows taskbar.
- System prompts/messages and user responses/input are shown in the Courier font. For example, if an entered value is out of range, the following message is displayed:
Entered value is not valid. The value must range from 0 to 30.
- If the string MIF349 is entered in a field, this is displayed as MIF349 in the procedure.
- Lower case and italics are used to represent the variables. For example,
server_ip_address.

1.2 Revision history

Revision	Version number	Date	History
A	10.2	31.03.2021	Updates to MicroSCADA X SYS600 10.2 UI

1.3 References

Document ID	Manual	Usage
1MRK 511 481-UEN	MicroSCADA X SYS600 10.2 System Configuration	Configure web server and default UI settings
1MRK 511 505-UEN	MicroSCADA X SYS600 10.2 Workplace X Process Picture Design Manual	Create and edit pictures shown on Workplace X
1MRK 511 506-UEN	MicroSCADA X SYS600 10.2 Workplace X View Writer's Guide	Create customized pictures and views shown by Workplace X

Section 2 Opening Workplace X

The Workplace X windows application is typically a part of the product installation and can be installed separately. Workplace X can be opened using a Windows application or browser. Windows application must be installed separately whereas a web browser can be launched from any computer without installation to start the MicroSCADA X SYS600 Workplace X.

2.1 Connecting with the Workplace X browser

Use the latest version of Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge to open Workplace X in web browser.

To open the Workplace X, type the *web server host name* in the web browser address bar.



In some cases, web server works on particular port. To know the exact port number, contact the system administrator. For example, *web server host name:port_number*



Mozilla Firefox browser needs to be configured to recognize operating system private CA (Certificate Authority) certificates. For more information see Mozilla support [web page](#).



Safari is the only supported browser when connecting with iPad tablet, and Chrome when connecting with Android tablet.

2.2 Connecting with the SYS600 Workplace X Windows application

Workplace X installation also contains a separate Windows application to run the Workplace X.

When opening the Workplace X application for the first time, it is set to default **web server host name**, as shown in [Figure 1](#). Click **Add New** from the drop-down list to add a server.

Server selection

Warning: This is a private system. Do not attempt to logon unless you are an authorized user. Any authorized or unauthorized access and use may be monitored and can result in criminal or civil prosecution under applicable law.

Use HTTPS

Server

127.0.0.1

[Remove selected](#)

CONTINUE TO LOGIN

Figure 1: Server selection

See [Figure 2](#) to add a server.

The screenshot shows a 'Server selection' dialog box. At the top, a warning message reads: 'Warning: This is a private system. Do not attempt to logon unless you are an authorized user. Any authorized or unauthorized access and use may be monitored and can result in criminal or civil prosecution under applicable law.' Below the warning is a checked checkbox labeled 'Use HTTPS'. Underneath is a text input field with the placeholder 'Server name or IP address' and a link 'Remove selected' below it. At the bottom is a large blue button labeled 'CONTINUE TO LOGIN'.

Figure 2: Add new server

To add a server:

- Click **Add New** in the server drop-down list.
- Type the server name or the IP address in the text box.
- Click **CONTINUE TO LOGIN**.

The added server can be removed by clicking **Remove selected**.



In some cases, the user must add the port number if the server has another web server running in the default port. For example, *web server host name:port_number*.



Uncheck **Use HTTPS** if the web server configuration does not support HTTPS.

2.3 Login screen

After establishing the connection with the server, login to Workplace X.

In the Login screen:

1. Type the username.
2. Type the password.
3. Click **LOGIN**.

Login

Warning: This is a private system. Do not attempt to logon unless you are an authorized user. Any authorized or unauthorized access and use may be monitored and can result in criminal or civil prosecution under applicable law.

Add application selection for login. [What is this?](#)

Username

Password

LOGIN

Figure 3: Login screen

4. If system has several applications, click **Add application selection for login** toggle button to enable the **Application** field.
5. Type the application name.

Login

Warning: This is a private system. Do not attempt to logon unless you are an authorized user. Any authorized or unauthorized access and use may be monitored and can result in criminal or civil prosecution under applicable law.

Server: 127.0.0.1 [Change server](#)

Add application selection for login. [What is this?](#)

Application

Username

Password

LOGIN

Figure 4: Workplace X application login screen

The **Change server** option is available only in the Workplace X Windows application login screen and is used to type the server host name or address to be connected with the Workplace X Windows application. When multiple servers are added, then the operator can connect to the server of choice.



If an application is not selected, then the system attempts to login to the default application. When multiple applications are configured in the server, then the operator can login to the application manually by enabling the **Add application selection for login** toggle button. The manual selection is not required if there is only one application or if the user wants to connect to the default application.

Section 3 General workplace concepts

This chapter explains the general operational concepts behind Workplace X. It is important to understand these concepts for efficient and safe usage of the workplace.

3.1 Navigation concepts

The navigation in Workplace X is designed to be intuitive, consistent, and predictable. Both new and users of previous versions of SYS600 operator user interface should be able to navigate through the system with ease.

The following concepts are used in Workplace X.

- Selecting an item in the left pane opens a tab and displays content in the content area.
- Selecting an object in the content area displays the detailed object information and operations in the right pane.

3.2 User interface sections

The user interface consists of four main elements: Global Header, Left Pane, Right Pane, and Content Area. For detailed information about different elements, see [Section 3.2.1](#) to [Section 3.2.4](#).

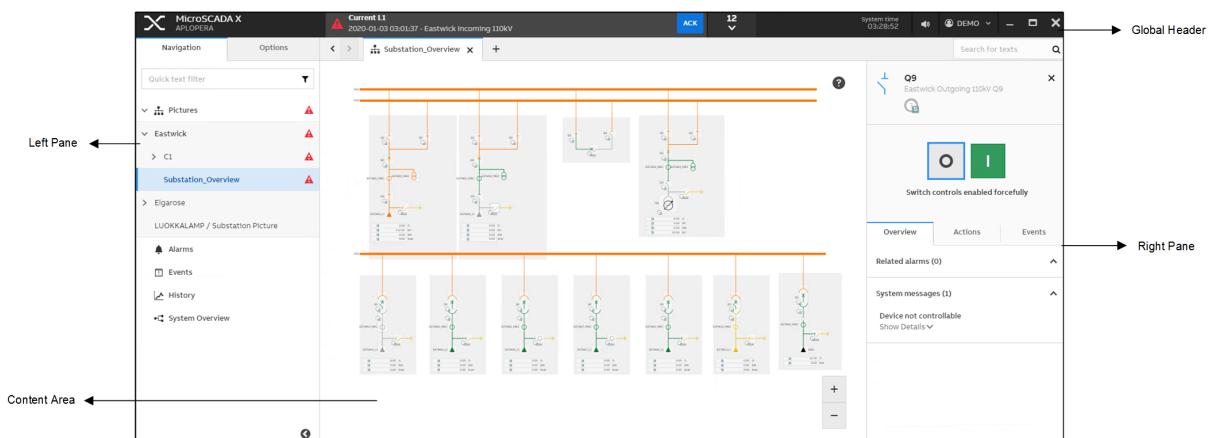


Figure 5: Main layout elements

3.2.1 Global header

The global header is the uppermost part of the user interface layout. The global header is always visible in all the context.



Figure 6: Global header

The global header consists of:

- Product name
- Application name
- Latest unacknowledged alarm with a drop-down list (drop-down has a list of five latest alarms)
- System time (server time in local time zone)
- Audible alarm enable/disable toggle
- Possible window link status (option available only in Workplace X Windows application)
- User menu drop-down

3.2.1.1 Alarm list

By default, the global header displays the latest unacknowledged alarm. Alarm information contains object text, activation time, and object path after the activation time. When there is more than one unacknowledged alarm, a drop-down is displayed at the right side of the global alarm. The value in the drop-down indicates the number of unacknowledged alarms. Click the drop-down to extend the global alarm list and display maximum of five alarms. If there are more than five alarms, click **View full list** to see all the unacknowledged alarms.

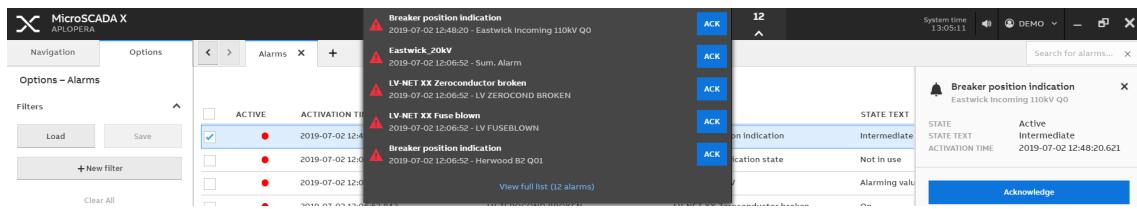


Figure 7: Extended global alarm list

Click the alarm from the drop-down list to view the detailed information. Click **ACK** to acknowledge the alarm.

3.2.1.2 User menu

The user menu is located on the right side of the global header. [Figure 8](#) shows the different menu options.

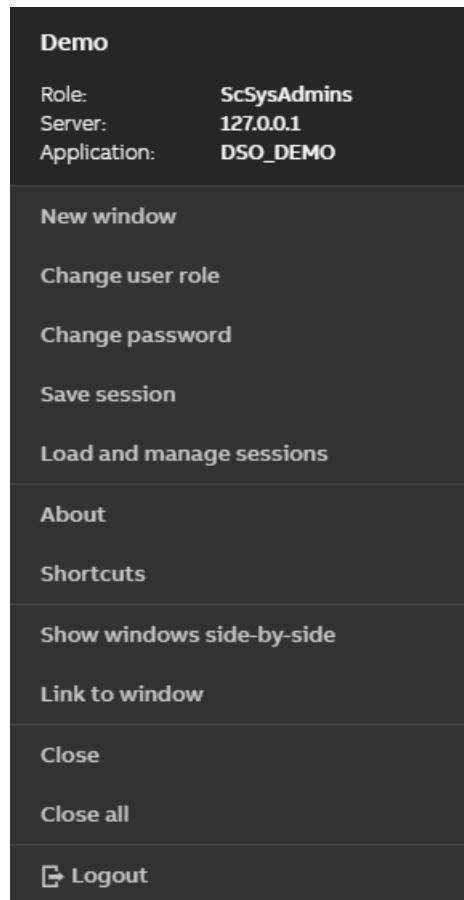


Figure 8: User menu

The topmost section on the user menu displays the user name and under it the active user role of the logged in user, and the connected server and SYS600 application.

User menu has the following options:

- **New window** - Click to open a new window. This option is only available when Workplace X is run as a Windows application.
- **Change user role** - Click to change the current user role. For more information, see [Section 3.2.1.2.1](#).
- **Change password** - Click to change the current user password. For more information, see [Section 3.2.1.2.2](#).
- **Save session** - Click to save the current state of the user interface. For more information, see [Section 3.2.1.2.3](#).
- **Load and manage sessions** - Click to load a previously saved state of the user interface. For more information, see [Section 3.2.1.2.4](#).
- **About** - Click to see the information of the software version and the license details.
- **Shortcuts** - Click to see the available keyboard shortcuts.
- **Show windows side-by-side** - Click to automatically arrange Workplace X windows side-by-side. This option is only available when Workplace X is run as a Windows application and when several windows are open.
- **Link to window** - Click to link the window to other window. The linked window's event and alarm list are automatically filtered based on the open SLD picture on the Master window. This option is only available when Workplace X is run as a Windows application and when several windows are open. For more information, see [Section 3.3](#).

- **Close** - Click to close the window. This option is only available when Workplace X is run as a Windows application.
- **Close all** - Click to close all windows. This option is only available when Workplace X is run as a Windows application.
- **Logout** - Click to log out from the workplace and return to the **Login** screen.



All the user menu options might not be available in all cases because of missing permissions or unsupported features. The **Change user role** option is available when the user has multiple user roles.

Changing user role

To change the user role of a currently logged in user:

1. Click **Change user role** in the user menu.
The **Change user role** dialog box opens.
2. Select the user role from the drop-down list.
3. Click **Change**.

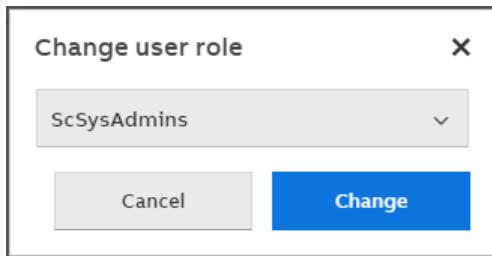


Figure 9: Changing user role

A confirmation message is displayed as shown in Figure 10.

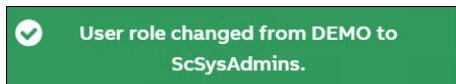


Figure 10: Change user role confirmation

Changing password

To change the password of currently logged in user:

1. Click **Change password** in the user menu.
2. Type the old and new passwords in the **Old password**, **New password**, and **Repeat new password** boxes.
3. Click **Change**.

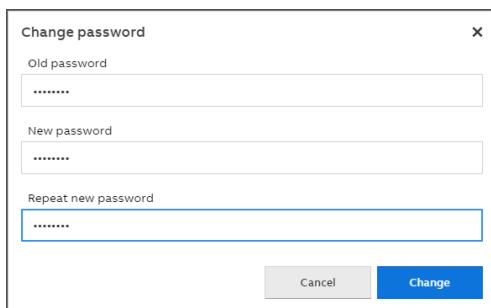


Figure 11: Change password



SYS600 password policy may allow the user to have an empty password. The user interface allows this by enabling **Change** button, when the CTRL key is pressed.

Saving and loading user session

The user menu has options for saving and loading the UI session state of the current user. The operator can save a session (current UI state) at the end of the shift and load the session when returning to the next shift. The UI session state takes all the other opened Workplace X application windows into account. In case of a normal browser, the currently active window state is saved. To save the UI session of the currently logged in user:

1. Click **Save session** in the user menu.
2. Type the session name in the text box (session name can contain alphabets, alphanumeric, or even contain special characters).
3. Select **Load automatically at startup** check box to enable automatic loading of the session at the login.
4. Click **Save**.

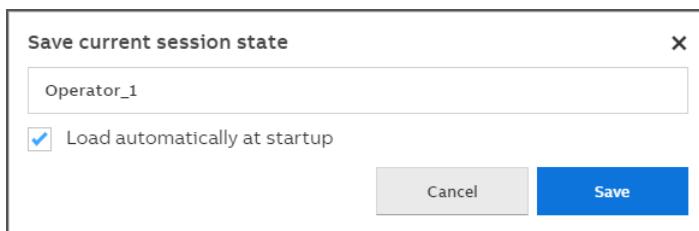


Figure 12: Saving user session in user menu



A session saved via Workplace X window application cannot be loaded on Workplace X on browser or vice-versa. This is because of the difference in the supported Workplace X features (for example, linked windows) between the Windows application and browser.

Loading and managing saved sessions

Loading a session restores the saved UI state and opens all the saved Workplace X application screens.

To load a UI session of the currently logged in user:

1. Click **Load and manage saved sessions** in the user menu.
2. Select the session name from the list.
3. Click **Load**.

It is also possible to delete saved sessions by clicking **Delete** and select the required one to load automatically during start up by clicking **Load at startup**.

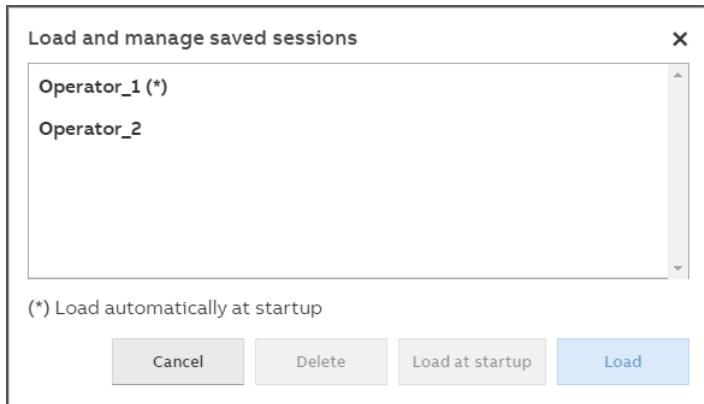


Figure 13: Loading user session in the user menu

3.2.2 Left pane

The left pane has the **Navigation** and the **Options** tabs, which can be selected and switched based on the need.

Use the left pane to navigate and configure the main content display in the content area.

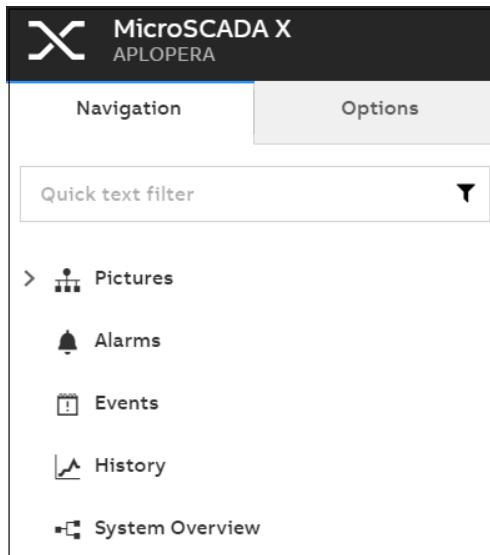


Figure 14: Left pane

For more space in the content area, click button to collapse left pane in the Workplace X layout.

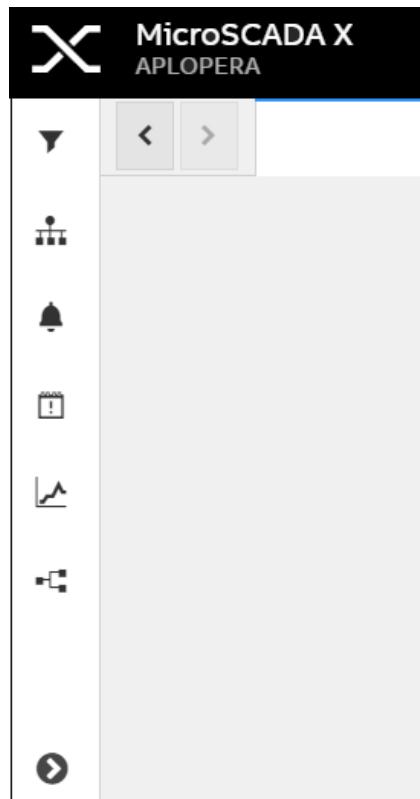


Figure 15: Left pane collapsed

3.2.2.1 Navigation tab

The **Navigation** tab in the left pane consists of different sections arranged in a tree structure. The main sections in the navigation tree are **Pictures**, **Alarms**, **Events**, **History**, and **System Overview**. Each section contains element views in a tree structure. Click on an element text to open the view in the content area. For detailed information, see [Section 4](#), [Section 5](#), [Section 6](#), and [Section 7](#).

Type the text (text can contain alphabets / numerics / special characters) in the **Quick text filter** box to search and navigate to the tree content.

Sections and Views in the navigation tree can look different to the ones presented here but the main navigation principles remain the same.

3.2.2.2 Options tab

The **Options** tab is specific to the current content present in the active tab in the content area. For example, when the **Pictures** view is active, picture specific options are available on the **Options** tab.

Following are the specific functionality available under options:

- See [Section 4.2](#) for picture options such as zoom and add notes.
- See [Section 6.5](#) for column options in events and [Section 5.7](#) in alarms.
- See [Section 6.6](#) for filter options in events and [Section 5.8](#) in alarms.
- See [Section 7.2](#) for history options.

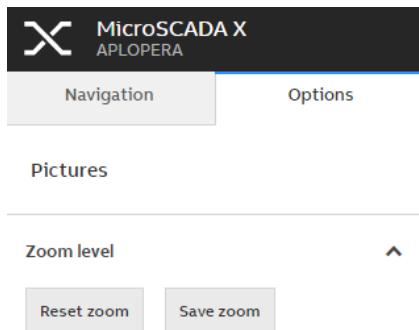


Figure 16: Options tab

3.2.3 Right pane

Click the object in the content area to open the right pane. The right pane displays the content specific interaction, control panel, content specific settings, and so on. The content of the right pane is always related to the object selected in the content area.

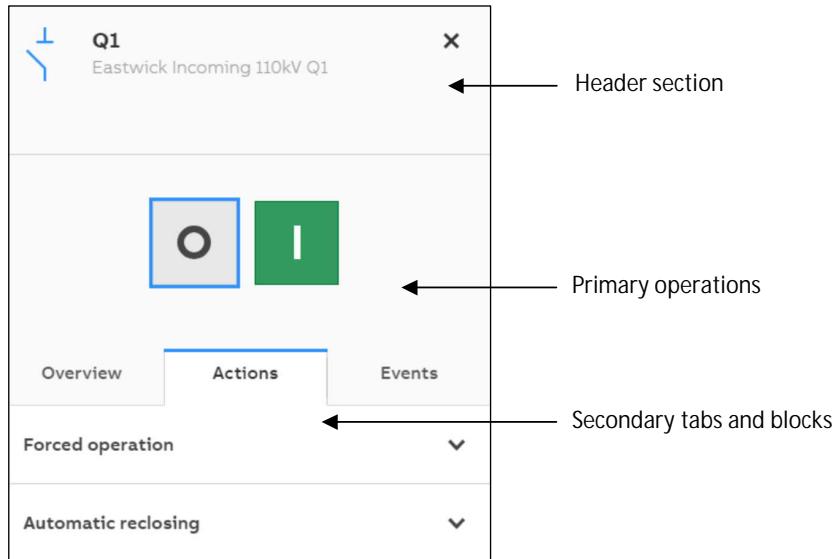


Figure 17: Right pane

An example of a disconnector control panel opened in the right pane can be seen in [Figure 17](#).

The header section consists of a device-specific symbol, name, and status icons.

The primary operations section for controlling the selected device (for example, open and close buttons for a disconnector) is located below the right pane header.

The secondary tabs are located below the primary operations section. By default, device-specific alarms, events, and other details are accessible in the secondary tabs.

3.2.4 Content area and tab navigation

The content area displays either a picture, the alarm list, the event list, a history data (graphs), or a system overview.

Click an item in navigation tree to display content in the content area. If a tab is active, selected content will be displayed in the tab. If no tabs are active in the content area, new tab will be created. The tab bar appears above the content area.

Click + to create a new blank tab.



Figure 18: Tab bar

Use back and forward buttons (< and >) to navigate through the tab history (state of the tab bar). Use the search box in the tab bar to search text in process pictures, alarms list and event list.

3.3 Multi-monitor workspace

The Workplace X application is designed to support several windows. Open the Workplace X Windows application to achieve the best user experience.

3.3.1 Synchronize content between monitor instances

A typical way of using Workplace X is to open several windows and have the different data visualized in each monitor. The content between the monitor instances can be synchronized only when two or more windows are open. To create a new window and to link several windows:

1. Click **New window** in the user menu to create a new window.
2. Click **Link to window** in the user menu.

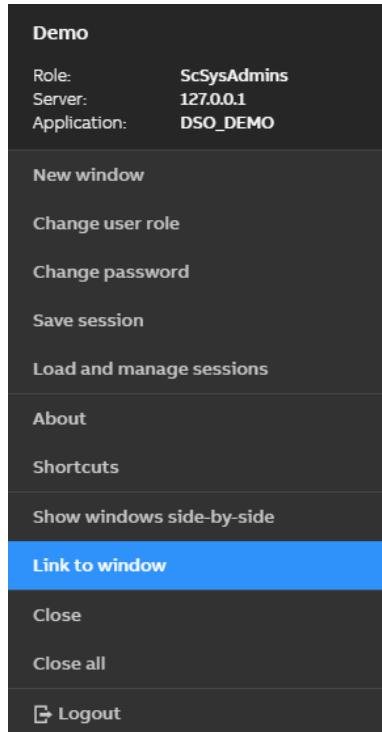


Figure 19: Link window



Link window option is available only when there are two or more windows open.

3. Link to window dialog box is displayed in which the user can choose the window to follow from the drop-down list, and that selected window becomes the master.

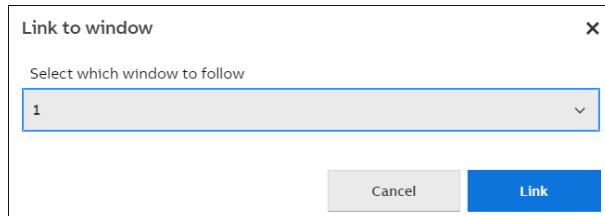


Figure 20: Link to window dialog box

4. Click **Link** to confirm the window linking.

When the monitors are linked together, the data (for example, event filters) synchronizes automatically between windows. One window is the Master and the window linked to it is Following.



Figure 21: Windows linked

Position No.	Windows
1	Unlinked window
2	Master window
3	Following window

- The first window is not linked to any window in [Figure 21](#).
- The third window is linked to second window in [Figure 21](#). Hence, the second window is the Master and the third window linked to the Master becomes the Following as highlighted in [Figure 21](#).



The Master window has all the navigation sections, but the Following window has only alarms and events. The user can view alarms and events in the Following window based on the process picture selected in the Master window.



It is possible to link several followers to master, but not possible to link another follower window to a window that is already linked to master (for example, no chain of followers).

The windows can be linked and unlinked based on the user requirement. To unlink the linked windows:

1. Click **Unlink window** in the user menu.

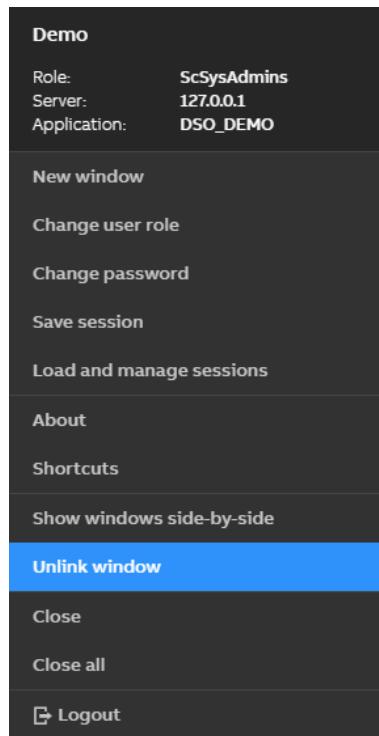


Figure 22: Unlink window

A dialog box is displayed as shown in [Figure 23](#).

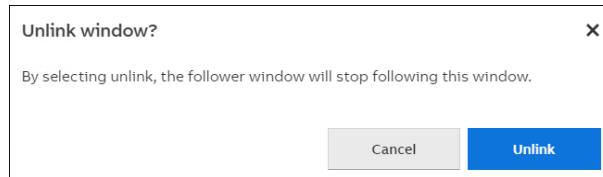


Figure 23: Unlink window dialog box

2. Click **Unlink** to unlink the window.

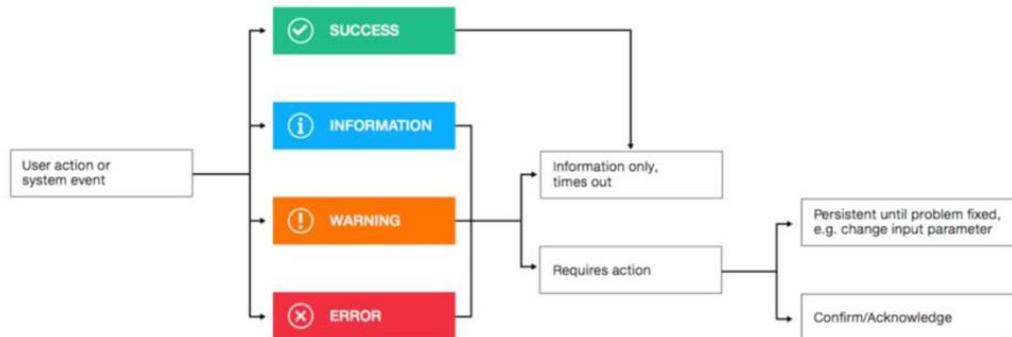
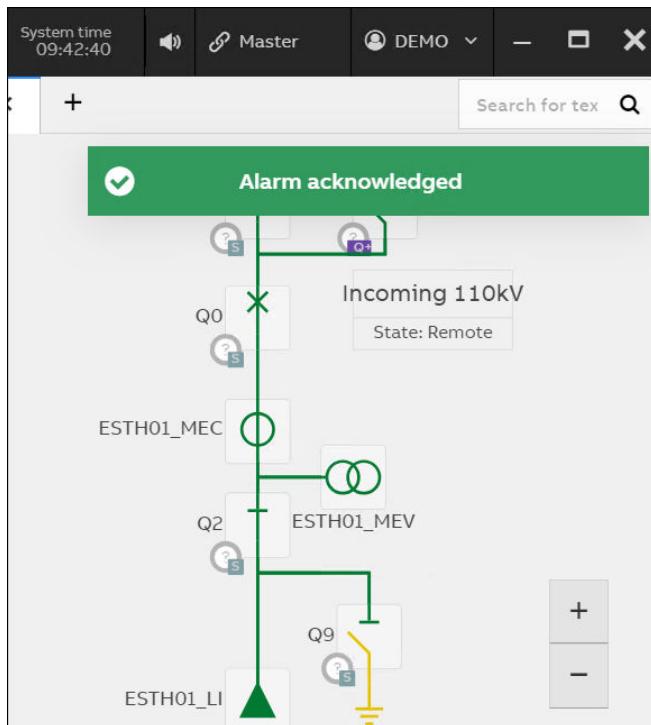
3.4 Using content specific search

The search function is used to locate texts in the Views.

1. Navigate to the content (Pictures, Events, or Alarms) to perform the search operation.
2. Click on the **Search** box.
3. Type text in the search field. The found matches are highlighted in the content area.
Text can contain alphabets, alphanumeric, numerics, or special characters. Search text can have one or many words. If words are separated with | character (that is, OR), they are considered as separate search texts providing separate results.

3.5 System notifications

The system notification pop-up messages provide brief feedback about operation, interaction, or system information in the form of a message on the screen. The notification pop-up window is displayed on top of the content area.



Success

These notifications make it obvious to users that their interaction was successful. **Green** is usually used.

Information

Information messages let users know that something happened in the system that wasn't out of the ordinary or unexpected. **Blue** is usually used.

Warning

Warnings should appear when users are about to do something that is normally destructive or when the result of an action is unexpected, but isn't an error. **Orange/yellow** is usually used.

Error

Error notifications are used to inform users that something went wrong, often with a suggestion of how to correct the situation. **Red** is usually used.

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Figure 25: System notifications

If the connection with the server is lost, **System is offline** is displayed on the screen.

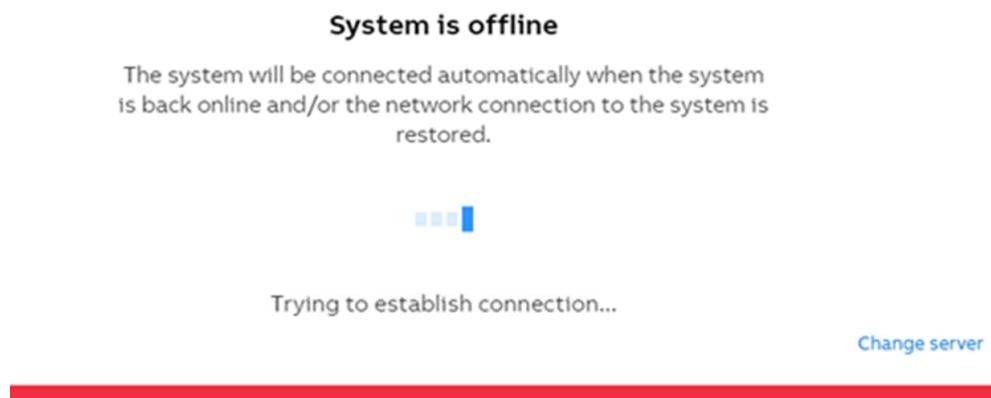


Figure 26: Server offline notification

3.6 Keyboard shortcuts

Click **Shortcuts** in the user menu to see the list of available keyboard shortcuts.

[Table 1](#) lists the shortcut keys and the functionality.

Table 1: Shortcut keys

Shortcut key	Functionality
Globals	
CTRL+R	Reload main window
CTRL+F	Local search
CTRL+L	Logout
CTRL+N ¹⁾	Create new main window
CTRL+T ¹⁾	Create new tab
CTRL+W ¹⁾	Close current tab
CTRL+Tab ¹⁾	Next tab
CTRL+Shift+Tab ¹⁾	Previous tab
Space	Toggle left pane
CTRL+Space	Toggle current tab full screen
ESC	Close right pane
Alt + 1	Activate 1. tab
Alt + 2	Activate 2. tab
Alt + 3	Activate 3. tab
Alt + 4	Activate 4. tab
Alt + 5	Activate 5 tab
Alt + 6	Activate 6. tab
Alt + 7	Activate 7. tab
Alt + 8	Activate 8. tab
Alt + 9	Activate 9. tab
Table continues on next page	

Shortcut key	Functionality
Process Displays	
CTRL+UP ARROW	Zoom in
CTRL+DOWN ARROW	Zoom out
UP ARROW	Pan up
DOWN ARROW	Pan down
LEFT ARROW	Pan left
RIGHT ARROW	Pan right
Alarm list	
CTRL+S	Save filter
UP ARROW	Scroll up
DOWN ARROW	Scroll down
PAGE DOWN	Scroll down
PAGE UP	Scroll one page up
Events list	
CTRL+S	Save filter
UP ARROW	Scroll up
DOWN ARROW	Scroll down
PAGE UP	Scroll one page up
PAGE DOWN	Scroll down
History	
CTRL+S	Save selected data

- 1) Available only in Workplace X Windows application, not when connecting via Workplace X browser

3.7 System legend

Click **System legend** to view the explanation of icons, symbol, and color. Access **System legend** from the **Navigation** menu.

In the **System legend**, items are organized based on the type of content. The elements appearing in different parts of the system are categorised under general elements section.

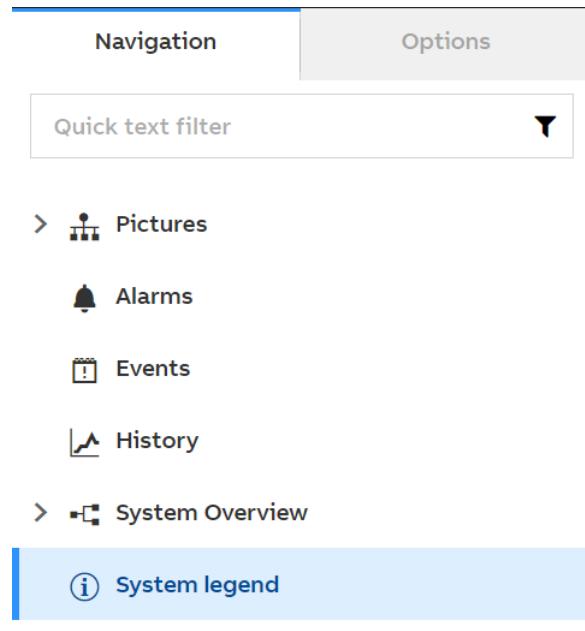


Figure 27: Location of System legend in the navigation menu

Section 4 Viewing and controlling process

The process pictures present information about the system process in a graphical form.

4.1 Structure of process picture views

Workplace X applications manage the complexity of a system by providing views with different granularity levels. As per the customer needs, the levels of details are pre-defined and discreet to provide the user with familiar and predictable views on the system. This enables the user to know in which level certain information resides.

The visible view structures are provided with two separate mechanisms.

- Picture decluttering settings (adjusted in the picture engineering phase)
- Picture tree structure

4.1.1 Process picture tree structure

Process pictures are arranged in a hierarchical tree structure in the left pane. The tree structure in the left pane can be station, voltage level, and bay level.

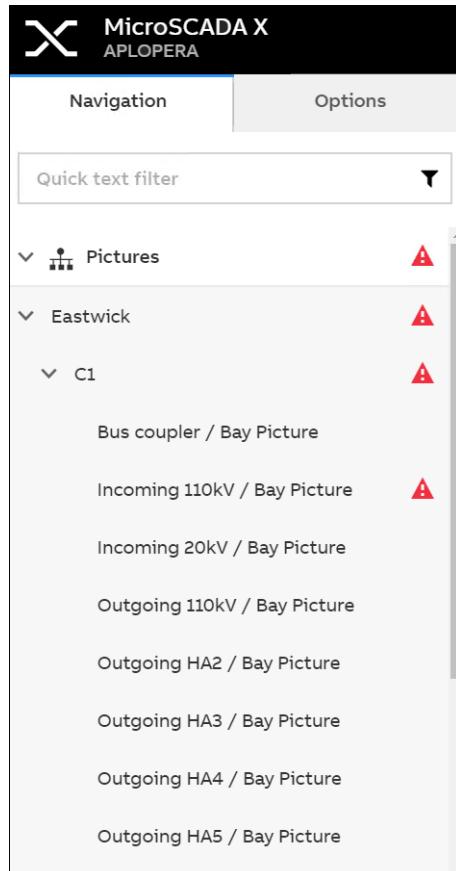


Figure 29: Process picture hierarchy

4.1.2 Zooming the process picture

The following are the three different ways to zoom in a process picture.

- Scroll mouse wheel on top of the picture.
- Click + or - in the bottom right of a picture.
- Press **CTRL+UP ARROW** or **CTRL+DOWN ARROW**.

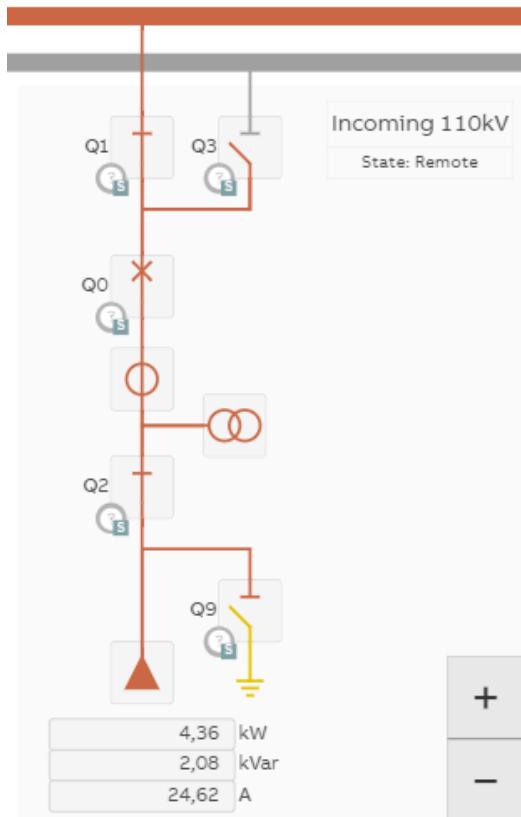


Figure 30: Zooming a process picture

Decluttering function can cause objects to appear and disappear depending on the zoom level. This depends on how the pictures have been engineered.

4.2 Picture options

To view the options related to a picture:

1. Open the picture in the active tab in the content area.
2. Click the **Options** tab in the left pane.
The available options under the **Options** tab are **Zoom level**, **Network topology**, and **Notes**.

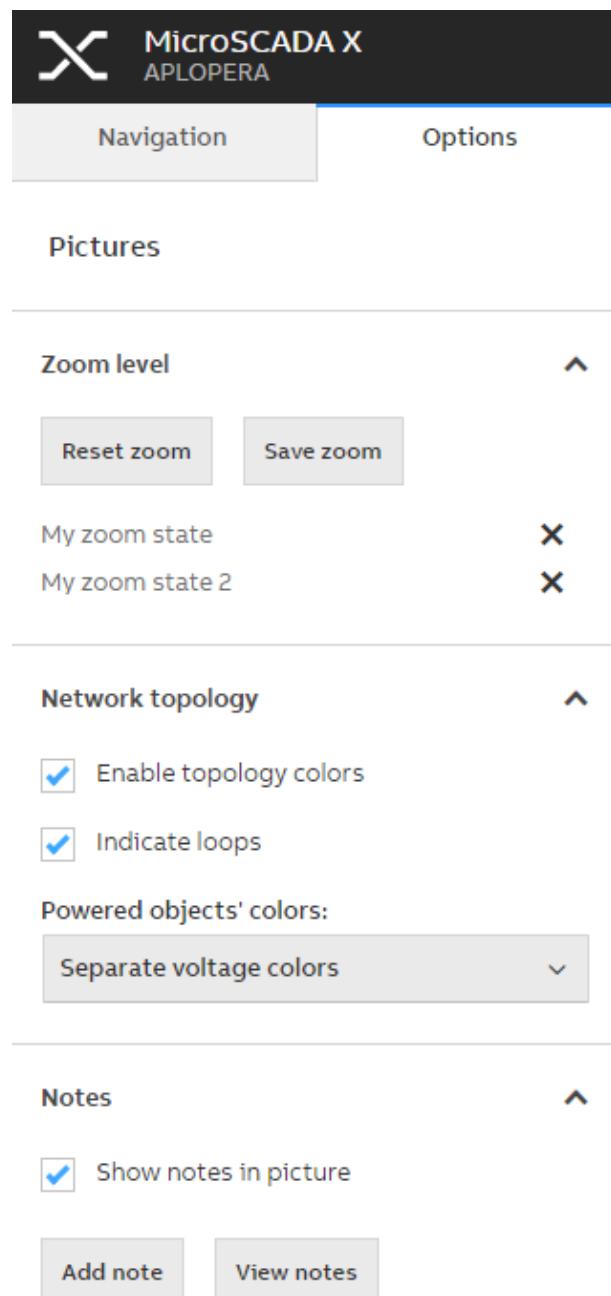


Figure 31: Picture options

4.2.1 Picture zoom states

In large region level SLD views, it might be useful to save certain zooming state to restore it quickly with a single click. For example, there can be some important information in some lower level bay view, which is useful for inspection without switching away from the region view.

To save a zoom state:

1. Zoom the picture to a required level.
2. Click **Save zoom**.

A dialog box is displayed for the zoom name to be saved.

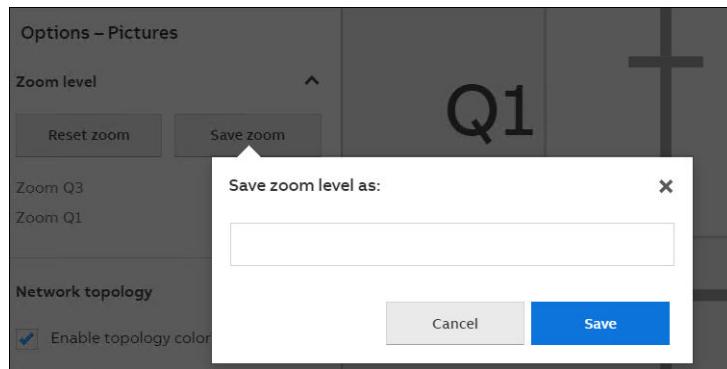


Figure 32: Saving zoom state

3. In the prompted window, type the name of the zoomed state.
4. Click **Save**.

The saved zoom states (for example, Zoom Q3 and Zoom Q1 in [Figure 33](#)) are displayed in the left pane under Options. Click on the saved zoom states to load the zoomed state.

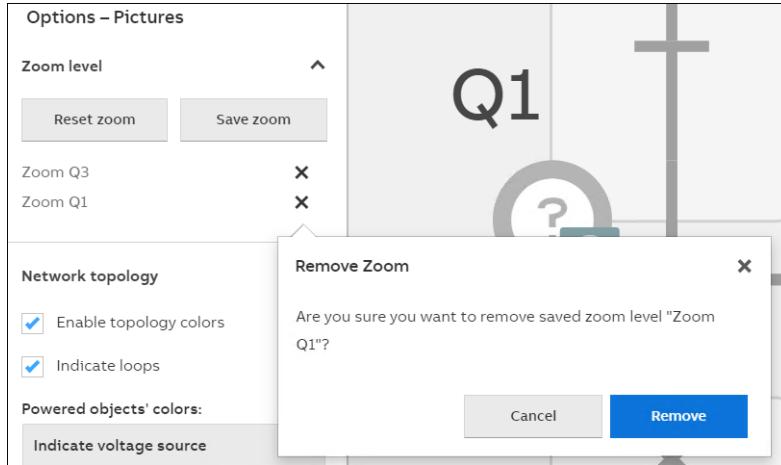


Figure 33: Removing zoom state

The saved zoom states can be removed by clicking X.

4.2.2 Adjusting network topology settings

The network topology coloring can be used to indicate the status of line segments in several different ways. It can indicate which line segments are powered, unpowered or in certain other states, or more accurately which voltage level each line segment has. Alternatively, each voltage source type can have a color that is used for line segments they are connected to. Network topology coloring may also be used to indicate situations where two or more voltage sources form a loop.

To adjust the network topology of a picture:

1. Click **Network topology** under **Options** in the left pane to collapse **Network topology** item in the view.
2. Select **Enable topology colors** check box.

This setting is used to enable or disable the network topology coloring. Static coloring is used for line segments when the setting is disabled. Objects are colored using their status color when enabled.

3. Select **Indicate loops** check box.

This setting is used to enable specific color to indicate situations where two or more voltage sources form a loop.

4. Click **Powered objects colors** drop-down menu.

This setting is for selecting the color to be used for the powered network objects (for example, line segments and switching devices). Following are the three modes:

- One color mode - One color mode uses the same color for all powered network objects.
- Voltage level mode - In Voltage level mode, the color is specified for the voltage source (generator, transformer, or line indicator) based on the voltage level.
- Voltage source mode - In Voltage source mode, the same color is used for all network objects that are fed by same voltage source type.

5. Click **Source coloring priorities** and set the coloring priorities.

This setting is used for ordering the voltage source coloring priorities. The device of the highest priority is on top of the list. To change the priority order, select a device from the list and click the arrow buttons on the right to change the order. Priority setting is only applicable if the user has selected to color powered line segments according to voltage source.

6. Click **Apply properties**.

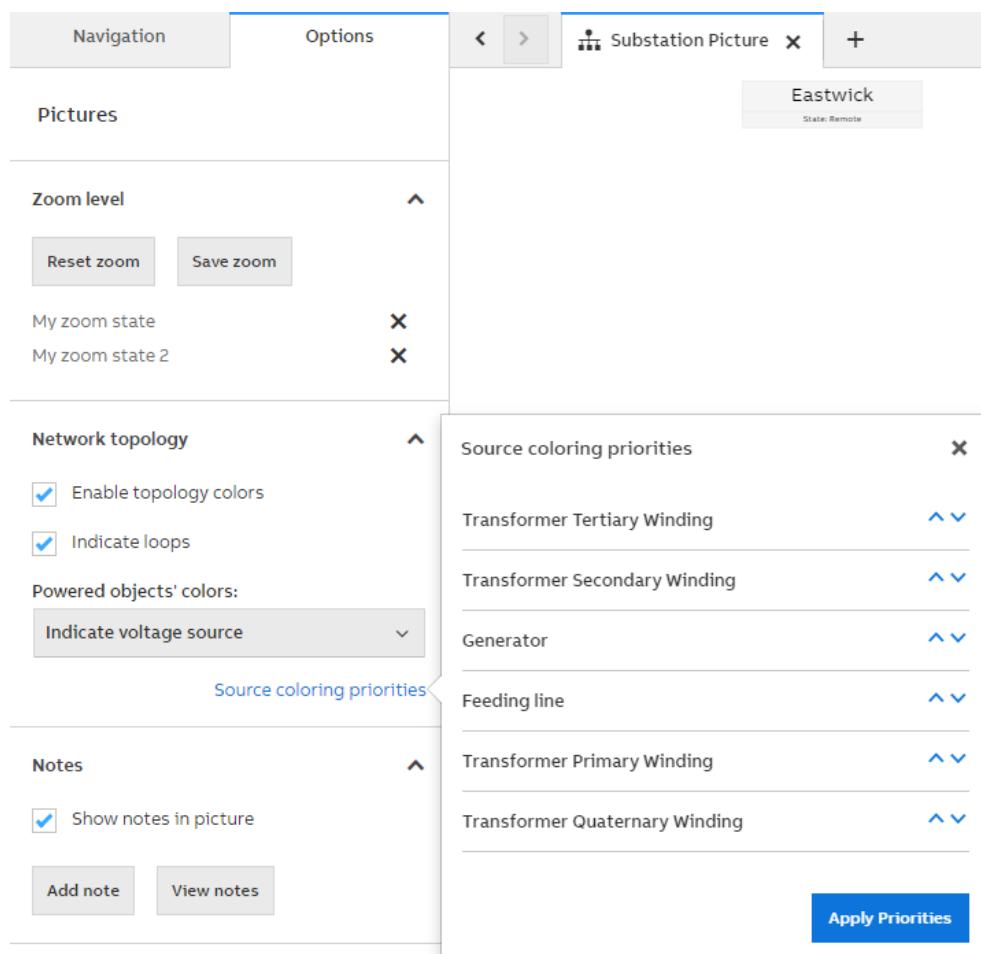


Figure 34: Adjusting network topology settings

4.2.3 Adding notes to process pictures

To add notes related to process pictures:

1. Click **Add note**.
2. Type the text.
3. Select **Add symbol to picture** check box to display a symbol to the note created.
4. Click **Create**.

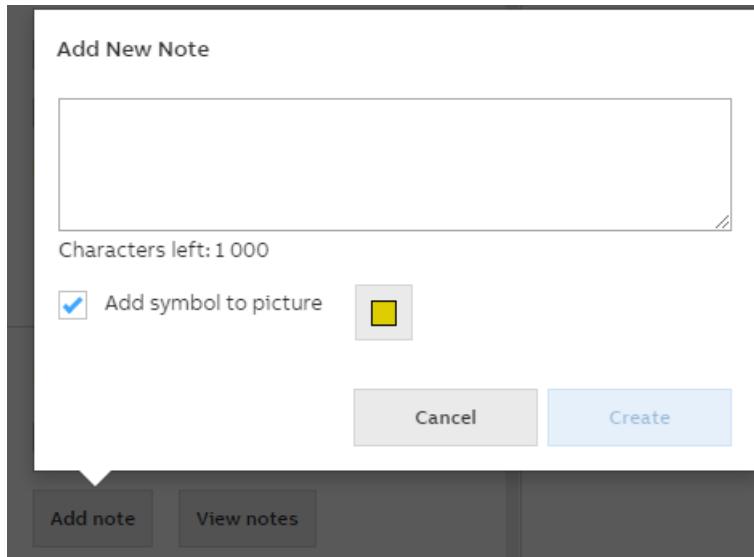
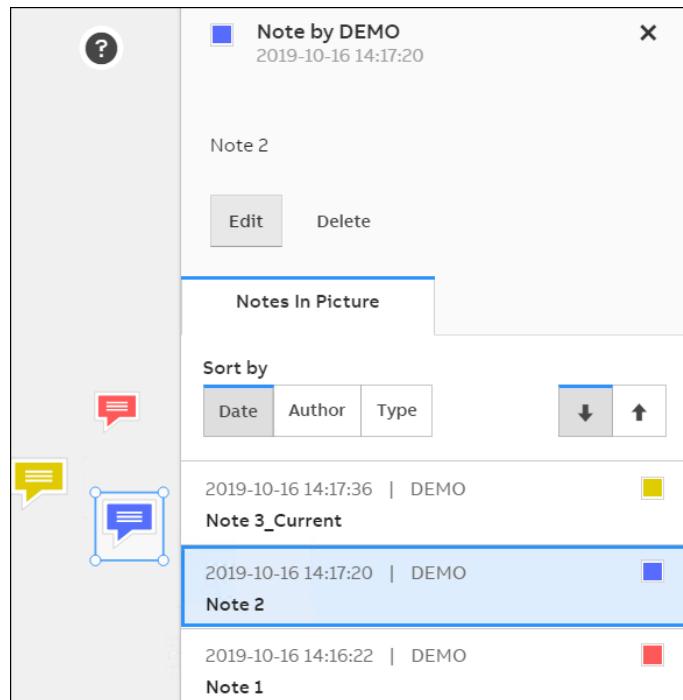


Figure 35: Adding notes to process pictures



The alternative way to add a note is by right-clicking on the process picture and clicking **Add note**. Operator notes can be positioned anywhere on the picture and can be re-sized or deleted.

The notes appear on a process picture as note symbol  colored by the selected color. To read the note text, click the note symbol to open the note details in the right pane. The **Notes in Picture** section in the right pane lists all the notes in the current picture.

*Figure 36: List of notes*

[Figure 36](#) displays the note details and list of all notes in the current picture.

To re-size the note symbol, right click on top of the symbol and select **Resize**. Dots appear on the symbol corners , and the symbol can be re-sized by dragging the dots on the note symbol.

4.2.4 Automatic picture scaling

Open right pane on a process picture to hide the important information. The picture scaling functionality is to keep the relevant information visible while the right pane is open. To enable automatic picture scaling, select the **Scale picture** and **Bring related area visible** check boxes in the **Picture scaling** section.

*Figure 37: Process picture scaling options*

Select **Scale picture** to enable the process picture to scale automatically so that the visible area stays same after opening the right pane.

Select **Bring related area visible** to enable the process picture to pan so that the area where the selected device belongs to, for example a bay, becomes visible after the right pane is

opened. The related area is also made visible and highlighted when a control confirmation is requested (that is, when a control button is pressed on the right pane).

4.3 Device symbols in process pictures

The devices and equipment related to the system process are presented as device symbols in the process pictures. The device symbols consist of **Emblems**, **Symbol**, and **Background** elements.

- The **Emblem** element displays the different alarm / warning states of the devices on the picture.
- The **Symbol** element indicates the device state (for example, device state such as open, closed, intermediate or faulty and the device type such as disconnector, circuit breaker).
- The **Background** element indicates the user interactions and different states related to the user interaction (for example, during the hovering the background is highlighted with white and the selected device is highlighted in blue).

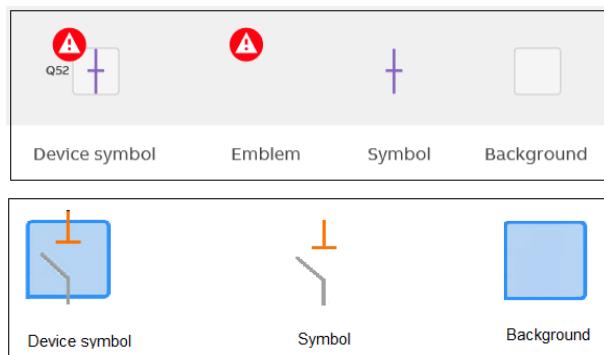


Figure 38: Device symbol elements

4.3.1 Symbol background states

The background of symbols indicates different user interactions with the device symbol. The background symbol states are shown in [Figure 39](#).

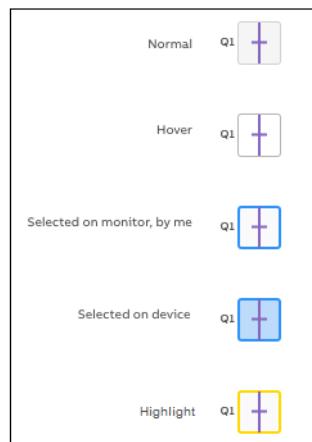


Figure 39: Symbol background states

4.3.2 Emblems

Emblems are used to show additional information about the object and its data quality. The meaning of the emblem is indicated by four different characteristics: location, background, icon and add-on.

- The background indicates the severity of the status.
- The icon indicates the main category of the status.
- The add-on indicates the exact status.



Figure 40: Emblem background, icon and add-on

The main state of the device can be recognised easily, for example, all the alarm states of the device emblem are always shown in the top left corner.

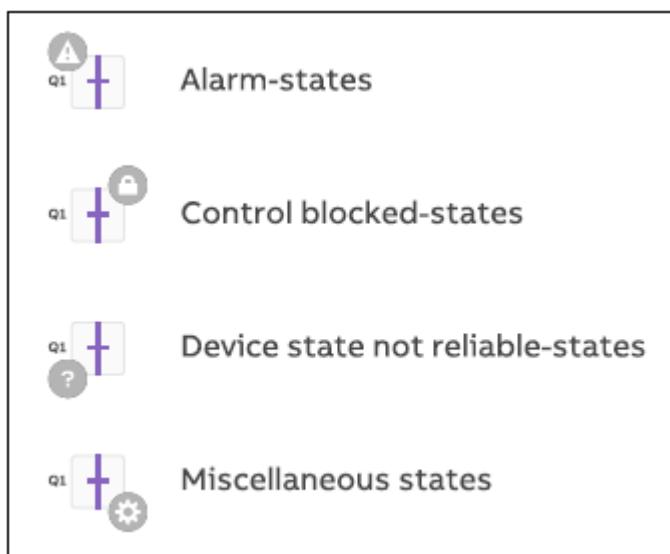


Figure 41: Emblem icons indicating the device status

The device sub states are displayed as the emblem add-ons. The sub states are displayed with a consistent letter and color combination. Recognize the color of the add-on by letters such as A, E, and P. This minimizes the visual clutter in a process picture. If multiple sub states are active, the highest priority state displays plus sign to indicate more states.



Figure 42: Add-ons indicating device sub state

[Figure 43](#) and [Table 2](#) provide the possible states that are presented with the device symbol emblems and add-ons.

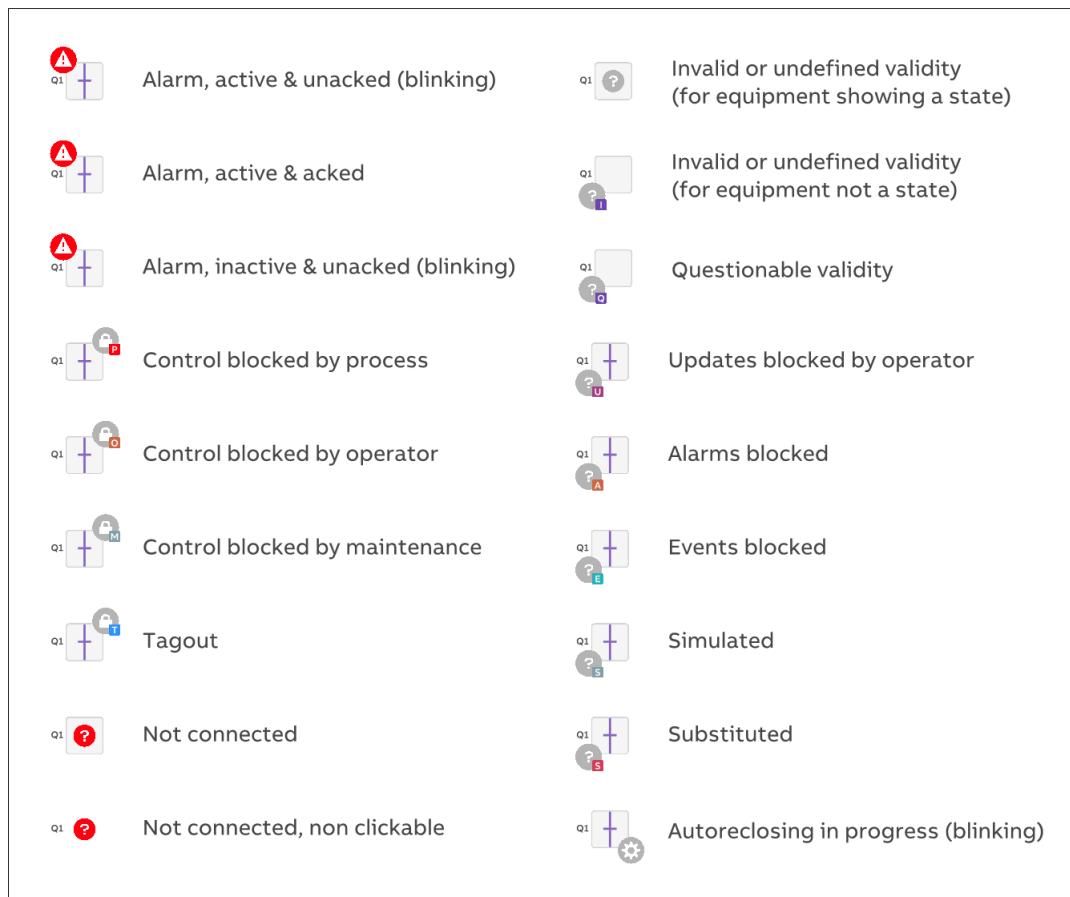


Figure 43: Device states with emblems and add-ons

Table 2: Device states with emblems and add-ons

State	Emblem	Emblem color	Color	Add-on letter	Add-on color	Color
Alarm, unacknowledged	Alarm (blinking)	Red		-	-	
Alarm, active and acknowledged	Alarm	Red		-	-	
Control blocked by process	Control blocked	Grey		P	Red	
Control blocked by operator	Control blocked	Grey		O	Peach	
Control blocked by maintenance	Control blocked	Grey		M	Asphalt	
Tagout	Control blocked	Gray		T	Blue	
Not connected	Device state not reliable	Red		-	-	
Invalid or undefined validity (for equipment showing a state, e.g. switch devices)	Device state not reliable	Grey		-	-	
Invalid or undefined validity (for equipment not showing a state, e.g. transformers)	Device state not reliable	Grey		I	Purple	

Table continues on next page

State	Emblem	Emblem color	Color	Add-on letter	Add-on color	Color
Questionable validity	Device state not reliable	Grey 180		Q	Purple 4	
Updates blocked by an operator	Device state not reliable	Gray		U	Pink	
Alarms blocked	Device state not reliable	Gray		A	Peach	
Events blocked	Device state not reliable	Gray		E	Turquoise	
Simulated	Device state not reliable	Gray		S	Asphalt	
Substituted	Device state not reliable	Gray		S	Red	
Auto reclosing in progress	Miscellaneous	Gray		-	-	

The measurement value symbols follow the same logic as equipment symbols described above. But the emblems and add-ons are placed a bit differently. The measurement symbols use only *Alarm emblem* placed on the left side of the symbol. The possible **Device state not reliable** add-on (without emblem) is placed next to *Alarm emblem*, if required. On the right side of measurement value symbol, there is an icon indicating if alarm or warning limit (either low or high) is exceeded. [Figure 44](#) illustrates the measurement symbol states.

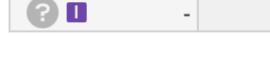
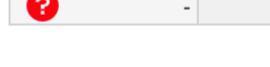
Alarm active and alarm unacknowledged	 alarm icon blinking
Alarm active and alarm acknowledged	 alarm icon static
Alarm inactive and alarm unacknowledged	 alarm icon blinking
Warning active and alarm unacknowledged	 alarm icon blinking
Warning active and alarm acknowledged	 alarm icon static
Warning inactive and alarm unacknowledged	 alarm icon blinking
Alarm limit exceeded, alarm not configured	
Warning limit exceeded, alarm not configured	
Invalid validity	
Not connected	
Device state not reliable (example: Updates blocked by an operator)	
Warning and Device state not reliable (example: Questionable validity and more)	

Figure 44: Measurement symbol states

The local/remote switch symbol for station and bay uses add-ons for indicating data quality of the local/remote switch state. The actual switch state is presented with text in the bottom section of the symbol, and with background color of the top section of the symbol. [Figure 45](#) illustrates the local/remote switch symbol for a station.



Figure 45: Local/remote switch symbol

4.4 Controlling devices and viewing detailed information

Click the device symbol to get a device-specific control panel in the right pane, which provides an option to operate the selected device.

Primary controls to operate a selected device are in the center of the primary section in the right pane.

All the control actions follow the same pattern:

1. Click the button to trigger the action or select an item in the control panel.
A confirmation window prompts to execute or cancel the command.
2. Click **Cancel** or **Close/Open** on the confirmation window.

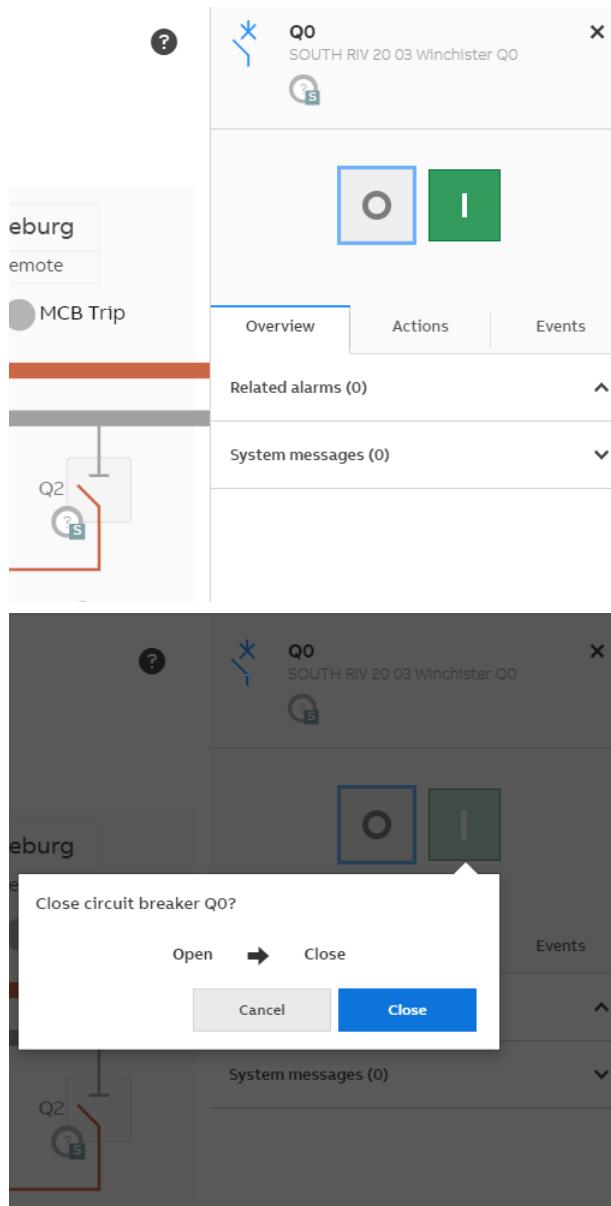


Figure 46: Primary actions

4.4.1 Controlling switching devices

The primary operations section for switching devices (for example, circuit breaker, disconnector, and truck) contains the open and close buttons. The open button is represented in gray color and the close button in green color. The current state of the device is indicated with the blue border on the button. If the operation is not allowed, the corresponding button will be dimmed.

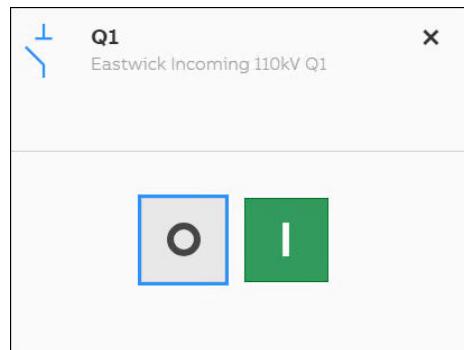


Figure 47: Switching device primary operations

The primary controls might be disabled for several reasons. For example (see [Figure 48](#)), the device in the bay is reserved for local use only. The detailed reason is shown in the Messages block in the control panel secondary section or the message is displayed when the cursor is placed on the disabled control. For more information, see [Section 4.4.12](#). The **See Messages for more info** option is available below the open and close buttons to open the message block.

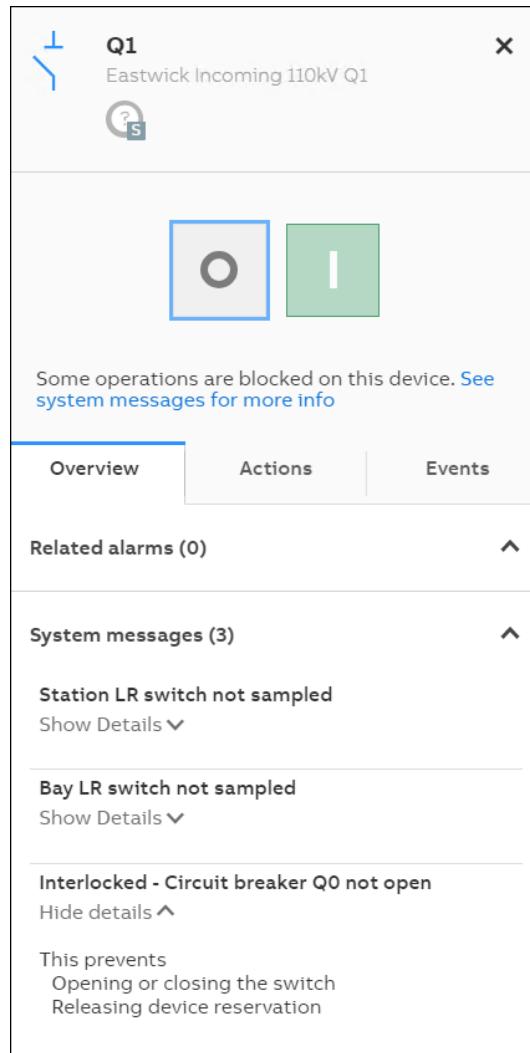


Figure 48: Switching device primary operations disabled

Click the primary action button (open or close) to initiate the control operation sequence. This will select and reserve the device for the operation. The selected device and related bay area

are highlighted in the content area. A confirmation pop-up message is then shown to either execute the operation or cancel it.

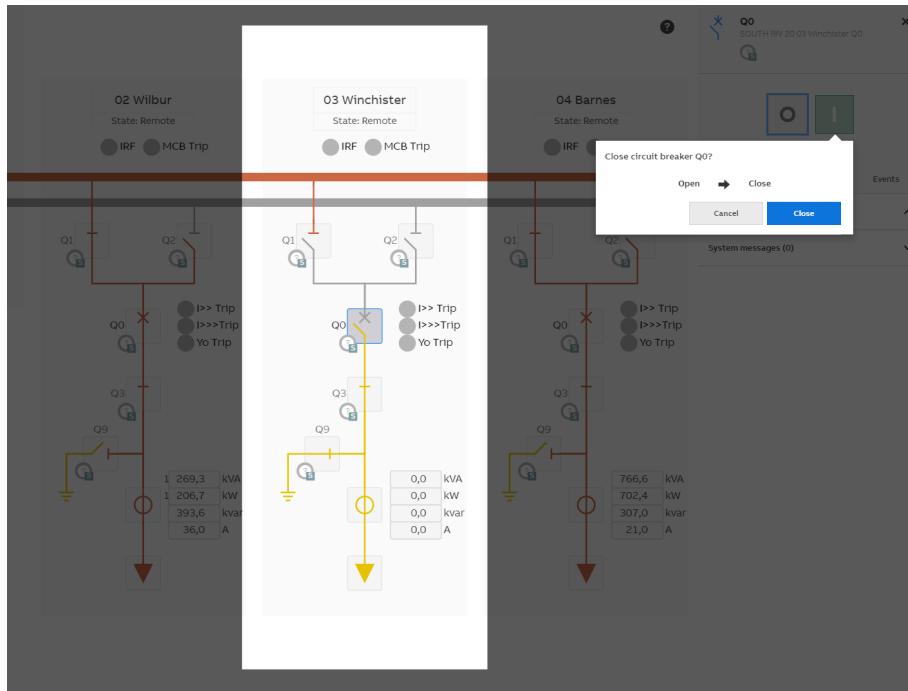


Figure 49: Action confirmation (device selected)

4.4.2 Controlling tap changer in transformer devices

The primary operations section of a transformer device including tap changer contains information about the current tap position and + / - buttons for changing the position. The options and buttons are grayed-out when unavailable.



The reason for unavailability of the options and buttons appears at the bottom of the primary operations section.

The tap changer control panel shows only the operations that are supported by the selected device. [Figure 50](#) shows the control panel with all currently supported options available. It shows also current transformer voltage value and enables to set the target voltage in the tap changer.

To set the device in a specific mode or role, use the settings that are available, that is, **Operation Mode**, **Operation Role**, and **Parallel Mode**. The **Operation Mode** (automatic or manual) can be changed using the option **Switch to automatic mode** available in the primary section. The **Operation Role** (master or follower) and **Parallel Mode** (parallel or independent) can be set using the options available in the **Co-operation** secondary block.

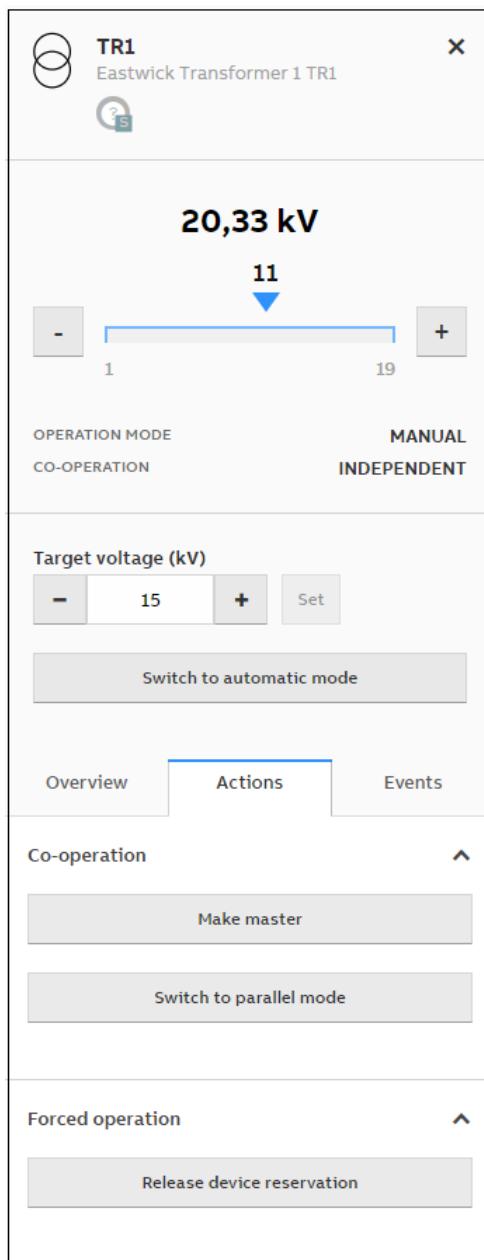


Figure 50: Tap changer device primary operations

4.4.3 Using bay control panels

Click the bay symbol in the content area to open the corresponding control panel. The location, where controlling of the selected bay is authorized, is presented in the primary area. The bay secondary sections have the **Alarms** and **Events** tabs for listing alarms and events related to the selected entity. Bay control panel also contains **Measurements** tab for the bay measurements.

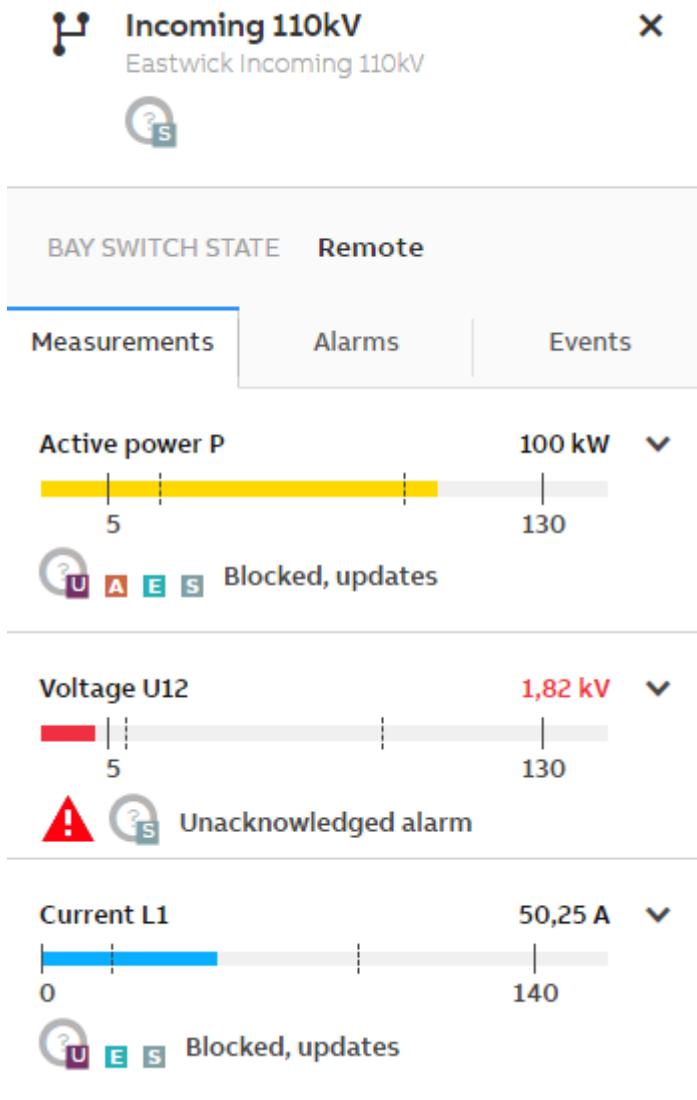


Figure 51: Bay control panel that can be controlled remotely

4.4.4 Using station control panels

Click the station symbol in the content area to open the corresponding control panel. The location, where controlling of the selected station is authorized, is presented in the primary area. The station secondary sections have the **Alarms** and **Events** tabs for listing alarms and events related to the selected entity.

In the station control panel, it is also possible to change the location where the control is authorized, using a **STATION SWITCH STATE** drop-down list. The tabs and blocks in the secondary section contains list of system messages. For more information, see [Section 4.4.12](#).

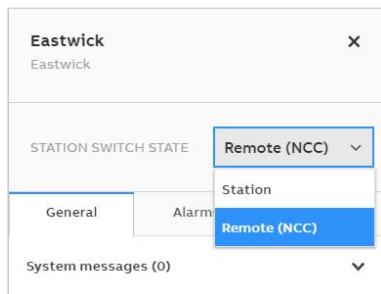


Figure 52: Station local remote switch

4.4.5 Viewing measurements

The list of device specific measurements is available in the control panel secondary section, if applicable. Most commonly, the list of measurements is available in the bay control panel.

The measurement block shows the name and current value of a measurement. A bar is displayed to visualize the value when warning and alarm limits are configured, otherwise, only the value (and unit) is displayed. At the start and end of a bar, the minimum and maximum value of the measurement is displayed. On top of the bar, lines are displayed presenting warning and alarm limits (low and high). The warning limit is represented as the dotted line and the alarm limit as the solid line.

The bar is visualized with three different colors: blue (normal), yellow (warning), and red (alarm) based on the current value measured. In case if the alarm is configured to trigger when the limit exceeds, the red alarm triangle icon is displayed below the bar.

In case if the measurement value is not reliable, then the device state not reliable emblem with detailed add-ons are displayed below the bar. In case if several states are on at the same time, the descriptions for the states are shown in a tooltip when the mouse is hovered near the text.

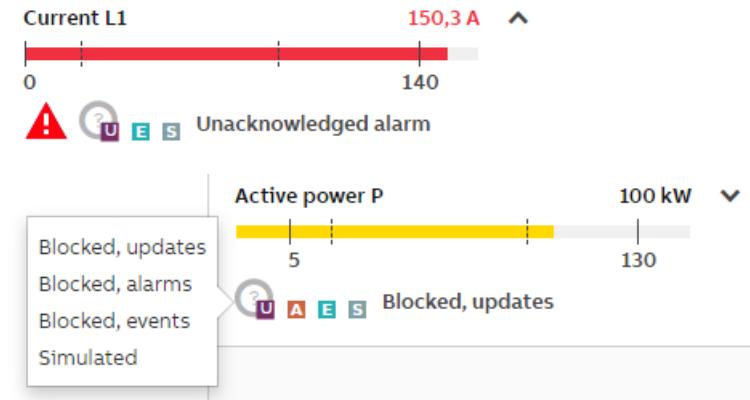


Figure 53: Measurement block

Click the measurement block to view the list of related sub-blocks. The Trend sub-block is included in every measurement block. The Trend sub-block is to view the current measurement value in a graph. Trend does not display stored history values but displays the trend of the measurement logged while the right pane trend block is open. The graph time frame can be selected from the options available below the graph (1 min, 5 mins, or 10 mins). Below the time frame options, maximum and minimum peak values and the average value for a selected time frame are displayed.

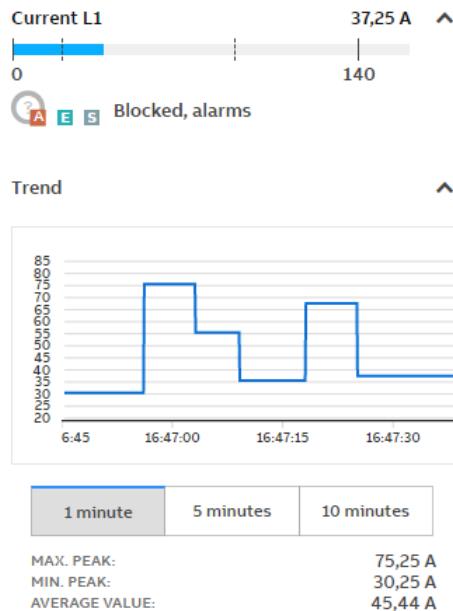


Figure 54: Trend sub-block

4.4.6 Viewing alarms related to a device

There is a control panel secondary block for listing alarms related to the selected device. The block is included in the **Overview** tab for switching devices (for example, circuit breaker, disconnector, and truck) and for tap changer. In the bay and station control panels, the alarm list is in **Alarms** tab.

Click a list entry for opening the main alarm list view with the selected item for detailed inspection. Click **ACK** to acknowledge the alarm.

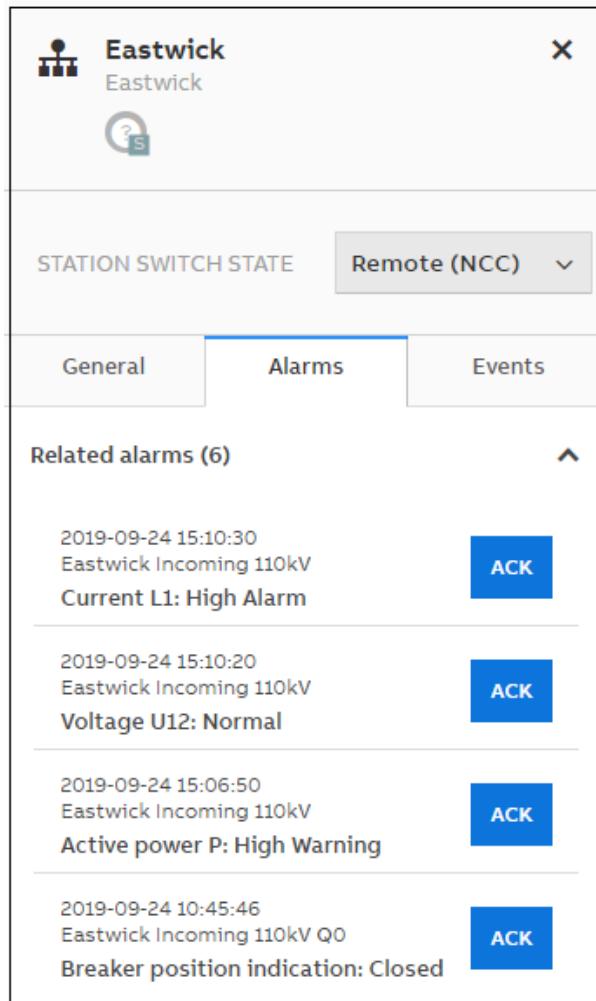


Figure 55: Alarms related to the selected device

4.4.7

Viewing events related to a device

A control panel secondary block, for listing events related to the selected device. The block is included in the **Events** tab.

Click a list entry for opening the main event list view with the selected item for detailed inspection.

The screenshot shows a window titled "Incoming 110kV" with the sub-section "Eastwick Incoming 110kV". At the top, it displays "BAY SWITCH STATE Local". Below this are three tabs: "Measurements", "Alarms", and "Events", with "Events" being the active tab. A button "Show all events for Incoming 110kV" is present. Under "Latest events", there are three time-based filters: "Last 24h" (selected), "Last week", and "Last month". The event log lists the following entries:

- 2019-07-03 10:04:26 Eastwick Incoming 110kV Bay local/remote-switch: Local
- 2019-07-03 10:03:47 Eastwick Incoming 110kV Q0 Breaker cancel command: Cancelled
- 2019-07-03 10:03:45 Eastwick Incoming 110kV Q0 Breaker open select command: Selected
- 2019-07-03 09:59:00 Eastwick Incoming 110kV Current L1: Normal
- 2019-07-03 09:58:14 Eastwick Incoming 110kV Current L1: High Alarm

Figure 56: Events related to the selected device

4.4.8 Enable and disable blockings

The **Blocking** secondary block contains toggles to enable or disable the blockings and is available for the switching and tap changer devices and measurements.

- Select **Update blocking** to enable or disable the updates for currently selected device or measurement.
- Select **Control blocking** to enable or disable the control for currently selected device or measurement.
- Select **Alarm blocking** to enable or disable the alarm activation for currently selected device or measurement.
- Select **Event blocking** to enable or disable the event activation for currently selected device or measurement.

The toggle switch appears only if the related blocking control is available. The toggle switch is unavailable for the unsupported control blocking.

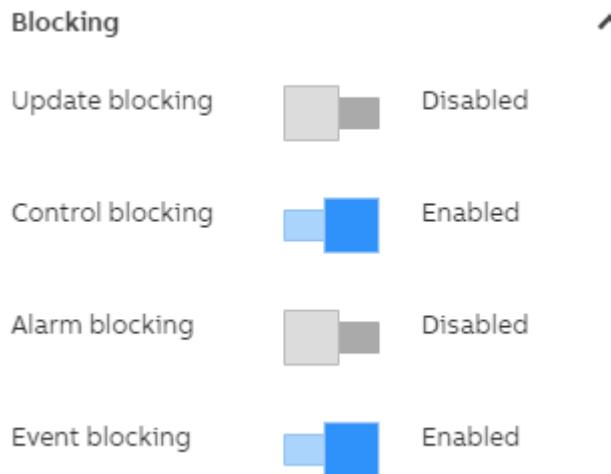


Figure 57: Blocking controls

4.4.9 Bypassing system control blocking

The **Forced operation** secondary block provides ways to forcefully bypass the system control blocking. This block is available for the switching and tap changer devices.

In some cases, when a device is selected and reserved, or due to an error condition in the system process, there might be a need to release the reservation from outside. Click **Release device reservation** for sending released command to the selected device.

There are also check boxes for bypassing other system restrictions and checks:

- Select **Forcefully enable switch controls** box for enabling open and close buttons in the primary area, though disabled due to system control blocking
- Select **Enable test mode for switch controls** box for sending open and close commands with test mode flag enabled.
- Select **Bypass interlocking for switch controls** box for sending open and close commands with bypass interlock flag enabled.
- Select **Bypass synchro-check for switch controls** box for sending close command with synchro-check bypass.

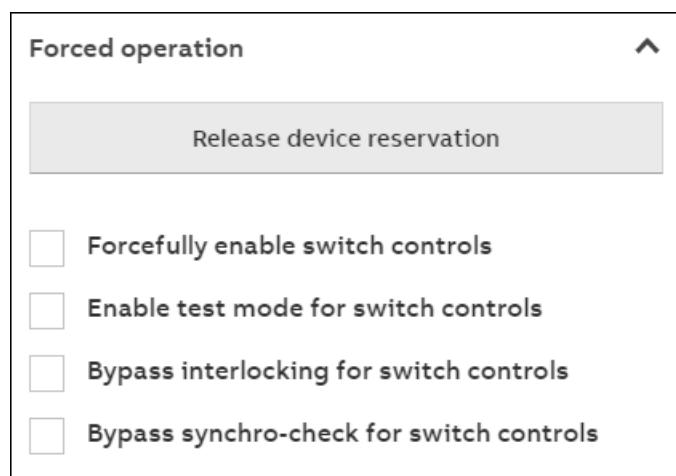


Figure 58: Forced operation block

4.4.10 Controlling automatic reclosing

The automatic reclosing can be activated and deactivated from the button in the **Automatic reclosing** secondary block. The block is available for the switching devices. The text in the block indicates if the automatic reclosing is activated, deactivated, or not available for the selected switching device.

Click **Automatic reclosing** to activate or deactivate the automatic reclosing feature.

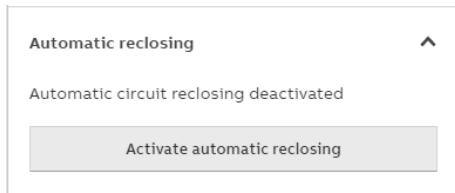


Figure 59: Automatic reclosing deactivated

The device is reserved, and the system displays confirmation message to proceed. Click **Activate/Deactivate** to proceed.

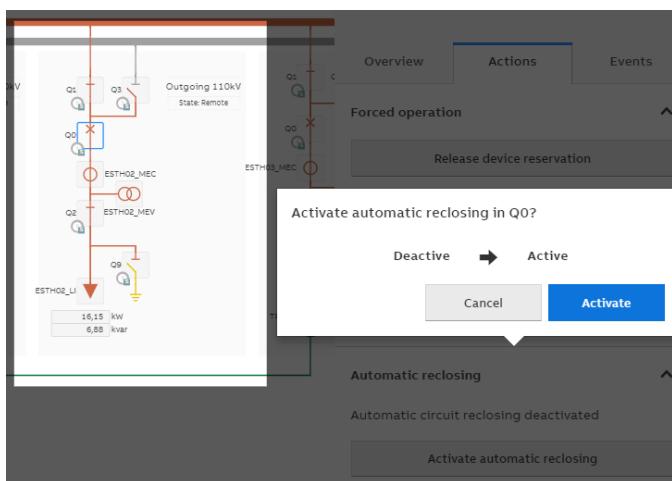


Figure 60: Automatic reclosing confirmation

The button is disabled if the automatic reclosing feature is not available for the selected device.

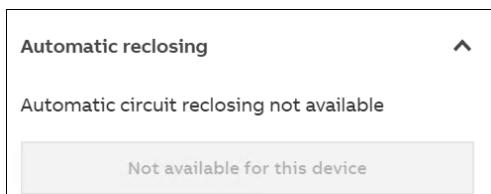


Figure 61: Automatic reclosing disabled

4.4.11 Simulation and substitution

The **Simulation and substitution** secondary block contain toggles to enable or disable the simulation and the substitution, and for setting the simulated or substituted values. This block is available for the switching devices and measurements.

- Select **Simulation** to enable or disable the simulation for currently selected device on the SYS600 software level.
- Select **Substitution (SYS)** to enable or disable the substitution for currently selected device on the SYS600 software level.
- Select **Substitution (IED)** to enable or disable the substitution for currently selected device on an IED via IEC 61850 protocol.



Simulation cannot be deactivated if the process communication is not configured for the selected device or measurement.

UI controls for setting a simulated or substituted value are located at the bottom of the **Simulation and substitution** block. In case of a switching device, four buttons are available for selecting the simulated switch state.

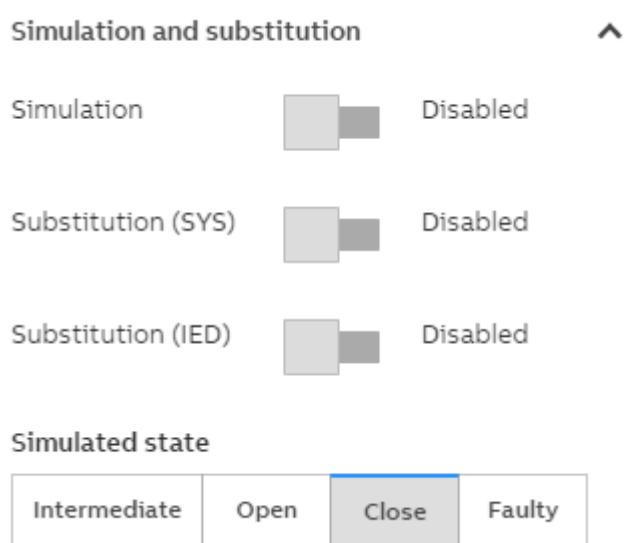


Figure 62: Simulation and substitution for switching devices

In case of a measurement, a value input control is available for setting the simulated measurement value.

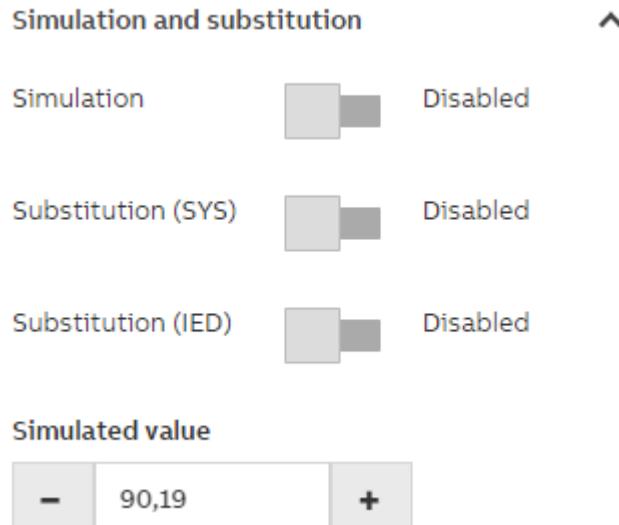


Figure 63: Simulation and substitution for measurements

The **Simulation**, **Substitution (SYS)**, and **Substitution (IED)** modes have a defined priority order in the Workplace X if the **Simulation** is enabled and the **Substitution (SYS)** and the **Substitution (IED)** are unavailable. Also, enabling **Substitution (SYS)** will make **Substitution (IED)** unavailable.



If **Simulation** is enabled, the states of **Substitution (SYS)** and **Substitution (IED)** are unknown and switch toggles are disabled.

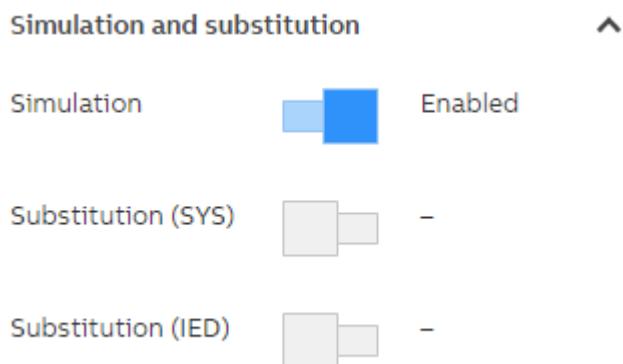


Figure 64: Simulation enabled and substitutions unavailable

4.4.12 Viewing system messages

The **System messages** in secondary block shows the device specific system messages. The messages explain reasons for the operations that are currently unavailable. The **System messages** block is available in the switching device, tap changer, and station control panels.

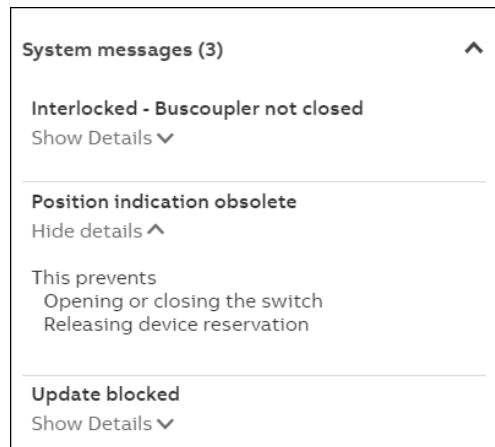


Figure 65: System messages block

4.5 Searching texts in process pictures

To search text in the process picture, type a search string in the search box located on the tab bar in the right top corner. The text (search result) is highlighted with yellow border in the process picture. The search is case-insensitive. To activate the quick search, press CTRL+F.

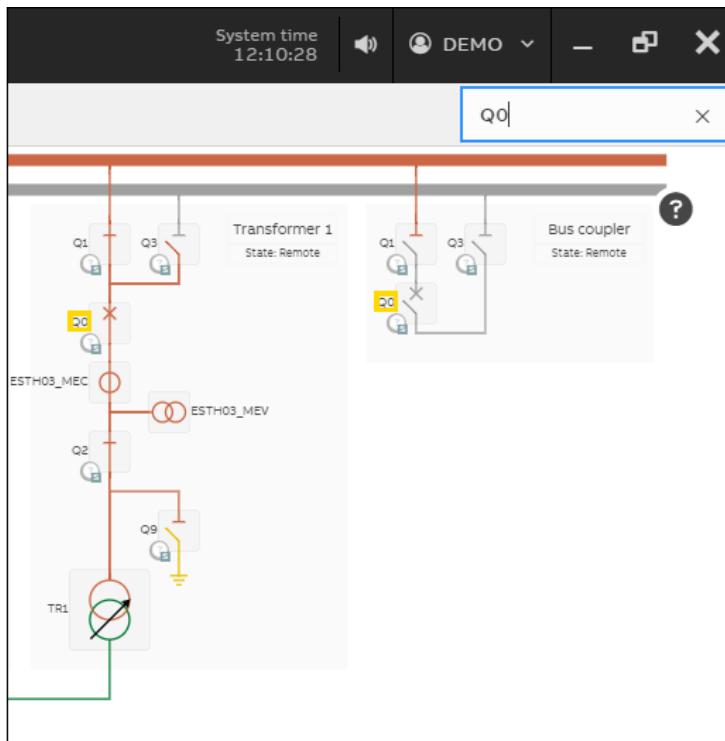


Figure 66: Searching texts in a process picture

Section 5 Alarms

The Alarms options are used to browse, search, filter the alarms, and to acknowledge alarms. The event and alarm list have almost identical user interfaces. The differences are details in the right panes of the user interface and additional option to acknowledge the alarms.

5.1 Column specific context menu

Click the column header of alarm list to open the column specific context menu.

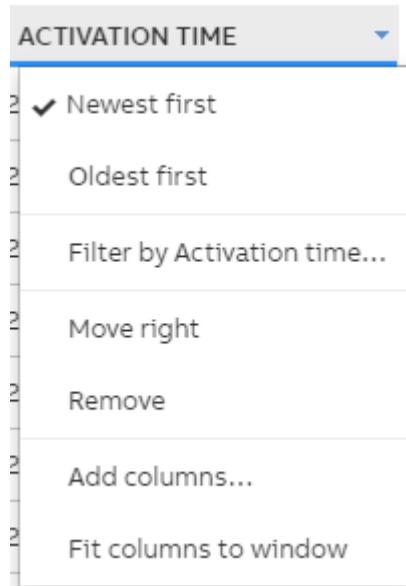


Figure 67: Column specific context menu

The context menu provides following functionalities:

- Sort the list in ascending or descending order. Blue triangle pointing up or down next to the column header indicates whether the list is currently sorted in ascending or descending order.
- Filter the list based on the data of selected column. See [Section 5.8](#) for more information.
- Move the selected column right or left or remove the column.
- Open Column selector view for adding and editing visible columns. See [Section 5.7](#) for more information.
- Fit columns to window.



Columns related to discrete dataset (for example, system hierarchy: Substation, Bay, Device) have a possibility to apply filter directly from the context menu just by selecting items from a list of available values.



Alarm list can be sorted for all columns.

5.2 Using alarm list

The **Navigation** pane displays **Alarms** title for easy navigation to the alarms sections. If alarm sections have any saved filters (see [Section 6.6](#) for more information), then the alarms in the left pane have a drop-down.

Click the title to open alarm display without any filters.

Click the drop-down next to the alarms to open a list of stored filters. Click any filter in the list to open alarm list with the selected filter applied.

Alarms display the latest alarms in the chronological order and all the active filters as tags at the top of the content area.

ACK	STATE	ACTIVATION TIME	OBJECT PATH	OBJECT TEXT	STATE TEXT
<input type="checkbox"/>	● Active	2020-01-03 10:18:43.000	Eastwick 110kV Incoming Q0	Breaker close Interlocked	Off
<input type="checkbox"/>	● Active	2020-01-03 10:18:32.704	Eastwick 110kV Incoming Q1	Disconn. open Interlocked	Off
<input type="checkbox"/>	● Active	2020-01-03 10:18:27.624	Eastwick 110kV Incoming Q1	Disconn. close Interlocked	Off
<input type="checkbox"/>	● Active	2020-01-03 10:16:57.789	Eastwick 110kV Incoming Q0	Breaker open Interlocked	Off
<input type="checkbox"/>	● Active	2020-01-03 10:19:11.684	Eastwick 110kV Incoming Q2	Disconn. open Interlocked	Off
<input type="checkbox"/>	ACK	2020-01-03 10:19:17.077	Eastwick 110kV Incoming Q2	Disconn. close Interlocked	Off

Figure 68: Alarm list

Alarms list also displays check box for hiding acknowledged alarms and indicates the number of active alarms.

5.3 Alarm details

Select a row in the alarm list to view the detailed information about the alarm in the right pane.

The alarm details show alarm data, a button **Go to SLD** for navigating to the picture that includes the device that created the alarm, and a button to acknowledge the alarm. Secondary section of the alarm data contains tabs for creating filter and viewing related alarms.

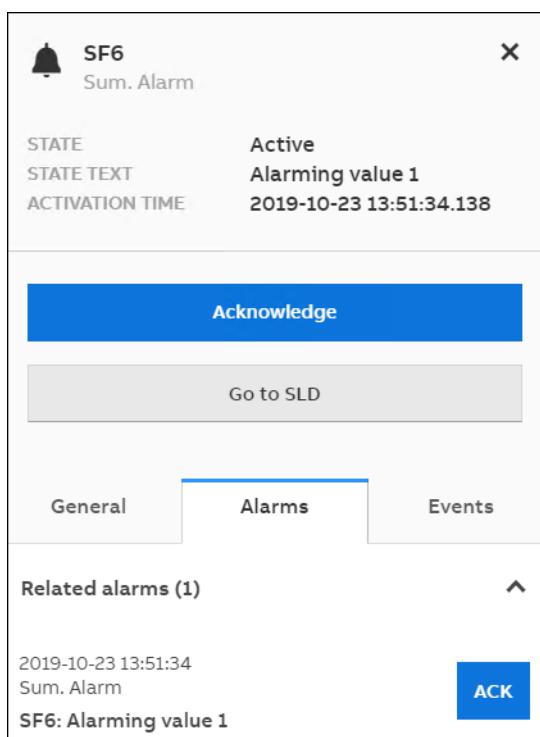


Figure 69: Alarm right pane

Alarm state can have three values: active, fleeting, and inactive. The fleeting state is on for alarms that are not anymore active (that is, inactive) but have not been acknowledged.

Alarm state text describes the alarming state in free text format.

Alarm activation time indicates the time when the alarming situation occurred.

[Table 3](#) provides an explanation for the different alarm types.

Table 3: Alarm types

Alarm Type	Explanation
Active unacknowledged	An alarm has been reported, but it has not been acknowledged.
Active acknowledged	An alarm has been reported, and it has been acknowledged.
Inactive unacknowledged (Fleeting alarm)	The state has been alarming, but it is no longer alarming.

5.4 Searching text in alarms list

In the content area, search for text in the alarm list by typing a string in the search box on the tab bar. The search highlights the alarms that match the entered string.

The search is case-insensitive. Search text can have one or many words. If words are separated with | character (that is, OR), they are considered as separate search texts to be applied to multiple list rows. If words are separated with space, they are considered to be found in the same list row. If multiple words are included in " " marks, they are considered to be found in the same list cell. To activate the quick search, press CTRL+F.

<input type="checkbox"/>	ACK	STATE	ACTIVATION TIME	OBJECT PATH	OBJECT TEXT	STATE TEXT
<input type="checkbox"/>	ACK	○ Fleeting	2019-10-24 15:12:47.699	Eastwick Incoming 110kV	Current L1	High Warning
<input type="checkbox"/>	ACK	● Active	2019-10-24 15:12:47.693	Eastwick Incoming 110kV...	Disconn. position indication	Open
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.210	NCC 1 SEQ S18	Seq.validation check FAIL	
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.138	Sum. Alarm	SF6	Alarming value 1
<input type="checkbox"/>	2019-10-23	● Active	2019-10-23 13:51:34.134	PJ NOLLAJOHDIN POIKK	Muuntamo 3142: Nollajohdin poikki	On
<input type="checkbox"/>	2019-10-23	● Active	2019-10-23 13:51:34.134	PJ SULAKEPALO	Muuntamo 3142: 3 valiheen sulake palanut	On
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.134	LV ZEROCOND BROKEN	LV-NET XX Zeroconductor broken	On
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.134	LV FUSEBLOWN	LV-NET XX Fuse blown	On

Figure 70: Searching text in alarms list

5.5 Acknowledging alarms

To acknowledge the alarm:

1. Select the unacknowledged alarm from the alarm list and click **Acknowledge** in the right pane.
2. Click **Acknowledge** to confirm acknowledgment in the **Confirm** dialog box.

<input type="checkbox"/>	ACK	STATE	ACTIVATION TIME	OBJECT PATH	OBJECT TEXT	
<input type="checkbox"/>	2019-10-23	● Active	2019-10-23 13:51:34.134	PJ SULAKEPALO	Muuntamo 3142: 3 valiheen sulake pa...	
<input type="checkbox"/>	2019-10-23	● Active	2019-10-23 13:51:34.134	PJ NOLLAJOHDIN POIKK	Muuntamo 3142: Nollajohdin poikki	
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.138	Sum. Alarm	SF6	
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.210	NCC 1 SEQ S18	Seq.validation check FAIL	
<input checked="" type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.110	Eastwick Outgoing HA3	SF6 Low pressure	
<input type="checkbox"/>	ACK	● Active	2019-10-23 13:51:34.134	LV FUSEBLOWN	LV-NET XX Fuse blown	

Figure 71: Acknowledging alarms

To acknowledge more than one alarm, select the alarm check boxes in the alarm list. To select all alarms, select **Active** check box in the alarm list in column header row.

Select multiple alarms to open the right pane. The right pane displays all the alarms grouped by the originator of the alarm.

To acknowledge multiple alarms, select the alarms to be acknowledged in the content area and click **Acknowledge all** in the right pane.

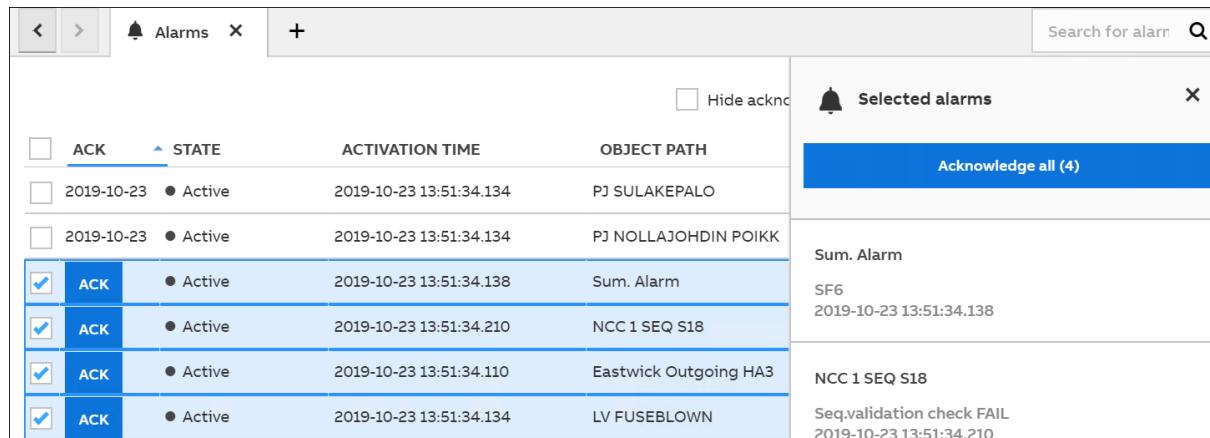


Figure 72: Acknowledging multiple alarms

5.6 Audible alarms

Certain alarms can be configured to trigger audio sound when activated. This can be configured based on the alarm severity/alarm class. In addition to the sound, the audible alarms will trigger a pop-up window on top of the content area. The pop-up shows main alarm information and the **Mute alarms** button to mute the alarm sound.

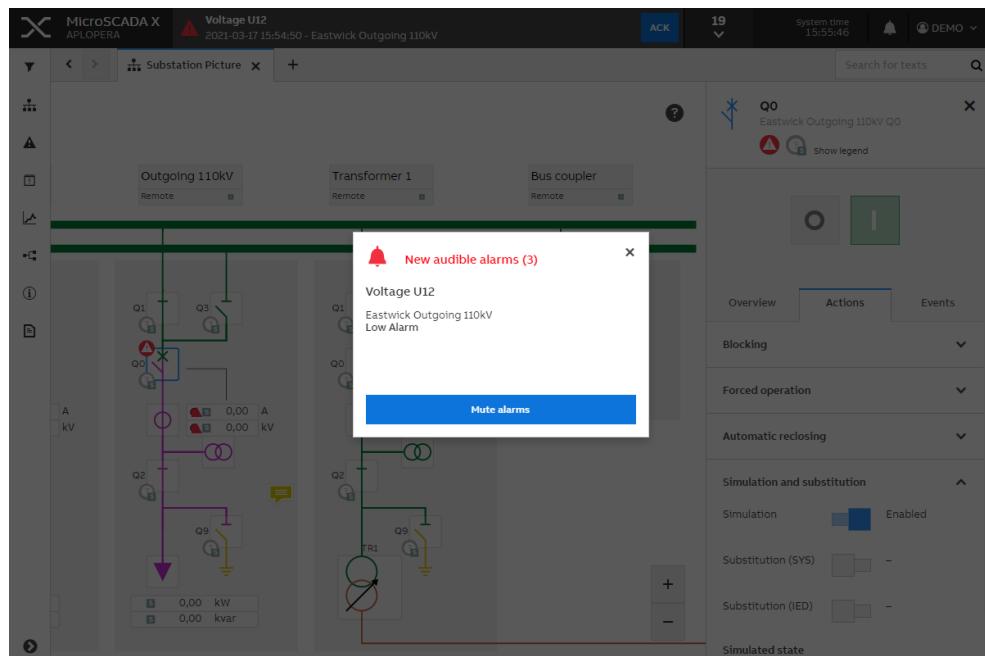


Figure 73: Audible alarm pop-up

When the **Mute alarms** button is pressed, the sound is muted, and the pop-up displays **View in Alarms list** and **Close** options. Clicking **View in Alarms list** will show more detailed information of the alarm in the alarm list.

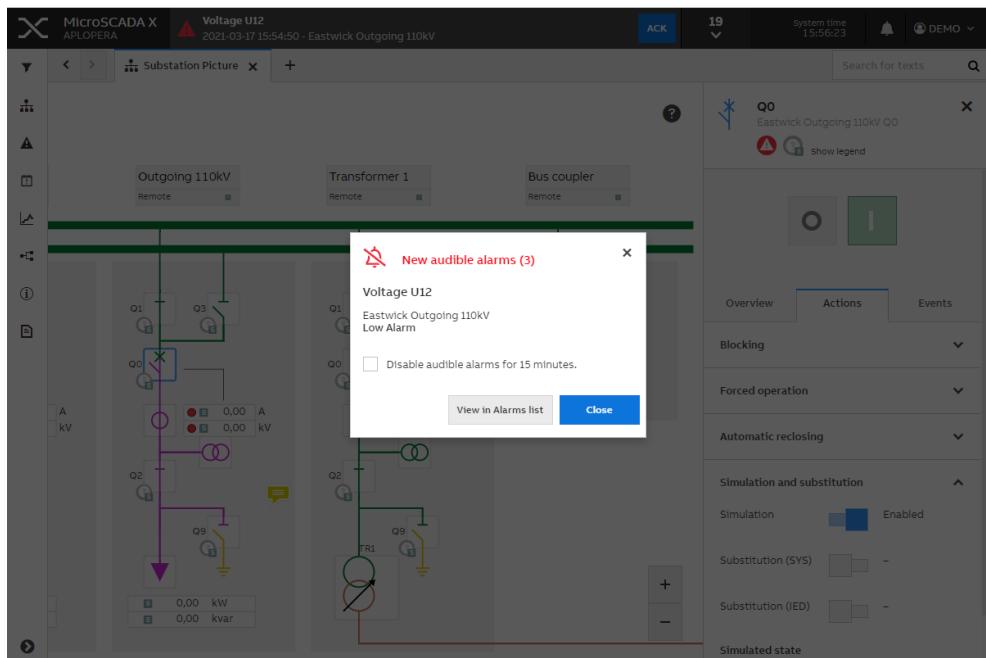


Figure 74: Audible alarm pop-up in muted state

There is also a check box **Disable audible alarms for 15 minutes** for situations where the audible alarms are triggered constantly, and temporary disabling of the sound and pop-ups are needed.

If several audible alarms are triggered while the pop-up is open, the number of currently active audible alarms are shown and updated in brackets in the pop-up title.

The audible alarms are played on the Workplace X application or on Chrome browser. The audio is played on all logged in users. If audio is muted by one user, another user will still have it on. If one user acknowledges the alarm, the audible alarm (sound and pop-up) is removed from all users. If the user has multiple Workplace X windows open, the alarm pop-ups are shown in all windows. But acting on one window is enough, for example, closing the alarm pop-up in one Workplace X window will also close the pop-ups on the other Workplace X windows.

The audible alarm pop-ups and sound can be disabled and enabled from the global header.



Figure 75: Audible alarm toggle enabled



Figure 76: Audible alarm toggle disabled

To enable automatic audio playing, browser settings need to be adjusted for allowing automatic audio playing for the site. This can be done by adding Workplace X web server host name to the allowed list (for example, Chrome settings can be found in the chrome://settings/content/sound. See *Browser's documentation* for more details. If audio option is disabled, a warning pop-up is displayed every time when browser page is re-loaded. See [Figure](#)

[77](#) for audible alarm pop-up. In Workplace X Windows application, audio auto-play policy settings are handled automatically, and no manual adjustments are required.

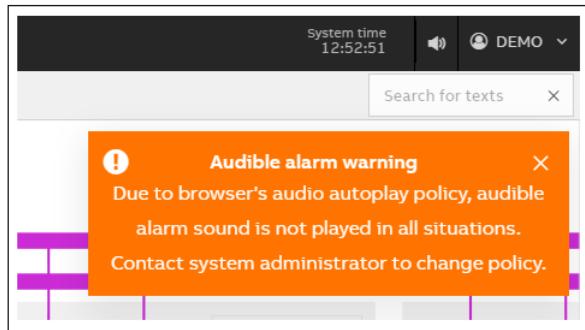


Figure 77: Audible alarm audio policy warning

5.7 Columns

Columns in the alarms list can be edited in the **Edit Columns** dialog box. The dialog box can be opened from the **Columns** section of the **Options** tab, or by selecting **Add columns** option from a column specific context menu.

See [Section 5.1](#) for more details on the column specific context menu.

The Alarms **Options** are shown in [Figure 78](#).

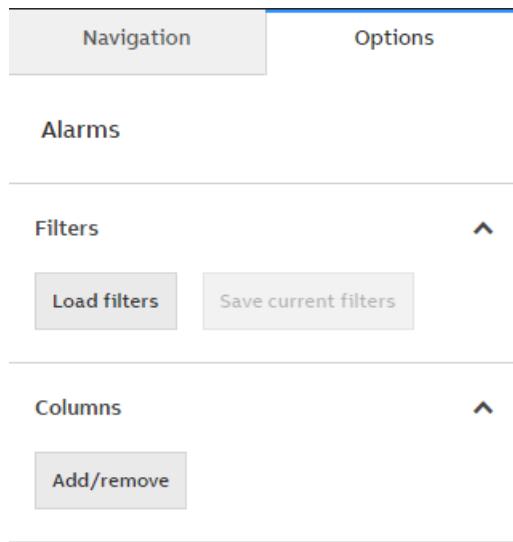


Figure 78: Alarms Options

5.7.1 Adding columns

To add columns:

1. Click **Add/remove** under **Columns** in the **Options** section or **Add columns** in the column context menu.



The **Edit Columns** dialog box displays few basic column names that are pre-selected by default. Press the **Reset to default** button to bring the default selection back.

2. Use the search box in the **Edit Columns** dialog box to search the column names.
3. Select the required columns from the list and click **Apply**.



In the **Edit Columns** dialog box, all the columns are displayed in the alphabetical order.



The **Suggested** items above the search box, shows which default columns are not currently selected.

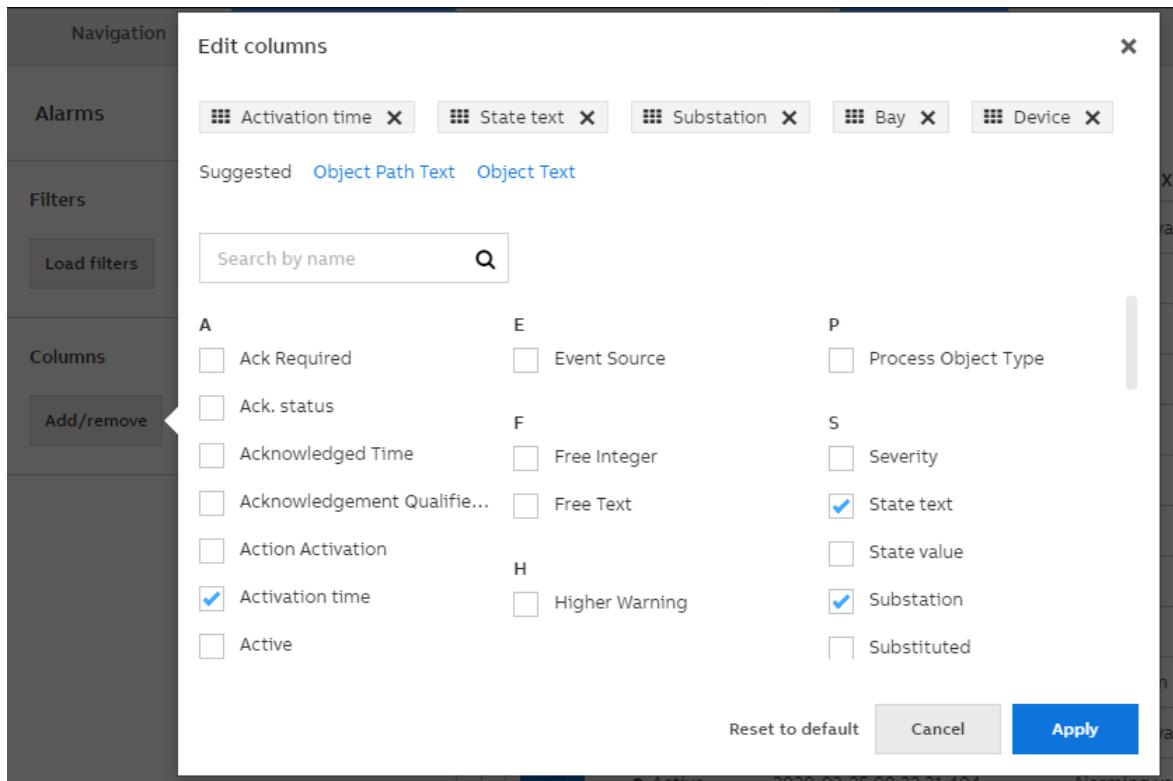


Figure 79: Adding columns

5.7.2

Reordering columns

To reorder columns in alarms list:

- Drag the columns in the column list in the left pane.
- Drag the column tags in the **Edit Columns** dialog box.

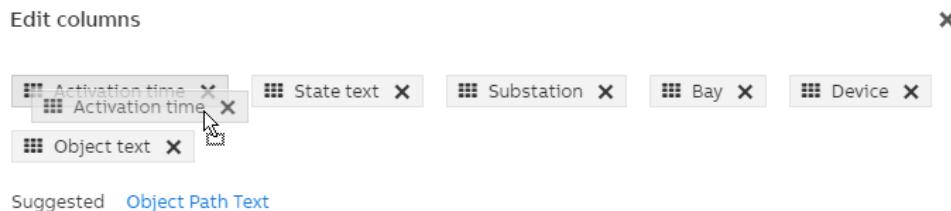


Figure 80: Reordering columns in the Edit Columns dialog box

Alarms						<input type="checkbox"/> Hide acknowledged alarms (3)
ACK	STATE	STATE TEXT	ACTIVATION TIME	OBJECT PATH	OBJECT TEXT	
<input type="checkbox"/>	<input checked="" type="radio"/> Active	2019-10-23 13:51:34.110	Alarm	Eastwick Outgoing HA3	SF6 Low pressure	

Figure 81: Reordering columns using the column titles

5.7.3 Removing columns

To remove columns from alarm list:

- In the **Edit Columns** dialog box, click the **x** icon on the column tag on top of the dialog box.
- In the **Edit Columns** dialog box, clear the check box next to the column title and click **Apply**.
- In the column specific context menu, select the **Remove** option.

5.7.4 Resizing columns automatically

To enable automatic columns resizing based on the currently visible list view area, select the **Resize columns automatically** check box in the **Options** section.



Figure 82: Resize columns automatically option

Columns will resize automatically when the size of the Workplace X window changes or when the right pane is opened.

5.8 Filtering alarms

Filters limit the alarms displayed on the main list based on the filtering conditions.

Active filters are displayed as tags in the alarm list header section.

Filters can be added by clicking **Add Filters** in the alarm list header section, or by selecting filtering option from the column specific context menu.

The applied filters can be edited by clicking the filter tags in the list header.

Click the **x** icon in the filter tag to remove a filter.

The column specific context menu provides fast way to filter the list based on columns with discrete dataset. For example, the columns presenting system hierarchy (for example, Substation, Bay, and Device), will have a filter sub-menu in the column specific context menu. If multiple items are selected from the menu, the filter is formed by connecting the items with OR logical operators. See [Section 5.8.2.3](#) for more information.

5.8.1 Filter basics

Filters consist of one or more conditions separated by logical operators.

Conditions have an attribute, a comparator, and a constant value.

Attribute is the column of alarm or attribute list used for filtering.

Comparators compare the attribute value against a constant. Comparators depend on the type of attribute. For example, time stamps have **Is Before** or **In Between** comparators, whereas the numerical attributes have arithmetic comparators like **>** or **==**.

Table 4: Filter comparators

Attribute type	Comparators
Time	<ul style="list-style-type: none"> • Is Before • Is After • Is Between • Is Not Between
Text	<ul style="list-style-type: none"> • contains • does not contain • is • is not • starts with • ends with
Numeric	<ul style="list-style-type: none"> • == • > • < • => • <= • <>
Boolean	<ul style="list-style-type: none"> • is

There are three types of filters:

1. Basic Filters: Basic filters usually contain single condition.
2. The discrete dataset (for example, system hierarchy) filters can contain several conditions separated with OR logical operators.
3. Advanced filters: Advanced filters have several conditions, separated by either AND or OR logical operations.

When several filters are active, then they are joined with an AND operator. An alarm must fulfill the conditions of every active filter that is displayed in the alarm list.

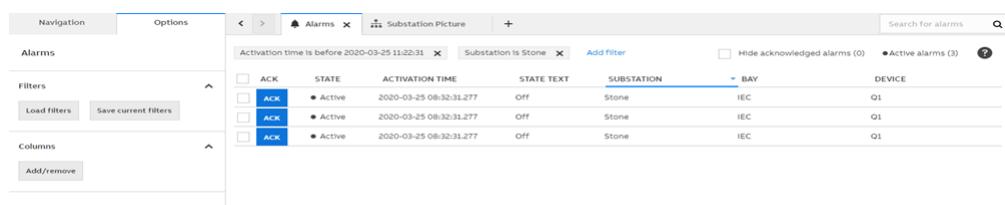


Figure 83: Setting filters

5.8.2 Creating filters

5.8.2.1 Creating basic filter

To open filter creation dialog box, in the alarm list header section, click the button **Add filter** or click the alarm list column, and select **Filter by <column>** option from the column specific context menu.

The basic filter dialog box opens.

To create a filter:

1. Select a column.
2. Select a comparator.
3. Set a target value for the attribute.
4. Click **Create filter**.
5. Click **Save** in the **Options** tab.
Save filter dialog box opens.
6. Type the filter name.
7. Click **Save**.

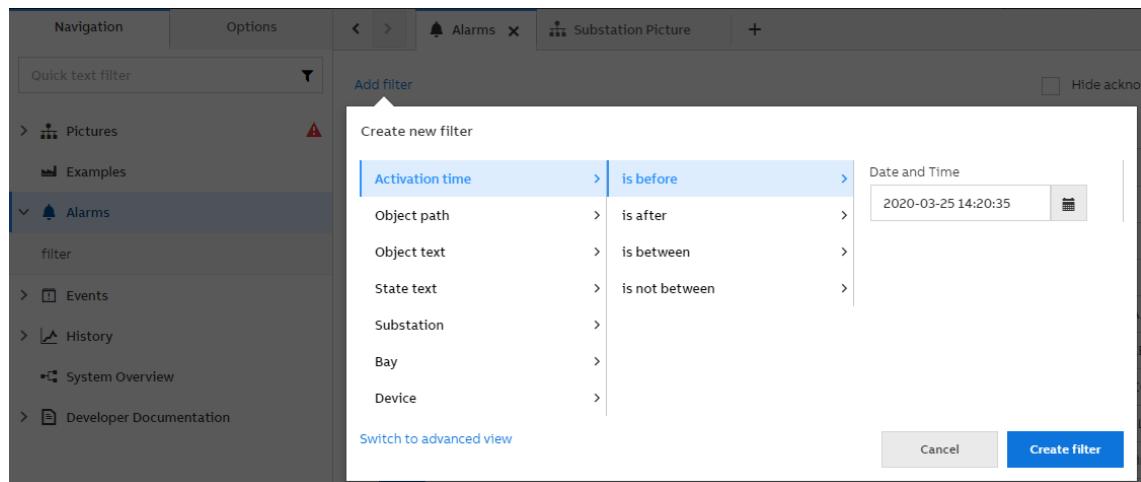


Figure 84: Creating basic filter

5.8.2.2 Creating discrete value filter

If the column data consists of specific discrete values (for example, system hierarchy), the target value selection can be done from the pre-defined list of values.

To create a discrete value filter:

1. Click the column header where data consists of discrete values.
2. Select **Filter** in **Options** tab for opening the discrete values sub-menu.
3. Select target values from the sub-menu, and the filter will be applied immediately.

SUBSTATION	BAY	DEVICE
S ✓ Z to A	IEC	Q1
S A to Z	IEC	Q1
S Filter by Substation >	Search by name	
	NCC 1	
	Norwood	
	Penrith	
	PJ	
	PSTO	
	Rivers	
	Safeplus	
	Senior	
✓ Stone		
	Sum. Alarm	
	System1	
	VVO Demo	

Figure 85: Filtering based on discrete system hierarchy values

5.8.2.3 Creating advanced filter

Advanced filter has several conditions that are combined with the logical operators.

To create an advanced filter:

1. Open the filter dialog box and click **Switch to advanced view** in the **Create new filter** dialog box.
2. In the advanced filter dialog box, select attributes, comparators, and values for the filter attribute from the drop-down list.
3. Use the logical operator (**AND** or **OR**) buttons at the end of each filter to connect conditions.
4. Click **+** to add a new condition at the end of the filter.

- Click - to remove a condition at the end of the filter.
5. Use **AND** and **OR** buttons to set the logical operator between conditions.
 6. Click **Create filter**.

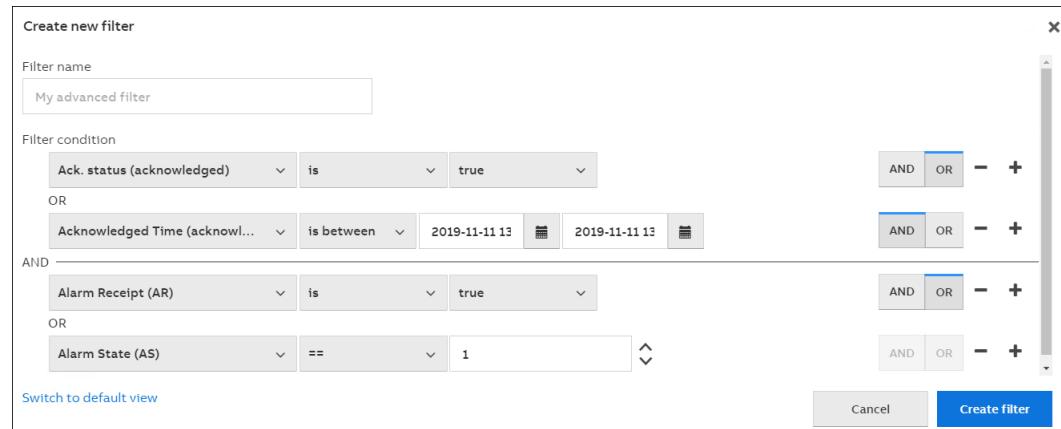


Figure 86: Creating advanced filter

5.8.2.4 Creating a quick filter

It is possible to create a quick filter directly from the alarms displayed in the alarm list or from the right pane.

To create a quick filter from the alarm list:

1. Right-click on the column value in the alarm list in the content area and click **Create filter**.
2. A basic filter dialog box opens with the selected attribute, a value, and a suitable comparator pre-filled.
3. Edit the inserted values.
4. Click **Apply** to confirm the creation of a quick filter.

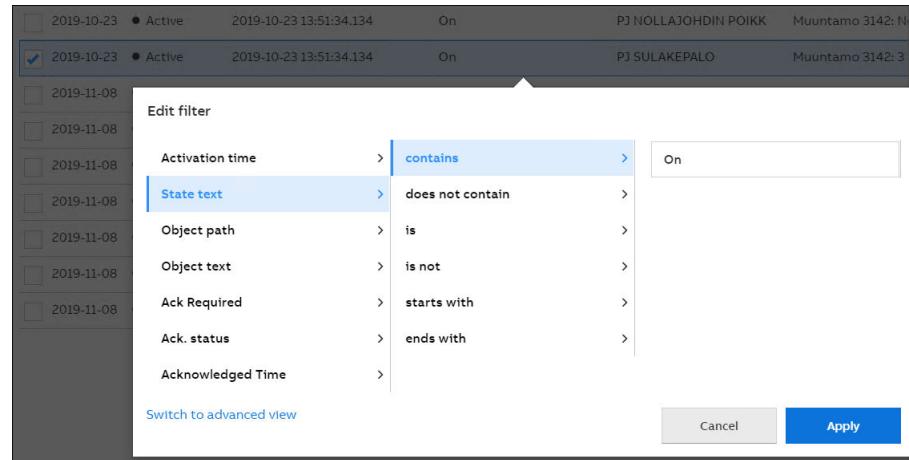


Figure 87: Creating a quick filter

To create a quick filter from the right pane:

1. Select an alarm to open the right pane.
2. Click the **General** tab in the right pane under alarm details.

- In the General tab, create filter for the selected alarm.
3. Click **Edit filter**. An advanced filter dialog box opens with all the columns visible in the list with the preset values in the filter.
 4. Edit the conditions and operators.
 5. Click **Apply** to confirm the new filter.

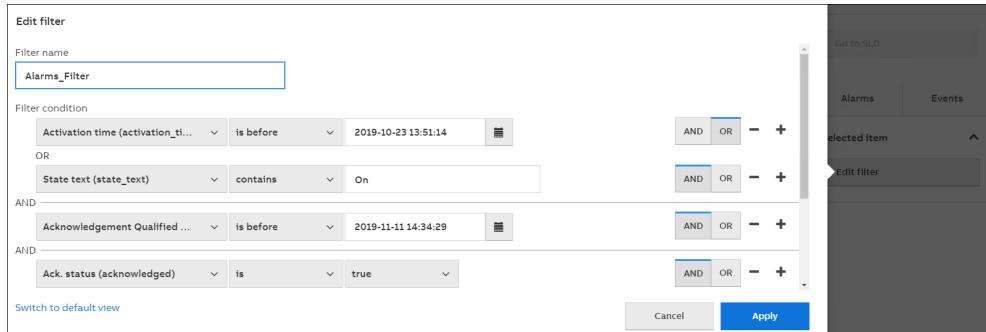


Figure 88: Creating a quick filter from the right pane

5.8.3 Filter renaming

To provide a custom name to the filter:

1. Click the filter tag bar above the alarm list.
2. Click **Switch to advanced view** in the edit filter dialog box.
3. Modify the name as required in the Filter name text box.
4. Click **Apply**.

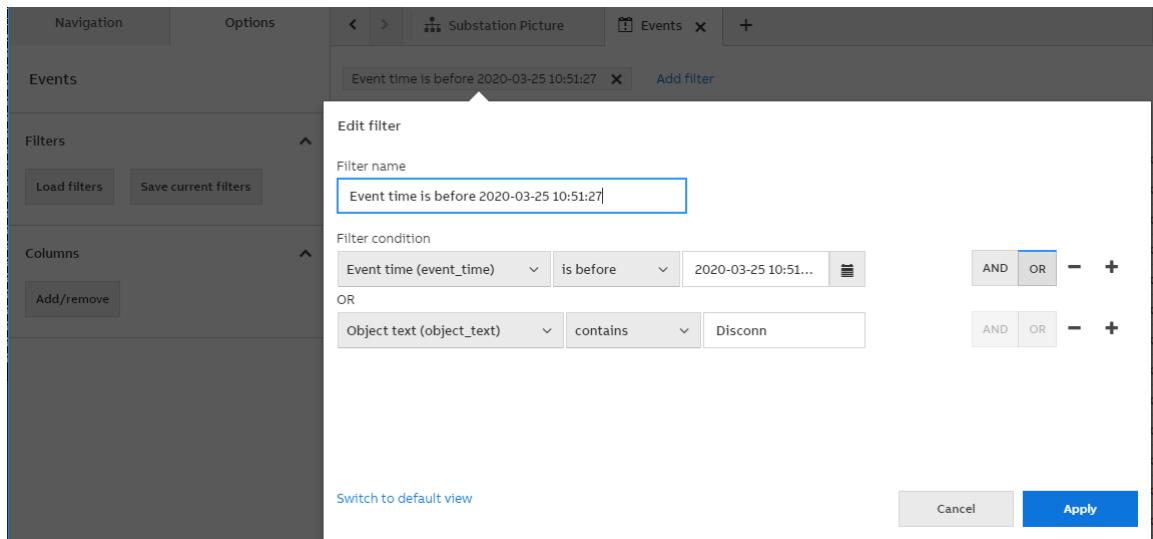


Figure 89: Filter renaming

5.8.4 Removing filters

To remove a filter, click the x icon next to the filter name on the filter tag bar above the alarm list.

5.8.5 Editing filters

To edit an existing filter:

1. Click on a filter name, on the filter tag bar above the alarm list, to open filter dialog box.
2. In the filter dialog box, edit the filter.
3. Click **Apply** to confirm the changes and to close the dialog box.
4. Click **Cancel** to discard the changes and close the dialog box.

5.8.6 Saving, loading, and deleting filters

To save a filter:

1. Click **Save current filters** in the **Options** tab.



Save a new filter by entering a new name in the **Save Filter** dialog box.

2. Click **Shared** to make the saved filter visible for all the application users.



Filters can be saved in **Personal** or **Shared** tabs depending on the data visibility to the user.

3. Click **Save** in the **Save Filter** dialog box.

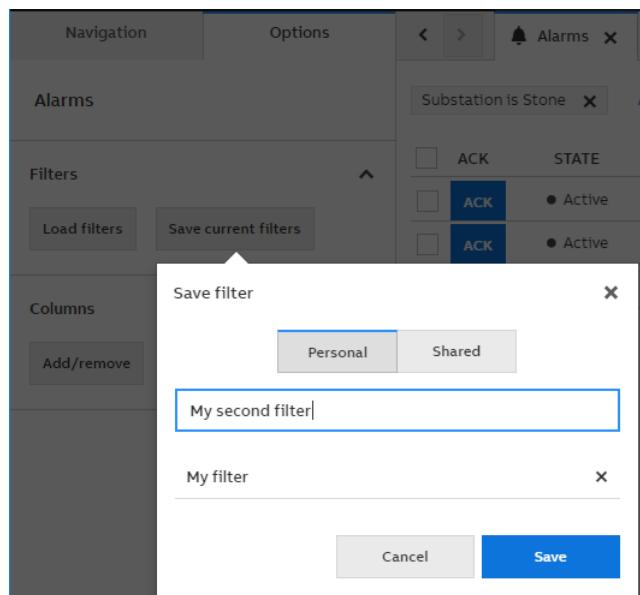


Figure 90: Saving filter

To load previously saved filter:

1. Click **Load filters** in the **Options** tab.
2. Click **Personal** or **Shared** to view either user specific or system wide filters.
3. Select a filter from the list in the **Load filter** dialog box.
4. Click **Apply** to confirm the selection.



The text box in the **Load filters** dialog box can be used to search the list of stored filters.

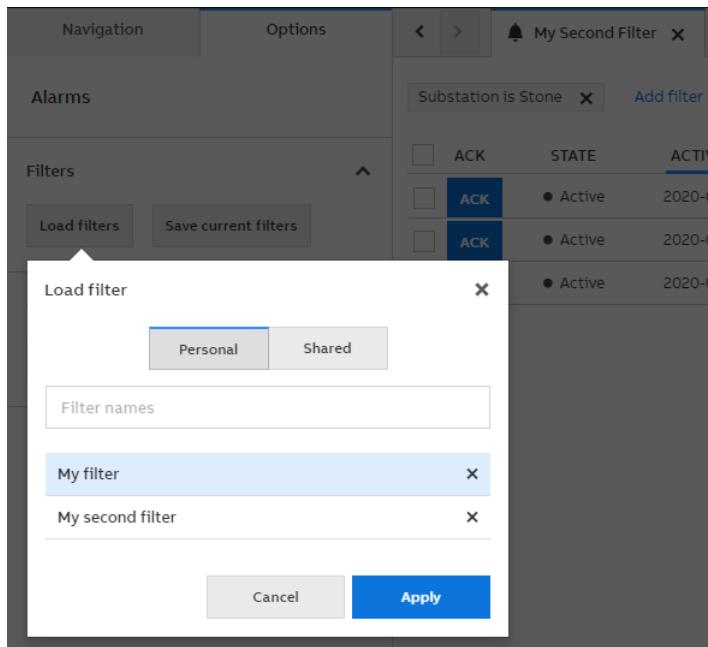


Figure 91: Loading filter

To delete a previously stored filter:

1. Click the **x** icon in the right side of a stored filter name, either in the **Save** or **Load** dialog box.
2. Click **Delete filter** to delete the filter in the confirmation dialog box.

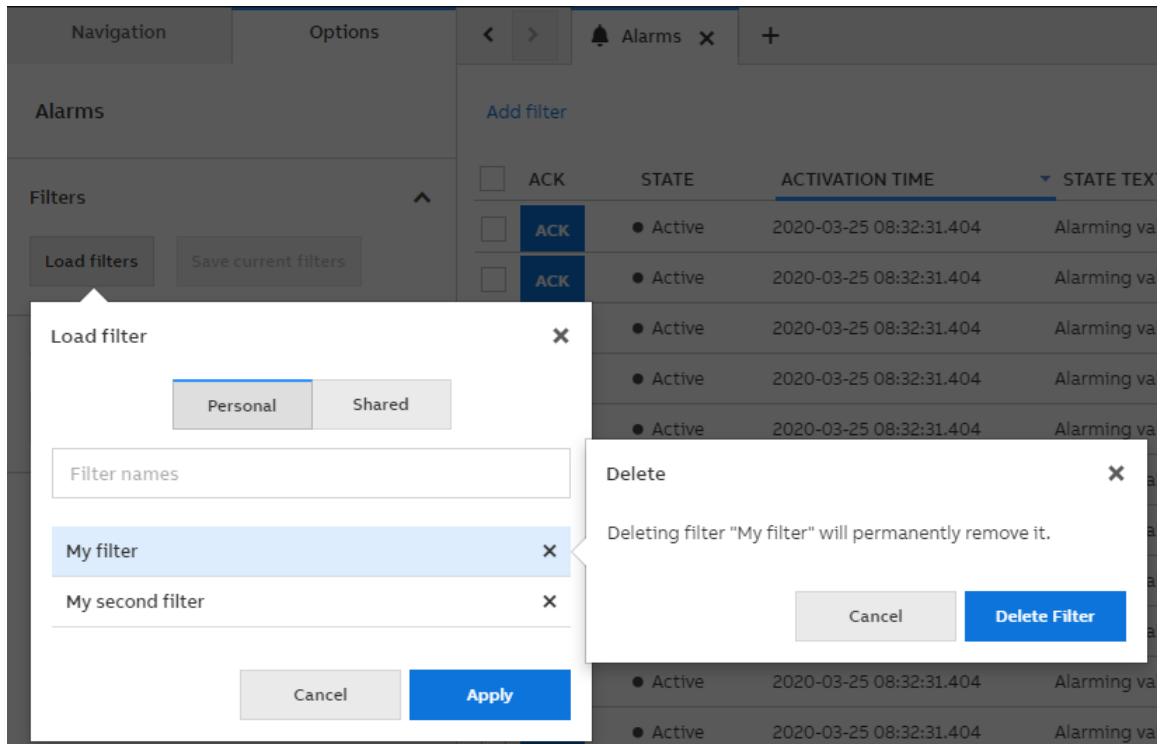


Figure 92: Deleting filters

5.9 Exporting Alarms

Alarms can be exported either in CSV or XML (SpreadsheetML) format. The exported files can be opened with common spreadsheet applications.

Alarm export is available in the **Options** tab in the left pane. To export alarms, click **Export alarms** under **Export** option and select the required format from the **Export** pop-up window. If some rows are selected in the alarm list, it is possible to select whether to export the selected rows only or all rows. All rows include the rows that can be accessed by scrolling the list and not just the rows that are visible.

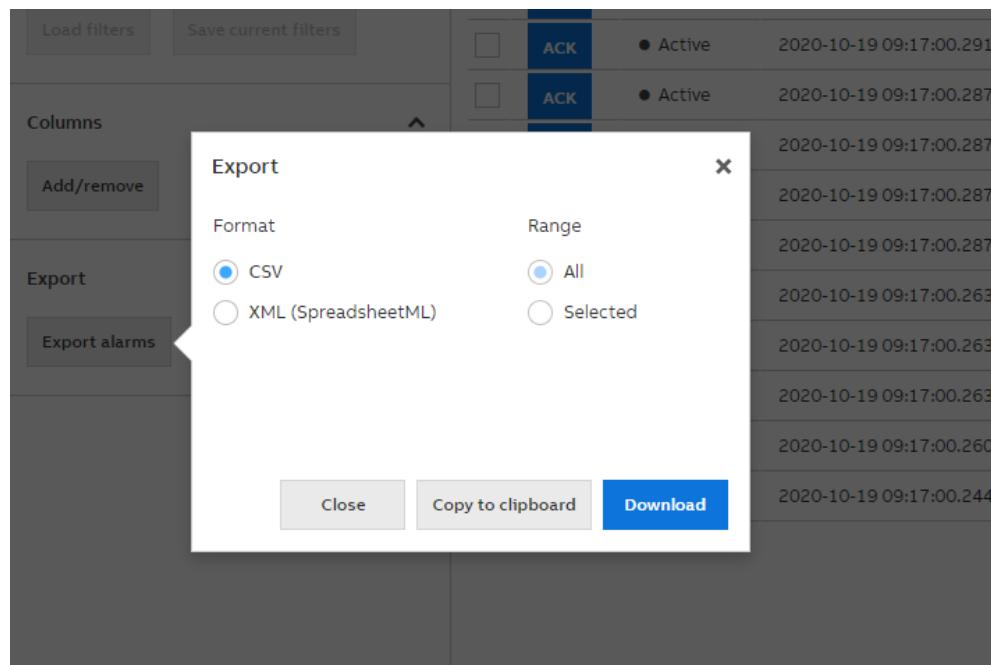


Figure 93: Exporting alarms

It is possible to either download the export or copy the data to the clipboard.



The XML that is copied to the clipboard cannot be pasted to a spreadsheet application. It must be stored in a file with .xml extension, for example, with Notepad application.

Section 6 Events

The **Events** options are used to browse, search, or filter the events, and add notes to the events.

The event and alarm list have almost identical user interfaces. The differences are details in the right panes of the user interface and additional operations for the alarms.

6.1 Column specific context menu

Click the column header of the event list to open the column specific context menu.

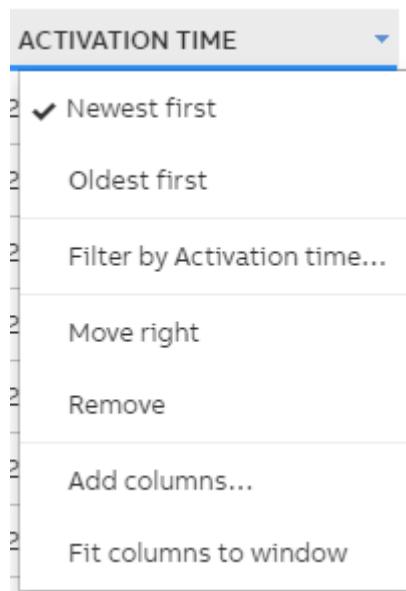


Figure 94: Column specific context menu

The context menu provides the following functionalities:

- Sort the list in ascending or descending order. The blue triangle pointing up or down next to the column header indicates whether the list is currently sorted in ascending or descending order.
- Filter the list based on the data of the selected column. See [Section 6.6](#) for more information.
- Move the selected column right or left or remove the column.
- Open the column selector view for adding and editing visible columns. See [Section 6.5](#) for more information.
- Fit columns to window.



Columns related to system hierarchy (for example, Substation, Bay, and Device) have a possibility to apply filter directly from the context menu by selecting items from a list of available values.



Event list can only be sorted in Event Time and Registration Time columns.

6.2 Using events list

The **Navigation** pane displays **Events** title for easy navigation to the respective section. If event sections have any saved filters (see [Section 6.6](#) for more information), then the events in the left pane have a drop-down.

Click the title to open event display without any filters.

Click the drop-down next to the events to open a list of stored filters. Click any filter in the list to open event list with the selected filter applied.

EVENT TIME	OBJECT PATH	OBJECT TEXT	STATE TEXT
2020-01-03 10:22:36.224	Eastwick 110kV Incoming Q0	Breaker cancel command	Cancelled
2020-01-03 10:19:17.077	Eastwick 110kV Incoming Q2	Disconn. close interlocked	Alarm generation on value 1
2020-01-03 10:19:11.684	Eastwick 110kV Incoming Q2	Disconn. open interlocked	Alarm generation on value 1
2020-01-03 10:19:03.854	Eastwick 110kV Incoming Q2	Disconn. close interlocked	Alarm Class 1
2020-01-03 10:19:03.854	Eastwick 110kV Incoming Q2	Disconn. close interlocked	Switch state manual
2020-01-03 10:19:03.847	Eastwick 110kV Incoming Q2	Disconn. open interlocked	Alarm Class 1
2020-01-03 10:19:03.847	Eastwick 110kV Incoming Q2	Disconn. open interlocked	Switch state manual
2020-01-03 10:18:43.000	Eastwick 110kV Incoming Q0	Breaker close interlocked	Off
2020-01-03 10:18:32.704	Eastwick 110kV Incoming Q1	Disconn. open interlocked	Off
2020-01-03 10:18:27.624	Eastwick 110kV Incoming Q1	Disconn. close interlocked	Off

Figure 95: Event list

Events display the latest events in the chronological order and all the active filters as tags at the top of the content area.

6.3 Event details

Select a row in the events list to view the detailed information about the event in the right pane.

The event details show event data and a button **Go to SLD** for navigating to the picture that includes the device that created the event. Secondary section of the event data contains tabs for creating filter, adding notes to an event, and viewing related events.

Breaker position indication
Eastwick Incoming 110kV Q0

EVENT VALIDITY: Questionable validity

EVENT TIME: 2020-09-01 12:55:27.132
STATE TEXT: Obsolete status

[Go to SLD](#)

Overview Alarms **Events**

Related Events (3)

Show all events for Eastwick Incoming 110kV Q0

Latest events

Last 24h Last week Last month

2020-09-01 12:55:29
Eastwick Incoming 110kV Q0
Breaker position indication: Invalid status

2020-09-01 12:55:27
Eastwick Incoming 110kV Q0
Breaker position indication: Obsolete status

Breaker position indication
Eastwick Incoming 110kV Q0

EVENT TIME: 2020-09-01 12:55:26.014
STATE TEXT: Invalid time

Time invalid status

[Go to SLD](#)

Overview Alarms **Events**

Related Events (3)

Show all events for Eastwick Incoming 110kV Q0

Latest events

Last 24h Last week Last month

2020-09-01 12:55:29
Eastwick Incoming 110kV Q0
Breaker position indication: Invalid status

2020-09-01 12:55:27
Eastwick Incoming 110kV Q0
Breaker position indication: Obsolete status

Figure 96: Event right pane

In case the event is not reliable, the Event validity field is displayed with related add-on and text description of the validity issue. If the event is reliable, then the Event validity field is not displayed. The bad event validity is indicated by displaying the add-on in the left most column of the event list.

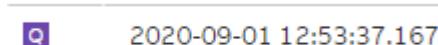


Figure 97: Event validity add-on

Event time indicates the time the event occurred. In case the event time is invalid, it is indicated by purple ! add-on with text **Invalid time** below the Event time field as shown in [Figure](#). The invalid event time is also indicated by displaying the add-on on the right side of the event time column in the list.



Figure 98: Event time invalid add-on

Event state text describes the state of the event in free text format.

6.4 Searching text in events list

In the content area, search events by typing a search string in the search box on the tab bar. The search highlights the events that match the entered string.

The search is case-insensitive. Search text can have one or many words. If words are separated with | character (that is, OR), they are considered as separate search texts to be applied to multiple list rows. If words are separated with space, they are considered to be found in the same list row. If multiple words are included in " " marks, they are considered to be found in the same list cell. To activate the quick search, press CTRL+F.

EVENT TIME	OBJECT PATH	OBJECT TEXT	EVENT STATE	USER NAME
2019-10-23 14:59:09.682	PJ NOLLAJOHDDIN POIKK	Muuntamo 3142: Nollajohdin poi...	Alarm acknowledged	DEMO
2019-10-23 14:59:06.684	PJ SULAKEPALO	Muuntamo 3142: 3 vaiheen sulak...	Alarm acknowledged	DEMO
2019-10-23 14:53:56.106	Eastwick Incoming 110kV	Current L1	High Warning	DEMO
2019-10-23 14:53:56.102	Eastwick Outgoing HA6 QO	Breaker position indication	Open	DEMO
2019-10-23 14:53:56.101	Eastwick Outgoing HA6 QO	Breaker command	Open executed	DEMO
2019-10-23 14:53:54.867	Eastwick Outgoing HA6 QO	Breaker command	Selected	DEMO
2019-10-23 14:53:43.718	Eastwick Outgoing HA6 QO	Breaker position indication	Closed	DEMO
2019-10-23 14:53:43.718	Eastwick Outgoing HA6 QO	Breaker command	Close executed	DEMO
2019-10-23 14:53:42.114	Eastwick Outgoing HA6 QO	Breaker command	Selected	DEMO
2019-10-23 14:53:39.874	Eastwick Outgoing HA6 QO	Breaker position indication	Open	DEMO
2019-10-23 14:53:39.873	Eastwick Outgoing HA6 QO	Breaker command	Open executed	DEMO

Figure 99: Searching text in events list

6.5 Columns

Columns in the events list can be edited in the **Edit Columns** dialog box. The dialog box can be opened from the **Columns** section of the **Options** tab, or by selecting **Add Columns** option from a column specific context menu.

See [Section 6.1](#) for more information on column specific context menu.

The Events **Options** are shown in [Figure 100](#).

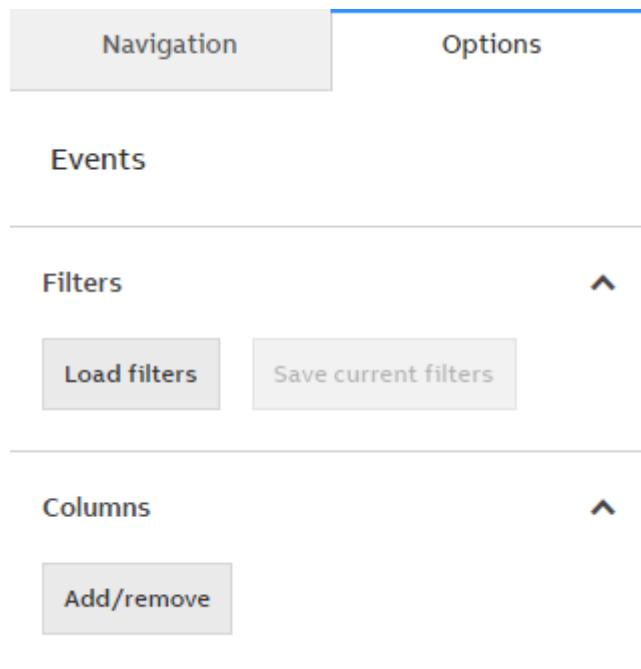


Figure 100: Events Options

6.5.1 Adding columns

To add columns:

1. Click **Add/remove** under **Columns** in the **Options** section or **Add columns** in the column context menu.



The **Edit Columns** dialog box displays few basic column names that are pre-selected by default. Press the **Reset to default** button to bring the default selection back.

2. Use the search box in the **Edit Columns** dialog box to search the column names.
3. Select the required columns from the list and click **Apply**.



In the **Edit Columns** dialog box, all the columns are displayed in the alphabetical order.



The **Suggested** items, above the search box, shows which default columns are not currently selected.

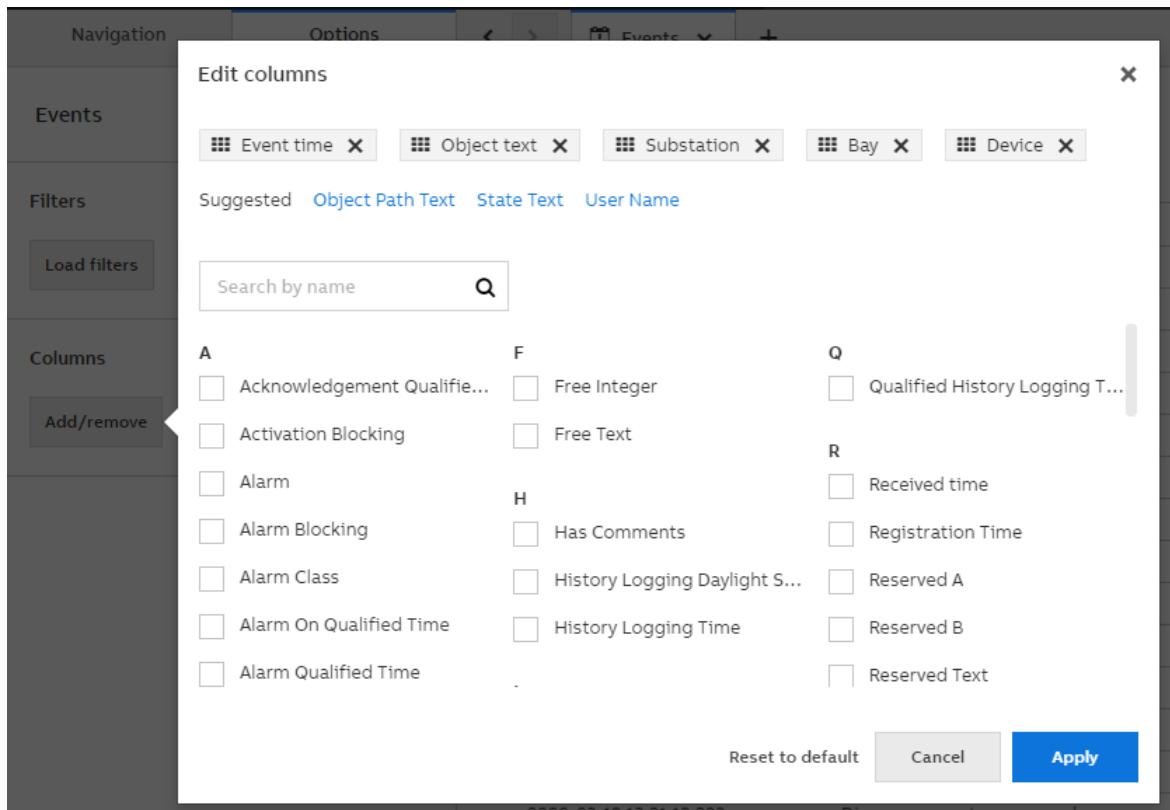


Figure 101: Adding columns

6.5.2 Reordering columns

To reorder columns in events list:

- Drag the columns in the column list in the left pane.
- Drag the column tags in the **Edit Columns** dialog box.

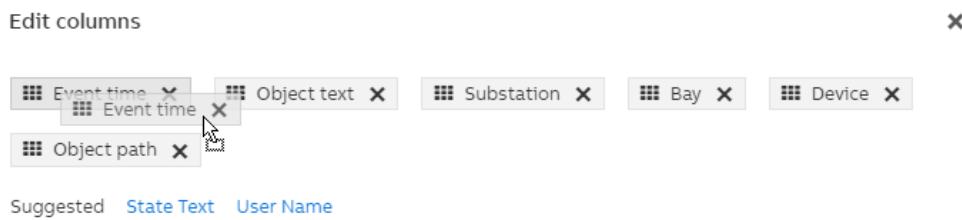


Figure 102: Reordering columns in the Edit Columns dialog box

OBJECT PATH	OBJECT TEXT	EVENT TIME	EVENT STATE	USER NAME
NCC 1 SEQ S18	2019-11-05 09:42:39.431	Seq.validation check FAIL	Alarm acknowledged	DEMO

Figure 103: Reordering columns using the column titles

6.5.3 Removing columns

To remove columns from events list:

- In the **Edit Columns** dialog box, click the **x** icon on the column tag on top of the dialog box.
- In the **Edit Columns** dialog box, clear the check box next to the column title and click **Apply**.
- In the column specific context menu, select the **Remove** option.

6.5.4 Resizing columns automatically

To enable automatic columns resizing based on the currently visible list view area, select the **Resize columns automatically** check box in the **Options** section.



Figure 104: Resize columns automatically option

Columns will resize automatically when the size of the Workplace X window changes or when the right pane is opened.

6.6 Filtering events

Filters limit the events displayed on the main list based on the filtering conditions.

Active filters are displayed as tags in the events list header section.

Filters can be added by clicking **Add Filters** in the event list header section, or by selecting filtering option from the column specific context menu.

The applied filters can be edited by clicking the filter tags in the list header.

Click the **x** icon in the filter tag to remove a filter.

The column specific context menu provides fast way to filter the list based on columns with discrete dataset. For example, the columns presenting system hierarchy (for example, Substation, Bay, and Device), will have a filter submenu in the column specific context menu. If multiple items are selected from the menu, the filter is formed by connecting the items with OR logical operators. See [Section 6.6.2.3](#) for more information.

6.6.1 Filter basics

Filters consist of one or more conditions separated by logical operators.

Conditions have an attribute, a comparator, and a constant value.

Attribute is the column of event or attribute list used for filtering.

Comparators compare the attribute value against a constant. Comparators depend on the type of attribute. For example, time stamps have **Is Before** or **In Between** comparators, whereas the numerical attributes have arithmetic comparators like **>** or **==**.

Table 5: Filter comparators

Attribute type	Comparators
Time	<ul style="list-style-type: none"> • Is Before • Is After • Is Between • Is Not Between
Text	<ul style="list-style-type: none"> • contains • does not contain • is • is not • starts with • ends with
Numeric	<ul style="list-style-type: none"> • == • > • < • => • <= • <>
Boolean	<ul style="list-style-type: none"> • is

There are three types of filters:

1. Basic Filters: Basic filters usually contain single condition.
2. The discrete dataset (for example, system hierarchy) filters can have several conditions separated with OR logical operators.
3. Advanced filters: Advanced filters have several conditions, separated by either AND or OR logical operations.

When several filters are active, then they are joined with an AND operator. An event must fulfill the conditions of every active filter that is displayed in the event list.

EVENT TIME	OBJECT PATH	OBJECT TEXT	EVENT STATE	USER NAME
2019-10-23 14:53:56.106	Eastwick Incoming 110kV	Current L1	High Warning	DEMO
2019-10-23 14:53:56.102	Eastwick Outgoing HA6 Q0	Breaker position indication	Open	DEMO
2019-10-23 14:53:56.101	Eastwick Outgoing HA6 Q0	Breaker command	Open executed	DEMO
2019-10-23 14:53:54.867	Eastwick Outgoing HA6 Q0	Breaker command	Selected	DEMO
2019-10-23 14:53:43.718	Eastwick Outgoing HA6 Q0	Breaker position indication	Closed	DEMO

Figure 105: Setting filters

6.6.2 Creating filters

6.6.2.1 Creating basic filter

To open filter creation dialog box, in the event list header section, click the button **Add filter** or click an event list column, and select **Filter by <column>** option from the column specific context menu.

The basic filter dialog box opens.

To create a filter:

1. Select a column.
2. Select a comparator.
3. Set a target value for the attribute.
4. Click **Create filter**.
5. Click **Save** in the **Options** tab.
Save filter dialog box opens.
6. Type the filter name.
7. Click **Save**.

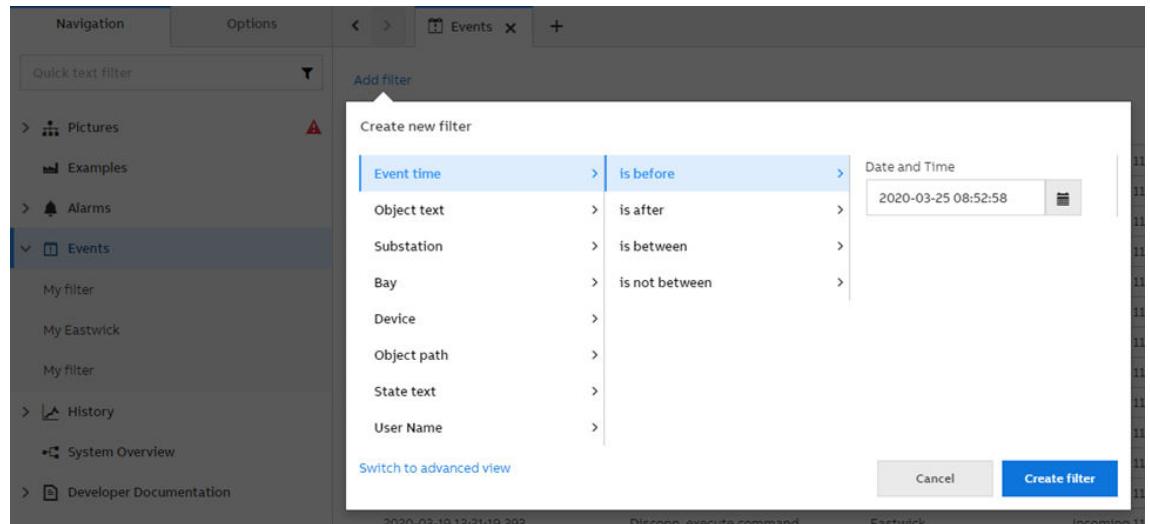


Figure 106: Creating basic filter

6.6.2.2 Creating discrete value filter

If the column data consists of specific discrete values (for example, system hierarchy), the target value selection can be done from the pre-defined list of values.

To create a discrete value filter:

1. Click a header of column which data consist of discrete values.
2. Select **Filter** options for opening the discrete values submenu.
3. Select target values from the submenu, and the filter will be applied immediately.

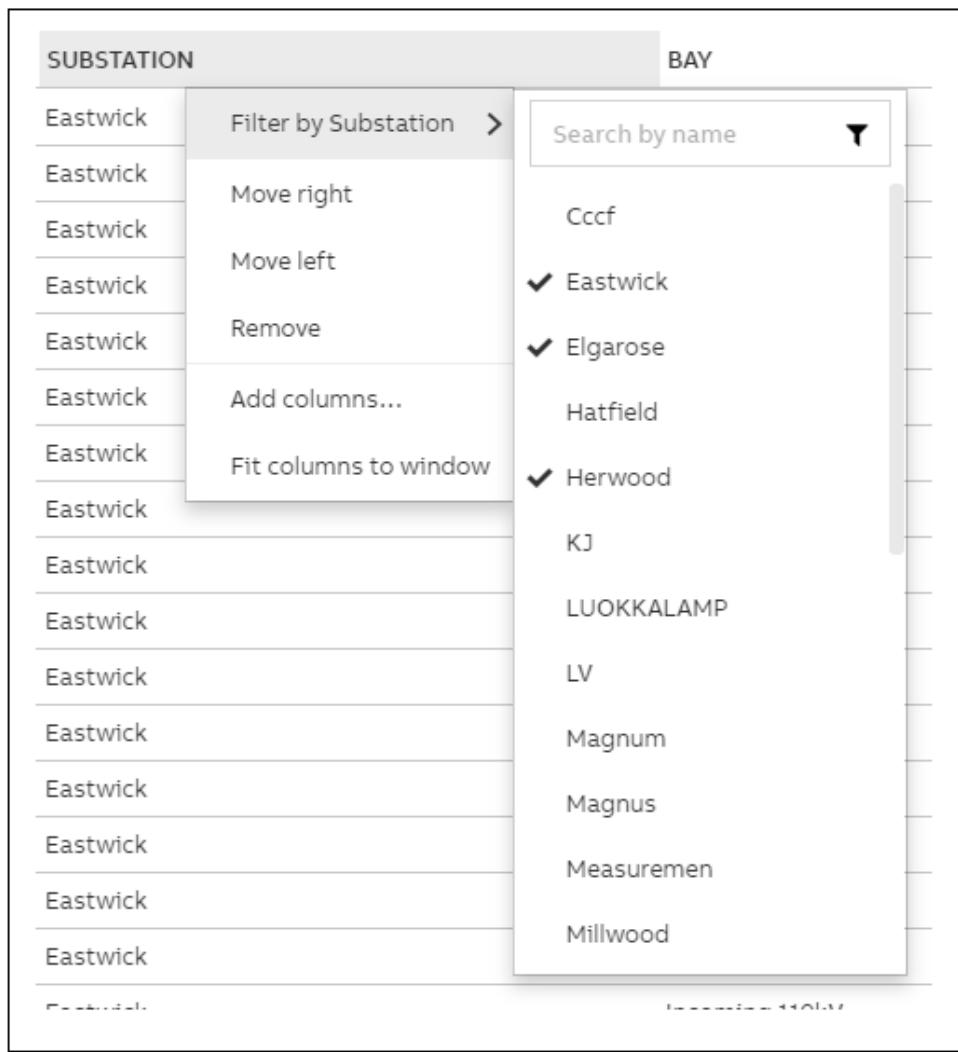


Figure 107: Filtering based on discrete system hierarchy values

6.6.2.3 Creating advanced filter

Advanced filter has several conditions that are combined with logical operators.

To create an advanced filter:

1. Open the filter dialog box and click **Switch to advanced view** in the **Create new filter** dialog box.
2. In the advanced filter dialog box, select attributes, comparators, and values for the filter attribute from the drop-down list.
3. Use the logical operator (**AND** or **OR**) buttons at the end of each filter to connect conditions.
4. Click **+** to add a new condition at the end of the filter.
Click **-** to remove a condition at the end of the filter.
5. Use **AND** and **OR** buttons to set the logical operator between conditions.
6. Click **Create filter**.

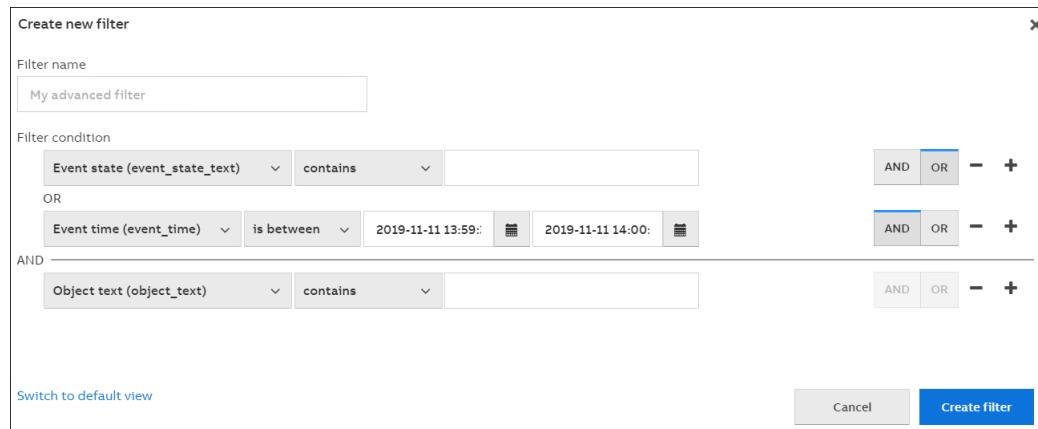


Figure 108: Creating advanced filter

6.6.2.4 Creating a quick filter

It is possible to create a quick filter directly from the events displayed in the events list or from the right pane.

To create a quick filter:

1. Right-click on the column value in the events list and click **Create filter**. A basic filter dialog box opens with the selected attribute, a value, and a suitable comparator pre-filled.
2. Edit the inserted values.
3. Click **Apply** to confirm the creation of a quick filter.

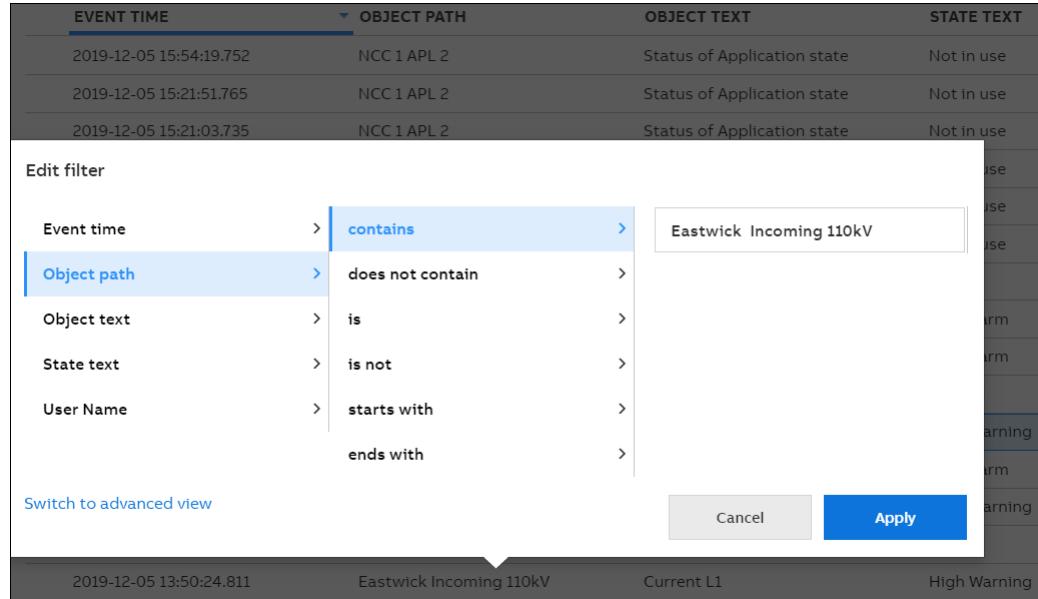


Figure 109: Creating a quick filter

To create a quick filter from the right pane:

1. Select an event to open the right pane.
2. Click the **General** tab in the right pane under event details.

- In the **General** tab, create filter for the selected event.
3. Click **Edit filter**.
An advanced filter dialog box opens with all the columns visible in the list with the preset values in the filter.
 4. Edit the conditions and operators.
 5. Click **Apply** to confirm the new filter.

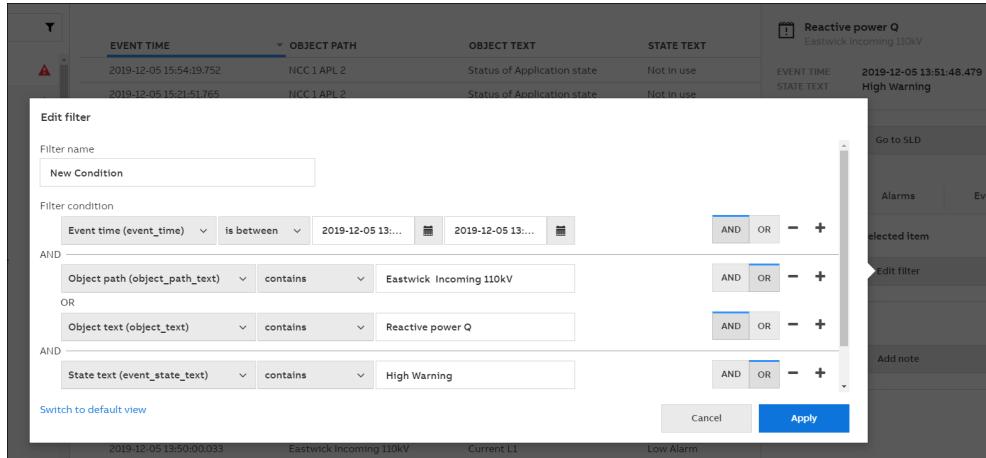


Figure 110: Creating a quick filter from the right pane

6.6.3 Filter renaming

To provide a custom name to the filter:

1. Click the filter tag bar above the alarm list.
2. Click **Switch to advanced view** in the edit filter dialog box.
3. Modify the name as required in the Filter name text box.
4. Click **Apply**.

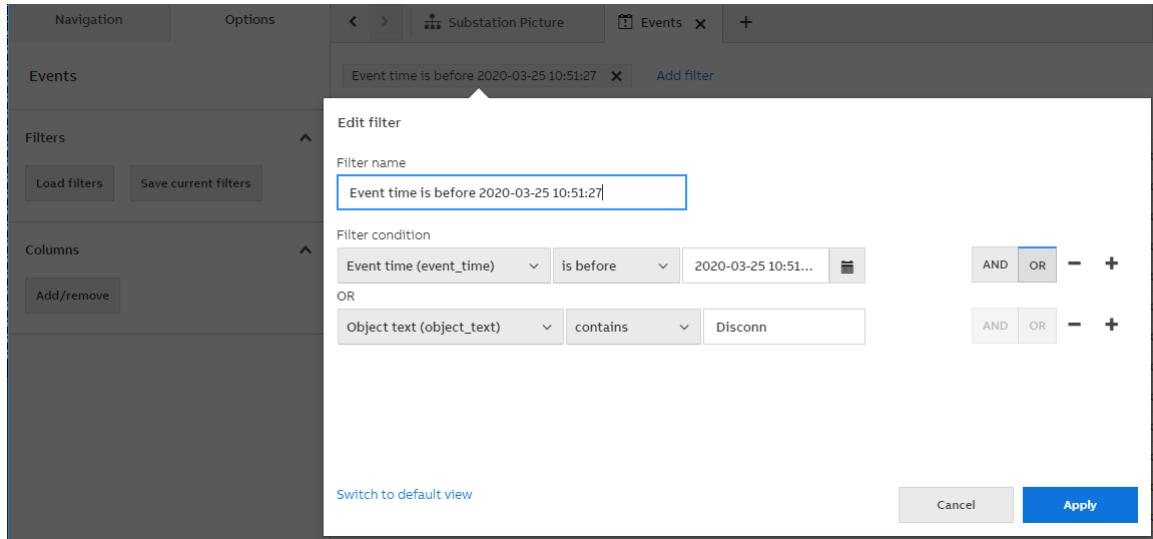


Figure 111: Filter renaming

6.6.4 Removing filters

To remove a filter, click the **x** icon next to the filter name on the filter tag bar above the event list.

6.6.5 Editing filters

To edit an existing filter:

1. Click on a filter name, on the filter tag bar above the alarm list, to open filter dialog box.
2. In the filter dialog box, edit the filter.
3. Click **Apply** to confirm the changes and to close the dialog box.
4. Click **Cancel** to discard the changes and close the dialog box.

6.6.6 Saving, loading, and deleting filters

To save a filter:

1. Click **Save current filters** in the **Options** tab.



Save a new filter by entering a new name in the **Save Filter** dialog box.

2. Click **Shared** to make the saved filter visible for all the application users.



Filters can be saved in **Personal** or **Shared** tabs depending on the data visibility to the user.

3. Click **Save** in the **Save Filter** dialog box.

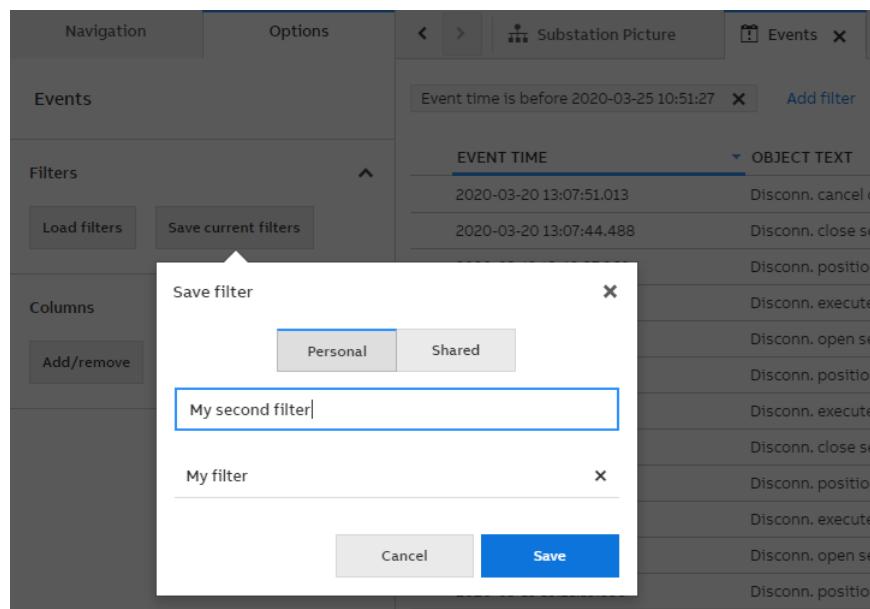


Figure 112: Saving filter

To load previously saved filter:

1. Click **Load filters** in the **Options** tab.
2. Click **Personal** or **Shared** to view either user specific or system wide filters.
3. Select a filter from the list in the **Load filter** dialog box.
4. Click **Apply** to confirm the selection.



The text box in the **Load filter** dialog box can be used to search the list of stored filters.

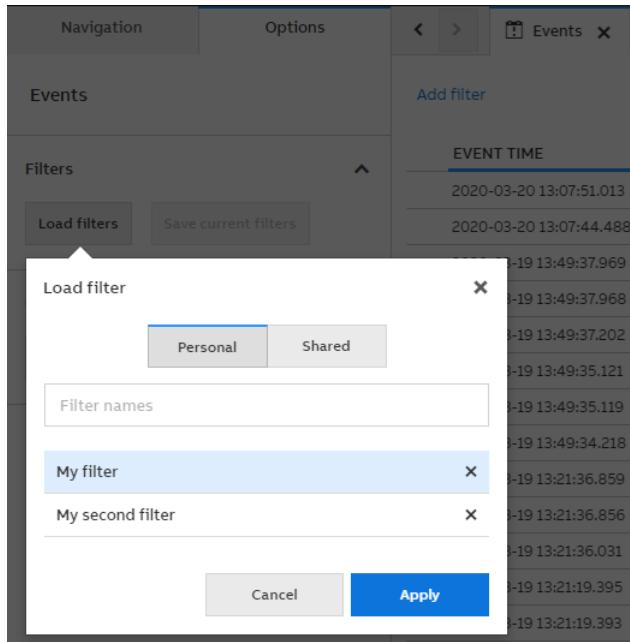


Figure 113: Loading filter

To delete a previously stored filter:

1. Click the **x** icon in the right side of a stored filter name, either in the **Save** or **Load** dialog box.
2. Click **Delete filter** to delete the filter in the confirmation dialog box.

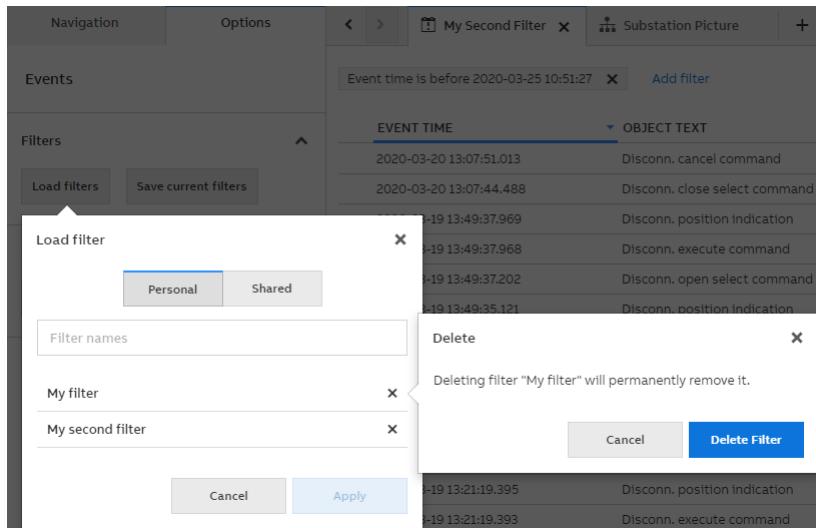


Figure 114: Deleting filters

6.7 Exporting Events

Events can be exported either in CSV or XML (SpreadsheetML) format. The exported files can be opened with common spreadsheet applications.

Event export is available in the **Options** tab in the left pane. To export events, click **Export events** under **Export** option and select the required format from the Export pop-up window. The export will include all the events that are loaded. If some rows are selected in the event list, it is possible to select whether to export the selected rows only or all rows. All rows include the rows that can be accessed by scrolling the list and not just the rows that are visible.

Export contains all the selected columns and three special columns. One of the three special column contains information if the event has a comment. Export will not contain the comment. The other special column contains the quality information related to the events value, and the last special column contains the quality information related to the timestamp.

It is possible to either download the export or copy the data to the clipboard.



The XML that is copied to the clipboard cannot be pasted to a spreadsheet application. It must be stored in a file with .xml extension, for example, with Notepad application.

Section 7 History

7.1 History

History is used for viewing historical values of a selected data point. The **History** view consists of three main blocks: **graph**, **finder**, and **statistics**.

- Graph shows the graphical representation of how values of selected data points have changed in the past.
- Finder is used for selecting time frame of presented data.
- Statistics shows main statistical information of selected data points in a table format.

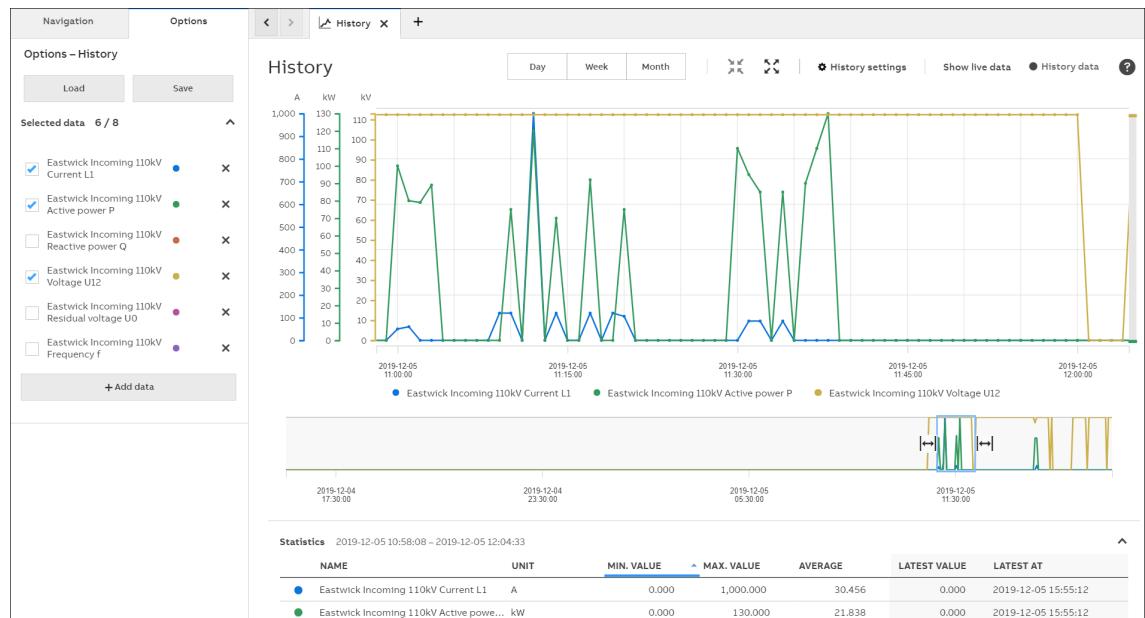


Figure 115: History overall view

7.2 Adding history data

When the **History** view is open in the content area, the **Options** in the left pane provides a method to add data that needs an inspection.

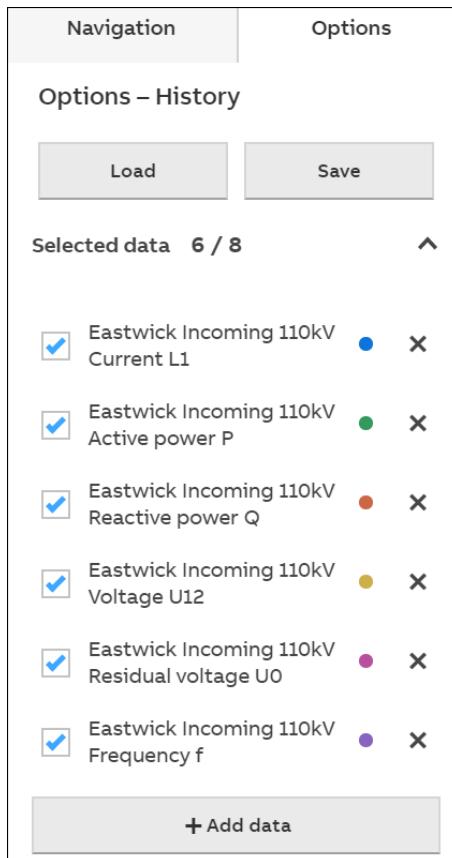


Figure 116: History options side

To add a data-point for inspection:

1. Click the + icon to open the dialog box for selecting the data.
2. Browse the data hierarchy and select the data points.
3. Click **Add** to add the data points to the view.

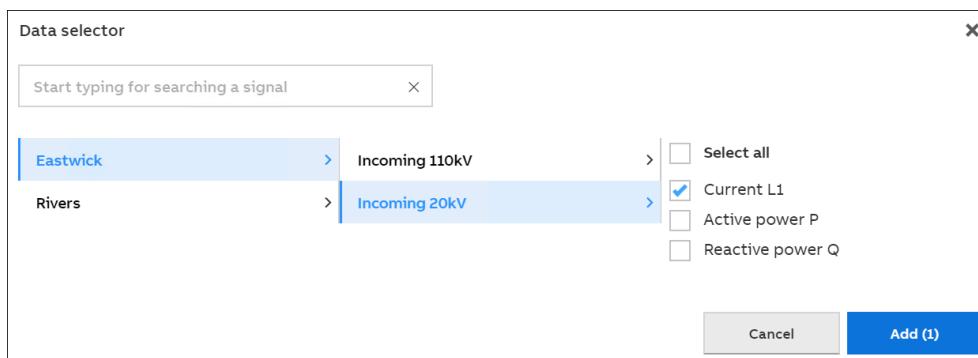


Figure 117: History data selector

The data is structured in a typical hierarchy which consists of region, station, bay, and the device. Each level contains data points that are added and inspected in the **History** view.



Eight is the maximum number of data points that can be added to the graph.

After adding the data to the **History view**, the display modifies (see [Section 7.4](#) for more information) as per the requirements. The configuration can be saved by clicking **Save** in the left pane of the **Options** view.

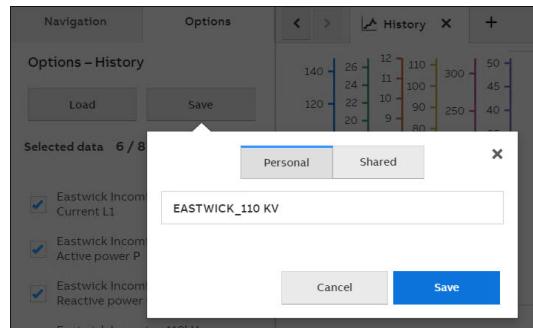


Figure 118: Save history configuration

The History configuration can be loaded by clicking **Load** (next to **Save**) and selecting the wanted configuration. The saved History configuration is also available for loading in the left pane, under the main History item.

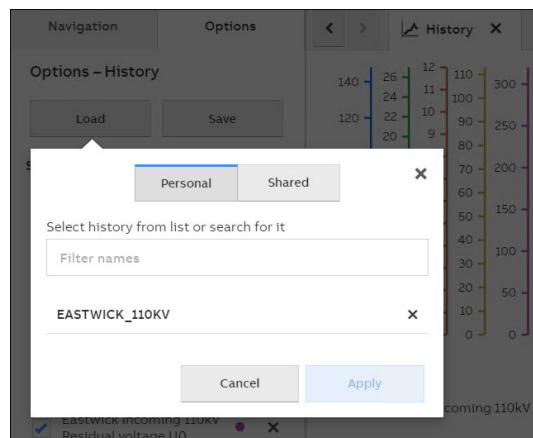


Figure 119: Load history configuration

7.3 Viewing history data

7.3.1 Graphic and finder basics

The historical values of the selected data are presented in the graph. The x-axis of the graph is always time, and the y-axis is the unit of a selected data point. The y-axis is colored with the same color as the corresponding line in the graph. The current value of the selected data is shown in the bar displayed on the right side of the graph.

The updates in the graph can be set to update automatically when the values are changing in the process. To enable live data updates, click **Show live data** on the top right corner of the **History** view.

The graph legend, showing the selected data items and respective color codes, is located below the graph.

The finder component below the graph legend is used for selecting a time frame for inspecting values in the graph. The finder time scale can also be modified to the required accuracy.

7.3.2 Inspecting values in graph

Received historical data values are indicated with the line markers in the graph. The data quality is visualised with different line formats:

- Solid line indicates good quality
- Dashed line indicates questionable quality
- Gray line indicates invalid quality

History and trends

- Valid data (line color taken from data source)
- Questionable data (line color taken from data source)
- Invalid data

Figure 120: History line visualisation

The current real-time data values are shown in the bar on the right side of the graph. The tooltip is shown when the mouse pointer hovers on top of the graph or on the current value bar. The common **Device state not reliable** emblem add-ons are shown in the tooltips for indicating the quality of the data.

7.3.3 Selecting time frame for inspecting values

The first step in selecting a proper inspection time frame in the graph is to set a proper time scale to the finder.

Choose any of the following to select the finder time scale:

- Click **History** settings to open the right pane and select a scale with quick buttons (**Day/Week/Month**).
- Click **Custom** to choose the scale by manually setting the start and end times.

The graph active time frame can be set with the finder by dragging the start and end time bars to the correct location. There are also buttons (**Day/Week/Month**) to set the graph active area below the finder. The finder time scale is automatically set to fit in the graph active area.

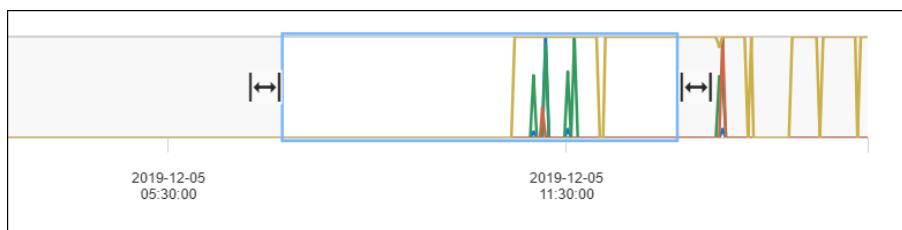


Figure 121: History finder

In **Live updating** mode, the finder end time is always set to the right-most position (current time). If the finder end time bar is moved away from the right-most position, **Live updating** stops and the mode is switched to **History data**.

7.3.4 Statistics of selected data

At the bottom of the **History** view, there is a table showing statistics of the currently selected data. The statistics contain the following information for each selected data. The accurate time frame is shown next to the table title.

- Name of the selected data point, including color code
- Data unit
- Minimum and maximum values of data
- Average value
- Latest value and time when it was received

Statistics 2019-09-24 09:31:55 – 2019-10-24 09:31:55						
NAME	UNIT	MIN. VALUE	MAX. VALUE	AVERAGE	LATEST VALUE	LATEST AT
● Eastwick Incoming 110kV Active power P	kW	0	26.35	12.12	24.41	2019-10-24 09:35:00
● Eastwick Incoming 110kV Current L1	A	0	147.8	68.04	137	2019-10-24 09:35:00
● Eastwick Incoming 110kV Frequency f	Hz	0	50.02	24.46	50.02	2019-10-24 09:24:00
● Eastwick Incoming 110kV Reactive power Q	kvar	0	11.61	5.374	10.84	2019-10-24 09:35:00
● Eastwick Incoming 110kV Residual voltage U0	V	0	320	156.5	320	2019-10-24 09:24:00
● Eastwick Incoming 110kV Voltage U12	kV	0	112.4	54.98	112.4	2019-10-24 09:24:00

Figure 122: History Statistics

7.3.5 Specific details of history data

The data specific right pane view can be opened by either clicking the data item in the graph legend, or by clicking the data item in the **Options** tab displayed in the left pane.

The header and primary sections of the data specific right pane displays the data point hierarchical name and the current value and unit.

The secondary sections of the data specific right pane displays the name, graph appearance, interpolation, and Y-axis scale. For more information see [Section 7.4.2](#)

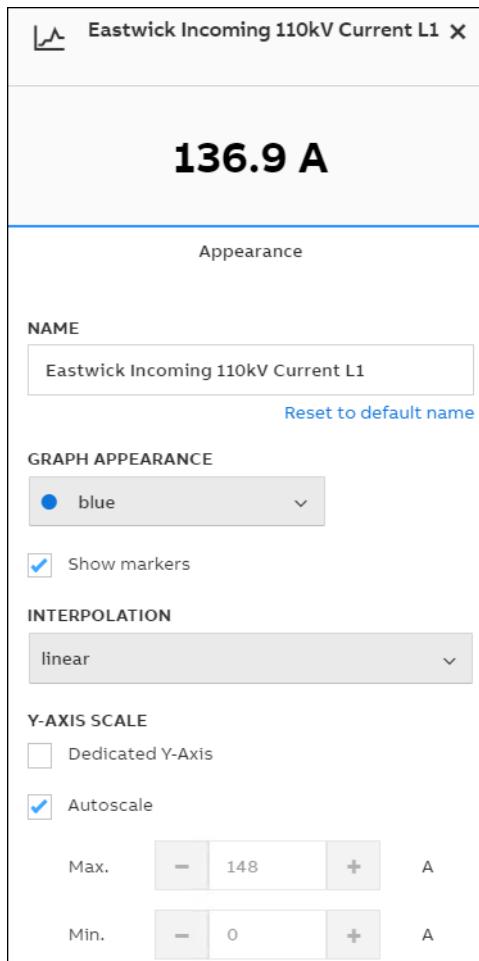


Figure 123: History data details pane

7.4 Adjusting history and data settings

Following are the two types of settings available related to the **History** view:

- General History setting affecting the appearance of the main **History** view. For more information see [Section 7.4.1](#).
- Data appearance setting affecting the presentation of individual data presented in the **History** view. For more information see [Section 7.4.2](#).

7.4.1 Modifying general history settings

The general history settings are accessed from the **History settings** from the top right corner of the **History** view. The following settings are available:

- **History name:** Change the title text shown in the top left corner of the **History** view.
- **Update mode:** Set live data updates to on or off.
- **Graph type:** Select from the drop-down list, if the used graph type is either **Sparkline** or **Area**.
- **Finder scale:** Change the time scale of the finder area (full area, not selected area).
- **Graph active area:** Change the time scale of the active area of the graph.
- **Grid lines:** Add vertical and horizontal lines to the graph.

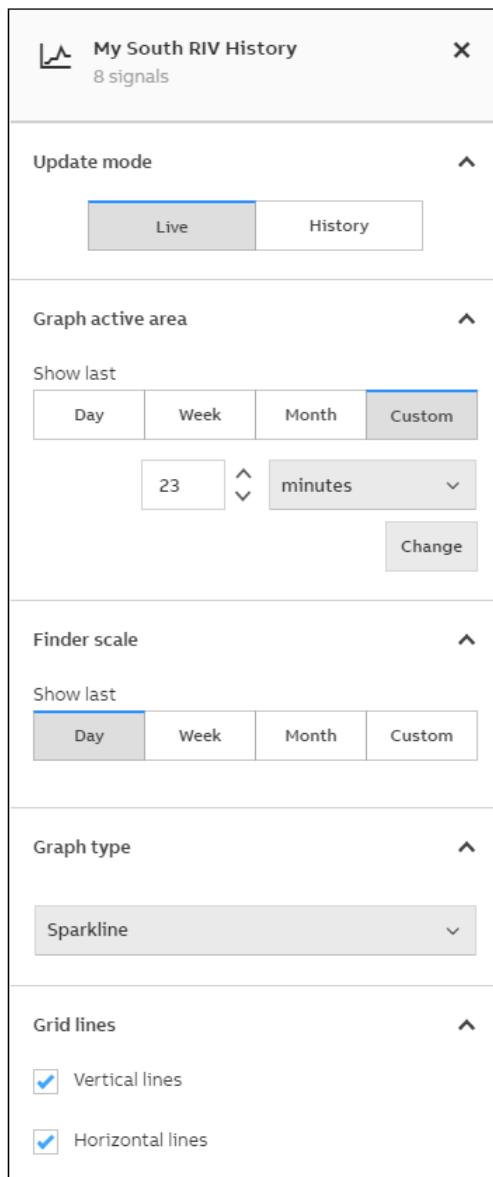


Figure 124: General history settings

7.4.2 Modifying data presentation in graph

The data appearance settings can be accessed by opening the data specific right pane view either by clicking the data item in the graph legend or by clicking the data item in the left pane options view. The following settings are available under data appearance:

- **Name:** Possibility to give a custom data point name shown in the left pane and in the graph legend.
- **Graph appearance:** Change the color of the data representation in the graph and hide line markers representing the received value samples.
- **Interpolation:** Change the data representation in the graph. Supported presentations are:

- Linear: Line is drawn directly between the data samples.
- Step-after: Line is drawn horizontally until a new data sample is received, and then vertically to the received value.
- **Y-axis scale:** Select **Dedicated Y-Axis** if each data must have a separate Y-axis. The axis with the same unit is merged if the **Dedicated Y-Axis** check box is cleared. Clear **Autoscale** check box to set the scale of Y-axis manually.

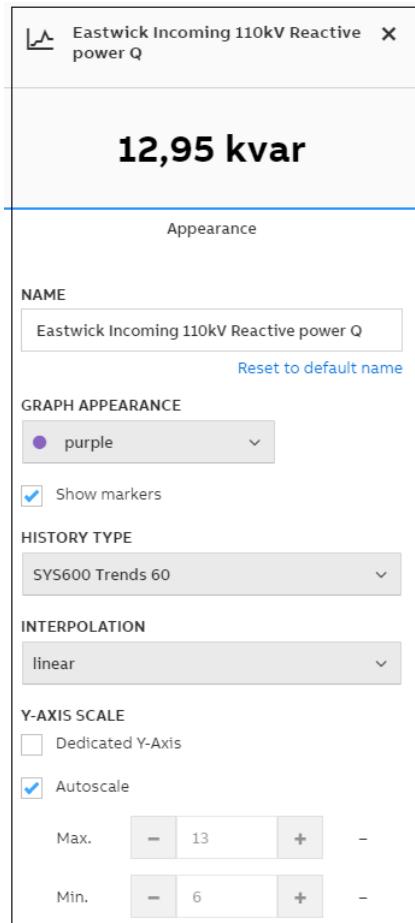


Figure 125: History data appearance settings

7.5 Exporting history data

History data can be exported either in CSV or XML (SpreadsheetML) format. The exported files can be opened with common spreadsheet applications.

History data is available in the **Options** tab in the left pane. To export events, click **Export history data** under **Export** option and select the required format from the Export pop-up window. The export will include all the data points used to draw the graph. Export contains signal name, timestamp, value, and quality columns. If there are many data points, then some data points are filtered out. Typically, each signal has less than 1000 data points in the exported file.

It is possible to either download the export or copy the data to the clipboard.



The XML that is copied to the clipboard cannot be pasted to a spreadsheet application. It must be stored in a file with .xml extension, for example, with Notepad application.

7.6 Resizing history view automatically

To enable automatic **History** view resizing when the right pane is opened, select the **Resize view automatically** check box in the **Options** section.

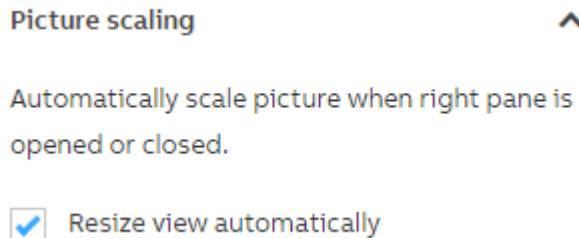


Figure 126: Resize history view automatically option

Section 8 System overview

System overview is used for supervising the system health. The **System overview** consists of three separate viewpoints to the system: **IED communication**, **Network hardware**, and **SYS600 applications**.

- **IED communication** view lists the SYS600 communication nodes and IEDs connected to them. Communication and alarm states are visualised for each node and IED.
- **Network hardware** view lists the network devices that are connected via SNMP (Simple Network Control Protocol) to the system. The communication and alarm states are visualised for each device.
- **SYS600 applications** view shows SYS600 servers and applications, and data shadowing and mirroring connections between the applications.

The device communication states are visualised with the icons as shown in [Figure 127](#).

Connection status icons

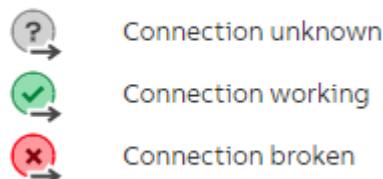


Figure 127: Communication state icons

IED communication and **Network hardware** views contain a header that shows the overall count of the devices, the number of devices that are connected successfully, and the number of devices that have connection issues (that is, unknown or broken connection). Click the header to extend and view more detailed information.



Figure 128: Devices summary header

IED communication and **Network hardware** views can have different layout modes for keeping the most relevant information visible. The most suitable mode depends on the number of devices in the system.

- **Collapsed view** mode shows only the devices that have issues (either connection issue or alarm). Successfully connected devices can be set visible and to hide the connected devices, click a link at the end of the communication line section.
- **Expanded view** mode shows all the devices without possibility to hide any information. This mode is optimal for the systems with small number of devices.
- **Compressed view** mode shows all the device statuses in a compressed way. The device names are hidden. This mode is optimal for systems with very large number of devices.

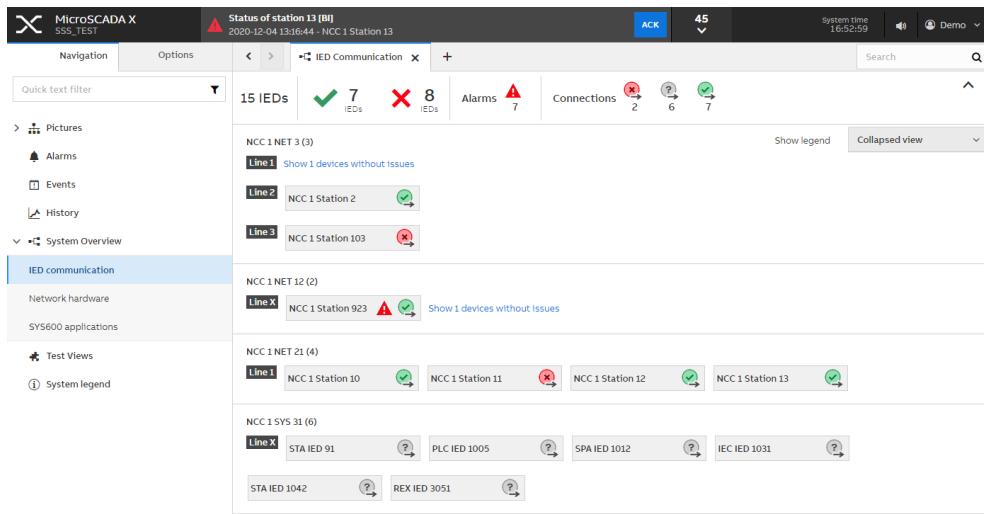


Figure 129: Collapsed view

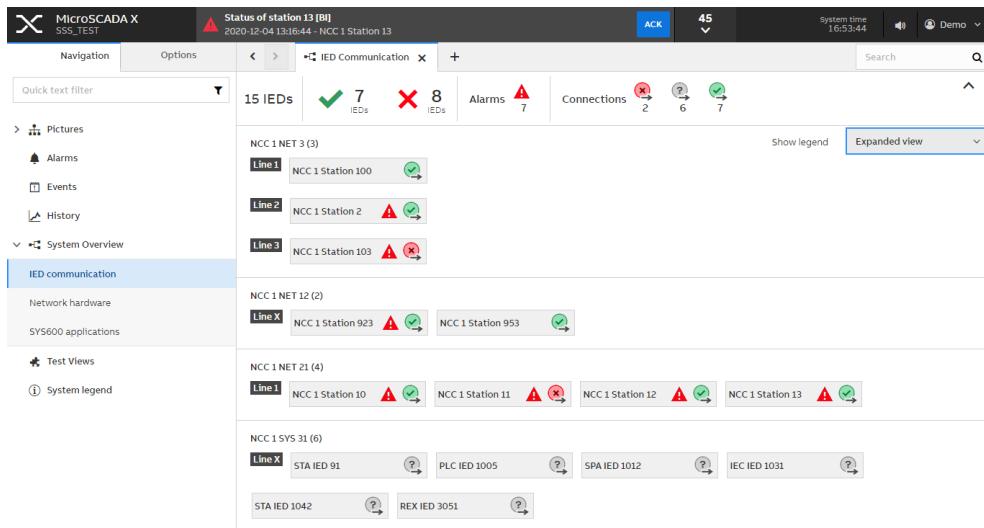


Figure 130: Expanded view

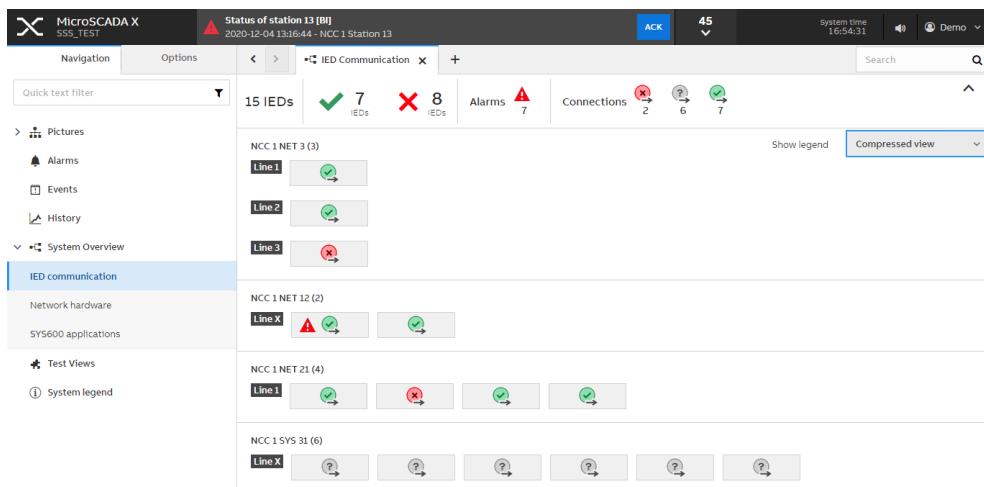


Figure 131: Compressed view

8.1 Supervising IED communication

The **IED communication** view lists SYS600 communication nodes in the system and IED devices connected to them. The communication nodes (for example PC-Net or IEC 61850 client) are shown as separate sections. The communication line connected to the nodes appear inside the black rectangle box (for example, **Line1**) in the sections.

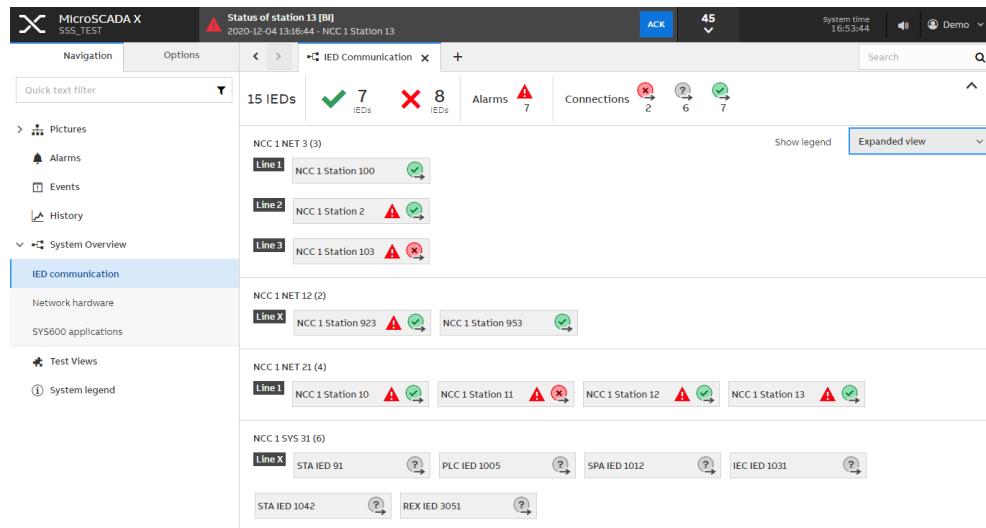


Figure 132: IED communication view

Select an item in the **IED communication** view to see the detailed information in the right pane.

The right pane of the IED device shows the common right pane header section with a device type icon, names, and status icons. The secondary section of the IED device right pane consists of **Communication tree** in the **Overview** tab, **Related alarms** and **Related events** in the **Alarms** and **Events** tabs.

Communication tree visualises modules, lines and the selected IED device connected to the current SYS600 server (that is, where Workplace X session is opened to). The selected IED is always placed at the bottom and the current SYS600 server on the top. The communication status and alarms are visualised for each node. The **Communication tree** helps to identify the possible connection problems that are located.

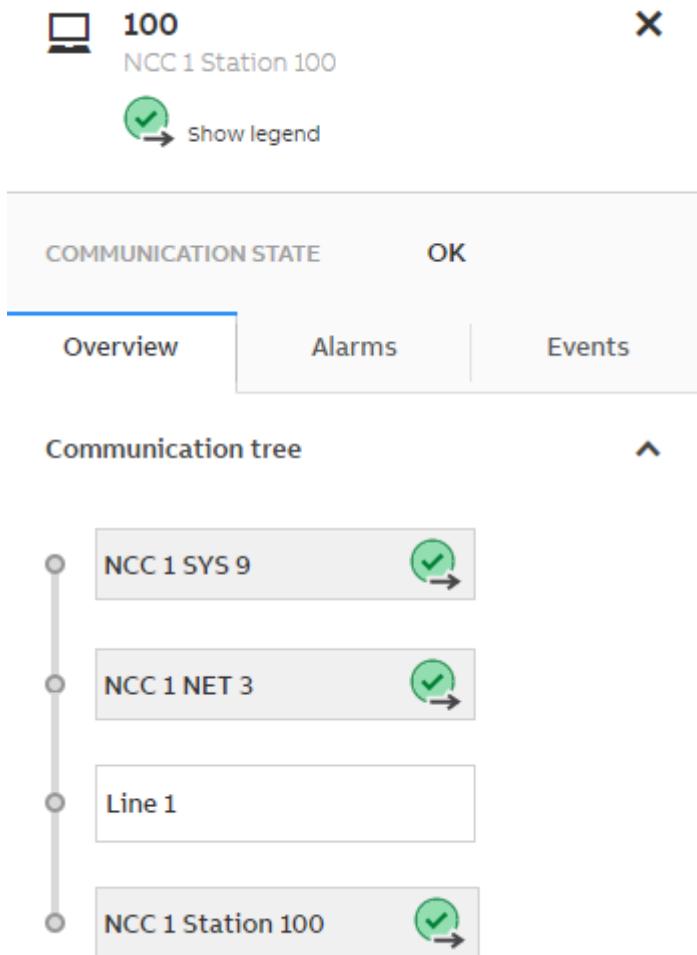


Figure 133: IED device right pane

8.2 Supervising network devices

Network Hardware view lists all the network devices connected to the system via SNMP (Simple Network Control Protocol). Based on the device type, the devices are organized in the sections.

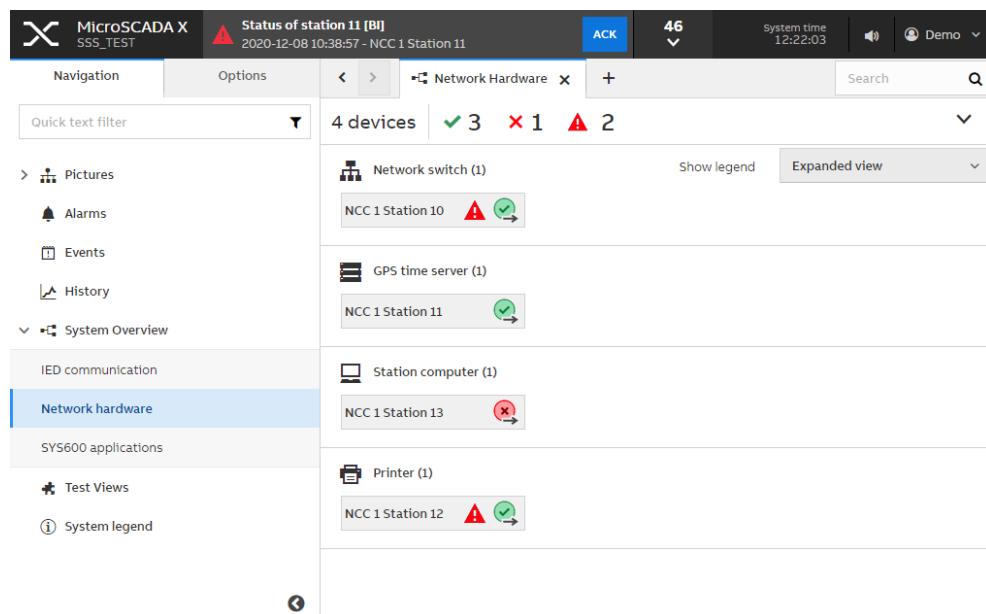


Figure 134: Network Hardware view

Select a device item in the **Network Hardware** view to see the detailed information about the device in the right pane.

The network device right pane shows the common right pane header section with a device type icon, names, and status icons. The secondary section of the network device right pane consists of **Properties** in the **Overview** tab and **Related alarms** and **Related events** in the **Alarms** and **Events** tabs.

Properties lists the network device properties. The name and state of each property are shown in the textual form. The alarms and quality related to the property value are visualised with the common icons.

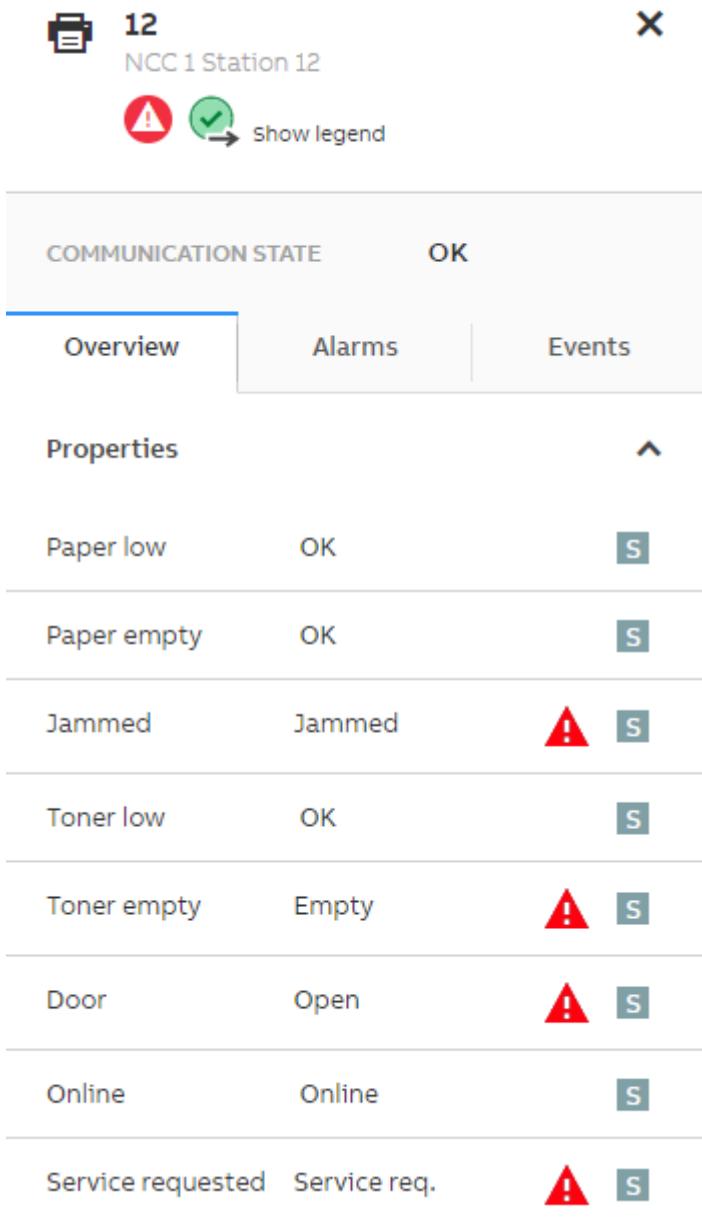


Figure 135: Network device right pane

8.3 Supervising SYS600 applications

SYS600 Applications view shows the computers connected to the servers that have shadowing or mirroring connections to application where the Workplace X is connected. The SYS600 applications and their states are listed for each SYS600 server. The servers are placed in the columns representing the data flow direction: **INCOMING DATA**, **CURRENT SERVER**, and **OUTGOING DATA**. The current server (that is, where the current Workplace X session is opened to) is always placed in the middle.

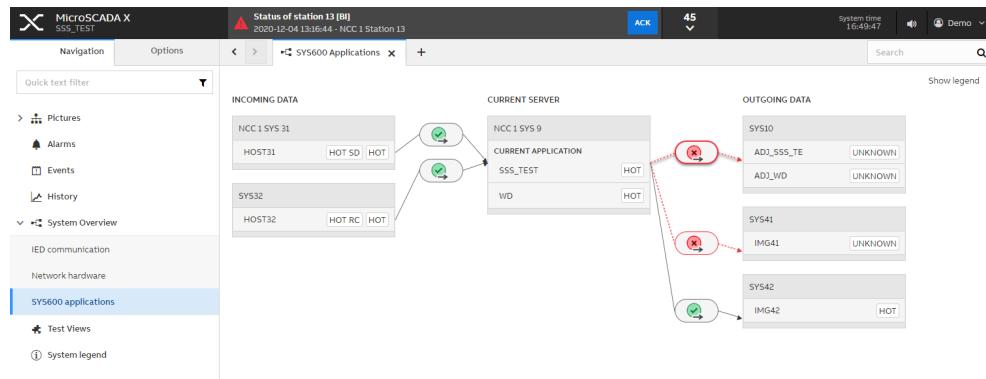


Figure 136: SYS600 applications view

There are two types of data connections:

- **Shadowing connection** is used for copying data from a hot application to a cold application. This enables the hot stand-by (redundancy) functionality.
- **Mirroring connection** is used for copying data between SYS600 servers, applications, and other external servers.

The red line and borders of the connection element are indicating that the connection is not working as expected.



Only one **Shadowing connection** is available at a time and the connection is from the **CURRENT APPLICATION** to its hot stand-by pair.



Only **Mirroring connections** pointing to the **CURRENT APPLICATION** are shown.

SYS600 connection types



Mirroring connection



Shadowing connection



Problematic connection

Figure 137: SYS600 connection types

Select an application or a connection item in the **SYS600 Applications** view to see the detailed information about the application in the right pane.

The application right pane shows the common right pane header section with a device type icon, names, and status icons. The secondary section of the application right pane consists of **Related alarms** and **Related events** in the **Alarms** and **Events** tabs.

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