



COPADATA
do it your way

zenon manual

Screens

v.8.00





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1. Welcome to COPA-DATA help

ZENON VIDEO-TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel (https://www.copadata.com/tutorial_menu). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to documentation@copadata.com.

PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com.

LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com.

2. Screens

Screens are central elements of a project. They display the configured equipment, inform, and provide user elements.

Screens consist of vector elements or dynamic elements. These are linked with variables or functions. Screens are configured in the main window of the Editor.

zenon offers a large number of pre-defined screen types, such as alarm message lists, Extended Trend and many others. The advantage of these screen types is that the desired functionality is connected to

the screen type. You only need to create the screen type and you immediately have a variety of pre-defined functions available.

You can find an overview of screen types in the Types of screen (on page 265) section.

MAIN WINDOW

In the main window documents such as screens, reports, etc. are displayed and edited. The main window is the only window that cannot be hidden.

OPEN MULTIPLE DOCUMENTS PARALLEL.

You can display multiple screens in the main window at the same time. The screens can be selected with tabs at the top of the main window and can be positioned via options in menu item **Windows**. When switching the tabs, the elements in the properties window are amended to the selected tab.

To close open screens, use the keyboard shortcut **Ctrl+F4**, the context menu or the command **Screen-> Close**.

CONTEXT MENU DOCUMENTS

Right-click on the tab of a document in order to open the context menu.

Parameters	Description
Save	Saves the document.
Close	Closes the document.
Close all others	Closes all other documents.

POSITION ELEMENTS IN THE SCREEN

Activate elements by clicking on the symbol in the Toolbar elements and open them with the mouse in the main window.

There are multiple possibilities for moving the elements:

- ▶ Move quickly: Click element and position it with the mouse.
- ▶ Position exactly: Click element and position it with the arrow keys.
- ▶ Turning: Rotate the element with the "handle" on the **Reference point** as desired.

POSITIONING OF ELEMENTS IN THE EDITOR

Elements can be assigned visibility levels in the Editor and also be hidden (on page 264) individually.

Attention: Control elements are always displayed at the uppermost position. That also applies if they are covered by other elements in the Editor. This ensures that they can always be reached.

ADJUSTMENT TO RESOLUTION

Screens and their elements are automatically adjusted to the screen resolution in Runtime. This can be prevented. To display screen elements in the size and position configured in the Editor, activate the **Do not adapt element to screen resolution** property for the corresponding screen in the **Display** group.

3. Graphics quality

In zenon the quality of the displayed graphics can be tuned to the resources for the system. This setting is made using the project setting **Graphics quality** in group **Graphical design**. These settings only have an effect on Runtime. **DirectX** is always used in the Editor.

Possible options are:

- ▶ **Windows Basic:** Basic graphics settings. Recommended for resource-weak hardware.
- ▶ **DirectX Software:** Graphics calculations are done by the CPU. Depending on the graphic you can use more than one CPU. Using **DirectX Software** may cause a high CPU workload.
- ▶ **DirectX Hardware:** A part of the graphic calculation is done by the graphics card by which the performance is increased. If this setting is not supported by the system used, zenon automatically switches to **DirectX Software**. In principle, **DirectX Hardware** is preferable and **DirectX Software** should only be used if necessary.



Attention

- ▶ **DirectX** is not available under Windows CE.
- ▶ **DirectX** cannot be used for **OCX**.

DIRECTX

DirectX allows a higher quality of graphics than **Windows Basic**.

To be able to use **DirectX**, several requirements must be fulfilled:

Requirement	Description
DirectX Hardware or DirectX Software must be activated.	In the project settings you must select DirectX Hardware or DirectX Software for property Graphical design .
The operating system must support DirectX 11.1.	<p>DirectX hardware and DirectX software only works on operating systems that support DirectX11.1.</p> <p>If the system does not support DirectX 11.1, it automatically switches to Windows Enhanced.</p> <p>The current DirectX- Runtime must be installed. For zenon it is installed together with the setup. For the zenon Web Client it must be installed manually.</p>
The screen or element must support DirectX.	Only supported elements or screens can be displayed with DirectX.
For DirectX Hardware the minimum requirements must be fulfilled.	<p>You can find details on the minimum requirements in the System requirements when using DirectX chapter . If they are not met, it automatically switches to DirectX Software.</p> <p>If the operating system does not provide any hardware acceleration (e.g. Remote Desktop), it may not be possible to use DirectX Hardware.</p>

DIRECTX 11.1

The following is applicable with regard to the operating system when using DirectX 11.1:

- ▶ Windows 8 or higher:
DirectX 11.1 is available natively.
- ▶ Windows 7 SP1 and Server 2008 R2 SP1:
A Windows service pack must be installed.
- ▶ Windows 7 and Server 2008 R2 without service pack and lower:
DirectX 11.1 cannot be used.

INSTALL SERVICE PACK FOR WINDOWS 7 SP1 AND SERVER 2008 R2 SP1

To install the Service Pack:

1. Download the platform update KB2670838 from the Microsoft support website.
2. Select the version that corresponds to your operating system:
 - 32-Bit
 - 64-Bit

3. Execute the corresponding installation file.

Note: This only concerns Windows 7 SP1 and Server 2008 R2 SP1. DirectX 11.1 is already present on more recent versions. The update cannot be installed on older versions.

3.1 DirectX: Improve graphics performance

There is a graphics card in each computer. This is important for bringing the graphics to the screen.

If the graphics card has dedicated graphics memory, the graphics card has its own working memory and it is thus a separate graphics card and not an integrated graphics processor. Graphics cards with dedicated graphics memory and a graphics processor are normally used in the form of plug-in cards in the computer. These generally offer high performance.

An integrated graphics processor is located in the main processor directly and cannot be removed. This generally does not have its own graphics memory and thus needs part of the working memory. Such graphics cards generally offer low graphics performance.

High graphics performance is necessary for good and quick visualization of screens. The graphics performance is improved by **DirectX**, however it can be the case that high-resolution screens with many elements and effects lead to longer waiting times.

In this case, the graphics performance can be additionally improved in that you are aware of the following things.

POSSIBLE INFLUENCES ON THE GRAPHICS PERFORMANCE:

EFFECTS

The application of effects for elements can have an effect on the graphics performance when the following properties are used:

- ▶ **Shadow size** for values not equal to 100%
- ▶ **Blur** for values greater than 0
- ▶ **Spread** for values greater than 0



Possibilities for increasing the graphics performance

- ▶ If possible, use alternative designs for which these effects are not needed.

NUMBER OF ELEMENTS

The performance requirements increase with the number of elements configured.



Attention

Note the following information when adding elements into symbols:

- ▶ Symbols are mostly used more than once; as a result of this, each element added has a corresponding effect on performance.

For a better overview and increased graphics performance, the following is recommended in this case:



Possibilities for increasing the graphics performance

Display from several elements:

- ▶ If possible, combine several elements into one element.

Examples:

- ▶ Use a rectangle element to display a rectangle and not a polygon element.
- ▶ Combine several individual polygon elements into one polygon element.

Limitations on the extent of the screen:

- ▶ Distribute elements to several screens that you each allocate a task.
- ▶ Only call up the screen that the user needs for the current task.

Hiding elements for specific zoom levels:

Different details are required at different zoom levels.

- ▶ You should therefore set the visibility of the elements for certain zoom levels.

NESTED ELEMENTS (SYMBOLS, COMBINED ELEMENTS AND FACEPLATES)

An element that is in a screen directly offers higher performance than an element that is in a nested element, for example in a symbol.



Possibilities for increasing the graphics performance

- ▶ Refrain from unnecessary hierarchical complexity if possible.

COLOR GRADIENTS

Color gradients require more power than simple filled colors.



Possibilities for increasing the graphics performance

- ▶ Elements with color gradients configured that are only difficult to see in the screen or are barely visible sometimes only have a minor visual effect. In this case, these can be replaced with a simple fill color.
- ▶ Refrain from color gradients by using other design alternatives, such as flat design.

DYNAMICS

The use of dynamics for elements can, without a visible effect, lead to an increased requirement for performance.

Examples of dynamics:

- ▶ **Panning,**
- ▶ **Scaling,**
- ▶ **Rotation.**



Possibilities for increasing the graphics performance

- ▶ Only use dynamics if it is really necessary.
- ▶ Use static means instead of dynamics if the desired effect is the same.
- ▶ Avoid an unnecessary high value precision for the dynamics.

RESOLUTIONS AND ELEMENTS SIZES

The number of screen points for the display can have a direct effect on the graphics performance.



Possibilities for increasing the graphics performance

- ▶ Avoid unnecessarily high graphics resolutions.
- ▶ Reduce the resolution:
 - Reduce the monitor resolution.
 - Reduce the element sizes.

OVERLAPPING OF ELEMENTS

If an element has to be redrawn due to a change, this can lead to elements underneath and above this also having to be redrawn.

**Possibilities for increasing the graphics performance**

- ▶ Avoid an overlapping of elements that changes often and quickly.
- ▶ Avoid a refresh rate that is too quick with permanent value changing.

LARGE GRAPHICS FILES

Large graphics files need, due to the large number of pixels, corresponding power.

**Possibilities for increasing the graphics performance**

- ▶ Amend the graphics to the output size.
- ▶ Avoid high resolutions.
- ▶ Use zenon elements instead of graphics files if possible.

NUMBER OF OPEN SCREENS

Several screens open at the same time can require more graphics performance.

**Possibilities for increasing the graphics performance**

- ▶ Only call up required screens.
- ▶ Close screens that you no longer need.
- ▶ Create task-specific overview screens of many detail views.

TRUNCATIONS

The use of rounded corners for elements can require more graphics performance.

**Possibilities for increasing the graphics performance**

- ▶ Refrain from using rounded corners if possible.
- ▶ Instead, use design alternatives such as flat design.

Note: It is recommended that test of graphics performance and ergonomics are carried out on the respective target platform even in early phases.

3.2 DirectX: Comparison between DirectX hardware and DirectX software

In principle the graphic output between DirectX hardware and DirectX software is identical. The same graphic properties are supported for screens and screen elements with both graphics options.

When selecting the graphics options DirectX hardware or DirectX software, the following is to be noted:

DIRECTX HARDWARE

Allows additional hardware acceleration due to a DirectX-compatible graphics processor (GPU). This can be in the form of an integrated graphics processor or ideally a dedicated graphics card integrated into the computer system. A DirectX-compatible graphics card ensures that certain graphics operations are sped up. This subsequently leads to the computer system being under less load and a potential performance improvement.



Hint

For extensive visualization, it is recommended that corresponding graphics support in the form of a powerful graphics card is used, in order to create suitable requirements for ergonomic functionality. You can find out more details on the minimum requirements for the use of DirectX in the System requirements for the use of DirectX chapter.

DIRECTX SOFTWARE

If DirectX hardware is not available as an option, the DirectX software graphics option can be used. After selecting this option, DirectX uses emulation to execute the graphics operations on the CPU of the computer. As a result of this, it is possible that there is an increased load on the system, particularly the CPU and the memory.

Note: The freely-available computer performance of a single-core or multi-core CPU is used to the full with this graphics option.



Hint

For extensive visualizations, it is recommended that graphics support in the form of a powerful multi-core CPU is used, in order to create suitable requirements for ergonomic functionality. You can find out more details on the minimum requirements for the use of DirectX in the System requirements for the use of DirectX chapter.

3.3 DirectX: Error Handling

Errors are output in the Diagnosis Viewer.

DIRECTX IS NOT INITIALIZED.

If DirectX cannot be initialized during the call up of a screen or in continuous operation, an attempt is made to initialize DirectX again. During this process, zenon Editor and Runtime continue to run normally. You can attempt to rectify the problem in this time. Possible causes and solutions can be found out with the Diagnosis Viewer.

A progress bar appears during reinitialization. To cancel the reinitialization:

1. Click on the **Cancel** button.
2. Confirm the error message that is shown to you.
3. Depending on whether you have canceled the process, either the editor or Runtime is ended.

Note: Errors that make reinitialization of DirectX impossible are announced by means of an error message.

DIAGNOSIS VIEWER

DirectX provides individual messages in the Diagnosis Viewer with:

- ▶ an error message.
- ▶ possible reasons for the error,
- ▶ error codes.

The display take place in an own module **DirectX**. For errors, the error text is displayed in the **Error** text field; for warnings and debug information, the corresponding messages are displayed in the **General** text field:

- ▶ For the successful call up of a screen at least one DEBUG success message is displayed.
- ▶ Warning point out events which can influence the operation.
- ▶ If an error occurs which cannot be fixed, an error message is displayed.



Information

If a message is not completely displayed in the table in the Diagnosis Viewer, open the entry via double click to display the whole message.

CHECK LIST FOR ERROR CHECKING

A check to see whether DirectX is working can be carried out by activating the debug messages in the Diagnosis Viewer. A corresponding message is shown if the check is successful.

- ▶ Are DirectX-specific warnings or error messages displayed in the Diagnosis Viewer?
- ▶ Is `DirectX Hardware` or `DirectX Software` set in the **Graphics quality** project property?
- ▶ Are the minimum requirements for DirectX met? You can find details on the minimum requirements in the `System requirements when using DirectX`.
- ▶ Is DirectX supported by the screen or the element?
- ▶ Does the display with `Windows Basic` work properly?
- ▶ Does the display work with another driver?
- ▶ Does the display work with a graphics card of another manufacturer?

4. Project manager context menu

Menu item	Action
New screen	Creates a new screen with the default name 'Picture' as a standard screen type.
Export all as XML	Exports all entries as an XML file.
Import XML...	Imports entries from an XML file. Note: Existing frames are not replaced during XML import using the Screens node. Existing frames are overwritten via the Frames node during XML import. In this case, all screens and their elements are adapted to the new frame.
Editor profile	Opens the drop-down list with predefined editor profiles.
Help	Opens online help.

5. Detail view of toolbar and context menu



CONTEXT MENU

Menu item	Action
New screen	Adds a new screen to the list and puts the focus onto this entry.
Open screen	Opens the main window for the screen highlighted.
Create standard function	Creates a screen switch function (on page 475) and opens the corresponding dialog. Only available if a screen has been selected in the detail list.
Jump back to starting element	Click to go to back the element from which you jumped to the screen.
Copy	Copies the selected entries to the clipboard.
Paste	Pastes the content from the clipboard. If an entry with the same name already exists, the content is pasted as " Copy of... ".
Delete	Deletes selected entries after a confirmation from list.
Expand/collapse	Allows all or selected nodes to be expanded or collapsed. Selection: <ul style="list-style-type: none"> ▶ Expand all ▶ Collapse all ▶ Expand selected ▶ Reduce selected
Export selected as XML...	Exports all selected entries as an XML file.
Import XML	Imports entries from an XML file. Note: Existing frames are not replaced during XML import using the Screens node. Existing frames are overwritten via the Frames node during XML import. In this case, all screens and their elements are adapted to the new frame.
Export screen/symbol as a graphic file...	Exports the screen/symbol as a graphics file. The file selection dialog offers the corresponding graphics formats supported on the system. In principle, all Windows Imaging Component (WIC) codecs that support <code>saving</code> are provided for selection. The size of the graphics results from the screen or symbol to be exported.
Create template for screen type	Opens dialog for creating a new template (on page 274) for adding control elements in the screen type.
Remove all filters	Removes all filter settings.

Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line. Only cells that can be edited can be selected.
Replace text in selected column	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window.
Help	Opens online help.

Note: Subscreens of faceplates (on page 284) linked in the screen container cannot be edited. These can only be displayed and copied.

6. Creating a screen

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ using the screen creation dialog (activated per default)
- ▶ The creation of a screen using the properties

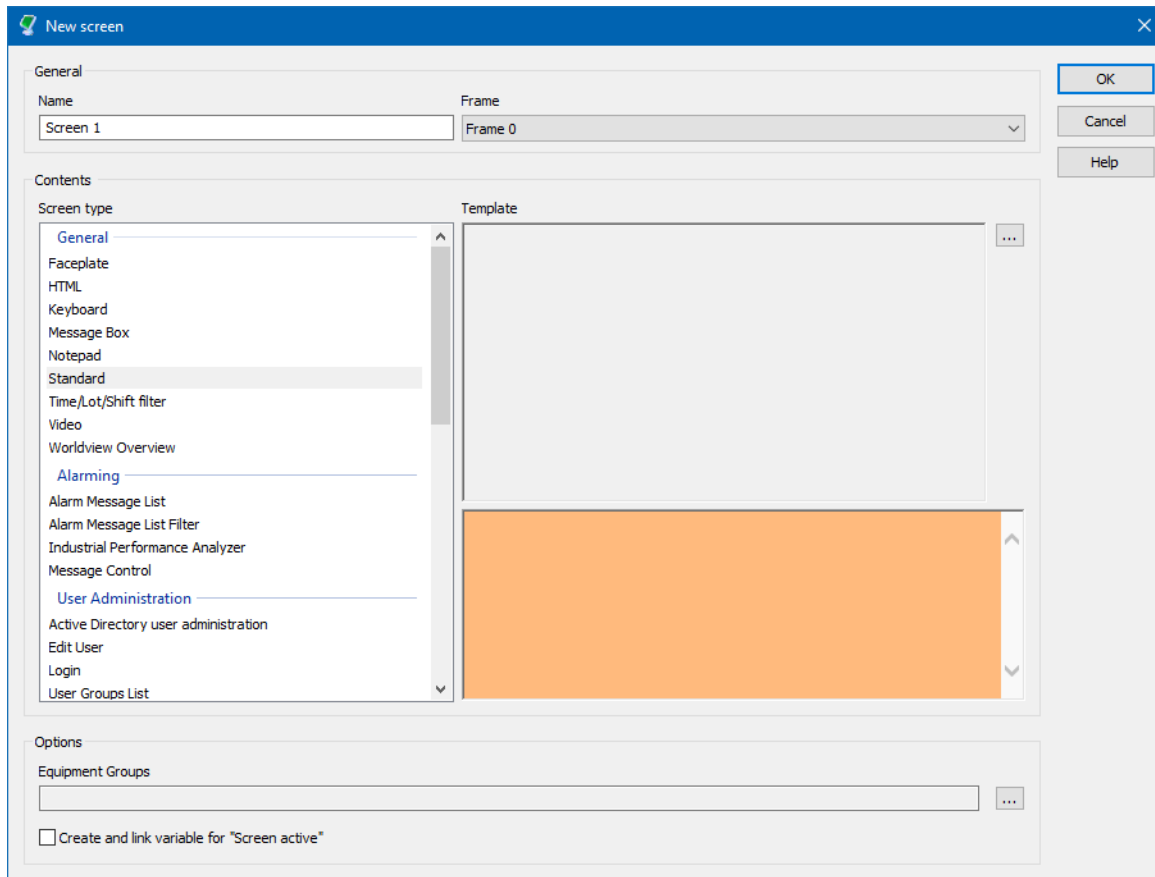
Note: Screens take the size of the frame on which they are based. Sizes smaller than the frame are ignored. If screens are defined as larger than the frame, they become a Worldview. For navigation and scrolling in Worldviews, a **Worldview overview** screen, the Touch control and the mouse can be used.

6.1 Create screen with screen creation dialog

To open the screen creation dialog:

1. Select, in the **Screens** node or in the detail view of the screens, the **New screen** command in the context menu or in the toolbar.
The screen creation dialog is opened.
2. Configure your screen by selecting the settings for your screen from the available possibilities.
The screen type **Standard** is pre-selected by default.
3. Confirm your settings by clicking on **OK**.
The screen will be created.

STRUCTURE OF THE SCREEN CREATION DIALOG



GENERAL

Parameter	Description
Name	Naming the screen
Frame	Selection possibilities for the applied frame. Each screen is assigned to a frame and displayed in the screen area defined by the frame (on page 203).

CONTENTS

Select the desired screen type with a mouse click under **screen type**. The screen types are arranged according to the respective topic in dialog **New screen**. For more information about screen type **Standard** and about other screen types refer to chapter **Screen types** (on page 265). You can find an alphabetic arrangement and a short description about the available screen types in chapter **Special screen types** (on page 266).

TEMPLATE

In this area a scaled-down display of the screen template is shown.

To make a selection for several deposited templates:

1. Click on the ... button.
The **Select template** dialog is opened.
2. Select the desired template with a mouse click.
3. Confirm your selection by clicking on **Apply**.

DIALOG HELP

The dialog help informs you about the configurable properties in dialog New screen and the individual screen types.

OPTIONS

In this area you can link the equipment groups to the screen.

How to link an equipment group to a screen:

1. Click on the ... selection button.
The **Select equipment group** dialog is opened.
2. On tab **Equipment Modeling** open the node of the equipment group by clicking on the **plus**.
The entries located in the node are displayed
3. Select the desired equipment group with a mouse click.
4. Click on the **Add** button.
The equipment group is added.
5. Confirm your selection by clicking on **OK**.
The equipment group is linked to the screen when the screen is created.

Checkbox "**Screen active**"- create and link variable

Enable checkbox "**Screen active**"- create and link variable in order to automatically create a variable and link the screen to the variable.

6.1.1 Deactivate the screen creation dialog

As of zenon version 8.00 the screen creation dialog is available and activated per default.

To deactivate the screen creation dialog:

1. In the menu bar of the Editor go to **Extras** and **Settings....**
The **Settings** dialog is opened.
2. On tab **Settings** under **Editor options** deactivate the checkbox of property **Use assistant**.
Note: By deactivating this property other creation dialogs are also deactivated!
3. Confirm the modification by clicking on **OK**.

Now the screen creation dialog is deactivated. You can create a screen according to the procedure described in chapter Create screens via properties (on page 24).

6.2 Create screens and engineering via properties

Procedure for creating a screen:

1. Select, in the **Screens** node or in the detail view of the screens, the **New screen** command in the context menu or in the toolbar.
2. A new standard screen is created.
3. If required, select a special screen type in the properties or in the detail view.
4. Configure the properties such as size, frames (on page 203) on which it is based, interactions, etc.
5. Add special elements using the Control elements menu.

7. Toolbar screens

A toolbar is available for editing screens. Per default, it is displayed below the menu bar.



Symbol	Description
Save screen	Save the current screen.
Save all	Saves all changed screens.
Cut	Cuts the selected element and stores it in the clipboard; works across projects, too. Only available if an element has been selected.
Copy	Saves a copy of the current screen to the clipboard. Only available if an element has been selected.
Paste	Inserts (i.e. pastes) a screen from the clipboard. Only available if the clipboard contains data.
Transfer format	Transfers the formatting of the element that has just been selected to the next element that is selected.
Redraw screen	Refreshes the display.
Undo	Allows undoing up to 100 actions. By default, 10 actions can be undone. Define the number of actions: Options -> Settings -> Settings -> number of undoable actions. Enter a number between 1 and 100.
Edit mode	Switches from Zoom to Edit mode .
Zoom	<p>Provides three zoom modes:</p> <ul style="list-style-type: none"> ▶ Variable zoom: A predefined value can be selected from the combobox, or you can directly enter any value between 15% and 1600%. ▶ Zoom tool: It is possible to zoom directly in the screen at the click of a mouse with the two magnifier symbols (+ and -). Click on the magnifier symbol to switch to zoom mode. Now click in the screen to change the size. The Ctrl key switches between the reduce/enlarge. The defined zoom is saved for each single screen. To end the zoom mode, click on the Editing Mode symbol in the Elements tool bar. ▶ Amend: Automatically selects a zoom factor between 15 - 1600%, so that the complete screen is shown in full and in proportion in the Editor. The current zoom factor is shown in the combobox. <p>Keyboard combinations:</p> <ul style="list-style-type: none"> ▶ Reduce view: Keys: Ctrl + Shift + - ▶ Enlarge view: Keys: Ctrl + Shift + + ▶ Set view to 100%: Keys: Ctrl + Alt + 0 ▶ Amend the view to the space available in the Editor and display it proportionally: Keys: Ctrl + 0 <p>Control using the mouse:</p> <ul style="list-style-type: none"> ▶ Ctrl + mouse scroll wheel downwards: Reduce view

	<ul style="list-style-type: none"> ▶ Ctrl + mouse scroll wheel upwards: Enlarge view Reduction/enlargement is carried out under 100% in 25% steps, under 800% in 50% steps and over 800% in 100% steps
Help	Opens online help.
Options for toolbar	<p>Clicking on the arrow opens the submenu:</p> <p>Active: Toolbar is displayed.</p> <p>If the toolbar is not displayed, it can be activated using the Options -> Toolbar menu.</p> <p>Note: For free placed toolbar (undocked from the Editor) options are not displayed. The toolbar can be closed by clicking on button X.</p>

8. Toolbar Elements



Symbol	Function
Edit mode	Switches from Zoom to Edit mode .
Ellipse/Circle	With frame and fill color, type of frame and fill pattern (circle).
Arc of a circle	With definable line thickness, line color and line type.
Segment of a circle	Draws circle segment with an opening angle of 180° (changeable), definable line thickness, color and line type.
Line	With definable line thickness, line color and line type.
Polygon	With frame and fill color, type of frame and fill pattern.
Polyline	With line type and line color.
Rectangle	With frame and fill color, type of frame and fill pattern.
Pipe	With frame and fill color, type of frame and fill pattern
Static text	With font color and selection of the type of font.
Button	Operating field in button display.
Combined element	Display of one or more variables on a screen point in color or symbol (chained characters).
Universal slider	Slider control or rotating control.
Switch	Simple command initiation or set value input element
Combo-/Listbox	Link values of variables with text messages.
Command Processing element	Only available with a license for SICAM 230
Button for screen alarming	Only available with a license for SICAM 230
Numeric value	Display values numerically.
Bar display	Display value as bar graph.
Pointer instrument	Value in instrument display.
Dynamic text	Display limit value texts
Trend element	Simple line graphics
WPF element	Displays valid WPF XAML files.
ActiveX Element	Insert ActiveX elements.
Clock	Show date and time.
Options for toolbar	Clicking on the arrow opens the submenu: Active: Toolbar is displayed. If the toolbar is not displayed, it can be activated using the Options -> Toolbar menu.

	Note: For free placed toolbar (undocked from the Editor) options are not displayed. The toolbar can be closed by clicking on button X.
--	---

9. Elements context menu

Commands adapted to the situation are available to you in the context menu.

The scaled-down display decreases the length of the context menu to the executable options.

The order of the entries displayed in the context menu complies with the available options and does not have to match the tabular listing of the individual commands.

You can also get to these commands using menus and toolbars.

Command	Description
Symbol	<p>Opens drop-down list Symbols (on page 31). The following commands are available depending on the symbol state:</p> <ul style="list-style-type: none"> ▶ Create element group ▶ Resolve ▶ Changing to individual editing mode/leaving individual editing mode ▶ Insert in existing element group ▶ Convert symbol into element group ▶ Edit in symbol editor ▶ Inserting in the symbol library
Select element	<p>Displays all elements located under the mouse pointer which are positioned on top of each other in this area. Thus makes it possible to quickly select a single element. Select the desired element by clicking on it.</p>
Element Position	<p>Opens the drop-down list for changing the position of the element:</p> <ul style="list-style-type: none"> ▶ Foreground: Moves selected elements into foreground ▶ Background: Moves selected elements into background ▶ Forward: Moves selected elements one layer up ▶ Backward: Moves selected elements one layer down.
Alignment	<p>Opens the drop-down list for aligning elements.</p>
Arrange	<p>Opens the drop-down list for rearranging elements.</p>
Create style group from element	<p>Makes it possible to create an own style group from the styles used in the element.</p>
Linked elements	<p>Opens the drop-down list with dynamically linked elements, such as: Variables, functions, fonts, symbols etc.</p>
Replace links...	<p>Opens the dialog to replace links.</p> <p>Example: tank 1 temperature is replaced by tank 2 temperature</p>
Cut	<p>Cuts the selected objects and stores them in the clipboard.</p>
Copy	<p>Copies selected objects</p>
Duplicate	<p>Duplicates the selected object including the recently made changes.</p> <p>Example: If you duplicate a button and then move it, the next duplication will be automatically inserted by an offset corresponding the same direction and the same distance.</p>

Paste	Pastes copied or cut objects from the clipboard.
Paste in same position	Pastes copied or cut objects form the clipboard.
Delete	Deletes selected objects
Transfer format (on page 156)	<p>Transfers the properties of a selected element to another one / multiple elements.</p> <ul style="list-style-type: none"> ▶ Transfer to an element: <ul style="list-style-type: none"> Click on element with original properties -> Click on Transfer format symbol or command in the context menu -> Click on target element: Properties are transferred ▶ Transfer to multiple elements: <ul style="list-style-type: none"> Select source element -> Select target element with the <code>Ctrl</code> key held down (source and target element are highlighted) > Click on the Transfer properties symbol or command in the context menu -> Properties of the source element are transferred to the target elements. <p>Source and target object determine which properties are transferred.</p> <p>If several elements were chosen as source, the properties of the first selected element are transferred.</p>
Full-screen mode	<p>The full-screen hides all remaining windows and shows only the main window with all opened documents (screens, reports, ...) in full-screen mode.</p> <p>Note: The Control elements menu can still be called up in full-screen mode.</p> <p>The full-screen mode can be closed by:</p> <ul style="list-style-type: none"> ▶ the displayed button for closing the full-screen mode ▶ the short key <code>Shift+F9</code>
Show grid	Switches the grid on or off.
Use grid	<p>Switches the orientation of elements to the grid on or off.</p> <p>On: All objects are automatically aligned with the grid.</p> <p>Note: The <code>Ctrl</code> key deactivates this setting temporarily. If the <code>Ctrl</code> key is held when moving an element, the element is not aligned to the grid.</p>
Use magnetic points	<p>Switches magnetic points on or off.</p> <p>Use: If you move an object near the handling point of another object, it snaps in place at the handling point.</p>

Zoom	Allows changes to the resolution size in fixed steps between 15% and 1600%. Amend: automatically selects a zoom factor between 15 - 1600%, so that the complete screen is shown in full and in proportion in the Editor.
Export screen/symbol as a graphic file...	Exports the screen/symbol as a graphics file. The file selection dialog offers the corresponding graphics formats supported on the system. In principle, all Windows Imaging Component (WIC) codecs that support <code>saving</code> are provided for selection. The size of the graphics results from the screen or symbol to be exported.
Insert vector graphics	Opens the dialog for inserting an external vector graphic. Supports some versions of the file types DXF and PLT . Note: Import of vector graphics is not available for the 64-bit Editor.
Properties	Opens the property window for the selected element.
Save screen	Saves the screen.
Save all screens	Saves all screens.
Redraw screen/symbol	Refreshes the display.
Create template for screen type...	Creates a template for a screen type.
Edit text	Makes it possible to edit text if a button was selected when the context menu was opened.
Help	Opens online help.

9.1 Symbols

Commands adapted to the situation are available to you in the context menu. The commands displayed in the context menu comply with the state of the selected symbol or symbols.

The scaled-down display decreases the length of the context menu to the executable options. The order of the entries displayed in the context menu complies with the available options and does not have to match the tabular listing of the individual commands.

The following commands can be available in the context menu:

Command	Description
Create element group	Creates an element group. The keyboard shortcut <code>Ctrl + G</code> can also be used for this.
Resolve	Resolves an element group into its screen elements. The keyboard shortcut <code>Ctrl + Shift key + G</code> can also be used for this.
Changing to individual editing mode/leaving individual editing mode	Switches to the individual editing mode or back to the symbol editing mode. The individual editing mode enables you to edit individual elements of a symbol.
Insert in existing element group...	Inserts symbol into an existing element group.
Insert into symbol library...	Opens the dialog (on page 254) to add an element group from a screen of a symbol library. In doing so, the element group is converted into a symbol and inserted as a symbol. The element group in the screen is retained as an element group.
Convert symbol into element group	Converts a symbol into an element group.
Edit in symbol editor	Opens a symbol in the symbol editor in order to edit it there.

10. XML export and XML import

EXPORTING SCREENS

The included variables and functions are exported with the screens. The export file for the screens (on page 9) has the following sections:

- ▶ Screens
- ▶ Frames
- ▶ Symbols
- ▶ Variables
- ▶ Functions

To export screens:

1. highlight the desired screens
2. In the context menu of the detail view, select the **Export selected as XML...** command
Alternatively: in the context menu of the **Screens** node, select the **Export all as XML** command

3. the selection dialog for the saving location is opened
4. select the desired saving location
5. assign a name
6. pay attention to file type XML
7. confirm by clicking on the **Save** button

The selected screens are exported to an XML file and can be imported in this or in other projects at any time.

IMPORTING SCREENS

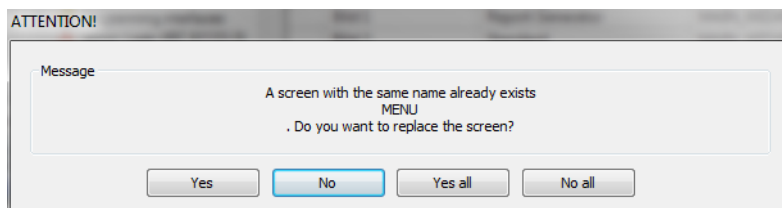
To import screens:

1. in the context menu of node **Screens** or in the detail view **Screens** select the **Import XML** command
2. the selection dialog for the saving location is opened
3. navigate to the saving location of the desired XML file
4. Select the desired file
5. confirm the import by clicking on the **Open** button

The screens are imported.

NAME CONFLICTS DURING THE IMPORT

At the import of a screen the name (attribute **ShortName**) which is stored in the XML file is used for the name of the screen which is created. If a screen with the same name already exist, the import is halted and an error message is displayed:



Parameter	Description
Yes	The screen described in the error message is replaced by the screen from the XML file at the import. If a new conflict occurs, the error message is displayed again.
No	The screen described in the error message is not imported. The existing screen is maintained. If a new conflict occurs, the error message is displayed again.
Yes, all	The screen described in the error message is replaced by the screen from the XML file at the import. This setting is used automatically when errors due to using the same name occur. All affected screen are replaced.
No, all	The screen described in the error message is not imported. The existing screen is maintained. This setting is used automatically when errors due to using the same name occur. All affected screen are maintained.

Note: Only the **ShortName** is used. The file name does not matter for the name of the screens which should be imported. Thus it cannot be used to solve the conflict.

VARIABLES AND FUNCTIONS IN SCREENS

Dynamic elements (on page 34) and Frames (on page 203) are automatically imported together with the screens. Variables and functions have to be imported manually before from the same file.

Only variables and functions of the first level are treated, i.e. variables and functions that are directly linked to the screen. As on the one hand variables can be linked to functions (e.g. setting values) but on the other hand functions can be linked to variables (e.g. limit value functions), it can be necessary to first import the variables, then the functions, and then the variables again. Then all links should work correctly.

Example: A screen contains a button with a function **Send value to hardware** to a variable. The function is imported with the screen but not the variable.



Information

Here we recommend using the XML Import Wizards.

11. Screen elements

You use two types of screen elements in zenon:

1. static vector elements
2. Dynamic elements

VECTOR ELEMENTS IN ZENON

Element	Properties
Ellipse (on page 105)	With frame and fill color, type of frame and fill pattern
Circle	Select the ellipse symbol and hold down the <code>Shift</code> key when drawing; with frame and fill color; type of frame and fill pattern
Arc of a circle (on page 105)	With definable line thickness, color and type
Segment of a circle (on page 106)	With definable line thickness, color and type
Line (on page 108)	With definable line thickness, color and type
Polygon (on page 108)	With frame and fill color, type of frame and fill pattern
Polyline (on page 110)	With line type and color (also filling pattern and color for an area description)
Square	select Rectangle symbol, hold down the <code>Shift</code> key when drawing; frame and fill color; type of frame and fill pattern
Rectangle (on page 111)	with frame and fill color, type of frame and fill pattern
Rounded rectangle (on page 111)	with frame and fill color, type of frame and fill pattern
Pipe (on page 112)	With frame and fill color, type of frame and fill pattern
Static text (on page 114)	With font color and selection of the type of font



Hint

Hold down `Shift` when drawing one dimensional elements (**lines, pipes**) in order to draw the elements horizontal or vertical.

Hold down `Shift` when drawing two dimensional elements in order to draw the elements square or circular.

DYNAMIC ELEMENTS IN ZENON

Element	Function
ActiveX (on page 50)	Inserts any desired ActiveX controls. These must already be installed on the computer.
Bar display (on page 53)	Displays the size of a signal in bar form. In doing so, the length of the bar changes with the signal size.
Command Processing element (on page 54)	Makes it possible to send commands for the Command Processing module. Requires license for SICAM 230.
Button Screen Alarm (on page 54)	Enables alarming with color and flashing via the screen. Requires license for SICAM 230.
Bitmap button	<p>Links a graphics file (pixel graphics: *.bmp, *.jpg, *.gif, and *.png or vector graphics: *.wmf) with a button.</p> <p>Warning! This element is only available if the project property Create Runtime files for has been set to lower than 6.50. This function has been integrated into the button element from version 6.50.</p>
Button (on page 54)	<p>Enables actions such as "execute function" or "write set value" to be instigated. It can display text and graphics and be created as a transparent object via other elements.</p> <p>Warning! If the project property Create Runtime files for is set to less than 6.50, only texts are displayed in the Runtime. The engineering for the graphical design of the button for display in the Runtime is not supported.</p> <p>Graphics and the invisible function must then be configured with the bitmap button and the invisible button elements. You then find these two elements at the bottom of the elements drop-down list.</p>
Combined element (on page 57)	Displays conditions of variables via symbols, screens and texts in graphic form also be used as a switch or as a button.

Combo-/Listbox (on page 95)	Displays a text in a combo box or a list box regardless of variable value. When an entry is selected, the attendant value is sent or the attendant function is executed.
Dynamic text (on page 102)	Displays the value of a string variable in alphanumeric form or the current limit value text of numeric variables.
Message element	<p>Reads text from a text file, depending on two variables, and displays this.</p> <p>Warning! This element is only available if the project property Create Runtime files for has been set to lower than 7.50. This property is no longer supported from version 7.50.</p>
Multibin	<p>Enables, independently of variable values, a graphic to be displayed or symbols to be colored and a status text to be provided.</p> <p>Warning! This element is only available if the project property Create Runtime files for has been set to lower than 7.50. This property is no longer supported from version 7.50.</p>
Switch (on page 113)	Displays values of a binary variable and modifies these.
Move symbol (on page 137)	<p>Enables a symbol to be moved, rotated and changed in size regardless of variable values.</p> <p>Is required for project configurations under Windows CE.</p>
Trend element (on page 115)	Displays values in the form of trend curves.
Clock (on page 117)	Displays the current time and date.
Universal slider (on page 118)	<p>Provides sliders in different graphical forms.</p> <p>Notes on the <code>moving scale</code> style: Values can only be amended in Runtime by means of a dialog. Changing a value using the slider directly is not possible.</p>
Invisible button	<p>Transparent object, with which actions such as "execute function" or "write set value" can be triggered.</p> <p>Warning! This element is only available if the project property Create Runtime files for has been set to lower than 6.50. This function has been integrated into the button element from version 6.50.</p>
WPF element	Displays WPF-XAML files in zenon.
Numeric value (on page 122)	Displays the value of a variable in numerical form.
Pointer instrument (on page 123)	Displays the value of a variable in the form of an analog measuring tool with a indicator as display element.
Status element	<p>Transfers properties from linked variables to a symbol and displays statistical limit value texts.</p> <p>Warning! This element is only available if the project property Create Runtime files for has been set to lower than 7.50. This property is no longer supported from version 7.50.</p>

**Hint**

*Hold down **Shift** when drawing elements in order to draw the elements in square form.*

11.1 Engineering

In this section, you can find information on:

- ▶ Vector elements in zenon
- ▶ Dynamic elements in zenon
- ▶ Insert into the main window
- ▶ Define properties
- ▶ Change element size
- ▶ Rotate element
- ▶ Line height
- ▶ Visibility
- ▶ Ambiguous project configuration

**Hint**

You have many key combinations available when editing screen elements. You can find details in the help, in the graphics key combinations (on page 172) section.

VECTOR ELEMENTS IN ZENON

You create vector elements in zenon with the character editor. Select the desired element in the Elements toolbar (on page 26) and place it in the main window using the mouse. Configure the properties with the **Properties** window. The element must be selected in the main window to do this.

IMPORTING YOUR OWN VECTOR GRAPHICS

Vector elements that have been created in external programs can be imported as a screen and included. To do this, go to Files-> Graphics -> Add file in the project manager.

Note: Import of vector graphics is not available for the 64-bit Editor.

DYNAMIC ELEMENTS IN ZENON

You create dynamic screen elements in zenon with the character editor. Select the desired element in the Elements toolbar (on page 26) and place it in the main window using the mouse. Configure the properties with the Properties window. The element must be activated in the main window to do this. Graphic elements can be activated directly here through variables. For many elements, a configuration dialog is shown when they are being created.

DEFINE PROPERTIES

For many dynamic elements, a configuration dialog opens to select variables or functions that define the elements in runtime. The properties can also be set independently of the configuration dialog in the properties window. They can be changed at any time here. The corresponding element must be activated in the main window to do this.

You can also select several elements at the same time and assign these common properties. For this, the following applies:

- ▶ Different values for different properties are marked in red.
- ▶ Properties which cannot be changed jointly are deactivated.

You also receive help instructions for the properties when the elements are created. To do this, activate the properties list in zenon.

DISPLAY IN THE MAIN WINDOW

You can obtain information on a dynamic element in the main window by:

Tool tip when the mouse is moved over it:

- ▶ Element type
- ▶ Element name
- ▶ Function name/function type
- ▶ Linked variables

In the status bar on activation:

- ▶ Mouse pointer position
- ▶ Element type
- ▶ Element name
- ▶ Start point
- ▶ Width/height

11.1.1 Define properties

For elements in the main window, the properties are set in the Property window. The corresponding element must be activated in the main window to do this.

You can also select several elements at the same time and assign these common properties. For this, the following applies:

- ▶ Different values for different properties are marked in red.
- ▶ Properties which cannot be changed jointly are deactivated.

You also receive help instructions for the properties when the elements are created. To do this, activate the help window in zenon.

11.1.2 Element: Insert into the main window

The selected element can be selected several time in the main window and arranged there. Which element is selected and therefore active is shown by a symbol under the peak of the mouse pointer.

To add an element:

1. Select the desired element by clicking on it.
2. Drag the mouse to the desired location in the main window.
3. Click the left mouse button and drag the element up.
4. Release the mouse button as soon as you have reached the desired size for the element.

Exception: Polyline, Polygon and tube

- ▶ A mouse click inserts a new supporting position
- ▶ A double-click or the `Esc` key stops pulling



Attention

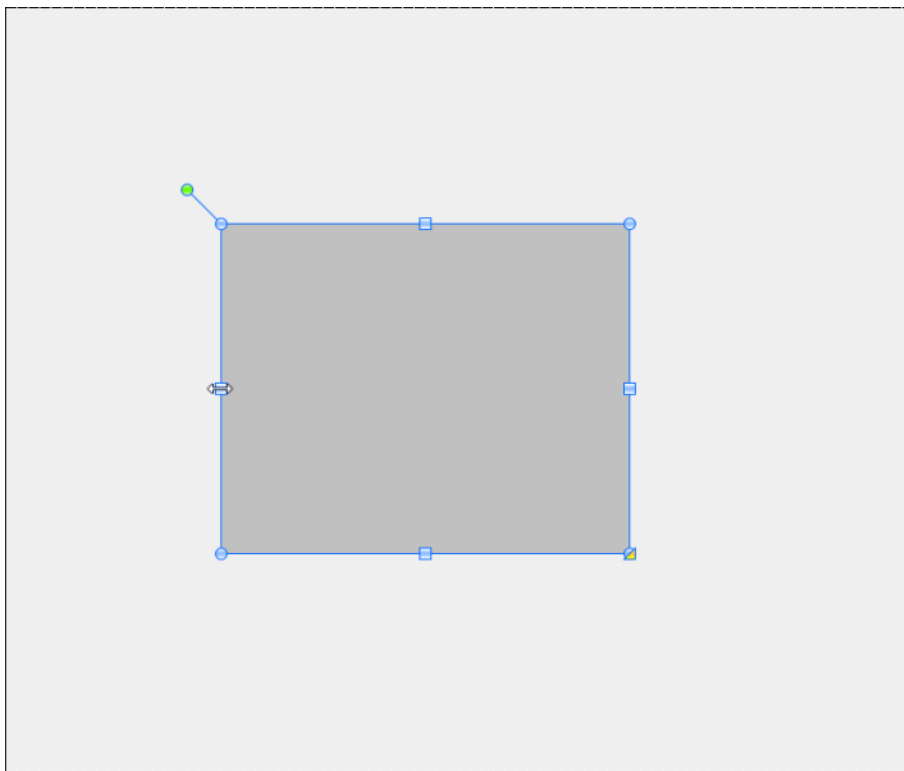
Each element must have a unique ID. If several elements with the same ID are used in a screen, all duplicates are removed during compilation. If, for example, a button is copied and inserted into the same screen, it has the same ID. The copy is removed during compilation.

Exception: Several containers can be created in a `Faceplate` screen.

11.1.3 Element: Change size

In order to change the size of an element, you can use the mouse, keyboard, properties or a dialog:

- ▶ With the mouse:
 - a) Click on one of the handles of the element frame.
 - b) Drag the element to the desired size.
- ▶ With the keyboard:
 - Activate the desired sizing handle (mouse pointer must be over the sizing handle).
 - Drag with the help of the arrow keys:
 - By pressing an arrow key you change the position by 1 pixel.
 - With the `Shift` key: + arrow key: By pressing an arrow key you change the position by 10 pixel.
- ▶ With the property window: In the property group **Position** you can enter the position and the size of the element accurate to the last pixel.
- ▶ With a dialog: Double clicking a handle opens a dialog in which you can enter the position accurate to the last pixel.



Note: If, for the **Graphic size** property, `original size` has been selected for the value with the element **multibin**, **combined element**, **button** or **switch**, then the width and height of the respective graphics file can no longer be changed.

11.1.4 Rotate element

Elements can be rotated freely. The pivot point is set with the properties in the group **Reference point**.

You set the rotation angle:

- ▶ With the mouse:
Click on the element and rotate it with the help of the blue sizing handle.
- ▶ Via a property:
Use the property **Rotation angle [°]** in the group **Position**
- ▶ With a dialog:
Double-click on the green sizing handle to open a dialog. You can enter the rotation angle in the dialog.



Information

Window-based screen elements such as **ActiveX**, lists or **combobox/listbox** cannot be rotated in Runtime. Configuration in the Editor is possible for **ActiveX**, but this has no effect on the display in Runtime.

11.1.5 Visibility

Visibility determines whether an element or status is shown in Runtime. The visibility of an element in Runtime is defined by the properties on the **Visibility/flashing** group. The settings of the **Visibility** property are used to define whether the visibility of a variable or an interlocking is determined.

- ▶ **Variable:** The visibility is controlled by a variable.
The element is always visible if no variable is defined. If a variable has been defined, the visibility is either taken from the limit value properties of these variables or defined by the value range that is defined in the **from** and **to** properties.
- ▶ **Interlocking:** The visibility is controlled by an interlocking.
The element is always visible if no interlocking is defined. The **Visible if interlocked** property is used to define whether the element is visible, if it is interlocked or if it is not interlocked.

Visibility with interlocking:

Interlocking linked	Interlocking active	Visible if interlocked	Result
X	X	X	Visible
X	X	-	Invisible

X	-	X	Invisible
X	X	-	Visible
-	-	-	Visible

11.1.6 Line height

The row height can be defined for certain elements, regardless of the font size, using the **Representation/Line height [pixel]** property. The default value is 0 `pixels`. For the default setting the line height is fitted to the font size. Each value above 0 defines a fixed value in pixels for the row height. If a line height is defined in this way, graphical illustrations are not scaled according to the line height but adapted to the font size.

Attention: If the row height

- ▶ is selected is too large, nothing is displayed in Runtime in certain circumstances.
- ▶ is selected as smaller than the font size, then graphical illustrations are cut off.

11.1.7 Ambiguous project configuration

There can be ambiguous project configurations at project property level.

PROJECT PROPERTIES VS. SCREEN PROPERTIES

If the graphical display for the interlocking is on the one hand configured at project property **User Administration** or **Graphical design** and on the other hand at property **Visible if interlocked** at the screen element, an ambiguity occurs. In this case, the local setting has a higher priority than the setting in the project properties.

COVERED ELEMENTS

If a vector element overlays a dynamic element:

- ▶ The dynamic element or the overlaid part of it is not displayed.
- ▶ The dynamic element can be operated even if it is fully covered.
- ▶ If several dynamic elements are overlaid, only the visible (clickable) parts can be operated.

**Hint**

Elements that remain hidden or out of the visibility range of a screen in Runtime can be actuated in the Editor with the keyboard. For details on configuration, see the **Runtime** manual, **Defining sequences in frames** chapter.

11.2 Screen elements in the Runtime

IN THE RUNTIME

- ▶ Behavior in Runtime:
 - Transformation
 - Graphic display
 - Sequence in Runtime
 - Visibility
You can find detailed information on this in the Engineering (on page 38) chapter.
 - Hidden elements
You can find detailed information on this in the Engineering (on page 38) chapter.

**Information**

Screen elements (on page 34) that are linked to a variable that have neither a value nor a status are switched to invisible in Runtime.

TRANSFORMATION

Defines the transformation sequence for the graphic elements.

- ▶ Rotation -> Zoom -> Translation
- ▶ Zoom -> Rotation -> Translation

Default: Zoom -> Rotation -> Translation

You can find more information in the transformation sequence of the screen elements (on page 45).

GRAPHIC DISPLAY

Elements with graphics only show the graphics if the attendant value is present.

If the variable does not have a value or the value has not yet been requested from the driver, graphics in elements (such as a combined element) are not shown in Runtime. This also applies for variables from subprojects for which the project server cannot be reached. However in this case, a communication problem is shown (blue square) - if this is activated. If the server for a subproject cannot be reached after values have already been transferred to the variable, the graphics are displayed until the screen is opened again.

You can find further information in the Status processing manual in the **Not updated(N_UPDATE)** chapter.

If there is no communication with the PLC, the value of the variable concerned is visualized in Runtime with a red square.

You can find out more information in relation to this at the **Display status of variable** property.

SORTING ORDER

In Runtime, the elements are shown in a sequence from top to bottom. For this, the following applies:

1. WPF element: always in the foreground
 2. ActiveX Element: always in the foreground, unless it is overlaid by a WPF element
 3. Dynamic elements and vector elements
- You can find detailed information on this in the Engineering (on page 38) chapter.

You define the sequence for the actuation of the elements in a screen with the project configuration in the zenon Editor. For instructions on configuration, see the Runtime manual, Defining sequences in frames chapter.

11.2.1 Transformation sequence of the screen elements

The transformation sequence of the graphic elements can be selected in the Editor in the **Graphical design** group under the **Transformation sequence** project property.

You can select between the following two options:

1. Rotation -> Zoom -> Translation
 - If you select this transformer sequence, the graphical element under this option will look as follows in the original:

After a 4x enlargement of the graphical element, it will look like this:

It will look as follows with an enlargement and a 45° rotation:

1. Zoom -> Rotation -> Translation

- ▶ If you select this transformer sequence, the graphical element under this option will look as follows in the original:

After a 4x enlargement of the graphical element, it will look like this:

It will look as follows with a 45° enlargement and rotation:

Note: The difference between the two transformation sequences is in the use of enlargement and rotation of a graphical element. The `Zoom -> Rotation -> Translation` option is selected by default.

11.2.2 Character behavior of buttons and vector elements on a Windows basis

Depending on the setting of the **project.ini UseGDILegacyDrawing**, the following is applicable for buttons and vector elements:

With the setting active (corresponds to the display in versions < 7.60)

- ▶ Buttons with a color gradient are displayed with roundings of 20%.
- ▶ Right-angled buttons with a color gradient are shown with centered (50%) or full (100%) offset.
- ▶ Round buttons are shown with the **Spot** setting.
- ▶ Rectangles with color gradients are shown with the `Linear` color gradient setting.
- ▶ Rectangles with roundings are shown without color gradient.
- ▶ The ellipse/circle element with color gradient are shown with the `Selective` color gradient setting.

If the setting is inactive (corresponds to the display in versions from 7.60 and the display in the Editor)

- ▶ Buttons with a color gradient are displayed with roundings like on the element.
- ▶ Linear color gradients for buttons can have any value (0-100%).
- ▶ Round buttons can be displayed with all color gradient settings (`Linear`, `Selective`, `Radiant`).
- ▶ Rectangles (also with roundings) can be displayed with the color gradient settings `Linear` and `Radiant`.
- ▶ The ellipse/circle elements can be displayed with all color gradient settings (`Linear`, `Selective`, `Radiant`).

- ▶ Vector elements (rectangle, circle/ellipse) with color gradient are displayed with the frame as configured in the settings in the **Line** group.

11.3 .NET Controls

The ActiveX control **CD_DotNetControlContainer.Container** makes it possible to use any .NET Windows Forms Controls as dynamic elements in zenon. In doing so, all functions implemented in the .NET control are supported. It can be used with all zenon versions from 5.50 on which support **ActiveX**.

Note: .NET Framework 3.5 or higher must be available.



Information

You can read more about the use of .NET with zenon in the Programming interfaces manual in the .NET chapter.

To use the ActiveX control **CD_DotNetControlContainer.Container**:

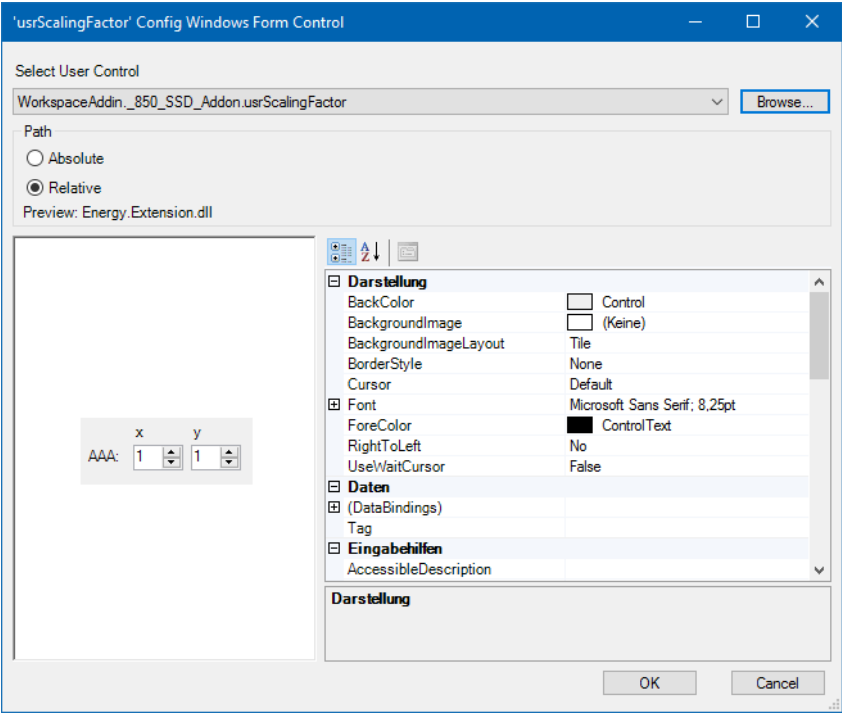
1. Create a dynamic element of the type **ActiveX** (on page 50).
2. Select **CD_DotNetControlContainer.Container** from the list of available controls.

Note: Controls should always be saved in the project's **Additional** folder. They are thus taken into account during backups and transfers. If the file is saved in the **Additional** folder, select the **Relative** option for **Path**.

3. Click on button **Properties**.

The dialog for configuring the control opens.

CONFIGURATION DIALOG



Option	Description
SelectUserControl	Selection of the .NET Controls via drop-down list from the controls which are available in the selected .NET Control Assembly .
Browse	Opens the file manager for selecting a .NET Control Assembly . Note: The .NET Control Assembly should be in the project's Additional folder.
Path	Selection of how the path is saved: <ul style="list-style-type: none"> ▶ Absolute: The path is stated as absolute. Note: This can lead to problems if, for example, Runtime is running on a different computer than the Editor and the path does not exist on the Runtime computer. ▶ Relative: Path relative to save location of the DLL. Select this option if the DLL is in the project's Additional folder. Default: <i>Relative</i> The selected path is shown underneath the radio button.
Preview	Shows path to the .NET Control Assembly . Field left below: Preview of the control. Field right below: List of properties for the selected .NET Control .
Symbol: By categories	Displays properties sorted by categories.
Symbol: Alphabetical	Display properties in alphabetic order.
Symbol: Property pages	Displays property pages.
OK	Confirms configuration. This is then saved in the zenon ActiveX element as XML stream.

Cancel	Discards configuration.
---------------	-------------------------

11.4 ActiveX

You connect ActiveX elements in projects using the **ActiveX** dynamic element.



Information

You can read more about the use of ActiveX with zenon in the Programming interfaces manual in the ActiveX chapter.

To create ActiveX in a screen:

1. Select the symbol **ActiveX** in the **Elements** toolbar.
2. Select the start point in the main window.
3. Pull the control element open while pressing and holding the left mouse button
4. A configuration dialog opens, in which you can select the element and configure it.
5. The shape, size and position can be changed at any time by pulling the vertexes or moving the element.
6. If you press and hold the **Alt** key while pulling the outer corner points, the change is carried out symmetrically.

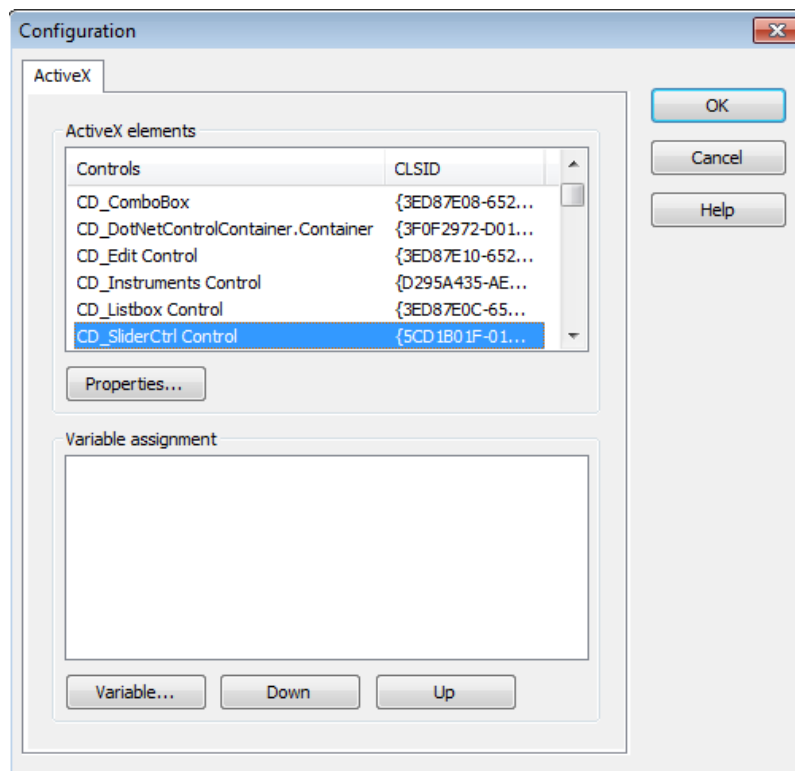
You define individual properties of the element in the properties window. In order to do this, the element must be active (mouse click) in the main window. To subsequently select or change controls, open the configuration dialog by double-clicking on the properties menu item in the context menu.



Attention

*Only ActiveX elements that are installed or registered on the computer are shown. All ActiveX elements are also installed on all Runtime systems on which you use the project. You can also use Remote Transport to register ActiveX elements on remote systems. Refer to chapter **Define files** (Editing: copy & register)*

ACTIVEX CONFIGURATION



ACTIVEX ELEMENTS

Element	Function
ActiveX elements	List of all ActiveX elements available.
Properties	Opens a configuration dialog for the ActiveX highlighted, if available. You can obtain help and information about the configuration from the manufacturer of the respective ActiveX control.

VARIABLE ASSIGNMENT

Element	Function
Variable assignment	List of variables linked to the ActiveX element.
Variable	Opens the zenon Dialog to select variables if it is possible to link variables.
Down	Sorts highlighted variables downwards.
Up	Sorts highlighted variables upwards.

POSITION CHANGE IN RUNTIME

Windowed ActiveX controls work with untransformed mouse coordinates in Runtime. If an element is rotated, stretched or otherwise changed in terms of its size or position, the control no longer fits and continues to be executed at the original position. The transformed element can therefore no longer be operated at its transformed position using the control.

Windowless ActiveX controls can work with transformed mouse coordinates in Runtime. If an element is rotated, stretched or its position is otherwise changed, the control works if the following requirements have been met:

- ▶ Does not work under Windows CE.
- ▶ Does not contain a control in windowless ActiveX
- ▶ Windowless ActiveX supported transformed characters correctly



Information

Regard the difference between windowed and windowless ActiveX elements.

Windowed ActiveX elements (e.g. all Microsoft ActiveX Controls) are always in the foreground.

In contrast you can place for example a dynamic element over windowless ActiveX elements.

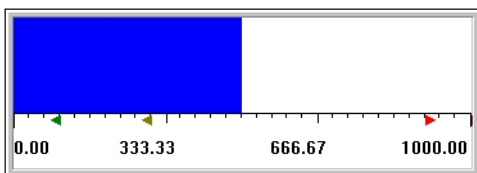
11.5 Bar display

You show the numerical size of a signal with the **Bar display** dynamic element. The length of the bar changes with the signal size in runtime.

To create **Bar display** in a screen:

1. Select the **Bar display** symbol in the **Elements** toolbar or in the **Elements** drop-down list
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
4. the dialog to select a variable (on page 200) opens
5. The shape, size and position can be changed at any time by pulling the vertexes or moving the element.
6. If you press and hold the **Alt** key while pulling the outer corner points, the change is carried out symmetrically.

You define individual properties of the element in the **Properties window**. In order to do this, the element must be active (mouse click) in the **Main window**.



To edit the linked variable:

1. open the variables in the Project Manager Detail view,
2. drag the desired variable onto the element while holding the left mouse button
3. the previous variable is substituted by the new one

COLOR-CODED DISPLAY OF THE LIMIT VALUE VIOLATION

At limit value violations the color from the variable can color the whole area or only the area starting from the limit violation. This functionality is controlled via property **Explicit** in group **Representation**.

This property affects only the display of values with defined limit values from variables.

Limit values from reaction matrices are not considered.

- ▶ **Active:** If a limit value of the linked variable is violated, only the part of the display that goes into the limit value violation is shown in the color of the respective limit value.
If the variable has several defined limit values, the corresponding areas of the display are each shown in the color of the limit value.
- ▶ **Inactive:** If a limit value of the linked variable is violated, the complete display is displayed in the color of the violated limit value.

Default: Inactive

11.6 Command Processing element

Makes it possible to send commands for module Command Processing. Requires license for SICAM 230.

You can find instructions on how to use elements in the help at SICAM 230.

11.7 Button Screen Alarm

Attention: The **button for screen alarming** requires a license for SICAM 230. You can find further instructions on how to use elements in the help at SICAM 230.

11.8 Button

You create a freely adjustable button the dynamic element **button** which you can use interactively in the screen to either carry out a function or as a switch for a binary variable.

The button can

- ▶ display a graphics file
- ▶ animate a graphics file
- ▶ be displayed invisibly



Information

Buttons are subdivided into text button, bitmap button and invisible button in versions up to and including version 6.22. From version 6.50, all properties that can be configured with buttons are together in the element button.

To create the dynamic element button in a screen:

1. Select the **Button** symbol in the **Elements** toolbar
2. select the start point in the main window
3. pull open the element while pressing and holding the left mouse button
4. The Selection dialog functions (on page 199) open
5. select the desired function

6. Define the desired properties in the properties window
Hint: You can round (on page 141) the corners as you wish
7. You add variables by dragging & dropping

LABELING

To label the button:

- ▶ Click in the element.
- ▶ enter the text
- ▶ define the text properties in the **Text** node

UNDERLINE

To underline text, place a & in front of the text to be underlined.

&Text becomes:



If you would like to use the character '&' in text, enter it twice:
1 && 2 becomes 1 & 2.

LINE BREAK

To define a line break, use the string **\n**.

Example:

Line 1 \n

Line 2

BUTTON AS SWITCH

To use the button as a switch:

1. Activate the **Switch** property in the **Write set value** node
2. You activate settings to use the button as a pushbutton with the **Pushbutton** property
3. Link the button with a binary variable (node **Variable/function**, property **Variable**)

BUTTON TO EXECUTE A FUNCTION

To link a button to a function:

1. Deactivate the **Switch** property in the **Write set value** node
2. Link the button with a binary variable (node **Variable/function**, property **Function**)

BUTTON WITH GRAPHICS

To put graphics on the button:

1. Click in the element.
2. Activate the desired graphics for the different switch states in the **Fill** node via properties **Graphics File** and **Graphics file for pressed**.
You can use the following graphics files:
Pixel graphics: *.bmp, *.jpg, *.gif, *.png or *.tif
vector graphics: *.wmf.

INVISIBLE BUTTON

to define an interactive, transparent user interface:

1. Click in the element.
2. In properties in node **Fill**, activate the checkbox for property **Transparent**.
3. Remove all labeling from the button

Access to Runtime:

- The mouse pointer changes when the mouse is moved over the element
- over a defined key combination (**Runtime** node, **Key combination** property)



Info

The status of the variable cannot be displayed for the invisible button.

11.8.1 Fill pattern and color gradient

The Element button supports different **Fill pattern**.

To define a color gradient, select **Color Gradient** as a **Fill pattern**.

The following **color gradients** and the **Spot** setting are supported, depending on **Button shape** and **Graphics quality**:

	DirectX	Windows Basis
--	---------	---------------

Button shape	Angular	Round	Angular	Round
Linear	X	X	X (horizontal only)	X
Selective	X	X	--	X
Selective with edges	X	--	--	--
Radiant	X	--	X	--
Spot	--	X	--	X

Key:

- ▶ **X**: available
- ▶ **--**: not available

11.8.2 Animate graphics

GIF graphics files can be animated in the dynamic element **Button**:

1. Assign a GIF file to a button in the **Fill** node via Property **Graphics File**
2. In the same node, activate an activation possibility for **GIF animation**.

You can execute the animation continuously or as dependent on a Bool variable:

- a) To execute the animation continuously: Activate the **GIF animation always** property.
- b) To execute the animation as dependent on a variable: Link the **Variable** property to a Bool variable. The animation is executed as soon as this variable gets the value 1.

11.9 Combined element

The combined element is a dynamic element that can be used universally and can adopt the most varied graphic characteristics:

- ▶ Graphics
- ▶ Screen symbol
- ▶ Text

The form of the display is defined through statuses. Variable values of the main value, values of further values and status information from all linked variables can all serve as statuses. Links can be created as desired via formulas.

Statuses of the main variables (limit value attributes) can be transferred directly to the combined element. The combined element also supports the setting of set values in the form of a

switcher/pushbutton as well as the sending of functions and serves to implement technical process-related elements for Automatic Line Coloring.

If set values are set via command processing and a response variable is set in the **combined element** dynamic element, it can be set regardless of the setting of the **Write set value** property. All action buttons in the **Command processing** screen that trigger a direct modification of the response variable are then set to invisible.

CREATE A COMBINED ELEMENT

To create a combined element in a screen:

1. Click on the **Combined Element** symbol in the Elements toolbar (on page 26) and drag the element to the main window with the mouse.
The variable selection dialog opens, filtered for numeric variables.
2. Select the desired variable
3. The Assistant (on page 61) for combined element settings opens and guides you through the basic settings. If you prefer to define all settings manually, click on **Cancel** now. You can find details in the Assistant. (on page 61) chapter

When setting up manually, define the **Type of display** in the **Representation** node. The `symbol` from the `library` is given as a default. You can define screen data and text according to the settings.

You define additional statuses either in the assistant via the **New Status** or in Combined Element Properties in the display with property node **Configuration and test**.

Functions and variables can be assigned to the combined element by dragging & dropping. In doing so, the respective variables/functions are each replaced by the new ones.

Combined elements can accept the action for buttons set in the project. To do this, activate the **Apply project properties for "locked"** property. In doing so, the settings from the **Locked buttons** and **Interlocked buttons** properties are applied. The `gray` selection only has an effect on non-symbolic text components.



Attention

Note the following limitations:

- ▶ Symbols in a "Combined" element cannot be operated.
Exception: Symbols from the library can be used as clickable buttons (on page 67).
- ▶ If the combined element is configured with shading, it cannot be rotated within a symbol.

LINK RULES

If you have selected `Symbol from Library` as a display type, you can enter link rules. You open the dialog for entering the element via the **Configuration and test** property. After selecting the symbol via the **Symbol Select** button, you can create and edit linking rules. These rules are saved for every status.



Example

Variables/functions contained in the symbol:

```
Var_SWITCH_0010  
Var_TEMPERATURE_0010  
Fct_ShowTrend_0010  
Fct_Help_0000
```

The variables and functions of the symbol are now replaced with the following rule:

Source: `*_0010`

replace with: `_0020`

result of linking rule:

```
Var_SWITCH_0020  
Var_TEMPERATURE_0020  
Fct_ShowTrend_0020  
Fct_Help_0000
```

With the help of the linking rule, all variables and functions can be exchanged. If a variable or function does not fit into the scheme, that link cannot be replaced.

When the runtime files are created, the respective links are set for every status, according to the rule.



Example

You would like to graphically display whether a motor is switched on and in which direction it is turning.

*The information about running direction and about on/off status equals the value of the linked variable with the current values from the PLC. This variable is linked to the combined element in property group **Variable/function** at property **Variable**.*

The status text displays whether the motor is turning and how it is turning.

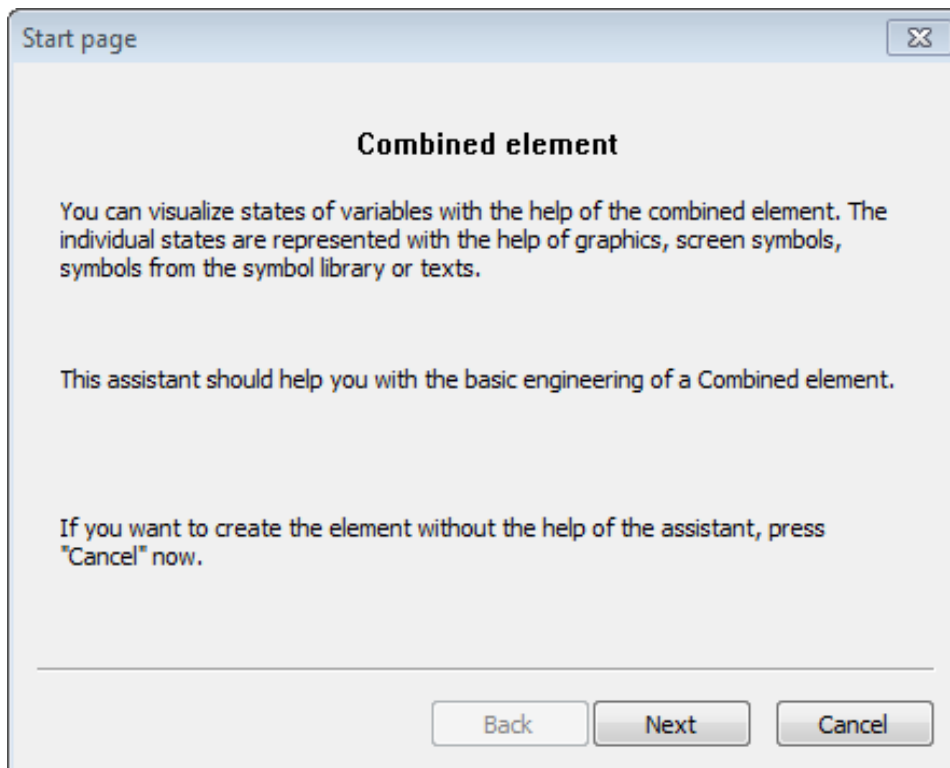
- ▶ In property group **Representation** at property **Type of display** select entry `Condition text` and `screen symbol` from the drop-down list.
- ▶ For configuring the combined element click on `...` at property **Configuration and test**.
The **Condition definition** dialog is opened.
- ▶ Enter the state text which you want to assign to the respective value in this dialog in option area **Display element**.

It is subsequently displayed in your motor during runtime, for example: 'left', 'right' or no text at all if the motor is not turning.

You will find more information about the evaluation of the status bits in the chapter *Statuses* (on page 71).

11.9.1 Assistant

An assistant is available for the basic configuration of the combined element. This opens as soon as you have selected a variable for the combined element.



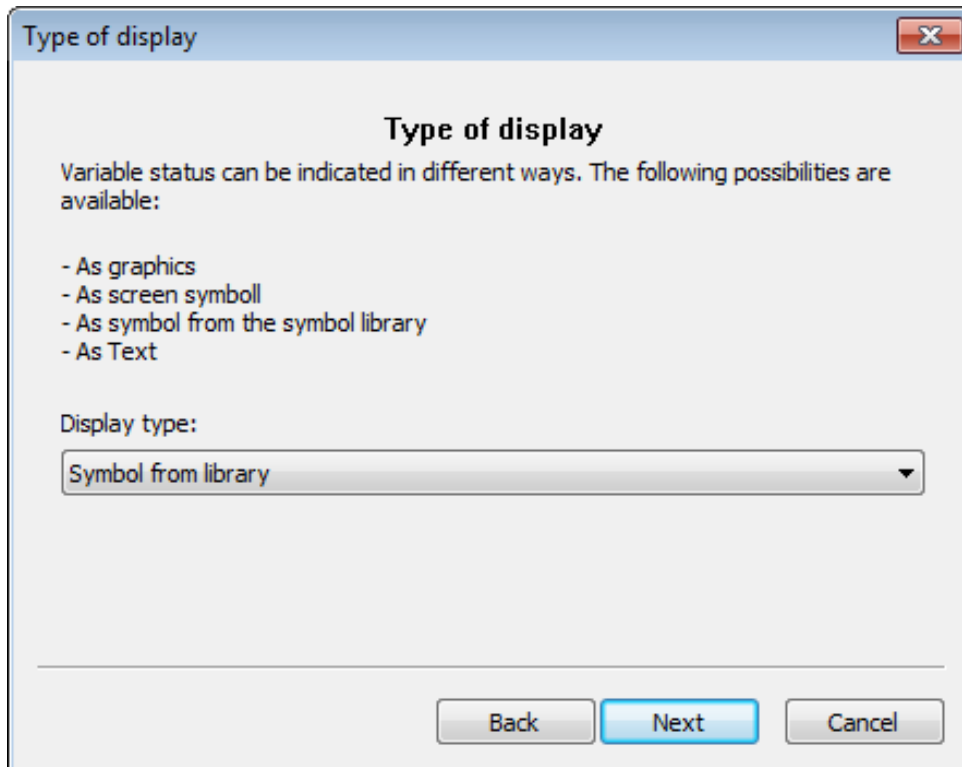
In the first step, you select the display type. The following display types are available:

- Symbol from library
- Status texts and screen symbols
- Graphics file and screen symbol
- Only screen symbol



Information

You can define additional statuses in all status selection windows. The New Status button is available for this.



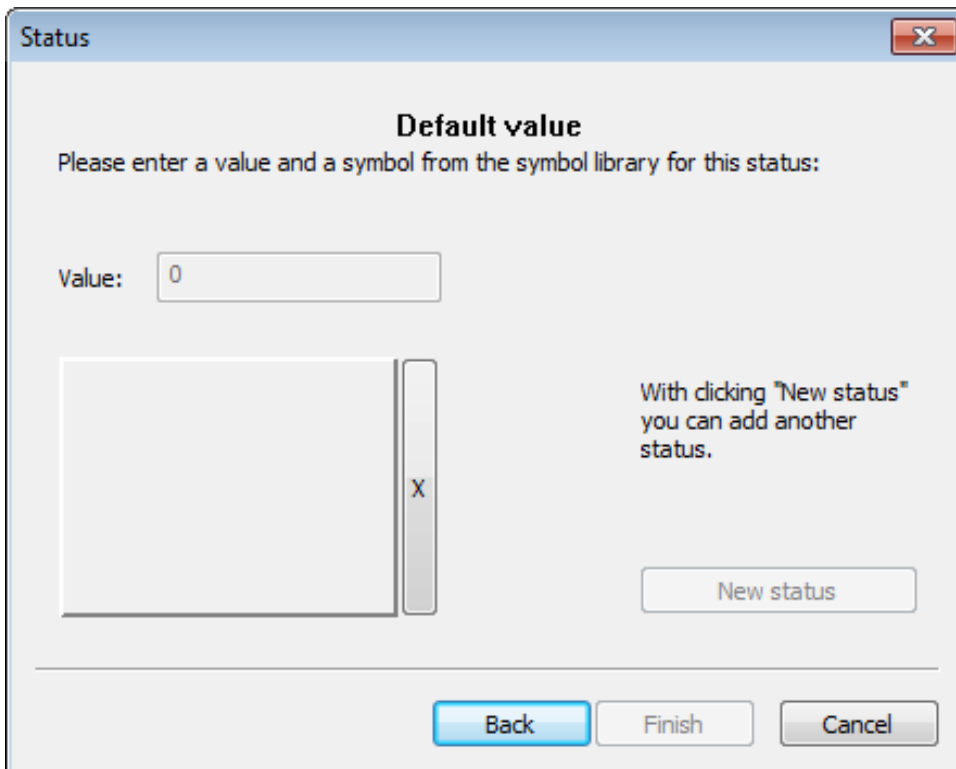
Default: `Symbol from library`

This setting is also displayed as standard in the properties if you create the combined element without the assistant.

You can define statuses as soon as you have selected a type of display. The first status is always the default status.

Note: A value cannot be entered for the default status; a value must be entered for all other statuses. You can only edit one status at a time.

SYMBOL FROM LIBRARY



Click on the empty window at the bottom left to select a symbol from the global symbol library or from the project library. You can delete the selected symbol again by clicking on the X next to the window.

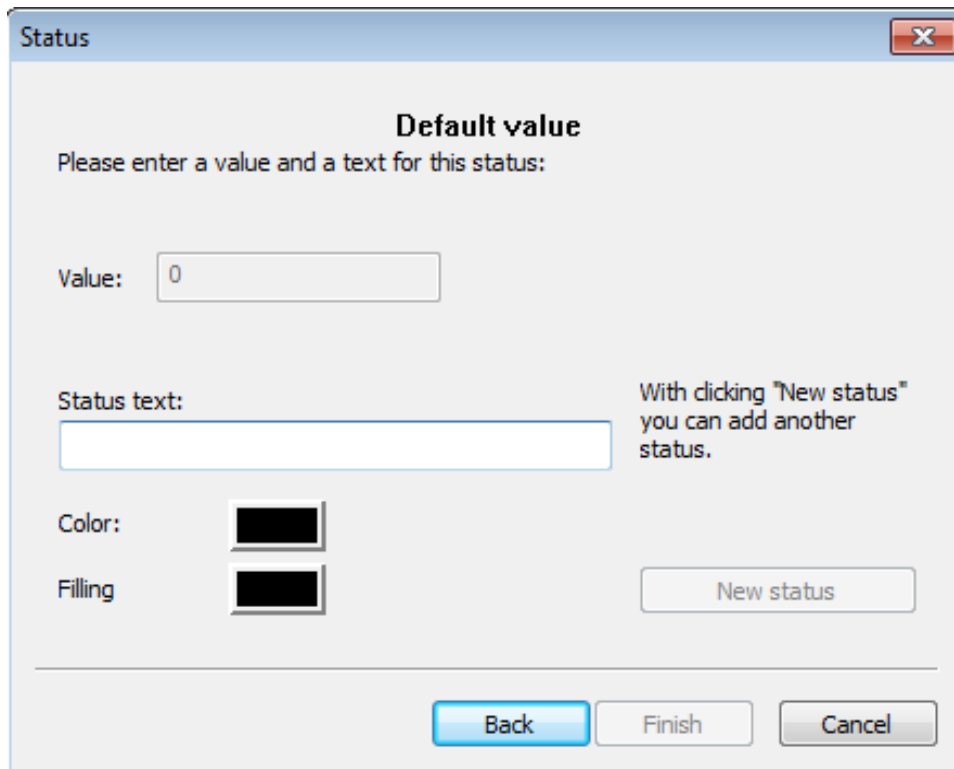
Setting	Description
Value	Numerical value at which the status becomes active. Default: no value From 2. Status: Entry required.
New status	Creates a new status for the combined element.



Information

For Symbol from library, clickable buttons (on page 67) can be created in any form.

STATUS TEXTS AND SCREEN SYMBOLS

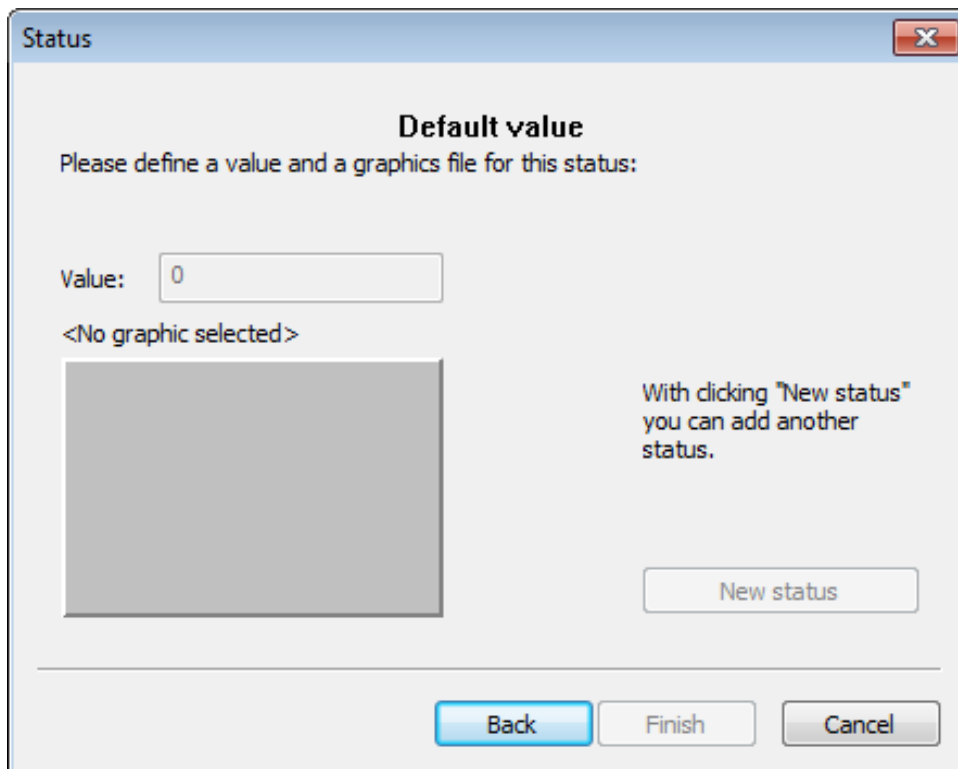


The screenshot shows a 'Status' dialog box with a title bar containing a close button. The main area is titled 'Default value' and contains the instruction 'Please enter a value and a text for this status:'. Below this, there is a 'Value:' label followed by a text input field containing the number '0'. Further down, there is a 'Status text:' label followed by a text input field. To the right of the 'Status text' field, there is a note: 'With clicking "New status" you can add another status.' Below the 'Status text' field, there are two color selection controls: 'Color:' with a black color swatch and 'Filling' with a black color swatch. To the right of these color swatches is a button labeled 'New status'. At the bottom of the dialog, there are three buttons: 'Back' (highlighted in blue), 'Finish', and 'Cancel'.

Each condition can be labeled with a text and with a foreground and background color.

Setting	Description
Value	Numerical value at which the status becomes active. Default: no value From 2. Status: Entry required.
Status text	Text as it is displayed in runtime.
Color	Font color of the status text.
Fill color	Background color of the status text.
New status	Creates a new status for the combined element.

GRAPHICS FILE AND SCREEN SYMBOL



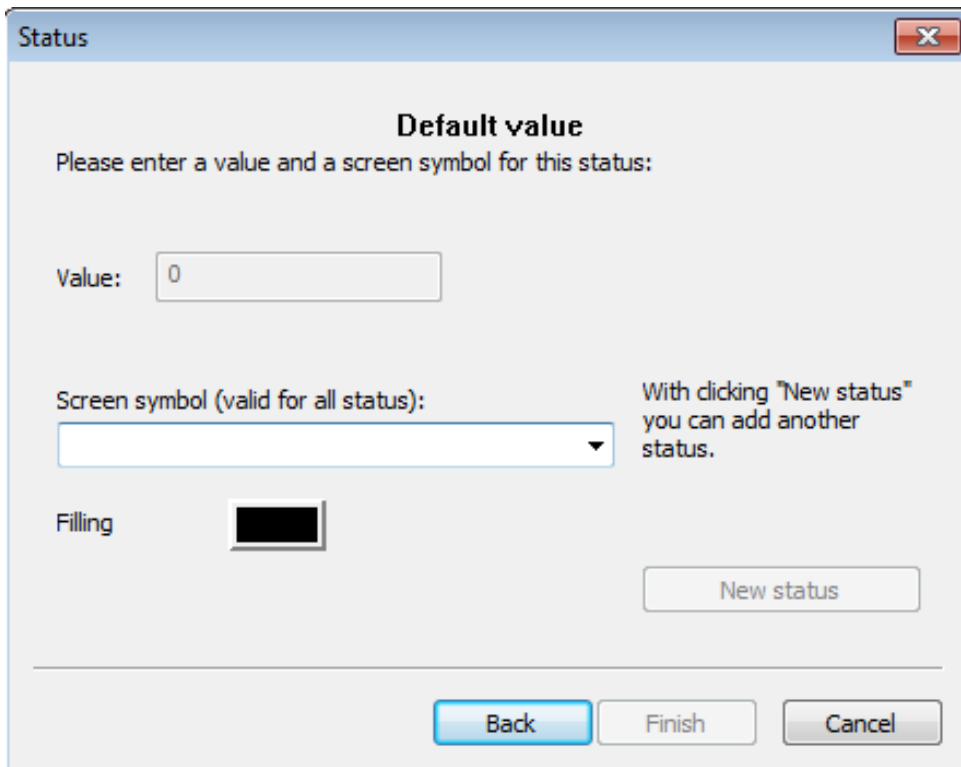
Click on the <No graphic selected> button at the bottom left to select a screen file (*.bmp, *.gif, *.jpg, *.png etc.). You have two options for screen selection:

1. Pictures from the project:
Pictures which you have already stored in the graphics directory of a project (see chapter on Editor -> Project Manager -> Files) are offered to you automatically by the assistant.
2. Absolute path to other directories:
 - Activate direct file selection for this

- The window switches to direct selection
- Click on the button ...
- Select the corresponding file with the explorer

Setting	Description
Value	Numerical value at which the status becomes active. Default: no value From 2. Status: Entry required.
New status	Creates a new status for the combined element.

ONLY SCREEN SYMBOL



You can give a common symbol for all combined element statuses.
This symbol:

- ▶ must already be present on the screen
- ▶ applies for all statuses
- ▶ can be labeled for each status with its own fill color

Setting	Description
Value	Numerical value at which the status becomes active. Default: no value From 2. Status: Entry required.
Screen symbol	Drop-down list to select a symbol. If no symbols are displayed, then no symbols are present in the current screen.
Fill color	Names the allocated status.
New status	Creates a new status for the combined element.

11.9.2 Clickable buttons in any desired form

In the combined element, clickable buttons can also be created in any desired form.



Information

This option is available from version 6.51. For projects for earlier versions, the property is treated as inactive.

To create clickable buttons in any form desired:

1. Create a combined element in the **Symbol from library** attributes
2. In combined element properties, activate the **Symbol form defines the click area** property in the **Representation** node



Information

This property does not work under Windows CE, because the required functionality is not available under Windows CE.

ELEMENTS

There can be further symbols or combined elements in the symbol. The clickable area of this contents is adjusted accordingly. For symbols, the element limits are used completely normally, with a combined element this depends on the **Symbol form defines the click area** property, either the individual click areas of the elements or the environment rectangle of the combined element.

The following elements have their own special click area:

- ▶ Rounded rectangle (present as its own vector element up to version 6.50)
- ▶ Button

- ▶ Combined element with "Symbol form for click area" property
- ▶ Circle
- ▶ Segment of a circle
- ▶ Arc of a circle
- ▶ Line
- ▶ Pipeline
- ▶ Polygon
- ▶ Polyline
- ▶ Rectangle
- ▶ Static text
- ▶ Symbol (correct click areas of the symbol elements are used)

All other elements have their surround as a click area.

SPECIAL ATTRIBUTES

Special attribute	Effect
Are never treated specially: <ul style="list-style-type: none"> ▶ Type of line ▶ Filling pattern ▶ Transparencies of all type (except text element) 	Areas are always clickable.
Transparency for static test: Elements behave as though the element did not exist. As a result, it is possible to name elements without unintentionally enlarging the click area.	Does not influence the click area. Hint: If a transparent text element is to influence the click area: <ul style="list-style-type: none"> ▶ Deactivate the Transparent property ▶ Place a transparent element over or under this manually
Button	Is used for the click area; GIF animation for "pressed" is not available here. This corresponds to the behavior with an inactive Symbol form defines the click area property.
Symbol protrudes from the combined element.	Symbol is displayed, but clicks are only interpreted within the combined element. Comment: If elements protrude outside symbol limits or symbols protrude out from the limits of a combined element, this can lead to display problems

	and blurring effects.
--	-----------------------

CLICK AREAS

In the Editor, areas larger than the click area are sometimes defined, in order to make these easier to click on. For example, a line with 1 pixel thickness in the editor can be selected using a width of 8 pixels.

The display of the click area is exact in Runtime. For example, a line of 1 pixel thickness is also only selectable from a width of 1 pixel.

The calculation of the click area for the combined element works regardless of the **Graphics quality** property's setting. However, a different click area is calculated for the elements regardless of this setting.

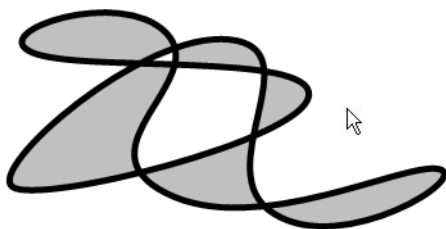


Information

If the mouse pointer is above the combined element, it is analyzed whether the cursor is in the click area of the element. The load placed on the CPU can then be high with a large number of elements in the combined element symbol.

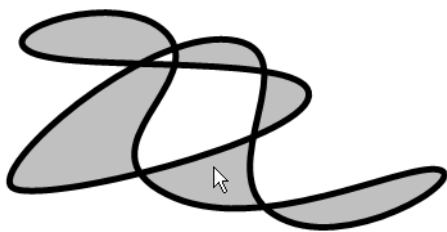
Clickable buttons example

EXAMPLE 1



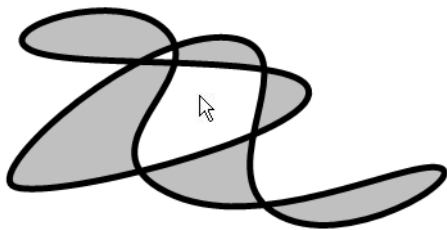
status Symbol form defines the click area	Action
active	No click
inactive	Click

EXAMPLE 2



status Symbol form defines the click area	Action
active	Click
inactive	Click

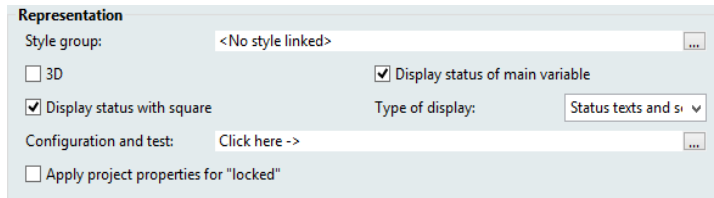
EXAMPLE 3



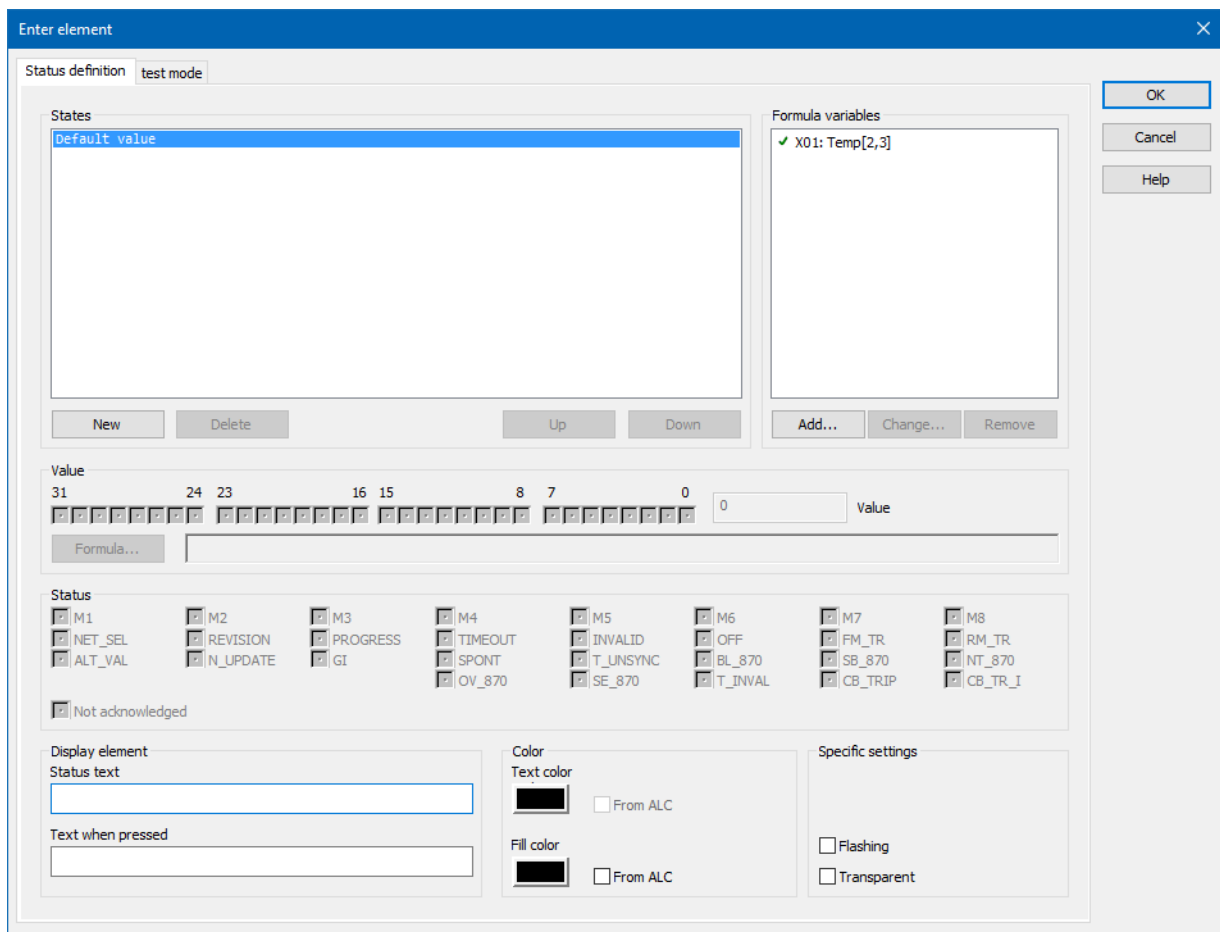
status Symbol form defines the click area	Action
active	No click
inactive	Click

11.9.3 Conditions

You get to the statuses window via the **Configuration and test** property in the **Representation** node.



Clicking on the ... button or on the "**Click Here**" text opens the window:



Here

- ▶ you edit existing statuses
- ▶ add the new statuses
- ▶ specify in which direction statuses are to be processed.

The settings in the upper part of the window are the same for all types of display. In the lower third, individual settings for the four different types of display are made.

COMMON SETTINGS

STATUS DEFINITION

Lists all defined statuses. A condition can consist of values and status. The element is processed from the first condition up to the last entry. The first complete match is shown. Exception: The Overlapping property (for symbols from the library) or Chained (for texts) is active.

Parameter	Description
Default value	The status defined when creating the element. It is always in the first position and can longer be changed or deleted.
Value	Shows the defined (32 bit) value.
Status	shows the defined status. An "F" at the end of the status display indicates a formula.
New	Defines new statuses. in doing so, values, status and formulas of the condition currently highlighted are taken on as initial values.
Delete	Deletes the selected status. The default status cannot be deleted.
upwards/downwards	changes the order in which statuses are processed. The default status is always in the first position.

FORMULA VARIABLES

shows all variables that were defined for input in formulas. Existing variables are marked with a green tick, non-existent variables are marked with a red cross. Non-existent variables can be replaced by exiting variables via Change. The Add and Change buttons open the dialog to select variables (on page 200).

VALUE

Enables

- ▶ input of a value for a status via a matrix or numerically
- ▶ the definition of a formula

Parameter	Description
Value	Defining the value via a preset bit structure
Value	Enter the numeric value.
Formula	Opens the window to enter formulas (on page 88). In the formula variable area, defined variables are available. Linking is performed by logical, bitwise and comparative operators.

**Attention**

For non-binary variables, the value is entered in the signal resolution. Settings in the measuring range or the non-linear value adjustment are not supported in this element.

STATUS

Enables status information to be requested.

Attention: Most statuses can only be requested if the driver supports the status processing.

No.	Short term	Long name	Comment
0	M1	User status 1	
1	M2	User status 2	
2	M3	User status 3	
3	M4	User status 4	
4	M5	User status 5	
5	M6	User status 6	
6	M7	User status 7	
7	M8	User status 8	
8	NET_SEL	Select in the network	
9	REVISION	Revision	
10	PROGRESS	In process	
11	TIMEOUT	Timeout exceeded	
12	MAN_VAL	Manual value	Only available for formulas
13	M14	User status 14	Only available for formulas
14	M15	User status 15	Only available for formulas
15	M16	User status 16	Only available for formulas
16	GI	General query	
17	SPONT	Spontaneous	
18	INVALID	Invalid	
19	T_CHG_A	Time change announcement	
20	OFF	Switched off	
21	T_EXTERN	Real time external	Only available for formulas
22	T_INTERN	Realtime internal	Only available for formulas
23	N_SORTAB	Not sortable	Only available for formulas
24	FM_TR	Error message transformer value	
25	RM_TR	Working message transformer value	
26	INFO	Information for the variable	
27	ALT_VAL	Substitute value	
28	RES28	Reserved	
29	N_UPDATE	Not updated	
30	T_STD	Standard time	Only available for formulas
31	RES31	Reserved	

32	COT0	Cause of transmission bit 1	Only available for formulas
33	COT1	Cause of transmission bit 2	Only available for formulas
34	COT2	Cause of transmission bit 3	Only available for formulas
35	COT3	Cause of transmission bit 4	Only available for formulas
36	COT4	Cause of transmission bit 5	Only available for formulas
37	COT5	Cause of transmission bit 6	Only available for formulas
38	N_CONF	Negative acceptance of Select by device (IEC60870 [P/N])	Only available for formulas
39	TEST	Test bit (IEC 60870 [T])	
40	WR_ACK	Writing acknowledged	Only available for formulas
41	WR_SUC	Writing successful	Only available for formulas
42	NORM	Normal status	Only available for formulas
43	N_NORM	Deviation from normal status	Only available for formulas
44	BL_870	IEC 60870 Status: blocked	
45	SB_870	IEC 60870 Status: substituted	
46	NT_870	IEC 60870 Status: not topical	
47	OV_870	IEC 60870 Status: overflow	
48	SE_870	IEC 60870 Status: select	
49	T_INVALID	Time invalid	Only available for formulas
50	RES50	reserved	
51	RES51	reserved	
52	RES52	reserved	
53	RES53	reserved	
54	RES54	reserved	
55	RES55	reserved	
56	RES56	reserved	
57	RES57	reserved	
58	RES58	reserved	
59	RES59	reserved	
60	RES60	reserved	
61	RES61	reserved	
62	RES62	reserved	
63	RES63	reserved	



Information

The short terms for the status bits have been unified for all languages since version 6.50. You can find more details and how you can use the old short terms in chapter Status bits - new short terms.

Not acknowledged: If option **Flashing** is active for the limit value of the variable, the bit not acknowledged is set. With the option **Acknowledge flashing** in the alarm configuration, the alarm is acknowledged and the bit not acknowledged is set to 0 (see also chapter Acknowledge flashing for alarms).

INDIVIDUAL SETTINGS

Individual settings for the 4 types of display of statuses is available in the subchapters:

- ▶ Symbol from library (on page 77)
- ▶ Status texts and screen symbols (on page 79)
- ▶ Graphics file and screen symbol (on page 80)
- ▶ Only screen symbol (on page 81)

CONFIGURING THE STATUS FOR VARIABLES THAT HAVE NOT YET BEEN LINKED

Sometimes you must define a combined element but you do not yet have a real, existing variable available. For example, if the combined element is supposed to be used in a symbol of the symbol library and it the variable link will be created only after pulling it into the screen. In this case, you first work with a 'dummy variable', which you then subsequently replace with an existing variable. You can then define all statuses in the combined element if existing variables have not yet been linked. You have no access with dummy variables in the test mode only.

This is how you create a 'dummy' variable:

- ▶ Enter a symbolic name into the properties of the combined element in the **Variable** input field.
- ▶ Click in the **Representation** area in the **Configuration and test** field: The states page in the element input is opened.
- ▶ In the list of formula variables, existing variables are marked with a green check mark. Variables that do not exist are marked with a red X. You can add further variables:
- ▶ Use the Add button for existing variables.
With Change, you can replace existing and non-existing variables with other variables.
- ▶ To add a non-existent variable, click on Add and then on No selection. You get a formula variable named after the following scheme: X00: <empty>. (00 stands for a two-digit number.) Highlight the variable and click in the <empty> area; assign a label.

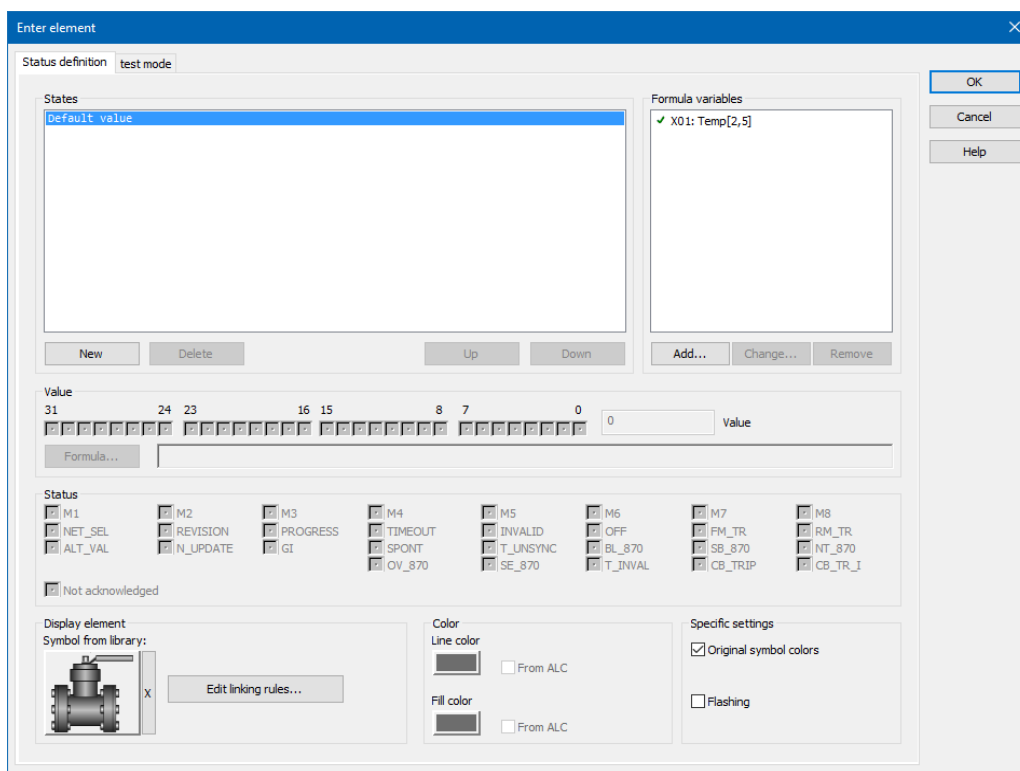
If you enter the name of an existing variable, the link is established and the mark changes from a red X to a green check mark.

FORMULAS

Read how a formula is created in the chapter on the Formula Editor (on page 83).

Symbol from library

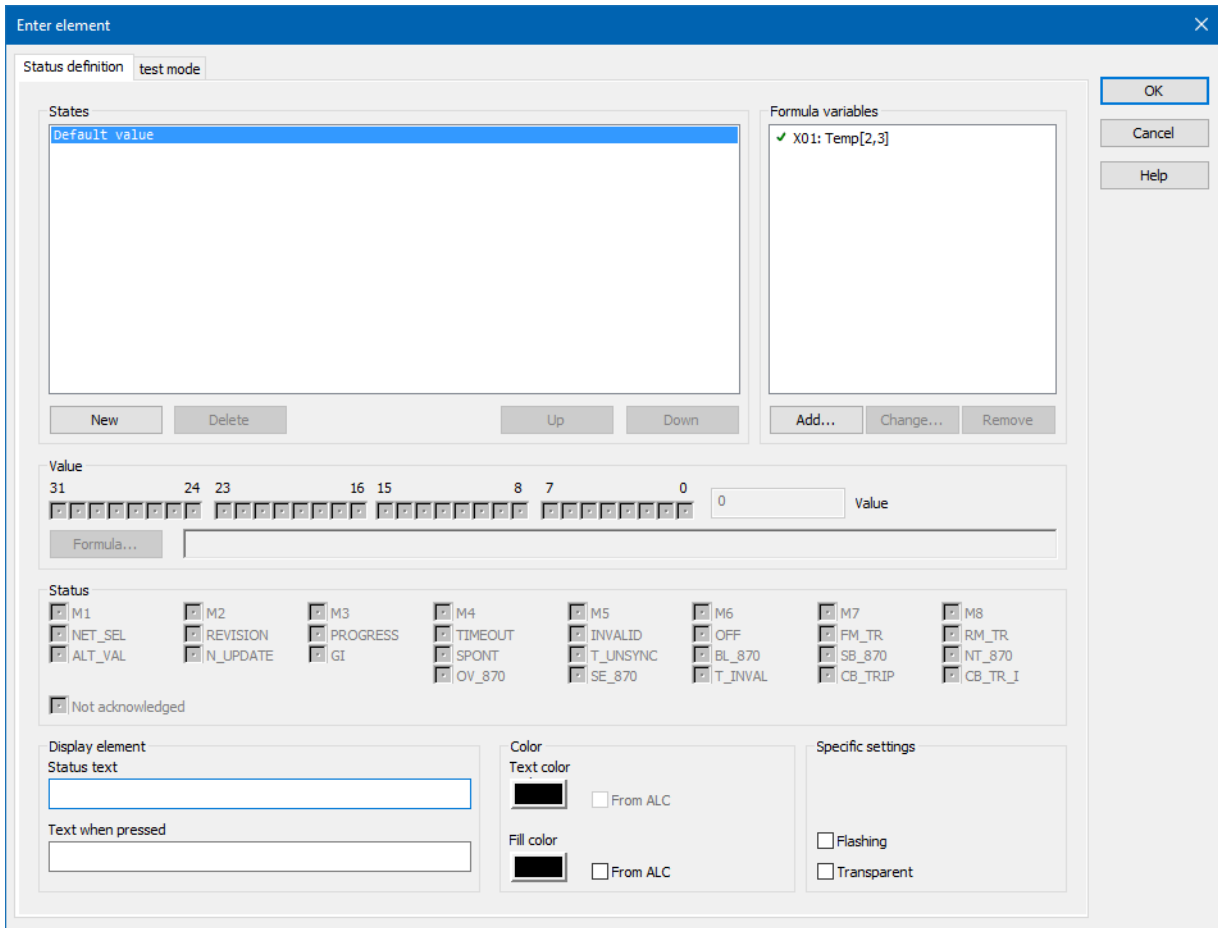
The general settings for all display types can be found in the chapter on statuses (on page 71).



Option	Description
Display element	
Symbol from library	<p>Clicking on the symbol opens the dialog to select a symbol.</p> <p>Clicking on the X next to the symbol deletes the selected symbol.</p>
Edit linking rule	<p>Variables and functions contained in the symbol can be exchanged with the help of linking rules.</p> <p>Attention: If a variable or function does not fit into the scheme, that link cannot be replaced.</p>
Colors	Only available if the Original Symbol Colors property in Specific Settings is turned off.
Color	Choice of color.
Fill color	Choice of fill color.
From ALC	The color of the linked source is used.
Specific settings	
Original symbol colors	<ul style="list-style-type: none"> ▶ Active: Transfers original color from symbol. Deactivates Take color of main variable property.
Flashing	<ul style="list-style-type: none"> ▶ Active: Symbol flashes in runtime if status has been achieved.

Status texts and screen symbols

The general settings for all display types can be found in the chapter on statuses (on page 71).



Enter element

Status definition | test mode

States

Default value

New Delete Up Down

Formula variables

✓ X01: Temp[2,3]

Add... Change... Remove

Value

31 24 23 16 15 8 7 0 0 Value

Formula...

Status

<input checked="" type="checkbox"/> M1	<input checked="" type="checkbox"/> M2	<input checked="" type="checkbox"/> M3	<input checked="" type="checkbox"/> M4	<input checked="" type="checkbox"/> M5	<input checked="" type="checkbox"/> M6	<input checked="" type="checkbox"/> M7	<input checked="" type="checkbox"/> M8
<input checked="" type="checkbox"/> NET_SEL	<input checked="" type="checkbox"/> REVISION	<input checked="" type="checkbox"/> PROGRESS	<input checked="" type="checkbox"/> TIMEOUT	<input checked="" type="checkbox"/> INVALID	<input checked="" type="checkbox"/> OFF	<input checked="" type="checkbox"/> FM_TR	<input checked="" type="checkbox"/> RM_TR
<input checked="" type="checkbox"/> ALT_VAL	<input checked="" type="checkbox"/> N_UPDATE	<input checked="" type="checkbox"/> GI	<input checked="" type="checkbox"/> SPONT	<input checked="" type="checkbox"/> T_UNSYNC	<input checked="" type="checkbox"/> BL_870	<input checked="" type="checkbox"/> SB_870	<input checked="" type="checkbox"/> NT_870
			<input checked="" type="checkbox"/> OV_870	<input checked="" type="checkbox"/> SE_870	<input checked="" type="checkbox"/> T_INVAL	<input checked="" type="checkbox"/> CB_TRIP	<input checked="" type="checkbox"/> CB_TR_I

☒ Not acknowledged

Display element

Status text

Text when pressed

Color

Text color ☐ From ALC

Fill color ☐ From ALC

Specific settings

☐ Flashing

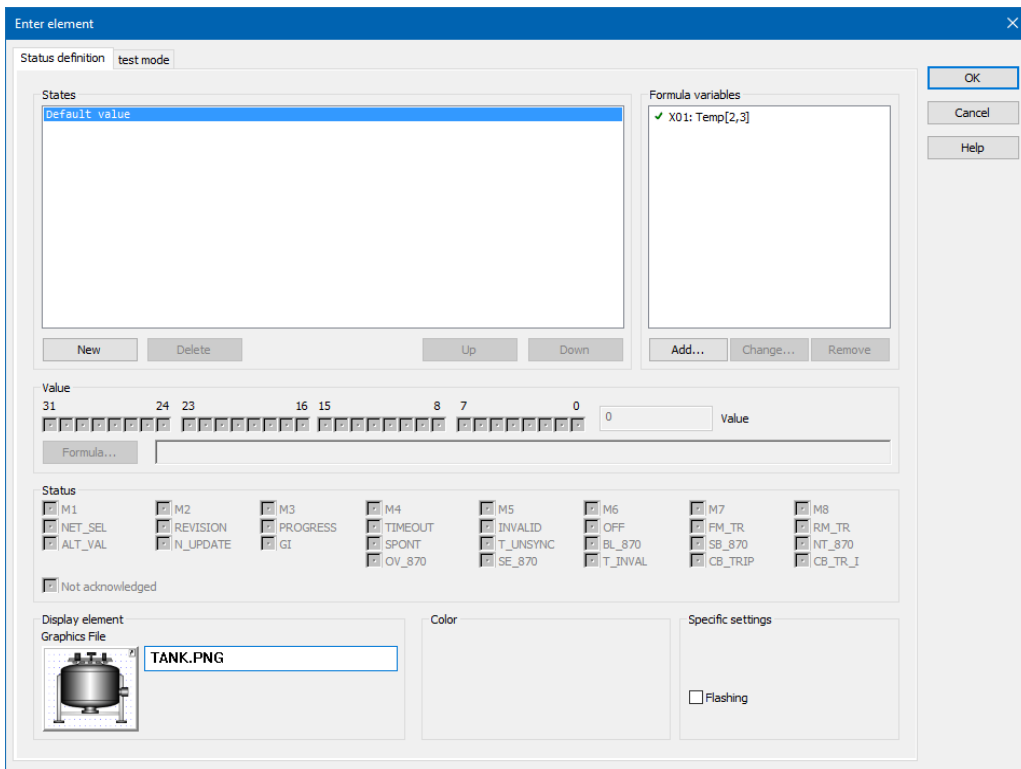
☐ Transparent

OK Cancel Help

Parameters	Description
Display element	
Status Text	Text for the status.
Text when pressed	Text with pressed Symbol.
Colors	
Color	Choice of color.
Fill color	Choice of fill color.
From ALC	The color of the linked source is used.
Specific settings	
Flashing	Active: Symbol flashes in runtime if status has been achieved.
Transparent	Active: Fill color is set to transparent.

Graphics file and screen symbol

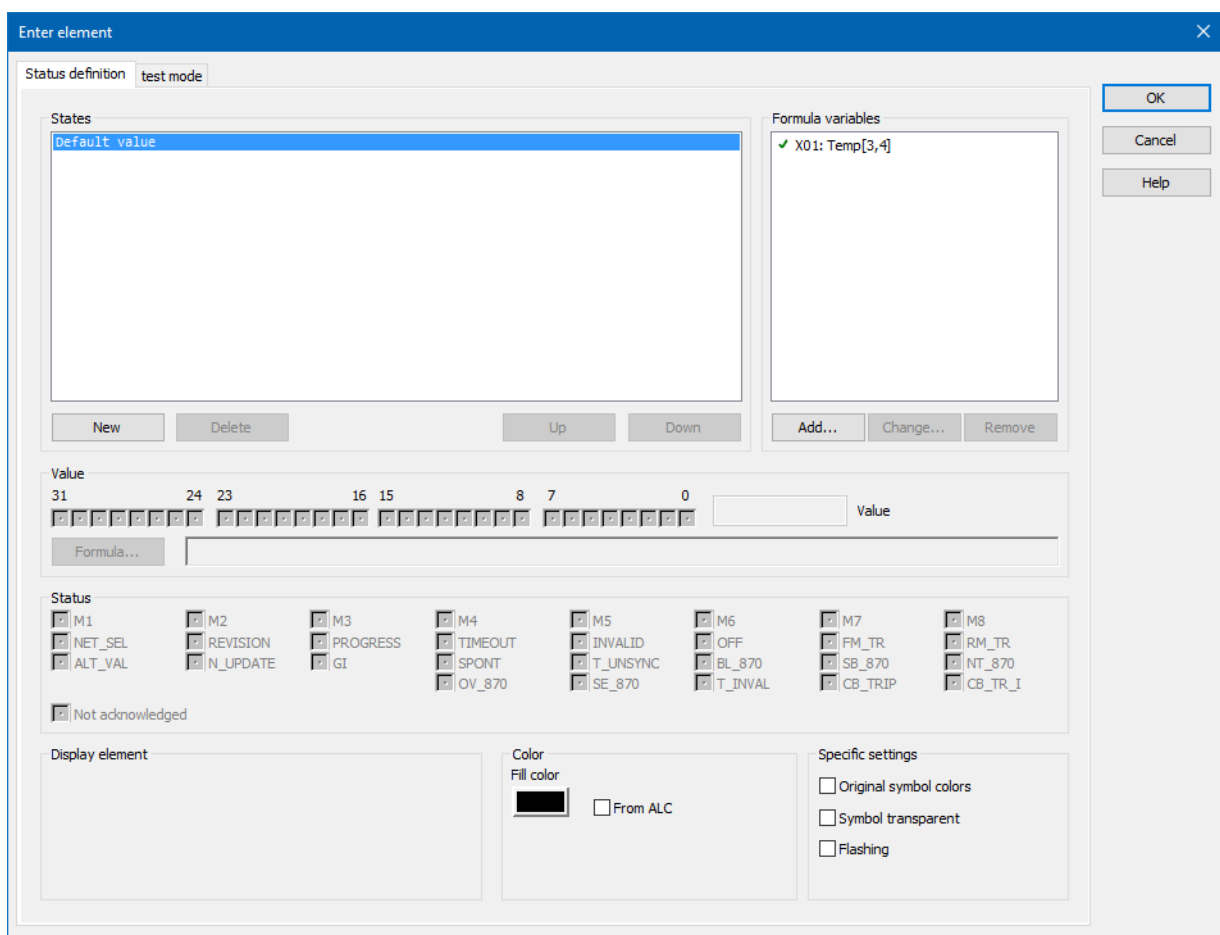
The general settings for all display types can be found in the chapter on statuses (on page 71).



Parameters	Description
Display element	
Graphics	Clicking on Graphics opens the graphics selection dialog. Delete: Remove name from text line.
Specific settings	
Flashing	Active: Symbol flashes in runtime if status has been achieved.

Only screen symbol

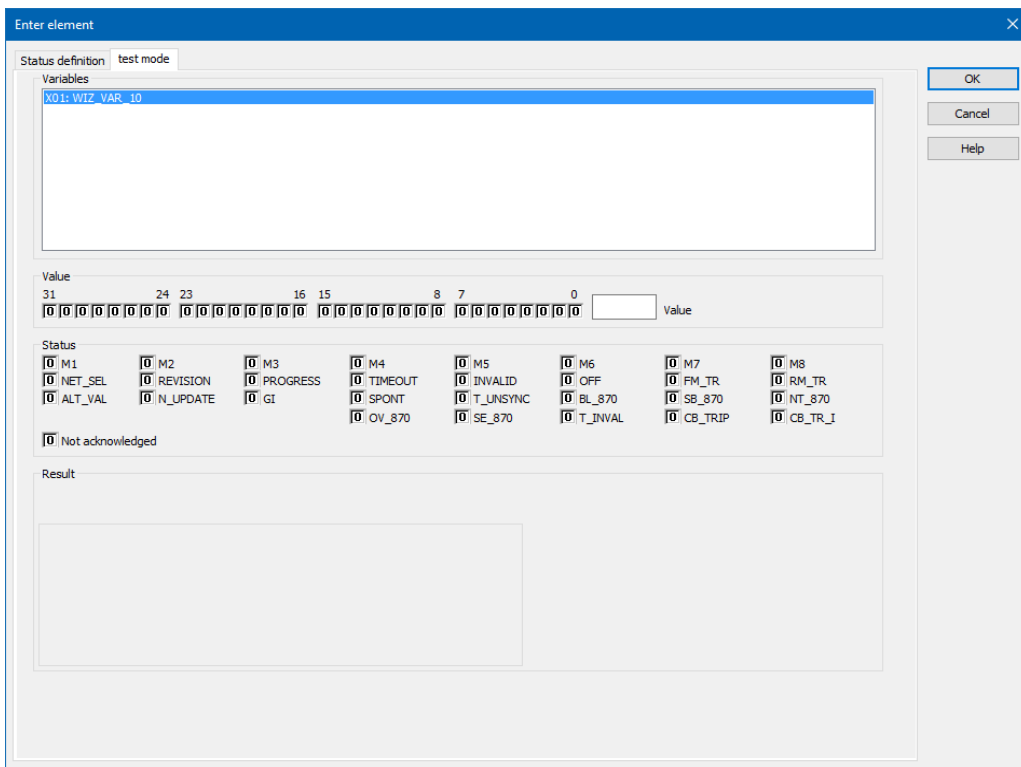
The general settings for all display types can be found in the chapter on statuses (on page 71).



Parameters	Description
Colors	
Color	Choice of color.
From ALC	The color of the linked source is used.
Specific settings	
Original symbol colors	Active: Transfers original color from symbol.
symbol transparent	Active: Symbol color is set to transparent.
Flashing	Active: Symbol flashes in runtime if status has been achieved.

11.9.4 Test mode

The test mode simulates the Runtime: You can test the change of a value and see how your Combined Element would behave during the Runtime. You can only activate this tab if all links refer to existing variables.



Note: In test mode, the symbol is displayed in a lower resolution than on the screen in Runtime.

11.9.5 Formula editor

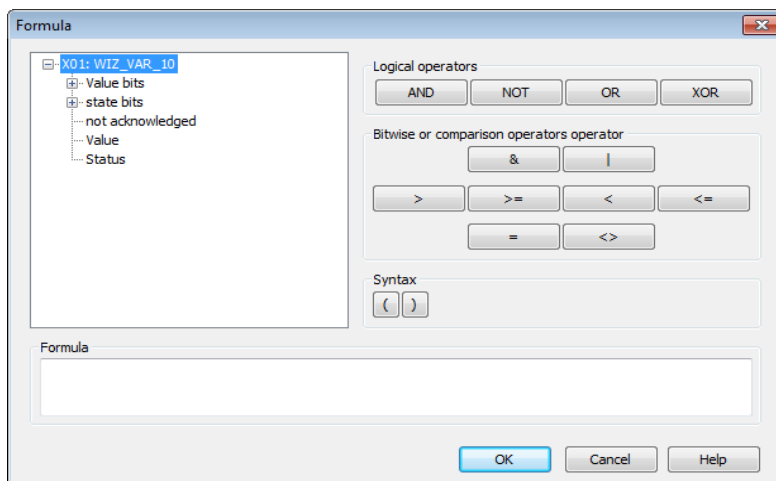
The formula editor provides support when creating formulas with logical or comparative operators with a combined element, for interlockings and command processing. If additional variables are required for a formula, create these in the **formula variables** (on page 71) area of the status window by clicking on the **Add** button. existing formulas are displayed in the status list with the letters **F**.

Note on the input of decimal points:

- ▶ Decimal separator: Comma (,) is automatically converted into a dot (.):
- ▶ Zero as a decimal point is removed automatically; 23 , 000 automatically becomes 23

CREATING A FORMULA

Click on the **Formula** button in the status window. The formula editor opens



You select the bits for your formula in the left screen.

On the right, you find the operators for logical and comparative operations.

The formula created is displayed in the **Formula** area.



Information

Up to 99 variables can be linked in one formula. X01 to X99. The length of the formula must not exceed 4096 characters.

THE MEANING OF THE BITS:

Parameter	Description
value bits	<p>32 value bits (from 0 -31) are available. They describe the variable value bit by bit. For binary variables, only bit 0 is of importance, for SINT and USINT only the bits from 0–7, etc.</p> <p>Note: The value refers to the raw value (signal range) of the variables and not to the converted measuring range.</p>
State bits	Here you find the most commonly used status bits. You find the exact definition and use of the status bits in the Status Bits List (on page 86).
unreceipted	Not acknowledged is treated like a usual status bit. But here it is listed separately, because it does not belong to the classical variable statuses.
value and status	<p>In the formulas, all values (value bits and status bits) are treated as binary values and can be logically linked with AND, OR, etc.</p> <p>The total value and overall status are an exception to this. In order to arrive at a Boolean expression, this total value has to be ORed bitwise (on page 89) with a constant. For this, we use the operator &.</p> <p>For the result 0 (FALSE) of this logical ORing, we get the binary value 0 (FALSE), otherwise 1 (TRUE).</p> <p>Example: See the bitwise ORing example (on page 89) chapter</p>



Info

The status bits NORM and N_NORM are only available in the formula editor and cannot be engineered via the status.

If other settings outside the formula are set for the current status, they are combined with the formula with a logical AND.

Refer to the examples (on page 91) section for examples.



Information

Formulas with binary X values and bitwise linking can be used with a maximum of 2 binary values. If more values are required, the linking must be carried out without binary X values.

Example:

X01.Value & X02.Value -> works

X01.Value & X02.Value & X03.Value -> does not work

But:

X01.00 AND X02.00 AND X03.00 AND X04.00 AND X05.00 -> works

List of status bits

Bit number	Short term	Long name	zenon Logic long name
0	M1	User status 1; for Command Processing: Action type "Block"; Service Tracking (Main.chm::/IEC850.chm::/117281.htm) of the IEC 850 driver	_VSB_ST_M1
1	M2	User status2	_VSB_ST_M2
2	M3	User status3	_VSB_ST_M3
3	M4	User status4	_VSB_ST_M4
4	M5	User status5	_VSB_ST_M5
5	M6	User status6	_VSB_ST_M6
6	M7	User status7	_VSB_ST_M7
7	M8	User status8	_VSB_ST_M8
8	NET_SEL	Select in the network	_VSB_SELEC
9	REVISION	Revision	_VSB_REV
10	PROGRESS	In operation	_VSB_DIRECT
11	TIMEOUT	Command "Timeout exceeded" (command runtime exceeded)	_VSB_RTE
12	MAN_VAL	Manual value	_VSB_MVALUE
13	M14	User status14	_VSB_ST_14
14	M15	User status15	_VSB_ST_15
15	M16	User status16	_VSB_ST_16
16	GI	General query	_VSB_GR
17	SPONT	Spontaneous	_VSB_SPONT
18	INVALID	Invalid	_VSB_I_BIT
19	T_STD_E	External standard time (standard time) Caution: up to version 7.50, this was the status bit T_CHG_A	_VSB_SUWI
20	OFF	Switched off	_VSB_N_UPD
21	T_EXTERN	Real time - external time stamp	_VSB_RT_E
22	T_INTERN	Internal time stamp	_VSB_RT_I
23	N_SORTAB	Not sortable	_VSB_NSORT
24	FM_TR	Error message transformer value	_VSB_DM_TR

25	RM_TR	Working message transformer value	_VSB_RM_TR
26	INFO	Information for the variable	_VSB_INFO
27	ALT_VAL	Alternate value	_VSB_AVALUE
28	RES28	Reserved for internal use (alarm flashing)	_VSB_RES28
29	N_UPDATE	Not updated (zenon network)	_VSB_ACTUAL
30	T_STD	Internal standard time	_VSB_WINTER
31	RES31	Reserved for internal use (alarm flashing)	_VSB_RES31
32	COT0	Cause of transmission bit 1	_VSB_TCB0
33	COT1	Cause of transmission bit 2	_VSB_TCB1
34	COT2	Cause of transmission bit 3	_VSB_TCB2
35	COT3	Cause of transmission bit 4	_VSB_TCB3
36	COT4	Cause of transmission bit 5	_VSB_TCB4
37	COT5	Cause of transmission bit 6	_VSB_TCB5
38	N_CONF	Negative confirmation of command by device (IEC 60870 [P/N])	_VSB_PN_BIT
39	TEST	Test bit (IEC870 [T])	_VSB_T_BIT
40	WR_ACK	Writing acknowledged	_VSB_WR_ACK
41	WR_SUC	Writing successful	_VSB_WR_SUC
42	NORM	Normal status	_VSB_NORM
43	N_NORM	Deviation normal status	_VSB_ABNORM
44	BL_870	IEC 60870 Status: blocked	_VSB_BL_BIT
45	SB_870	IEC 60870 Status: substituted	_VSB_SP_BIT
46	NT_870	IEC 60870 Status: not topical	_VSB_NT_BIT
47	OV_870	IEC 60870 Status: overflow	_VSB_OV_BIT
48	SE_870	IEC 60870 Status: select	_VSB_SE_BIT
49	T_INVAL	External time stamp invalid	not defined
50	CB_TRIP	Breaker tripping detected	not defined
51	CB_TR_I	Breaker tripping detection inactive	not defined
52	OR_DRV	Value out of the valid range (IEC 61850)	not defined
53	T_UNSYNC	ClockNotSynchronized (IEC 61850)	not defined

54	PR_NR	Not recorded in the Process Recorder	not defined
55	RES55	reserved	not defined
56	RES56	reserved	not defined
57	RES57	reserved	not defined
58	RES58	reserved	not defined
59	RES59	reserved	not defined
60	RES60	reserved	not defined
61	RES61	reserved	not defined
62	RES62	reserved	not defined
63	RES63	reserved	not defined



Information

In formulas all status bits are available. For other use the availability can be limited.

You can read details on status processing in the Status processing chapter.

Logical operators

Logical links: Variables will only be checked for the logical value '0'; if the value does not equal '0', it will be considered as '1'.

In contrast to bit formulas, the technical range can be modified by a stretch factor -> (not equal '0' or '1').

Operator	Meaning
AND	logical 'AND'
NOT	Negation
OR	logical 'OR'
XOR	logical 'EXCLUSIVE OR'

The operators have the following priority in the formula calculation:

Priority	Operator
1	& (operator for bit formulas (on page 89))
2	NOT
3	AND
4	XOR/OR

**Info**

Up to 99 variables can be linked in one formula. X01 to X99.

**Info**

The status bits NORM and N_NORM are only available in the formula editor and cannot be engineered via the status.

Bit formulas

Bit formulas only have a logical high or low state. In contrast to logical formulas, the raw value is already predefined (0,1).

Operator	Description
&	AND
	OR

Example: ORing bitwise

You want to find out if one of the user status bits 1-8 (M1 ... M8) of the variable X01 is set.

USUAL FORMULA:

X01.M1 OR X01.M2 OR X01.M3 OR X01.M4 OR X01.M5 OR X01.M6 OR X01.M7 OR X01.M8

This query can be made much easier by the logical ORing of the overall status.

LOGICAL ORING

X01.Status & 0xFF

The constant can be entered in hexadecimals, as described above:

0xFF corresponds to decimal 255; these are the first eight status bits (binary 11111111). If one of these bit is set to 1, the result of this bitwise ORing is 1 (true), otherwise it is 0 (false).

If, for example, all user status bits except the user status bit M7 should be queried, the binary statement for this would be: 10111111. Bit 7 is not of interest and is thus set to 0. This corresponds to 0xBF in hexadecimal. The expression for the formula is then: **X01.Status & 0xBF**.

Instead of ORing bitwise with a constant, the value can also be directly compared to a decimal number. If the comparison is wrong, the binary value is 0 (false) otherwise it is 1 (true).

Example:

You want to find out if the value is equal to the constant 202: The formula is:

X01.value = 202

If the value is equal to the constant 202, the result of the comparison is 1 (True) otherwise it is 0 (False).

Note: The bitwise ORing works with the OR character (|), the same as in this example.

Comparison operators

Comparison operators are for the direct comparison of two numeric values. The result of this comparison is a binary value. "0" if the condition is not fulfilled and „1“ if the condition is fulfilled.

Operator	Description
<	less
>	greater
<=	Less than or equal
>=	greater or equal
=	Equal
<>	unequal

To the left and to the right of the comparison operator, there has to be a (total) value or a (total) status, single bits cannot be used with these comparison operators.

There can also be a constant to the right of the comparison operator.

These constants are entered as hexadecimal values or decimal values in the combined element.

Hexadecimal numbers are automatically converted to decimal numbers by clicking on **OK**. For example, 0x64 corresponds to the numerical value 100.

Note: The combined element is not available in the **Batch Control** module.



Example

X01.value >= X02.value

The result is 1, if the value of X01 is higher than or equal to the value of X02

X01.value = 0x64

The result is 1, if the value of X01 is exactly equal to the numeric value 100 (= hex 0x64)

(X01.value = 0x64) OR (X01.value = 0x65)

The result is 1, if the value of X01 is exactly equal to the numeric value 100 or 101 (= hex 0x64 and hex 0x65)

Examples for formulas

SIMPLE LOGICAL AND LINKING BETWEEN TWO BIT VALUES



Example

Formula: X01.03 AND X02.03

This formula has the status TRUE, if both **bit 3** of variable 1 and **bit 3** of variable 2 both have the value 1.

COMPARISON OF AN VALUE OR STATUS OF A VARIABLE



Example

(X01.Value > X02.Value)

COMPARE COMPARISONS TO ONE OTHER ON A LOGICAL BASIS



Example

(X01.Value > X02.Value) AND (X01.Value = X02.Value)

COMPARE WITH VALUE BITS AND STATUS BITS



Example

(X01.Value > X02.Value) AND (X01.Value = X02.Value) OR (X01.03 = X02.03)

COMPARE A VALUE WITH A DECIMAL OR HEXADECIMAL VALUE



Example

Formula: (X01.Value = 111)

Formula: (X01.Value = 0x6F)

If a hexadecimal value is used, this is later transferred to decimal by clicking on **OK**. If a decimal value is entered and confirmed, the value continues to be displayed as a decimal value after reopening.



Info

It is not possible to use a comma or a period when entering values.

11.9.6 Display of variable information

You can display information on variables with the help of the combined element for:

- ▶ Resources label
- ▶ Measuring unit
- ▶ Variable identification
- ▶ Variable name
- ▶ Variable value
- ▶ Timestamp

The information shown is always applicable for the linked main variable.

Engineering

1. Create a Combined element.
2. As type of display, select Condition text & screen symbol.
3. Create a default condition.

4. Enter on of the following placeholder as condition text.
Pay attention to capital letters and small letters when entering the data!
The figures are examples.
5. Activate the **Transparent** option for the element.

RESOURCES LABEL

Placeholder	Description
%r	Shows the resources label.
%r,1,2	Shows the resources label starting at position 1 for 2 characters.
%R	Shows the resources label.
%R,3,2	Shows the resources label minus the first 3 and the last 2 characters.

MEASURING UNIT

Placeholder	Description
%u	Shows the measuring unit.
%u,1,2	Shows the measuring unit starting at position 1 for 2 characters.
%U	Shows the measuring unit.
%U,3,2	Shows the measuring unit minus the first 3 and the last 2 characters

VARIABLE IDENTIFICATION

Placeholder	Description
%l	shows the variable identification.
%l,1,2	Shows the variable identification starting at position 1 for 2 characters.
%L	shows the variable identification.
%L,3,2	Shows the variable identification minus the first 3 and the last 2 characters.

VARIABLE NAME

Placeholder	Description
%n	shows the variable name.
%n,1,2	Shows the variable name starting at position 1 for 2 characters.
%N	shows the variable name.
%N,3,2	Shows the variable name minus the first 3 and the last 2 characters.

VARIABLE VALUE

Placeholder	Description
%v	Shows the current variable value.

%v,1,2	Shows the current variable value starting at position 1 for 2 characters.
%V	Shows the current variable value.
%V,3,2	Shows the current variable value minus the first 3 and the last 2 characters.

TIMESTAMP

Placeholder	Description
%t	Shows the time stamp.
%t,1,2	Shows the time stamp starting at position 1 for 2 characters.
	Shows the time stamp.
%T,3,2	Shows the time stamp minus the first 3 and the last 2 characters.

The formats for the time settings from the operating system are applied.

11.10 Combo-/Listbox

You link values of variables with texts using the **combo/list box** dynamic element. You use this in two ways:

1. If a text is selected in runtime, the value of the variable changes to the value that is linked to this text.
2. If the variable reaches one of the defined values, the linked text is displayed in the combo/list box for as long as the value is available.

CREATE A COMBO/LIST BOX

To create the **Combo/List box** dynamic element in a screen:

1. select the **Combo-/Listbox** symbol in the **Elements** toolbar
2. select the start point in the main window
3. pull open the element while pressing and holding the left mouse button
4. a Dialog (on page 200) opens in which you can link the desired variable to the element. Variables can also be linked to the element by Drag&Drop. Drag a variable onto a combo/list box and this then replaces the variables that were there before.

The following variable types are supported:

- Binary
- Numerical
- string



Info

No semicolon (;) can be displayed in the text for string variables, because the semicolon is used as a separator.

The combo/list box element supports the same additional functionalities as the numerical value (on page 122) element:

- ▶ Lock, Status, Visibility, Dynamic Colors.
- ▶ Dynamic colors: The background color is only accepted for existing entries. The part of the element that is not filled with entries is displayed in the standard background color.

Linking of macros to element events (such as LeftClickUp ...) is not supported.



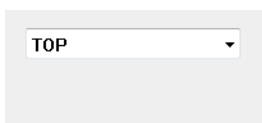
Attention

It is not possible to modify colors and fonts in the combo/list box under Windows CE.

Comboboxes/listboxes can be created dynamically or statically. The property **Entries from string variable** switches between static and dynamic operation. Fixed entries are defined in the Editor during static operation. In dynamic operation, a content variable is linked and its value is interpreted in Runtime.

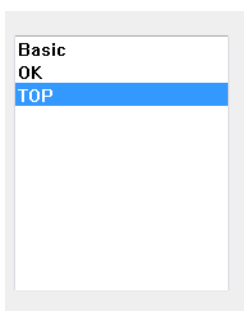
DIFFERENCE BETWEEN COMBOBOX AND LIST BOX

The texts are opened individually in a window in the **Combo box**.



Note for the display of the combobox in the Editor: The first line is shown in the background color; the rest of the box is transparent. Thus other elements are not covered in the Editor. The display in Runtime is as usual.

The values are displayed in a list and the current value is marked in the **List box**. If there are more statuses than can be displayed in the list, a scroll bar is displayed.





Info

If the variable has a value which has not been defined in the combo box/list box entries, no text is displayed or marked.

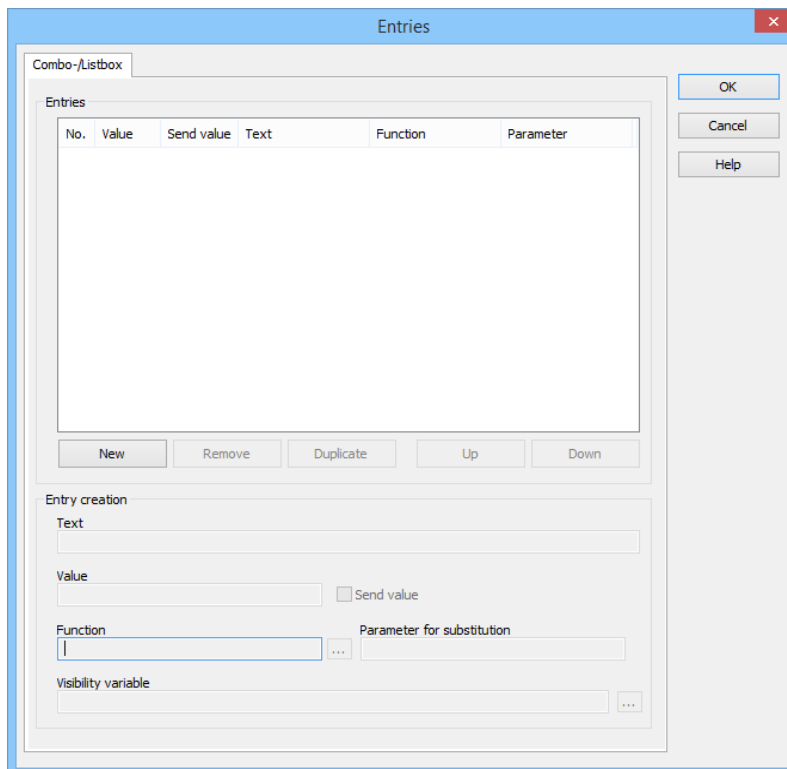
STATIC COMBOBOX OR LIST BOX

Fixed entries are configured in the Editor for a static box. These are displayed and used in Runtime.

To enter values:

1. Open the **Representation** group.
2. Select the display type using the **Type** property: `Combobox` or `List box`.
Default value `Listbox`
3. Entries can be entered directly or created dynamically. To do this, switch to the **Text** group.
4. To create entries dynamically, activate the **Entries from string variable** property.
5. To configure entries using the dialog, click on the **...** button in the **Entries** property.

The dialog for configuration of the entries is opened.



6. Enter the values for states.
7. Link the values with the texts for states.

ENTRIES DIALOG

Entries

Combo-/Listbox

Entries

No.	Value	Send value	Text	Function	Parameter
0		yes		Function 0	
1		yes		Batch	Intern1

New

Remove

Duplicate

Up

Down

Entry creation

Text

Value

☒ Send value

Function

Batch

...

Parameter for substitution

Intern1

Visibility variable

...

OK

Cancel

Help

ENTRIES

Parameter	Description
Entries	List of entries already defined.
No.	Consecutive number, is assigned automatically.
Value	Value that was assigned under Entries/Value .
Send value	Yes: Send value is active. No: Send value is inactive.
Text	Character string that was entered into Entries/Text .
Function	Function that was linked to the Entries/Function field.
Parameter	Parameter that was issued for the function for substitution.
Variable	Linked visibility variable.
New	Creates a new entry with: <ul style="list-style-type: none"> ▶ consecutive number ▶ Set active value
Delete	Removes the selected entry. Only one entry can be removed; it is not possible to select several entries.
Copy	Copies selected element and adds it at the end of the list as new element. The settings of the copied elements are taken over.
Upwards/downwards	Moves the selected entry upwards or downwards and adapts the consecutive numbering to suit.

ENTRY CREATION

Parameter	Description
Entry creation	Configuration of entries in the list.
Text	Entry of the character string which is linked to the value.
Value	Numerical value. The values that can be entered depends on the data type of the variables.
Send value	activates or deactivates set value: Active: The value is set as a set value. Inactive: The value entered only serves to index the selection. Attention: Set value only affects the value, not the function. The function is always sent. Set value must be inactive for a function call without linked variable.

Function	<p>Function that is executed when the entry is selected in Runtime. Click on the ... button to open the dialog for selecting a function (on page 199).</p> <p>Attention: The function is only executed if you select the entry via the combo box/list box during runtime. If the triggering value changes and reaches the level of the variable, the function is not executed. Set value must be <i>inactive</i> for a function call without linked variable.</p>
Parameter for substitution	<p>Entry of the character sequence for substitution via parameters. Replaces the key word {PARAM} in the substitution dialog (on page 187) of the screen switching for indices.</p>
Visibility variable	<p>Variables for which the value changes and thus limit value violations can be evaluated in Runtime. If there is a limit violation at the visibility variable, it is evaluated and determines whether the entry is visible in the list. The entry is displayed in the list as standard (there is no limit value violation). Click on the ... button under Visibility variable in order to open the dialog for selecting a variable (on page 200).</p> <p>Attention: A value change during operation can lead to, with comboboxes, an open combobox being closed.</p>

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

SORTING ENTRIES

The entries can be sorted using:

- ▶ **Upwards** and **Downwards** buttons: Highlight the desired element and move it with the buttons.
- ▶ Drag & drop: Drag the element to the desired place with the mouse. A red line displays the point where the element is inserted.

DYNAMIC COMBOBOX OR LIST BOX

For dynamic operation, a string variable that defines the content must be linked using the **Variable** property. Any static entries that may be configured at the same time in Runtime are ignored. The value of the content variable is evaluated and interpreted. To do this, the value of the variables must correspond to a valid layout in Runtime.

LAYOUT

The string value displays a list of entries. Each entry consists of a value and a text that is separated with a comma ",". Entries are concluded with a semi-colon ";". If the text part of an entry contains an "@" character, the text part is translated with the help of the existing language table.

Example of a valid string value:

1,one;2,two;3,three;

Example of a valid string value with translation:

1,@one;2,@two;3,@three;

CONFIGURATION

To link a variable:

1. Open the **Representation** group.
2. Select the display type using the **Type** property: `Combobox` or `List box`.
Default value `Listbox`
3. Activate the property **Entries from string variable**
4. Select, using the **Variable** property, the desired variable
(clicking on the ... button opens the dialog for variable selection (on page 200))
5. Select the string variable with the configured entries

MARK ELEMENT IN LIST WHEN SELECTED

The elements displayed in the combo box or list box can be marked in color in runtime. To do this:

- ▶ navigate to Group **Fill** in properties
- ▶ In group **Fill** select the properties
 - **Text color when selected** for the text color
 - **Background color when selected** for the text background color

These colors are then used during runtime. Operating system settings are ignored, as are the colors of linked variables.



Information

The colors of the operating system were used up to version 6.50. When converting the project:

- ▶ the background color is set to that configured in the operating system
- ▶ if the text color is set as a statically defined color

On computers where the colors have been changed in the operating system, this may lead to different behavior during runtime.

ERROR TREATMENT

Errors are displayed as log entries in the Diagnosis Server:

Message	Level	Meaning
The value '%s' of the content variable '%s' is not valid, entries might be incorrect or missing!	Error	<p>The string variable linked in the Variable property has a value with invalid layout.</p> <p>The text is evaluated as far as possible. The current value is also logged to make error analysis in Runtime easier.</p>

11.11 Dynamic text

With the **Dynamic Text** dynamic element, you display the current limit value text in the event of the limit value being violated or display the value of a string variable in alphanumeric form. If there is no limit value violation, the text defined in the Editor is displayed.

To create a **dynamic text** in a screen:

1. Select the **Dynamic text** symbol in the **Elements** toolbar
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
4. the dialog to select a variable (on page 200) opens
5. Select the desired variable

6. Define the desired properties in the properties window

Above all:

- Select the type for **Display text**.
If limit value text is selected here, then stipulate the text that is displayed as long as there is no limit value violation in the **Text** property.

The linked variable and the content selected in the **Display text** property is displayed in the preview of the element in the main window.



Information

If the element is used in Runtime to replace a static Win32 control element and it is deactivated, the background color and text color is set to gray values.

HIDDEN ENTRY OF TEXT

If the element is used to design sensitive elements such as passwords, input can be masked. To do this, activate the **Hidden input** property. If you want, you can define any desired character using the **Masking character** property, which is used for masking.

Text is replaced with the defined character in Runtime. The replacement is already carried out during entry. The input field always the character 8 times, regardless of the actual length of the text. If the **Hidden input** property is deactivated, the text entered by the user is displayed.

The following is applicable for input:

- ▶ Must not be empty.
If the input field is deleted, the last-used, valid character is entered.
- ▶ Only one character can be entered.
- ▶ If a space is entered, the field is shown as empty in Runtime.

Default: *

DISPLAY TEXT IN RUNTIME

Value for **Display text**:

- ▶ `Resources label`: The content of the **Resources label** variable property is displayed.
- ▶ `Limit value text`: As long as no limit value has been violated, the content of the **Text** screen property is displayed. If a limit value is violated, the content of the **Limit value text** variable property is displayed. The color from the limit value text is used for the text. If a dynamic color has been configured for the element, this is used.
- ▶ `Measuring unit`: The content of the **Measuring unit** variable property is displayed. The element is updated as soon as a **Measuring unit conversion** function is executed.
- ▶ `Variable identification`: The content of the **Identification** variable property is displayed.

- ▶ `Variable name` : The content of the **Name** variable property is displayed.
- ▶ `Variable value`: The value of the variable is displayed.

WRITE SET VALUE

When writing a set value using a `dynamic text`, it is possible to use the **Write on lost focus** property to define how the element acts in Runtime.

Property:

- ▶ **Active**: The value is written as soon as the control element loses the focus.
Input is canceled by pressing the `Esc` key and the value is not written.
- ▶ **Inactive**: The value is written after confirmation by pressing the `Enter` key.
Input is canceled by pressing the `Esc` key and the value is not set.

The default value depends on whether the element from the toolbar can be inserted into the screen or whether it was inserted as editable **dynamic text** from the **control elements** menu:

- ▶ As an element in the screen: `Inactive`
- ▶ From the **control elements** menu: `active`

LANGUAGE FILE

The language of all displayed content of the display text types is translated if the language file contains corresponding entries.

Exception: The variable name is not translated.

WITH PROJECTS BEFORE VERSION 7.20

With version 7.20, the checkbox **Text from variable** was replaced by the new drop-down selection **Display text** and the possible settings were increased. A conversion of the original entries was implemented for this change: The 'variable value' value was originally only used for **STRING** variables. From version 7.20, this version is converted depending on the type of the variables. **INTEGER** variables become `limit value text`, **STRING** variables become `variable value`. This conversion is carried out in the Editor and in Runtime when loading a screen element.

If Runtime files are transferred from a project before 7.20 directly into a version 7.20 project, this can lead to the following behavior: **INTEGER** variables are swapped for **STRING** variables and vice versa.

Solution: Create the Runtime files again in version 7.20.

11.12 Ellipse and Circle

To draw an ellipse:

1. Select the **Ellipse/Circle** symbol in the tool bar or in the **Elements** menu.
2. Select the start point in the main window.
3. Pull open the ellipse while pressing and holding the left mouse button.
4. To change the shape, size or position, drag the corners or move the element.
5. Define the desired properties in the **property window**

Note:

- ▶ Adjusting an ellipse:
To execute changes symmetrically when dragging, hold down the `Alt` key.
- ▶ Drawing a circle:
In order to draw a circle: Hold down the `Shift` key when drawing.
- ▶ Adjust circle:
To get the circle shape when dragging, hold down the `Shift` key.

11.13 Arc of a circle

In order to draw an arc of a circle:

- ▶ Select the **Arc of a circle** symbol in the **Elements** toolbar
- ▶ Select the start point in the main window.
- ▶ Pull open the arc of the circle while pressing and holding the left mouse button
- ▶ Pulling upwards to the right opens the arc of the circle to the left; all directions work along the same lines
- ▶ To change the opening direction, move a central touch point over the opposite line
- ▶ The shape, size and position can be changed at any time by pulling the vertexes or moving the element.
- ▶ If you press and hold the `Alt` key while pulling the outer corner points, the change is carried out symmetrically.
- ▶ Hold down the `shift` key whilst moving it and the aspect ratio is maintained
- ▶ Define the desired properties in the **properties window**

**Info**

The arc of the circle is always displayed as a quadrant and can be extended by copying and pasting.

Filling patterns and fill colors are not available for arcs of circles.

11.14 Segment of a circle

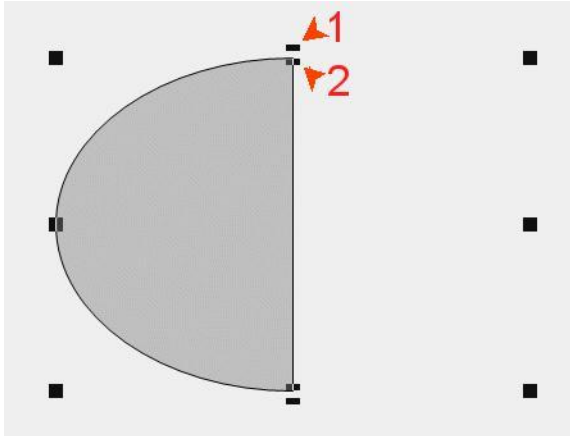
**Attention**

With the segment of a circle, you draw the desired part of a circle or ellipse.

To draw a segment of a circle:

1. Select the **Segment of a circle** symbol in the **Elements** toolbar
 2. Select the start point in the main window.
 3. Pull on the segment of the circle pressing and holding the left mouse button
 4. Pulling upwards to the right opens the segment to the left and vice versa
 5. To change the opening direction, move a central touch point over the opposite line
 6. The shape, size and position can be changed at any time by pulling the vertexes or moving the element.
 7. If you press and hold the Alt key while pulling the outer corner points, the change is carried out symmetrically.
 8. hold down the `shift` key whilst moving it and the aspect ratio is maintained
 9. You have two possibilities to change the opening angle or to open the circle segment upwards or downwards:
 - Move the mouse over one of the two divided touch points until the mouse pointer on the outermost of the two points turns into a black cross with arrows and move the point into the desired direction
or
 - Change the angle settings properties under **Opening angle**. For example:
 - for opening downwards: **End angle** [°] 180° and **Start angle** [°] to 0°
 - for opening upwards:
- Angle data can have a maximum of two decimal points.
Note: Because the corner points calculated from angle data are pixels, and these must be whole numbers, it can be the case that the angle display deviates from the data somewhat. For example 45° does not give a whole number of pixels. zenon internally it is rounded and the angle is displayed as 44.75°.

10. Define the desired properties in the properties window.



Key:

1. touch points for opening angle
2. touch point for height

Info

*If you would like to use the segment of a circle as an arc of a circle, change the **Fill pattern** property to the value of transparent. Only the outer line is displayed with the transparent display type.*

The opening angle must always be $> 0^\circ$ and $< 360^\circ$.

Attention

The Segment of a circle element is not available in Windows CE.

SEGMENT THICKNESS

In the properties you can define the segment thickness of a segment of a circle under **Display** in group **Segment thickness**. If the **Adjustable segment thickness** property is activated, then the ellipsis at the start and end angle of the outer edge to the center only displays the thickness set. Thus hose-like forms with different start thicknesses and end thicknesses can be displayed in a curved form.

Both circle-shaped and elliptical segments are supported. The **End thickness equals start thickness** property is available to display forms with the same thickness.

If 0 is defined as the segment thickness for **Thick start angles [pixel]** and **Thickness end angles [pixel]**, then an arc of a circle is displayed.

Note on availability: Not available for **Graphics quality** Windows Basis, for **Windows CE project** aktiv or for **Color gradient** With brightness values.

11.15 Line

To draw a line:

1. Select the **Line** symbol in the **Elements** toolbar
2. select the start point in the main window
3. Pull out the line while pressing and holding the left mouse button
4. The shape, size and position can be changed at any time by pulling the vertexes or moving the element
5. If you press and hold the `Alt` key while pulling the outer corner points, the change is carried out symmetrically
6. define the desired properties in the **properties window**



Info

Filling patterns and fill colors are not available for lines.

11.16 Polygon

To draw a polygon:

1. Select the **Polygon** symbol in the **Elements** toolbar
2. In the main window, select the start point by clicking the left mouse button
3. pull the first section
4. place an initial corner point with a simple mouse click (left)
5. draw another line and place the corner points
6. set the end point by double clicking or pressing the `escape` key
7. The shape, size and position can be changed at any time by pulling the vertexes or moving the element
8. Hold down the `shift` key when pulling; this way, only horizontal or vertical movements away from the original position are possible
9. Define the desired properties in the properties window

Hint: You define the rounding (on page 141) of the lines with the **Rounding** property. To do this, select a value between 0 (no rounding) and 1 (maximum rounding).

ADD DOTS

To add corner dots (support dots):

- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Add node in the selected element** menu item from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ The mouse pointer changes to an arrow including a plus sign.
- ▶ A mouse click adds a corner dot.

DELETE DOTS

To delete end points (support points):

- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Delete node in the selected element** menu entry from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ The mouse pointer changes to an arrow including a minus sign.
- ▶ A mouse click removes the point.

MOVE POINTS

To move end points (support points):

- ▶ move the mouse pointer over the desired point of the polyobject.
- ▶ Place the point over the arrow keys at the desired place.

Note:

- ▶ Pressing on the arrow key moves the position by 1 pixel. If the `Shift` key is held at the same time, a press of the button moves the point by 10 pixels.
- ▶ The options **Use grid**, **Horizontal distance** and **Vertical distance** in the Editor **settings** are ignored.



Information

*The **With brightness values** property is not available for polygons.*

11.17 Polyline

To draw a polyline:

1. Select the **Polyline** symbol in the **Elements** toolbar
2. In the main window, select the start point by clicking the left mouse button
3. pull the first section
4. place an initial corner point with a simple mouse click (left)
5. draw another line and place the corner points
6. set the end point by double clicking or pressing the `escape` key
7. The shape, size and position can be changed at any time by pulling the vertexes or moving the element
8. Hold down the `shift` key when pulling; this way, only horizontal or vertical movements away from the original position are possible
9. Define the desired properties in the properties window

Hint: You define the rounding (on page 141) of the lines with the **Rounding** property. To do this, select a value between 0 (no rounding) and 1.

ADD DOTS

To add corner dots (support dots):

- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Add node in the selected element** menu item from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ The mouse pointer changes to an arrow including a plus sign.
- ▶ A mouse click adds a corner dot.

DELETE DOTS

To delete end points (support points):

- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Delete node in the selected element** menu entry from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ The mouse pointer changes to an arrow including a minus sign.
- ▶ A mouse click removes the point.

MOVE POINTS

To move end points (support points):

- ▶ move the mouse pointer over the desired point of the polyobject.
- ▶ Place the point over the arrow keys at the desired place.

Note:

- ▶ Pressing on the arrow key moves the position by 1 pixel. If the `Shift` key is held at the same time, a press of the button moves the point by 10 pixels.
- ▶ The options **Use grid**, **Horizontal distance** and **Vertical distance** in the Editor **settings** are ignored.

11.18 Rectangle and square

To draw a rectangle:

1. Select the **Rectangle/square** symbol in the tool bar or in the **Elements** menu.
2. Select the start point in the main window.
3. Drag the rectangle while pressing and holding the left mouse button
4. To change the shape, size or position, drag the corners or move the element.
5. Define the desired properties in the **property window**

Hint: You can round (on page 141) the corners at will in order to create a rectangle with rounded corners

Note:

- ▶ Amending a rectangle:
To execute changes symmetrically when dragging, hold down the `Alt` key.
- ▶ Drawing a square:
In order to draw a square: Hold down the `Shift` key when drawing.
- ▶ Adjust square:
To get the square shape when dragging, hold down the `Shift` key.

11.19 Pipe

To draw a tube:

1. Select the **Pipe** symbol in the **Elements** toolbar
 2. In the main window, select the start point by clicking the left mouse button
 3. Pull the first section
 4. Place an initial corner point with a simple mouse click (left)
 5. Draw another line and place the corner points
 6. Set the end point by double clicking or pressing the `esc` key
 7. The shape, size and position can be changed at any time by pulling the vertexes or moving the element
 8. Hold down the `shift` key when pulling; this way, only horizontal or vertical movements away from the original position are possible
 9. Define the desired properties in the properties window
- Hint: You define the rounding (on page 141) of the lines with the **Rounding** property. To do this, select a value between 0 (no rounding) and 1 (maximum rounding).

ADD DOTS

To add corner dots (support dots):

- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Add node in the selected element** menu item from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ The mouse pointer changes to an arrow including a plus sign.

- ▶ A mouse click adds a corner dot.

DELETE DOTS

To delete end points (support points):

- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Delete node in the selected element** menu entry from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ The mouse pointer changes to an arrow including a minus sign.
- ▶ A mouse click removes the point.

MOVE POINTS

To move end points (support points):

- ▶ move the mouse pointer over the desired point of the polyobject.
- ▶ Place the point over the arrow keys at the desired place.

Note:

- ▶ Pressing on the arrow key moves the position by 1 pixel. If the `Shift` key is held at the same time, a press of the button moves the point by 10 pixels.
- ▶ The options **Use grid**, **Horizontal distance** and **Vertical distance** in the Editor **settings** are ignored.

11.20 Switch

You show the value of a binary variable in graphic form and modify it with the **Switch** dynamic element. The element can also be used as a pushbutton for one-stage unsecured command processing.

To create **Switch** in a screen:

1. Select the **Switch** symbol in the **Elements** toolbar
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.

The dialog to select a binary variable (on page 200) opens.

4. Select the desired variable
5. Define the desired properties in the properties window

Note:

- ▶ To use the element as a pushbutton, activate the **Pushbutton** property in the **Write set value** node
- ▶ The element can also be used in screens as a control element for checkboxes.

FILE FORMATS FOR THE DISPLAY OF THE SWITCH

There are different file formats available for the display of the switch in the Runtime.

Using the file formats depends in the project settings in property **Graphics quality**:

- ▶ **Windows Basic:**
The following file formats can be used:
 - BMP
 - JPG
 - PNG
 - in zenon pre-defined bitmaps
- ▶ **DirectX software or DirectX hardware:**
All supported file formats in Windows Basic plus TIF, animated GIF and WMF can be used.

USE AS A CONTROL ELEMENT

The element is also used in control elements of screens to display checkboxes. If the element in a screen is used as a control element, it is not available in Runtime if it is activated and the necessary user rights are available. Otherwise it is deactivated and displayed grayed out.

11.21 Static text

To enter statistical text:

1. Select the **Statistical Text** symbol in the **Elements** toolbar
2. Select the start point in the main window.
3. Pull the text field open while pressing and holding the left mouse button.

The shape, size and position can be changed at any time by pulling the vertexes or moving the element.

If you press and hold the Alt key while pulling the outer corner points, the change is carried out symmetrically.

4. Define the desired properties in the properties window.

ENTERING AND FORMATING TEXT

To enter text:

1. Click on the text field with a delayed double click
Or: select **Edit text** in the context menu:
Or: Write the text in the **Text** property.
2. Write the desired text.



Information

*The text is automatically wrapped as standard, depending on the size of the text field. To turn off the wrapping, deactivate the property **Automatic word wrap** in the **Text** node.*

UNDERLINE

To underline text, place a & in front of the text to be underlined.

&Text becomes:

Text

If you would like to use the character '&' in text, enter it twice:

1 && 2 becomes 1 & 2.

LINE BREAK

To define a line break, use the string `\n`.

Example:

Line 1 \n

Line 2

11.22 Trend element

With the **Trend Element** dynamic element, you display all values in runtime in the form of trend curves, where several process variables can be displayed at the same time.

In order for the **Trend Element** to display values, the **Harddisk data storage active** property in the **Harddisk data storage** node of variable properties must be active. **Cycle time [s]** and **Number of values** must correspond to the **Update time** and the **Time period of representation** in the **trend element**, otherwise the drawing of the curve is restarted every time the screen is called up. Each change can have an effect on other **Trend Elements** that use the same process variables.

CREATE A TREND ELEMENT:

To create a **Trend Element** in a screen:

1. Select the **Trend Element** symbol in the **Elements** toolbar or in the **Elements** drop-down list.
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.

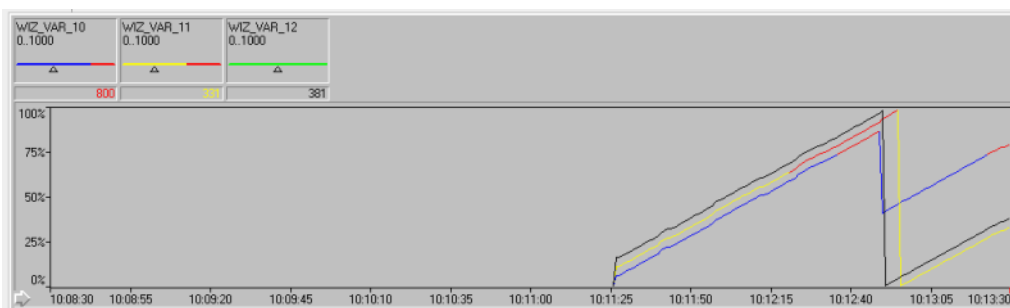
The dialog to assign several numeric variables (on page 200) opens.

4. Select the desired variables.

All curves are automatically created in the **Trend Element**.

To add a curve later:

- In properties, select the {**Curve new**} property in the **Curves** node
 - or:
 - drag the desired variable onto the **Trend-Element** while holding the left mouse button
5. Define the desired properties in the property window:
 - You define Graphic properties of the curves in the **Curves** node of properties
 - You determine cycle time and number of values in the properties of the respective variable in the **Harddisk data storage** node



Information

*Functions and variables can also be linked to the Element by Drag&Drop. If no curves have been defined in the Editor, the **trend element** is not shown in Runtime.*

11.23 Clock

With the dynamic element **Clock**, you show the current time in Runtime or you convert numerical values into a time. The date/and or the time can be displayed as an absolute time period or a time difference.

DISPLAY

The display in Runtime depends on whether a variable was linked.

- ▶ If no variable is linked to the element, the current system time is displayed in absolute time in Runtime.
To do this, set, in the **Representation** group, the **Display type** property to the value `System time/absolute time`.
- ▶ If a variable is linked, then its value can be displayed as:
 - **Time difference:** The variable must contain the number of seconds.
The integer values in the seconds area `-2147483648 (min(DINT))` to `+ 4294967295 (max(UDINT))` can be displayed.
It is also possible to display negative values: A variable value of `-60` is displayed in `mm:ss` format as `-01:00`. Thus if `-01:40` is this displayed, the resulting variable value is `-100`.
 - **Absolute time period:** The Unix time - the seconds passed since January 1, 1970 00:00 UTC in the positive range.
Only positive values up to `2147483647` can be displayed. A variable value outside this area leads to an incorrect display: The `hh:mm` part remains `00:00` or `01:00` in winter time.

ENGINEERING

To create a **Clock** in a screen:

1. select the **Clock** symbol in the **Elements** toolbar or in the **Elements** drop-down list
2. select the start point in the main window
3. pull open the element while pressing and holding the left mouse button
4. If a variable is to be linked, then:
Link the desired variable in the **Variable/function** section or by dragging & dropping the element
 - All variables can be linked, with the exception of `STRING` and `BOOL` variables.
 - The fractions of `FLOAT` variables (from data types `REAL` and `DATA_AND_TIME` for example) are not taken into account.
5. Define the desired properties in the properties window, most of all:
6. Select the **Display type** property in the **Representation** group

- **System time/absolute time period** The time is displayed as an absolute time.
Note: Context menu and tooltip are not supported.
- **Time difference:** The time difference is given in minutes and seconds The linked variable must contain the number of seconds.
The integer values in the seconds area -2147483648 ($\min(\text{DINT})$) to $+4294967295$ ($\max(\text{UDINT})$) can be displayed. It is therefore also possible to display negative values.
Examples in **mm:ss** format: The variable value 50 is displayed as 00:50, the variable value 100 is displayed as 01:40.
The variable value -60 is displayed as -01:00. Thus if -01:40 is this displayed, the resulting variable value is -100.

7. Select the desired display using the **Formating** property



Information

*With absolute time period with the **Write set value via element**, the input field has time difference formatting.*

For example:

- ▶ Formatting of the absolute time period **hh:mm:ss dd.mm.yy** is displayed in the element as: **dd:hh:mm:ss**
- ▶ **dd.mm.yyyy** (for example 17.12.2008) as **dddddd** (14230 days since 1. 1. 1970).

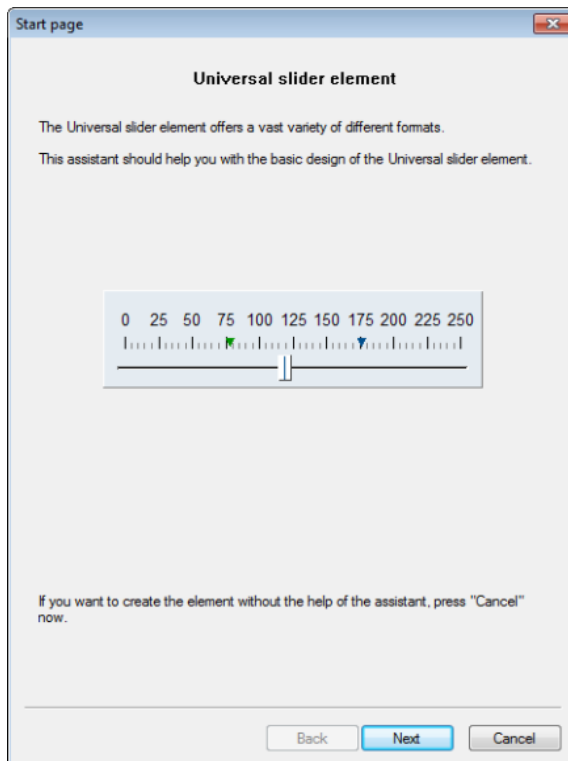
11.24 Universal slider

With the dynamic element **Universal slider**, you show variables in the form of sliders, bar graphs, LED bar displays or any other sliders you wish. The sliders allow set value elements to be set in runtime.

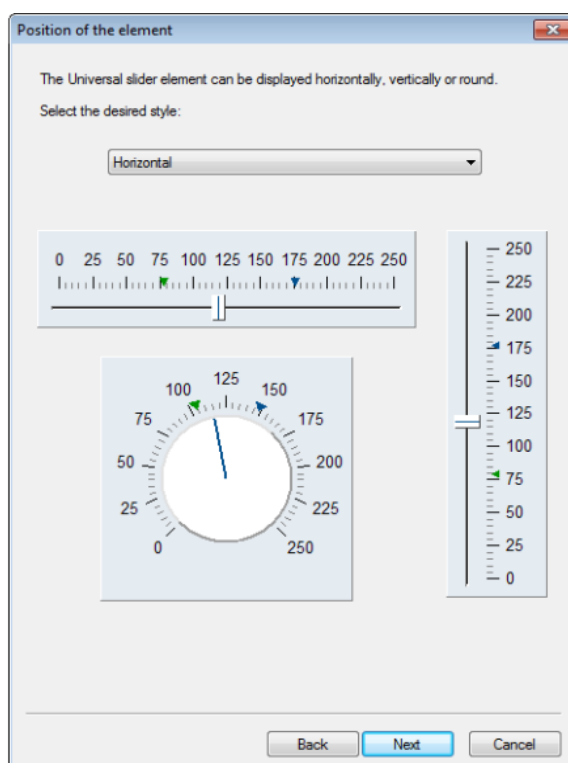
To create the **universal slider** in a screen:

1. Select the **Universal Slider** symbol in the **Elements** toolbar or in the **Elements** drop-down list.
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
the dialog to select a variable (on page 200) opens
4. Select the desired variable

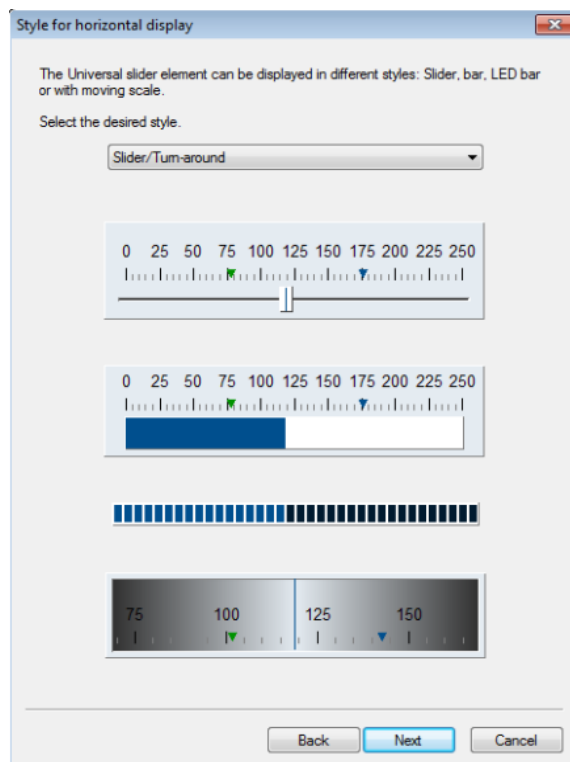
The universal slider configuration assistant opens



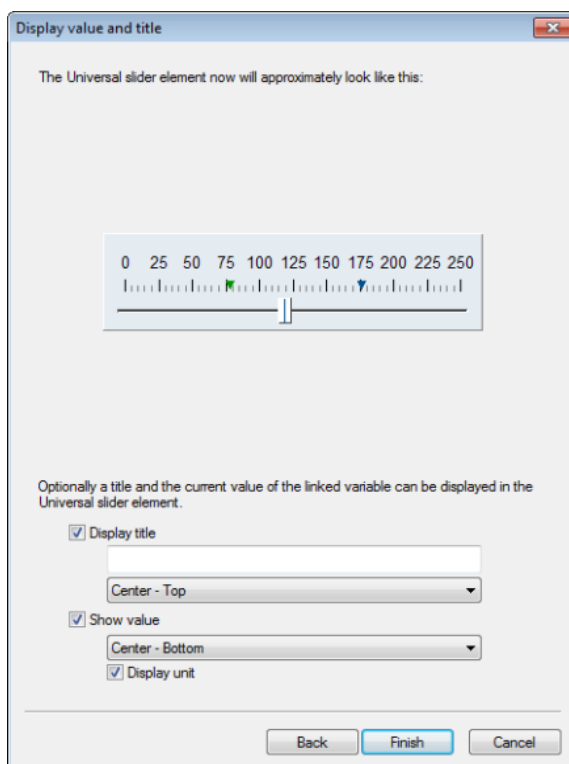
5. Select the alignment:
horizontal, vertical or round.



6. Select the shape:
slider/turn-around, bar, LED bars or moving scale.



7. You are given a preview:
Define the title display and position of the value display.



8. You define other properties in the property window.

Hint: You change the display and shape of a universal slider in properties in the **Universal slider** node



Information

Note:

- ▶ A drag indicator can display the minimum or maximum value of the variables within a certain period of time. Double-clicking the element in runtime resets the marking of minimum and maximum.
- ▶ **Moving scale** style: Values can only be amended in Runtime by means of a dialog. Changing a value using the slider directly is not possible.

COLOR-CODED DISPLAY OF THE LIMIT VALUE VIOLATION

At limit value violations the color from the variable can color the whole area or only the area starting from the limit violation. This functionality is controlled via property **Bar explicit** in group **Universal slider**.

This property affects only the display of values with defined limit values from variables. Limit values from reaction matrices are not considered.

- ▶ **Active:** If a limit value of the linked variable is violated, only the part of the display that goes into the limit value violation is shown in the color of the respective limit value.
If the variable has several defined limit values, the corresponding areas of the display are each shown in the color of the limit value.
- ▶ **Inactive:** If a limit value of the linked variable is violated, the complete display is displayed in the color of the violated limit value.

Default: `Inactive`

11.25 WPF

With the **WPF** dynamic element, valid WPF/XAML files in zenon can be integrated and displayed.



Information

You can find further information on the dynamic element WPF in the zenon WPF manual.

11.26 Numeric value

You display numerical values with the dynamic element **Numeric values**.

To create a **numeric value** element in a screen:

1. Select the **Numeric value** symbol in the **Elements** toolbar
2. select the start point in the main window
3. pull open the element while pressing and holding the left mouse button
4. the dialog to assign a numerical value (on page 200) opens
5. select the variable you want to assign
6. Define the desired properties in the properties window



Info

The following applies in runtime: A decimal value can be entered with a comma as well as with a period as a separator. It is always displayed as a period.

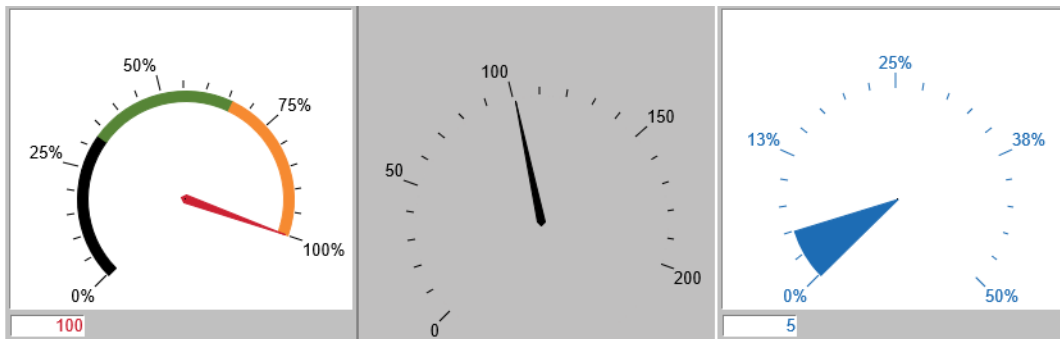
11.27 Pointer instrument

You display the indicating instrument with the dynamic element **indicating instrument**.

Note: The display possibility as **Bar display** for configured opening angle 0 have no longer been available since version 7.60. Use element **Bar display** or the **Universal slider** instead.

To create an **indicating instrument** in a screen:

1. Select the **Indicating Instrument** symbol in the **Elements** toolbar or in the **Elements** drop-down list
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
The dialog to select a numeric variable (on page 200) is opened.
4. Select the desired variable and define the desired properties in the properties window.



COLOR-CODED DISPLAY OF THE LIMIT VALUE VIOLATION

For limit value violations the color from the variable can either color the area starting from the limit value violation or the full area. This functionality is controlled via property **Explicit** in group **Representation**.

This property affects only the display of values with defined limit values from variables.

Limit values from reaction matrices are not considered.

- ▶ **Active:** If a limit value of the linked variable is violated, only the part of the display that goes into the limit value violation is shown in the color of the respective limit value.
If the variable has several defined limit values, the corresponding areas of the display are each shown in the color of the limit value.
- ▶ **Inactive:** If a limit value of the linked variable is violated, the complete display is displayed in the color of the violated limit value.

Default: *Inactive*

11.28 Elements from earlier versions

The following elements are no longer available for the current zenon version:

Element	Available up to and including version
Bitmap button (on page 124)	6.22
Message element (on page 126)	7.20
Multibin (on page 128)	7.20
Move symbol (on page 137)	6.22
Invisible button (on page 137)	6.22
Status element (on page 139)	7.20

The following is applicable for elements that are no longer supported:

- ▶ After conversion into a current project that no longer supports an element:
 - Existing elements are displayed in the Editor and in Runtime.
 - Existing elements can be configured in the Editor.
 - New elements cannot be created in the Editor.
- ▶ When compiling the Runtime files for a version that supports these elements:
 - The elements can be displayed, configured and created. You can then find these elements at the bottom of the **elements** drop-down list.

11.28.1 Bitmap Button (up to version 6.22 only)

Links a graphics file (pixel graphics: *.bmp, *.jpg, *.gif, or *.png or vector graphics: *.wmf) with a button.

If the project property **Create Runtime files for** is set to small 6.50, the element button can only display texts in runtime. Graphics must be configured by means of the bitmap button in this case.

Engineering buttons for different Runtime versions:

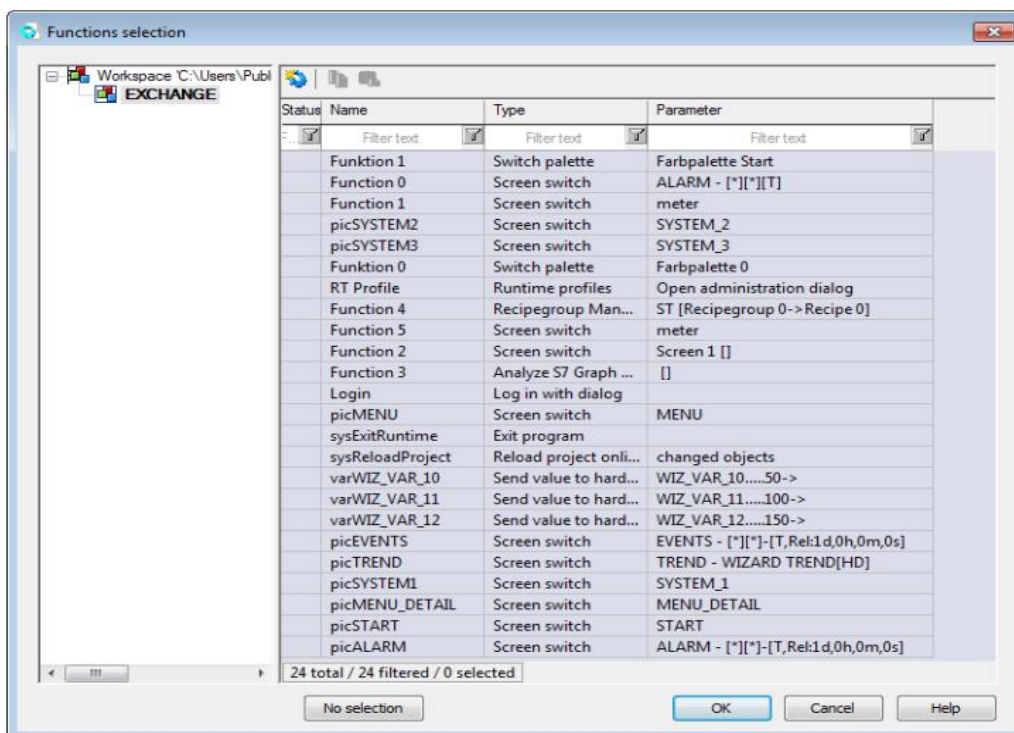
Button for	Create Runtime files for <6.50 AM	from 6.50
Text	Button	Button
Graphics	Bitmap button	Button
invisible	Invisible button	Button

to activate a bitmap button:

- ▶ Select the **Bitmap button** symbol in the **Elements** toolbar

- ▶ Select the start point in the main window.
- ▶ Pull open the element while pressing and holding the left mouse button.
- ▶ A dialog opens, in which you can link the desired function to the element.
- ▶ The shape, size and position can be changed at any time by pulling the vertexes or moving the element.
- ▶ If you press and hold the **Alt** key while pulling the outer corner points, the change is carried out symmetrically.
- ▶ You define individual properties of the element in the properties window. In order to do this, the element must be active (mouse click) in the main window.

In order to select functions, a filtered dialog is opened:



Element	Description
Project tree	Definition of the project from which the function should be selected.
Selection window	Selection of the function.
No selection	Depending on the element: <ul style="list-style-type: none"> ▶ the dialog is canceled ▶ already linked functions are deleted

Hint: The size of this dialog can be adjusted. The dialog size and position are saved.

CHANGE LINKED FUNCTION

1. manually
 - in the Project Manager's Detail view open the functions
 - drag the desired function on the element while holding the left mouse button
 - the previous function is substituted by the new one
2. automatic
 - Select the entry Replace links from the context menu. For more details see chapter Substitution of variables and functions in dynamic elements (on page 177).

GIF graphics files can be animated in the dynamic element **Button**:

1. Assign a GIF file to a button in the **Fill** node via Property **Graphics File**
2. In the same node, activate an activation possibility for **GIF animation**.
You can execute the animation continuously or as dependent on a Bool variable:
 - a) To execute the animation continuously: Activate the **GIF animation always** property.
3. To execute the animation as dependent on a variable: Link the **Variable** property to a Bool variable. The animation is executed as soon as this variable gets the value 1.

11.28.2 Message element (up to version 7.20 only)

With the **Message Element**, you can show text in Runtime depending on the value of process variables. The source for texts are text files, made up as tables. You can configure these freely.



Attention

This element is no longer supported from version 7.50.

This element is only available if the project property **Create Runtime files for** has been set to lower than 7.50.

To create the **Message Element** in a screen:

1. Select the **Message element** symbol in the **Elements** toolbar
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
4. The dialog to select several variables (on page 200) opens.
5. Select the desired variables.
6. Define the desired properties in the properties window

CONSTRUCTION OF THE TABLE

- ▶ Create a text document.
- ▶ Save it in Unicode format.
- ▶ Use the character | (ASCII-Code 124) as a column separator.
- ▶ Example:

```
Off|On|Diff|Fault
```

```
Off|On|True|False
```

```
Text1|Text2|Text3|Text4
```

- ▶ The linked variables define lines and columns of the text to be shown.

VARIABLE COLUMN SELECTION

This variable must be a word variable (UINT) and defines the column position from which the text is taken. At the same time, it controls the type of processing.

bit set	effect
Bit 15 (bit with the highest value)	Message element blocked; nothing is displayed any more.
Bit 14	Update of the screen output switched off; last active text is displayed.

VARIABLES FOR CELL ACTIVATION

The addressing of cells takes place by means of the bit number and not the numerical value.

The other variables define the cell positions from which the text is taken. The cell positions result from:

Value	Line
1	Line 1
2	Line 2
4	Line 3

Each line variable is responsible for a maximum of 16 lines. If more than 16 lines are needed, further line variables can be defined.

If line 1 and line 2 are to be displayed alternately, the value of the line variable must be 3. If all 16 bits of the first variable are set, lines 1 to 16 are displayed alternately. If all 16 bits of the 2nd variable are set, lines 17 to 32 are displayed alternately.

- ▶ Example:

If the first bit of the first variables and the first bit of the second variable is set, lines 1 and 17 are displayed alternately.

11.28.3 Multibin (up to version 7.20 only)

You can define several elements with the dynamic element **Multibin**:

- ▶ display graphics depending on variable values
- ▶ Color symbols
- ▶ Issue status text
- ▶ link numerical values and binary values
- ▶ display a switch or pushbutton for the first variable, provided the first variable is a binary variable

Note: The functionality of the **Multibin** element can also be configured using the **combined element**.



Attention

This element is no longer supported from version 7.50.

This element is only available if the project property **Create Runtime files for** has been set to lower than 7.50.

CREATING THE MULTI BINARY ELEMENT

To create a **multi-binary** in a screen:

1. Select the **Multibin** symbol in the **Elements** toolbar
2. select the start point in the main window
3. pull open the element while pressing and holding the left mouse button
4. the dialog to Assign a variable (on page 200) opens
5. select the desired variables
6. Define the desired properties in the properties window

DEFINE STATUSES

You define the settings for variable statuses to be displayed in the dialog to enter elements:

1. click on the **Representation** node
2. The property **Configuration**
the dialog for condition definition (on page 129) opens

3. defined statuses are processed from top to bottom
4. The settings for the first applicable status are displayed

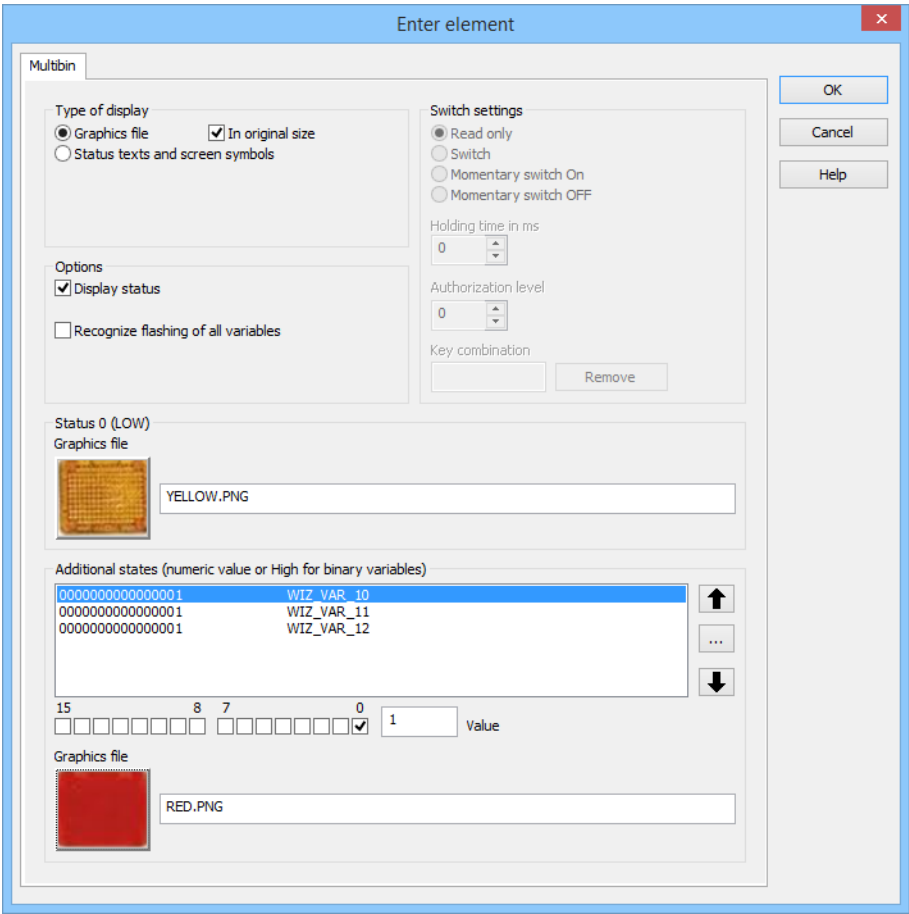
Multi-binary element

To assign the **multi binary element** to certain statuses:

1. In the **Representation** node, click on the **Configuration** property.
2. The dialog for inputting elements (on page 129) opens.
3. Select the desired display type:
 - Graphics file: Representation of the information in pixel graphics files; this also enables moved screens
 - Status Text and Screen Symbol Display of symbols and text information
4. Defined statuses processed from top to bottom and the setting for the first applicable status are displayed.

Graphics File

Display of the information in graphics files. Also allows moving images.



TYPE OF DISPLAY

Property	Description
Graphics File	<p>Active: Graphics files are used for the display of the states in Runtime.</p> <p>Their configuration is explained here.</p>
Status texts and screen symbols	<p>Active: Status text and screen symbols are used for the display of statuses in Runtime. The symbol or the element group must already be present on the screen. The symbol shown in the drop-down list flashes on the screen until the Enter element dialog is closed.</p> <p>Its configuration is explained in the Status text and screen symbol (on page 133) chapter.</p>
In original size	<p>Active: Graphics are displayed in original size.</p> <p>Inactive: Graphics are stretched or compressed to the display size.</p> <p>Note: If this property is activated, it is recommended that the same size is used for all graphics used in the element, because the size of the element adapts itself to the size of the currently-displayed graphics.</p>

OPTIONS

Property	Description
Display status	Highlights the element in Runtime with a red dot with exception status.
Recognize flashing of all variables	<p>Active: Sum alarming of all linked process variables. The graphics or color are determined by the current status. Active flashing states remain kept until quitting.</p>

STATUS 0 (LOW)

Property	Description
Status 0 (LOW)	Settings for the current status in line with display type.
Graphics	<p>Selection of graphics. A click on the ... button opens the file selection dialog.</p> <ul style="list-style-type: none"> ▶ If desired files in the <code>Files/Graphics</code> nodes are not yet present in the Project Manager, these can be added in the selection dialog. ▶ to select a file directly from any desired folder on the computer, the Direct file selection property must be activated. <p>Note: If the In original size property is activated, it is</p>

	recommended that the same size is used for all graphics used in the element, because the size of the element adapts itself to the size of the currently-displayed graphics.
--	---

FURTHER STATUSES

Property	Description
Further statuses	<p>Select further variables (on page 200) via the ... button and sorting of statuses via the Upwards and Downwards buttons.</p> <p>For each of the linked variables, there must be a discrete status defined; this is defined by entering the values for multibit information and numerical values. Multibit values must be assigned several times: Number of statuses minus 1; example double message=3.</p> <p>If a discrete state has occurred, it is displayed. If none of the indicated values is present, the status 0 [LOW], globally valid for the element, is displayed.</p> <p>Note: For non-binary variables, the value is entered in the signal resolution.</p>

SWITCH SETTINGS

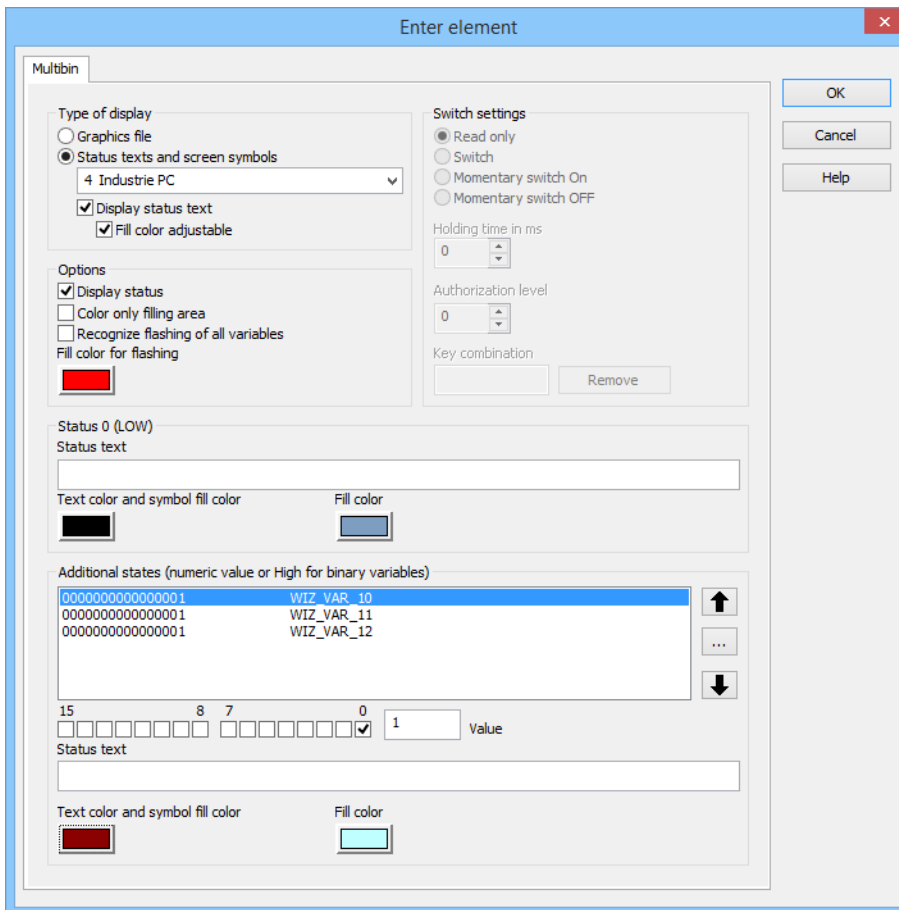
If a binary variable is linked as the first variable, this can be used as a switch or pushbutton.
For configuration, see the Switch settings (on page 136) chapter.

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Status texts and screen symbols

Display of symbols and text information. The color of the current status is transferred to the symbol at the same time.



Enter element

Multibin

Type of display

- ☐ Graphics file
- ☒ Status texts and screen symbols

4 Industrie PC

☒ Display status text

☒ Fill color adjustable

Options

☒ Display status

☐ Color only filling area

☐ Recognize flashing of all variables

Fill color for flashing

Switch settings

☒ Read only

☐ Switch

☐ Momentary switch On

☐ Momentary switch OFF

Holding time in ms

0

Authorization level

0

Key combination

Remove

OK

Cancel

Help

Status 0 (LOW)

Status text

Text color and symbol fill color

Fill color

Additional states (numeric value or High for binary variables)

0000000000000001	WIZ_VAR_10	↑
0000000000000001	WIZ_VAR_11	...
0000000000000001	WIZ_VAR_12	↓

15 8 7 0

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒

1 Value

Status text

Text color and symbol fill color

Fill color

TYPE OF DISPLAY

Property	Description
Graphics File	<p>Active: Graphics files are used for the display of the states in Runtime.</p> <p>Their configuration is explained in the Graphics file (on page 130) chapter.</p>
Status texts and screen symbols	<p>Active: Status text and screen symbols are used for the display of statuses in Runtime. The symbol or the element group must already be present on the screen. The symbol shown in the drop-down list flashes on the screen until the Enter element dialog is closed.</p> <p>Their configuration is explained here.</p>
Display status text	Active: Status texts are displayed in Runtime.
Background color can be set	Active: The background color for the text can be freely chosen.

OPTIONS

Property	Description
Display status	Active: Highlights the element in Runtime with a red dot with exception status.
Color only filling area	Active: Only the fill areas of the static elements are colored, the border stays the same
Recognize flashing of all variables	Active: Sum alarming of all linked process variables. The graphics or color are determined by the current status. Active flashing states remain kept until quitting.
Fill color for flashing	Background color when flashing. Clicking on the color opens the dialog to select the color.

STATUS 0 (LOW)

Property	Description
Status text	Text that it is displayed in runtime. Input is only possible if the Display status text property is active.
Symbol color/text color	Select the color for the symbol and status text. Clicking on the color opens the dialog to select the color.
Text background color	<p>Selection of the background color for the status text. Clicking on the color opens the dialog to select the color.</p> <p>Only available if the configurable background property is active.</p>

FURTHER STATUSES

Property	Description
Further statuses	<p>Select further variables (on page 200) via the ... button and sorting of statuses via the Upwards and Downwards buttons.</p> <p>For each of the linked variables, there must be a discrete status defined; this is defined by entering the values for multibit information and numerical values. Multibit values must be assigned several times: Number of statuses minus 1; example double message=3.</p> <p>If a discrete state has occurred, it is displayed. If none of the indicated values is present, the status 0 [LOW], globally valid for the element, is displayed.</p> <p>Note: For non-binary variables, the value is entered in the signal resolution.</p>
Status text	Text that it is displayed in runtime. Input is only possible if the Display status text property is active.
Symbol color/text color	Select the color for the symbol and status text. Clicking on the color opens the dialog to select the color.
Text background color	<p>Selection of the background color for the status text. Clicking on the color opens the dialog to select the color.</p> <p>Only available if the configurable background property is active.</p>

SWITCH SETTINGS

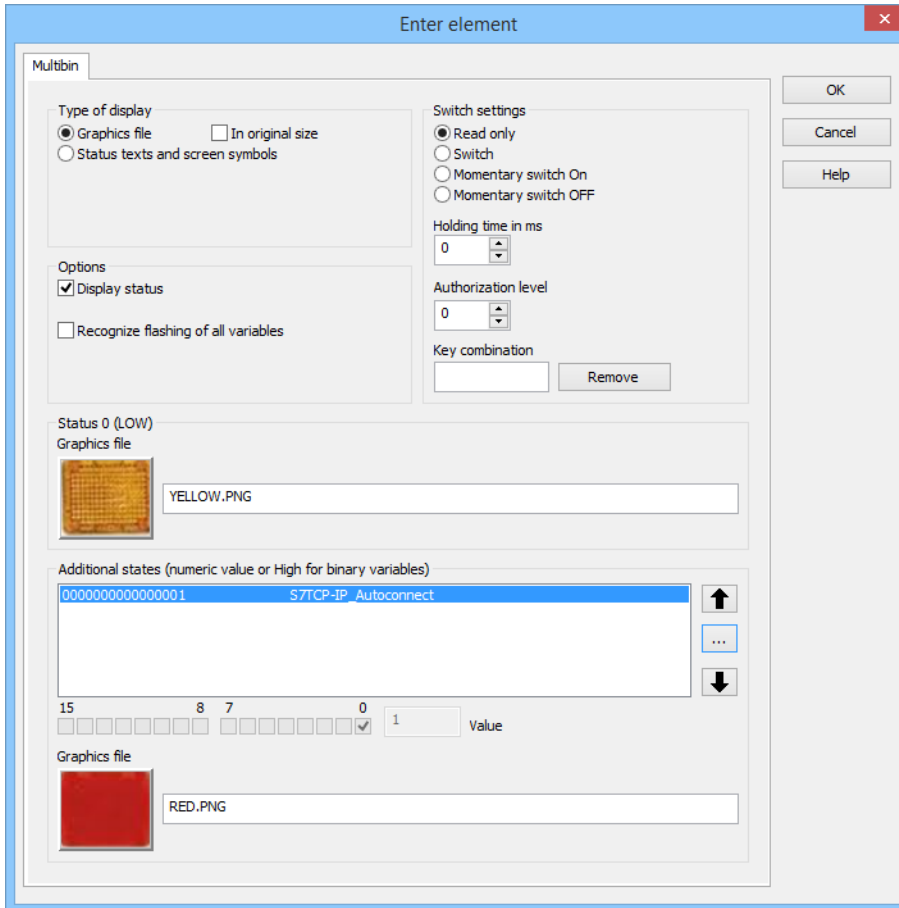
If a binary variable is linked as the first variable, this can be used as a switch or pushbutton.
 You can find information for the configuration in chapter Switch settings (on page 136).

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Switch settings

If a binary variable is linked as the first variable, this can be used as a switch or pushbutton.



Property	Description
Read only	Active: It is not possible to input setpoints in runtime.
Switch	Active: Element acts as a switch for setpoint input.
Pushbutton On	Active: Writes setpoint HIGH. The preferred position for the pushbutton goes to Off .
Pushbutton OFF	Active: Writes setpoint LOW. The preferred position for the pushbutton goes to On .
Holding time in ms	Holding time of the setpoint status in milliseconds.
Authorization groups	Defines the necessary authorization level for set value element.
Key combination	Key combination for set value input
Remove	Removes the key combination

11.28.4 Move symbol

With the dynamic element **Move Symbol**, you can move elements depending on the state of the variable horizontally or vertically or change their size (zoom). To do this, connect the elements to a symbol.

To create **Move Symbol** in a screen:

- ▶ select the **Move Symbol** symbol in the **Elements** toolbar
- ▶ select the start point in the main window
- ▶ pull open the element while pressing and holding the left mouse button
- ▶ select the desired variable and define the desired properties in the properties window
- ▶ You can only use symbols that are already in the screen

Note: The **Move Symbol** dynamic element is generally only available up to version 6.22. From version 6.50, use dynamic properties of an element such as **Position**, **Size and rotation dynamic** or **Fill** for all dynamic actions.

Exception: Windows CE: Projects from all versions provide the element if the **Windows CE project** property has been activated.

11.28.5 Invisible button (up to version 6.22 only)

If the project property **Create Runtime files for** is set to small 6.50, the element button can only display texts in runtime. Invisible buttons must be configured with the invisible button element in this case.

Engineering buttons for different Runtime versions:

Button for	Create Runtime files for <6:50 AM	from 6.50
Text	Button	Button
Graphics	Bitmap button	Button
invisible	Invisible button	Button

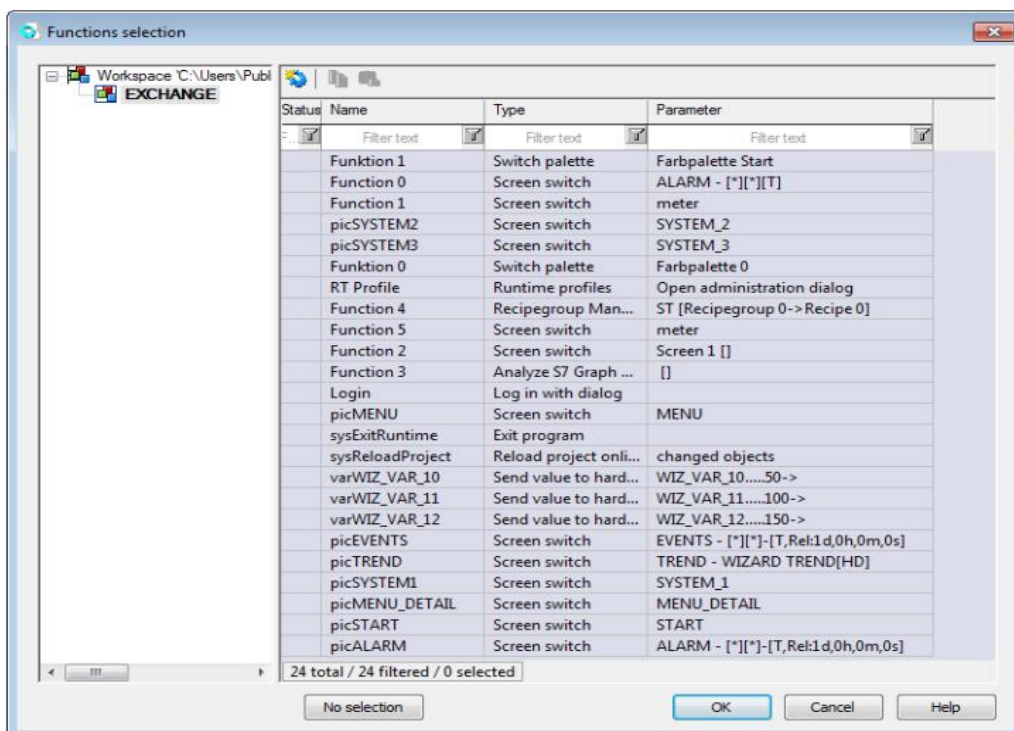
The dynamic element Invisible Button offers the possibility to define an interactive transparent user interface which is linked to a function call.

To activate an invisible button:

- ▶ select the **Invisible Button** symbol in the **Elements** toolbar or in the **Elements** drop-down list
- ▶ select the start point in the main window
- ▶ pull open the element while pressing and holding the left mouse button
- ▶ a dialog opens, in which you can link the desired function to the element

- ▶ The shape, size and position can be changed at any time by pulling the vertexes or moving the element
- ▶ if you press and hold the alt key while pulling the outer corner points, the change is carried out symmetrically
- ▶ You define individual properties of the element in the properties window. In order to do this, the element must be active (mouse click) in the main window.

In order to select functions, a filtered dialog is opened:



Element	Description
Project tree	Definition of the project from which the function should be selected.
Selection window	Selection of the function.
No selection	Depending on the element: <ul style="list-style-type: none"> ▶ the dialog is canceled ▶ already linked functions are deleted

Hint: The size of this dialog can be adjusted. The dialog size and position are saved.

CHANGE LINKED FUNCTION

- manually
 - in the Project Manager's Detail view open the functions

- drag the desired function on the element while holding the left mouse button
- the previous function is substituted by the new one

2. automatic

Select the entry Replace links from the context menu. For more details see chapter Substitution of variables and functions in dynamic elements (on page 177).



Info

For the invisible button the status of the variable cannot be displayed.

11.28.6 Status element (up to version 7.20 only)

You control a screen symbol with a **Status Element** dynamic element. In doing so, properties of a linked variable such as colors or flashing for example are transferred to a symbol. You can therefore also show statistical limit value texts.



Attention

This element is no longer supported from version 7.50.

This element is only available if the project property **Create Runtime files for** has been set to lower than 7.50.

To create the **Status Element** in a screen:

1. Select the **Status Element** symbol in the **Elements** toolbar or in the **Elements** drop-down list
2. Select the start point in the main window.
3. Pull open the element while pressing and holding the left mouse button.
4. the dialog to select a variable (on page 200) opens
5. Select the desired variable
6. Define the desired properties in the properties window



Information

*Instead of the **status element** dynamic element, the dynamics properties of an element or the **combined element** can be used.*

12. Edit screen elements

There are many possibilities available to you for editing screen elements:

- ▶ Graphic actions (on page 140)
- ▶ Automated replacement (on page 177)
- ▶ Background graphics (on page 198)
- ▶ Functions Selection dialog (on page 199)
- ▶ Variables selection dialog (on page 200)

12.1 Graphic actions

Graphic actions are also possible in zenon. To do this, use:

- ▶ Element properties
- ▶ Commands in the Edit menu
- ▶ Actions with the mouse:
 - Holding down the `ctrl` key when moving the mouse copies the element.
 - Moving with the right mouse button pressed opens the content menu, with a choice of whether to copy or move the item
- ▶ The context menu



Information

Graphic actions such as shading and blurring can have an effect on the performance of the system, both in the editor and in runtime.

ENTERING VALUES

To enter values within a defined limit, there are also sliders for many properties. These can be accessed via the `...` button+. Changes in values made with the slider are displayed in the properties field immediately.

When selecting colors, the color activated in the palette is displayed directly in the object as a preview.

12.1.1 Truncations

The elements **Rectangle** (on page 111) and **Button** (on page 54) and Polygon (on page 108), Polyline (on page 110) and Tube (on page 112) can be displayed with truncations.



Information

Rounding is only available to a limited extent for:

- ▶ Active **Windows CE project** property
or
- ▶ Windows `basic` value for the **Graphics quality** property

RECTANGLE AND BUTTON

You define the degree of truncation with the properties in **Rounded corners** node. 2 values can be given for each corner point:

- ▶ **X** value: Percentage value for the rounding based on the width of the element
- ▶ **Y**-value: is a percentage value for the rounding based on the height of the element

0% means no rounding.

100 % means a quadrant.

If the **Proportional** property is activated, only the X value can be entered.

The values can be defined separately for each angle. If the value of an angle is set at -1, it then takes its rounding value from the **All x [%]** and/or **All y [%]** property.



Information

*If the value for **All x [%]** or **All y [%]** is changed, all values are set to -1 on the corresponding axis. Therefore different values can be re-harmonized very easily.*

Hint: There is a small blue triangle in the lower right quadrant of the element. Click on it with the mouse and move the triangle up to the desired rounding.

Example:



There is a GIF file on the button with a transparent background. A red color gradient was defined for the button. The rounding of the angles was defined with **All x [%]** and **Proportional**, afterwards this value was changed individually for the lower left angle.



Information

*If the **With brightness values** property is used for displaying the fill color, no rounded edges can be used. If this element is activated for an element, that uses rounded-off corners, the element is displayed with non-rounded corners.*

POLYGON, POLYLINE UND TUBE

You can define the degree of rounding for polygons, polylines and tubes with the **Rounding** property in the **Representation** node. Enter a value between 0 and 1 for this.

12.1.2 Effects for screen elements

Several graphical elements can be highlighted with the help of effects in the Runtime.

You can find additional effects in chapter effects for frames (on page 219).

Glow effect

Many zenon support the glow effect.

REQUIREMENTS

To use glow effect for a graphical element, the following requirements must be fulfilled:

- ▶ The project property **Graphical design/Graphics quality** must be set to `DirectX Hardware` or `DirectX Software`. For details see chapter Graphics quality (on page 11).
- ▶ The graphical element must be supported.
Except for the following exceptions all graphical elements are supported: WMF, symbols, combi element, ActiveX, WPF, all Win32 control elements, windows and several special control elements.
- ▶ The element must be visible.
If the element is invisible, the glow effect is invisible automatically as it is derived directly from the element.

CONFIGURATION

To configure the glow effect for a supported element:

1. Ensure that the **Graphics quality** property is set to `DirectX Hardware` or `DirectX Software`.

2. create the element
3. go to property node **Effects**
4. activate the **Activate** property in the **Glow (DirectX only)** node
5. configure transparency, color, spread and visibility

If you configure several properties for the same effect, the stronger is executed in the Runtime. For details, see **Dependence of the configuration** section. (For example: An invisible glow effect is always invisible; the settings for flashing has no effect anymore.)

Default value for the glow effect:

- ▶ **Activate:** Inactive
- ▶ **Active if clicked only:** Inactive
- ▶ **Transparency [%]:** 20 %
- ▶ **Spread [pixel]:** 15 pixel
- ▶ **Coloring:** Inactive
- ▶ **Color:** #FFFF90 (yellow)
- ▶ **Variable for color:** None
- ▶ **Variable for visibility:** None
- ▶ **Adopt visibility from limit value:** Inactive
- ▶ **Visible from:** 0
- ▶ **Visible to:** 0
- ▶ **Variable for flashing:** None
- ▶ **Adopt flashing color from limit value:** Inactive
- ▶ **Make 2. flash state invisible:** Inactive

DEPENDENCIES OF THE CONFIGURATION

VARIABLE FOR VISIBILITY

Visibility has especially strong effects. If the glow effect is set to invisible, flashing and color is ignored.

Dependencies:

1. **Variable for visibility** is linked and **Adopt visibility from limit value** is active:
 - **Invisible** in the limit value is activated: Glow effect is invisible.
 - **Invisible** in the limit value is not activated:
The glow effect configured in the properties is displayed. Dependent of the settings the glow effect can also flash.

2. **Variable for visibility** is linked and **Adopt visibility from limit value** is inactive:
 - The variable value lies within the limits of properties of **Visible from** and **Visible to**:
The glow effect configured in the properties is displayed. Dependent of the settings the glow effect can also flash.
 - The variable value lies outside the limits of properties of **Visible from** and **Visible to**:
Glow effect is invisible
3. **Variable for visibility** is not linked:
The glow effect configured in the properties is displayed. Dependent of the settings the glow effect can also flash.

VARIABLE FOR FLASHING

For all states for which the originally configured glow effect is displayed, you get the glow effect which is configured in the properties. At this for example the color for a limit value can come from an own variable; for details see **Color from variable**.

1. **Variable for flashing** is linked, **Adopt flashing color from limit value** is active and **Make 2. flash state invisible** is active:
 - Limit value was violated:
Glow effect flashes and alternates between colored glow effect (from limit value violation) and the originally configured glow effect.
 - Limit value was not violated:
Glow effect does not flash and the glow effect is displayed as it was originally configured.
2. **Variable for flashing** is linked, **Adopt flashing color from limit value** is active and **Make 2. flash state invisible** is inactive:
 - Limit value violation is active:
Glow effect flashes and alternates between colored glow effect (from limit value violation) and no glow effect.
 - Limit value breach inactive:
Glow effect does not flash and the glow effect is displayed as it was originally configured.
3. **Variable for flashing** is linked, **Adopt flashing color from limit value** is inactive:
 - Limit value violation is active:
Glow effect flashes and alternates between originally configured glow effect and no glow effect.
 - Limit value breach inactive:
Glow effect does not flash and the glow effect is displayed as it was originally configured.
4. **Variable for flashing** is not linked:
Glow effect can be displayed dependent on other properties.

COLOR FROM VARIABLE:

Represents the possibility to define the color of the glow effect at normal view via the limit value of a variable. This is also true for the normal view when the glow effect does not flash.

1. **Variable for color linked:**
 - a) Limit value violation is active:
The color from the violated limit value is used.
 - b) Limit value breach inactive:
For coloring the glow effect the defined color from property **Color** is used.
2. **Variable for color not linked:**
For coloring the glow effect the defined color from property **Color** is used.

COLORING:

Defines whether the glow effect is created as image of the actual element or whether it is colored with a single color.

1. **Coloring active and Variable for color linked:**
 - a) Limit value violation is active:
For coloring the glow effect the color from the violated limit value is used.
 - b) Limit value breach inactive:
For coloring the glow effect the defined color from property **Color** is used.
2. **Coloring active and Variable for color not linked:**
For coloring the glow effect the defined color from property **Color** is used.
3. **Coloring inactive:** An image of the actual element with all corresponding colors of the element for the glow effect is used.

HINTS FOR CONFIGURATION

To receive good results:

- ▶ Select a rather lower value for **Transparency [%]**. Without coloring the value may be a little bit higher than with coloring.
- ▶ Do not select a too small value for **Spread [pixel]**. It should be >5 for the effect to be visible outside of the element.
Attention: Too high values (>20) can lead to the glow effect being reduced very much. In this case the visibility can be increased by reducing the transparency. In general the glow effect needs a lot of performance. Thus you should use it consider it well when and where to use it. A higher value for **Spread [pixel]** costs more performance which especially affects elements which lie close together.
- ▶ As for DirectX the glow effect (just like the shadow) is derived from the original element, dynamic changes of the element affect the effect. In addition bitmap graphics can be equipped

with this effect. Thus for example a PNG graphic with semi-transparent areas as well as a GIF animation obtain a correct glow effect which is created dynamically during the display. The glow effect just as the shadow also affects text by which correlating effects can be achieved.

Examples for glow effects

GLOW EFFECT

Element without glow effect:



Element with glow effect:



COLORS

Default color 0xFFFF90 (yellow):



Color 0xFFFFFFFF (white):



TRANSPARENCY

0% transparency:



20% transparency:



60% transparency:



SPREAD

0 pixel spread and 0% transparency:



5 pixel spread and 0% transparency:



10 pixel spread and 0% transparency:



20 pixel spread and 0% transparency:



Color 0xFFFF90, 5 pixel spread and 20% transparency:



Color 0xFFFF90, 20 pixel spread and 20% transparency:



TEXTS

5 pixel spread and 0% transparency:

Text

Color 0xFF0000, 5 pixel spread and 0% transparency:

Text

Large font with 15 pixel spread and 0% transparency:

Text

Large font with color 0xFF0000, 35 pixel spread and 20% transparency:

Text

PART-TRANSPARENT GRAPHIC

Original:



20 pixel spread and 20% transparency:



Color 0xFF0000, 20 pixel spread and 20% transparency:



Without color, 20 pixel spread and 20% transparency plus shadow with 40 pixel distance, 60% transparency, black and 5 pixel soft focus.



ELEMENT CHANGES

3D button in contrast colors, 15 pixel spread and 0% transparency on 3D button:



3D button in contrast colors, pressed with 15 pixel spread and 0% transparency on 3D button:



Error treatment

OUTPUT WINDOW

Entry	Level	Description
DirectX: Screen'Screen name' - Element 'Element name' uses an effect which cannot be displayed with the selected graphics setting.	Warning	At an element the glow effect is activated. However DirectX Software or DirectX Hardware is not selected or not available.

CHECK LIST FOR ERROR LOCALIZING

- ▶ Is DirectX turned on?
- ▶ Is DirectX available on the system? An according check can be carried out by activating the debug messages in the Diagnosis Viewer. For successful support, an appropriate message is displayed.
- ▶ Does the element support the glow effect?

- ▶ Is the element visible?
- ▶ Cause static properties (e.g. transparency) the glow effect not to be displayed or displayed differently?
- ▶ Cause dynamic properties the glow effect not to be displayed or displayed differently?
- ▶ Is a property selected which causes the glow effect only under certain circumstances (e.g. button element with property "Only active if pressed")?

Borders and shadows

Elements can be expanded with frames and shadows.

Exception: **Status elements** cannot obtain shadows.



Information

If the transparency of an object (for example the background color) is changed, the display of the preconfigured shading also changes accordingly. However, the values for color and transparency of shading remain the same in the process.

ALLOCATE FRAME AND SHADOWS

- ▶ To give an element a frame, select `Frame` in the property **Border type** node **Borders/Shadows**.
- ▶ To give an element a frame, select `Frame` in the property **Border type** node **Borders/Shadows**.

FOR SHADOWS AND FRAMES, YOU CAN DEFINE

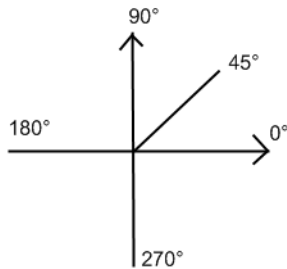
- ▶ Distance: distance of the frame or shadow to the element.
- ▶ Frame color: Color of frame or shadow.

FOR FRAMES, YOU CAN DEFINE

- ▶ Line width: The width of the frame.

FOR SHADOWS, YOU CAN DEFINE

- ▶ **Angle:** The angle in degrees with which the shadow falls, starting from the outside right counterclockwise.



- ▶ **Transparency:** Transparency of the shadow between 0 and 100%, with 0% being opaque and 100% being transparent.
- ▶ **Size of shadow:** Size of shadow in pixels.
- ▶ **Blurring:** Blurs the surface color and makes the transition to shadow softer.

Note: if a value is irregularly set to 0 here, then the calculation affects system performance.



Information

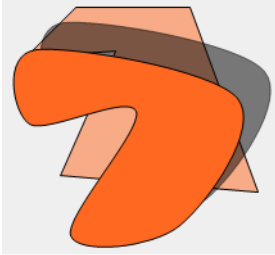
Transparency for lines or fill colors of an element have an effect on the shadow. For example: If the fill color is set to 100% transparent, then no shade will be visible for the fill area.

Examples

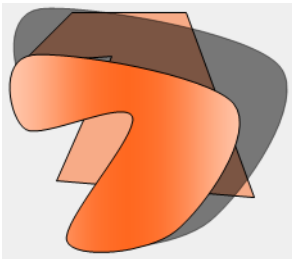
Shade with an angle of 45 degrees moved by 10 pixels



Shade with an angle of 45 degrees moved by 30 pixels



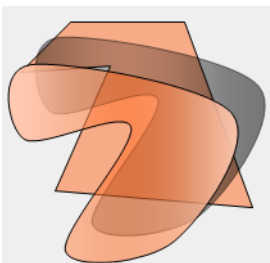
Shade with size of 30 pixels



Shade with size of -20 pixels



Shade with a size of -20 pixels and transparent color gradient in the element



Rounded rectangle with a blur of 10



12.1.3 Move elements

To move elements, use:

From version 6.50

- ▶ the properties from the respective element:
 - **Position**
 - **Size and rotation dynamic**
- ▶ You can also animate elements with properties
 - **Fill color(s) dynamic** in the node **Fill**
 - **Flashing** in the node **Visibility/flashing**
 - **Visibility** in the node **Visibility/flashing**

Up to and including version 6.22 and for Runtime compatibility with version 6.22, as well as for Windows CE:

- ▶ Alternatively, you can also use the Move Symbol (on page 137) dynamic element

12.1.4 Color gradient and transparency

Elements can be given color gradients or switched to transparent.

To do this, select the corresponding element properties in the **Fill** node:

COLOR GRADIENT

Color gradients can be set in the following direction for the following elements:

Element	Linear	Selective	Selective with edges	Radiant
Rectangle	X	X	X	X
Circle	X	X	--	X
Segment of a circle	X	X	--	X
Polygon	X	X	X	X
Button	X	X	X (if angular)	X

Key:

X: supported

--: not supported

To define a color gradient, select `Color Gradient` as a **Fill pattern**.

You can now define the color gradient via the properties of the group **Color gradient**. You can also define the color gradient with the mouse. To do this, click on the blue circle in the element with (connecting line to the middle point) and move the circle until you reach the desired gradient.

COLOR GRADIENT UNDER WINDOW CE OR FOR GRAPHICS QUALITY WINDOWS BASIS

Under Windows CE or for `Windows Basic` settings for the **Graphics quality** property, color gradients for buttons and vector elements can only be implemented by means of brightness values. For the display of color gradients use property:

- ▶ **Brightness outside**
- ▶ **Brightness inside**

Note:

Property **With brightness values** need not extra be activated.

Property **Angle** [°] can only be changed in steps of 90° under Windows CE and at setting `Windows Basis` for property **Graphics quality**.



Information

Gradients are orientated horizontally for angles between 45° and 135°, and angles between 225° and 315°, otherwise they are vertical.

*The **With brightness values** property is not available for polygons.*

BUTTON

For element button under Windows CE and Windows Basis the following is also true:

- ▶ For property **Color gradient** the values `Selective` and `Selective with edges` are not available.

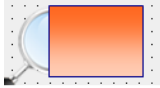
TRANSPARENCY

You can switch an element to be completely transparent with the **Transparent** property.

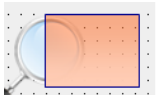
To switch elements to be partially transparent, use the properties for fill color transparency, gradient color and frame color. Here, you define the covering power of the colors with values between 0 and 100 percent. In doing so, 0 is opaque and 100 is completely transparent. All values between this appear transparent according to how they are set.

EXAMPLES

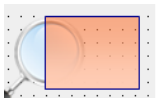
Transparency: fill color = 100, fill color 2 = 100



Transparency: fill color = 50, fill color 2 = 100



Transparency: fill color = 0, fill color 2 = 100



Information

Control elements to control list fields such as screen scroll bars do not support transparency.

12.1.5 Transfer format

To transfer the properties of a selected element to another one / multiple elements:

1. Transfer to an element:
 - a) Click on element with original properties -
 - b) Click on the **Transfer properties** symbol or the corresponding command in the context menu
 - c) Click on target element: Properties are transferred
2. Transfer to multiple elements:
 - a) Select source element -
 - b) Select target element with **Ctrl** key held down (source and target elements are highlighted)
 - c) Click on the **Transfer properties** symbol or the corresponding command in the context menu
 - d) The source element's properties are transferred to the target elements.

If several elements were chosen as source, the properties of the first selected element are transferred.



Information

Accept properties via properties window:

If several elements are highlighted, the properties of the last respective highlighted element in the properties input is displayed. If the properties window is displayed in the **Grouped view** mode or in the **All properties mode** mode, the respective property can be transferred to all highlighted elements by pressing the `Return` key. This is not possible in the **dialog view** mode. For details, see the Properties window chapter, **Multiselect** section.

RULES FOR TRANSFERRING FORMATS

TRANSFERRED ARE:

- ▶ Properties that directly define an element in form, color, and appearance and are not influenced by a variable.

NOT TRANSFERRED ARE: __

- ▶ Deactivated properties
- ▶ Direct properties that it does not make sense to transfer, such as texts and Graphics files

Exception:

- Graphics files for a switch are copied as you normally always want to have the same switches.
- Graphics files for buttons are not copied as different ones are normally used.
- ▶ Properties from groups:
 - **Authorization**
 - **Automatic Line Coloring**
 - **General**
 - **Position**
 - **Size and rotation dynamic**
 - **Runtime**
 - **VBA macros**
 - **Write set value**
- ▶ Everything that comes directly from variables
- ▶ Variables and linked functions

12.1.6 Copy, Insert and Move

To copy, move or delete elements on a screen, use

- ▶ Commands in the **Edit** menu
- ▶ Actions with the mouse:
 - Holding down the `ctrl` key when moving the mouse copies the element.
 - Moving with the right mouse button pressed opens the content menu, with a choice of whether to copy or move the item
- ▶ The context menu

MOVE

Objects can be moved with the mouse or the keyboard, with the exception of frames. You can use special effects in combination with function keys when moving:

Key	Action	Result
Ctrl	move with mouse	object is copied.
Shift	move with mouse	object can only be moved horizontally and vertically.
Shift	move with arrows	Each key press moves the object by 10 pixels.
Right mouse button	move with mouse	The context menu lets you choose between Copy and Move.
Space bar		Mouse pointer becomes a hand. With this hand, the editing area can be moved with the left mouse button.

12.1.7 Designing lists

The display of certain lists can be modified in Runtime. Not all configuration options are available for all lists. The configuration can differ depending on the screen type; for example, headers for Batch Control can be configured with different properties as those for AML. Most of all, list elements for AML, Batch Control, CEL, Extended Trend, Report Viewer or RGM have various design options.

For example, the following are available:

- ▶ General display (on page 159)
- ▶ Headers and scroll bars (on page 159)
- ▶ Graphic for checkbox (on page 161)

- ▶ Configurable lists (on page 161)

Representation

In the **Representation** area, the font and line height can be configured and the **Extended graphical settings** property can be activated.

FONT

Select the font to be used for the list using the **Font** property. Click on the ... button to open the dialog to select a font. You can configure the fonts offered here in the Screens/font lists (on page 234) node.

LINE HEIGHT

You can define the line height regardless of the font size with the **Line height [pixel]** property.

EXTENDED GRAPHICAL SETTINGS

This property allows you to use customizable horizontal and vertical scroll bars, the header and the grid.

PREVIEW

By activating property **Extended graphical settings** in the project settings of the control elements of screen type **Chronological Event List** the header and the scroll bar are displayed as preview in the Editor. Details such as colors, fill effects, lighting effects or grids can thus be configured more easily.

Attention: As the size of the scroll bars equals their size in the Runtime, the total size of the list in the Editor can vary from the size in the Runtime. This is also true for the size of the header and the font of the header.

DISPLAY OF BINARY VALUES

Binary values in configurable lists (on page 161) can be displayed graphically or numerically in Runtime. The display is configured using the properties in the **Representation/Display boolean values** group.

Headers and scroll bars

Headers allow, in Runtime:

- ▶ Columns to be moved
- ▶ The size to be changed

- The sorting to be changed.

Headers are generally configured in the **Representation/Header** area. Headers for AML and CEL differ from this; for details, see the section entitled **Headers for AML / CEL**.

HEADERS GENERAL

To be able to use headers in Runtime, activate the **Show header** property.

You fix the header with the **Freeze column location** property. You can no longer move columns via drag&drop in the Runtime. You can still change the column width.

Exception: For AML and CEL the column width can no longer be changed.

To activate the filter line in Runtime, activate the **Show filter row** property.

Note: Pre-configured filters are also executed if the filter line is not displayed.

You define the height of the header using the **Height of the header [in pixels]** property. The height is automatically determined on the basis of the font if the value is 0. The maximum height is 255 pixels.

HEADER FOR AML AND CEL

To use headers in AML or CEL screens:

1. Navigate to the **Alarm Message List** or **Chronological Event List** property group.
2. In the **Header AML** or **Header CEL** property, select the value `Operable header`. Alternatively you can also switch the header to inoperable or invisible here.
3. In the screen properties of AML/CEL open group **Header and grid** for the list.
4. Deactivate the **Freeze column location** property checkbox



Information

*You can prohibit the manipulation or the visibility of the header for each screen Alarm Message List by deactivating the property **Show header** or **Make header editable** for the tabular view.*

SORTING IN RUNTIME

To mark the relevant column for sorting in Runtime and to determine the sorting sequence, configure the graphic element for the title line:

1. Select `Graphics files` for the **Display style** property.
2. Link the **Sort ascending** and **Sort descending** properties with a graphics file
3. The selected graphic for the respective sorting direction is displayed in Runtime for the sorting of relevant columns

4. Clicking on the graphic changes the sorting sequence
5. Clicking in the column title activates the column for sorting

CONFIGURING THE APPEARANCE FOR SCROLL BARS AND GRID

To define the size and appearance of scroll bars, the header or grids:

1. Activate, in the **Representation** group, the **Extended graphical settings** property
2. Define the desired properties in the groups **Scroll bars** or **Header and grid**

You can find information on the individual properties in the embedded help.



Information

*If the **Graphics file** property is selected for the **Display style** property, then all elements for which no graphics file has been selected are shown with a color gradient. Transparent graphics cannot be used for control elements for lists.*

Graphic for checkbox

Checkboxes with graphics can be designed individually. To do this, assign the desired graphics to the corresponding properties in the Editor. The graphics must already be created in the **Files\graphics** node. The defined graphics are drawn in the Runtime with the aspect ratio being taken into account.

You define which graphics file is used for the status of a check box with the properties in the **Representation** group:

- ▶ **On**: The check box is switched on (activated).
- ▶ **On (inactive)**: The check box is switched on (activated) and cannot be changed.
- ▶ **Off**: The check box is switched off.
- ▶ **Off (inactive)**: The check box is switched off and cannot be changed.

Configurable lists

A range of lists can be individually configured in Runtime:

- ▶ Active Directory:
 - List in the Active Directory window (but not: tree)
- ▶ AML

- ▶ AML filter/CEL filter/time filter:
 - Lots: Archive selection
 - Lots: Lot selection
- ▶ Batch:
 - List of master recipes
 - Control Recipes List
 - Tag List 1
 - Tag List 2
- ▶ Command Processing
 - Interlocking list
- ▶ User list:
 - User list
- ▶ CEL
- ▶ Extended Trend:
 - Expanded curve list
- ▶ Message Control:
 - Message queue
- ▶ Process Recorder
- ▶ RGM:
 - Recipe list and recipe value table (but not: CE recipe value table)
- ▶ Shift Management
- ▶ Text lists

The following are possible actions for these lists:

- ▶ Moving the columns
- ▶ Configuration of the columns
- ▶ Coloring of columns
- ▶ Highlighting of the position with the focus
- ▶ Use of response variables

For general information, see also the **Design lists** (on page 158) chapter.



Information

Touch boxes can be configured like lists:

- ▶ AML/CEL/time filter
- ▶ Edit User
- ▶ User Groups List

Note: Not all elements can be configured with touch boxes. For example, there is no header and there is only one column.

CONFIGURATION IN THE EDITOR..

The appearance and behavior of the `configurable lists` in Runtime can be preconfigured in the Editor using the properties of the **Representation** group.

PROPERTIES OF THE HEADERS

The behavior of headers in Runtime is now defined in the Editor by means of the properties of the **Header** group:

- ▶ **Show header:**
Controls whether the header is displayed in Runtime.
- ▶ **Show filter row:**
Controls whether the filter line is displayed in Runtime.
- ▶ **Disable sorting:**
Controls the possibility of sorting table columns in Runtime with a click on the header.
- ▶ **Freeze column location:**
Controls the possibility to amend or move the width of table columns in Runtime with mouse actions.
- ▶ **Deactivate context menu:**
Activates or deactivates the context menu for the header.

BEHAVIOR IN RUNTIME

EDIT CELLS

You have the following possibilities for editing cells in the `configurable list` type lists:

- ▶ Double click on the entry
- ▶ Click in the cell, immediately followed by a second click (slow double click)

Depending on the screen type, there may also be a button available to activate editing.

COLOR COLUMNS

In configurable lists, the text color and background color of each column can be defined individually. To do this, configure the **User-defined colors** area in the `screen switching` function of the respective screen, in the **Format columns** tab.

SHOW FOCUS

In configurable lists, the respective focus can be signaled by means of different text and background colors. The cell, column or line that is in focus is emphasized in bold. These colors are configured in the **Selection colors for the object lists** project properties in the **Graphical design** node.

PRIORITIES WHEN COLORING

If several colors are applied on a list, the following priorities apply:

1. General: **Selection colors for the object lists**
2. RGM: **Recipe value validation**
3. RGM: Online validation
4. RGM: **Interlocking**
5. List: Column color

RESPONSE VARIABLES

Configurable lists can be linked to a `BOOL` response variable. These signalize if something has been selected in the list in Runtime.

To link a response variable:

1. Click on **Configurable lists**.
2. Open the **Response variables** group in the properties.
3. In the **Selection active** property, click on the **...** button.

The dialog to select a `BOOL` variable is opened.

4. Please select a variable.
5. Link the variable to an element that displays the status of the variable in Runtime.
Meaning of the values:

- 0: No selection in the list.
Note: If a screen is closed, the list is automatically set to 0.

- 1: Something has been selected in the list.

12.1.8 Add, delete and move dots for polylines, polygons and pipes

With polylines (on page 110), Polygons (on page 141) and pipes (on page 112), dots can be added, deleted and moved.

ADD DOTS

To add corner dots (support dots):

- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Add node in the selected element** menu item from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a line of the polyobject.
- ▶ The mouse pointer changes to an arrow including a plus sign.
- ▶ A mouse click adds a corner dot.

DELETE DOTS

To delete end points (support points):

- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ Click on the right mouse button.
- ▶ Select the **Delete node in the selected element** menu entry from the context menu

or:

- ▶ Hold down the `Ctrl` key and `Shift` key at the same time.
- ▶ Move the mouse pointer to a point of the polyobject.
- ▶ The mouse pointer changes to an arrow including a minus sign.
- ▶ A mouse click removes the point.

MOVE POINTS

To move end points (support points):

- ▶ move the mouse pointer over the desired point of the polyobject.
- ▶ Place the point over the arrow keys at the desired place.

Note:

- ▶ Pressing on the arrow key moves the position by 1 pixel. If the `Shift` key is held at the same time, a press of the button moves the point by 10 pixels.
- ▶ The options `Use grid`, `Horizontal distance` and `Vertical distance` in the Editor **settings** are ignored.

12.1.9 Arrows in vector elements

A symbol for the start and end of a line can be defined for all vector elements that display open figures. This applies for:

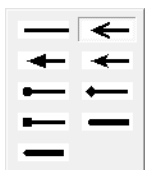
- ▶ Line
- ▶ Polyline
- ▶ Unfilled arc of a circle
- ▶ Unfilled segment of a circle

To add a symbol:

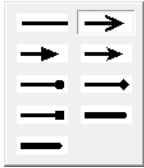
1. Ensure that, in the properties for the **Graphics quality** property (**Screens** node), at least `DirectX Software` has been selected.
2. Draw the element.
3. In properties, in the **End of line** group, select the properties for:
 - a) **Start type**: Symbol for start of line.
 - b) **End type**: Symbol for end of line.
 - c) **Size**: enlargement factor for line width. The factor relates to the line width of the vector element as defined in the **Line width [Pixel]** property. Default = 0

The following symbols are available:

from left or to the left:



from the right or to the right:



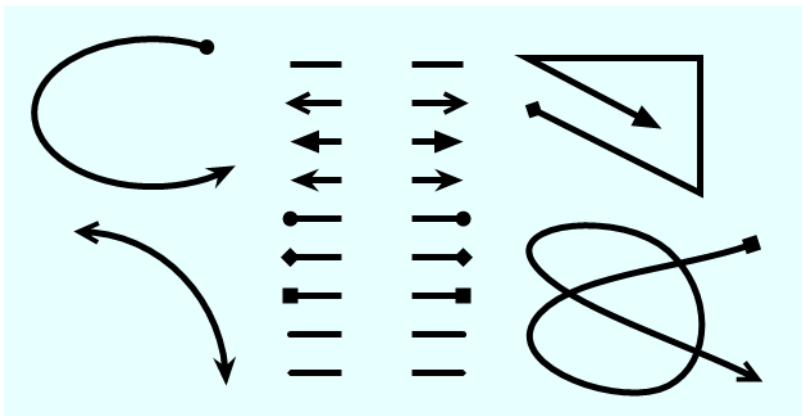
Information

These elements are not available:

- ▶ With Windows CE, because **Graphics quality** DirectX hardware or DirectX software must be activated
- ▶ with a filled circle segment
- ▶ with a filled arc of a circle

Example for arrows

Vector elements with start and end symbols with an enlargement factor of 1.5:



12.1.10 Grid

In zenon Editor, there is the possibility to turn on a grid, in order to align elements at an incremental position. The grid makes it possible to align elements precisely on the screen. The basic settings are in the **Tools/Settings** menu:

GRID

Options for the display of the configuration environment in the main window of the zenon Editor.

Option	Description
Display grid	<p>Display of a grid in the main window of the zenon Editor.</p> <ul style="list-style-type: none"> ▶ Active: Shows the grid that can be defined in the main window under Grid type. ▶ Inactive: Grid is not displayed.
Use grid	<p>Use of the grid for project configuration steps.</p> <ul style="list-style-type: none"> ▶ Active: Screen elements are automatically aligned with the grid. This function is independent from the option Display grid. ▶ Inactive: Screen elements are not orientated to the grid during configuration.
Color	<p>Defines the grid color. Clicking on the color field opens the pull-down menu to select a color.</p> <p>The windows color palette is used for selection.</p>
Display	<p>Drop-down list with the type of grid display:</p> <ul style="list-style-type: none"> ▶ full ▶ Intersections
Vertical space	<p>Defines the vertical distance between individual lines of the grid. Therefore, it also defines how finely scaled element sized can be displayed.</p> <p>Recommended grid distance: 10 pixel</p>
Horizontal space	<p>Defines the horizontal distance between individual lines of the grid. Therefore, it also defines how finely scaled element sized can be displayed.</p> <p>Recommended grid distance: 10 pixel</p>

IN THE PICTURE CONTEXT MENU, YOU DECIDE

Menu entry	Description
Display grid	Switch grid to visible or invisible.
Use grid	Elements are aligned in the grid.
Use magnetic points	Touch points of objects move into place when neared and align themselves to each other.



Information

If grid points are 5 pixels or less, only the grid lines that are more than 5 pixels apart are displayed. The smaller grid lines are also used for the positioning.

12.1.11 Font

A standard font is automatically created when creating a project. This is provided as the standard font for new objects. The standard font cannot be deleted!

If you require other fonts:

- ▶ Create the desired font in the Font Lists node (subnode of Screens).
- ▶ Select the font in the object properties (node **Text**, property **Font**).

12.1.12 Select

Objects are selected by means of a mouse click. To select several objects:

- ▶ Hold down `Shift` or `Ctrl` while clicking on the selected objects
or
- ▶ Drag a rectangle with the mouse

To deselect an object again, click on it with the `Ctrl` key held down.

CHANGING THE SELECTION SEQUENCE

If objects are to be aligned next to one another, the object that is selected first is used as a reference. You recognize the reference object as a completely-filled sizing handle. To make a different object the reference object:

1. Hold down the `Shift` key
2. Click the mouse onto the object that is to be the reference object

ALIGNING A SELECTED OBJECT

You can find further information on selecting objects in the Editor/toolbars/alignment and Editor/menu bar/Edit chapters

12.1.13 Scale, center and zoom

SCALING

This you can scale elements in two ways:

1. proportional: Hold down the `shift` key when scaling
2. around the center: hold down the `Alt` key to do this

Note: If an angle dissimilar to 0 via property **Rotation angle** [°] was defined for an element, scaling via arrow keys is not possible.

CENTER

The currently selected element can be centered in the editing window with the `H` key.

ZOOM

EDITOR

There are two zoom modes available in the Editor above the **Zoom** symbol:

- ▶ Variable zoom:
A predefined value can be selected from the combobox, or you can directly enter any value between 15% and 400%.
- ▶ Zoom tool:
You can zoom directly in the screen with the two magnifier symbols (+ and -). The `CTRL` key switches between the different modes. The defined zoom is saved for each single screen.

Close zoom mode: Click on the **Edit mode** symbol in the **Elements** toolbar.

RUNTIME

A screen can only be zoomed within the limits that have been set for the following properties:

- ▶ **Width (maximum)** [pixels]
- ▶ **Height (maximum)** [pixels]
- ▶ **Breite(Minimum)** [Pixel]
- ▶ **Höhe(Minimum)** [Pixel]

If a limit has been reached when zooming, then an attempt is made to continue zooming in the free directions. The page ratio is taken into account in the process.

Faceplate screens cannot be zoomed.

ZOOM WITH MULTI-TOUCH IN THE ETM

In the **Extended Trend** module, in addition to the window, the curve graphics can also be zoomed into with a two-finger gesture.

For zooming in the ETM, this means:

- ▶ Zooming graphics: Both fingers must be on the graphics.
- ▶ Zooming into the screen: Both fingers must be in the screen. No finger can be on the graphics.
- ▶ If there are two fingers on the graphics and two on the screen, graphics and the screen are zoomed.
- ▶ If there is one finger in the screen and one finger on the graphics, the screen is moved if configured accordingly.
- ▶ If a Button button is pressed during an action, this action can no longer be canceled.

12.1.14 Keyboard shortcuts

Shortcuts for the graphic editor:

Note for shortcuts: The plus sign (+) means that keys are pressed together.

For example:

`Ctrl+A` means: Hold down the `Control` key and then press the **A** key.

`Ctrl++` means: Hold down the `Control` key and then press the plus key.

GENERAL

Command	Key combination
Main window: Scroll content with 'moving hand'	Press and hold Space
Close current screen	Ctrl+F4
Open properties	Alt+Enter key

SELECT

Command	Key combination
Select several objects	Hold down the Shift or Control key
Deselect selected object during multi-select	Ctrl+mouse click
Selection: Change sort order. Defines the element on which all others realign	Hold down the Shift key when selecting
Select hidden objects	<ol style="list-style-type: none"> 1. Press the Alt key 2. Click object and move it
Select all elements of a screen.	Ctrl+A
Select next element according to the order of their creation	Tab
Select previous element according to the order of their creation	Shift key+Tab

POSITIONING

Command	Key combination
Move selected object.	Arrow keys
Move by 10 pixels each time you press an arrow key	Shift key+Arrow key
Move only horizontally or only vertically	Hold down the Shift key when moving
Centers the selected object in the working section	H

ACTIONS

Command	Key combination
Saves changes	Ctrl+S
Pastes element from the clipboard	Ctrl+V

	Shift+Ins
Inserts element from the clipboard at its original position; original and copy lie congruently on top of each user	Ctrl+Shift+V
Copies selected element.	Ctrl+C Ctrl+Ins
Copy instead of move	Hold down the Control key when moving
Duplicates the selected element. You can find more detailed information in the Duplicating elements (on page 175) section.	Ctrl+D
Deletes selected element	Del
Cuts out the selected element	Shift key+Del Ctrl+X
Undoes changes	Ctrl+Z Alt+Backspace
Add or delete node in the selected element. Add: Mouse cursor turns to plus symbol (+). Delete: Mouse cursor turns to minus symbol (-). Works for polylines, polygons and pipe elements.	Ctrl+Shift key
Cancel drawing of polylines and polygons	S
Cancel drawing of polylines and polygons and delete the section which was drawn last	Esc
Move selected elements one level up	+
Move selected elements one level down	-
Move selected elements to the foreground	Ctrl++
Move selected elements to the background	Ctrl+-

SCALING

Command	Key combination
Change size	<p>Move mouse cursor to the handle so that the mouse cursor changes to an arrow. After that you can position, with pixel precision, using the arrow keys or in steps of 10 pixels with the Shift key held down.</p> <p>Note: If an angle dissimilar to 0 via</p>

	property Rotation angle [°] was defined for an element, scaling via arrow keys is not possible.
Scaling object around the center	Hold down the Alt key when scaling.
Proportional scaling	Hold down the Shift key when scaling.

ZOOM

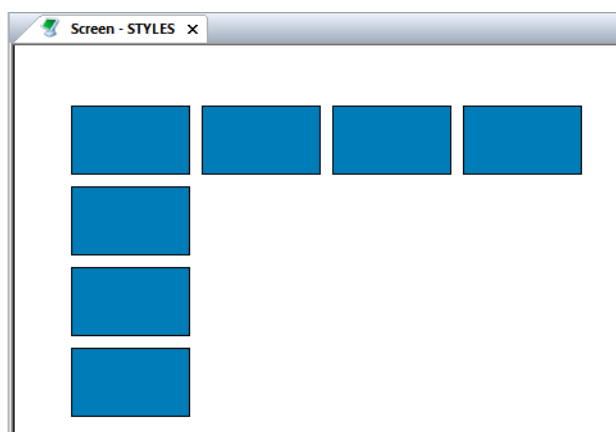
Reduce view	Ctrl+Shift key+-
Enlarge view	Ctrl+Shift key++
Set view to 100%	Ctrl+Alt+0
Amend the view to the space available in the Editor and display it proportionally	Ctrl+0

ZOOM WITH THE MOUSE

Reduce view	Ctrl+scroll wheel of the mouse downwards
Enlarge view	Ctrl+scroll wheel upwards

Duplicating elements

You have the possibility of duplicating elements in screens (on page 34) and elements in the frame editor to create free frame forms (on page 209).



To duplicate an element:

1. Select an element.
2. Select the `Ctrl+D` keyboard shortcut or the **Duplicate entry** from the element's context menu.

The element is duplicated and positioned with a default distance of 15 pixels to the right and 15 pixels down from the start point of the original element.

To duplicate further elements:

- ▶ Position the last-duplicated element at the desired distance next to the original element.
- ▶ Press the short cut `Ctrl+D`.

The element is duplicated and positioned at the same distance to the previous element in X-direction and in Y-direction.

If the original element is deselected, the default distance of 15 pixels is used again for the next duplication process.



Information

Elements are not positioned outside the screen window or the frame window during duplication. If there is no longer any room for positioning at the corresponding distance, the elements are added at the edge of the window.



Attention

To be able to copy elements by means of the `Ctrl` key and the left mouse button being held down, release the selection and select the `Ctrl+D` keyboard shortcut once again.

12.1.15 Assigning a keyboard shortcut to an element

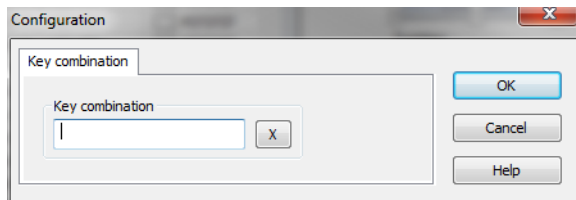
Operable elements in a screen can be linked using a key combination and operated in this way. This applies, for example, to:

- ▶ Execution of control elements and assigned functions such as print, move screen, etc.
- ▶ Send value (such as with switch)
- ▶ Set focus of certain windows (such as curve list in Extended Trend or Comboboxes in the Recipegroup Manager)

The element control function can be carried out with the keyboard in Runtime.

To assign a shortcut to an element:

1. Highlight the control element
2. Navigate to the **Key combination** property (object properties -> **Runtime** -> **Keyboard operation**)
3. Click on the ... button or in the input field
4. The dialog for defining the key combination is opened



Parameter	Description
Key combination	Input of the key combination. Click in the field and press the desired key or key combination, for example: A. The key combination is displayed in the input field.
X	Deletes the character sequence in the input field.
OK	Accepts key combination and closes dialog.
Cancel	Discards input/change and closes dialog.
Help	Opens online help.

12.2 Replacing linking of variables and functions

You can replace the link of screen elements with variables, functions and ALC aliases.

You can do this either in the Editor or in the Runtime. The engineering for this is always done in the Editor.

The links are already replaced in the Editor:

- ▶ for inserted symbols dialog **Edit link rules** is called.
- ▶ for several selected screen elements => context menu => replace link.
Replace link in Editor screen (on page 179)

Already engineered in the Editor but only replaced in the Runtime:

If several variables or functions are to be replaced at the same time, it is best if you use automatic replacement for:

- ▶ Replacing linking with screen switching (on page 182)

- ▶ Replace indices (on page 187)
- ▶ Symbols (on page 256)

You can also read about automated replacement for configuration in the **Efficient configuration with zenon** manual in the **Reusing elements** section.

12.2.1 Naming conventions

To be able to replace variables and other elements securely, the naming should be systematic and standardized if possible. You therefore support not only the reusability, but also maintenance and reverse engineering.

Different systems support you with systematic naming.

FOR EXAMPLE: ENERGY INDUSTRY

Germany

- ▶ KKS (Kraftwerk-Kennzeichen-System - Power Plant Classification System), for details (in German), see <http://de.wikipedia.org/wiki/Kraftwerk-Kennzeichensystem> (<http://de.wikipedia.org/wiki/Kraftwerk-Kennzeichensystem>)
- ▶ DIN 6779 (Kennzeichnungssystematik für technische Produkte und technische Produktdokumentation - Classification System for Technical Products and Technical Product Documentation), for details (in German), see http://de.wikipedia.org/wiki/DIN_6779 (http://de.wikipedia.org/wiki/DIN_6779)
- ▶ Equipment Classification System, for details (in German “Anlagenkennzeichnungssystem”), see <http://de.wikipedia.org/wiki/Anlagenkennzeichnungssystem> (<http://de.wikipedia.org/wiki/Anlagenkennzeichnungssystem>)

International

- ▶ KKS (Power Plant Classification System), for details, see http://en.wikipedia.org/wiki/KKS_Power_Plant_Classification_System (http://en.wikipedia.org/wiki/KKS_Power_Plant_Classification_System)

Such standards exist for all industries. It is recommended that their naming convention is used.

KKS EXAMPLE:

Variables are to be named in accordance with the KKS in an energy project.
A corresponding variable with the label **C01_MDY10-QA001_QA07** indicates:

- ▶ Wind energy equipment **C01** (row **C**, no. **1**)
- ▶ Wind turbine control **MDY10**

- ▶ Power part **QA001**
- ▶ Power protection **QA07**

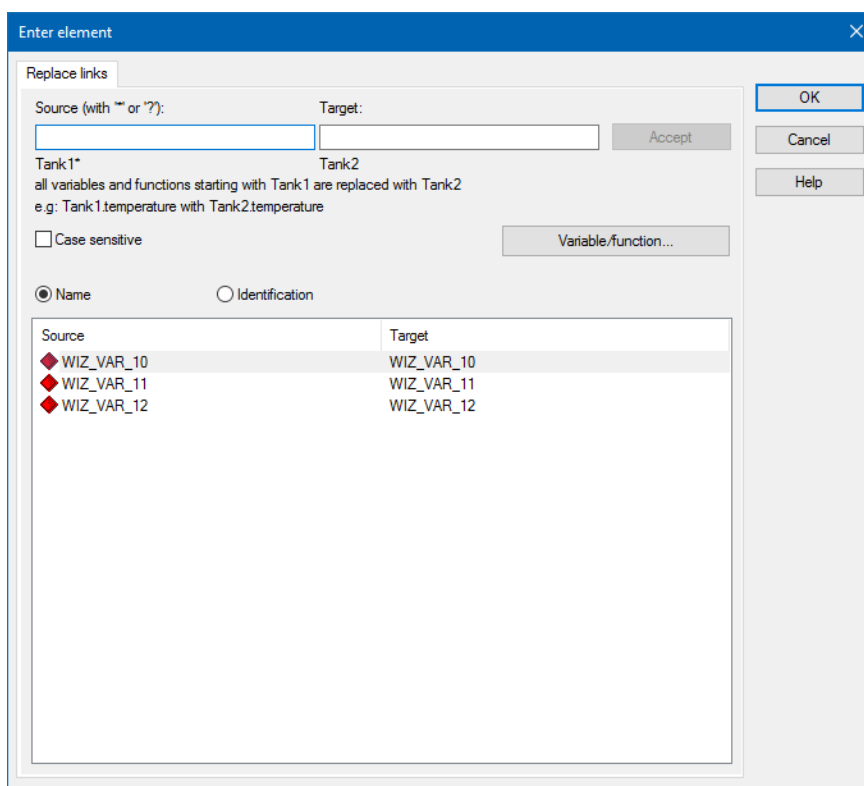
12.2.2 Replacing linking in the Editor screen

Linked variables or functions can be permanently replaced in the Editor in a rule-based manner. The replacement is not limited to the functions or variables defined in the properties of the **Variable/function** group. All other variables used the screen can also be replaced, such as variables for **Visibility**, **Flashing**, **Size and rotation dynamic** and others.

To replace variables or functions in a rule-based manner in the element directly:

1. Highlight the desired element and open it by right clicking the element in the context menu.
2. Select **Replace Links**.

The dialog for the replacement of links opens



Property	Description
Source	<p>Enter the partial string to be searched for.</p> <p>Place holder * and ? can be used. Placeholders are only permitted as prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note when a character appears more than once when using placeholders:</p> <ul style="list-style-type: none"> ▶ Example character sequence: 01{SU(00,Test1)} Test1 should be replaced with Test 2. ▶ Source entry *1 and target entry 2 finds and replaces the 1 in 01 but not in the subsequent following Test1. Result: 02{SU(00,Test1)} ▶ Source entry *test1 and target entry test2 finds and replaces Test1. Result: 01{SU(00,Test2)}
Target	<p>Entry of the partial string</p> <p>Note: Source and target must be in the same project.</p>
Apply	Swaps target strings from the source for those defined in the target .
Note capitalization	When swapping, be sure that any capitalization is an exact match.
Name	Swaps information in process variable names.
Identification	Exchanges information in the identification
Variable/Function	<p>Opens the selection list for variables/functions in relation to the selected line in the list. Clicking on the variable or function in the list defines new target variable or target function.</p> <p>Alternative: Double-click on the corresponding source variable or source function.</p>

REPLACE

REPLACE WITH MANUAL SELECTION

To replace elements manually:

- ▶ Select the element from the list that you would like to replace as the source.
- ▶ Select a target element via the **Variable/Function** button

The previous element is replaced by the new one.

AUTOMATED REPLACEMENT WITH RULES

To automatically replace elements on the basis of rules:

- ▶ In the **Source** input field, define the parameters for the element that you wish to replace
- ▶ Define the parameter for the new variable/function in the **Target** input field
- ▶ Specify what is to be replaced via **Name/Identification**.
- ▶ Click on **Accept**.



Information

The target variable or target function can also be in a different project as the source variable or source function. In doing so, all projects concerned must be started and available on the same computer in Runtime.

Internal variable IDs are used for replacement. This means that if variables are used or functions are renamed, the replacement remains.



Attention

When replacing variables, be aware of the type and signal resolution. If you replace a variable with one of an incompatible type, this can lead to errors during execution. You will be warned when making the substitution; the substitution will however be carried out.



Information

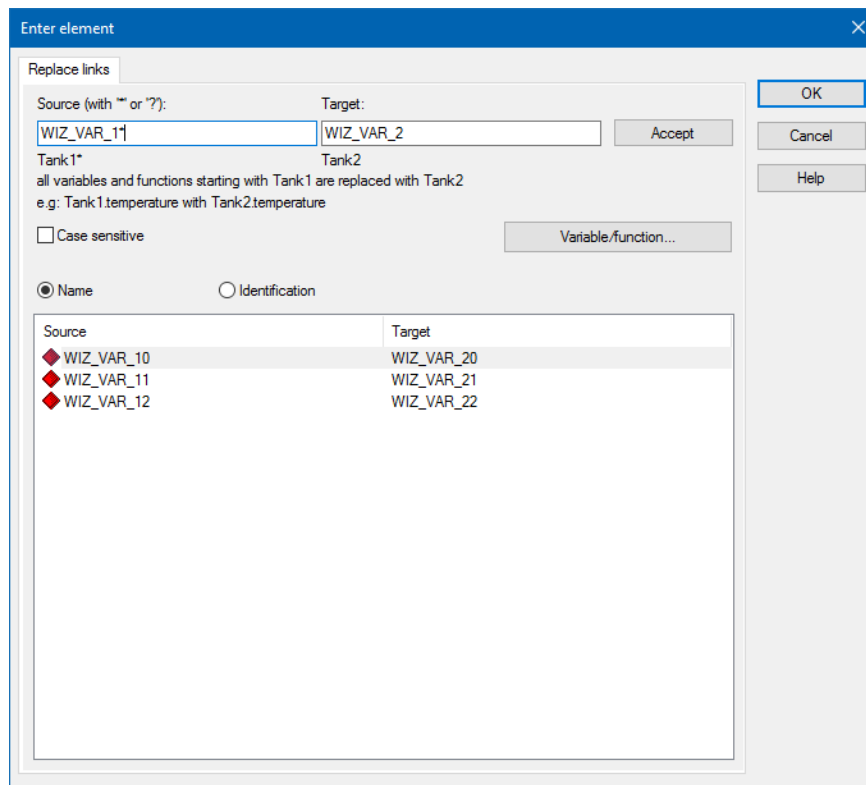
Replace via Drag&Drop: Elements that can only contain one variable or function can be swapped by dragging & dropping. Drag the new variable or function to the element using the mouse. It automatically replaces the previous one.

Example: Replace linked variables, rule-based

All variables with `WIZ_VAR_1` in the name are to be replaced by `WIZ_VAR_2`.

1. Enter, into the **Source** text field, `WIZ_VAR_1`. With the * character, you can include all variables that start with `WIZ_VAR_1`.
2. Enter `WIZ_VAR_2` into the **target** text field.
3. Click on **Accept**.

4. The variables WIZ_VAR_10, WIZ_VAR_11, and WIZ_VAR_12 are replaced by the variables WIZ_VAR_20, WIZ_VAR_21 and WIZ_VAR_22.



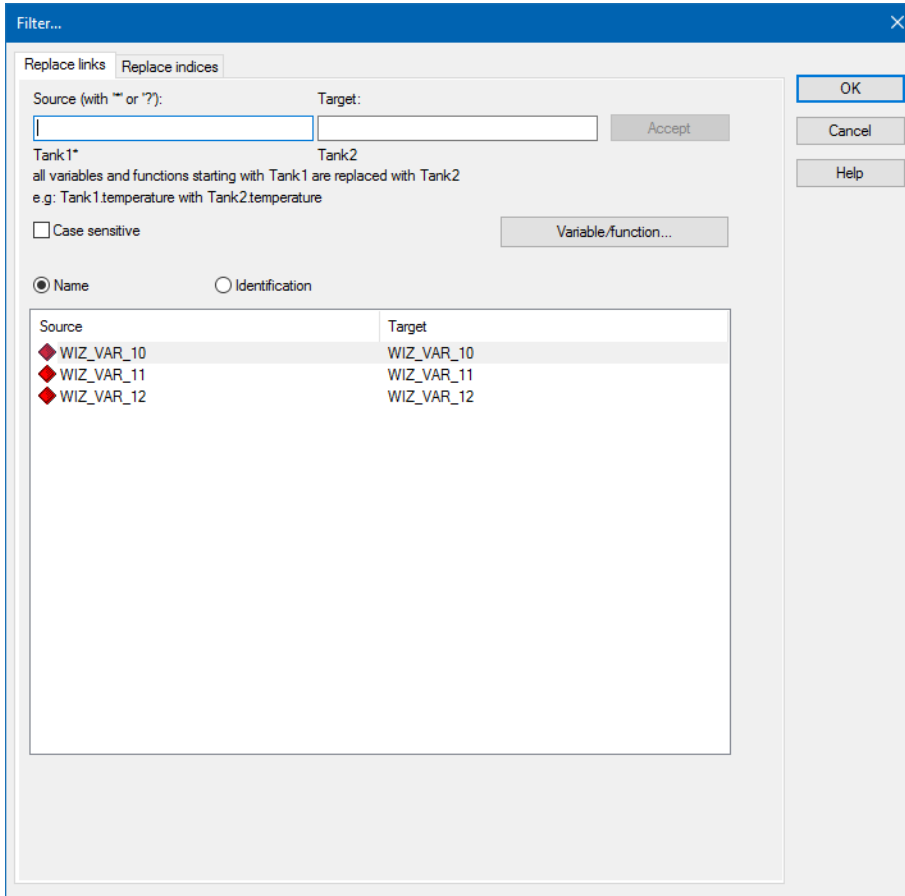
12.2.3 Replacing linking with screen switching

Linked variables or functions in one or more elements, as well as Alias in the ALC can be replaced with screen switching. In doing so, the elements in the screen are not replaced on a lasting basis, but the screen switching is linked in Runtime.

To replace linking when screen switching:

- ▶ Engineer a screen switching function

- Contains elements that can be replaced in the screen, the dialog for replacement is opened



The dialog box is titled "Filter..." and has a close button (X) in the top right corner. It contains two tabs: "Replace links" (selected) and "Replace indices".

Under the "Replace links" tab, there are two input fields: "Source (with '*' or '?'):" and "Target:". Below these fields is an "Accept" button. The text "Tank1*" is entered in the Source field, and "Tank2" is entered in the Target field. Below the input fields, there is a text description: "all variables and functions starting with Tank1 are replaced with Tank2" and an example: "e.g: Tank1.temperature with Tank2.temperature".

There is a checkbox labeled "Case sensitive" which is currently unchecked. To its right is a button labeled "Variable/function...".

Below the checkbox, there are two radio buttons: "Name" (selected) and "Identification".

At the bottom, there is a table with two columns: "Source" and "Target".

Source	Target
◆ WIZ_VAR_10	WIZ_VAR_10
◆ WIZ_VAR_11	WIZ_VAR_11
◆ WIZ_VAR_12	WIZ_VAR_12

On the right side of the dialog, there are three buttons: "OK", "Cancel", and "Help".

Property	Description
Source	<p>Enter the partial string to be searched for.</p> <p>Place holder * and ? can be used. Placeholders are only permitted as prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note when a character appears more than once when using placeholders:</p> <ul style="list-style-type: none"> ▶ Example character sequence: 01{SU(00,Test1)} Test1 should be replaced with Test 2. ▶ Source entry *1 and target entry 2 finds and replaces the 1 in 01 but not in the subsequent following Test1. Result: 02{SU(00,Test1)} ▶ Source entry *test1 and target entry test2 finds and replaces Test1. Result: 01{SU(00,Test2)}
Target	<p>Entry of the partial string</p> <p>Note: Source and target must be in the same project.</p>
Apply	Swaps target strings from the source for those defined in the target .
Note capitalization	When swapping, be sure that any capitalization is an exact match.
Name	Swaps information in process variable names.
Identification	Exchanges information in the identification
Variable/Function	<p>Opens the selection list for variables/functions in relation to the selected line in the list. Clicking on the variable or function in the list defines new target variable or target function.</p> <p>Alternative: Double-click on the corresponding source variable or source function.</p>

REPLACE

REPLACE WITH MANUAL SELECTION

To replace elements manually:

- ▶ Select the element from the list that you would like to replace as the source.
- ▶ Select a target element via the **Variable/Function** button

The previous element is replaced by the new one.

AUTOMATED REPLACEMENT WITH RULES

To automatically replace elements on the basis of rules:

- ▶ In the **Source** input field, define the parameters for the element that you wish to replace
- ▶ Define the parameter for the new variable/function in the **Target** input field
- ▶ Specify what is to be replaced via **Name/Identification**.
- ▶ Click on **Accept**.



Information

The target variable or target function can also be in a different project as the source variable or source function. In doing so, all projects concerned must be started and available on the same computer in Runtime.

Internal variable IDs are used for replacement. This means that if variables are used or functions are renamed, the replacement remains.



Attention

When replacing variables, be aware of the type and signal resolution. If you replace a variable with one of an incompatible type, this can lead to errors during execution. You will be warned when making the substitution; the substitution will however be carried out.

REPLACING INTERLOCKINGS

In the dialog, the variables of the interlockings used in this screen appear next to the variables directly linked to the screen. This also includes the result variable of an interlocking. If a variable was linked to both the elements of a screen and with interlockings of a screen, they only appear once in the dialog.

The variables to be replaced for all interlockings that use these variables are replaced in Runtime. In addition to the variables normally linked to interlocking, the result variables linked to the interlocking are replaced for the screen.

REPLACEMENT IN INTEGRATION PROJECTS

If variables or functions are replaced between a subproject and the integration project, it must be ensured that all projects involved in Runtime are available and started on the computer.



Example

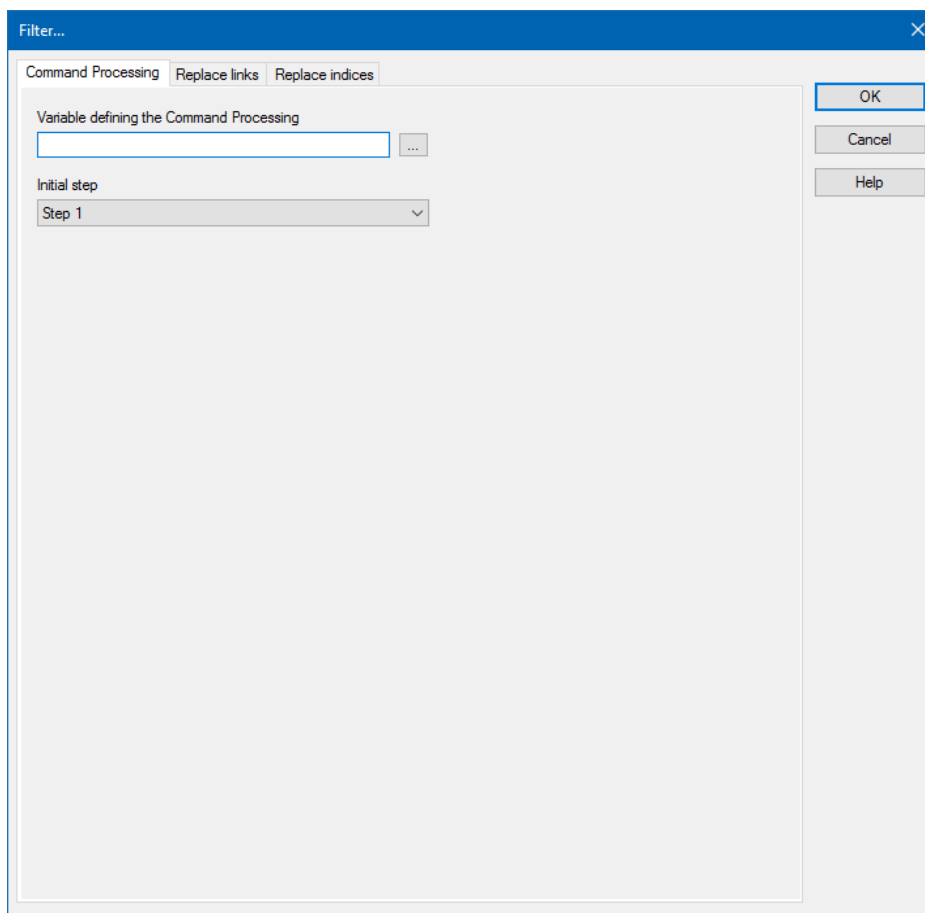
Screen switching to a screen of the subproject is configured in the subproject. In doing so, the variable **variable1** of the subproject is replaced by the variable **variable2** of the integration project. In order for this replacement to be carried out in Runtime, the integration project must be the start project.

If the subproject is the start project, the **variable2** variable of the integration project is not available. No replacement is carried out and the original **variable1** variable of the subproject is used.

The user is not informed that the replacement was not successful in Runtime.

12.2.4 Command Processing

With a **command input** screen switching function, the **Command** tab is also displayed:



Parameters	Description
Variable defining the Command Processing	Selection of the variable to determine the command. Click on button ... in order to open the dialog for selecting variables (on page 200).
Initial step	Defines the initial status of the command screen when it is called up in Runtime. Select from drop-down list: <ul style="list-style-type: none"> ► Step 1 Command screen is in status 1 . Step called up. ► Lock Command screen is called up in Lock status. Default: Step 1

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

§§Trenner



Information

You can also find further information about the possibilities of substituting variables for command screens in the variable substitution chapter in the Energy Edition - command input manual.

12.2.5 Replace indices

When switching screens in Runtime, variables, functions and ALC aliases can be replaced dynamically using indexing rules or element-specific parameters.

Possibilities for substitution:

- Using indexing variables: (on page 191) for example **{X01}**
- Using element-specific parameters: (on page 193) **{PARAM}**
- Without indexing variables or parameters (on page 196)



Attention

Because the names are replaced, variables and functions should always be given different names. Variables and functions are replaced if the names are the same.

*Example: If there is a **test** variable and a **test** function and the **test** variable is to be replaced, the **test** function is also replaced at the same time.*

*Hint: Name variables and functions each with a prefix (for example **var_** and **func_**). You therefore always have a overview in lists too.*

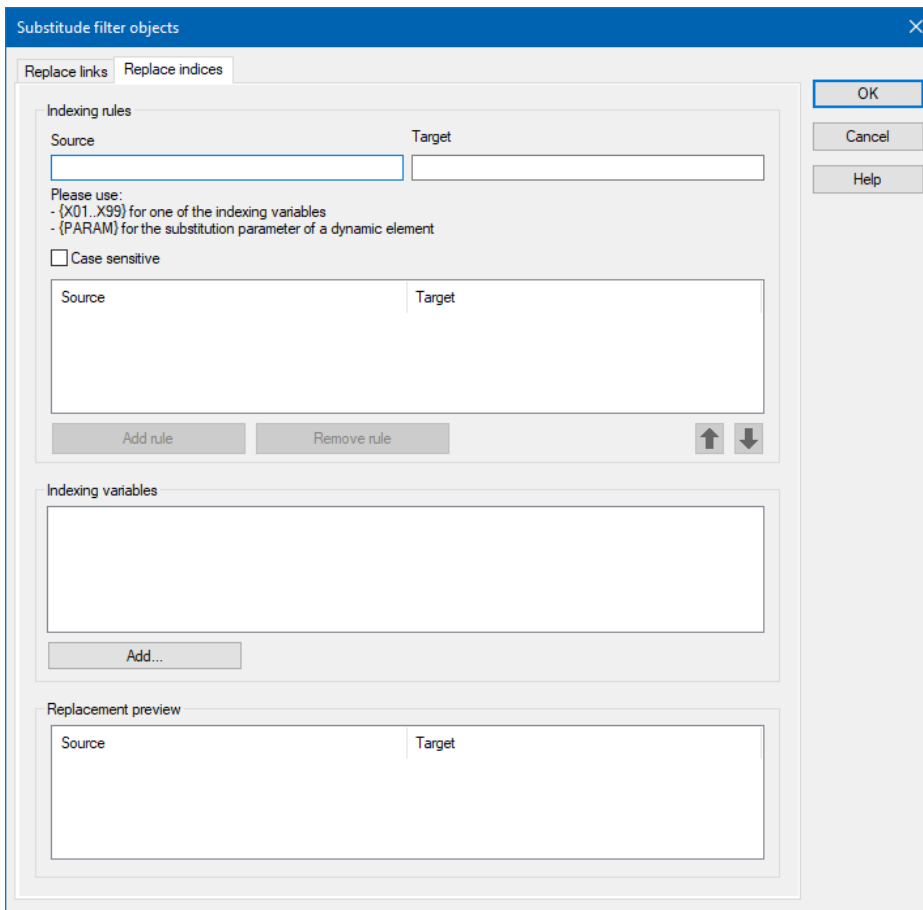


Attention

In contrast to replacing linkings (on page 182), replacement using indices is purely name-based and not via internal variable IDs.

This means that if variables, functions or ALC aliases used in the screen switch function are renamed, these changes must also be made in the screen switch function.

REPLACE INDEXES DIALOG



Substitute filter objects

Replace links Replace indices

Indexing rules

Source	Target

Please use:

- {X01..X99} for one of the indexing variables
- {PARAM} for the substitution parameter of a dynamic element

☐ Case sensitive

Source	Target

Add rule Remove rule

Indexing variables

Add...

Replacement preview

Source	Target

OK Cancel Help

INDEXING RULES

Parameter	Description
Indexing rules	Configuration of the rules for the replacement of variables, functions and ALC aliases.
Source	Entry of the source that is to be substituted.
Target	Entry of the target. Parameters for values from indexing values such as {X01} and parameters {PARAM} for functions can also be used.
Case sensitive	► Active: The replacement is case-sensitive.
List of rules	List of defined rules.
Add rule	Clicking on the button adds the defined rule available via Source and Target to the list. Info: If a rule is selected in the list, this is overwritten. To add a new rule, the selection must be removed beforehand.
Remove rule	Clicking on the button deletes the selected rule from the list.
Arrow upwards	Clicking on the button arranges the selected rule in the list one position up.
Arrow downwards	Clicking on the button arranges the selected rule in the list one position down.

Note: The **Replace indices** method can also be applied without indexing variables. The variables are entered in the list of rules.

Advantage: If sub-elements are added to the structure, the function does not need to be amended a further time as was the case with the **Replace linkings** method.

INDEXING VARIABLES

Parameter	Description
Indexing variables	Configuration of the indexing variables.
List of rules	Shows the selected indexing variables.
Add	<p>Clicking on the button opens the dialog to add and remove indexing variables.</p> <p>Selected variables are added in sequence and given a parameter. This can be used in the replacement rules for the respective indexing variable. The values of these variables are generally used during replacement.</p>

REPLACEMENT PREVIEW

Parameter	Description
Replacement preview	Lists all configured replacements. Clicking on an entry also fills the Source and Target options in the indexing rules section.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.



Attention

If index variables are used in a network project, the Client must first fetch the value from the Server. Then the calculation is executed. On devices with weak hardware performance, this may cause delays when screen switching.

Tip: Always activate index variables in a network project **Harddisk data storage active**.

Replacing by means of indexing variables

To configure replacement by means of indexing variables:

1. All variables and functions used in the screen are displayed in the **Source** field of the **Replacement preview**.
2. Left-click a variable, a function or an ALC alias for which you want to create an indexing rule.
3. In the **Indexing rules** area, the variable/function is entered in the fields **Source** and **Target**. Alternatively, you can also enter the desired variable/function directly into the **Source** field in the **Indexing rules**.
4. Define the indexing rule.
The dynamic part of the rule is inserted in curly brackets, for example **{X01}**.

Example:

The source variable **Motor1.RPM** is replaced by the target **Motor{X01}.RPM**.

The placeholder **X01** is replaced with the respective value of the indexing variable in Runtime.

The replacement rule would thus be:

Source: **Motor1**

Target: **Motor{X01}**

5. Carry this over to **Add Rule** by left clicking in the list of indexing rules.
Info: If a rule is selected in the list, this is overwritten. To add a new rule, the selection must be removed beforehand.
6. All indexing rules that have been created are displayed in the list.
7. You can change the order of the entries using the button with the arrow symbol.
Attention: The substitutions are executed in the order in which they are displayed in the list!
8. Use the **Add...** button in the **Indexing variables** area to add the required indexing variables.
9. The variables which are in this list are always kept in the memory in order to minimize waiting time when the screen is loaded.



Information

*For the placeholder * the same rules as for Replace links (on page 179) are valid.*

REPLACE THROUGHOUT THE PROJECT

If the target is in a different project to the source, this can be displayed with #.



Example

Source: **VAR_1**

Target: **VAR_1** In project 1

You thus enter **VAR_1** as the source and **Projekt_1#VAR_1** as the target.

Source: **SUBPROJEKT1#VAR_1**

Target: **{X01}VAR_1**

The index variable **X01** is a string variable and has the project name including # as a value, for example **SUBPROJEKT4#**.

Replacement by means of element-specific parameters

Elements in screens which cause a screen switch can be substituted via element-specific parameter at this screen switch function.



Information

The advantage of this method is that only one function needs to be created and the substitution formation direct from the calling element is used.

If in the Runtime a function is carried out which uses a substitution, the following possibilities are available:

1. **{PARAM}** is replaced by the content of text field **Parameter for substitution**
2. **{PARAM}** the calling screen is used for the substitution

PARAMETER FOR SUBSTITUTION IS REPLACED BY THE CONTENT OF THE TEST FIELD

Variables and function in screen switch functions can be replaced which are linked to the following screen elements:

- ▶ **Button**
- ▶ **Combo-/Listbox**
- ▶ **Combined element**

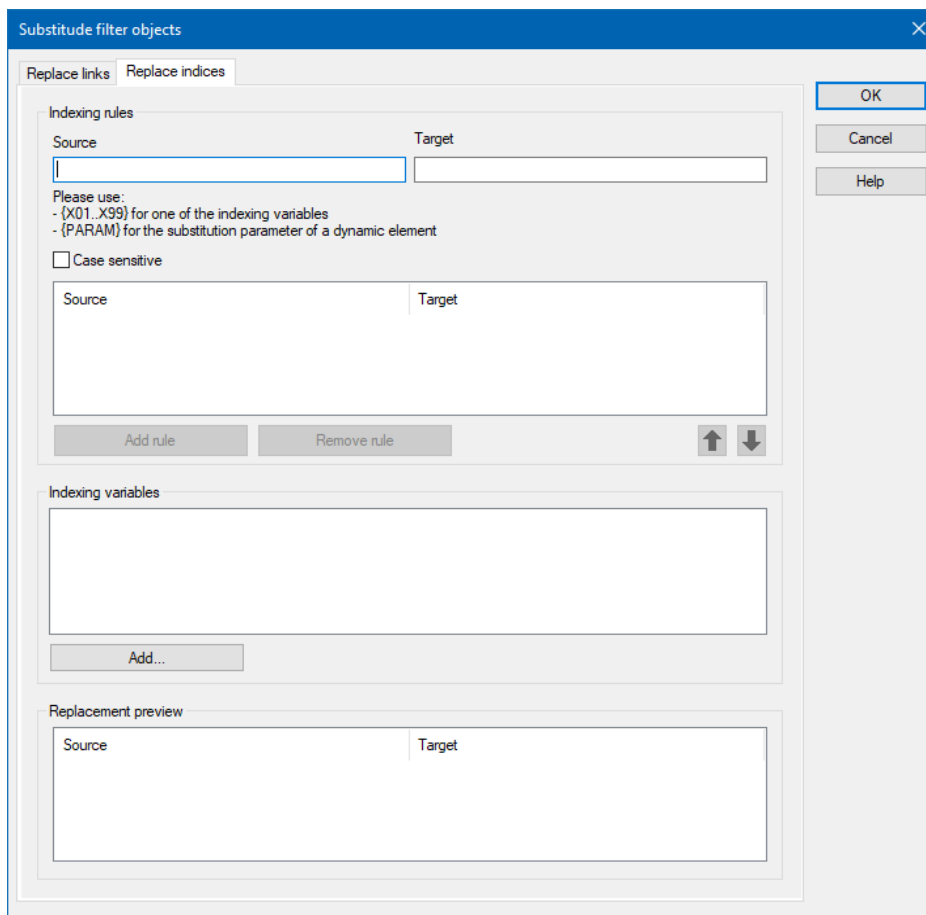
The parameter for the variables and functions to be replaced is used in the substitution dialog for indices of screen switching. In doing so, the key word **{PARAM}** is replaced by the content of parameter **Parameter for substitution** in the substitution rule.

Attention: Avoid character sequences that are also used for parameter of the indexing variables, such as **{X01}**.

CONFIGURATION

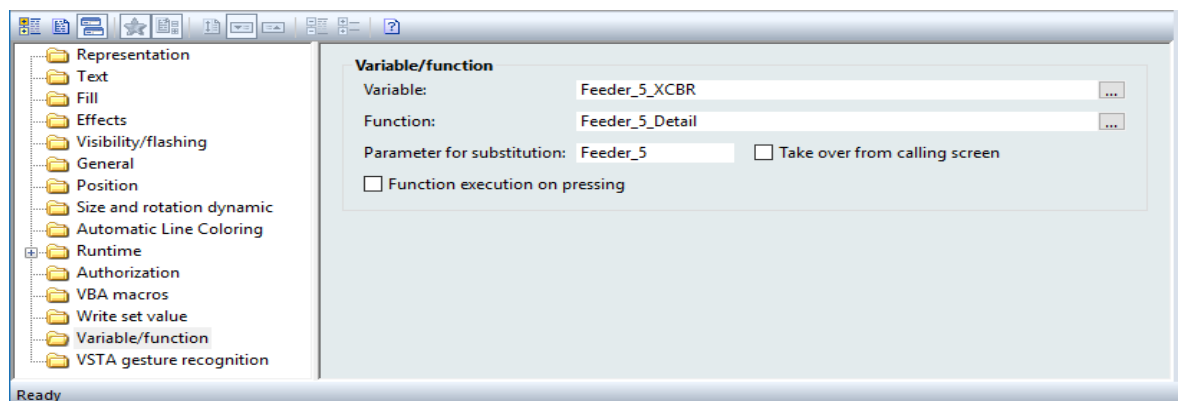
To use parameters:

1. In the filter dialog configure the **Target** as {PARAM}.



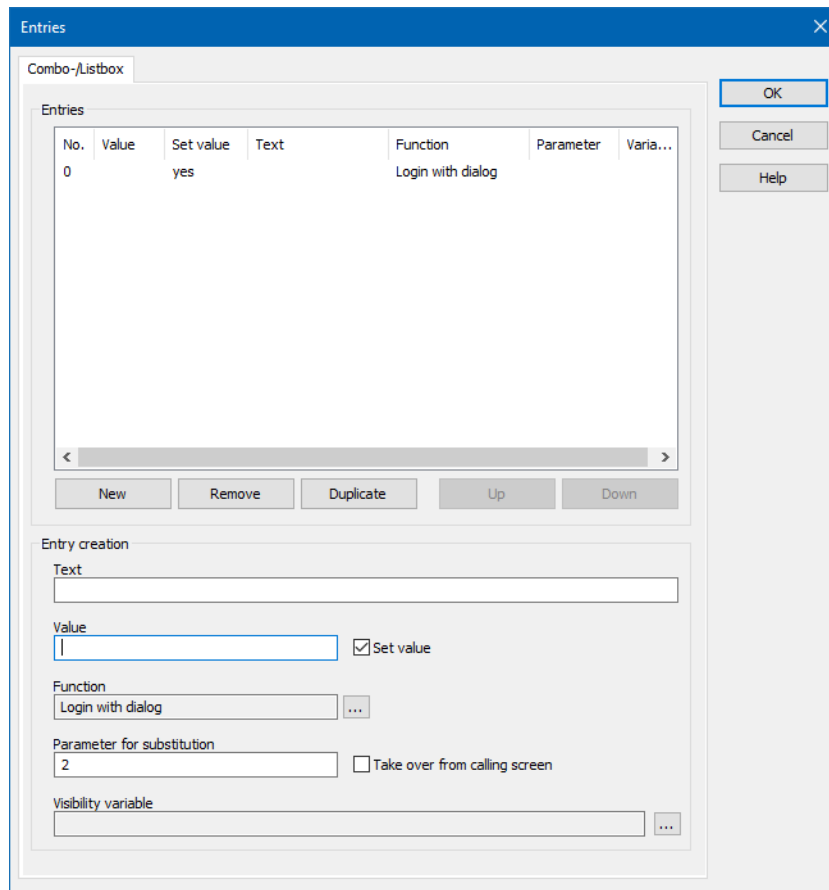
2. Enter the corresponding parameter in the property of the option of the element.

- **Button and combined element:**
Parameter for substitution property in the **Variable/function** group.



- **Combo-/Listbox:**

Option **Parameter** for substitution in the dialog for property **Entries** of **Combobox** oder **List box**.



No.	Value	Set value	Text	Function	Parameter	Varia...
0		yes		Login with dialog		

Entry creation

Text:

Value: ☒ Set value

Function: ...

Parameter for substitution: ☐ Take over from calling screen

Visibility variable: ...

RESULT

When executing a function in Runtime that uses substitution, the key word **{PARAM}** is replaced by its respective entry.

If the entry does not provide a meaningful result, the original value is displayed.

For example:

- ▶ If the parameter is 2 and the rule is to replace **WIZ_WAR_12*** with **WIZ_WAR_2** and both parameters exist, the element that previously displayed **WIZ_WAR_12** will now display **WIZ_WAR_2**.
- ▶ If the result of the replacement is **WIZ_WAR_2**, but the variable-postfix **2** does not exist, the original value is displayed.

USING {PARAM} OF THE CALLED SCREEN FOR SUBSTITUTION

If you enable the checkbox for property **Apply from calling screen**, it is possible to use the **{PARAM}** of the calling screen for the substitution in the called screen in the Runtime. With this the parameter can be passed on. If in the calling screen no {PARAM} was defined, the designated string remains empty. Input field **Parameter for substitution** becomes inactive as soon as property **Apply from calling screen** becomes active.

The property is available for the following screen elements:

- ▶ **Button**
- ▶ **Combo-/Listbox**
- ▶ **Combined element**

You can find the property:

- ▶ For buttons: in the properties under **Variable/function**
- ▶ For combined elements: in the properties under **Variable/function**
- ▶ For combo-/listbox: in the properties under **Text** and **Entries**. Click on the ... selection button.

The **Entries** dialog is opened. You can find the property under **Entry settings**.

Replacement without indexing variables or parameters

As an alternative to replacement via indexing variables or element-specific parameters, a "purely statistical" replacement is possible.

To do this, neither indexing rules with, for example, **{X01}**, nor the **{PARAM}** key word need be used.



Example

Source: **Motor1***

Target: **Motor2**

In Runtime, the variables that start with **Motor1** are replaced with **Motor2**.



Info

For the placeholder * the same rules as for Replace links (on page 179) are valid.



Information

The advantage of this method:

If new variables are added to a screen (that are to be replaced), the same substitution rules can be used. This also applies for new structure elements.

The function does not need to be reconfigured in this example, as is the case for replacing linkings (on page 182).



Attention

The advantage of this method is that, in contrast to Replace linkings (on page 182), replacement is text-only and is not based on internal variable IDs.

This means that if variables or functions used in the screen switch function are renamed, these changes must also be made in the screen switch function.

Replace multiples with indexing variables and function parameters

The parameters for indexing variables and functions can be combined as desired and used as often as desired.

Rules:

If the parameter is configured as a character string **{X01}** and this index exists for indexing variables, then **{X01}** is not replaced by the value of the indexing variables, but only **{PARAM}** by the character sequence **{X01}**, without an attendant variable being searched for.

EXAMPLES

DIFFERENT PARAMETERS

- ▶ Base values:
 - The value for the **Parameter for substitution** property is 1.
 - Index **X01** has the value 2.
 - Index **X02** has the value 3.
- ▶ Rule:
 - Replace **monitor[3]** with **monitor[{PARAM}{X01}{X02}{PARAM}{X02}]**
- ▶ Result:

- **monitor[12313]**

PARAMETER FOR FUNCTION IS IDENTICAL TO PARAMETER FOR INDEXING VARIABLES

- ▶ Base values:
 - The value for the **Parameter for substitution** property is **{X01}**.
 - Index **X01** has the value 2.
 - Index **X02** has the value 3.
- ▶ Rule:
 - Replace **monitor[3]** with **monitor[{PARAM}{X01}{X02}{PARAM}{X02}]**
- ▶ Result:
 - **mon[{X01}23{X01}3]**

12.3 Background graphics

A graphics file can be displayed in the background of every screen. These graphics are positioned in the visibility level furthest to the back and are covered by all other screen elements. It works along the lines of the background graphics of Windows Desktop.

Options such as centered or tiled are available for positioning. It is not possible to freely move the graphics.

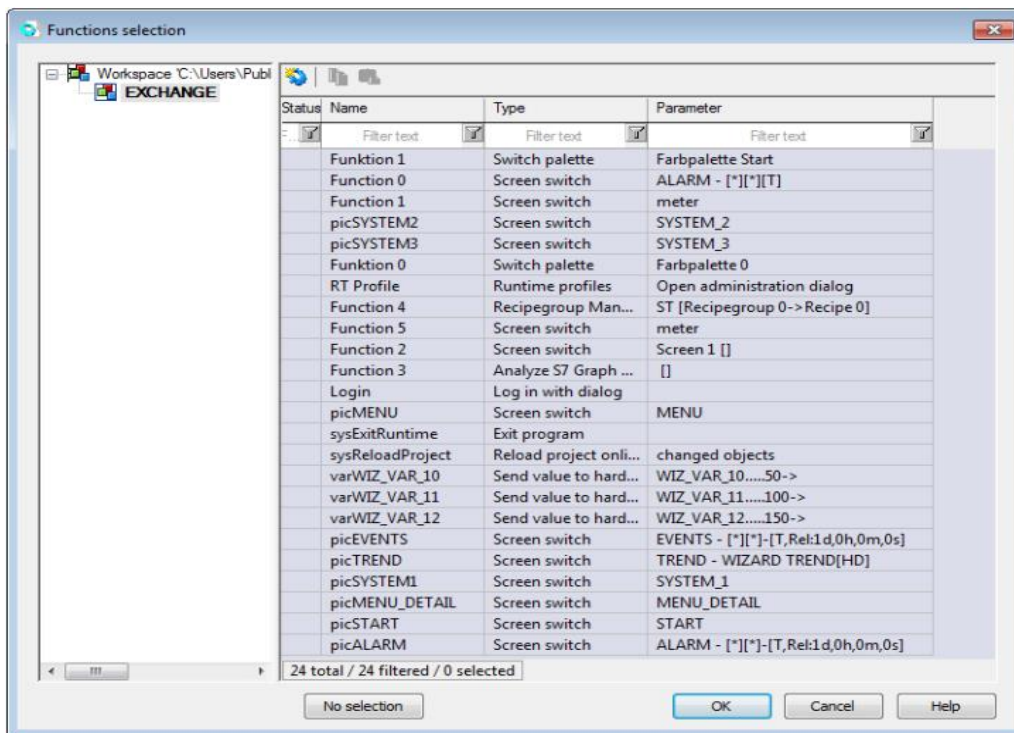
Only graphics data that is already available in the project in the Files/Graphics area can be used. See: Files.

Hint: If you wish to use the same background graphics for several screens, you can pre-define the background graphics in the frames. See: Background graphics for frames (on page 217)

Hint: Alternatively, a button with a graphics file can be used without a linked function to display a freely-positionable graphics file

12.4 Functions

In order to select functions, a filtered dialog is opened:



Element	Description
Project tree	Definition of the project from which the function should be selected.
Selection window	Selection of the function.
No selection	Depending on the element: <ul style="list-style-type: none"> ▶ the dialog is canceled ▶ already linked functions are deleted

Hint: The size of this dialog can be adjusted. The dialog size and position are saved.

CHANGE LINKED FUNCTION

- manually
 - in the Project Manager's Detail view open the functions
 - drag the desired function on the element while holding the left mouse button
 - the previous function is substituted by the new one
- automatic

- Select the entry Replace links from the context menu. For more details see chapter Substitution of variables and functions in dynamic elements (on page 177).

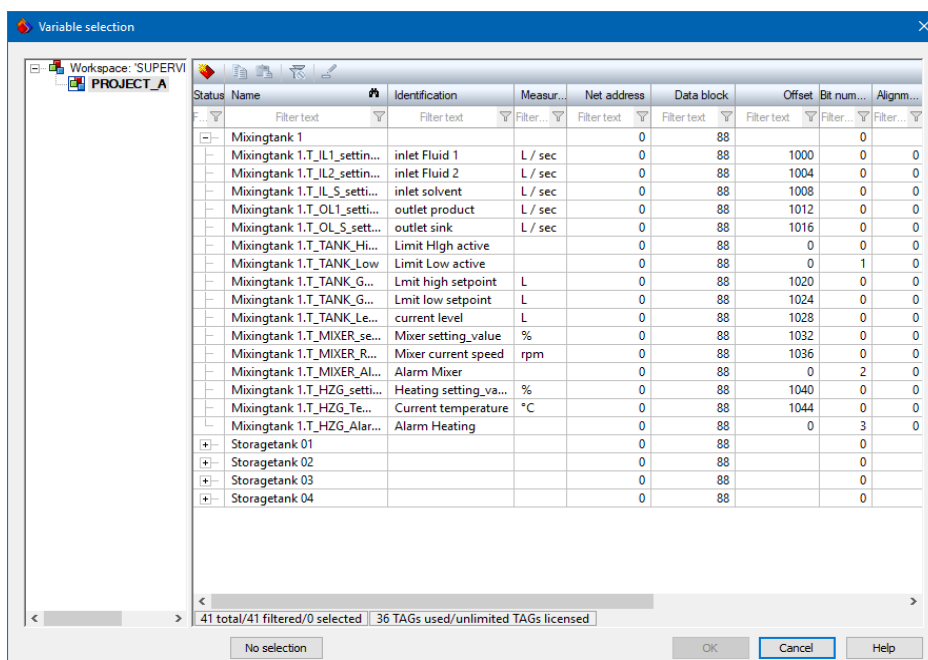
12.5 Variables

In order to select variables, a filtered dialog is displayed.

These variables can also be used throughout projects sometimes. When selecting throughout projects, ensure that the corresponding projects are available in Runtime.

LINKING A VARIABLE

Elements that can only be linked with one unique variable open the following dialog:



Element	Description
Project tree	Selection of the project from which the variable is to be selected.
Selection window	Selection of the variable which shall be linked. It can be linked in two ways: <ul style="list-style-type: none"> ▶ By double-clicking on the desired variable: The dialog is closed automatically. ▶ By selecting the desired variable and subsequently clicking OK.
No selection	Depending on the element: <ul style="list-style-type: none"> ▶ the dialog is canceled ▶ Variables that are already linked are deleted (such as linked lot variables in the Historian)

Note: The size of this dialog can be adjusted. The position and size of the dialog window are saved in the Editor, Runtime and zenon Web Client independently of the project.

ERROR TREATMENT

If the desired variable is not displayed, there can be several reasons for this:

- ▶ You have selected a filter and the desired variable does not match the filter: Check whether there is a filter active in the filter line. The information about filtered elements that is displayed at the bottom of the selection window also helps when checking for an active filter.
- ▶ The dialog is filtered by the Editor and the variable does not match the filter. The filtered switching then occurs if only a certain data type is permitted. For example, with a `numeric value` data element, no string variables can be linked.
- ▶ You have selected the wrong project in the project tree.

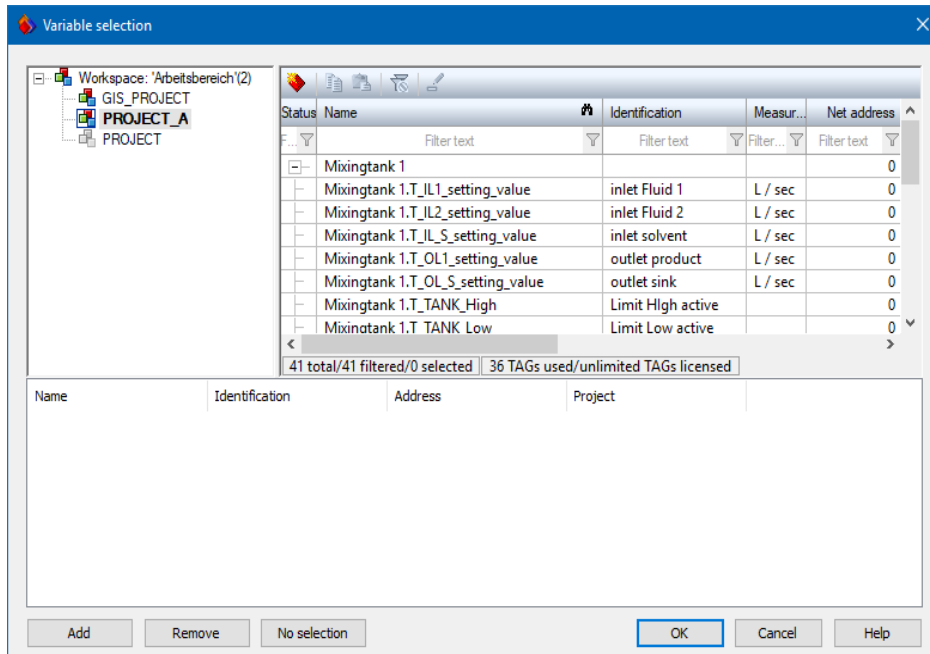


Attention

The dialog generally allows the selection of several variables using the conventional Windows keyboard shortcuts. In selection dialogs for just one variable, only one can be linked however. With multiple selection, the first variable selected is assigned to the element.

LINKING MULTIPLE VARIABLES:

Elements that can be linked to multiple variables open the following dialog:



Element	Description
Project tree	Definition of the project from which the variable shall be selected.
Selection window	<p>Selection of the variables:</p> <ul style="list-style-type: none"> ▶ Double click the selected variable in order to add it to the variable list. ▶ You can move the selected variable to the variable list via Drag&Drop ▶ Select the desired variable. With the help of Ctrl or Shift multi-selection is possible. By clicking Add the selected variables are added to the variable list.
Variable List	Lists all selected variables.
Add	Adds the currently selected variable of the selection window to the variable list.
Remove	Removes the variables which are selected in the variable list from the list.
No selection	<p>Depending on the element:</p> <ul style="list-style-type: none"> ▶ the dialog is canceled ▶ certain links such as lot variables in archiving can be released

Note: The size of this dialog can be adjusted. The position and size of the dialog window are saved in the Editor, Runtime and zenon Web Client independently of the project.

ERROR TREATMENT

If the desired variable is not displayed, there can be several reasons for this:

- ▶ You have selected a filter and the desired variable does not match the filter: Check whether there is a filter active in the filter line. The information about filtered elements that is displayed at the bottom of the selection window also helps when checking for an active filter.
- ▶ The dialog is filtered by the Editor and the variable does not match the filter. The filtered switching then occurs if only a certain data type is permitted. For example, with a `numeric value` data element, no string variables can be linked.
- ▶ You have selected the wrong project in the project tree.

CHANGE LINKED VARIABLE

Select the **Replace links** entry from the context menu of the element. For more details see chapter Substitution of variables and functions in dynamic elements (on page 177).

13. Frames

Frames form the basis for the layout of the window and the screens displayed during the Runtime. You structure the display on the screen and determine the position. Each screen is assigned to a frame and displayed in the screen area defined by the frame.

Frames determine the general window properties such as position, size, appearance and manipulation options during runtime.

Frames:

- ▶ Provides an overview of all screen areas defined in a project.
- ▶ Can be freely defined using the **Define free frame shape** property.
- ▶ Enable special functions to be allocated to all screens available in a frame, for instance:
Screen: Return to last, Set focus to frame, Take focus away from frame, Close frame, Alarms: acknowledge flashing, Print screenshot.
- ▶ Change all screens based on the corresponding frame
- ▶ Screens always appear in the same size at the defined location in runtime and cannot be moved as desired
- ▶ Can be automatically closed in Runtime if the focus is lost
- ▶ Screens within a frame can be optionally changed in the online mode.



Information

If there is no frame when creating a screen, then zenon automatically creates a default frame that covers the whole monitor.

PROJECT MANAGER CONTEXT MENU

Menu item	Action
Create new frame	Creates a new frame.
Open Frame Editor	Opens the frame editor in the main window and shows the list of frames in detail view.
Export all as XML	Exports all entries as an XML file.
Import XML...	Imports entries from an XML file. Note: Existing frames are overwritten via the Frames node during XML import. In this case, all screens and their elements are adapted to the new frame.
Help	Opens online help.

13.1 Frame detail view of toolbar and context menu



Menu item	Action
Create new frame	Adds a new frame to the list and puts the focus onto this entry.
Open Frame Editor	Opens the frame editor in the main window.
Define free frame shape	Changes to the main window to define a free frame shape.
Jump back to starting element	Jumps back to the initial position in the zenon Editor. Note: This context menu entry is only available if a jump to the current position has been made from another position with the Linked elements context menu entry.
Copy	Copies the selected entries to the clipboard.
Paste	Pastes the content from the clipboard. If an entry with the same name already exists, the content is pasted as " Copy of... ".
Delete	Deletes selected entries after a confirmation from list.
Export selected as XML...	Exports all selected entries as an XML file.
Import XML	Imports entries from an XML file. Note: Existing frames are overwritten via the Frames node during XML import. In this case, all screens and their elements are adapted to the new frame.
Remove all filters	Removes all filter settings.
Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line. Only cells that can be edited can be selected.
Replace text in selected column	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window.
Help	Opens online help.

13.2 Frame editor

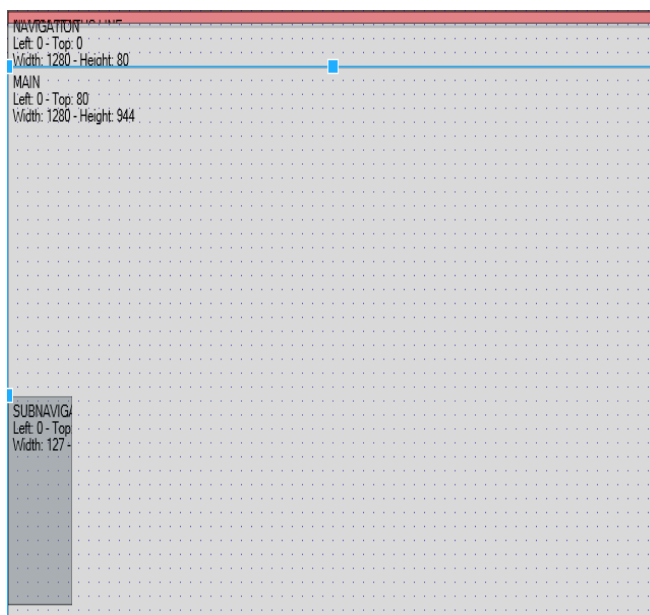
You can define and position all frames in the frame editor.

13.2.1 Opening the frame editor

To open the frame editor:

- ▶ In the project manager, click on the desired frame twice in Frames Detail View
- or
- ▶ select Project Manager -> Frames -> Context Menu -> Open Frame Editor

The size displayed in the frame editor is dependent on the monitor size set in monitor administration. See chapter on Monitor administration.) If the monitor settings are subsequently changed, the frame editor must be closed and reopened in order for it to take the new monitor settings into account.



The red frame for the alarm status line is automatically created at the upper edge of the screen by zenon for each project. Its position can be changed via the properties in the **Position** group. To do this, the **Use standard position** property must be deactivated.

13.2.2 Create new frame

You have two possibilities to create a new frame:

- ▶ Create a new frame in the size defined in the monitor properties:
Project Manager -> Frames -> Context menu -> Create new frame

or

Frame detail view -> Context menu -> New frame

- ▶ Mounting a new frame:

Main Window-> Context Menu -> Draw New Frame

Note: The mouse pointer turns into a symbol with four tips as soon as you enter the frame area. Press and hold the left mouse button in order to move the frame to the desired location. If you click on a corner of the edge area of the frame, the mouse pointer turns into a two-sided arrow symbol. With this you can drag the frame to the desired size.

CREATE NEW FRAME

To create a palette:

1. In the project manager, select the **Frames** sub item in the **Screens** node.
2. Select **New frame** in the context menu.
3. A new waterfall frame is created.
4. The initial size is determined by the size of the display.
5. click in the new frame and drag the frame over the touch point to the desired size

The size, as well as the size when called up in Runtime and the properties for moving (on page 210) are modified by means of the properties on the **Position** group.

6. Position the frame at the desired location in the window.
7. Define the desired properties in the properties window



Attention

*If frames receive the same name in the global project and in the subproject, then frames in the global project are automatically given the prefix **g_**.*



Example

three areas must be present in the whole project:

- ▶ A header appears at the top of the screen with the time and a logo.
A **header** frame is defined for this area. This defines the size and position of the header.
- ▶ A menu appears at the bottom of the screen.
A **menu bar** is created.
- ▶ Interim process screens.
A **process screen** is created.

Frames are always displayed in the defined size at the defined location. All screens created then are linked to one of these frames and in the Runtime opened in it. If the screen design is changed, because, for instance, menu bars are to be displayed at the top and the header is to be a footer, only the position of the frames need be changed. The screens contained in the frames are automatically carried over.

Hint: Never place the templates directly above one another. This way you ensure that you always have access to the screens in Runtime.

CHANGE THE SIZE IN RUNTIME

if the size of a frame can be changed in Runtime, the permitted size changes can be limited by means of the following properties in the **Position** group:

- ▶ **Breite(Minimum) [Pixel]:** Defines the minimum width.
- ▶ **Breite(Maximum) [Pixel]:** Defines the maximum width.
- ▶ **Höhe(Minimum) [Pixel]:** Defines the minimum height.
- ▶ **Höhe(Maximum) [Pixel]:** Defines the maximum height.

These limits only have an effect on manipulation using Multi-Touch gestures.

POSITIONING FRAMES

The position and orientation of a frame or a group of selected frame can be selected via the **Arrange** context menu in the main window.

POSITIONING WITH CONNECTION POINTS

If the option 'Use connection points' was activated (see chapter Editor, Section Settings), the connection points of frames stick to those of other frames. In addition, frames can connect to the screen border and to a possibly present (if activated in the project) alarm line.

Frame with free frame shape

You can adapt the frame shape to your individual wishes using the **Freely defineable frame shape** property. After you have activated this property, you arrive at the frame editor in one of the following ways:

- ▶ Click on the button of the **Define free frame shape** property
- ▶ Click on the corresponding symbol frame in the toolbar (on page 204)
- ▶ Select the menu entry Define Free Frame in the context menu (on page 204) when selecting the frame
- ▶ Select the Define Free Frame menu entry in the Context menu in the frame editor
- ▶ Double click on a frame in the frame editor

Here, you can create the frame as you wish with the `rectangle`, `circle`, `rounded rectangle` and `polygon` elements. The transparent area is shown as a white-gray chessboard pattern.



Information

Freely defineable frame shape is not available:

- ▶ For alarm status line frame
- ▶ Under Windows CE

*If the **Define free frame shape** property is deactivated an existing free frame form is not displayed in either the frame editor or the screen editor.*

***Freely defineable frame shape** Cannot be used with **Border**.*

You decide how the respective element influences the appearance of the frame with the help of the **Area utilization** property. To do this, the following settings are available:

Parameter	Description
Cover	The surface of the element is used as the screen area.
Cut	The surface of the element is removed from the surfaces underneath. For instance, you can create "holes" in the frame, for example.
ORed	This is either cut out or covered according to whether a covering element is under the element or not.



Info

The way the surface is used always relates to the surfaces under the element. If you, for example, draw a covering element over a cutting element, the surface is displayed filled. If you reverse the sequence, the cutting element is removed from the covering element.

Display frames in frame editor

Frames can be switched to visible or invisible by:

- ▶ Property **Display in the Frame Editor**:
activated: displays frame
- ▶ Drag&dop:
invisible Drag frame from the main window
visible: drag frame from the detail view into the main window
- ▶ Detail view-> View of frame editor:
invisible: Deactivate checkbox
visible: Activate checkbox

You obtain information on the name and position of the frame in the upper left corner of the frame and via tooltip if you move the mouse pointer over the frame.



Information

A system menu or an alarm status line is automatically taken into account in the frame editor and always displayed in the foreground. An incorrectly positioned frame can therefore not hide any important information during runtime.

13.2.3 Positioning and actions in Runtime

Frames can be switched to fixed or relatively defined positions in Runtime. In this way, keyboard screens or pop-up screens can be positioned exactly where the mouse pointer or the element to be switched is located. Frames can be switched in runtime:

- ▶ at an absolute position
- ▶ relative to the mouse position
- ▶ relative to element

Absolute and relative positions are defined in the properties of the frame in the zenon Editor.

KEEP POSITION WHEN DISPLAYING AGAIN

Windows always take their screen position from the template. If pop up screens are planned and moved whilst the program is running, the pop up screen is moved back to the planned position the next time the screen switching function is activated. Using the **Keep position and size on reopening** property, the template can be set to keep its position as long as it is open, regardless of screen switches. If the property is active:

- ▶ If a screen is opened in Runtime in a manually-moved frame, its position and size are also retained if the screen is switched.
- ▶ If another screen is opened in the in the same template, its position and size are retained. This also applies for a substituted call.

With this, a different position position for a template can be used on each client, because the local position is always saved.

ABSOLUTE POSITIONING

The frame is always switched at fixed, pre-defined coordinates. A fixed screen position is always used for all screens that are loaded automatically by the system, e.g. by the time control or a limit value violation.

RELATIVE POSITIONING

Relative positioning is especially suited to loading pop-ups, keyboard screens or command processing screens. This is possible for all screen switches, set value inputs with freely defined keyboard screens, and command processing screens that are started manually by the user. It does not matter whether the action was triggered by a screen switch function, a set value function or directly via an element. Relative positioning is available for:

- ▶ dynamic elements to which you can allocate a function
- ▶ dynamic elements that can be used to send a set value (buttons, combined elements)
- ▶ Main and Context Menus
- ▶ execute the screen-specific function in the Alarm Message List screen

Relative positioning also works for nested function calls, i.e. when screen switching or the setting of values are triggered by a script. If the screen were to go beyond the edge of the monitor, it is automatically positioned at the edge of the monitor. This also applies to multi-monitor management, so that it cannot protrude into the adjacent monitor.



Attention

Relative positioning only works when called up directly by the user, not with automated functions or via VBA.

RELATIVE TO THE ELEMENT

Positions the reference point of the frame relative to the element from which the screen switch was initiated (e.g. a button or a combined element). The frame's reference point is then always placed on the element's calculated reference point. If the frame cannot be switched on in this position because the screen would then be outside the visible screen area, the alternative reference points are used.

First define a reference point for your frame and then the preferred position in the element. The following settings are available:

Property	Value
Reference point element vertical	<ul style="list-style-type: none"> ▸ bottom ▸ top
Reference point element horizontal	<ul style="list-style-type: none"> ▸ Left ▸ Right
Vertical movement in pixels	Enter the desired movement
Horizontal movement in pixels	Enter the desired movement

ALTERNATIVE POSITION

Define an alternative position for the reference point of the frame and the reference point at the element. Proceed with the definition of the alternative positions in the same way as with the definition of the favored positions. The alternative position is used when the frame cannot be placed at the favored position.

RELATIVE TO THE MOUSE POINTER

The screen is displayed depending on the position of the mouse pointer. If the reference point is at the top left side, the frame will be loaded to the bottom right side of the reference point. If the screen cannot be displayed completely at the configured position, the position will be moved until the complete screen is inside the displayed area of the monitor.

Define the frame's reference point above the two properties, vertical reference point and horizontal reference point. The reference point is marked on the frame with a red dot. The following settings are available:

Property	Value
Reference point frame vertical	<ul style="list-style-type: none"> ▸ top ▸ bottom ▸ centered
Reference point frame horizontal	<ul style="list-style-type: none"> ▸ Left ▸ Right ▸ centered



Example

you have a button at the right border of the screen and try to position a popup window on its right side:

- ▶ Reference point element: right/centered
- ▶ Frame reference point: left/centered

In Runtime, the popup screen will appear on the right side of the button, centered to the middle of the button. The popup window will not cover the button.

You use the same frame also for a button on the left screen border. There may not be enough room on the right side to completely display the popup screen. The alternative configured position will therefore be used. For this, you place the

- ▶ alternative reference point for the element on: left/centered
- ▶ the frame's alternative reference point on right/centered

CHANGE THE SIZE IN RUNTIME

The size with which a screen is called up in Runtime and the permitted changes in size are configured with the properties of the **Position** group. In the zenon Editor, navigate to the **Screens** node. Click on the **Frames** subnode there and select a configured template in the `preview` window.

Property	Description
Width (maximum) [pixels]:	Defines the maximum width.
Height (maximum) [pixels]:	Defines the maximum height.
Limitation Minimum:	<p>Defines limits for minimum. Possible values:</p> <ul style="list-style-type: none"> ▶ Without. No limitation If a different value is selected, the selected limit in Runtime is displayed with a dotted line in the frame window. ▶ Width: Width limitation. ▶ Height. Height limitation. ▶ Relative: Limitation to a percentage value of the set screen size. <p>Only has an effect on Multi-Touch gestures. The corresponding values are defined with the Value (minimum) property.</p> <p>Default: Without</p>
Opening size:	<p>Defines the size with which a screen based on this frame is called up in Runtime:</p> <ul style="list-style-type: none"> ▶ Frame size. Size as defined in Width (maximum) [pixels] and Height (maximum) [pixels]. If a different value is selected, the size in Runtime is displayed with a dotted line in the frame window. ▶ Width [px]. Width as defined in Value (Opening size), height is amended accordingly. ▶ Height [px]. Size as defined in Value (Opening size), width is amended accordingly. ▶ Relative [%]. The size defined in Width (maximum) [pixels] and Height (maximum) [pixels] is amended to the percentage value defined in Value (Opening size). <p>The corresponding values are defined with the Value (Opening size) property.</p> <p>Default: Frame size</p>

MOVING AND ZOOMING

Frames can be moved and zoomed in Runtime.

MOVE

Moving always relates to the monitors defined in the monitor administration. These settings are not supported under Windows CE.

The moving of frames in Runtime can be limited to:

- ▶ **Frame border:**
The frame cannot be moved beyond the monitor limit.
- ▶ **Frame border area:**
The frame can be moved beyond the monitor limit. However there must be an area on the monitor (**Minimum frame margin**) that can be accessed for further actions.

The limit is only effective if the frame is already within the defined limit when it is opened. If the moving of a frame is not limited, it can - with Multi-Touch gestures for example - be moved beyond the visible area.



Information

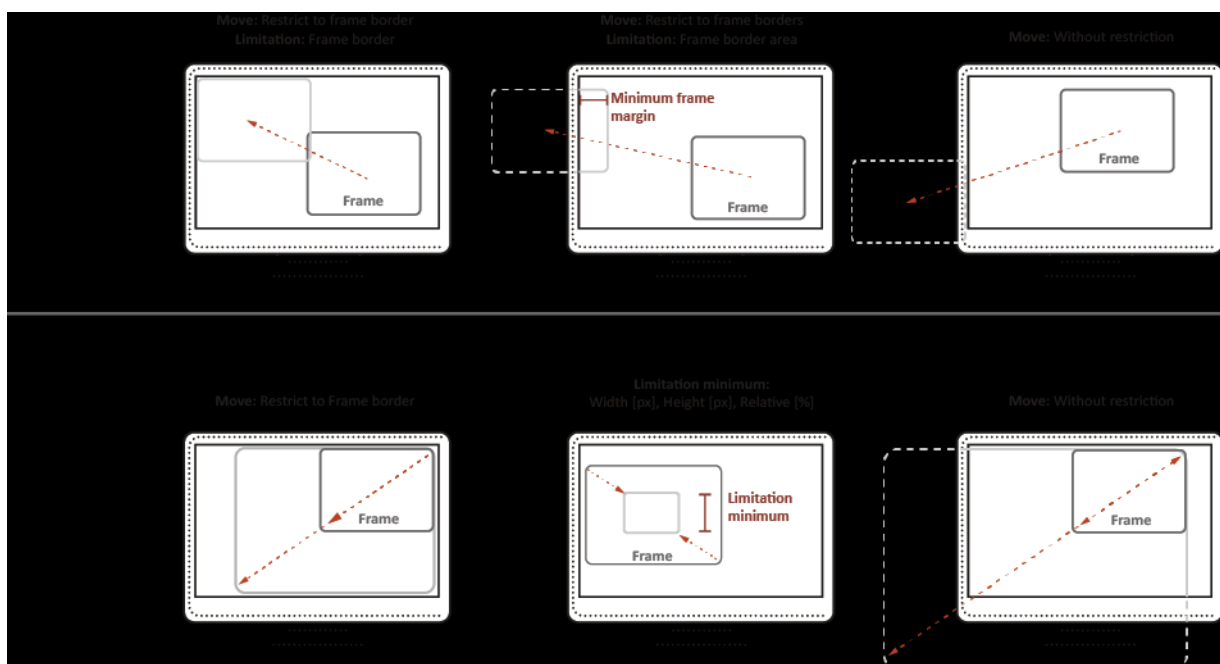
The moving of frames is most of all envisaged for full-screen operation. The Runtime application itself should not be moved to a different screen. If Runtime is moved, this can lead to limitations when moving.

ZOOM

The limits also apply for zooming. If a limit is reached when zooming, an attempt is made to continue zooming in the free space. In doing so, the side ratio is retained.

MOVE AND ZOOM OVERVIEW

When moving and zooming, the frames act as follows, depending on the settings made:



13.2.4 Call up frame several times

Frames can be called up several times in Runtime: Screens can therefore also be called up several times. To make frames able to be called up more than once, activate the **Frame can be opened multiple times** property in the **General** group of the frame properties.

If this option is activated, the frame is created as an independent instance each time a screen is called up. That means: Screens that have been opened before in this frame remain open.

For example: A screen is called up 100 times:

- ▶ **Frame can be opened multiple times** *active*: 100 screens are open on the monitor
- ▶ **Frame can be opened multiple times** *Inactive*: 1 screen is open on the monitor

NOTES FOR PROJECT CONFIGURATION

If screens that are switched more than once are covered by others, it can happen that these screens remain open, invisible and inaccessible in the background, until Runtime is closed.

The person configuring the project must therefore ensure that no screens get into the background this way.

Recommendations:

- ▶ Activating **Always in the foreground** property: This keeps the frame/screen in the foreground at all times.
- ▶ Configuration of the Close frame (on page 483) function: This closes all screens that are based on this frame, including those opened in the background.
- ▶ Configuring frames as freely placeable: Operators should be able to place frames on the screen according to their requirements. For example, using touch, with the mouse, or configuration of the relative position of the frame to a control or mouse pointer.

Recommendation: This option is most of all suited to configuring pop-ups.

ONLY OPEN ONCE PER SYMBOL

To open only one screen once per symbol, configure a button that is switched to invisible once it is first opened:

1. Create a button in the symbol.
2. Control the visibility of the button with a bool variable
3. Set this bool variable as a screen-active variable in the screen

As soon as the screen has been opened once, the button can no longer be operated.

BEHAVIOR IN THE EVENT OF A LOSS OF FOCUS

Frames can always be automatically closed if the focus is lost. In doing so, all screens that relate to this template are closed. Activate the **Close after losing focus** property to automatically close frames if they are no longer in focus.

This closing in the event of a loss of focus can also be suppressed. To do this, activate the **Do not close after losing focus** property. If this frame gets the focus, all other frames with the **Close after losing focus** property active remain open despite the loss of focus.

13.2.5 Deleting frames

To delete frames, you can:

- ▶ Highlight one or more of the frames with the mouse and select **Delete** in the context menu or press the `Delete` key
- ▶ Highlight one or more of the frames in the detail view and select **Delete** in the context menu or press the `Delete` key

A request to confirm this action is made before it is deleted.



Attention

Deletion of frames cannot be undone.

13.3 Define background graphics for frames

A graphics file can be displayed in the background of every screen. These graphics are positioned in the visibility level furthest to the back and are covered by all other screen elements. They are positioned via properties; it is not possible to position them freely. Only graphics data that is already available in the project manager in the files/graphics area can be used.

If several screens use the same background color, this is defined with the screen frame:

1. In properties, click on the **Graphics File** property in the **Background graphic** node
2. select a file from the files/Graphics node in project manager
3. define the position with the **Alignment** property

this graphics file is then used for all screens that are created using this frame. However, individual graphics files can still be defined as a background screen for each screen.

Warning! The graphics file is saved with the screens. Changing the graphics file or how they are set up in the frame is only effective for new screens. Existing screens must be changed manually.

13.4 Distributed engineering with frames

In multiuser operation, all usual mechanisms for allowing and accepting changes are implemented. In the frame editor however, in contrast to the screens, every frame is handled individually in the frame editor as opposed to the entire screen being released. For a better overview, frames where changes are not permitted are marked with a dotted border.

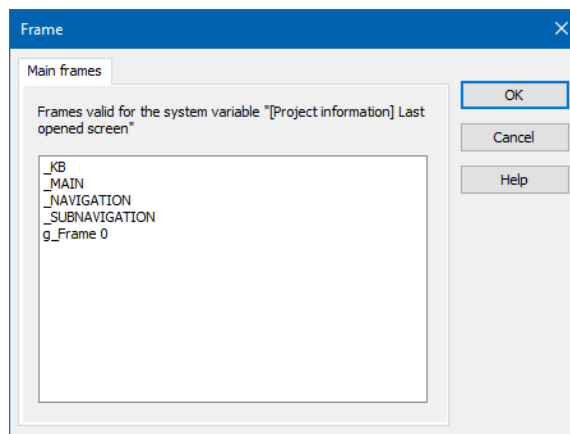
13.5 Main frames

In dialog main frame you define the frames which will be considered by system driver variable **Lastly opened screen..**

To define frames:

1. Navigate to project property **Main frames** in node **Graphical design/Runtime general**.
2. Click on the ... button.

The dialog for selecting the frame opens.



3. Select/deselect the desired frame by clicking on it. Selected frames are displayed with a blue background.
4. Click on **OK** to confirm the selection and to close the dialog.

13.6 Effects for frames

Frames can also be provided with effects.

You can find additional effects for screen elements in chapter effects for screen elements (on page 142).

13.6.1 Highlight frame

With the help of **Highlight frame** you can highlight a screen in order to draw attention to this screen. For this the frame, on which the screen is based, is highlighted by coloring the remaining area of the Runtime. For this a color and a transparency are defined for the surrounding of the frame of the screen which covers the screen lying below. The screen lying below cannot be operated.

Note:

- ▶ The screens must be based on different frames with different sizes.
- ▶ Only one screen with the **Highlight frame** property active can be called up at any one time.
- ▶ Screens can be called up from the highlighted screen, if they also have the **Highlight frame** property activated. These are also highlighted.
For example, a keyboard can be called up from a list. The list and keyboard are then both shown as emphasized.

Attention: A non-modal screen cannot be called up from a modal screen!

If a non-modal screen is called up using a modal one, this screen is visible but cannot be operated. The modal screen under this also cannot be operated because it is hidden. Runtime is thus blocked!

- ▶ This setting is ignored for use in a faceplate container.

CONFIGURATION

With the help of property **Highlight frame** you can call up a small screen above a larger screen.

Configuration:

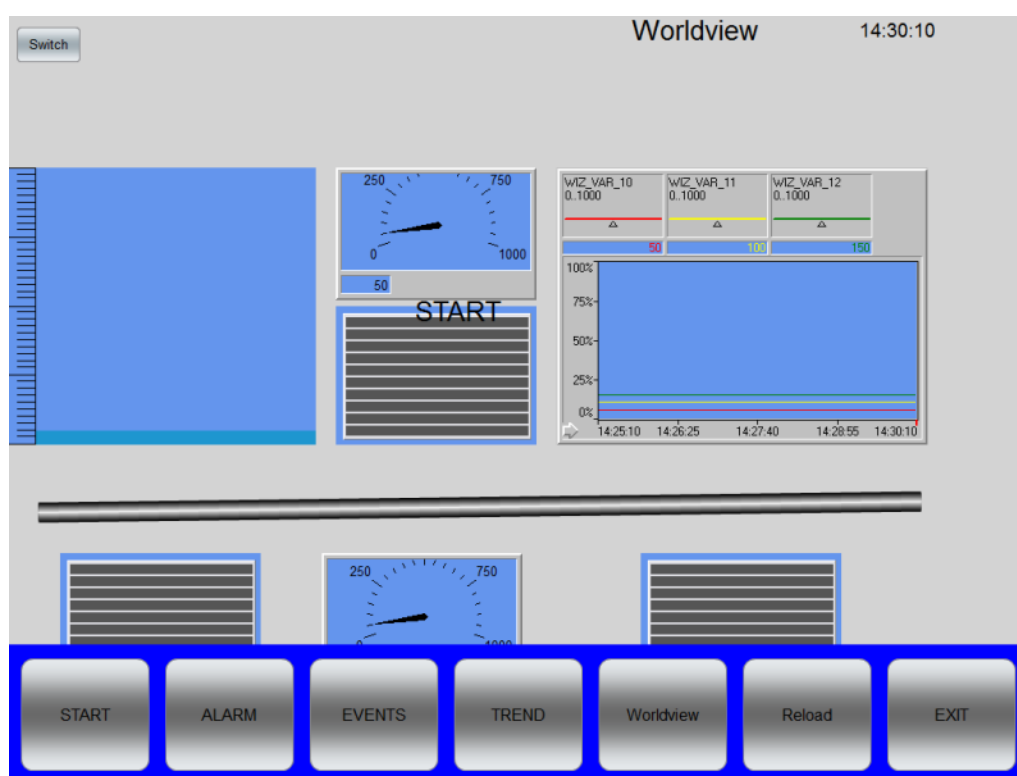
1. navigate to group **Display** in the screen properties.
2. Activate the **Modal dialog** property.
3. Activate the **Highlight frame** property.
4. With property **Surrounding color** you configure the color with which the surrounding of the active screen should be colored.
This property always affects the frame on which the screen is based.
5. With property **Surrounding transparency** configure the transparency of property **Surrounding color**.

6. Engineer a button for the screen in order to be able to close it in the Runtime.

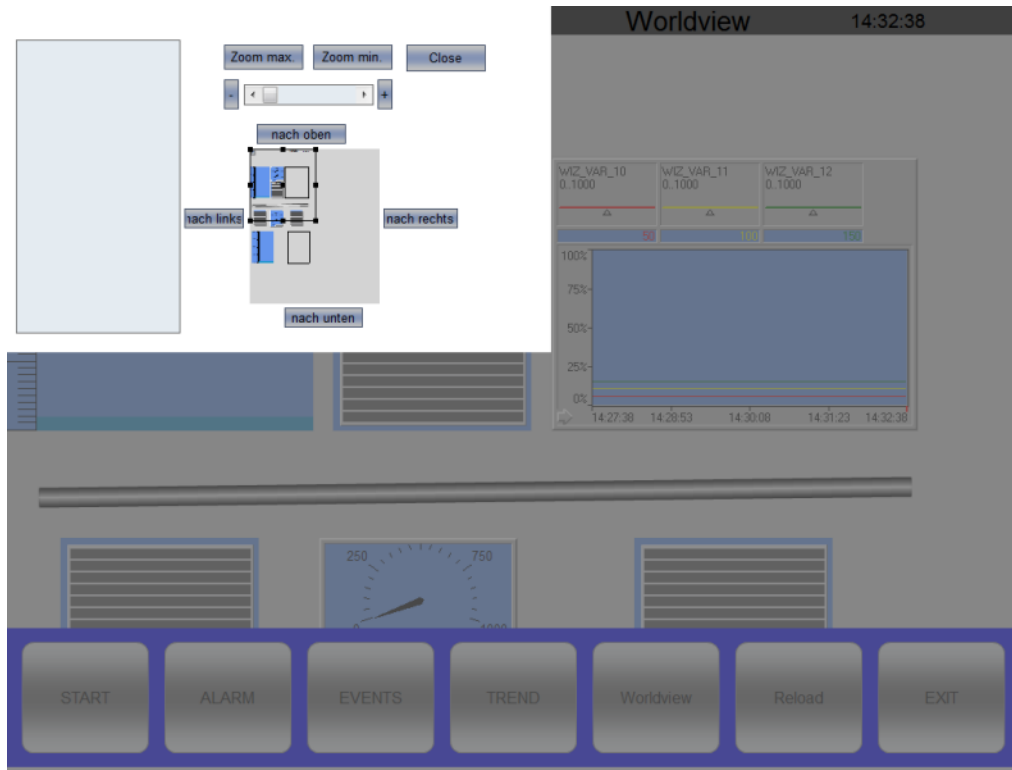
As soon as you open this screen above another, the area surrounding the frame is colored. Thus optically highlighting the screen. Only this screen can still be operated. After closing the screen, other screens are displayed in normal color again and can be operated.

EXAMPLE

Screen is opened:



Second screen with active effect **Highlight frame** is also opened. Everything outside the additionally opened screen is highlighted with the color defined in property **Surrounding color** and the transparency defined in property **Surrounding transparency**.



14. Color Palettes

Color palettes make it possible to summarize individual colors into color palettes. You can define a color set such as this, which can be easily edited at any time, both in the editor and in Runtime. All colors that are defined with the help of palette colors can be easily changed over with this; either centrally or globally with the help of a global project. The colors of the color palette can be used anywhere where colors are used.

This also allows the implementation of corporate design requirements without problems. If necessary, the design can be replaced completely (switching palettes) or only individual colors (color switch in palette) can be changed centrally.



Information

Do not use zenon color palettes for dynamic limit values for zenon projects whose data is to be exported for zenon Analyzer. Limit values cannot be dynamically amended in zenon Analyzer. Information from color palettes can therefore not be evaluated. This can lead to illegible graphics.

ENGINEERING

Color palettes are created in the editor, can be exported and imported and there is a function to switch these in runtime. Color palettes can be created in both a global project and a local project.

Note: All palettes of a project always contain the same amount of colors. The number of colors of a global project and local project can thus be different.



Attention

In the event of conflicts in the Runtime, the local project's color palettes take priority.

PROJECT MANAGER CONTEXT MENU

Menu item	Action
New palette	Creates a new color palette with the standard names Color palette plus continuous Index number .
Export all as XML	Exports all selected entries as an XML file.
Import XML...	Imports entries from an XML file.
Editor profile	Opens the drop-down list with predefined editor profiles.
Help	Opens online help.

14.1 Detail view of color palette toolbar and context menu

TOOLBAR AND CONTEXT MENU



Symbol	Action
New palette	Creates a new color palette with the standard names Color palette plus continuous Index number .
Create standard function	opens the dialog to create a Palette Switching Function (on page 229) and automatically activates the selected palette in the drop-down list.
Delete color palette	Delete the palette of the highlighted color. Palettes can only be deleted individually
New color	Creates a new color with the standard color <code>white</code> and the standard name Color plus Index number . New colors are always created for for all palettes of the project. Hint: Give clearly distinct names for the global project and the local project.
Delete color	Deletes the selected color from all palettes of the project. Note: The command is only active if the last color in each palette is highlighted. Because: Only the last color of a palette can be deleted, so that the index numbers continue to work. Furthermore, the color must be deleted for all palettes, so that the number of colors remains identical in all palettes.
Copy	Copies the selected colors to the clipboard.
Paste	Pastes selected colors from the clipboard.
Jump back to starting element	Jumps back to the initial position in the zenon Editor. Note: This context menu entry is only available if a jump to the current position has been made from another position with the Linked elements context menu entry.
Palette in the Editor	opens a drop-down lists with all palettes that can be defined in the local project and in the global project.
Save	Saves all changes to the color palettes.
Export selected as XML...	Exports all selected palettes as an XML file.
Import XML...	Imports entries from an XML file.
Properties	Opens the property window.
Help	Opens online help.

14.2 Create and edit colors

You can create color palettes globally or in a local project. Global color palettes are available in all projects, local color palettes are only available in the project in which they were created. If there are conflicts when setting these in runtime, the color projects of the local project take priority (see also Color palettes in Runtime (on page 228)).

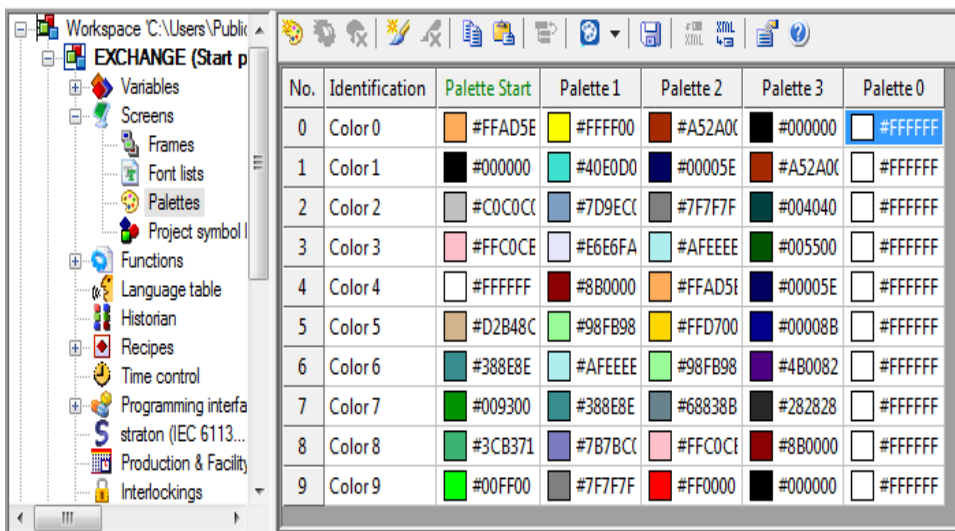
CREATE COLOR PALETTE

To create a color palette:

1. In the project manager of the desired project (local project or global project) select node **Color palettes** under **Screens**.
2. Select **New color palettes** in the context menu or in the toolbar.

A new palette is created with:

- **Color palette** plus **Color palette**, for example **Color0**
- the same number of colors as the pre-existing palettes, all colors are white as standard



No.	Identification	Palette Start	Palette 1	Palette 2	Palette 3	Palette 0
0	Color 0	#FFAD5E	#FFFF00	#A52A0C	#000000	#FFFFFF
1	Color 1	#000000	#40E0D0	#00005E	#A52A0C	#FFFFFF
2	Color 2	#C0C0C0	#7D9EC0	#7F7F7F	#004040	#FFFFFF
3	Color 3	#FFC0CE	#E6E6FA	#AFEEEE	#005500	#FFFFFF
4	Color 4	#FFFFFF	#8B0000	#FFAD5E	#00005E	#FFFFFF
5	Color 5	#D2B48C	#98FB98	#FFD700	#00008B	#FFFFFF
6	Color 6	#388E8E	#AFEEEE	#98FB98	#4B0082	#FFFFFF
7	Color 7	#009300	#388E8E	#68838B	#282828	#FFFFFF
8	Color 8	#3CB371	#7B7BC0	#FFC0C0	#8B0000	#FFFFFF
9	Color 9	#00FF00	#7F7F7F	#FF0000	#000000	#FFFFFF

RENAMING COLOR PALETTE

To rename a palette individually:

1. Select the palette or one or more colors of the palette
2. In properties, select **Color Palette** the property **Palette name** in the group.
3. Enter the desired palette name

Hint: Make a distinction between a global project and local project when issuing a name. You then always know where the palette comes from when selecting color palettes.

DELETE COLOR PALETTE

To delete a palette:

1. Highlight the palette's complete column
2. Select **Delete color palette** in the context menu or in the toolbar, or press the `Del` key.

The palette will be deleted without asking for confirmation.

Note: Palettes can only be deleted individually

14.3 Creating and editing colors

CREATE COLOR

In order to create a color:

1. Select a color or a palette.
2. Select **New color** in the context menu or in the toolbar, or press the `Insert` key.

At the lower end of the color table, a new color is inserted for all palettes with

- Default color `white` and
 - Default **color** plus **index number**, for example **Color10**
3. Define the color and give it a name

RENAME COLOR

To rename a color:

1. Select the color
2. In properties, select **Color** the property **Color name** in the group.
3. Enter the desired name.

DEFINE COLOR

to define a color:

1. Highlight the desired color in the palette
2. Enter the color:
 - either directly into the table cell in the detail view, as a hexadecimal code or via the selection dialog by clicking on ...

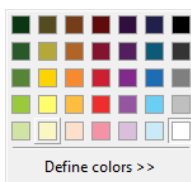
- or in the properties in the **Color** group in the Property **Color** field as a hexadecimal code or via the selection dialog by clicking on ...

DEFINE COLOR VIA DIALOG

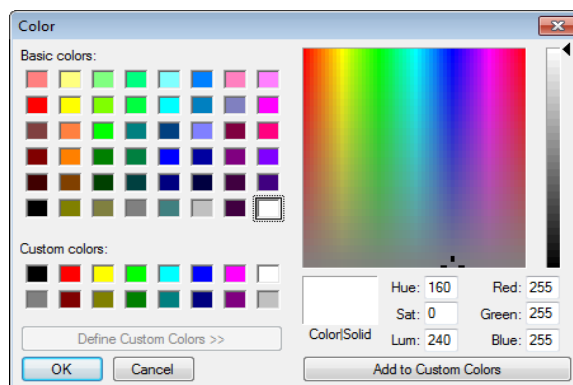
To select pre-defined base colors from a dialog or to create your own colors:

1. In the detail view, click in the cell with the desired color or in Properties **Color** on ...

The dialog for the selection of standard colors opens.



2. Click on a standard color to allocate it.
3. To define your own color, click on the **Define Color** button.



4. Define the color.
5. Using the **Add Color** button, add it to **User-Defined Colors**.
6. select the desired color
7. Assign the color by clicking on **OK**.

COPY COLOR

To copy several colors of the same color definition:

1. Highlight the hexadecimal code of the color in the input field of the desired color.
2. Copy the hexadecimal code with `ctrl+C` or the **Copy** command in the context menu.
3. Insert the hexadecimal code for all colors which should receive the same color definition with `ctrl+V` or the **Insert** command in the context menu

DELETE COLOR

Colors from palette are distinguished clearly by means of their index in the palettes (= row number in palette window). Therefore the colors can only be deleted at the end of the palette, because otherwise the indices of subsequent colors would change. Because all palettes in the project must have the same color, only complete rows can be deleted. To delete a color from all palettes:

1. Highlight the rows to be deleted, starting with the lower end of the palette colors
For highlighting use the pressed left mouse button and the `Ctrl` key or the shortcut `Ctrl+Shift`.
2. Select **Delete color** in the context menu or in the tool bar, or press the `DEL` key.

14.4 Use palettes in the editor

SELECTING THE ACTIVE PALETTE IN THE EDITOR

In the editor, a palette can be used as the active palette for display and color selection from the local or global project.

To select a palette for display in the editor:

1. Click on the table of color palettes with the right mouse button.
2. Select **Color palette in the editor** in the context menu
3. Select the desired palette from the drop-down list

Note: Palettes from the local project are arranged before those from the global project.

Attention: If there are palettes with the same name in the global and local projects, only the palettes from the local project are offered for selection.



Attention

If there is a different number of colors configured per palette in the global and local project, there may be less colors available for the active palette selection!

Palette definitions from the local project always have priority: If there is at least one color configured in the local project palettes, the amount of colors from the local palette are offered; otherwise the amount of a colors in the global project are offered.

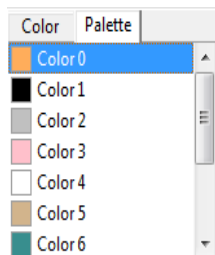
Colors missing from the active palette are displayed in white.

SELECTING THE PALETTE COLORS

Colors from the palette are assigned in the editor via:

- ▶ Dialog in properties
- ▶ Drag & drop the description of a color into the corresponding field in properties
- ▶ Direct input of the description of a color in the corresponding field in properties

If an element is assigned a color via properties, the color dialog opens with two tabs:



- ▶ Colors Selecting a particular color
- ▶ Color palettes: selecting a particular color palette from the active color palette

If there are not palettes with at least one color configured in the local or global project, or if the property does not allow a color to be assigned, only the tab colors are displayed.

COLORS FOR MULTI-USER PROJECTS

Changes to color palettes can only be enabled, transferred or discarded for all palettes of a project.

14.5 Create Runtime files

The palettes of the global project and local project are carried over in a joint list when creating Runtime files. There may be conflicts in doing so. Note:

- ▶ The local project always has priority.
- ▶ Each palette displays the unified amount and therefore contains as many colors as the largest palette.
- ▶ If the palette of the global project and the local project contain different amounts of colors, the shorter palettes are filled with `white`, so that all palettes have the same amounts of colors and a color is available in each palette for each color index.
- ▶ With palettes that have the same name, the palettes of the local project are used and filled with the colors of the global project if this contains more colors.

Example:

- ▶ There are 3 palettes in the global project: **Global 1**, **Global 2** and **Palette 1** with 10 colors each.
- ▶ There are two colors in the local project: **Palette 1** and **Palette 2** with 5 colors each.
- ▶ In Runtime there is then:
 - **Palette 1** comes from the local project and overwrites **Palette 1** from the global project; it contains the 5 colors from the local project plus the colors 6 - 10 from **Palette 1** from the global project
 - **Palette 2** contains the 5 colors from the local project plus the colors 6 - 10 initialized as white
 - **Global 1:** Contains the 10 colors from the global project
 - **Global 2:** Contains the 10 colors from the global project

SWITCH COLORS IN RUNTIME

To switch colors in runtime, you need the **Switch palette** function (see chapter on switching color palettes (on page 229)).

You can find an example of switching in Runtime in the chapter on the example for editor und Runtime (on page 232).

14.6 Switch color palette function

When starting runtime, the first palette in the project automatically becomes active, so long as another palette is not activated via a start script.

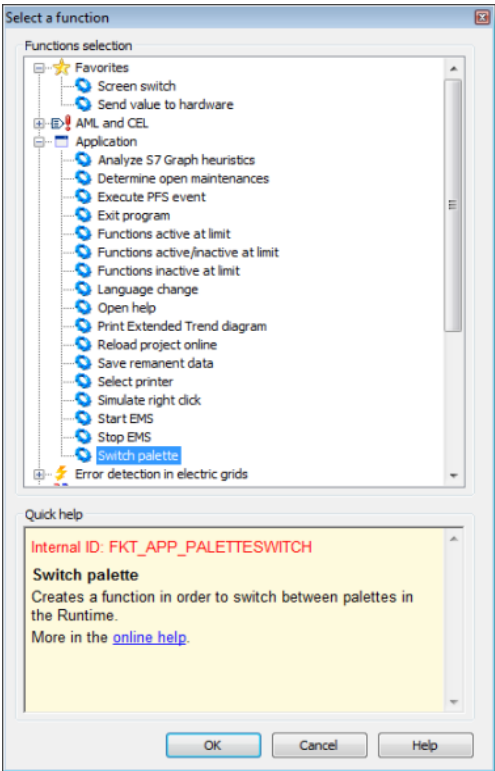
The active palette can be changed in runtime by means of the **Switch palette** function. All screens and elements are then relabeled with the colors of the new palette.

The respective active palette is defined via the name of the palette. If no palette exists with the given name, the first palette in the project is activated.

To create the **Switch palette** function:

1. In the project manager, select the **New Function..** command in the **Functions** node. .
2. Navigate to node **Application**

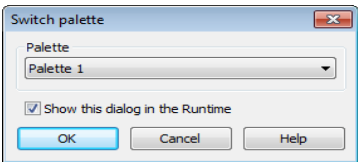
3. Select **Switch palette**.



4. Confirm with **OK**.

The dialog to select the color palette is opened.

SELECT COLOR PALETTE DIALOG



Option	Description
Palette	Select the desired color palette from the drop-down list.
Show this dialog in the Runtime	Enables a new color palette to be selected in runtime.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

These settings can be modified in the properties of the function in the **General** group at any time.

14.7 Export and import

Color palettes can be exported as XML files and imported from these.

EXPORT

To export a palette:

1. Select the desired palette.
To select several palettes use the `ctrl` or `shift` key or hold down the left mouse button and move the mouse over the title line of the table. Only complete selected palettes can be exported, not individual colors.
Note: Selected palettes can no longer be deselected individually.
2. Select **Export selected as XML...** in the context menu or in the toolbar.
3. In the file manager that opens, select a location to save the file and a name for the XML file

IMPORT

To import a palette:

1. Select **Import XML...** in the context menu or in the toolbar
2. Select the file you wish to import in the file manager that opens
3. The palettes saved in the XML file will be imported.



Attention

The sequence in the import file is taken into account:

If, for example, a palette is exported to the third place in the table, this is imported at the same place or added at the end if the project has fewer palettes. Palettes already present here are overwritten.

That means:

- ▶ If palettes are at the location that is imported to, the names and colors of the existing palettes are overwritten.
- ▶ If a palette is imported to a free location, it is inserted at the end of the sequence and named with the consecutive standard names.
- ▶ If the name of an imported palette is already used for a palette at a different location, then the colors and not the name of the overwritten palette are replaced.
- ▶ If the imported palette features more colors than those that already exist, the missing colors are supplemented with `white` in the existing palettes
- ▶ If the imported palette has fewer colors than the existing one, the missing colors are accepted by the overwritten palette or supplemented with `white`, if no palette was overwritten.

14.8 Error message

When transferring elements, for example by importing XML files or copying & pasting, some palette colors may no longer be displayed correctly. Possible reasons:

- ▶ No color palettes have been created in the project yet.
- ▶ Palettes have a different number of colors.
- ▶ Colors were deleted.

The corresponding error message is displayed in the properties input field, the element is displayed in white.

Error message	Reason
No palette loaded!	No palettes were configured in the local and global project.
Palette color not available!	The is no color in the project's palette with the corresponding index.

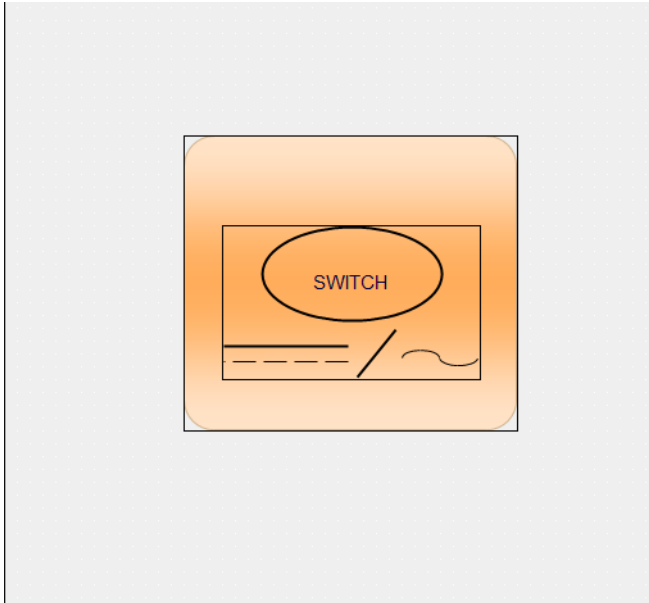
14.9 Example for Editor and Runtime

IN THE EDITOR

This is how you use color palettes in the editor for example:

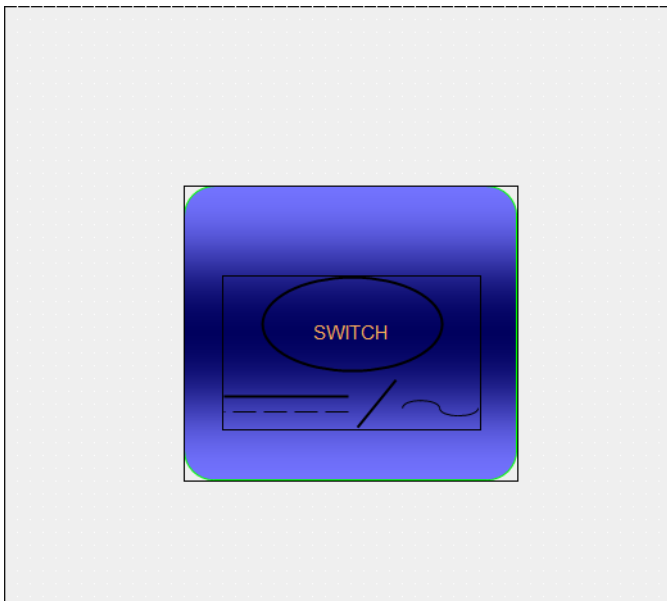
1. Create a screen with a button with text and a graphic element
2. Select the property **Fill color**.
3. Click on the button ...
The dialog for selecting colors opens.
4. Select the **Color palette** tab.
The colors of the active color palette are displayed.
5. select the desired color
6. Repeat this step for the properties **Border color** and **Text color**.

Screen with basic color palette:



7. In the color palette table, right-click in a cell.
8. Select **Color palette in the editor** in the context menu
9. In the drop down list, select a different palette, for example, `Palette 2`.

Screen in the editor:



IN THE RUNTIME

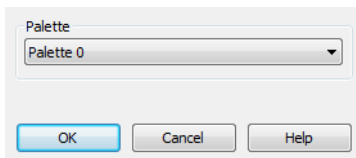
The screen with the color palette activated in the editor is displayed in Runtime.



If you have configured a switch color palettes (on page 229) function, you can select an engineered color palettes in the Runtime.

To do this:

1. Click on the element.
2. If the **Show this dialog in Runtime** option has been activated, a new palette can be chosen in Runtime. Otherwise the palette prescribed in the function is automatically used.



The element is switched to the new colors.



15. Fonts

In zenon all the fonts installed in the operating system can be used. The **Fonts** node is under the **Screens** node in the Project Manager.

PROJECT MANAGER CONTEXT MENU

Menu item	Action
New font list	Creates a new font list in the detail view
Export all as XML	Exports all entries as an XML file.
Import XML...	Imports entries from an XML file.
Help	Opens online help.



Information

The selected font must also be present on the target system with Runtime. If the font is not present on the target system, another font present on the system from the same family is used.

COMPATIBILITY WITH DIRECTX

Not all fonts are suitable for use with DirectX. TrueType and OpenType are suitable for use with DirectX. Bitmap fonts are not suitable. Unsuitable fonts are replaced by a suitable font in Runtime.

- ▶ Recommended for use zenon and suitable for DirectX:
 - TrueType (.ttf)
 - OpenType (.otf)
- ▶ Not suitable:
 - Bitmap (.fon) such as **System** or **Script** for example
 - Adobe Type 1 (.pfm/.pfb)

15.1 Font Lists

By default, one font list exists. This is displayed in the detail view if the **Screens/Fonts** node is selected in the Project Manager.

TOOLBAR AND CONTEXT MENU



Parameter	Description
New font list	Creates a new font list. For details, see the Creating a new font list (on page 237) section.
Delete font list	Deletes the selected font list.
Font new	Creates a new font. The operating system's font dialog is opened. Settings for font, style, degree etc. can be changed. See chapter Creating a new font (on page 238) also.
Delete font	Removes the selected font from the font list.
Jump back to starting element	Jumps back to the initial position in the zenon Editor. <i>Note:</i> This context menu entry is only available if a jump to the current position has been made from another position with the Linked elements context menu entry.
Font list in Editor	Displays all existing font list, the active one is marked.
Save	Saves the changes.
Export selected XML	Exports selected elements as an XML file. For details, see the Import/Export Screens /Fonts chapter.
Import XML	Imports elements from an XML file.
Properties	Opens the property window.
Help	Opens online help.

The name of the font list can be changed in properties.



Attention

*Name changes performed later on will not be integrated automatically. If you change the name of a font list after creating a function **Language Change** for this font list, you also have to change the name of the font list in that function.*

FONT LISTS: GLOBAL PROJECT VERSUS PROJECT

The Editor always has a font list actively switched. To use fonts from the standard project and the global project, the font lists in these two projects must be named the same.

Note when using font lists in global projects:

- ▶ If font lists are named the same in a global project and a standard project, the font list of the standard project takes priority in Runtime.
- ▶ If there are different names, two font lists are present in the standard project, either one of these is used in Runtime as desired.

To avoid this effect: Plan a language switching function by selecting the font list.

15.1.1 Creating a new font list

To link elements to fonts other than those in **Font list 1**, another font list must be created.

CREATING FURTHER FONT LISTS:

A new font list can be created in the Project Manager in the section **Screens/Fonts** with the entry **Font list new** from the context menu. The new font list is displayed in the detail view of the Project Manager.

The standard font is also automatically created in the first position here.

ACTIVATING A FONT LIST:

To activate a font list, click in the header for the desired font list and select the entry **Font list in the Editor** from the context menu. This can be necessary for language switchable texts. So you can check already in the Editor, how the element with the font will look in the Runtime. (e.g. whether the font is too large for a button). See chapter: Language switch/Fonts



Information

There is no standard font list for Runtime. If several font lists are planned, the font list to be used in Runtime must be set using Language switching.

15.2 Default font and system font

Every new element is linked to a default font. This is the font that is assigned to the element type. Changing the property **Font** of an element causes that every new element of that element type is connected to this new font. After the editor is restarted, the default font is used for all element types again. The default font is `Arial 10` and is on the second position of the list. Position.

The following fonts are automatically created when a project is first created:

Font	Font style	Font size	Information
Arial	Standard	8	
Arial	Standard	10	Standard font
Arial	Standard	12	
Arial	Standard	14	
Arial	Standard	20	

Note:

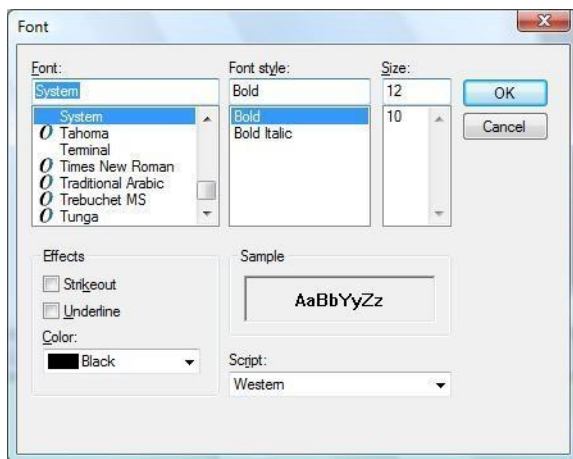
- ▶ The default font can be edited. The changes take effect everywhere where this font is linked.
- ▶ The system font is not scalable, which can lead to problems when zooming or when amending the resolution automatically.
- ▶ The default font can be changed via the **Font** property. The dialog is the same one that opens when **New font** is selected in the context menu.

15.2.1 Creating a new font

One font list exists by default, which is displayed in the detail view of the Project Manager and can be filled with different fonts.

CREATING A NEW FONT IN THE FONT LIST:

Click in the window of the detail view and open the context menu with a right mouse click. Select the entry '**Font new**' here.



The Windows dialog **Font** is opened. Here the following settings are available:

Parameter	Description
Font	All fonts of the operating system are sorted alphabetically
Font style	Bold, italic, etc.
Font size	Font size in pixels
Effects	Underlined, strike-out
Color	Selection of the font color
Script	Western, Cyrillic, etc.



Information

The color settings are ignored. Text is displayed in black unless the color has been explicitly edited in the properties Text colors only change in the Runtime (e.g. because of limit value violations).

For fonts in global projects refer to chapter: **Project administration/Global project**



Attention

*All fonts used must be installed on all computers on which the project will be started. The installation can also be carried out with Remote Transport. See also **Define files** (Editing: Copy & register).*

15.3 Naming and numbering fonts and font lists

When creating a zenon project, 5 standard fonts (on page 237) are created. The name of the font list and the standard font are dependent on the language in which the Editor was started. This applies for standard projects and global projects.

The fonts are given numbers. Number 1 and 2 are standard fonts. These two numbers cannot be changed, all other numbers can be adapted individually. When creating dynamic elements, this is automatically allocated to the font with number 2.

The Editor always has a font list actively switched. To use fonts from the standard project and the global project, the font lists in these two projects must be named the same.

Note: zenon projects that have been converted from version 5.50 into a later version have no standard font list if the project has no fonts in 5.50.

GLOBAL AND LOCAL

Fonts from the local standard project have a higher priority than fonts from the global project. For example: There is a font with the number 50 in the global project. This font can be used in the workspace in any standard project as long as the standard project does not have a font with the number 50. If there is also a number 50 in the standard project, this font is used.

The fonts with the numbers 1 and 2 cannot be deleted in the standard project. That means: The fonts with the number 1 and 2 can be changed in the global project. However, they cannot be used in the standard project, because these two numbers are always present in the standard project and have a higher priority. An offset can be used to differentiate fonts from the global project and the standard project. For example, font 2 from the standard project can become font 2002 in the global project.

Workaround to use fonts 1 and 2 from the global project in the standard project: Delete the font list in the standard project and name a new empty font list the same as the font list in the global project.

DELETE FONT LIST

If the fonts with the numbers 1 and 2 from the global project are to be used in the standard project, the font list must be deleted in the standard project. To do this:

1. This is how you create a project backup:
2. If adapted fonts from a standard project are to be used globally:
 - a) Carry out an XML export of the font list from the standard project
 - b) Carry out an XML import of the font list into the global project
3. Open the SQL folder for the standard project
 Hint: Highlight the project in zenon -> press Ctrl+Alt+E -> Explorer opens the project folder
 -> navigate on to zenon/system
4. close the workspace
5. Delete the file named **fonts.bin**
6. open the workspace
7. Now name an empty font list with the same name as the font list in the global project

Now the fonts with the numbers 1 and 2 from the global project are used in the standard project. New elements use the font with number 2 from the global project, if this is available, and the system font if the global project is not available.

IMPORT AND EXPORT VIA XML

When importing and exporting via XML, the **Name** property is used for identification with dynamic elements. If for example, in the global project there is a font with the name "zenon" and in the local standard project there is another font that also has the name "zenon", then the font of the local project is used during import and export.

Hint: The font names must be clear in the global project and standard project. The Editor does not check this.

VBA

VBA uses the **Number** property of the font for dynamic elements. Here, the offset can be useful for fonts in the global project and in the standard project.

For example: Font 2 from the standard project is replaced by 2002 from the global project. For vector elements, the font number is saved in the second position of the font string. In the font string "0 7 0 0

700 255 0 0 0 3 2 5 34 Arial", the number of the font is 7 and can easily be replaced by 2007 from the global project.

15.4 Linking fonts to elements

There are two possibilities to link a font to a dynamic or vector element (e.g: to link a text (on page 114))

► **Drag&Drop:**

- In the font list, click in the cell with the counter number of the desired font.
- Drag it to the desired element while holding the left mouse button.

The font is linked to the element.

► **Properties:**

The font can also be linked in the properties of the selected element.

Click on the ... button of the **Font** property in the **Text style** group to open the dialog to select a font.

16. Symbols and element groups

Symbols and element groups are screen elements to which vector screen elements and dynamic screen elements are assigned as screen macros. Both are used as screen symbols in screens. The color attribute of a screen symbol can be changed by means of dynamic elements (status element, multi-binary element and combined element) in Runtime.

- Symbols are collected in a symbol library and can be created there. They are either linked to a screen or inserted into a screen as an element group. As soon as they are linked, each change to the symbol in the library has an effect on the symbol in the screen. Symbols can also be inserted into a screen as an element group. The connection to the library is thus released. Changes to the symbol do not have an effect on the element group.

Note: You can link a symbol to another symbol however not to itself.

- Element groups can be created in a screen from several elements. An element group can also be inserted as a symbol in a symbol library. In doing so, it is converted into a symbol when inserted. However the element group in the screen remains as an element group.

zenon distinguishes between three symbol libraries:

Symbol Library	Property
General symbol library	<p>Symbols are available in all projects. The general symbol library node is located in the project manager below the currently-loaded projects.</p> <p>Label when linking in the screen: [symbol group]/[symbol name]</p> <p><u>Rules:</u></p> <ul style="list-style-type: none"> ▶ The dialog for selecting variables offers all projects of the workspace for linking. ▶ These symbols are saved in the zenon program folder and only updated when the Editor starts. These symbols are not saved during project backup. ▶ Interlockings and aliases for ALC cannot be configured. <i>Attention:</i> If symbols that contain interlockings or aliases are added, these settings are removed.
SYMBOL LIBRARY IN THE GLOBAL PROJECT	<p>Symbols are available for all projects of the workspace.</p> <p>Label when linking in the screen: Global project_[Symbol name]</p> <p><u>Rules:</u></p> <ul style="list-style-type: none"> ▶ The symbols copied into the symbol library of the global project retain their variable linking without changes. ▶ The variable dialog offers all projects of the workspace for linking. Linked variables are placed in front of the name of the respective project. ▶ The name of the Variable can be amended in the properties window. This way, for example, the prefix can be deleted with the project origin. ▶ The symbols are also backed up when a project is backed up. ▶ Interlockings and aliases for ALC cannot be configured. <i>Attention:</i> If symbols that contain interlockings or aliases are added, these settings are removed.
Symbol library in the project	<p>Symbols are only available in the current project.</p> <p>Label when linking in the screen: [Symbol name]</p> <p><u>Rules:</u></p> <ul style="list-style-type: none"> ▶ The symbols are saved in the project folder. The project symbol library is in the current project in the Screens node and is backed up together with project backup. ▶ Interlockings and aliases for ALC can be configured. These properties are also retained when symbols are added.

COPYING OF SYMBOLS BETWEEN LIBRARIES

Symbols can be copied with **Drag&Drop** .

For this, the following applies:

- ▶ Only symbols of the first level of the tree can be copied.

- ▶ Groups and folders cannot be copied.
- ▶ If there are already names of symbols in the target library, the added symbols are automatically renamed.
Renaming is carried out by adding an underscore and an ordinal number, for example:
Calibrator_1.
- ▶ Copying between libraries is only possible to a limited extent.

Overview of copying between symbol libraries using **Drag&Drop**:

Copying using Drag&Drop possible	General symbol library	Symbol library in the global project	Symbol library in the project
General symbol library	--	+	--
Symbol library in the global project	--	--	+
Symbol library in the project	--	+	--

Key:

- ▶ +: copying possible
- ▶ --: copying not possible

In order to be able to work with both libraries at the same time, the preview of the libraries is displayed in separate windows. In doing so, the names of the libraries are displayed in the tabs on the main screen.

Note: If, for the global project, an authorization level greater than 0 is configured for the editing of screens and the logged-in user does not have this authorization level, the adding of symbols into the symbol library of the global project is not possible. Linked symbols from the global project also cannot be edited in screens of the local project in this case.

SCREEN SYMBOLS AND SYMBOLS FROM THE A SYMBOL LIBRARY

- ▶ Screen symbols: Symbols or element groups contained in a screen.
- ▶ Symbols from a library: Are edited in the library and linked in the screen.



Attention

Symbols from the **general symbol library** are saved locally for each theme group (such as *tank, substation, ...*) in a separate file (***.sym**) in the zenon program folder. These files must always be added manually to back-up the project with multi-user projects and when forwarding projects.

Symbols from the symbol library in the local project and the global project are automatically included in the respective project backup.

Hint: Always save the symbols locally.

PROJECT MANAGER CONTEXT MENU

Menu item	Action
Export all as XML	Exports all entries as an XML file.
Import XML	Imports from an XML file.
Open in new window...	Opens a new window to view and edit the variable. (Default: at the bottom of the Editor.)
Help	Opens online help.

CHECKING SYMBOLS

Symbols are checked to see if they are present and correct:

- ▶ when the Runtime is compiled
- ▶ when the Editor is closed and new Runtime files are created

Missing symbols are marked red in the output window. The error message shows the name of the affected screens and symbols.

MENU SYMBOLS

As soon as a symbol is opened in the symbol editor, the screens menu item is replaced by a symbol in the toolbar.

This menu entry is only shown if a zenon screen is open in the main window.

The following actions are possible:

Menu item	Action
Save symbol	Saves the current symbol.
Save all symbols	Saves all symbols.
Change symbol size / background color	<p>Opens the dialog for configuration (on page 248) of symbol size and background color.</p> <p>Note: Changes of the background color always affect all symbols in the global system library.</p>
Toolbar	Opens a list of all symbols and element groups that are used in the current screen.
Full-screen mode	<p>The full-screen hides all remaining windows and shows only the main window with all opened documents (screens, reports, ...) in full-screen mode.</p> <p>Note: The Control elements menu can still be called up in full-screen mode.</p> <p>The full-screen mode can be closed by:</p> <ul style="list-style-type: none"> ▶ the displayed button for closing the full-screen mode ▶ the short key <code>Shift+F9</code>
Redraw symbol	Refreshes the display.
Display grid	Switches the grid on or off.
Use grid	<p>Switches usage of the grid on or off.</p> <p>On: All objects are automatically aligned with the grid.</p>
Use magnetic points	<p>Switches magnetic points on or off.</p> <p>Usage: If you move an object near the handling point of another object, it snaps in place at the handling point.</p>
Tab order for focus	<p>Stipulation of horizontal or vertical order for keyboard operation.</p> <p>You can find the configuration steps in the Define sequence within template chapter in the Runtime manual.</p> <ul style="list-style-type: none"> ▶ Order for left/right: Determines the horizontal order. ▶ Order for up/down: Determines the vertical order.
Zoom	<p>Allows changes to the resolution size in fixed steps between 15% and 1600%.</p> <p>Amend: automatically selects a zoom factor between 15 -</p>

	1600%, so that the complete screen is shown in full and in proportion in the Editor.
Export screen/symbol as a graphic file	<p>Saves the selected screen or symbol in a graphics file. The following is saved:</p> <ul style="list-style-type: none"> ▶ In screens: the selected screen with all elements and symbols ▶ In the symbol editor: the selected symbol <p>The file browser is opened for saving. Select the save location, filename and type here.</p>
Insert vector graphics	Opens the dialog for inserting an external vector graphic.

16.1 Symbol detail view toolbar and context menu

The symbol library can be operated from the context menu or the toolbar:



COMMANDS IN THE CONTEXT MENU AND TOOLBAR

Context Menu	Description
Symbol new	Creates a new symbol.
Open symbol	Opens the symbol in the symbol editor for editing purposes.
New symbol group	A new symbol group is created and can be filled with selected symbols from the library or with self-defined symbols. (Copy and Paste). Only available in the global symbol library.
Insert symbol as element group in screen	Creates an element group from the symbol and adds this to a screen (for details, see the Element groups (on page 255) chapter).
Insert symbol in screen	Links the symbol in the screen (for details, see the Symbols (on page 256) chapter).
Linked elements	Opens the sub-menu with linked elements and the possibility to jump back into the starting element.
Jump back to starting element	Jumps back to the starting element (only toolbar).
Copy	Copies the selected symbol to the clipboard (only hierarchical view).
Paste	Inserts the copied symbol in the active group (only hierarchical view).
Delete	Deletes the selected symbol or symbol group (only hierarchical view). Attention: Deleting cannot be undone!
Expand/collapse node	Allows expansion/reduction of the selected node or all nodes in the hierarchical view.
Flat view	Arranges all symbols in a flat view. Facilitates the search for certain symbols. Note: In this view, you can't create nor delete symbols and it is also impossible to copy or insert symbols from the clipboard.
Hierarchic view	Sorts all symbols hierarchical in subgroups and shows dependencies.
Export selected as XML...	Opens the dialog for XML-export of the selected symbols. (For details, see chapter Import/Export of symbols.)
Export screen/symbol as a graphic file...	Exports the screen/symbol as a graphics file. The file selection dialog offers the corresponding graphics formats supported on the system. In principle, all Windows Imaging Component (WIC) codecs that support saving are provided for selection. The size of the graphics results from the screen or symbol to be exported.
Import XML	Imports symbols from an XML-file (see chapter Import/Export of symbols).

Remove all filters	Removes all filter settings.
Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line. Only cells that can be edited can be selected.
Replace text in selected cell	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window.
Help	Opens online help.

16.2 Configure size and background color

To configure the symbol size and background color:

1. Set the focus to the symbol editor.
2. Select, in the **General** properties group, the desired parameters for the display of the symbol in the symbol editor:
 - a) **Background color**: Defines the background color for symbols in the symbol editor. Clicking on Color opens the palette.
Note: Changes to the background color always affect all symbols in the global system library.
 - b) **Width [pixels]**: Entry of the width of the symbol in pixels.
 - c) **Height [pixels]**: Entry of the height of the symbol in pixels.

16.3 Release properties from link

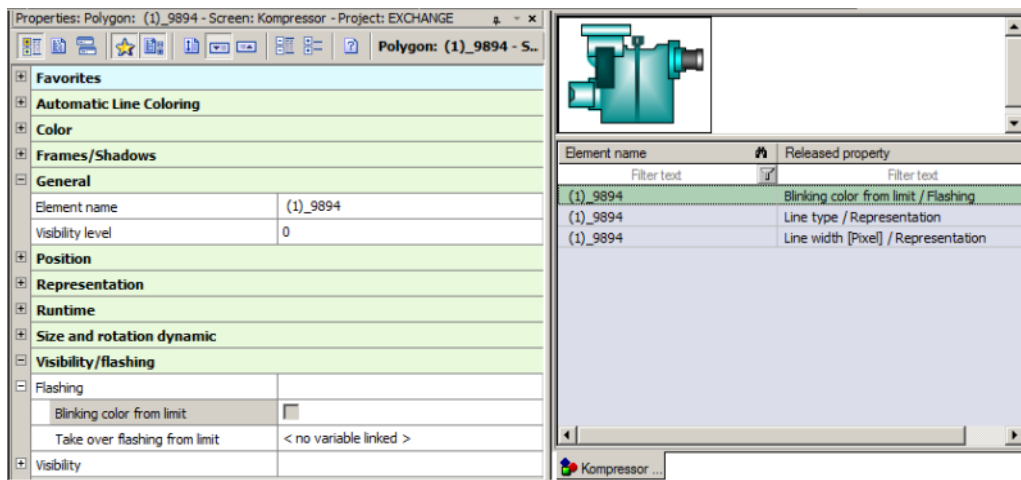
For optimum use of symbols, it is sometimes necessary to assign individual values to individual properties from system elements. For example, a motor symbol has a heading in which the name is contained.

You can release the **Text** property with this function. If the symbol is dragged onto the screen, the **Text** property can be changed individually for each motor.

This function is available for all properties.

ENGINEERING

The symbol editor is opened when a symbol is opened. The symbol editor consists of a window divided into two parts to edit the selected symbol.



The symbol is edited in the upper area; in the lower area, the released properties of the element of this symbol are listed. You have different possibilities to release elements:

1. Drag&Drop
 - a) Move the desired properties by dragging & dropping from the property window in the lower area of the symbol editor.
 - b) **Note:** You must always click on the name of the property (not the value) and move it into the release area by dragging & dropping.
2. Property context menu
 - a) Right-click on the name of the property.
 - b) Select **Release [property]** in the context menu
 - c) The property is entered in the list
3. Property toolbar
 - a) Left-click on the name of the property.
 - b) Click in the toolbar on the release symbol (green arrow upwards above text field)
 - c) The property is entered in the list

Note: If the entry is not offered or the symbol is displayed as deactivated, the element cannot be released. Possible reasons:

- ▶ No screen element selected in the symbol editor
- ▶ Property was already released
- ▶ Element does not support release (ActiveX, for example)

The release area is a list that can be filtered. You can filter according to individual properties as needed. A context menu is available for all actions.

CONTEXT MENU FOR RELEASE LIST:

Parameter	Description
Remove selected property	Removes release of the element.
Undo	Revises last action.
Help	Opens online help.

EDITING RELEASED PROPERTIES

If the symbol is displayed in a screen, the additional node **\$_Element Name** is available. All properties that have been released individually have been released. These are separated from the linking principle (released) and only concern this symbol if changed. If a property of one of the elements is selected in the **Properties** window, this element flashes in the screen.

The released properties can be changed:

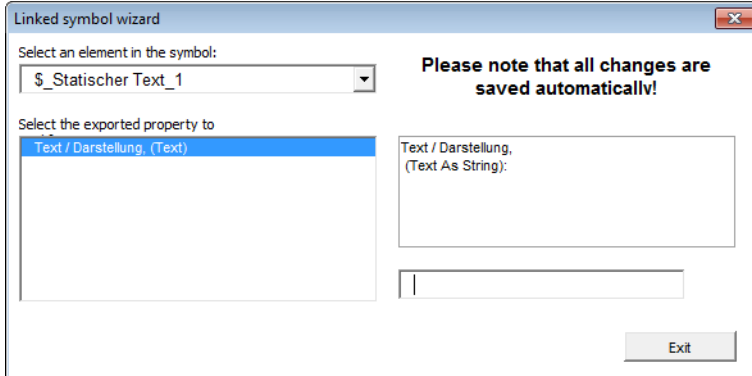
- ▶ With the properties in the **\$_element_name** branch
- ▶ with the Linked Symbol Wizard

LINKED SYMBOL WIZARD

The linked symbol wizard is available to you in order to edit released properties easily and with a clear overview:

1. Double click on a symbol that:
 - a) Is linked in the screen and
 - b) has released properties
2. The linked symbol wizard opens.
3. Select the property to be changed.
4. Enter the new value.
Note: Each change is accepted immediately!

5. Close the wizard by clicking on **Exit**.



Parameter	Description
Select an element in the symbol:	Selection of an element in the symbol from the drop-down list.
Select the exported property to	Selection of the released property from a list.
Display of property	Displays the property to be changed.
Input field	Input of the new value of the property by means of text entry/number entry, drop-down list or selection dialog - depending on the property.
Exit	Closes wizard



Information

The wizard does not support all possible symbol properties.

16.4 Create and delete your own symbols

Create symbols either in the symbol editor or in a screen. Elements of a symbol can be:

- ▶ Vector Elements
- ▶ Dynamic elements
- ▶ other symbols: Symbols can be inserted into element groups.



Information

Elements contained in a symbol should only be placed within the symbol area and not jut out. If elements jut out over the symbol borders, artifacts may occur at the display in the Runtime. This is also true for elements using symbols (e.g. combi element).

IN THE SYMBOL EDITOR:

1. Select **New symbol** in the context menu or in the toolbar.
2. Click in the input field for **Element Name** and assign a name (periods are not permitted in symbol names).
3. Create the symbol in the symbol editor.
4. Add any individual properties (see sub-chapter on releasing inherited properties (on page 248))
5. Save the symbol.

ON THE SCREEN:

1. Select one or more element in the screen.
2. In the context menu, select Symbol -> Create Embedded Symbol (or -> Insert into Existing embedded Symbol)
or select it in the Edit-> Symbol -> Create Embedded Symbol menu.
3. Save the screen.



Attention

Fonts and graphics in symbols for use throughout the project:

Fonts: fonts are defined through their ID. Ensure that the same ID is assigned to the desired font in all projects in which the symbol is used.

Graphics: Graphics embedded into a symbol are not saved with the symbol. The corresponding graphics must be copied manually to the graphics library of the corresponding project.

EMBED SYMBOLS INTO SYMBOLS OR LINK SYMBOLS TO SYMBOLS

You can also link existing symbols or create them as an element group when creating symbols in a similar manner to the screens (see Insert symbol into screen (on page 254)). In doing so, you must heed the following rules:

- ▶ A symbol must not contain any recursion i.e. it must not link to itself.

- ▶ Project symbols must not be linked across projects!
- ▶ Symbols from the global library may not contain any links to project symbols.



Information

You can only edit the contents of symbols in the symbol editor. If you insert it into a screen as an element group, this cannot be edited in the screen editor.



Attention

You can only link symbols from the project library within the respective project. It is not possible to link symbols from the project library across projects. To use a symbol from another project library in another project, you can create an element group from it.

DELETE OR REMOVE

To delete a symbol:

1. Highlight the symbol in the library.
2. Select the **Delete** command in the context menu or in the toolbar.

To remove an element group in a screen:

1. Highlight the element group in the library.
2. In the context menu, select Symbol -> Remove
3. the element group is removed in its elements.
4. if the symbol for the symbol library has already been inserted, it remains there unchanged; it is deleted from symbol administration however.

To delete a symbol:

1. Highlight the symbol in the library.
2. Select Delete in the context menu.
3. The symbol remains unchanged in the symbol library, but it is deleted from symbol administration.



Information

To edit individual elements of a symbol without removing the symbol assignment, select:

- ▶ For symbols: **Edit in symbol editor**
- ▶ For element groups: **Switch to single edit mode**

16.4.1 Transferring your own symbols to the library

Element groups created in a screen can be inserted into a symbol library as symbols.

To insert an element group into a symbol library as a symbol:

1. In the context menu of the element group, select Symbol -> Insert into symbol library.
2. The dialog for **symbol definition** opens.
3. Select the desired symbol library and the appropriate folder.
4. Confirm the dialog with **OK**.
5. Change to the selected symbol library.
6. The element group was converted into a symbol and entered with the name **Elementgruppe_Nr.** (**Nr** is a continuous numbering of the existing element groups, starting with 1)
7. Enter the chosen name.
8. To continue editing the symbol or to allocate it individual properties (see Release Inherited Properties), (on page 248), open the symbol by double-clicking on it or via the **Open Symbol** context command **in the symbol editor**.

Note: If, for the global project, an authorization level greater than 0 is configured for the editing of screens and the logged-in user does not have this authorization level, the adding of symbols into the symbol library of the global project is not possible. Linked symbols from the global project also cannot be edited in screens of the local project in this case.

16.5 Add symbols to screen

Symbols can be inserted into a screen in two ways:

- ▶ Element groups (on page 255): These are no longer connected to the symbol in the library; changes to the original symbol have no effect on the embedded symbol.
- ▶ Symbols (on page 256): Remain linked to the original symbol. Changes to the symbol also change the symbol in the screen.



Attention

You can only link symbols from the project library within the respective project. It is not possible to link symbols from the project library across projects. To use a symbol from a project library in another project, you can create an element group.



Information

*If you have activated the **Display frame around dynamic elements in the Editor** property, you can distinguish between embedded symbols and linked symbols at a glance: An arrow symbol is displayed in the upper right corner for symbols. You find this property under Tools-> Settings in the **Screen editing** area.*

16.5.1 Element groups

This is how you insert a symbol as an element group:

- ▶ Hold down the `ctrl` key and move it by dragging & dropping
- or
- ▶ Select the **Insert symbol as an element group in the screen** in the context menu of the symbol to embed the symbol into the current screen as element group.

Element groups can then be broken down to their individual elements or their individual elements can be edited. To do this, select Symbol -> Change to individual editing mode in the context menu or Edit-> Symbol -> Element group individual editing mode in the menu.

Element groups do not change if the original symbol from which they were created is changed in the library, as they are no longer linked to it.

REPLACE LINKED VARIABLES

When creating an element group from a symbol that contains variables, the dialog to replace variables and functions opens. Here, you can automatically replace the elements present with those you want for this symbol. You can find details on automatic replacement of variables and functions in the chapter on Replace links in the Editor (on page 179).

To replace variables in symbols that have already been inserted, select the **Replace Links** command in the context menu.

Hint: Ensure that the variables are named (on page 178) uniquely and meaningfully from the start.

16.5.2 Symbols

Symbols do not save variables that are physically present in the symbol library, only variable names. When inserting variables into a screen as a link, the variable names saved in the symbol can be assigned to variables from the project. If the project is given a variable that corresponds to a variable name saved in the symbol, this is linked automatically - without an extra rule.

INSERT SYMBOL IN SCREEN

This is how you link a symbol to a screen:

- ▶ move the symbol by dragging & dropping it into the screen
or
- ▶ In the context menu, select the **Symbol - Insert into screen** symbol

Symbols are only saved as a reference in the screen. Each change of the symbol in the library has a direct effect on the symbol on the screen. For example, if a dynamic element is added to a symbol, it is also available in all screens in which this symbol is used.

Exception: Changes to the symbol size only have an effect on the screen if the `original size` symbol is selected in the **Graphic size** symbol property.

You can do the following to symbols:

- ▶ Convert to element groups: Symbol context menu -> Convert symbol into element group
- ▶ Edit them in symbol editor: Symbol -> Edit in Symbol Editor
- ▶ Insert in existing element group: Symbol -> Insert in existing element group

Symbols cannot be broken down into their elements and their elements cannot be changed in `Edit elements` (context menu -> Symbol -> Change to individual editing mode mode or the Edit -> Symbol -> Symbol/ element group individual editing mode menu).

Replacing linked variables or linked functions

When inserting a symbol that contains variables, the dialog to replace variables and functions opens. Here, you can automatically replace the elements present with those you want for this symbol. ALC aliases that are die used in elements in the symbol can also be replaced. Several entries are separated by a semicolon (;).

You can also get to this dialog using the **Preview** property in the **Linking rule** node of the element.

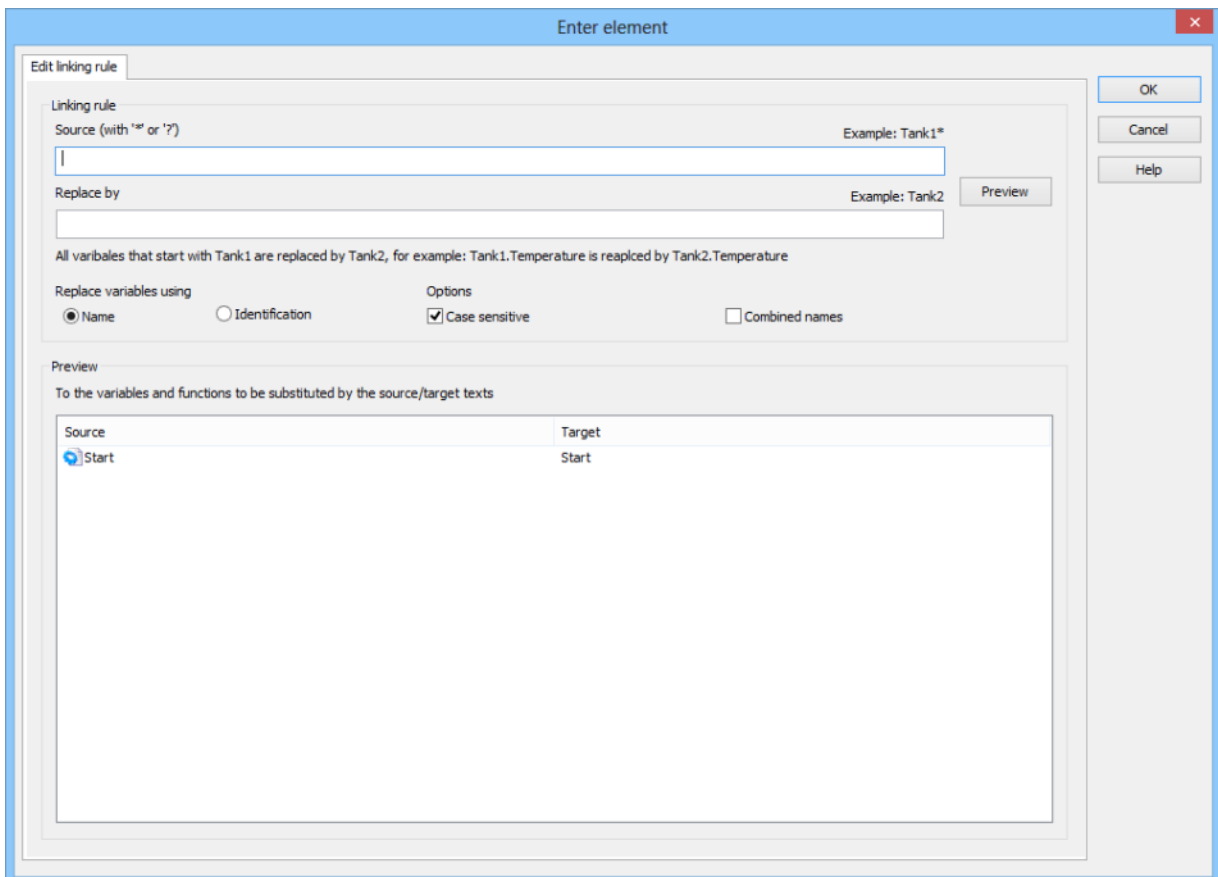


Information

The process for symbols can also be applied to *faceplate* (on page 290) screen containers. The same properties and rules apply.

Exception: The **Hierarchical names** property is not available.

REPLACING LINKED VARIABLES OR LINKED FUNCTIONS



The screenshot shows the 'Enter element' dialog box with the 'Edit linking rule' tab selected. The dialog is used to define a linking rule for replacing source text with target text.

Linking rule

Source (with '*' or '?') Example: Tank1*

Replace by Example: Tank2 Preview

All variables that start with Tank1 are replaced by Tank2, for example: Tank1.Temperature is replaced by Tank2.Temperature

Replace variables using Options

☒ Name ☐ Identification ☒ Case sensitive ☐ Combined names

Preview

To the variables and functions to be substituted by the source/target texts

Source	Target
Start	Start

LINKING RULE

Property	Description
Linking rule	Configuration of which character sequence can be replaced and how.
Source	Enter the character string to be searched for. Permitted wildcards: * and ? Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.
Replace by	Entry of the character string that is to be replaced.
Name	Swaps information in process variable names.
Identification	Exchanges information in the identification
Note capitalization	When swapping, be sure that any capitalization is an exact match.
Hierarchical names	Permitted combined names. Is not available for ALC aliases and faceplate containers (on page 284). These are always used without a symbol prefix.

PREVIEW

Property	Description
Preview	Display of the selected and replaced elements.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

You can find further details on automatic replacement of variables and functions in the chapter on **replacing linking of variables and functions** (on page 177).

Hint: Ensure that the variables are named (on page 178) clearly and sensibly from the start.

Linking rule - composite names

If the **Hierarchical names** property in the **Linking rule** node is active, the names of the linked variables from the object names of the symbol and the variable names or variable identification are combined.

This action is determined in the **Via variable name** property.

- ▶ **Active:**
The name of the linked variable is compiled from the object name of the symbol and the variable name (the **Name** property in the **General** property group for the variable).
- ▶ **Not active:**
The name of the linked variable is compiled from the object name of the symbol and the variable identification (the **Identification** property in the **General** property group for the variable).

The two names are separated by a dot:

"Symbol name.Variable" or **"Symbol name.Identification"**



Attention

*If the **Hierarchical names** property is active, but the **Via variable name** property is not active, the variable identification is used. However if this **Identification** is empty, the combining will fail!*

EXAMPLE

Variable name: *Motor.Speed*

*The symbol object name is "**Motor**". The dynamic element that is used in the symbol has the placeholder "**Speed**" as a linked variable.*

*The placeholder "**Speed**" can be easily typed in for the symbol property when creating the variable.*

Combined names also work with nested symbols:

*If you have a "**Pump**" symbol, which in turn contains a "**Motor**" symbol and a "**Convertor**" symbol with the variable placeholder "**Output**", then the linking works if there is a **Pump.Motor.Output** variable and a **Pump.Convertor.Output** variable.*

16.5.3 Symbol selection in the Combined element

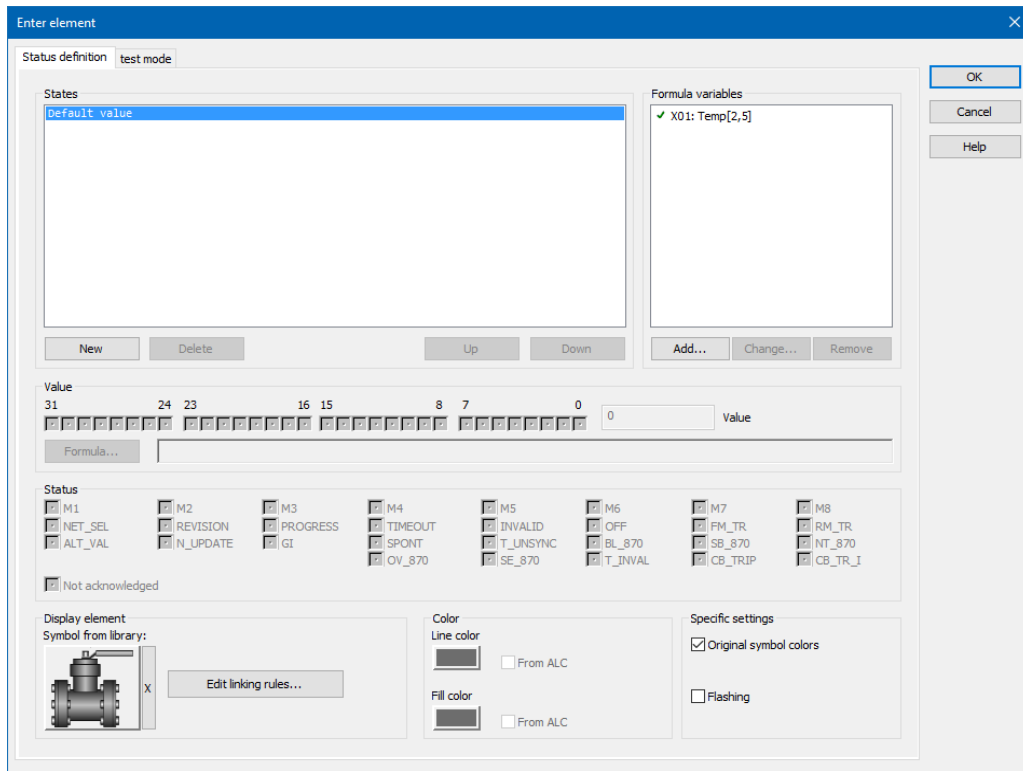
To link combined elements with a symbol:

1. Select **Symbol from library** in the combined element properties in the **Representation** node in the **Type of display** property

2. Click **Configuration and test**.

The configuration dialog opens:

The general settings for all display types can be found in the chapter on statuses (on page 71).

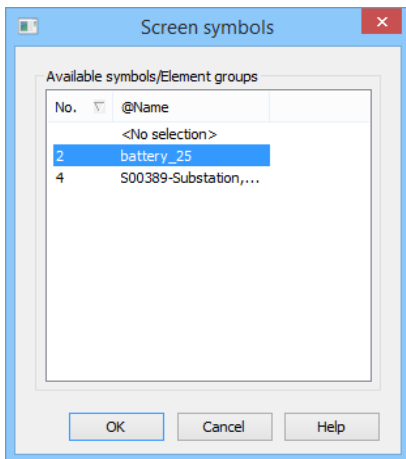


Option	Description
Display element	
Symbol from library	<p>Clicking on the symbol opens the dialog to select a symbol.</p> <p>Clicking on the X next to the symbol deletes the selected symbol.</p>
Edit linking rule	<p>Variables and functions contained in the symbol can be exchanged with the help of linking rules.</p> <p>Attention: If a variable or function does not fit into the scheme, that link cannot be replaced.</p>
Colors	Only available if the Original Symbol Colors property in Specific Settings is turned off.
Color	Choice of color.
Fill color	Choice of fill color.
From ALC	The color of the linked source is used.
Specific settings	
Original symbol colors	<ul style="list-style-type: none"> ▶ Active: Transfers original color from symbol. Deactivates Take color of main variable property.
Flashing	<ul style="list-style-type: none"> ▶ Active: Symbol flashes in runtime if status has been achieved.

▶

16.6 Toolbar

Via Edit -> Symbol ->Symbol list... Open a list that displays all symbols of the active screen:



Parameters	Description
Available symbols/Element groups	List of the symbols and element groups in the screen.
No.	Number of the symbol or the element group.
Name	Name of the symbol or the element group

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

You sort the symbols according to number or name by clicking on the respective column title. A symbol selected in the list of symbols is blinking in the screen.

16.7 XML export and XML import

Import/export of symbols is possible from the project and the global symbol library. Single or selected symbols or the entire library can be imported or exported. The path for the export can be defined freely.

EXPORT SYMBOLS

To export symbols:

1. highlight the desired symbols
2. Select the **Export selected as XML...** command in the context menu of the detail view.
Alternate: select in the context menu of the **project symbol library** node, the **Export all as XML** command
3. the selection dialog for the saving location is opened
4. select the desired saving location
5. assign a name
6. pay attention to file type XML
7. confirm by clicking on the **Save** button

The selected symbols are exported to an XML file and can be imported in this or in other projects at any time.

IMPORT SYMBOLS

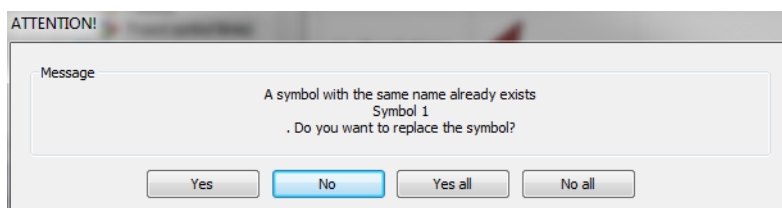
To import symbols:

1. in the context menu of the node or the detail view of the **Project symbol library** or in the detail view of the **Global symbol library** select **Import XML...** command
2. the selection dialog for the saving location is opened
3. navigate to the saving location of the desired XML file
4. Select the desired file
5. confirm the import by clicking on the **Open** button

The symbols are imported.

NAME CONFLICTS DURING THE IMPORT

At the import of a symbols the name (attribute **ShortName**) which is stored in the XML file is used for the name of the symbol which is created. If a symbol with the same name already exist, the import is halted and an error message is displayed:



Parameter	Description
Yes	The symbol described in the error message is replaced by the symbol from the XML file at the import. If a new conflict occurs, the error message is displayed again.
No	The symbol described in the error message is not imported. The existing symbol is maintained. If a new conflict occurs, the error message is displayed again.
Yes, all	The symbol described in the error message is replaced by the symbol from the XML file at the import. This setting is used automatically when errors due to using the same name occur. All affected symbols are replaced.
No, all	The symbol described in the error message is not imported. The existing symbol is maintained. This setting is used automatically when errors due to using the same name occur. All affected symbols are maintained.

Note: Only the **ShortName** is used. The file name does not matter for the name of the symbol which should be imported. Thus it cannot be used to solve the conflict.

17. Visibility levels

Similar to CAD programs, you can define visibility levels in the Editor and allocate them with unique elements. That way you can easily hide unused elements in complex images and show them again anytime. 15 visibility levels are available. Levels are allocated using the properties **Visibility level** in the node **General**. Individual levels can be activated and deactivated using the buttons of the **Visibility levels** toolbar:



Symbol	Description
Show all visibility levels	Shows all levels.
Hide all visibility levels	Hides all levels.
Visibility level [No]	Shows / hides the relevant visibility level.
Options for toolbar	<p>Clicking on the arrow opens the submenu:</p> <p>Active: Toolbar is displayed.</p> <p>If the toolbar is not displayed, it can be activated using the Options -> Toolbar menu.</p> <p>Note: For free placed toolbar (undocked from the Editor) options are not displayed. The toolbar can be closed by clicking on button X.</p>



Information

Visibility levels only apply to the Editor and have no effect in Runtime.

Note on control elements: Control elements are always displayed at the uppermost position. That also applies if they are covered by other elements in the Editor. This ensures that they can always be reached.

18. Screen types

Screens are created in the basic setting with the **Standard** screen type. Comply with the instructions in chapter Create screen with screen creation dialog (on page 21) in order to create a screen with screen type **Standard**. Screen type **Standard** is already selected by default.

In the screen creation dialog you can select special screen types under **Content** and **Screen type**.



Attention

If a screen type is changed from a type standard to a special screen type, the new screen type is fixed with the screen and can no longer be changed.

SPECIAL SCREEN TYPES

zenon offers a range of special screen types (on page 266) for special tasks. After selecting a special screen type, all user elements for the respective screen type are available in the **Control elements** menu. Menu item **add template** (on page 272) opens a selection dialog for adding pre-defined layouts with certain control elements at pre-defined locations.



Information

Special screen types need only be created once, even when used multiple times. They can be opened with different data by means of the screen switching function.

SPECIAL SCREEN TYPES AS A START SCREEN

Each screen type can also be used as a start screen.

Attention: Special screen types are opened with an empty filter and thus no data are opened.

18.1 Screen type Standard

There are two procedures for the selection of the screen type and the creation of a screen from zenon version 8.00:

- ▶ using the Screen creation dialog (on page 21) which is activated by default. This approach is recommended.
- ▶ the creation of a screen using the properties.

CREATING A SCREEN OF SCREEN TYPE STANDARD WITH SCREEN CREATION DIALOG DEACTIVATED.

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select **Standard** in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select **Insert template** in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

18.2 Special screen types

In table **Special screen types in zenon** you can find a list and description of the available screen types
There are two procedures for the selection of the screen type and the creation of a screen from zenon version 8.00:

- ▶ using the Screen creation dialog (on page 21) which is activated by default. This approach is recommended.

- The creation of a screen using the properties. The description of the procedure is linked to the corresponding screen type in the following table.

SPECIAL SCREEN TYPES IN ZENON:

Screen type	Description
Active Directory user administration	Allows the administration of the Active Directory users and user groups in Runtime.
Alarm Message List	Collects alarm messages and displays them in list form.
Alarm Message List Filter (on page 312)	filter for the Alarm Message List .
Equipment Model	Equipment models offer the possibility to structure physical production equipment. The equipment model can be used in Runtime, as a filter for example, via the screen type.
Archive revision	Allows a display of saved archive values in a table and editing of these. License info: Only available if the Historian is licensed.
Batch	Creating defaults for master recipe in module Batch Control. The module corresponds to the ANSI/ISA-S88 standard. This screen type can be used to automate batch-orientated manufacturing processes for lot and batch products. License info: Only available if Batch Control is licensed.
Command Processing	Allows the display and execution of commands. License info: Only available if the Energy Edition is licensed.
User List	Display of users and the possibility to edit these with the <code>Edit user</code> screen.
User Groups List	Display of user groups and the possibility to edit these with the <code>Edit user</code> screen.
Edit User	Creating, editing and deleting users.
Chronological Event List	Collects process events, system events and user defaults and displays them in list form.
Chronological Event List Filter (on page 333)	Filter for the Chronological Event List
Extended Trend	Displays online values and archive values as diagrams in Runtime.
Faceplate (on page 284)	Encompasses several screens of different types into one screen and thus allows a simultaneous display of the screens in Runtime.
Maximum Load Forecast	Screen for the display of Maximum Load Forecast . License info: only available if SICAM 230 is licensed.

HTML	Allows the display of a web site in HTML, adapted to Microsoft Internet Explorer.
Industrial Maintenance Manager	Offers an overview of which device, equipment or machines have to be maintained. The screen type allows the display of maintenance information. License info: Only available if the Industrial Maintenance Manager is licensed. Note: Not available under Windows CE.
Industrial Performance Analyzer	Analyzes the alarm data statistically in order to locate weak points (downtime) of equipment. Note: Not available under Windows CE.
Keyboard	Creates a freely definable virtual keyboard.
Context List (on page 437)	Allows the central administration of hierarchically-structured texts in Runtime. Possible alarm causes can be pre-defined centrally through the linking of a context list entry with entries from the alarm message list.
Load flow (n-1) calculation	Serves to visualize current loads of a line and calculated loads on lines. The calculated loads show the values of a line with the assumption that another line of the mesh network is no longer present.
Load Management	planning and display of energy use management (electricity). License info: Only available with a license for Load Management . Note: Not available under Windows CE.
Login	Individually-designable window for temporary login in Runtime, as well as input of a signature and login via a function.
Message Box (on page 420)	The screen type allows the display of errors, warnings, notices and queries in Runtime.
Message Control	The module allows the sending of messages to individual recipients or recipient groups. The screen type is for the administration of the message queue in Message Control.
Notepad (on page 429)	Displays protocols and text files which were created from database requests or existing text files.
Production & Facility Scheduler	Chronological processes can be controlled directly with this screen type. This allows the management of schedules and profiles. License info: Only available if the Production & Facility

	Scheduler (PFS) is licensed.
Process Recorder	<p>Screen for the control of the playback of recorded process data in Runtime.</p> <p>License info: Only available with a license for the optional Process Recorder module.</p>
Report Generator	<p>To output protocols that have been obtained from the data of the different modules, such as the alarm message list or chronological event list. The protocols have been created with the advanced report generator.</p> <p>License info: Only available if the Report Generator is licensed. If you only want to display reports but not edit them, you do not need a license for Runtime.</p>
Report Viewer	<p>Serves to display RDL reports for Archive, AML, CEL and online values.</p> <p>License info: only available if reporting is licensed.</p>
Recipegroup Manager	<p>Administrates recipes and their use within a recipe group.</p> <p>License info: Only available if the Recipegroup Manager (RGM) is licensed.</p>
S7 Graph	is used for sequential chains with alternative or parallel step sequences (SFC). Displays the current status of chain control in the PLC in runtime.
Standard Recipes	Screen type for easy management of recipes.
Command Sequencer	<p>Screen type for the creation of processes in Runtime. Command actions that are configured in the Editor serve as a basis.</p> <p>License info: Only available with an additional license. Can only be licensed in addition to Energy Edition.</p>
Scheduler	<p>For the configuration of switching actions that are executed at a certain time.</p> <p>License info: Only available if there is no PFS license.</p>
Shift Management	For the modeling and organization of shifts.
Variable Diagnosis	<p>Screen type to display variables, time stamps and status displays in Runtime and to write set values.</p> <p>Note: Not available under Windows CE.</p>
Video (on page 461)	<p>Displays online and saved videos (*.avi).</p> <p>Note: Not available under Windows CE.</p>
Worldview overview	Makes it possible to scroll standard screens which are larger

	than the screen resolution.
Time and lot filters (on page 354)	Enables general filter settings to be set for lists. The lists that are controlled by this are defined in the Screen switch function.

18.2.1 Create special screen types

There are two procedures for the selection of the screen type and the creation of a screen from zenon version 8.00:

- ▶ using the Screen creation dialog (on page 21) which is activated by default. This approach is recommended.
- ▶ The creation of a screen using the properties.

CREATING A SCREEN WITH A SPECIAL SCREEN TYPE WITH SCREEN CREATION DIALOG DEACTIVATED.

1. Create a new screen or select an existing screen of the type `Standard`.
2. Click on the predefined `Standard` type in the properties in the **Screen type** at **General** node
3. Select the desired screen type from the drop-down list.

Alternative: In the **Screen** detail view, click on the screen type of the elements and select the desired screen type from the drop-down list.

4. Select the desired control elements in menu **Control elements**
 - **Add template** (on page 272) opens a selection dialog for adding pre-defined layouts with certain control elements at pre-defined locations.
 - Elements that are already present on the screen are displayed in gray and can no longer be selected.



Information

Limitation for automatic insertion of the template:

If there is already a static element, such as a control element, in the screen, no frame or frame text is inserted when inserting the default control elements.

Recommendation: Insert, after creating a special screen type in the first stage, the default control elements from the template and then further elements.

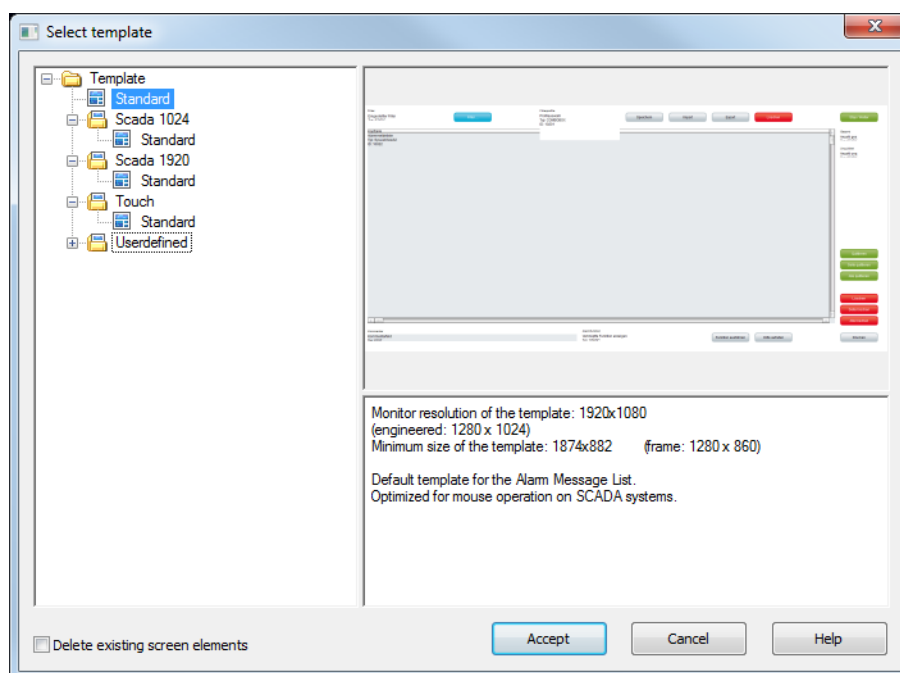
18.2.2 Template for standard screens and special screen types

For special screen types and also for standard screen you can use templates for automatic inserting and positioning elements. Templates can be created from every screen by yourself. For special screen types pre-defined templates are shipped with zenon.

Templates are stored as compressed zip files which include three files:

- ▶ Meta data: XML file with the description of the template (name, description, size, etc.).
- ▶ Screen elements: XML file with the exported elements of the screen.
- ▶ Preview: Bitmap file with a preview of the template.

SHIPPED TEMPLATE



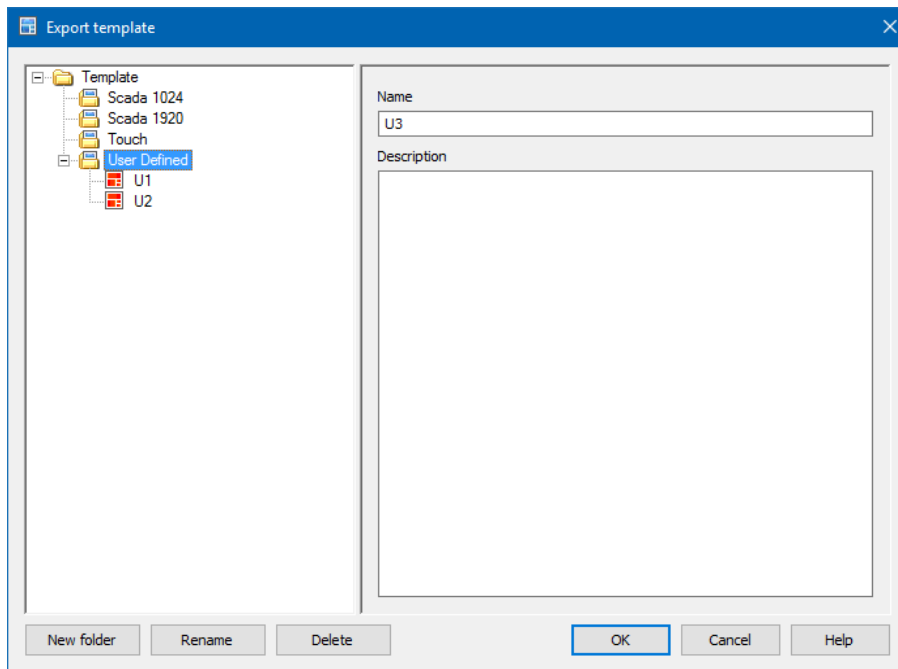
The shipped templates are available in different resolutions and also optimized for touch screens. These templates cannot be changed or deleted. Pre-defined templates by COPA-DATA are saved in the zenon program folder under: `\Templates\ScreenTypes\[LANGUAGE]\[name of the screen type]\[Dateiname].zip`.

Example: You can find the english templates for the Alarm Message List under `%Program Files (x86)%\COPA-DATA\zenon 9.2\Templates\ScreenTypes\ENGLISH\Alarm Message list\`

Note: Only templates for the currently-set language are loaded.

USER-DEFINED TEMPLATE

Users can create and save templates for all screen types. They can also be edited and deleted.



User-defined templates are saved in the zenon data folder: `Templates\ScreenTypes\<name of screen type>\<file name>.zip`.

e. g.: `%ProgramData%\COPA-DATA\zenon8.00\Templates\ScreenTypes\Alarm Message List\3e9afbcf-f93d-46d9-a199-e00effe4811c.zip`.

Note: The path depends on whether it is registered at the installation or via the **Startup Tool**. If the latter is the case, the current program folder is used as data folder.

Use templates

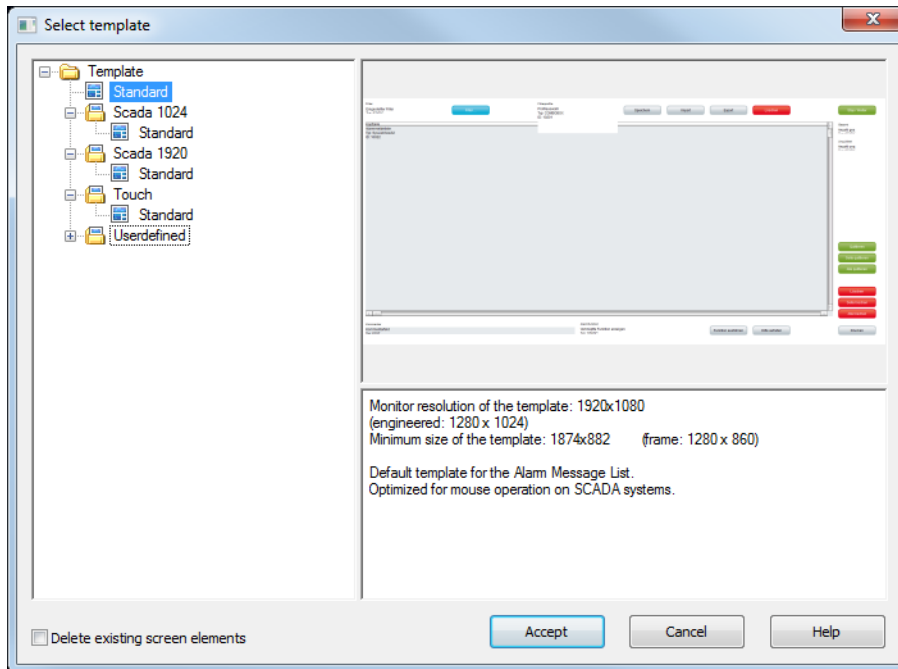
To use templates for a screen:

1. Open the screen.
2. Select the **Add template...** command in the control element menu
3. the dialog for selecting pre-defined and user-defined templates is opened.

Note: for standard screens, only user-defined templates are available.

4. Select the desired template.
5. Click on **Accept**.

6. the elements defined in the template are inserted at the pre-defined location.



Parameter	Description
List field templates (left)	Displays all pre-defined and user-defined template.
Preview to template (top right)	Preview of the screen at taking over the selected template.
Description template (bottom right)	Description of the template.
Delete existing screen elements	Active: Pre-existing elements in the screen are deleted when the template is applied.
Apply	Adds the selected template to the screen and closes the dialog.
Cancel	Closes dialog without inserting elements.
Help	Opens online help.

Create templates

Folders and template can be newly created, deleted, renamed and moved for user-defined templates. Shipped, pre-defined templates cannot be changed or deleted.

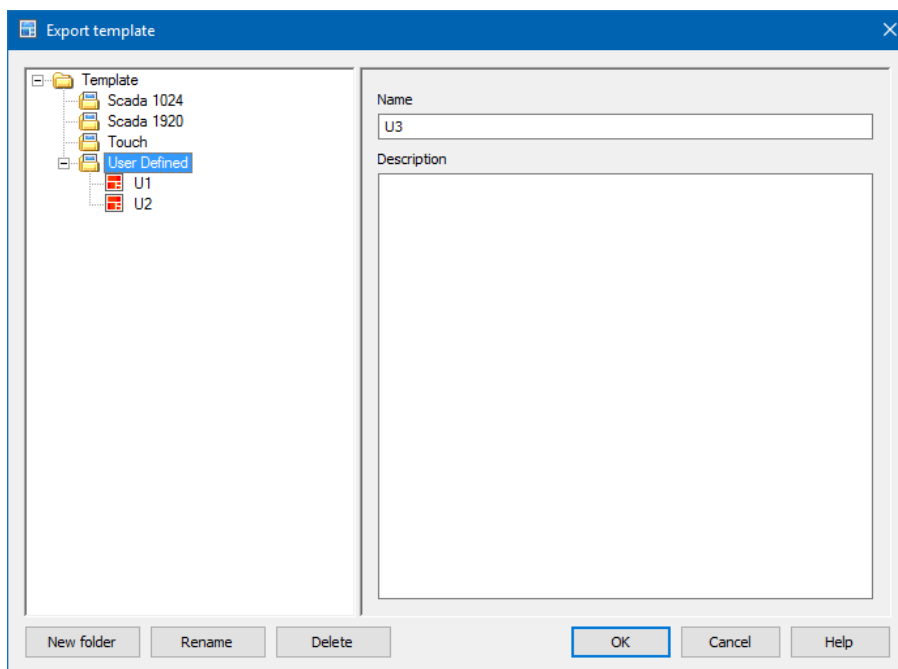
CREATE FOLDER OR TEMPLATE

To create a folder, select:

- ▶ button **New folder** in the dialog
- ▶ or command **New folder** in the context menu
- ▶ or use the **Ins** key

To create a template:

1. highlight the desired screen in the detail view
2. select command **Create template for screen type** in the context menu or in the toolbar
3. the dialog for creating own templates is opened
4. select an existing folder or create a new one
5. enter a name for the new template
6. you can add a description as an option
7. Confirm with **OK**
8. the template is added to the highlighted folder



Parameter	Description
List field templates (left)	Displays all pre-defined and user-defined template. Makes it possible to delete or rename folder and templates and to add folders via the context menu.
Preview to template (top right)	Preview of the screen at taking over the selected template.
Description template (bottom right)	Description of the template.
New folder	Creates a new folder. You can create several levels.
Rename	Opens field with names for editing. This can also be achieved with the <code>F2</code> key or a delayed double click.
Delete	Deletes the selected folder with all subfolders after a confirmation request.
OK	Create template and closes dialog.
Cancel	Closes the dialog without creating the template.
Help	Opens online help.

DELETE FOLDER

To delete a folder or a template:

1. highlight the folder or template
2. select
 - a) Button **Delete** in the dialog
 - b) or command **Delete** in the context menu
 - c) or use the `Del` key

The folder or template is deleted after a confirmation request. For folders possible subfolders including all their templates are also deleted.

RENAME FOLDER OR TEMPLATE

To rename a folder or a template:

- ▶ Select the **Rename** command in the context menu
- ▶ or use the **Rename** button
- ▶ or highlight the element and open it by pressing the `F2` key or a delayed double click on the text for editing.
- ▶ or at templates change the text in filed **Name**

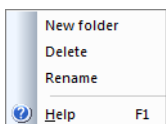
MOVE FOLDERS OR TEMPLATES

Folders and template can be moved via drag&drop with the help of the mouse to other folders.

Context menu create template for screen type

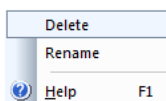
In the dialog for creating new template context menus are also available.

CONTEXT MENU FOR FOLDER



Parameters	Description
New folder	Creates a new folder below the highlighted level.
Delete	Deletes the highlighted folder after a confirmation message.
Rename	Opens the folder caption for renaming.
Help	Opens online help.

CONTEXT MENU FOR TEMPLATES



Parameters	Description
Delete	Deletes the highlighted template after a confirmation message.
Rename	Opens the template caption for renaming.
Help	Opens online help.

18.3 Screen type specific functions

If a **Button** dynamic element is created in a screen with a special screen type, the additional property **Screen type specific action** is available in properties in the nodes (**Variable/function** nodes). With this property, you can link special functions that depend on the screen type with a button.

If screen-type specific functions are invalid, for example as a result of copying a button to a screen of a different type, then the invalid linking is pointed out and this can be replaced. Invalid functions are removed during compiling.



Attention

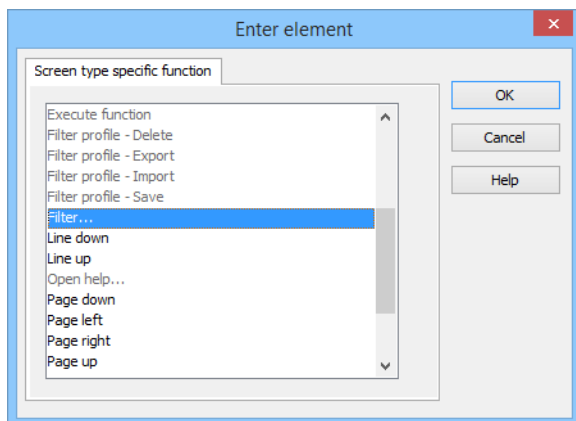
In addition to a screen-type specific function, it is also possible to link a general function with the button. VBA events (such as [LeftClickDown](#)) can also be executed in Runtime.

In this case, note the sequence of execution when clicking on the button:

1. VBA events
2. Screen-type-specific function
3. General function

A function is only executed if the previous event has been completed.

ENTER ELEMENT DIALOG



Parameters	Description
List of functions	Lists all specific functions available for the screen type. Functions that are not available for this button are shown in gray. Clicking on an entry selects this for linking.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

18.4 Active Directory user administration

You can access the Windows Active Directory in Runtime with an `Active Directory user administration` screen. You can create, delete and edit organization units, users and user groups and assign them rights in zenon.



Information

Active Directory and **AD LDS**, as well as **ADAM** (for Windows XP), are not available under Windows CE.

DOMAINS IN RUNTIME

In Runtime, the domain of the user who started Runtime for the Active Directory login is used. Only the users who belong to this domain can log in.

USER AUTHORIZATION



Attention

Rights that are issued in zenon are applicable for the respective project or the workspace. Permissions that are issued in the Active Directory are applicable globally.

If rights have been issued to users or user groups of the Active Directory, then the rights for these users are applicable in all zenon projects!

CREATING AN ACTIVE DIRECTORY USER ADMINISTRATION SCREEN

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

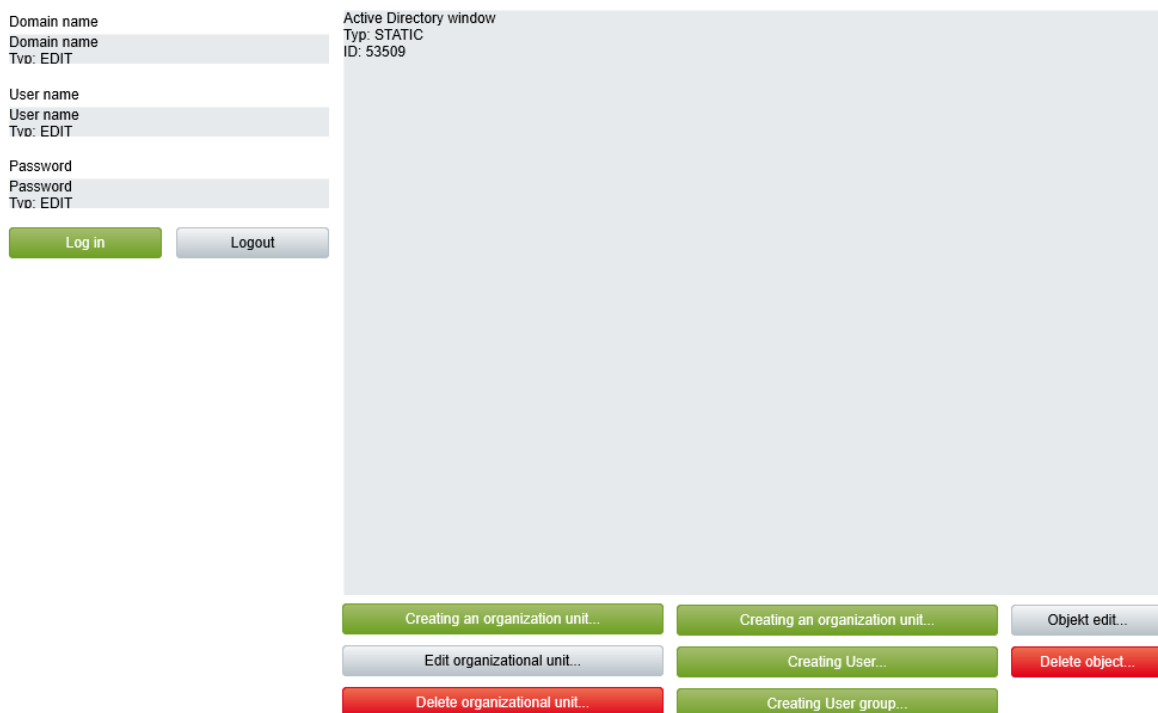
Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools**, **Settings** and **Use assistant**:

1. Create a new screen.

To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.

2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `Active Directory user administration` in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

ACTIVE DIRECTORY USER ADMINISTRATION SCREEN



Domain name
Domain name
Tvo: EDIT

User name
User name
Tvo: EDIT

Password
Password
Tvo: EDIT

Log in Logout

Active Directory window
Typ: STATIC
ID: 53509

Creating an organization unit... Creating an organization unit... Objekt edit...

Edit organizational unit... Creating User... Delete object...

Delete organizational unit... Creating User group...

CONTROL ELEMENTS

Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p>

ACTIVE DIRECTORY WINDOW

Control elements for the display and administration of the Active Directory.

Contains the **Active Directory detail view**: Window in which the structure of the Active Directory is displayed.

Control element	Description
Active Directory Explorer	
Create new organization unit (tree)	Opens the dialog to create a new organization unit in the tree.
Edit organisation unit	
Delete organization unit... (Tree)	Deletes the organization unit selected in the tree after requesting confirmation.
One level up	Navigates to one level higher in the structure.
Create new organization unit	Creates a new organization unit below the element selected in the tree. The corresponding dialog is opened:
Create new user	Opens the dialog to create a new user.
Create new user group	Opens the dialog to create a new user group.
Edit object	Opens the dialog to edit the selected object.
Delete object	Deletes the selected object.

LOGIN

Control elements for logging into the Active Directory.

Control element	Description
Domain name	Entry and display of the domain name. Note: Element of the type <code>Dynamic text</code> . Functionality is assigned using the Screen type specific action property.
User name	Entry and display of the AD user name. Note: Element of the type <code>Dynamic text</code> . Functionality is assigned using the Screen type specific action property.
Password	Entry of the password. Note: Element of the type <code>Dynamic text</code> . Functionality is assigned using the Screen type specific action property.
Login	Clicking logs the user into the AD.
Logout	Clicking logs the user out.

COMPATIBLE ELEMENTS

Control elements that are replaced or removed by newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates.

Control element	Description
Domain name	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
User name	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
Password	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.

You can find details on use in zenon and configuration of the Active Directory in the **user administration** manual, in chapters:

- ▶ **Active Directory user administration with zenon Runtime**
- ▶ User administration with Microsoft Active Directory



Attention

Rights that are issued in zenon are applicable for the respective project or the workspace. Permissions that are issued in the Active Directory are applicable globally.

If rights have been issued to users or user groups of the Active Directory, then the rights for these users are applicable in all zenon projects!

18.5 Equipment Model

With an equipment model screen, the following is possible in Runtime:

- ▶ Other, already-open screens can be filtered for certain equipment groups.
- ▶ All functions linked to a certain equipment group are automatically listed consecutively.

Filtering for an equipment group always has an effect on the screens that have already been opened. If screens are called up again or reloaded, they are displayed again without the equipment model screen filter.

Note: With the **hierarchical filter** option, it is sufficient if a variable is linked to a level of the equipment model. This variable is automatically taken into account when filtering at superordinate levels.



Information

There are equipment models from global projects and local projects available. In the event of naming conflicts, local equipment projects are preferred.

Hint: Ensure that you use clear names when configuring equipment models. For example, give global equipment models a corresponding prefix or suffix. This way you avoid having the same names in local and global equipment models. And you can easily identify the origin of the displayed equipment model in selection lists.

You can find details on configuration and use of equipment model screens in the **Equipment modeling** manual in the **Equipment model screen type** and **Filtering in Runtime** chapters.

18.6 Faceplate

Faceplate is the term for a zenon screen that can accept several screens of different types using screen containers and display these consecutively in Runtime. For example, with faceplates:

- ▶ Several screens can be displayed in a screen at the same time
- ▶ Several time filters can be applied to the same screen type at the same time
- ▶ Data from a screen can be applied to another screen using a filter

CREATING A FACEPLATE SCREEN

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select **Faceplate** in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.

3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

PERMITTED SCREEN TYPES FOR FACEPLATES

The following screen types can be linked in faceplates:

- ▶ AML
- ▶ AML filter
- ▶ Equipment Model
- ▶ CEL
- ▶ CEL filter
- ▶ ETM
- ▶ HTML
- ▶ Report Generator
- ▶ Report Viewer
- ▶ Standard
- ▶ Time filter

FACEPLATES IN THE DETAIL VIEW

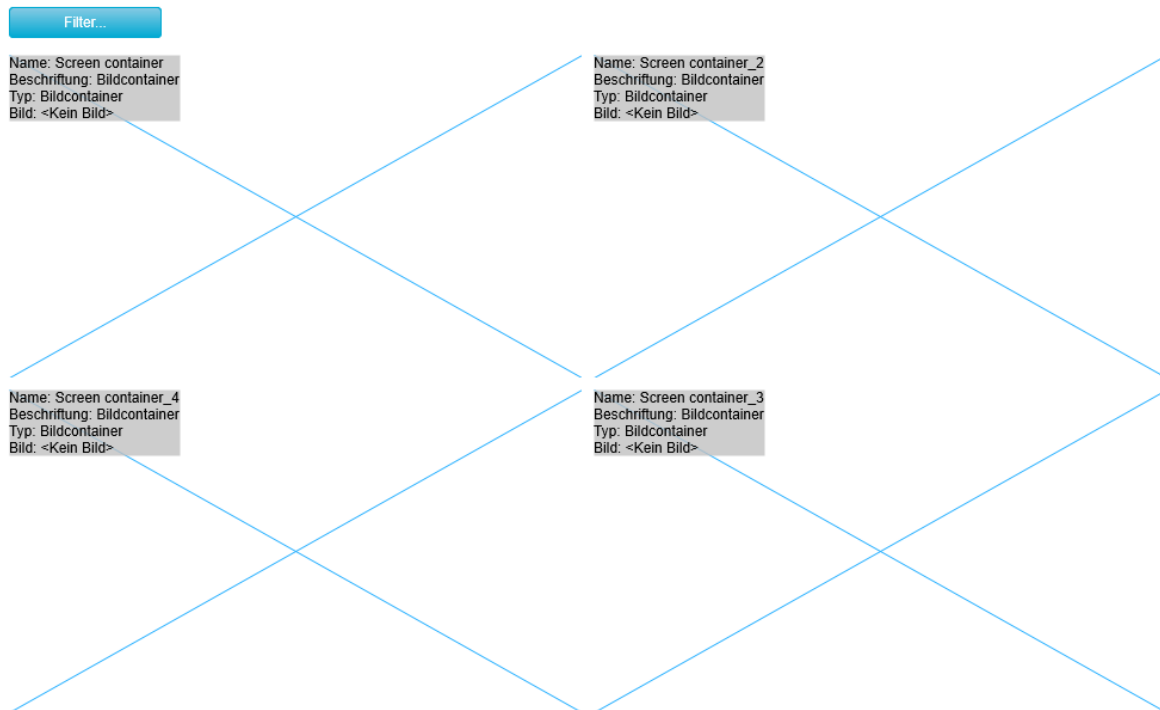
Subscreens linked in faceplates are displayed as a group below the faceplate screen in the detail view.

It is possible to filter the subscreens in the **Name** column. All subscreens appropriate to the filter and the respective faceplate are displayed. Subscreens can be copied, but no longer edited.

18.6.1 Creating a faceplate screen

A faceplate screen consists of screen containers and the optional buttons **Filter** and **Filter editable**.

SCREEN CONTAINER:



Screen containers show the name of the container and the name of the and type of linked screen. For screens that have already been linked, this information is accentuated by automatically-defined background colors. This information in the Editor thus always overlays the content of the linked screen that is positioned at the same location.

The size of the container can be adapted to the size of the linked screen. To do this, navigate to the **Accept size of linked screen** property in the **Position** group. Clicking on the ... button accepts the size of the linked screen for the container.

FACEPLATE SCREEN



Control elements	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p>
Screen container	<p>Element that is linked to an existing screen as displays the content of the linked screen in Runtime.</p> <p>Several screen containers can be used in a <i>faceplate</i> screen.</p> <p>If the option Border around dynamic elements (Tools -> Settings) has been activated, then a symbol is displayed in the upper right-hand corner. This indicates that the content is linked.</p> <p>The container contains information on the linked screen.</p>
Filter	<p>Calls up a window in Runtime with the filters configured in the Editor. Only filters that have been unlocked (on page 293) can be edited.</p>
Filter editable	<p>Calls up a window in Runtime with the filters configured in the Editor and allows the editing of all filters - regardless of the requirements (on page 293) in the Editor.</p>

CREATING A FACEPLATE SCREEN

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select *Faceplate* in the **Screen type** property.

- c) Select the desired frame in the **Frame** property.
- 3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
- 4. Create a screen switch function.

NOTES FOR PROJECT CONFIGURATION

You have the following options for linking a screen to a container:

- ▶ **Drag & drop:**
Move a screen into the container by dragging & dropping it. A symbol is displayed when the mouse is positioned over the target, which indicates if the screen can be linked.
Note: If several screens are moved to a container at the same time by dragging & dropping, the screen that is selected first is linked.
- ▶ **Selection via property:**
Select a screen using the properties screen in the Display properties group. Only permitted screen types are offered for linking.
- ▶ **Dialog in the container:**
Call up the dialog to select a screen by double-clicking on the empty screen container. Only permitted screen types are offered for linking.
Note: Double-clicking on a container that has already been filled opens the linked screen.

1.

Name: Screen container_1
Text: Screen container
Type: Screen container
Screen: Alarm (Alarm Message List)

Filter...

Filter profiles

Profile selection
Type: COMBOBOX
ID: 10004

Save Import

Header

Alarm Message list
Type: SysListView32
ID: 10022

Filter...

Filter editable...

Name: Screen container_2
Text: Screen container
Type: Screen container
Screen: CEL (Chronological Event List)

Filter...

Filter profiles

Profile selection
Type: COMBOBOX
ID: 10004

Save Import

Header

Chronologic event list
Type: SysListView32
ID: 10013

Hints:

- ▶ Double-clicking on the screen container opens:
 - With the screen container empty: the dialog to link a screen
 - With the screen container configured: the linked screen in the new tab
- ▶ The **Show preview in the Editor** property can be used to switch the display of the linked screen in the screen container on or off in the Editor. It is recommended that the display is turned off in the event of performance problems.

**Information**

*When giving it a name for the **Element name** property, ensure that there are unique identifications. This is how you ensure that there is a unique selection when creating screen switching.*

CREATING SCREEN CONTAINERS MANUALLY

To create screen containers manually:

1. Open the **Control elements** menu
2. Select **Screen container**.
3. Drag the screen container into the screen with the mouse.

The dialog for selecting a screen is opened.

4. Select the desired screen from the list and confirm this selection by clicking **OK**.
5. Assign a unique name for the screen container.

Repeat this step for desired screen containers.



Information

Only faceplates with permitted screen types can be created in the Editor. However, for the standard screen type, a screen type that is not permitted can subsequently be set. If such screen types are selected in the Editor, the linking is deleted. An empty container is shown in Runtime

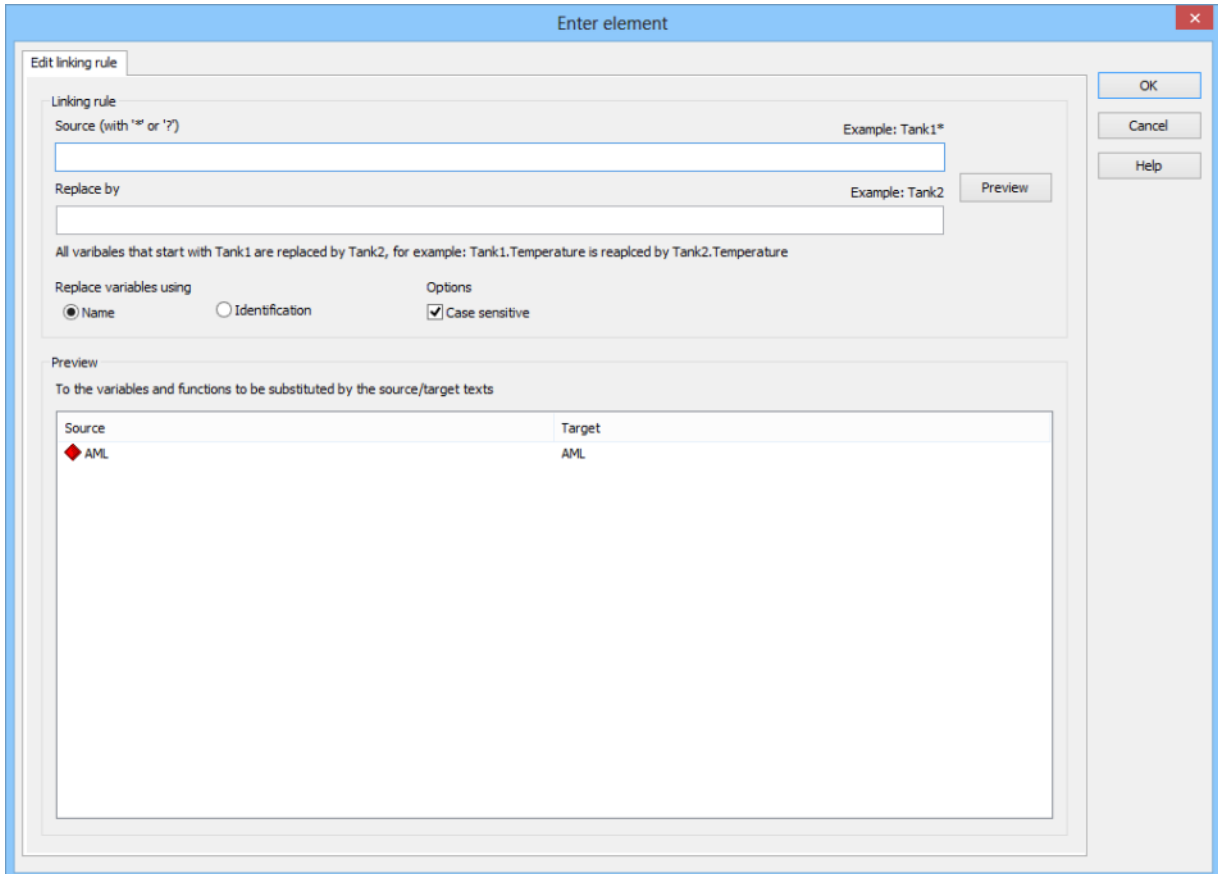
18.6.2 Replace links

Functions, variables, locking variables and ALC aliases linked in the container can be replaced automatically.

To replace links:

1. Navigate to the **Linking rule** group in the properties of the container.
2. Configure the corresponding replacements directly or use the dialog.
3. Clicking on the ... button in the **Preview** property opens the dialog to configure and preview the replacements.

Replacements for several containers can be undertaken at the same time using multiple selection. In this case, the rules must be defined using the properties. The dialog with the preview is then not available.



Enter element

Edit linking rule

Linking rule

Source (with * or ?) Example: Tank1*

Replace by Example: Tank2 Preview

All variables that start with Tank1 are replaced by Tank2, for example: Tank1.Temperature is replaced by Tank2.Temperature

Replace variables using Options

☒ Name ☐ Identification ☒ Case sensitive

Preview

To the variables and functions to be substituted by the source/target texts

Source	Target
AML	AML

LINKING RULE

Property	Description
Linking rule	Configuration of which character sequence can be replaced and how.
Source	Enter the character string to be searched for. Permitted wildcards: * and ? Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.
Replace by	Entry of the character string that is to be replaced.
Name	Swaps information in process variable names.
Identification	Exchanges information in the identification
Note capitalization	When swapping, be sure that any capitalization is an exact match.
Hierarchical names	Permitted combined names. Is not available for ALC aliases and faceplate containers (on page 284). These are always used without a symbol prefix.

PREVIEW

Property	Description
Preview	Display of the selected and replaced elements.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

You can find further details on automatic replacement of variables and functions in the chapter on **replacing linking of variables and functions** (on page 177).

Hint: Ensure that the variables are named (on page 178) clearly and sensibly from the start.

The defined linking rule is applied to the following objects if they are present in the screen:

- ▶ Functions
- ▶ Variables
- ▶ Interlocking variables
- ▶ ALC aliases

PROCEDURE

When switching to a faceplate screen, the linking rule for the objects to be replaced using the linking rule configured for the screen container is displayed in the preview list of the screen switching. The preview of the screen container also already shows the objects that have been replaced. Different screen containers can use the same screen, but define different linking rules.

In Runtime, only the replacement rule configured for the screen container is applied to the linked screen. Then, if configured, the linking rule is applied to the screen switching function.

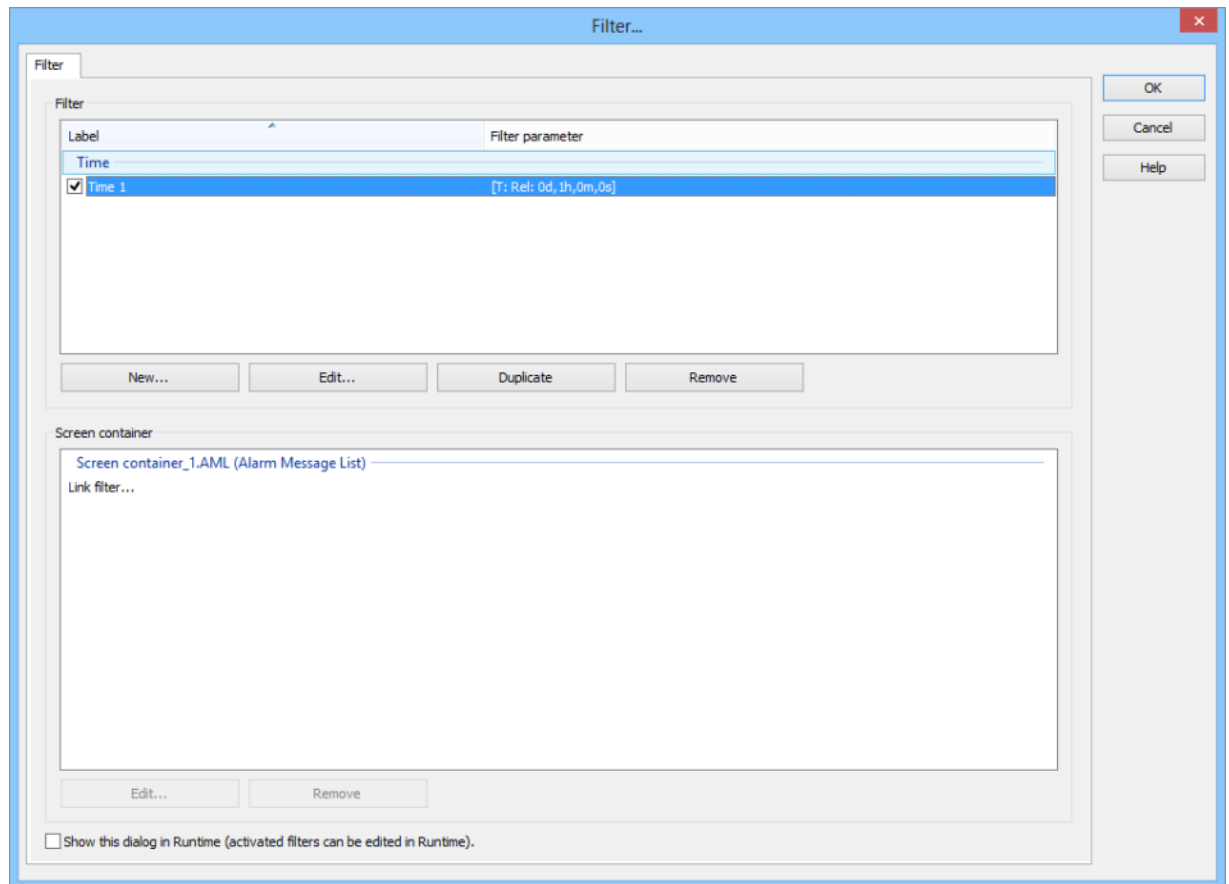
If a linking rule cannot be deleted in Runtime, a LOG entry is created.

18.6.3 Configuring screen switching

To create a new function to call up a `variable diagnosis` screen:

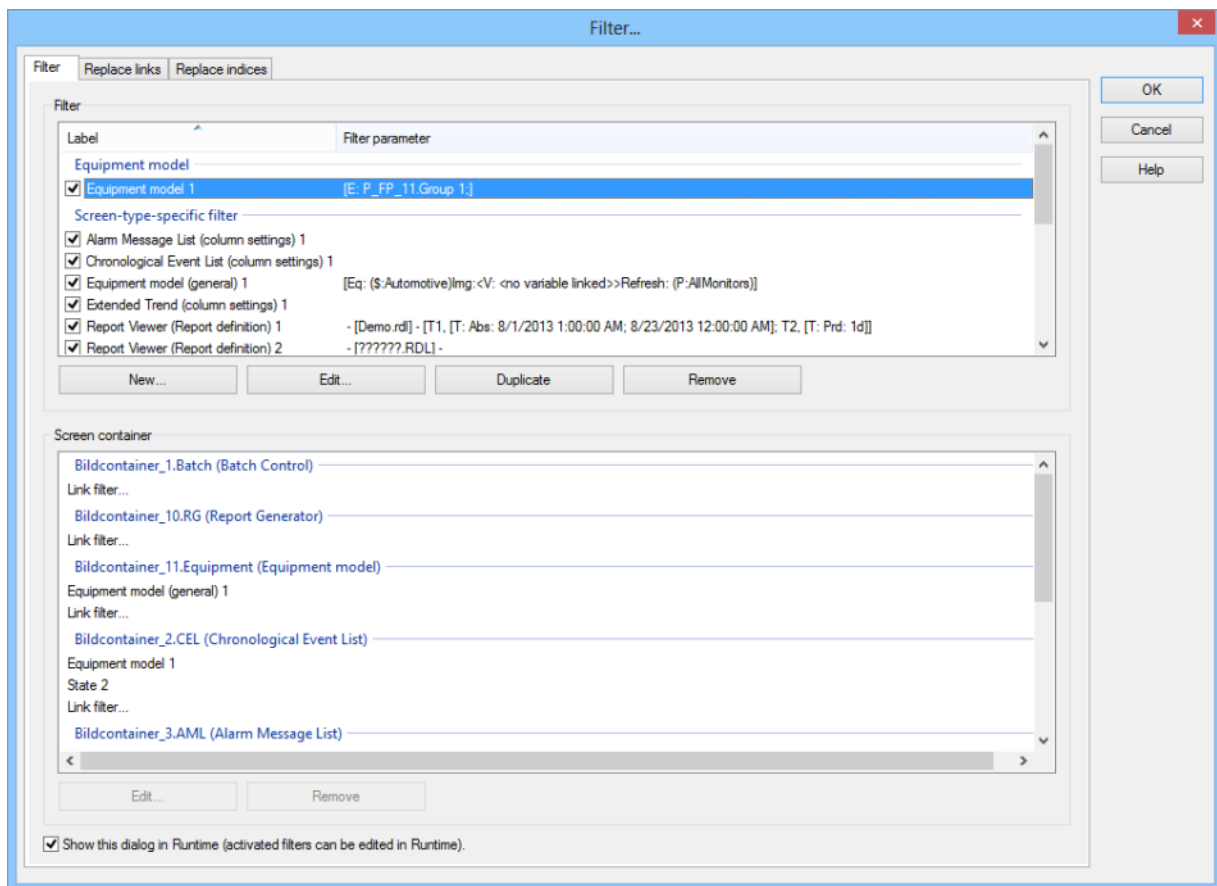
1. Select **New function**.
2. Select **Screen switching**.
3. Select `Faceplate` screen (on page 285) or a subscreen linked in the faceplate.

The dialog for configuring and linking filters is opened.



4. Configure (on page 300) the desired filter
Hint: You can configure different filters of the same type.
5. Link (on page 305) screen containers to the filter:
Note: Only filters that are supported by the screen type in the screen container can be supported.
AML, CEL, time and equipment model filters can be applied to subscreens
6. Confirm the configuration by clicking on the **OK** button.

FILTER DIALOG



Parameter	Description
Filter	Tab to configure the filters for screen containers in the faceplate.
Replace links	Tab in which the linked variables can be replaced.
Replace indices	Tab in which the indexes can be replaced.
List of filters	<p>List of all filters created. These filters can be allocated individual screen containers.</p> <p>The list is sorted alphabetically according to filter. The entries in each group can be sorted according to description or filter parameter by clicking on the column title.</p>
Checkbox	<p>Active: If the option Show this dialog in Runtime has been activated for the dialog, this filter is available in Runtime for configuration.</p> <p>Inactive: This filter cannot be selected in Runtime.</p> <p>Default: active</p>
New	<p>Opens the dialog (on page 300) to select a filter type and creates a new filter in the list accordingly.</p> <p>Shortcut: Ins . key.</p>
Edit	<p>Opens a configuration dialog depending on the filter type.</p> <p>The dialog can also be opened by double clicking on the filter in the list.</p>
Duplicate	Copies the selected filter and inserts it with a new name into the group of the corresponding filters.
Remove	<p>Removes the currently-selected filter from the list.</p> <p>Shortcut: Del key</p>
Screen container	Assignment of filters to screen containers.
List of filters	<p>Lists all screen containers and the respective linked filters.</p> <p>The names of the containers consist of: Identifiers for the screen container plus the name of the screen plus the screen type.</p> <p>Filters that have already been linked are displayed alphabetically below the container name. Each container entry has a Link filter button. Clicking the Link filter button opens the dialog to select a filter.</p>
Link filter	Clicking this opens the dialog (on page 305) to select a filter that is to be linked to the container. Only filters that can be linked to the selected container are shown.

	<p>Several filters per container can be selected, however not several screens of the same type. Filter types that are already linked to the respective screen container are no longer available for selection.</p> <p>This button is displayed for each screen container at the end of its filter list.</p>
Edit	<p>Opens a configuration dialog depending on the filter type.</p> <p>The dialog can also be opened by double clicking on the filter in the list.</p>
Remove	<p>Deletes the linking of the currently-selected filter to the screen container.</p> <p>Shortcut: Del key</p>
Show this dialog in the Runtime	<p>Active: This dialog is opened in Runtime before the function is executed.</p> <p>In Runtime, only filters whose checkboxes have been activated in the Editor and whose screen type is appropriate are offered for editing. All other filters are displayed but cannot be edited.</p> <p>Note: This setting can be overcome in Runtime in the screen with the Filter editable (on page 285) button.</p>
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

SUPPORTED SCREEN TYPES FOR OFFERING THE DIALOG IN RUNTIME

If the **Show this dialog in Runtime** option activated, the dialog to edit the filter is offered in Runtime before the screen switching is executed. Not all screen types support this in full.

List of the screen types and filters:

Key:

- ▶ X: available
- ▶ 1/2/3: with restrictions; see notes
- ▶ --: not available

Screen type	Filter	Can be edited in RT
Alarm Message List	Alarm Message List (general)	X
	Alarm Message List (column settings)	X
	Equipment Model	X
	Lots	1
	Project	X
	Status	X
	Text	X

	Time	2
Alarm Message List Filter	Alarm Message List filter (general)	X
	Lots	1
	Lot list (Column settings)	X
	Text	X
	Linked screens	--
	Time	2
Equipment Model	Equipment Model (general)	--
Chronological Event List	Equipment Model	X
	Lots	1
	Chronological Event List (general)	X
	Chronological Event List (column settings)	X
	Project	X
	Status	X
	Text	X
	Time	2
Chronological Event List Filter	Lots	1
	Lot list (Column settings)	X
	Chronological Event List filter (general)	X
	Text	X
	Linked screens	--
	Time	2
Extended Trend	Lots	1
	Extended Trend (general)	3
	Extended Trend (printer settings)	X
	Extended Trend (column settings)	X
	Time	2
HTML	HTML (general)	X
Report Generator	Report Generator (file)	X
	Report Generator (parameters)	X
	Lots	1

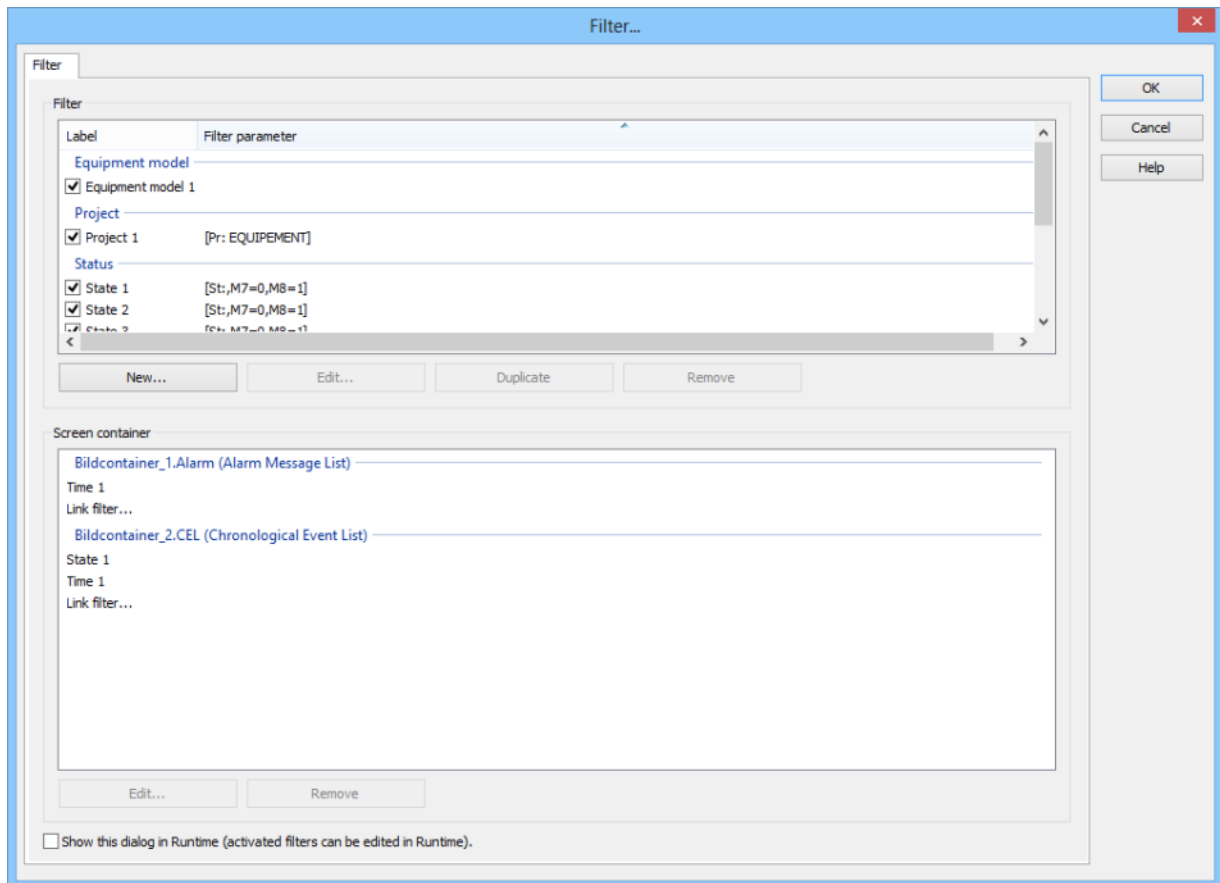
	Time	2
Report Viewer	Report Viewer (Report definition)	--
Standard		--
Time filter	Lots	1
	Lot list (Column settings)	X
	Linked screens	--
	Time	2

Notes:

- ▶ **1 - lots:** No lot filter or Apply lot filter directly.
No Name/archive from variable.
- ▶ **2 - Time:** Absolute/relative time period with preset only.
No time period.
- ▶ **3 - Extended Trend (general):** Same limitations as for **Extended Trend** screen switching, for example no switch of the data source, diagram type, etc.

Create a new filter

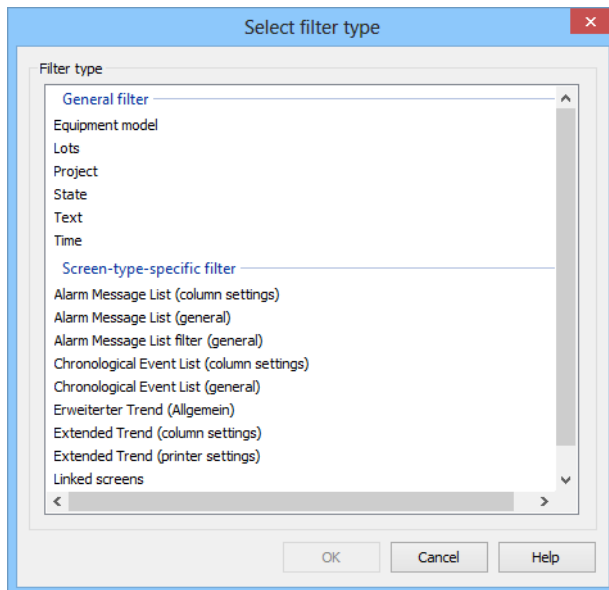
Filters for screen containers are created and administered in the upper area of the **Filter** tab.



To create a filter:

1. Click on the **New** button.

2. The dialog for selecting a filter type is opened.



3. The following are displayed:
 - General filters
 - Screen-type-specific filter
4. select the desired filter.
You can select several filters at the same time:
 - `Ctrl+mouse click`: selects all filters clicked
 - `Mouse click -> Shift key + mouse click`: selects all filters between the first and the second click
 - Clicking on the filter heading: selects all filters of this group
 - `Ctrl+A`: selects all filters
 - `Ctrl+D`: deselects all filters
 - `Shift+[character]`: selects the next filter that starts with the corresponding letter

If only one filter is selected, clicking on OK opens the corresponding configuration dialog. No dialog is opened if several filters are selected. Each selected filter must be configured manually once it has been created.
5. Configure the filter.
6. close the configuration by clicking **OK**.

FILTER TYPES

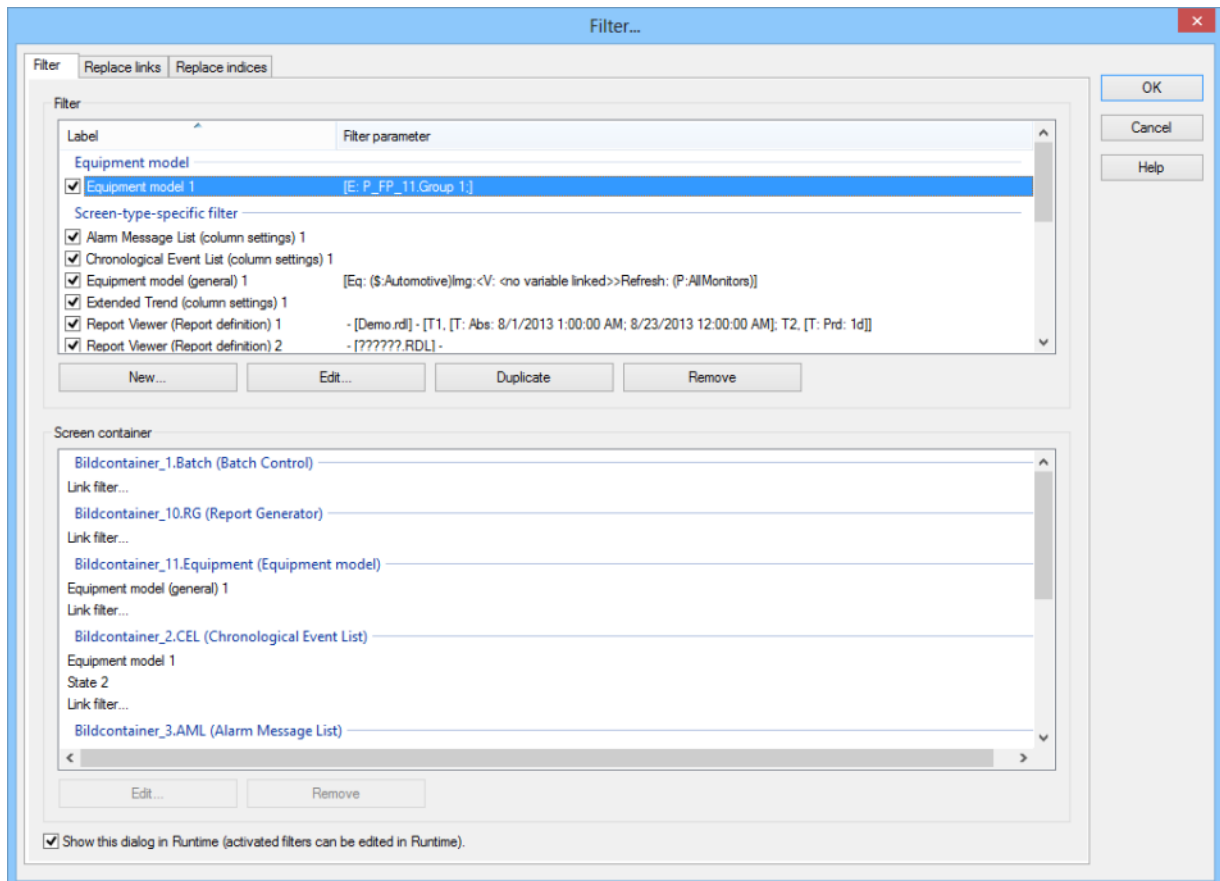
Different filter types are available for faceplates. During configuration, only filters that are suitable for the screen types present in the faceplate are offered. If, for example, none of the linked screen types uses lots, then the lot filter is also not offered.

Filter	Description
General filters	Filters that are available regardless of the configured screen types.
Time	Configuration of time filters.
Text	Limitation of the display to messages that contain certain search terms.
Lots	Configuration of a lot filter. Available if, in the faceplate, an AML, CEL, Extended Trend or Report Generator screen is linked.
Status	Configuration of the status that is to be filtered.
Equipment Model	Configuration of a filter for equipment groups from the global project or the local project.
Project	<i>Selection of the projects of an integration project that are to be filtered.</i> Note: Generally only available if several projects have been created in an integration project. With the filter configuration for faceplates, the project filter is also offered for individual projects.
Screen-type-specific filter	Filters that are available depending on the configured screen types.
Alarm Message List (general)	Configuration of which alarms are displayed.
Alarm Message List (column settings)	Configuration of which columns of the AML are displayed, including the sequence and sorting.
Equipment Model (general)	Configuration of the filter for an equipment model screen.
Chronological Event List (general)	Configuration of which events are displayed.
Chronological Event List (column settings)	Configuration of which columns of the CEL are displayed, including the sequence and sorting.
Extended Trend (general)	Configuration of the following settings for Extended Trend: <ul style="list-style-type: none"> ▶ Data ▶ Representation ▶ X-axis
Extended Trend (printer settings)	Configuration of the printer settings for Extended Trend.
Extended Trend (column settings)	Configuration of the column settings for Extended Trend.

HTML (general)	Configuration of the filter for an HTML (on page 426) screen.
Report Generator (file)	Configuration of the report file of the Report Generator to be called up.
Report Generator (parameters)	Configuration of the parameters of the Report Generator to be used.
Report Viewer (Report definition)	Configuration of the report definitions of the Report Viewer to be used.
Linked screens	Configuration of the linked screens (on page 377) for time filters, Alarm Message List (on page 377) and Chronological Event List (on page 377).

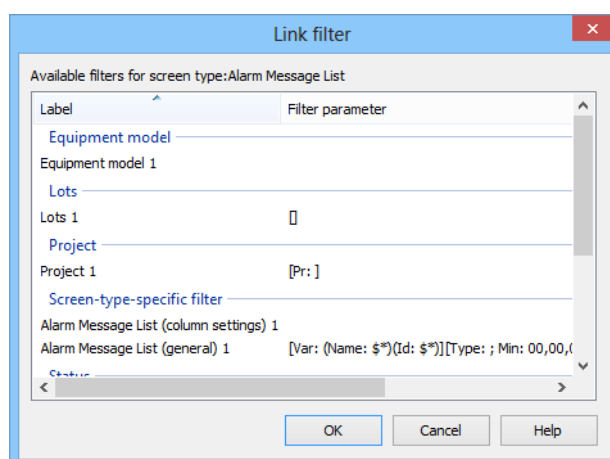
Link filter

Filters for screen containers are linked and administered in the lower area of the **Filter** tab.



To link a screen container to a filter:

1. Click, in the screen container window, on the **Link filter** button.
2. The dialog to link a filter is opened



3. Select the desired filter.
4. Confirm the linking by clicking on the OK button

SELECTION OF FILTER FOR LINKING

Several filters can be linked to each screen container. However only one filter can be linked per filter type. Filter types that are already linked to the respective screen container are no longer available for selection.

The list of filters is sorted alphabetically according to filter. The entries in each group can be sorted according to **description** or **filter parameter** by clicking on the column title.

Several filters can be selected at the same time.

- ▶ Shortcut `Ctrl+mouse click`: selects all filters clicked
- ▶ Mouse click -> Shift key + mouse click: selects all filters between the first and the second click
- ▶ Clicking on the filter heading: selects all filters of this group
- ▶ `Ctrl+A`: selects all filters
- ▶ `Ctrl+D`: deselects all filters
- ▶ `Shift+[character]`: selects the next filter that starts with the corresponding letter

Transfer of filters when screen switching to other screen types

For screen switching to certain screen types, `Faceplate` screens or subscreens of a faceplate can be selected as the screen to be called up or screen to be refreshed. If the `faceplate` screen is selected as the screen to be updated, the filter is applied to all suitable subscreens.

Screen types that allow faceplates and subscreens as a source/target with screen switching:

- ▶ AML filter
- ▶ Equipment Model
- ▶ CEL filter
- ▶ Time filter

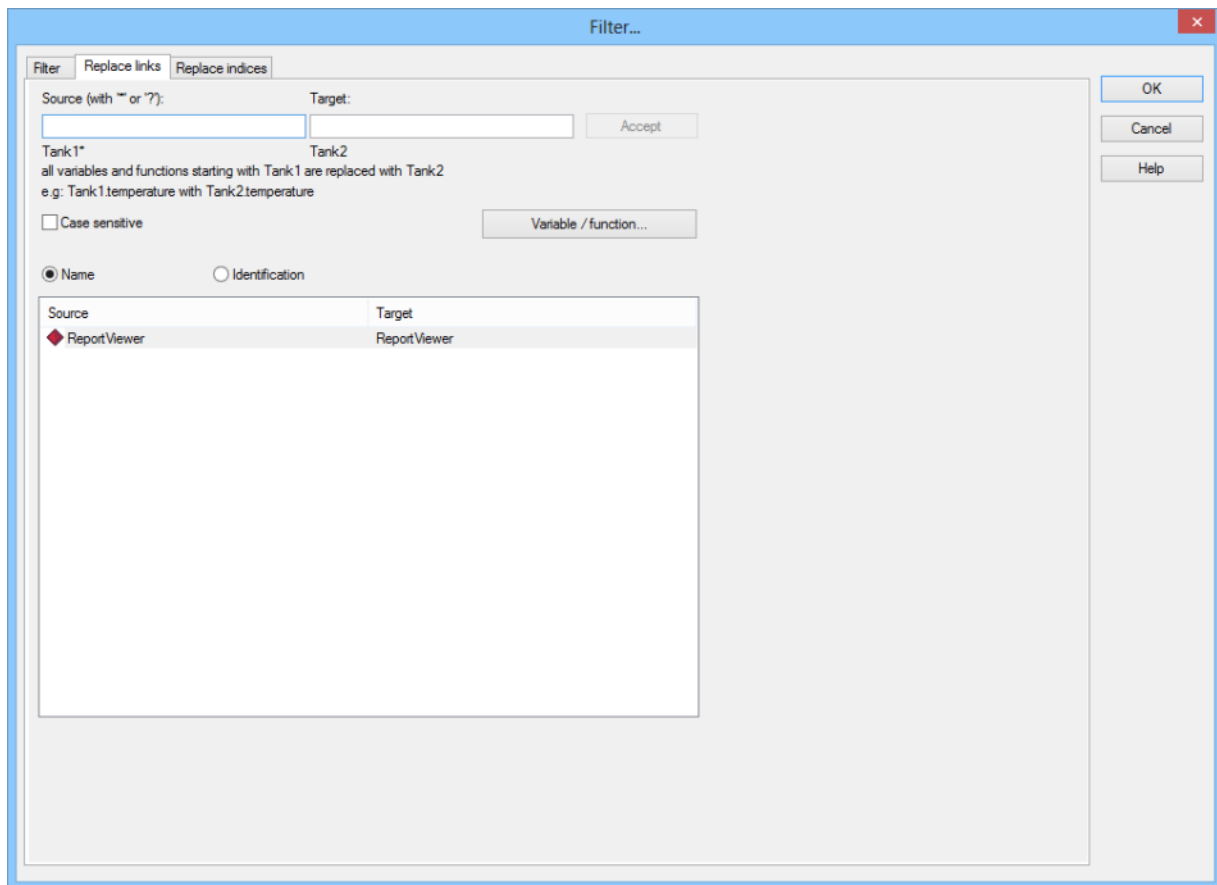
Supported screen containers in the faceplate that is selected as the **screen to be updated**:

- ▶ AML
- ▶ AML filter
- ▶ Equipment Model
- ▶ CEL
- ▶ CEL filter
- ▶ Extended Trend

- Time filter

Replace linking and indexes

In this tab, all variables and functions of linked screens are listed. These can also be replaced automatically as with other screen switching.



For details see:

- Replacing linking of variables and functions (on page 177)
- Replacing linking with screen switching (on page 182)
- Replace indices (on page 187)

PARTICULAR FEATURE WHEN REPLACING FACEPLATE SCREENS

The settings for the replacement of variables and functions are applied not just in a `faceplate` screen, but also in all embedded screens. Replacements that have already been configured (on page 290) for the container via the properties of the **Linking rule** group are displayed in the **Replace linking** tab. In

Runtime, only the replacement rule configured for the screen container is applied to the linked screen. Then, if configured, the linking rule is applied to the screen switching function.

EXAMPLE:

Initial situation:

- ▶ The faceplate screen contains a variable, **Test1**, and a screen, **CEL**.
- ▶ The CEL screen also contains a variable **Test1**.
- ▶ When switching screens, the variable **Test1** is replaced by **Test2**.

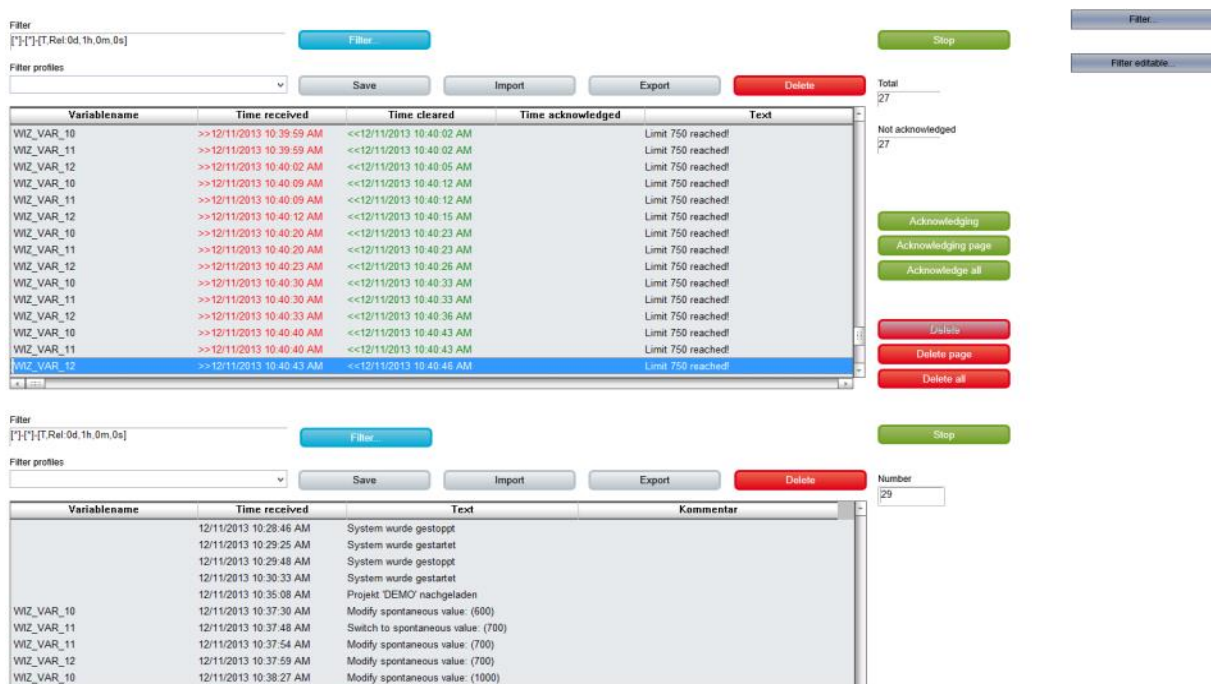
Result:

- ▶ The faceplate screen is called up and displays, instead of the variable **Test1**, the variable **Test2**.
- ▶ The linked **CEL** screen is displayed as embedded.
- ▶ The variable **Test1** is also replaced by **Test2** in the CEL screen.

18.6.4 Use faceplate in Runtime

In Runtime, at places where screen containers are placed, the screens linked in these are displayed. The screens take on the size of their screen container and can be operated in the same way as all other switched screens.

Two containers with different screens are shown in the following faceplate screen.



Filter: [1][1][T:Rel Od, 1h, 0m, 0s]

Filter profiles: [v]

Buttons: Filter, Save, Import, Export, Delete, Stop, Filter editable

Variablename	Time received	Time cleared	Time acknowledged	Text
WIZ_VAR_10	>>12/11/2013 10:39:59 AM	<<12/11/2013 10:40:02 AM		Limit 750 reached!
WIZ_VAR_11	>>12/11/2013 10:39:59 AM	<<12/11/2013 10:40:02 AM		Limit 750 reached!
WIZ_VAR_12	>>12/11/2013 10:40:02 AM	<<12/11/2013 10:40:05 AM		Limit 750 reached!
WIZ_VAR_10	>>12/11/2013 10:40:09 AM	<<12/11/2013 10:40:12 AM		Limit 750 reached!
WIZ_VAR_11	>>12/11/2013 10:40:09 AM	<<12/11/2013 10:40:12 AM		Limit 750 reached!
WIZ_VAR_12	>>12/11/2013 10:40:12 AM	<<12/11/2013 10:40:15 AM		Limit 750 reached!
WIZ_VAR_10	>>12/11/2013 10:40:20 AM	<<12/11/2013 10:40:23 AM		Limit 750 reached!
WIZ_VAR_11	>>12/11/2013 10:40:20 AM	<<12/11/2013 10:40:23 AM		Limit 750 reached!
WIZ_VAR_12	>>12/11/2013 10:40:23 AM	<<12/11/2013 10:40:26 AM		Limit 750 reached!
WIZ_VAR_10	>>12/11/2013 10:40:30 AM	<<12/11/2013 10:40:33 AM		Limit 750 reached!
WIZ_VAR_11	>>12/11/2013 10:40:30 AM	<<12/11/2013 10:40:33 AM		Limit 750 reached!
WIZ_VAR_12	>>12/11/2013 10:40:33 AM	<<12/11/2013 10:40:36 AM		Limit 750 reached!
WIZ_VAR_10	>>12/11/2013 10:40:40 AM	<<12/11/2013 10:40:43 AM		Limit 750 reached!
WIZ_VAR_11	>>12/11/2013 10:40:40 AM	<<12/11/2013 10:40:43 AM		Limit 750 reached!
WIZ_VAR_12	>>12/11/2013 10:40:43 AM	<<12/11/2013 10:40:46 AM		Limit 750 reached!

Buttons: Acknowledging, Acknowledging page, Acknowledge all, Delete, Delete page, Delete all, Stop

Filter: [1][1][T:Rel Od, 1h, 0m, 0s]

Filter profiles: [v]

Buttons: Filter, Save, Import, Export, Delete, Stop, Number

Variablename	Time received	Text	Kommentar
	12/11/2013 10:28:46 AM	System wurde gestoppt	
	12/11/2013 10:29:25 AM	System wurde gestartet	
	12/11/2013 10:29:48 AM	System wurde gestoppt	
	12/11/2013 10:30:33 AM	System wurde gestartet	
	12/11/2013 10:35:08 AM	Projekt 'DEMO' nachgeladen	
WIZ_VAR_10	12/11/2013 10:37:30 AM	Modify spontaneous value: (600)	
WIZ_VAR_11	12/11/2013 10:37:48 AM	Switch to spontaneous value: (700)	
WIZ_VAR_11	12/11/2013 10:37:54 AM	Modify spontaneous value: (700)	
WIZ_VAR_12	12/11/2013 10:37:59 AM	Modify spontaneous value: (700)	
WIZ_VAR_10	12/11/2013 10:38:27 AM	Modify spontaneous value: (1000)	



Information

Only faceplates with permitted screen types can be created in the Editor. However, for the standard screen type, a screen type that is not permitted can subsequently be set. If such screen types are selected in the Editor, the linking is deleted. An empty container is shown in Runtime

CHANGES TO FRAMES AND SCREENS

The screens in the containers are adapted to borders and frames.

The screen to be displayed is cut accordingly if:

- ▶ The frame has been configured to be smaller than the screen that it is to display
- ▶ A faceplate screen has been called up as a pop-up and its size has been changed

Editing filters

The filters for the screens in the screen containers configured in the Editor can be edited depending on the settings in Runtime.

FILTER CANNOT BE EDITED

In order for there to be no possibility of editing a filter when a screen is called up in Runtime, deactivate the **Show this dialog in Runtime (activated filters can be edited in Runtime)** option in the Configuration of screen switching (on page 293).

This block can be circumvented with the **Filter editable** button.

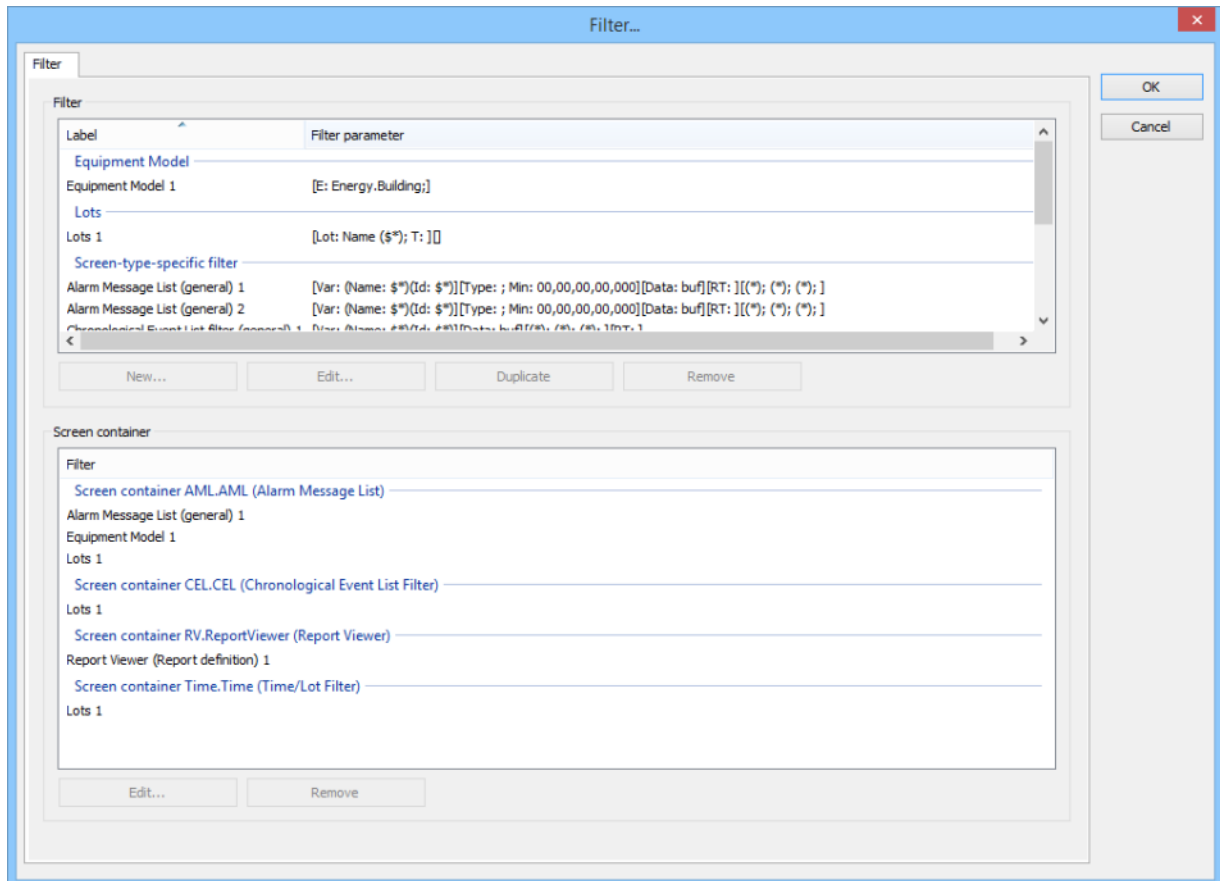
SELECTED FILTER EDITABLE

In order for filters to be able to be edited in Runtime when a screen is called up:

- ▶ Activate, in the configuration of screen switching (on page 293),
 - in the **Filter** list, the checkbox for each desired filter
 - The **Show this dialog in Runtime (activated filters can be edited in Runtime)** option.

Note: Note the limitations (on page 293) for supported screen types in the **Supported screen types for offering the dialog in Runtime** section.

The dialog to select and edit the filter is displayed in Runtime when the screen is called up. All filters approved for editing can be selected and edited. All other filters are blocked. However, blocked filters can also be unlocked with the **Filter editable** button.



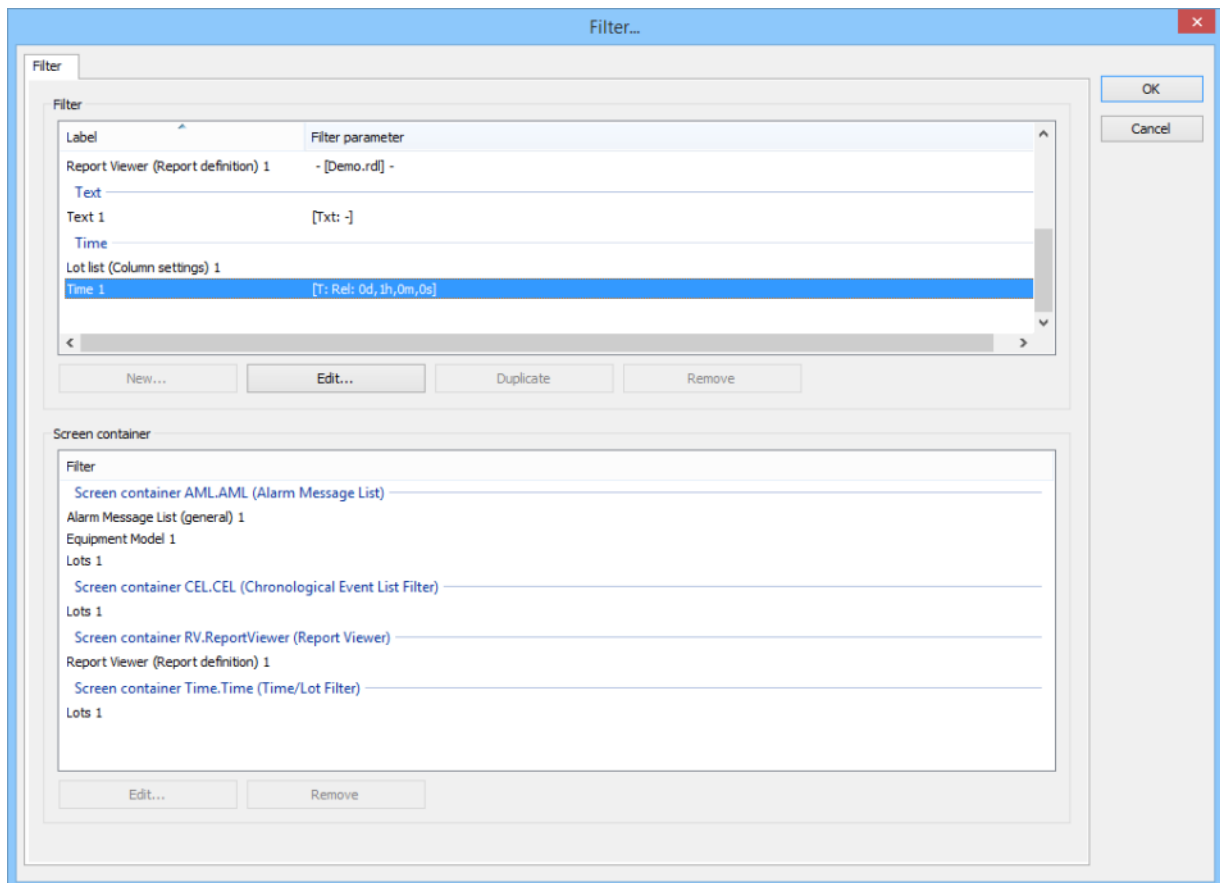
DISPLAY AND EDIT ALL FILTERS IN RUNTIME

The dialog with all filters freely editable can be called up in Runtime with the **Filter editable** button (on page 285).

If filters are only to be edited to a limited extent, but a user is to have unlimited access, then:

1. Configure the screen switching with limited/no access possibilities for the filter
2. Create a **Filter editable** button
3. Grant corresponding access rights for the button, for users and user groups

In Runtime, the filters can only be edited as stipulated in the screen switching. However the users authorized for the button can edit all configurable filters.



18.7 Filter screens

You use filter screens to design individual filter pages with their own filter dialogs. You can do this according to aspects such as touch operation, filtering of special areas only, ability to switch languages, etc.

The following is provided as filter screens:

- ▶ Alarm Message List Filter
- ▶ Chronological Event List Filter
- ▶ Time/Lot/Shift filter

18.7.1 Creating filter screens

This is how you create filter screens:

- ▶ Alarm Message List Filter (on page 312)
- ▶ Chronological Event List Filter (on page 333)
- ▶ Time/Lot/Shift filter (on page 354)

Creating an Alarm Message List filter screen

It is possible to adjust filter settings for the Alarm Message List in Runtime with the help of the Alarm Message List Filter screen. Only the filter elements that are actually required are configured and provided to the user. The appearance can also be freely defined and thus adapted to different end devices. All filter settings that are available in the filter for the function to switch the screen to the Chronological Event List screen can be configured.

Therefore:

- ▶ Only the filter elements that are actually required are configured and provided to the user.
- ▶ The user only has these filters displayed and has an overview
- ▶ The appearance can be freely defined and can, for example, ensure ease of use by means of a touch screen.

For details of use in Runtime, see Using the Alarm Message List Filter chapter.

For the definition of filter criteria, see Filter Alarm Message List Filter chapter.



Attention

*Screens of type **Alarm Message List Filter**, **Chronological Event List Filter** and **Time Filter** must be engineered with an own frame. If they use the same frame as other screens, all screens based on this frame are closed when the screen is closed.*

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools**, **Settings** and **Use assistant**:

1. Create a new screen.

To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.

2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) In the **Screen type** property, select `Alarm Message List` filter.
 - c) Select the desired frame in the **Frame** property.
Note: The `AML` filter screen must not be based on the same frame as other screens!
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
 The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

Variable filter

Variable name

Identification

☐ Case sensitivity

☐ Show list without refresh

☐ Non-acknowledged alarms only
☐ Current alarms only
☐ Cleared alarms only
☐ Comment required

Origin of the data
☐ Ring buffer
☐ Historic data

Maximum number

Time filter

Filter type

Typ: COMBOBOX

From

From year	From month	From day	From hour	From minute	From second
Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX
ID: 10003	ID: 10002	ID: 10001	ID: 10004	ID: 10005	ID: 10006

Until

Until year	Until month	Until day	Until hour	Until minute	Until second
Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX	Typ: COMBOBOX
ID: 10009	ID: 10008	ID: 10007	ID: 10010	ID: 10011	ID: 10012

Current time

Minimum time active

Day	Second	Minute	Hour	Millisecond
Minimum time alarm	Minimum time alarm	Minimum time alarm	Minimum time alarm	Minimum time alarm
Typ: EDIT	Typ: EDIT	Typ: EDIT	Typ: EDIT	Typ: EDIT

Text filter

☐ No text filter

☒ Search for (word separated by space)

Search text

☐ Case sensitivity
☐ Words do not need to appear in full within the text
☐ At least one word has to appear in the text
☐ All words must be in the text
☐ Filter string must exactly be in the text

Control elements

The Alarm Message filter screen can contain the following control and display elements.

INSERT TEMPLATE

Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p> <p>You can read more about templates for this screen type in the Templates (on page 331) chapter.</p>

GENERAL FILTERS

Drop-down list of different general filters.

Control element	Description
Insert all elements: General filters	Inserts all elements from the area of general filters into pre-defined places. Elements can be arranged individually.
Insert all elements: General filter (Touch)	Inserts all elements from the area of general filters into pre-defined places. Elements can be arranged individually. The elements were optimized for touch operation.
Variables	Alarms of which variables are displayed:
▶ Name	Filter according to names of variables.
▶ Identification	Filter according to identification of variables.
▶ Case sensitive	Note capitalization when filtering the variables.
Type of alarms	Which alarms are displayed:
▶ Only not acknowledged alarms	Only non-acknowledged alarms.
▶ Only cleared alarms	Cleared alarms only.
▶ Only current alarms	Current alarms only
▶ Comment required	Alarms that require a comment when acknowledged.
▶ Alarm cause required	Alarms whose acknowledgment requires the linking of an alarm cause.

Minimum time active alarms	Time for which alarms must be active as a minimum.
▶ Days	Only alarms that have been current for at least the given number of days.
▶ Hours	Only alarms that have been current for at least the given number of hours.
▶ Minutes	Only alarms that have been current for at least the given number of minutes.
▶ Seconds	Only alarms that have been current for at least the given number of seconds.
▶ Milliseconds	Only alarms that have been current for at least the given number of milliseconds.
Minimum time active alarms (touch)	<p>Elements optimized for touch operation for configuration of the minimum time for pending alarms.</p> <ul style="list-style-type: none"> ▶ Button: Days (up) ▶ Touchbox: Days ▶ Button: Days (down) ▶ Button: Hours (up) ▶ Touchbox: Hours ▶ Button: Hours (down) ▶ Button: Minutes (up) ▶ Touchbox: Minutes ▶ Button: Minutes (down) ▶ Button: Seconds (up) ▶ Touchbox: Seconds ▶ Button: Seconds (down) ▶ Button: Milliseconds (up) ▶ Touchbox: Milliseconds ▶ Button: Milliseconds (down)
Origin of the data	Where does the data come from:
▶ Ring buffer	From the ring buffer.
▶ Historical data	From an archive.
▶ Maximum number (input field)	Input of the maximum alarms to be displayed when historical alarms are displayed.

	0: displays all
Alarm/event groups/alarm/event classes/alarm areas	List field for grouped display:
▶ Alarm/event groups	Alarm/event groups
▶ Alarm/event classes	Alarm/event classes
▶ Alarm Areas	Alarm areas Note: If the Use hierarchical alarming of the Equipment Model property is activated, the Alarm area column is empty. The checkbox is in the alarm handling item of the variable properties.
Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (<i>dynamic text</i>, <i>switch</i>) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <p>For the description, see current elements.</p> <p>Variables</p> <ul style="list-style-type: none"> ▶ Name ▶ Identification <p>Type of alarm</p> <ul style="list-style-type: none"> ▶ Only non-acknowledged alarms ▶ Only cleared alarms ▶ Only current alarms ▶ Comment required <p>Origin of the data</p> <ul style="list-style-type: none"> ▶ Ring buffer ▶ Historic data ▶ Maximum number (input field)

TIME FILTER

Elements for time filters.

Control element	Description
Insert all elements	Opens drop-down list to select pre-defined elements for certain time periods.
Absolute time period - classic display	Elements for the absolute time period in classic display.
Absolute time period - compact display	Elements for the absolute time period in compact display.
Relative time period	Elements for the relative time period.
Starting from HH:MM:SS	Elements for a time period from a defined time.
Starting from day - HH:MM:SS	Elements for a time period from a defined day at a defined time.
Starting from day, month - HH:MM:SS	Elements for a time period from a defined day in a defined month at a defined time.
Time period: 15/30/60 minutes	Elements for a time period of 15, 30 or 60 minutes.
Time period - one day	Elements for a time period of one day.
Time period - 1 or 2 weeks	<p>Elements for a time period over one or two weeks.</p> <p>Each week can be selected, both for the view for a week as well as for the view for two weeks. With the two-week view, a time period of 14 days is selected, depending on the week selected.</p>
Time period - one month	Elements for a time period of one month.
Time period - one year	Elements for a time period of one year.
Insert all elements (Touch)	<p>Opens the drop-down list to select pre-defined elements for certain time periods, which have been optimized for touch operation. Like Insert all elements, the following are available:</p> <ul style="list-style-type: none"> ▸ Absolute time period - classic display ▸ Relative time period ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - at HH:MM:SS ▸ Time period - 15/30/60 minutes ▸ Time period - one day ▸ Time period - 1 or 2 weeks

	<ul style="list-style-type: none">▶ Time period - one month▶ Time period - one year
--	--

Set filter type (Display)	Dynamic text element for the display of the set filter type.
Time filter type (label)	Labeling for time filter type.
Time filter type (combobox)	Combobox: Time filter type
Time filter type (radio group)	<p>Switch elements that show or hide certain elements in Runtime:</p> <ul style="list-style-type: none"> ‣ No filter ‣ Absolute time filter ‣ Relative time filter ‣ Starting from day, month - HH:MM:SS ‣ Starting from day - HH:MM:SS ‣ Starting from HH:MM:SS ‣ Time period 15 minutes ‣ Time period 30 minutes ‣ Time period 60 minutes ‣ Time period 1 day ‣ Time period 1 week ‣ Time period 2 weeks ‣ Time period 1 month ‣ Time period 1 year
Time from	<p>Fields and labeling for stating "from" time.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ From day (label) ‣ From day (combobox) ‣ From hour (label) ‣ From hour (combobox) ‣ From minute (label) ‣ From minute (combobox) ‣ From second (label) ‣ From second (combobox)

	<p>► From (spin control)</p>
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Time to	<p>Fields and labeling for stating "to" time.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (combobox) ‣ To month (label) ‣ To month (combobox) ‣ To day (label) ‣ To day (combobox) ‣ To hour (label) ‣ To hour (combobox) ‣ To minute (label) ‣ To minute (combobox) ‣ To second (label) ‣ To second (combobox) ‣ To (spin control)
Time from (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ From hour (label) ‣ From hour (button: up) ‣ From hour (Touch box) ‣ From hour (button: down) ‣ From minute (label) ‣ From minute (button: up)

	<ul style="list-style-type: none">▶ From minute (Touch box)▶ From minute (button: down)▶ From second (label)▶ From second (button: up)▶ From second (Touch box)▶ From second (button: down)
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Time to (Touch)	<p>Fields and labeling for stating "to" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (button: up) ‣ To year (Touch box) ‣ To year (button: down) ‣ To month (label) ‣ To month (button: up) ‣ To month (Touch box) ‣ To month (button: down) ‣ To day (label) ‣ To day (button: up) ‣ To day (Touch box) ‣ To day (button: down) ‣ To hour (label) ‣ To hour (button: up) ‣ To hour (Touch box) ‣ To hour (button: down) ‣ To minute (label) ‣ To minute (button: up) ‣ To minute (Touch box) ‣ To minute (button: down) ‣ To second (label) ‣ To second (button: up) ‣ To second (Touch box) ‣ To second (button: down)
Filter absolute time	<p>Fields and labeling for stating absolute time filter.</p> <ul style="list-style-type: none"> ‣ From (label) ‣ From date (calendar display) ‣ From date (date display) ‣ From time (time display) ‣ To (label) ‣ To date (calendar display) ‣ To date (date display)

	<ul style="list-style-type: none">▶ To time (time display)
--	--

Time period	<p>Fields and labeling for stating time periods.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ Week (label) ‣ Week (combobox) ‣ From day (label) ‣ From day (combobox) ‣ Start time (label) ‣ Start time (combobox)
Time period (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ Week (label) ‣ Week (button:up) ‣ Week (touchbox) ‣ Week (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ Start time (label) ‣ Start time (button:up) ‣ Start time (Touch box) ‣ Start time (button:down)
Compatible elements	Control elements that are replaced or removed by

	<p>newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <ul style="list-style-type: none">▶ Time filter type (radio group) Radiobutton Win32 control elements. Has been replaced by <code>switch elements</code>. For the description, see current elements.▶ Set time filter type (display) Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
--	---

LOT FILTER

Elements for lot selection in Runtime.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Archive list	<p>List of archives available in Runtime.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Archive list status	<p>Status of the archive list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Lot list	<p>List of available lots.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Lot list status	<p>Status of the lot list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Apply time filter to lot list	Applies the configured time filter to the selection in the lot list.
Lot name filter (Input field)	Entry of a character sequence for filtering the lot names

	in the lot list.
Lot name filter (Button)	Button to execute filtering for lot names. Deactivated if the Lot name filter element is not present.
Compatible elements	Control elements that are replaced or removed by newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates. The following Win32 elements were replaced by dynamic text elements. <ul style="list-style-type: none">▶ Archive list status▶ Lot list status▶ Lot name filter (Input field)

SHIFT FILTER

Drop-down list for element of the shift filter.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Shift list	List of available shifts.
Status of the shift list	Status of the shift list with number for: <ul style="list-style-type: none"> ▸ Total ▸ Filtered ▸ Selected
Update shift list	Clicking on the button updates the display of the shift list .

TEXT FILTER

Drop-down list of different text filters (on page 386).

Control element	Description
Insert all elements: Text filter	Inserts all elements for text filters.
No text filter	Radio button to deselect text filter.
Search for (separate words by Space)	Radio button to activate the search
Text: Search text	Labeling for search field.
Input field: Search text	Field for input of search term.
Options	Search options
▸ Case sensitive	Capitalization must be noted.
▸ Words do not need to be in the text completely	Fragments can also be searched for.
▸ At least one word must be in the text	At least one search term from several must be in the result.
▸ All words must be in the text	All search terms must be included in the result.
▸ Exact filter text must be in the text	Exact text from the input field must be contained in the result.

Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (<code>dynamic text</code>, <code>switch</code>) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <p>For the description, see current elements.</p> <ul style="list-style-type: none"> ▶ No text filter ▶ Search for (separate words by Space) ▶ Input field: Search text ▶ Case sensitivity ▶ Words do not need to appear in full within the text ▶ At least one word should be in the text ▶ All words must exist in the text ▶ Filter string has to appear exactly in the text
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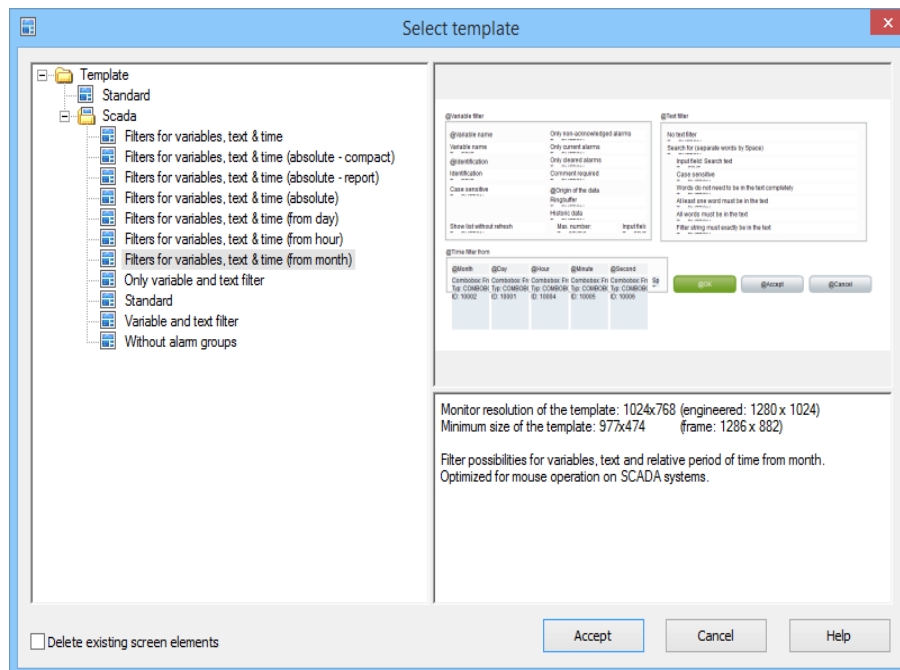
BUTTONS

Buttons in Runtime.

OK	<p>Button: Applies the filter settings and closes the screen.</p> <p>Note on faceplates: In faceplates, <code>AML filter</code>, <code>CEL filter</code> and <code>time/lot/shift filter</code> screens can be used. When configuring these in Runtime, clicking on OK closes the complete faceplate. If the filter settings are to be saved and the faceplate is to stay open, click on Accept.</p>
Cancel	Button: Cancels the configuration of the filter settings.
Apply	Button: Accepts the filter settings.
Update	Button: Updates the filtered display.

Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (<code>dynamic text</code>, <code>switch</code>) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <ul style="list-style-type: none"> ▶ Show list without refresh
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Template



Template	Description
List field templates (left)	Displays all pre-defined and user-defined template.
Preview and description (right)	Shows preview and description of the selected template.
Standard	Inserts standard elements.
Scada	Special templates, optimized for mouse operation.
Only variable & text filter	Adds elements for filtering for variables and text.
Without alarm groups	Adds elements for filtering for variables, text and pending minimum time without alarm groups.
Standard	Inserts standard elements.
Filters for variables, text & time	Adds elements for filtering for variables, text and time.
Filters for variables, text & time (from month)	Adds variables for filtering for variables, text and relative time range <i>from month</i> .
Filters for variables, text & time (from hour)	Adds variables for filtering for variables, text and relative time range <i>from hour</i> .
Filters for variables, text & time (from day)	Adds variables for filtering for variables, text and relative time range <i>from day</i> .
Filters for variables, text & time (absolute - table)	Adds elements for filtering for variables, text and absolute time range.
Filters for variables, text & time (absolute - compact)	Adds elements for filtering for variables, text and absolute time range in compact form.
Filters for variables, text & time (absolute)	Adds elements for filtering for variables, text and absolute time range.

CLOSE DIALOG

Button	Description
Delete existing screen elements	Active: Pre-existing elements in the screen are deleted when the template is applied.
Apply	Adds the selected template to the screen and closes the dialog.
Cancel	Closes dialog without inserting elements.
Help	Opens online help.

Create a screen of the type CEL Filter

It is possible to adjust filter settings for the Chronological Event List in Runtime with the help of the `Chronological Event List Filter` screen. Only the filter elements that are actually required are configured and provided to the user. The appearance can also be freely defined and thus adapted to different end devices. All filter settings that are also available in the filter for the function to switch the screen to the Chronological Event List screen can be configured.

Therefore:

- ▶ Only the filter elements that are actually required are configured and provided to the user.
- ▶ The user only has these filters displayed and has an overview
- ▶ The appearance can be freely defined and can, for example, ensure ease of use by means of a touch screen.

For details of use in the Runtime, see Using the CEL Filter chapter.

For the definition of filter criteria, see Filter screen switch CEL Filter chapter.



Attention

*Screens of type **Alarm Message List Filter**, **Chronological Event List Filter** and **Time Filter** must be engineered with an own frame. If they use the same frame as other screens, all screens based on this frame are closed when the screen is closed.*

CREATE A SCREEN OF TYPE CHRONOLOGICAL EVENT LIST FILTER

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools**, **Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `Chronological Event List Filter` in the **Screen type** property.

- c) Select the desired frame in the **Frame** property.
Note: The `CEL filter` screen must not be based on the same frame as other screens!
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
 The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

Variable filter

Variable name	Origin of the data
Identification	<input type="checkbox"/> Ring buffer <input type="checkbox"/> Historic data
<input type="checkbox"/> Case sensitivity <input type="checkbox"/> Show list without refresh <input type="checkbox"/> Show relative times	Maximum number

Time filter

Filter type

Combobox: Time filter type

Typ: COMBOBOX

ID: 10000

Current time

11:14:31 01.03.2018

From year	From month	From day	From hour	From minute	From second
Combobox: Fr	Combobox: Fr	Combobox: Fr	Combobox: Fr	Combobox: Fr	Combobox: Fr
Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB
ID: 10003	ID: 10002	ID: 10001	ID: 10004	ID: 10005	ID: 10006

Until year	Until month	Until day	Until hour	Until minute	Until second
Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un
Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB
ID: 10009	ID: 10008	ID: 10007	ID: 10010	ID: 10011	ID: 10012

Text filter

☐ Text filter

☐ Search for (separate words by Space)

☐ Case sensitivity
☐ Words do not need to appear in full within the text
☐ At least one word has to appear in the text
☐ All words must be in the text
☐ Filter string must exactly be in the text

OK

Apply

Cancel

Refresh search

Control elements

The screen of type `Chronological Event List Filter` can contain the following control and display elements.

INSERT TEMPLATE

Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p> <p>You can read more about templates for this screen type in the Templates (on page 353) chapter.</p>

GENERAL FILTERS

Drop-down list of different general filters.

Control element	Description
Exclude system messages from filter	<p>Shows a checkbox in Runtime to display or filter system messages. System messages are messages that do not relate to a variable.</p> <p>Operation in Runtime:</p> <ul style="list-style-type: none"> ▶ Active: System messages are always displayed in Runtime. This also applies if they are to be filtered out by the text or variable filter. <p>Exception: However system messages are not shown despite the checkbox being activated if they are filtered out by the time filter or the filters for data origin (ring buffer or historic data).</p> <p>Example: Only messages with the text "XY" are to be displayed. However if the option is active, system messages that do not contain the term are also displayed.</p>
Insert all elements: General filters	<p>Inserts all elements from the area of general filters into pre-defined places. Elements can be arranged individually.</p>
Variables	Alarms of which variables are displayed:
▶ Name	Filter according to names of variables.
▶ Identification	Filter according to identification of variables.

▶ Case sensitive	Note capitalization when filtering the variables.
Origin of the data	Where does the data come from:
▶ Ring buffer	From the ring buffer.
▶ Historical data	From an archive.
▶ Maximum number (description)	Text for Maximum number input field
▶ Maximum number (input field)	Input of the maximum alarms to be displayed when historical alarms are displayed. 0: displays all
Runtime settings	
▶ Show list without refresh	Switches the CEL in stopped state. New alarms are not added.
▶ Show relative times	Switches between the normal display and the relative-time display, without the selected entry losing focus. Relative time: All entries are displayed in the time distance to the selected entry. The displayed time is the difference time passed since the selected entry. The selected entry automatically gets the time stamp 0. The other events have a: <ul style="list-style-type: none"> ▶ positive time difference to the selected entry if they occurred later ▶ negative time difference to the selected entry if they occurred earlier
Alarm/event groups/alarm/event classes/alarm areas	List field for grouped display:
▶ Alarm/event groups	Alarm/event groups
▶ Alarm/event classes	Alarm/event classes
▶ Alarm Areas	Alarm areas
Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (<code>dynamic text</code>, <code>switch</code>) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <p>For the description, see current elements.</p> <p>Exclude system messages from filter</p> <p>Variables</p> <ul style="list-style-type: none"> ▶ Name

	<ul style="list-style-type: none">▶ Identification▶ Case sensitive <p>Origin of the data</p> <ul style="list-style-type: none">▶ Ring buffer▶ Historic data▶ Maximum number (input field)
--	--

TIME FILTER

Elements for time filters.

Control element	Description
Insert all elements	Opens drop-down list to select pre-defined elements for certain time periods.
Absolute time period - classic display	Elements for the absolute time period in classic display.
Absolute time period - compact display	Elements for the absolute time period in compact display.
Relative time period	Elements for the relative time period.
Starting from HH:MM:SS	Elements for a time period from a defined time.
Starting from day - HH:MM:SS	Elements for a time period from a defined day at a defined time.
Starting from day, month - HH:MM:SS	Elements for a time period from a defined day in a defined month at a defined time.
Time period: 15/30/60 minutes	Elements for a time period of 15, 30 or 60 minutes.
Time period - one day	Elements for a time period of one day.
Time period - 1 or 2 weeks	<p>Elements for a time period over one or two weeks.</p> <p>Each week can be selected, both for the view for a week as well as for the view for two weeks. With the two-week view, a time period of 14 days is selected, depending on the week selected.</p>
Time period - one month	Elements for a time period of one month.
Time period - one year	Elements for a time period of one year.
Insert all elements (Touch)	<p>Opens the drop-down list to select pre-defined elements for certain time periods, which have been optimized for touch operation. Like Insert all elements, the following are available:</p> <ul style="list-style-type: none"> ▸ Absolute time period - classic display ▸ Relative time period ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - at HH:MM:SS ▸ Time period - 15/30/60 minutes ▸ Time period - one day ▸ Time period - 1 or 2 weeks

	<ul style="list-style-type: none">▶ Time period - one month▶ Time period - one year
--	--

Set filter type (Display)	Dynamic text element for the display of the set filter type.
Time filter type (label)	Labeling for time filter type.
Time filter type (combobox)	Combobox: Time filter type
Time filter type (radio group)	<p>Switch elements that show or hide certain elements in Runtime:</p> <ul style="list-style-type: none"> ‣ No filter ‣ Absolute time filter ‣ Relative time filter ‣ Starting from day, month - HH:MM:SS ‣ Starting from day - HH:MM:SS ‣ Starting from HH:MM:SS ‣ Time period 15 minutes ‣ Time period 30 minutes ‣ Time period 60 minutes ‣ Time period 1 day ‣ Time period 1 week ‣ Time period 2 weeks ‣ Time period 1 month ‣ Time period 1 year
Time from	<p>Fields and labeling for stating "from" time.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ From day (label) ‣ From day (combobox) ‣ From hour (label) ‣ From hour (combobox) ‣ From minute (label) ‣ From minute (combobox) ‣ From second (label) ‣ From second (combobox)

	<p>► From (spin control)</p>
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Time to	<p>Fields and labeling for stating "to" time.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (combobox) ‣ To month (label) ‣ To month (combobox) ‣ To day (label) ‣ To day (combobox) ‣ To hour (label) ‣ To hour (combobox) ‣ To minute (label) ‣ To minute (combobox) ‣ To second (label) ‣ To second (combobox) ‣ To (spin control)
Time from (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ From hour (label) ‣ From hour (button: up) ‣ From hour (Touch box) ‣ From hour (button: down) ‣ From minute (label) ‣ From minute (button: up)

	<ul style="list-style-type: none">▶ From minute (Touch box)▶ From minute (button: down)▶ From second (label)▶ From second (button: up)▶ From second (Touch box)▶ From second (button: down)
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Time to (Touch)	<p>Fields and labeling for stating "to" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (button: up) ‣ To year (Touch box) ‣ To year (button: down) ‣ To month (label) ‣ To month (button: up) ‣ To month (Touch box) ‣ To month (button: down) ‣ To day (label) ‣ To day (button: up) ‣ To day (Touch box) ‣ To day (button: down) ‣ To hour (label) ‣ To hour (button: up) ‣ To hour (Touch box) ‣ To hour (button: down) ‣ To minute (label) ‣ To minute (button: up) ‣ To minute (Touch box) ‣ To minute (button: down) ‣ To second (label) ‣ To second (button: up) ‣ To second (Touch box) ‣ To second (button: down)
Filter absolute time	<p>Fields and labeling for stating absolute time filter.</p> <ul style="list-style-type: none"> ‣ From (label) ‣ From date (calendar display) ‣ From date (date display) ‣ From time (time display) ‣ To (label) ‣ To date (calendar display) ‣ To date (date display)

	<ul style="list-style-type: none">▶ To time (time display)
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Time period	<p>Fields and labeling for stating time periods.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ Week (label) ‣ Week (combobox) ‣ From day (label) ‣ From day (combobox) ‣ Start time (label) ‣ Start time (combobox)
Time period (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ Week (label) ‣ Week (button:up) ‣ Week (touchbox) ‣ Week (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ Start time (label) ‣ Start time (button:up) ‣ Start time (Touch box) ‣ Start time (button:down)
Compatible elements	Control elements that are replaced or removed by

	<p>newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <ul style="list-style-type: none">▶ Time filter type (radio group) Radiobutton Win32 control elements. Has been replaced by <code>switch elements</code>. For the description, see current elements.▶ Set time filter type (display) Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
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LOT FILTER

Elements for lot selection in Runtime.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Archive list	<p>List of archives available in Runtime.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Archive list status	<p>Status of the archive list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Lot list	<p>List of available lots.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Lot list status	<p>Status of the lot list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Apply time filter to lot list	Applies the configured time filter to the selection in the lot list.
Lot name filter (Input field)	Entry of a character sequence for filtering the lot names

	in the lot list.
Lot name filter (Button)	Button to execute filtering for lot names. Deactivated if the Lot name filter element is not present.
Compatible elements	Control elements that are replaced or removed by newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates. The following Win32 elements were replaced by <code>dynamic text</code> elements. <ul style="list-style-type: none">▶ Archive list status▶ Lot list status▶ Lot name filter (Input field)

SHIFT FILTER

Drop-down list for element of the shift filter.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Shift list	List of available shifts.
Status of the shift list	Status of the shift list with number for: <ul style="list-style-type: none"> ▸ Total ▸ Filtered ▸ Selected
Update shift list	Clicking on the button updates the display of the shift list .

TEXT FILTER

Drop-down list of different text filters (on page 386).

Control element	Description
Insert all elements: Text filter	Inserts all elements for text filters.
No text filter	Radio button to deselect text filter.
Search for (separate words by Space)	Radio button to activate the search
Text: Search text	Labeling for search field.
Input field: Search text	Field for input of search term.
Options	Search options
▸ Case sensitive	Capitalization must be noted.
▸ Words do not need to be in the text completely	Fragments can also be searched for.
▸ At least one word must be in the text	At least one search term from several must be in the result.
▸ All words must be in the text	All search terms must be included in the result.
▸ Exact filter text must be in the text	Exact text from the input field must be contained in the result.
Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (<i>dynamic text</i>, <i>switch</i>) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <p>For the description, see current elements.</p> <ul style="list-style-type: none"> ▸ No text filter

	<ul style="list-style-type: none"> ▶ Search for (separate words by Space) ▶ Input field: Search text ▶ Case sensitivity ▶ Words do not need to appear in full within the text ▶ At least one word should be in the text ▶ All words must exist in the text ▶ Filter string has to appear exactly in the text
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RUNTIME SETTINGS

Control element	Description
▶ Show list without refresh	Switches the CEL in stopped state. New alarms are not added.
▶ Show relative times	<p>Switches between the normal display and the relative-time display, without the selected entry losing focus.</p> <p>Relative time: All entries are displayed in the time distance to the selected entry.</p> <p>The displayed time is the difference time passed since the selected entry. The selected entry automatically gets the time stamp 0. The other events have a:</p> <ul style="list-style-type: none"> ▶ positive time difference to the selected entry if they occurred later ▶ negative time difference to the selected entry if they occurred earlier

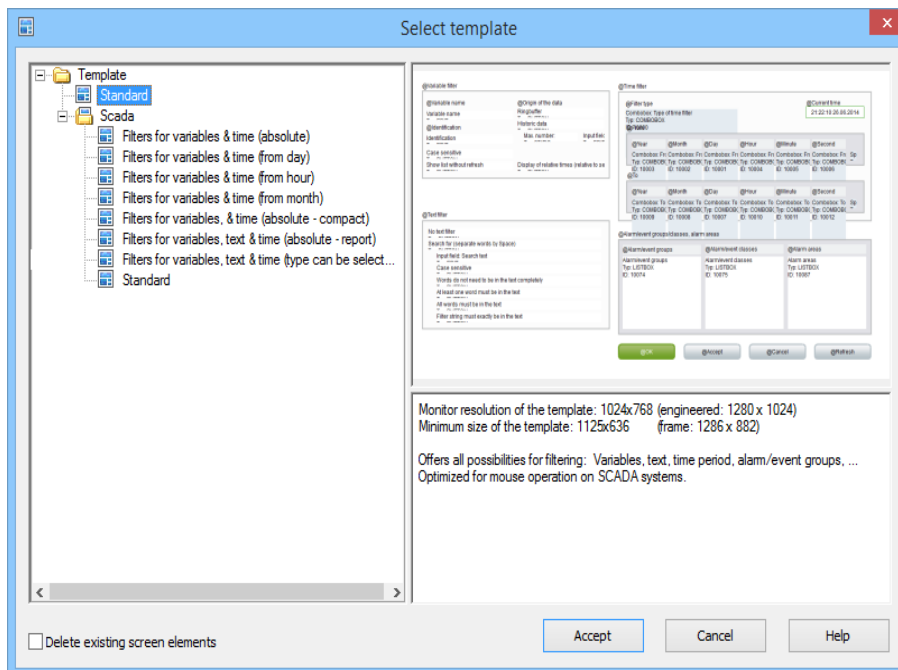
BUTTONS

Buttons in Runtime.

OK	<p>Button: Applies the filter settings and closes the screen.</p> <p>Note on faceplates: In faceplates, AML filter, CEL filter and time/lot/shift filter screens can be used. When configuring these in Runtime, clicking on OK closes the complete faceplate. If the filter settings are to be saved and the faceplate is to stay open, click on Accept.</p>
Cancel	Button: Cancels the configuration of the filter settings.
Apply	Button: Accepts the filter settings.
Update	Button: Updates the filtered display.

Compatible elements	<p>Standard Win32 control elements that have been replaced or removed by zenon elements (dynamic text, switch) and continue to be available due to compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <ul style="list-style-type: none"> ▶ Show list without refresh ▶ Show relative times (relative to selected entry)
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Template



Template	Description
List field templates (left)	Displays all pre-defined and user-defined template.
Preview and description (right)	Shows preview and description of the selected template.
Standard	Inserts standard elements.
Scada	Special templates, optimized for mouse operation.
Standard	Inserts standard elements.
Filters for variables, text & time (absolute - compact)	Adds elements for filtering for variables, text and absolute time range in compact form.
Filters for variables, text & time (absolute)	Adds elements for filtering for variables, text and absolute time range.
Filters for variables, text & time (from month)	Adds variables for filtering for variables, text and relative time range <i>from month</i> .
Filters for variables, text & time (from hour)	Adds variables for filtering for variables, text and relative time range <i>from hour</i> .
Filters for variables, text & time (from day)	Adds variables for filtering for variables, text and relative time range <i>from day</i> .
Filters for variables, text & time (absolute - table)	Adds elements for filtering for variables, text and absolute time range.
Filters for variables, text & time (type can be selected)	Adds elements for filtering for variables, text and selectable time range.

CLOSE DIALOG

Parameter	Description
Delete existing screen elements	Active: Pre-existing elements in the screen are deleted when the template is applied.
Apply	Adds the selected template to the screen and closes the dialog.
Cancel	Closes dialog without inserting elements.
Help	Opens online help.

Creating a Time/Lot/Shift Filter screen

It is possible to make changes to the time filter settings including lot and shift information in the Runtime using a `Time/lot/shift filter` screen. The following screens can be influenced by the filter:

- ▶ Alarm Message List
- ▶ Archive revision
- ▶ Chronological Event List
- ▶ Extended Trend

The advantage of this type of screen is that only the filter elements that are actually necessary can be configured. Thus the user does not have to deal with too many filter settings. Only the filter settings that he needs are displayed. Furthermore, you are completely free to change the appearance and can, for example, ensure ease of use by means of a touch screen.



Attention

Screens of type **Alarm Message List Filter**, **Chronological Event List Filter** and **Time Filter** must be engineered with an own frame. If they use the same frame as other screens, all screens based on this frame are closed when the screen is closed.

In the time filter screen, all time filter settings that are also present in the filter for the function to switch screens to the appropriate screen can be engineered.

CREATING A TIME/LOT/SHIFT FILTER SCREEN

Lot filter

Current time
 11:15:45 01.03.2018

From

Year	Month	Day	Hour	Minute	Second	
Combobox: Frc	Combobox: Frc	Combobox: Frc	Combobox: Frc	Combobox: Frc	Combobox: Frc	Sp...
Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	
ID: 10003	ID: 10002	ID: 10001	ID: 10004	ID: 10005	ID: 10006	

Until

Year	Month	Day	Hour	Minute	Second	
Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un	Combobox: Un	Sp...
Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	Typ: COMBOB	
ID: 10009	ID: 10008	ID: 10007	ID: 10010	ID: 10011	ID: 10012	

Apply time filter to lot list

Archive

Archive list

Typ: STATIC

ID: 10524

Lot

Lot list

Typ: STATIC

ID: 10525

OK
Apply
Cancel

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) In property **Screen type** select `Time/lot/shift filter`.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

Control elements

For time filter screens, there are also elements that have been optimized for touch-screen operation in addition to the conventional elements.

Type of time filter
 Combobox: Type of time filter
 Typ: COMBOBOX
 ID: 10000

Current time
 09:55:44 16.01.2013

Year	Month	Day	Hour	Minute	Second	Sp
Combobox: Fi	Combobox: Fi	Combobox: Fi	Combobox: Fi	Combobox: Fi	Combobox: Fi	Combobox: Fi
Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO
ID: 10003	ID: 10002	ID: 10001	ID: 10004	ID: 10005	ID: 10006	

Until

Year	Month	Day	Hour	Minute	Second	Sp
Combobox: U	Combobox: U	Combobox: U	Combobox: U	Combobox: U	Combobox: U	Combobox: U
Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO	Typ: COMBO
ID: 10009	ID: 10008	ID: 10007	ID: 10010	ID: 10011	ID: 10012	

OK Accept Cancel Refresh

INSERT TEMPLATE

Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p> <p>You can read more about templates for this screen type in the Templates (on page 371) chapter.</p>

TIME FILTER

Elements for time filters.

Control element	Description
Insert all elements	Opens drop-down list to select pre-defined elements for certain time periods.
Absolute time period - classic display	Elements for the absolute time period in classic display.
Absolute time period - compact display	Elements for the absolute time period in compact display.
Relative time period	Elements for the relative time period.
Starting from HH:MM:SS	Elements for a time period from a defined time.
Starting from day - HH:MM:SS	Elements for a time period from a defined day at a defined time.
Starting from day, month - HH:MM:SS	Elements for a time period from a defined day in a defined month at a defined time.
Time period: 15/30/60 minutes	Elements for a time period of 15, 30 or 60 minutes.
Time period - one day	Elements for a time period of one day.
Time period - 1 or 2 weeks	<p>Elements for a time period over one or two weeks.</p> <p>Each week can be selected, both for the view for a week as well as for the view for two weeks. With the two-week view, a time period of 14 days is selected, depending on the week selected.</p>
Time period - one month	Elements for a time period of one month.
Time period - one year	Elements for a time period of one year.
Insert all elements (Touch)	<p>Opens the drop-down list to select pre-defined elements for certain time periods, which have been optimized for touch operation. Like Insert all elements, the following are available:</p> <ul style="list-style-type: none"> ▸ Absolute time period - classic display ▸ Relative time period ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - at HH:MM:SS ▸ Time period - 15/30/60 minutes ▸ Time period - one day ▸ Time period - 1 or 2 weeks

	<ul style="list-style-type: none">▶ Time period - one month▶ Time period - one year
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Set filter type (Display)	Dynamic text element for the display of the set filter type.
Time filter type (label)	Labeling for time filter type.
Time filter type (combobox)	Combobox: Time filter type
Time filter type (radio group)	<p>Switch elements that show or hide certain elements in Runtime:</p> <ul style="list-style-type: none"> ‣ No filter ‣ Absolute time filter ‣ Relative time filter ‣ Starting from day, month - HH:MM:SS ‣ Starting from day - HH:MM:SS ‣ Starting from HH:MM:SS ‣ Time period 15 minutes ‣ Time period 30 minutes ‣ Time period 60 minutes ‣ Time period 1 day ‣ Time period 1 week ‣ Time period 2 weeks ‣ Time period 1 month ‣ Time period 1 year
Time from	<p>Fields and labeling for stating "from" time.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ From day (label) ‣ From day (combobox) ‣ From hour (label) ‣ From hour (combobox) ‣ From minute (label) ‣ From minute (combobox) ‣ From second (label) ‣ From second (combobox)

	<p>► From (spin control)</p>
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Time to	<p>Fields and labeling for stating "to" time.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (combobox) ‣ To month (label) ‣ To month (combobox) ‣ To day (label) ‣ To day (combobox) ‣ To hour (label) ‣ To hour (combobox) ‣ To minute (label) ‣ To minute (combobox) ‣ To second (label) ‣ To second (combobox) ‣ To (spin control)
Time from (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ From hour (label) ‣ From hour (button: up) ‣ From hour (Touch box) ‣ From hour (button: down) ‣ From minute (label) ‣ From minute (button: up)

	<ul style="list-style-type: none">▶ From minute (Touch box)▶ From minute (button: down)▶ From second (label)▶ From second (button: up)▶ From second (Touch box)▶ From second (button: down)
--	--

Time to (Touch)	<p>Fields and labeling for stating "to" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ To year (label) ‣ To year (button: up) ‣ To year (Touch box) ‣ To year (button: down) ‣ To month (label) ‣ To month (button: up) ‣ To month (Touch box) ‣ To month (button: down) ‣ To day (label) ‣ To day (button: up) ‣ To day (Touch box) ‣ To day (button: down) ‣ To hour (label) ‣ To hour (button: up) ‣ To hour (Touch box) ‣ To hour (button: down) ‣ To minute (label) ‣ To minute (button: up) ‣ To minute (Touch box) ‣ To minute (button: down) ‣ To second (label) ‣ To second (button: up) ‣ To second (Touch box) ‣ To second (button: down)
Filter absolute time	<p>Fields and labeling for stating absolute time filter.</p> <ul style="list-style-type: none"> ‣ From (label) ‣ From date (calendar display) ‣ From date (date display) ‣ From time (time display) ‣ To (label) ‣ To date (calendar display) ‣ To date (date display)

	<ul style="list-style-type: none">▶ To time (time display)
--	--

Time period	<p>Fields and labeling for stating time periods.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (combobox) ‣ From month (label) ‣ From month (combobox) ‣ Week (label) ‣ Week (combobox) ‣ From day (label) ‣ From day (combobox) ‣ Start time (label) ‣ Start time (combobox)
Time period (Touch)	<p>Fields and labeling for stating "from" time, optimized for touch operation.</p> <ul style="list-style-type: none"> ‣ From year (label) ‣ From year (button: up) ‣ From year (Touch box) ‣ From year (button: down) ‣ From month (label) ‣ From month (button: up) ‣ From month (Touch box) ‣ From month (button: down) ‣ Week (label) ‣ Week (button:up) ‣ Week (touchbox) ‣ Week (button: down) ‣ From day (label) ‣ From day (button: up) ‣ From day (Touch box) ‣ From day (button: down) ‣ Start time (label) ‣ Start time (button:up) ‣ Start time (Touch box) ‣ Start time (button:down)
Compatible elements	Control elements that are replaced or removed by

	<p>newer versions and continue to be available for compatibility reasons. These elements are not taken into account with automatic insertion of templates.</p> <ul style="list-style-type: none">▶ Time filter type (radio group) Radiobutton Win32 control elements. Has been replaced by <code>switch elements</code>. For the description, see current elements.▶ Set time filter type (display) Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
--	---

LOT FILTER

Elements for lot selection in Runtime.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Archive list	<p>List of archives available in Runtime.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Archive list status	<p>Status of the archive list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Lot list	<p>List of available lots.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Lot list status	<p>Status of the lot list with number for:</p> <ul style="list-style-type: none"> ▸ available ▸ Filtered ▸ displayed
Apply time filter to lot list	Applies the configured time filter to the selection in the lot list.
Lot name filter (Input field)	Entry of a character sequence for filtering the lot names

	in the lot list.
Lot name filter (Button)	<p>Button to execute filtering for lot names.</p> <p>Deactivated if the Lot name filter element is not present.</p>
Compatible elements	<p>Control elements that are replaced or removed by newer versions and continue to be available for compatibility reasons.</p> <p>These elements are not taken into account with automatic insertion of templates.</p> <p>The following Win32 elements were replaced by <code>dynamic text</code> elements.</p> <ul style="list-style-type: none"> ▶ Archive list status ▶ Lot list status ▶ Lot name filter (Input field)

SHIFT FILTER

Drop-down list for element of the shift filter.

Control element	Description
Insert all elements	Inserts all subelements into the screen.
Shift list	List of available shifts.
Status of the shift list	<p>Status of the shift list with number for:</p> <ul style="list-style-type: none"> ▶ Total ▶ Filtered ▶ Selected
Update shift list	Clicking on the button updates the display of the shift list .

Note: In order for the control elements for the shift filters to be displayed in Runtime:

- ▶ The **Show shift selection** option must be selected in the screen switching.
- ▶ The time filter must be configured.

BUTTONS

Buttons in Runtime.

OK	Button: Applies the filter settings and closes the screen. Note on faceplates: In faceplates, AML filter, CEL filter and time/lot/shift filter screens can be used. When configuring these in Runtime, clicking on OK closes the complete faceplate. If the filter settings are to be saved and the faceplate is to stay open, click on Accept .
Cancel	Button: Cancels the configuration of the filter settings.
Apply	Button: Accepts the filter settings.
Update	Button: Updates the filtered display.

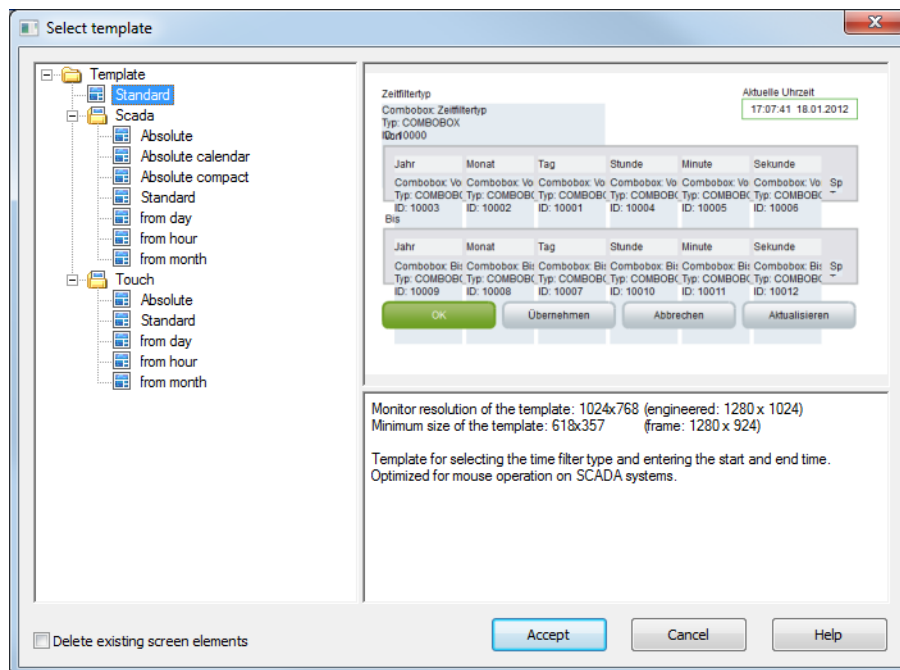
EMPHASIS OF TOUCH ELEMENTS

Control elements for touch operation can be emphasized by means of colored emphasis. To do this, the following properties in the **Fill** group are configured in the screen for touch elements:

- ▶ **Text color on focus:** Text color if the element is in focus
- ▶ **Background color on focus:** Background color if the element is in focus
- ▶ **Text color without focus:** Text color if the element is not in focus
- ▶ **Background color without focus:** Background color if the element is not in focus

Template

Several pre-defined templates are available for time filter screens.



Template	Description
List field templates (left)	Displays all pre-defined and user-defined template.
Preview and description (right)	Shows preview and description of the selected template.
Standard	Inserts standard elements.
Scada	Template for mouse operation
Absolute	Inserts elements for absolute time.
Absolute calendar	Inserts elements for absolute time with calendar.
Absolute compact	Inserts elements for absolute time in compressed design.
Standard	Inserts standard elements.
from month	Inserts elements for time range from month.
from hour	Inserts elements for time range from hour.
from day	Inserts elements for time range from day.
Touch	Templates, optimized for touch operation.
Absolute	Inserts elements for absolute time.
Standard	Inserts standard elements.
from month	Inserts elements for time range from month.
from hour	Inserts elements for time range from hour.
from day	Inserts elements for time range from day.
Preview to template (top right)	Preview of the screen at taking over the selected template.
Description template (bottom right)	Description of the template.
Delete existing screen elements	Active: Pre-existing elements in the screen are deleted when the template is applied.

CLOSE DIALOG

Parameter	Description
Delete existing screen elements	Active: Pre-existing elements in the screen are deleted when the template is applied.
Apply	Adds the selected template to the screen and closes the dialog.
Cancel	Closes dialog without inserting elements.
Help	Opens online help.

Pre-defined names

Pre-defined names are available for time filters.

Attention: The pre-defined names are not available under Windows CE.

To select a name:

1. In the detail view, define as screen type `time filter`, `chronological event list filter` or `alarm message list filter`
2. Click twice in the name field in the 'Name' column
3. Select the desired pre-defined name from the drop-down.
 - `TIMEFILTER_ABSOLUTE`
 - `TIMEFILTER_DAY`
 - `TIMEFILTER_HOUR`
 - `TIMEFILTER_MONTH`
 - `TIMEFILTER_PERIOD`
 - `TIMEFILTER_PERIOD_DAY`
 - `TIMEFILTER_PERIOD_MINUTE`
 - `TIMEFILTER_PERIOD_MONTH`
 - `TIMEFILTER_PERIOD_WEEK`
 - `TIMEFILTER_PERIOD_YEAR`
 - `TIMEFILTER_RELATIVE`

Note: `CEL filter` and `AML filter` screens also have a pre-defined name, `CEL_FILTER` or `AML_FILTER`.

Use filter screen

FILTER SCREENS

Filter screens make it possible to transfer a preset filter from one screen to another. The filter of the source screen is set using the target screen. The screens can also be of a different screen type.



Attention

*In order for the time to be taken from the screen to be called up in Runtime, the following **time range** must be selected in the Editor for the screen switching function for the Alarm Message List or the Chronological Event List in the **time filter**. Set filter at time filter type*

CALL DEFINITION

The following requirements must be met for the set filters to be used:

1. Set filter for time filter type is selected as a **time period** for the time filter.
2. The screen (**Alarm Message List Filter**, **Chronological Event List filter** or **Time/Lot/Shift Filter** screens) is activated using a button or a combined element. Only in this way can the relationship between filter screen and source screen be maintained.
3. The source screen and filter screen must either be configured on different frames or on different monitors. The filter for the filter screen can only be updated if the source screen is open. This is only possible if both screens do not use the same frame or the same monitor.
4. The screen to be called up must be compatible with the filter screen to be called up (see table).

Source screen	AML filter	CEL filter	Time Filter
Archive revision	T	T	T
Extended Trend	T	T	T
Time Filter	T	T	X
Alarm Message List Filter	X	C	T
Chronological Event List Filter	C	X	T
Alarm Message List	X	C	T
Chronological Event List	C	X	T

Key:

- ▶ C: Common settings are updated.
- ▶ T: Time settings are updated.
- ▶ X: All settings are updated.



Information

No filtering

The filter screen is not filtered, but opened with the configured values, if:

- ▶ One of the conditions 1 to 3 is not met or
- ▶ The **Screen to call up** setting is not activated for the **Screen switching** function or
- ▶ The screen is not called up via a screen element

*In this case, the **Accept**, **Close** and **Update** buttons are grayed out in Runtime and have no function.*

UPDATE

When a filter screen is called up (**Alarm Message List filter**, **Chronological Event List filter**, **time filter**), the screens configured in the **screen switching function** are updated in two ways:

- ▶ If the filter screen is called up using a screen element, the target screens that are on the same monitor as the source screen are updated.
- ▶ If the filter screen is called up in a different way or if the **Update on all monitors** setting is activated, all configured target screens are updated.

They are updated as soon as you click the **Accept** button or as soon as you closes the filter screen with the close **Close** button. The **Cancel** button discards the changes and closes the filter screen.

UPDATE FILTER SETTINGS

You update the current filter settings for the source screen using the **Update** button. If the filter screen is not called up by a screen element or if the **Calling screen** has not been activated, all monitors are searched for screens that can be used for updating. The first screen that is found is then this is used for updating.

18.7.2 Screen switch to a filter screen

To create a function to switch to a filter screen:

1. Select **New function**.
2. Select **Screen switching**.
3. Select the desired screen:
 - AML filter

- CEL filter
 - Time filter
4. The dialog for configuration and linking of the filter for the selected screen type is opened. The tabs shown depend on the screen type.
 5. Configure the corresponding tabs.



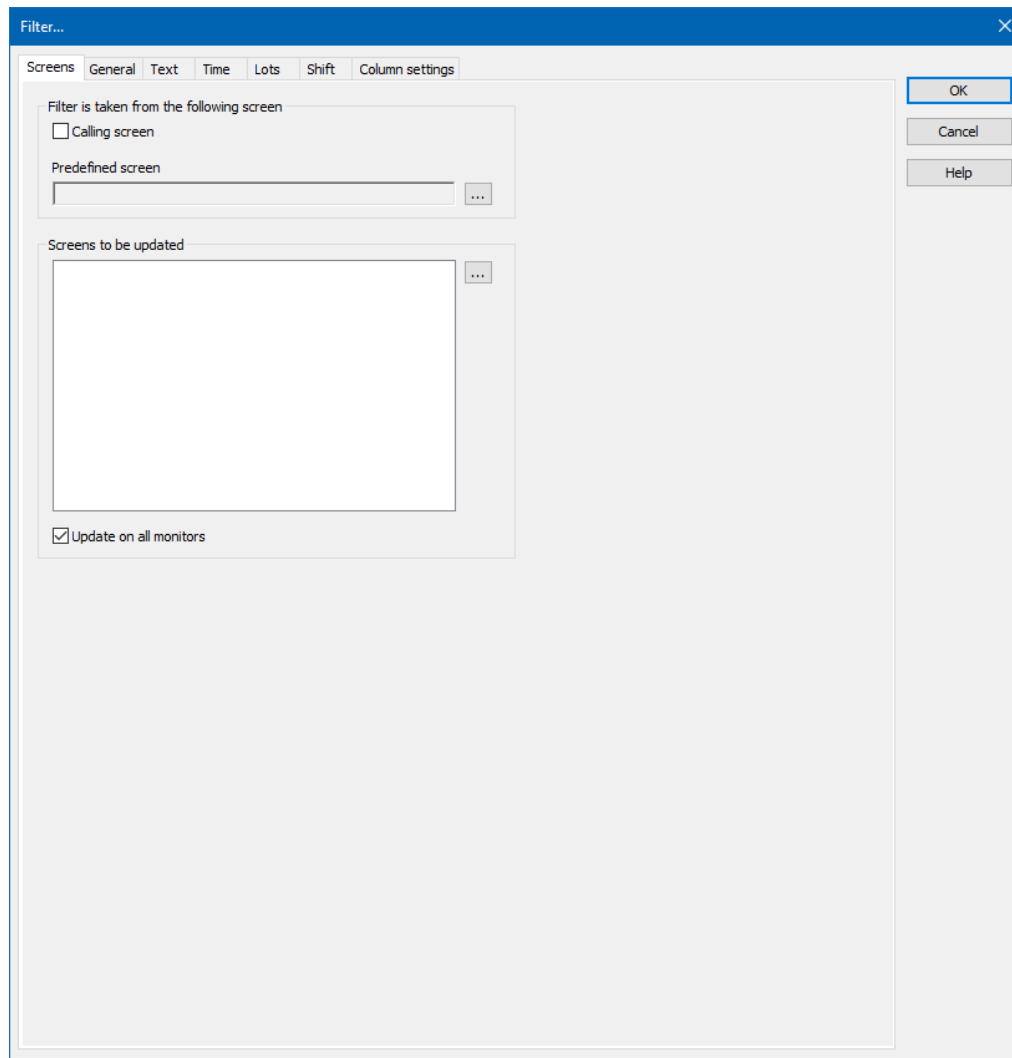
Information

Tabs for special screen types:

- ▶ AML filter: Screens, General, Text, Time, Lots, Shifts, Column settings
- ▶ CEL filter: Screens, General, Text, Time, Lots, Shifts, Column settings
- ▶ Time filter: Screens, Time, Lots, Shifts, Column settings

Screens

On this tab, you can define the screens that are to be updated by the screen filter.



The following settings are available:

FILTER IS TAKEN FROM THE FOLLOWING SCREEN

Parameter	Description
Filter is taken from the following screen	Definition of the screen form which the filter is to be taken.
Calling screen	<p>Active: The filter settings are take over from the screen from which the filter screen is called up. The screen button is grayed out. You cannot explicitly select a screen, because the filter is always updated from the calling screen with this setting.</p> <p>Note: Settings in the General, Text and Time tabs are locked.</p>
Predefined screen	<p>Click on button opens the Screen selection dialog.</p> <p>Select the screen from which the filter - when clicking button Update during Runtime - should be read.</p> <p>Subscreens of faceplates (on page 284) can also be selected for screen switching to AML filter, CEL filter, time filter, equipment model and shift management. For these screens, the name of the faceplate screen is placed in front of the subscreen in order to clearly distinguish them from other screens.</p> <p>Attention: When the filter screen is first called up using the function, the filter configured in the function is used, not the filter of the screen stated here!</p> <p>Note: It therefore only makes sense to select a screen that can adopt or fill the screen filter.</p> <p>The selected screen is entered into the list of screens to be updated. If you delete it from the list, the next selected screen from the list automatically takes its place.</p> <p>Note: Not available if you have activated the Calling screen checkbox.</p>

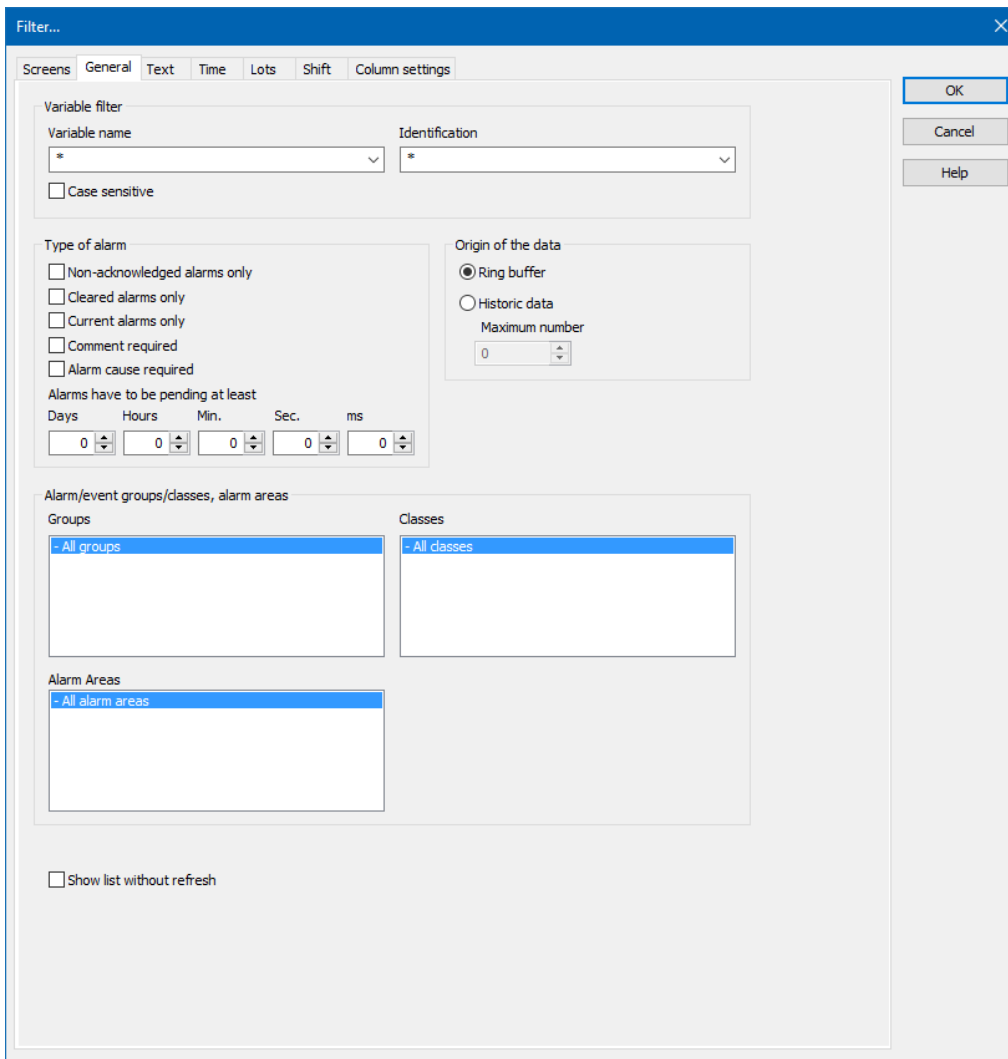
SCREENS TO BE UPDATED

Parameter	Description
Screens to be updated	<p>Selection of the screens that are to be updated.</p> <p>Subscreens of faceplates (on page 284) can also be selected for screen switching to AML filter, CEL filter, time filter, equipment model and shift management. For these screens, the name of the faceplate screen is placed in front of the subscreen in order to clearly distinguish them from other screens.</p>
Screen selection	Click the button to open dialog Screen selection of the filter screens. Select the desired screen.
Update	Stipulation of where the filter should take effect.
Update on all monitors	Active: The screens from the list of the monitors that must be updated are updated on all accessible monitors.

General

This tab is only available for the Alarm Message List filter and Chronological Event List and shows the standard filter for the respective list. See Alarm Message List filter or Chronological Event List filter.

AML FILTER



The screenshot shows the 'Filter...' dialog box with the 'General' tab selected. The dialog has a title bar with a close button (X) and a tab bar with 'Screens', 'General', 'Text', 'Time', 'Lots', 'Shift', and 'Column settings'. The 'General' tab contains the following sections:

- Variable filter:** Two dropdown menus for 'Variable name' and 'Identification', both set to '*'. A checkbox for 'Case sensitive' is unchecked.
- Type of alarm:** A group box containing five checkboxes: 'Non-acknowledged alarms only', 'Cleared alarms only', 'Current alarms only', 'Comment required', and 'Alarm cause required'. All are unchecked.
- Origin of the data:** A group box containing two radio buttons: 'Ring buffer' (selected) and 'Historic data'. Below 'Historic data' is a 'Maximum number' spinner set to 0.
- Alarms have to be pending at least:** A group of five spinners for 'Days', 'Hours', 'Min.', 'Sec.', and 'ms', all set to 0.
- Alarm/event groups/classes, alarm areas:** Three list boxes. 'Groups' and 'Classes' each contain '- All groups' and '- All classes'. 'Alarm Areas' contains '- All alarm areas'.
- Show list without refresh:** An unchecked checkbox.

On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

VARIABLE FILTER

Parameter	Description
Variable filter	Limitation to alarms of certain variables
Variable name	<p>Enter the name or part of the name of the variable you want to filter.</p> <p>Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in zenon6.ini and are available for selection in the drop-down list.</p> <p>Attention: The comma character (,) "only" serves as a separator between several variables to be filtered. However it is not possible to filter for a comma character in variables names!</p> <p>This results in the special filtering of array variables for Dim 2 and Dim 3 not being possible.</p>
Identification	<p>Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible.</p> <p>Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in zenon6.ini and are available for selection in the drop-down list.</p>
Case sensitive	Active: Capitalization is recognized when filtering for variable name or identification.

TYPE OF ALARMS

Parameter	Description
Type of alarms	Type of alarm that is displayed.
Only not acknowledged alarms	Active: Only alarms that have not yet been acknowledged by the user are displayed.
Only cleared alarms	Active: Only alarms that have already passed, i.e. whose values no longer in the critical range, are displayed.
Only current alarms	Active: Only alarms that are still active, i.e. whose values are still in the critical range, are displayed.
Comment required	Active: Only alarms for which it is required to enter a comment during acknowledging are displayed.
Alarm cause required	Active: Only alarms that are required for the linking of an alarm cause are displayed.

Alarms have to be pending at least	<p>Use the spin control to define the minimum time that an alarm should be active in order for it to be displayed.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Days ▶ Hours (hr.) ▶ Minutes (min.) ▶ Seconds (sec.) ▶ Milliseconds (ms)
---	--

ORIGIN OF THE DATA

Parameter	Description
Origin of the data	Display of current or current and historical alarms.
Ring buffer	Active: Only data from the ring buffer are displayed.
Historical data Maximum number	<p>Active: Data from the ring buffer and historical data from the AML are displayed.</p> <p>The maximum number of the data which should be displayed includes the data from the ring buffer.</p>

ALARM/EVENT GROUPS/CLASSES, ALARM AREAS

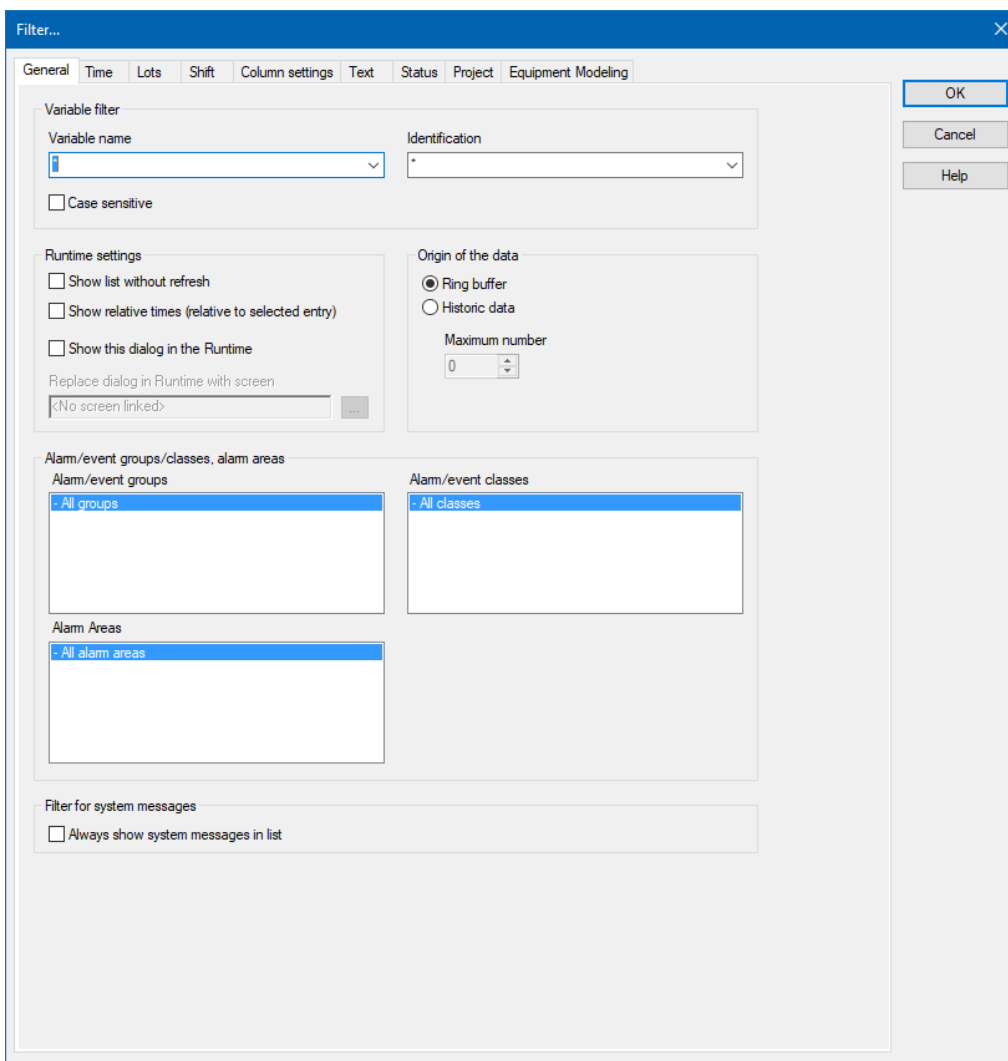
Parameter	Description
Alarm/Event Groups/Classes, Alarm Areas	Selection of groups, classes and alarm area.
Alarm/event groups	From the existing alarm/event groups select the one from which alarms should be displayed.
Alarm/event classes	From the existing alarm/event classes select the one from which alarms should be displayed.
Alarm areas	<p>From the existing alarm areas select the one from which alarms should be displayed.</p> <p>Note: If the Use hierarchical alarming of the Equipment Model property is activated, the Alarm area column is empty. The checkbox is in the alarm handling item of the variable properties.</p>
Runtime settings	Behavior of the AML in Runtime
Show list without refresh	Active: As long as the list is displayed no new entries are added.

CEL FILTER

With the general filter you define which events are displayed and what kind of access you have to the settings in the Runtime. To this you differentiate events according to:

- ▶ Type
- ▶ Origin of the data
- ▶ Variables
- ▶ Alarm/event groups, classes and alarm areas

The following properties are available:



Filter...

General | Time | Lots | Shift | Column settings | Text | Status | Project | Equipment Modeling

Variable filter

Variable name: Identification:

☐ Case sensitive

Runtime settings

☐ Show list without refresh

☐ Show relative times (relative to selected entry)

☐ Show this dialog in the Runtime

Replace dialog in Runtime with screen:

Origin of the data

☒ Ring buffer ☐ Historic data

Maximum number:

Alarm/event groups/classes, alarm areas

Alarm/event groups

- All groups

Alarm/event classes

- All classes

Alarm Areas

- All alarm areas

Filter for system messages

☐ Always show system messages in list

OK Cancel Help

VARIABLE FILTER

Parameter	Description
Variable filter	Restrictions to events of certain variables
Variable name	<p>Enter the name or part of the name of the variable you want to filter.</p> <p>Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in zenon6.ini and are available for selection in the drop-down list.</p> <p>Attention: The comma character (,) "only" serves as a separator between several variables to be filtered. However it is not possible to filter for a comma character in variables names!</p> <p>This results in the special filtering of array variables for Dim 2 and Dim 3 not being possible.</p>
Identification	<p>Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible.</p> <p>Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. *xxx or xxx*.</p> <p>Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in zenon6.ini and are available for selection in the drop-down list.</p>
Case sensitive	Active: Capitalization is recognized when filtering for variable name or identification.

ORIGIN OF THE DATA

Parameter	Description
Origin of the data	Display current or current and historical events.
Ring buffer	Active: Only data from the ring buffer are displayed.
Historical data Maximum number	<p>Active: Data from the ring buffer and historical data from the CEL are displayed.</p> <p>The maximum number of the data which should be displayed includes the data from the ring buffer.</p>
Runtime settings	Behavior of the CEL in the Runtime
Show list without refresh	<p>Active: As long as the list is displayed no new entries are added.</p> <p>(Not available for function Export CEL.)</p>

Display relative time	<p>All entries are displayed in the time distance to the selected entry.</p> <p>The displayed time is the difference time passed since the selected entry. The selected entry automatically gets the time stamp 0. The other events have a:</p> <ul style="list-style-type: none"> ▶ positive time difference to the selected entry if they occurred later ▶ negative time difference to the selected entry if they occurred earlier
------------------------------	--

ALARM/EVENT GROUPS/CLASSES, ALARM AREAS

Parameter	Description
Alarm/event groups/classes, alarm areas	Selection of groups, classes and alarm area.
Alarm/event groups	From the existing alarm/event groups select the one from which alarms should be displayed.
Alarm/event classes	From the existing alarm/event classes select the one from which alarms should be displayed.
Alarm Areas	From the existing alarm areas select the one from which alarms should be displayed.

FILTER FOR SYSTEM MESSAGES

Parameter	Description
Filter for system messages	Filter settings for system messages. System messages are messages that do not relate to a variable.
Always show system messages in list	<p>Setting for the display of system messages regardless of the filter settings.</p> <ul style="list-style-type: none"> ▶ Active: System messages are always displayed in Runtime. The following filters are thus suppressed as a result: Variable name Identification Status Equipment modeling Alarm/event groups Alarm/event classes Lots <p><u>Special features:</u></p> <ul style="list-style-type: none"> ▶ System messages are not shown despite the checkbox

	<p>being activated if they are filtered out by the time filter or the filters for data origin (ring buffer or historic data).</p> <ul style="list-style-type: none"> ▶ System messages are always shown regardless of this setting if there is filtering for equipment models.
--	---

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

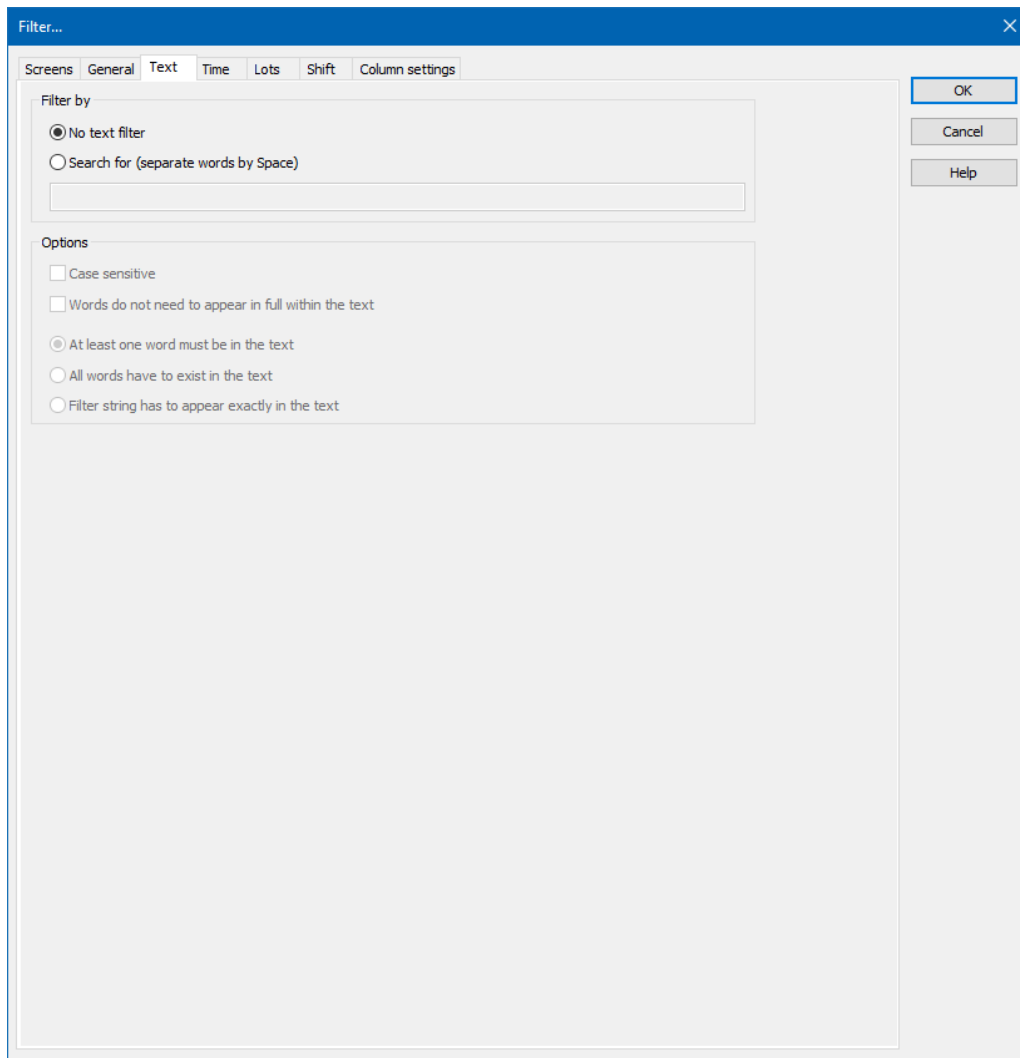


Attention

*For zenon under Windows CE, the following is applicable: CE systems on which the filter dialog should be displayed must have a screen resolution higher than 800*600 pixel for the dialog to be displayed completely.*

Text

You can define the default values for text filtering in this tab. Only available for Alarm Message List and Chronological Event List.



The screenshot shows the 'Filter...' dialog box with the 'Text' tab selected. The dialog has a title bar 'Filter...' and a close button 'X'. Below the title bar is a tabbed interface with tabs: 'Screens', 'General', 'Text' (selected), 'Time', 'Lots', 'Shift', and 'Column settings'. The 'Text' tab contains two main sections: 'Filter by' and 'Options'. In the 'Filter by' section, there are two radio buttons: 'No text filter' (selected) and 'Search for (separate words by Space)'. Below the second radio button is an empty text input field. In the 'Options' section, there are four checkboxes and three radio buttons. The checkboxes are 'Case sensitive' and 'Words do not need to appear in full within the text', both of which are unchecked. The radio buttons are 'At least one word must be in the text' (selected), 'All words have to exist in the text', and 'Filter string has to appear exactly in the text'. On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

FILTER BY

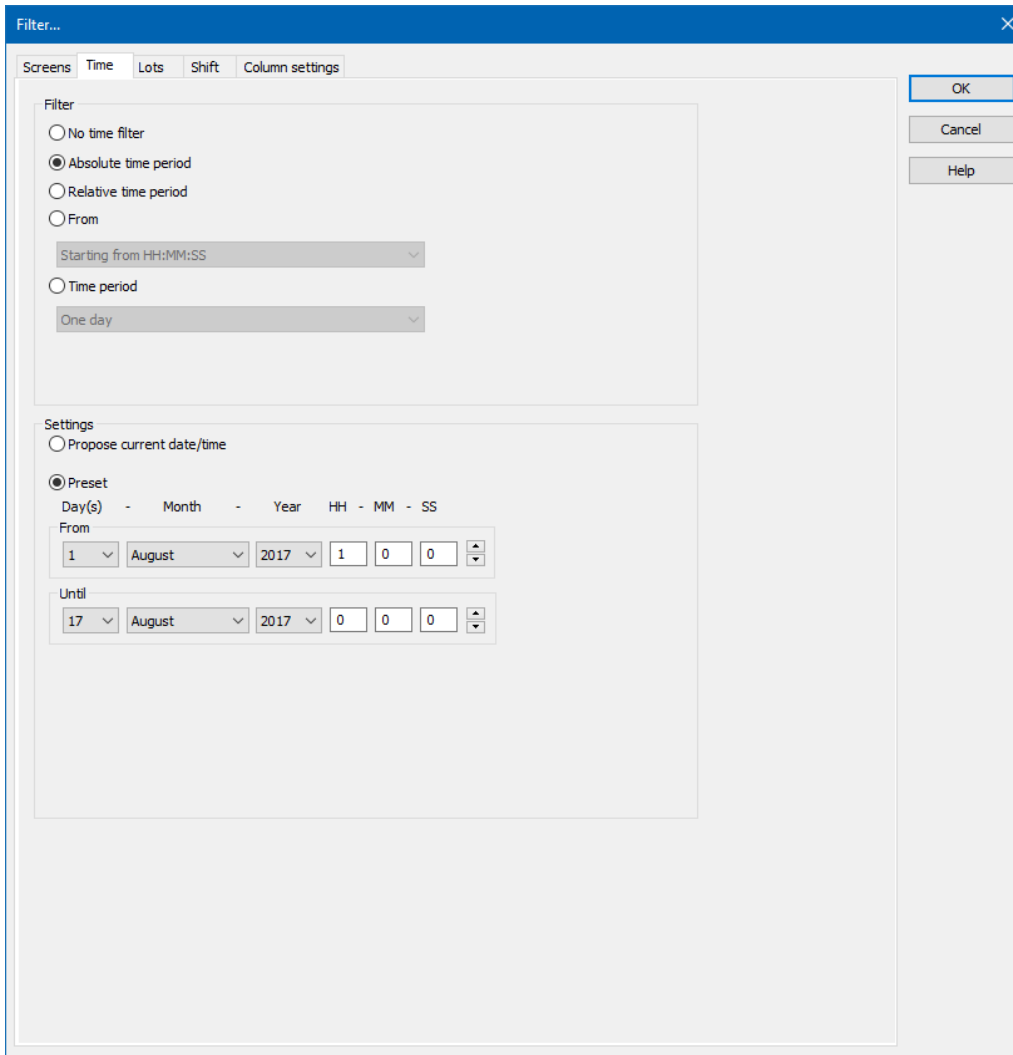
Parameter	Description
Filter by	
No text filter	The text filter is not used.
Search for (words separated by spaces)	The text filter is used. Further options are activated.
Input field	Enter the corresponding words or character strings.

OPTIONS

Parameter	Description
Options	
Note capitalization	Active: The filtering is case-sensitive.
Words do not have to appear in the text in full	Active: Parts of words can also be taken into account during filtering.
At least one word must be in the text	Active: At least one word of the search string has to be in the text.
All words must be present in the text	Active: All words must be present in the search string. In doing so, the sequence plays no role.
Filter text must appear in the text exactly	Active: The text must be exactly as defined in the search string.

Time

On this tab, you define the time period that is to be used when the filter screen is opened.



The screenshot shows the 'Filter...' dialog box with the 'Time' tab selected. The dialog has a title bar with a close button (X) and a tab bar with 'Screens', 'Time', 'Lots', 'Shift', and 'Column settings'. The 'Time' tab contains two main sections: 'Filter' and 'Settings'. In the 'Filter' section, there are four radio buttons: 'No time filter', 'Absolute time period' (which is selected), 'Relative time period', and 'From'. Below these, there is a dropdown menu labeled 'Starting from HH:MM:SS'. In the 'Settings' section, there are two radio buttons: 'Propose current date/time' and 'Preset' (which is selected). Below these, there are two rows of date and time pickers. The first row is labeled 'From' and the second row is labeled 'Until'. Each row has a dropdown for 'Day(s)', a dropdown for 'Month', a dropdown for 'Year', and three input fields for 'HH', 'MM', and 'SS'. The 'From' row shows '1', 'August', '2017', '1', '0', '0'. The 'Until' row shows '17', 'August', '2017', '0', '0', '0'. On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

Filter...

Screens Time Lots Shift Column settings

Filter

☐ No time filter

☒ Absolute time period

☐ Relative time period

☐ From

Starting from HH:MM:SS

☐ Time period

One day

Settings

☐ Propose current date/time

☒ Preset

Day(s) - Month - Year HH - MM - SS

From

1 August 2017 1 0 0

Until

17 August 2017 0 0 0

OK Cancel Help

FILTER

Selection of the filter.

Parameter	Description
No time filter	<p>Active: No time filter is used.</p> <p>Note: all Runtime entries since 1. 1. 1990 are displayed. Use of this filter setting is not supported by Extended Trend.</p>
Absolute filter	<p>Active: A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used.</p> <p>In the settings section, the corresponding options can be shown and configured there.</p> <p>Note: Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.</p>
Relative time period	<p>Active: A relative time period is entered.</p> <p>In the settings section, the corresponding options can be shown and configured there.</p> <p>Attention: this filter is constantly updated.</p>
From	<p>Active: A time from which the filter is effective is stated. If the time is not reached on the current day, filtering takes place from the corresponding time the previous day.</p> <p>Selection of the area mode from drop-down list:</p> <ul style="list-style-type: none"> ▶ Starting from HH:MM:SS ▶ Starting from day - HH:MM:SS ▶ Starting from day, month - at HH:MM:SS <p>In the settings section, the corresponding options can be shown and configured there.</p> <p>Attention: The start point of this filter is not updated automatically. Only the existing times are used when shown.</p> <p>The end time point is not defined with this filter, it is carried over.</p>

Time period	<p>Active: A fixed time period is entered. Selection of the area mode from drop-down list:</p> <ul style="list-style-type: none"> ▶ One day ▶ One week ▶ Two weeks ▶ One month ▶ One Year ▶ 15 minutes ▶ 30 minutes ▶ 60 minutes <p>In the settings section, the corresponding options can be shown and configured there.</p> <p>The following selection is also enabled on activation:</p> <ul style="list-style-type: none"> ▶ Display selection dialog ▶ Use current date and time <p>The Modify time period property can be activated.</p> <p>The time period can be moved to the future.</p> <p>The time period can be amended.</p> <p>Example: Create a screen switch, for example to an AML screen. In the screen switching filter dialog in the Time tab, set the filter to time period and select One Month in the drop-down list. Select Use current date/time under Settings. Activate the Modify the checkbox of the time period property Enter the following setting under Move time period to the future: HH = 0 . Activate, under Change time period by, the checkbox of the Use last-completed time period property.</p> <p>Evaluation: today's date: 2/22/2018</p> <p>Result of the time filter in Runtime: 01.01.2018 - 31.01.2018</p>
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CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Help	Opens online help.
-------------	--------------------

Absolute time period

You define a fixed time period with the absolute filter. When the function is executed, the defined absolute time period is exactly used. To set the filter:

- 1. Select, in the **Filter** section, the **Absolute time period** option
- 2. Configure the desired time in the **Settings** section

Filter...

GeneralTimeLotsShiftColumn settingsTextStatusEquipment Modeling

Filter

☐ No time filter

☒ Absolute time period

☐ Relative time period

☐ From

Starting from HH:MM:SS

☐ Time period

One day

Settings

☐ Propose current date/time

☒ Preset

Day(s)MonthYearHHMMSS

From

1

February

2018

1

0

0

Until

8

February

2018

0

0

0

OK

Cancel

Help

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Parameter	Beschreibung
Einstellungen	Konfiguration des Zeitfilters.
Aktuelles Datum/Uhrzeit vorschlagen	Aktiv: Zeitfilter wird zur Runtime konfiguriert.
Vorgabe	Aktiv: Zeitfilter wird im Editor vorgegeben. Zur Runtime kann nur noch der Startzeitpunkt festgelegt werden.
Von	Startzeitpunkt des Filters. Auswahl von Tag, Monat, Jahr, Stunde, Minute und Sekunde.
Bis	Endzeitpunkt des Filters. Auswahl von Tag, Monat, Jahr, Stunde, Minute und Sekunde.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Relative period of time

A relative time period is entered.

Attention: This filter is updated constantly and continues to run.

Example: You set a relative time of 10 minutes and switch to a screen with this time filter at 12:00. You are then shown the data from 11:50 to 12:00 when switching. If the screen stays open, the filter is automatically updated. At 12:01, you see the data from 11:51 – 12:01 etc.

To set the filter:

1. Select, in the **Filter** section, the **Relative period of time** option

2. Configure the desired time in the **Settings** section

Filter...

General Time Lots Shift Column settings Text Status Equipment Modeling

Filter

☐ No time filter

☐ Absolute time period

☒ Relative time period

☐ From

Starting from HH:MM:SS

☐ Time period

One day

Settings

☐ Propose current date/time

☒ Preset

Day(s) - Month - Year HH - MM - SS

0 1 0 0

OK

Cancel

Help

Parameter	Description
Settings	Configuration of the time filter.
Propose current date/time	Active: Time filter is displayed in Runtime.
Preset	Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime. Selection of the relative time period in days, hours, minutes and seconds.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

From

A time from which the filter is effective is defined. To set the filter:

1. Select, in the **Filter** section, the **Off** option
2. Select the desired filter from the drop-down list.
 - Starting from HH:MM:SS
 - Starting from day - HH:MM:SS
 - Starting from day, month - at HH:MM:SS

3. Configure the desired time in the **Settings** section

Filter...

GeneralTimeLotsShiftColumn settingsTextStatusEquipment Modeling

Filter

No time filter

Absolute time period

Relative time period

From

Starting from HH:MM:SS

Time period

One day

Settings

HH - MM - SS

1

0

0

OK

Cancel

Help

Parameter	Description
Settings	Configuration of the time filter.
[Date/Time]	<div>Depending on the settings of the Off option, the time from which the filter is effective is configured here:</div> <div><div>▶ Starting from HH:MM:SS</div><div>▶ Starting from day - HH:MM:SS</div><div>▶ Starting from day, month - at HH:MM:SS</div></div> <div>Warning! The start point of this filter is not updated automatically. Only the existing times are used when shown, even if the screen remains open and 23:00:00 is reached. The end time point is not defined with this filter, it is carried over.</div>
▶ Starting from HH:MM:SS	A time from which the filter is effective is stated. If the time is

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	<p>not reached on the current day, filtering takes place from the corresponding time the previous day.</p> <p>Example: You enter 23 : 00 : 00. If it is then 23:30 when executing the function, then it is filtered from 23:00:00 up to the current point in time. If it is 22:30 however, then filtering takes place from 23:00:00 on the previous day to the current point in time.</p>
<p>► Starting from day - HH:MM:SS</p>	<p>A day and time for the start of the filter are entered. If the time given has not been reached in the current month, the corresponding time from the previous month is used.</p> <p>Example: You enter day 5 - 23 : 00 : 00. If it is the 10th of the month at 23:30, then filtering takes place from the 5th of the month from 23:00:00 to the current time point. If, however, it is the 4th of the month, then filtering takes place from the 5th of the previous month to the current time point.</p>
<p>► Starting from day, month - at HH:MM:SS</p>	<p>A month, day and time for the start of the filter are entered. If the time stated has not been reached in the current year, the corresponding time from the previous year is used.</p> <p>Example: You enter Day 5, Month October - 23 : 00 : 00. If it is October 10th at 23:30, then filtering takes place from October 5th from 23:00:00 to the current time point. If, however, it is only October 4th, then filtering takes place from the 5th of the previous year to the current time point.</p>

CLOSE DIALOG

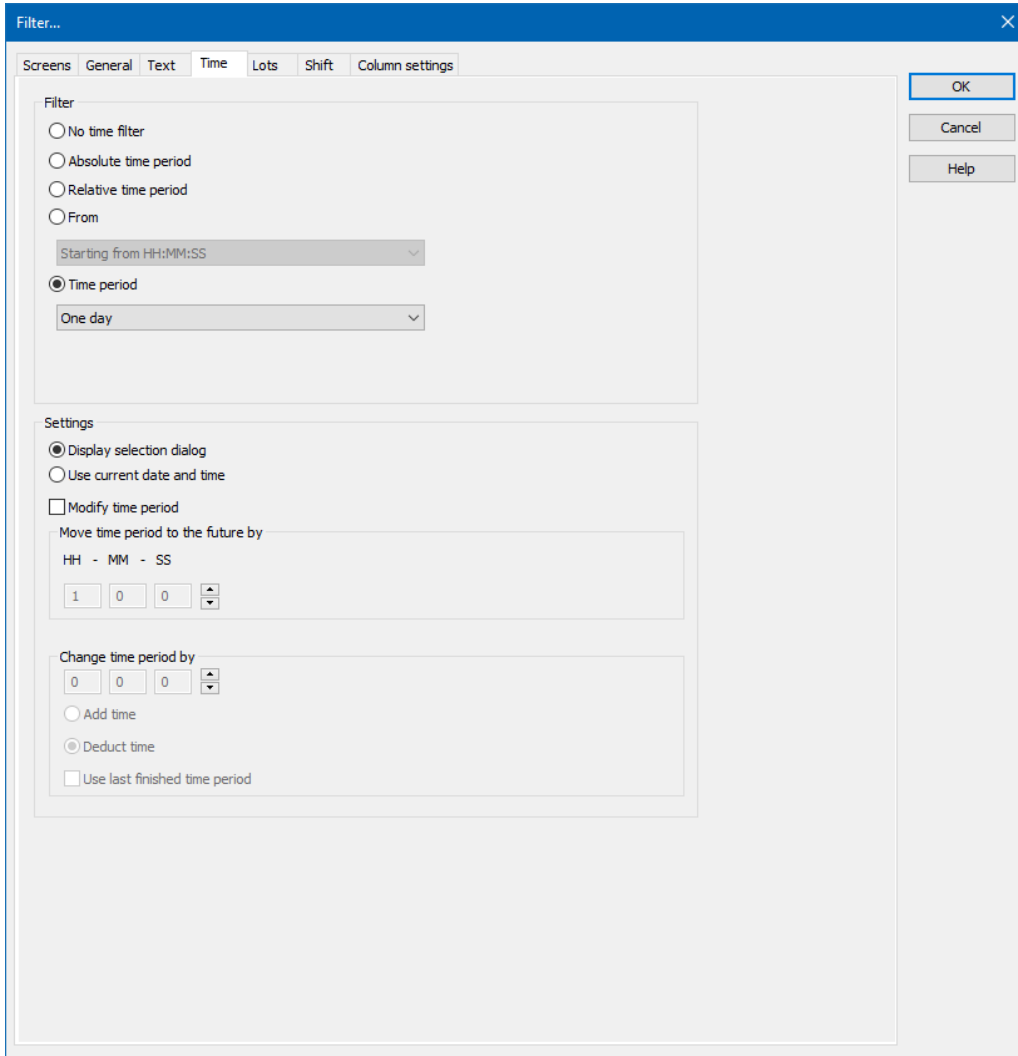
Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Time period

A time period in which the filter is effective is defined. To set the filter:

1. Select, in the **Filter** section, the **Time period** option
2. Configure the desired time in the **Settings** section

3. Note: The **Offer selection dialog** and **Use current date/time** entries are deactivated if, in the **Filter...** dialog in the **Display** tab under **Runtime**, the **Show this dialog in Runtime** property has been activated.



The screenshot shows the 'Filter...' dialog box with the 'Time' tab selected. The dialog has a blue title bar and a close button (X) in the top right corner. Below the title bar is a tabbed interface with tabs for 'Screens', 'General', 'Text', 'Time' (selected), 'Lots', 'Shift', and 'Column settings'. The main content area is divided into two sections: 'Filter' and 'Settings'.

Filter Section:

- ☐ No time filter
- ☐ Absolute time period
- ☐ Relative time period
- ☐ From
 - Starting from HH:MM:SS
- ☒ Time period
 - One day

Settings Section:

- ☒ Display selection dialog
- ☐ Use current date and time
- ☐ Modify time period
 - Move time period to the future by
 - HH - MM - SS
 - 1 0 0
- Change time period by
 - 0 0 0
 - ☐ Add time
 - ☒ Deduct time
 - ☐ Use last finished time period

On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

Option	Description
Time period	<p>Selection of a time range from a drop-down list.</p> <p>Filtering for this time range is carried out in Runtime. The filter relates to the time of screen switching.</p> <p>For example: The value <code>60 minutes</code> shows all archives of the last hour.</p> <p>If this dialog is also offered in Runtime, the start time of the time range can be selected.</p> <p>The following possibilities for selection are activated:</p> <ul style="list-style-type: none"> ▶ Display selection dialog ▶ Use current date and time <p>The Modify time period property can be activated.</p> <p>The time period can be moved to the future.</p> <p>The time period can be amended.</p>
Settings	Optional setting for the time range.
Display selection dialog	The selection dialog for the start time of the filter is offered in Runtime.
Use current date and time	The current date/time is set for the filter.
Modify time period	<p>Allows amendments to cycles, postponements and extensions of time periods.</p> <p>Active: Evaluation is carried out in accordance with the following rules:</p> <ul style="list-style-type: none"> ▶ First, the Use last finished time period option is evaluated. ▶ After this, Change time period by is used. ▶ Move time period to the future by is then applied. <p>Inactive: No changes to the time period are made.</p> <p>Attention: With version 7.10, filter actions on the basis of this function led to different results than those in the versions before.</p>
Move time period to the future by	<p>Active: The time period defined in the filter is postponed to the future. The start and end time are moved by the set time span.</p> <p>Given in <code>hours - minutes - seconds</code>.</p> <p>If a postponement that is the same or greater than the selected time period is set, a note to check the configuration is displayed.</p> <p>Note: The default value for HH is 1. If, for example, an evaluation of the last month is to be undertaken, this value must be set to 0.</p>

Change time period by	<p>Active: The time period defined in the filter is modified. The end time is moved by the set time span. The start time remains unchanged.</p> <p>Given in hours - minutes - seconds.</p> <p>The time range can be added or deducted. Selection by means of radio buttons:</p> <ul style="list-style-type: none"> ▶ Add time: The time stated in Change time period by is added to the time defined in the Time range option. ▶ Deduct time: The time stated in Change time period by is deducted from the time defined in the Time range option. <p>If a change and a postponement that are the same or greater than the selected time period is set, a note to check the configuration is displayed next to the control element for time configuration.</p>
Use last finished time period	<p>Active: The last selected and fully-completed time period in the Time period option is used.</p> <p>Example: For the Time period option, <i>One day</i> was selected. Filtering is thus carried out for "Yesterday", because this is the last day that was completed in full.</p>

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Specify time period in the Editor

With this method, you enter a fixed time period into the editor, which is applied when the function is carried out in Runtime. You can then only define the start time in Runtime, but no further filter settings.

For example: You set a 30 minute time filter. In Runtime, you can now only set when this 30 minute time period is to start. However, you cannot change the filter to a day filter.

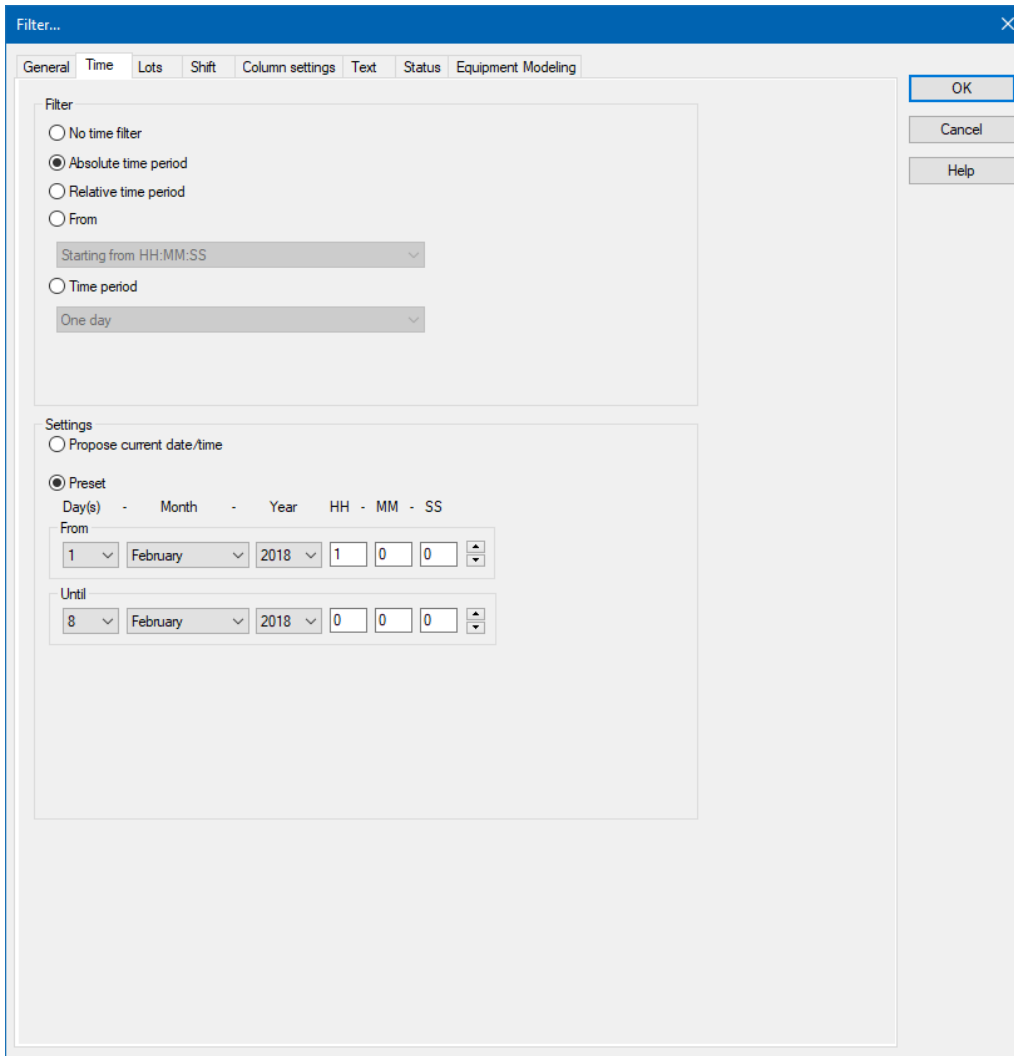


Attention

*When using this type of filter, you can also no longer amend all other filters in Runtime that are available in the **General** tab. It is still possible to filter for text, status and equipment.*

To create the filter:

1. The screen must have the **Filter** button to start the filter in Runtime
2. select the desired filter
3. Configure the selected time period



Tip for time period: Activate the `Show this dialog in Runtime` option in the filter dialog. This way you can amend the start time before the function is carried out. Do not have the filter displayed in Runtime when the function is turned on; this way the current time period is always used. If you have activated the **Use last closed time period** option, the previous time period is shown.

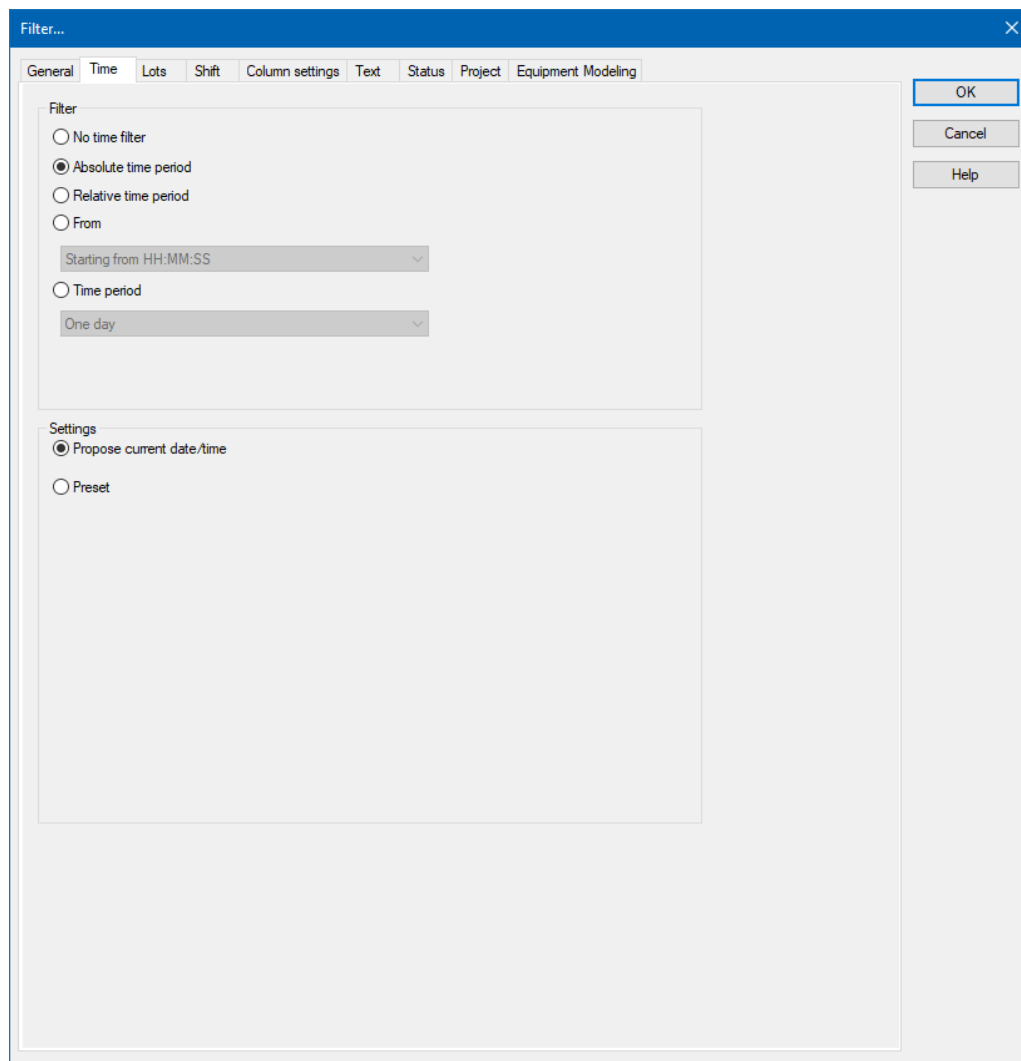
For example: You have set a 30 minute filter. It is 10.45 when the function is activated. If the **Use last closed time period** option is deactivated, the filter is set to the current time period 10:30:00 to 10:59:59. If the option is activated, the filter is set to the previous time period of 10:00:00 to 10:29:59.

Time filter can be configured in Runtime

With this method, the time filter can be amended in Runtime before execution.

To create the filter:

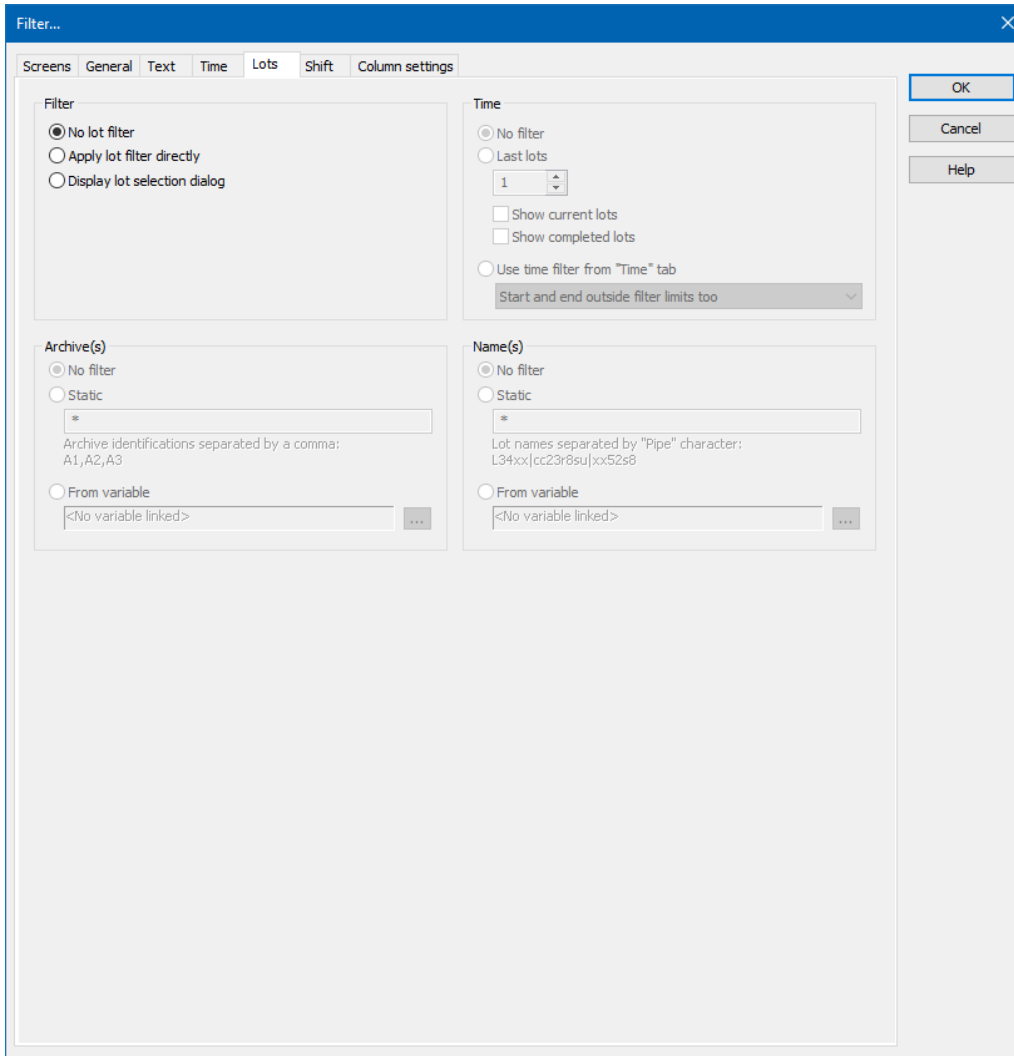
1. select the desired filter:
 - Absolute time period
 - Relative time period
 - Time period
2. Select, in the Settings section, the option **Propose current date/time**
3. The filter dialog is opened in Runtime with the current date and time



Lots

On this tab, you can define the lots that are to be displayed.

Note: If the lot filter is activated, the shift filter is automatically deactivated. Both filters mutually exclude one another.



Filter...

Screens General Text Time **Lots** Shift Column settings

Filter

- ☒ No lot filter
- ☐ Apply lot filter directly
- ☐ Display lot selection dialog

Time

- ☐ No filter
- ☐ Last lots
 - 1
- ☐ Show current lots
- ☐ Show completed lots
- ☐ Use time filter from "Time" tab
 - Start and end outside filter limits too

Archive(s)

- ☐ No filter
- ☐ Static
 - *
 - Archive identifications separated by a comma:
A1,A2,A3
- ☐ From variable
 - <No variable linked>

Name(s)

- ☐ No filter
- ☐ Static
 - *
 - Lot names separated by "Pipe" character:
L34xx|cc23r8su|xx52s8
- ☐ From variable
 - <No variable linked>

OK Cancel Help

FILTER

Settings for the application of the lot filter. Selection of one of the options:

- ▶ **No lot filter**
- ▶ **Apply lot filter directly**
- ▶ **Display lot selection dialog**

Note: If the lot filter is shown as a dialog, it can be prefiltered for archive identifications. It is expressly recommended that you use this prefiltering for performance improvements.

Option	Description
No lot filter	Active: The lot filter is deactivated and cannot be configured. Filtering for lots is not carried out in Runtime.
Apply lot filter directly	Active: The filter configured here is applied in Runtime directly.
Display lot selection dialog	<p>Active: The dialog for lot selection is shown in Runtime when:</p> <ul style="list-style-type: none">▶ Clicking on Filter or▶ screen switching, if the Show this dialog in Runtime option has been activated (Not available for each function/screen type) <p>Note: The dialog is not shown on reloading.</p> <p>Options can be pre-selected in the Editor.</p>

TIME

Configuration of the time filter for lot selection. Selection of one of the options:

- ▶ No filter
- ▶ Last lots
- ▶ Use time filter from "Time" tab

Option	Description
No filter	<ul style="list-style-type: none"> ▶ Active: The time range set in the Time tab is not taken into account. All completed and current lots are displayed.
Last lots	<p>Attention: Only works in conjunction with the Apply lot filter directly option.</p> <p>The option allows the combination of both options Display current lots and Display completed lots. At least one of the two options must be activated. If both options have been deactivated, this corresponds to the No filter setting.</p> <ul style="list-style-type: none"> ▶ Active: Input of the number of lots last concluded, according to what they should be filtered for. Input of the number in the number field or configuration via arrow keys. <p>Example: 3 was entered as a value for the option. 2 lots run and 10 have been ended. The following is shown: the two that are current and one that has been completed.</p> <p>Note: The setting of the time filter is not used as a time period for the current lots, but the last year. This filter will not be executed as a prefilter and can therefore not be used to improve performance.</p> <p>Note on compatibility: If the project is compiled for a version before 7.11, the following is applicable: If the current lots are selected or the combination of current and completed lots, then only the completed lots are shown in Runtime.</p>
Display current lots	<ul style="list-style-type: none"> ▶ Active: The current lots are displayed. <p>Note: If the number of lots to be displayed is greater than the number of current lots, lots that have been completed are also shown until the set limit has been reached. Example: 3 lots are to be displayed. 1 lot is running, 5 have been completed. The one current lot and two completed lots are displayed.</p>
Display completed lots	<ul style="list-style-type: none"> ▶ Active: The completed lots are displayed. <p>Note: If the number of lots to be displayed is greater than the number of completed lots, lots that have been completed are also shown until the set limit has been reached.</p>
Use time filter from "Time" tab	<ul style="list-style-type: none"> ▶ Active: Pre-filtering is carried out with the settings of the Time tab. <p>The effective range of the filter can be amended within this time range. Select from drop-down list:</p> <ul style="list-style-type: none"> ▶ Start and end also outside filter limits: (Default)

	<p>Lots can start before the start time configured in the Time filter and end after the configured end time.</p> <ul style="list-style-type: none"> ▶ Start and end only outside filter limits: Lots must start and end within the time points configured in the Time filter for the start and end. ▶ Start also before filter limit: Lots can start before the start time configured in the Time filter and end after the configured end time. ▶ End also after the filter limit: Lots can also end after the end time set in the time filter, but must start at or after the configured start time. ▶ Adjust start and end to filter limits: Lots are cut to the time points configured in the Time filter for the start and end.
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ARCHIVE(S)

Configuration of filtering for archives. Selection of one of the options:

- ▶ **No filter**
- ▶ **Static**
- ▶ **From variable**

Option	Description
No filter	Active: Filtering for archive names is not carried out.
Static	<p>Active: Archives whose identification corresponds to the character string entered in the input field are filtered for.</p> <p>Input of the archive identifications in the input field:</p> <ul style="list-style-type: none"> ▶ Several identifications are separated by a comma (,). ▶ * or empty: All archives, no filter.
From variable	<p>Active: The value of the variables linked here is applied as a filter for archive names in Runtime.</p> <p>Click on button ... in order to open the dialog for selecting a variable.</p> <p>Only available for all modules if the Apply lot filter directly option has been selected:</p> <p>Notes for variables in Runtime:</p> <ul style="list-style-type: none"> ▶ The variable selection is only activated in Runtime if a valid variable has already been linked in Runtime. The ... button is always deactivated in Runtime. The option can be selected, but no new variable can be linked. ▶ If the variable is not signed into the driver at the time at which the lot filter is applied, the variable is signed in and read. This can lead to delays with slow driver connections/protocols. <p>Attention: If the selected variable is not found in Runtime, there is no filtering for archive names. This also applies if the value of the variable cannot be determined. The filter then corresponds to the No filter setting.</p>

NAME(S)

Configuration of the filtering to names. Selection of one of the options:

- ▶ **No filter**
- ▶ **Static**
- ▶ **From variable**

Option	Description
No filter	Active: Filtering for lot names is not carried out.
Static	<p>Active: Lot names that correspond to the character string entered in the input field are filtered for.</p> <p>Input of the lot name in the input field:</p> <ul style="list-style-type: none"> ▶ Several entries are separated by a pipe character (). ▶ * or empty: All lots of all displayed archives, no filter.
From variable	<p>Active: The value of the variable linked here is applied as a filter for lot names in Runtime.</p> <p>Click on the ... button to open the dialog for selecting a variable.</p> <p>Only available if the option Apply lot filter directly has been selected.</p> <p>Notes for variables in Runtime:</p> <ul style="list-style-type: none"> ▶ The variable selection is only activated in Runtime if a valid variable has already been linked in Runtime. The ... button is always deactivated in Runtime. The option can be selected, but no new variable can be linked. <p>If the variable is not signed into the driver at the time at which the lot filter is applied, the variable is signed in and read. This can lead to delays with slow driver connections/protocols.</p> <p>Attention: If the selected variable is not found in Runtime, there is no filtering for lot names. This also applies if the value of the variable cannot be determined. The filter then corresponds to the No filter setting.</p>

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Shift

You configure the limitation of the display to certain shifts in this tab. The shift information is also applied to the existing filter.

Note:

- ▶ The shift filter requires a configured time filter. If the time filter is set to the **No time filter** option, the shift filter is deactivated. A notice of the cause of the deactivation is shown.
- ▶ If the lot filter is activated, the shift filter is automatically deactivated. Both filters mutually exclude one another. A notice of the cause of the deactivation is shown.

CONFIGURATION

To filter for shifts:

1. Configure the time filter.
 - **Absolute time filter:** Shifts from the absolute defined time period are shown.
 - **Relative time filter:** Shifts from the relative defined time range are shown. The upper limit is set at 1440 minutes by default.
 - **From:** Shifts from a certain time point are shown.
 - **Time range:** Shifts within a certain time range are shown.
2. Configure the shift filter.
To do this, select one of the options:
 - **Apply shift filter directly:**
The configured time filter is used to filter the shifts in Runtime. In doing so, all shifts that are at least partly in the time filter range are taken into account. Even if the time filter is defined in Runtime, the shift filter is applied after selecting the time period. If there is no suitable shift, no data is shown in the CEL screen.
The set filter continues to have an effect on the CEL data. If a shift is only partially within the set time range, only the CEL entries that are both in the time filter and the shift are shown.
 - **Show shift selection:**
The shift filter is configured and applied when called up in Runtime. All shifts that are at least partly in the time filter range are offered in a list for selection. After selecting one or more shifts, the time filter is overwritten and set to the times of the selected shifts. It is thus ensured that the complete shift is always included in the filter.
3. Configure **Name** and **Options** if required.

With the Apply shift filter directly option, the shifts are permanently monitored by the filter and the filter is amended if necessary.

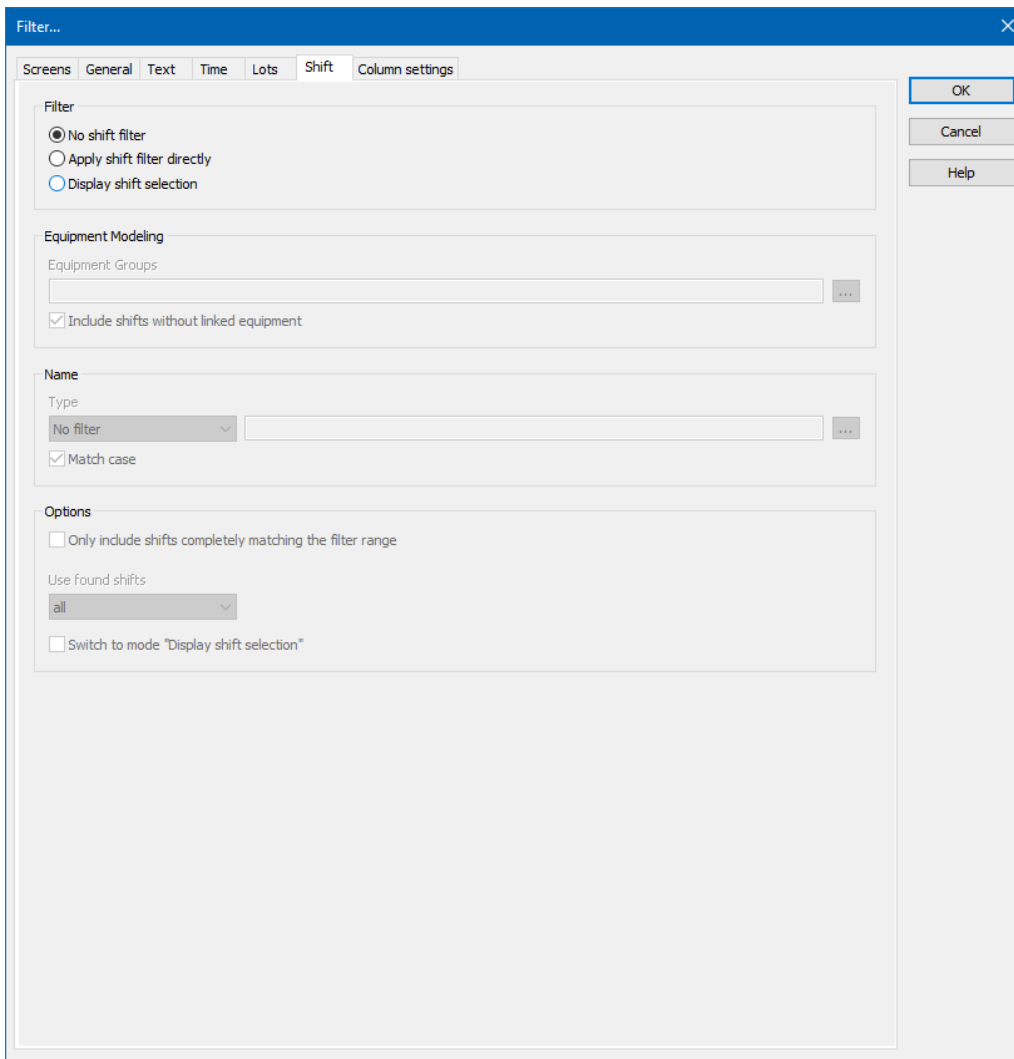
The shifts for filtering the data are redetermined if:

- ▶ Shifts are reconfigured
- ▶ Shifts are newly-created in the filter time period
- ▶ The time period is reconfigured

The following are not taken into account in the filter:

- ▶ Deleted shifts
- ▶ Shifts that are removed from the time filter due to a change of the time period

SHIFT DIALOG



Filter...

Screens General Text Time Lots Shift Column settings

Filter

☒ No shift filter
☐ Apply shift filter directly
☐ Display shift selection

Equipment Modeling

Equipment Groups

☒ Include shifts without linked equipment

Name

Type

No filter

☒ Match case

Options

☐ Only include shifts completely matching the filter range

Use found shifts

all

☐ Switch to mode "Display shift selection"

OK Cancel Help

FILTER

Settings for the application of the shift filter. Selection of one of the options:

- ▶ **No shift filter**
- ▶ **Apply shift filter directly**
- ▶ **Display shift selection**

Option	Description
No shift filter	<p>Shift filter selection:</p> <ul style="list-style-type: none"> ▶ Active: The shift filter is deactivated and cannot be configured. Filtering for shifts is not carried out in Runtime.
Apply shift filter directly	<p>Applying the shift filter in Runtime:</p> <ul style="list-style-type: none"> ▶ Active: The filter configured here is applied in Runtime directly. Equipment groups and shift names can be preselected.
Display shift selection	<p>Display of the shift selection in Runtime:</p> <ul style="list-style-type: none"> ▶ Active: The dialog for shift selection is shown in Runtime. <p>The settings chosen in the Editor are applicable for the reading of the shifts in Runtime.</p> <p>The dialog is shown in Runtime when:</p> <ul style="list-style-type: none"> ▶ Clicking on the Filter button. Or: ▶ Executing screen switching. <p>Note: The dialog is not shown on reloading.</p>

EQUIPMENT MODELING

Configuration of the equipment groups for filtering for shifts.

Option	Description
Equipment Groups	<p>Selection of equipment groups to which shifts must be linked.</p> <p>Clicking on the ... button opens the dialog to select equipment groups.</p> <p>If several equipment groups are selected, they are displayed in the option separated by a semicolon (;).</p>
Include shifts without equipment linking	<p>Selection of whether linking to an equipment group is necessary.</p> <ul style="list-style-type: none"> ▶ Active: Shifts that are not linked to an equipment group are also taken into account. ▶ Inactive: Only shifts that are linked to at least one equipment group are taken into account. <p>Default: Active</p>

NAME

Configuration of the shift names for which filtering is to take place.

Selection of one of the options:

- ▶ **No filter**

- ▶ Name with wildcards
- ▶ Name from variable

Option	Description
Type	<p>Selection of the filter type from a drop-down list when filtering according to name:</p> <ul style="list-style-type: none"> ▶ No filter: Filtering for names is not carried out. ▶ Name with wildcards: A name with placeholder can be entered into the input field. All shifts whose name is applicable for the filter are included. ▶ Name from variable: The name of the shift is defined by a variable in Runtime. Click on button ... Opens the dialog for selecting a variable. <p>Default: No filter</p> <p><u>Wildcards:</u></p> <ul style="list-style-type: none"> ▶ *: Replaces desired characters in the desired quantity. Can be used as a search term at any desired place. red* finds all texts that start with red. ▶ ?: Replaces precisely one character. r?d finds red, rad, .. <p>Notes for variables in Runtime:</p> <ul style="list-style-type: none"> ▶ The variable selection is only activated in Runtime if a valid variable has already been linked in Runtime. The ... button is always deactivated in Runtime. The option can be selected, but no new variable can be linked. ▶ If the variable is not signed into the driver at the time at which the lot filter is applied, the variable is signed in and read. This can lead to delays with slow driver connections/protocols. <p>Attention: If the selected variable cannot be found in Runtime or the value of the variables cannot be determined, the filter is treated like the No filter setting.</p>
Note case sensitivity	<p>Setting for filtering for upper/lower case</p> <ul style="list-style-type: none"> ▶ Active: Capitalization is taken into account for names. <p>Default: Aktiv</p>

OPTIONS

Configuration of the options for filtering for shifts in the CEL.

Option	Description
Only include shifts that are fully in the filter range	<p>Configuration of which shifts are displayed.</p> <ul style="list-style-type: none"> ▶ Active: Only shifts that are fully in the time filter set are shown. ▶ Inactive: Shifts that start earlier and/or finish later are also shown. <p>Default: <code>Inactive</code></p> <p><u>Example:</u></p> <ul style="list-style-type: none"> ▶ Time filter: Today 08:00 – 12:00. ▶ Existing shift: Today 8:30 AM – 5:00 PM. <p>Result for:</p> <ul style="list-style-type: none"> ▶ Option active: The shift is not taken into account because it is not fully in the time filter. ▶ Inactive option: The shift is taken into account because it is partly in the time filter.
Use shifts found	<p>Selection of shifts that are taken into account, from drop-down list:</p> <ul style="list-style-type: none"> ▶ All: All shifts found are taken into account. ▶ Earliest shift only: Of the shifts found, only the earliest are taken into account. The earliest shift is the shift with the earliest start time. If several shifts have the same start time, one of these shifts is selected randomly. ▶ Only last shift: Of the shifts found, only the latest shift is taken into account. The latest shift is the shift with the latest end time. If several shifts have the same end time, one of these shifts is selected randomly. <p>Default: <code>all</code></p> <p>Attention: The Only include shifts that are fully in the filter range influences the evaluation of this option. If it is active, only shifts that are fully in the time range can be found. If it is inactive, shifts that start earlier or end later can be found.</p> <p><u>Example:</u></p> <p><u>Configuration and shifts:</u></p> <ul style="list-style-type: none"> ▶ Only include shifts that are fully in the filter range option: active. ▶ Use found shifts option: <code>Latest shift only</code> ▶ Time filter: Today 08:00 – 10:00 AM. ▶ Shift 1: Today 08:00 – 8:30 AM. ▶ Shift 2: Today 8:30 AM – 9:00 AM. ▶ Shift 3: Today 10:00 AM – 11:00 AM.

	<u>Result:</u> <ul style="list-style-type: none"> ▶ Shift 2 is used
Switch to "Show shift selection" mode	<ul style="list-style-type: none"> ▶ Active: The filter acts as with the Show shift selection option. The time filter is set to absolute; start and end correspond to the start time and end time of the shifts. If no shift is found, the times are set to 0 for the time filter. <p>Default: Inactive</p> <p><u>Behavior in Runtime:</u></p> <p>If the shift management is set to Show shift selection in Runtime, the filter options also have an effect on the shifts shown in the shift list. The shift list is filtered accordingly by clicking on the Update button.</p>

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Column settings

In this tab, you define how the **archive list**, the **lot list** and the **shift list** are displayed in Runtime:

- ▶ Selection of the columns to be displayed
- ▶ Sorting of the columns
- ▶ Formatting of columns:
 - Labeling
 - Width

- Alignment

Filter...

ScreensGeneralTextTimeLotsShiftColumn settings

Archive list

Archive identification	Archive name	Equipment Groups
Filter text	Filter text	Filter text

<

>

Column selection...

Column format...

Lot list

Lot name	Start time	End
Filter text	Filter text	Filter text

<

>

Column selection...

Column format...

Shift list

Shift name	Start date	Start time	End date	End
Filter text	Filter text	Filter text	Filter text	Filter text

<

>

Column selection...

Column format...

OK

Cancel

Help

ARCHIVE LIST

Option	Description
Archive list	<p>Configuration of the archive list. Display of the configured columns.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Column selection	Clicking on the button opens a dialog to select and sort the columns.
Column format	Clicking on the button opens a dialog to format the list.

LOT LIST

Option	Description
Lot list	<p>Configuration of the lot list. Display of the configured columns.</p> <p>If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Column selection	Clicking on the button opens a dialog to select and sort the columns.
Column format	Clicking on the button opens a dialog to format the list.

SHIFT LIST

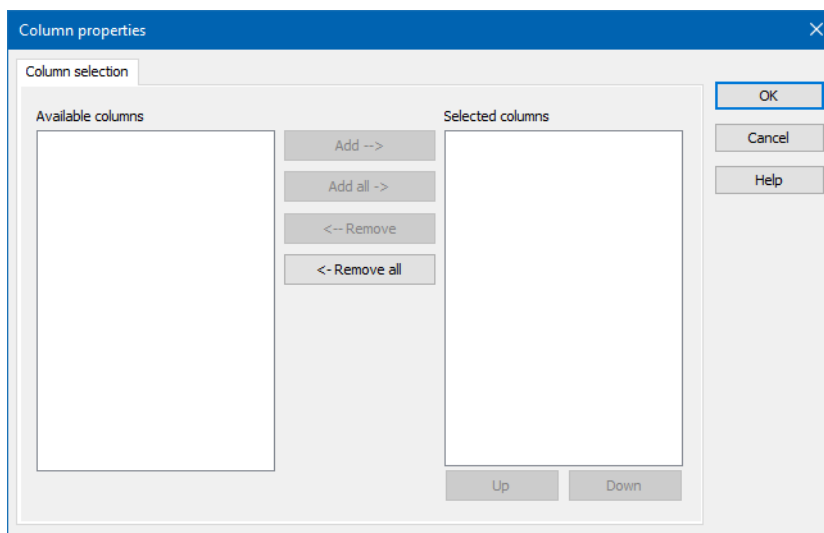
Option	Description
Shift list	<p>Configuration of the shift list. Display of the configured columns.</p> <p>Longer texts can also be displayed in Runtime over several lines using the Automatic word wrap property.</p> <p>In the Editor, go to Representation in the properties of the respective list properties and activate the checkbox of the Automatic word wrap property.</p> <p>The line height must be amended manually.</p>
Column selection	Clicking on the button opens a dialog to select and sort the columns.
Column format	Clicking on the button opens a dialog to format the list.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Column selection

Selection and sequence of the columns.



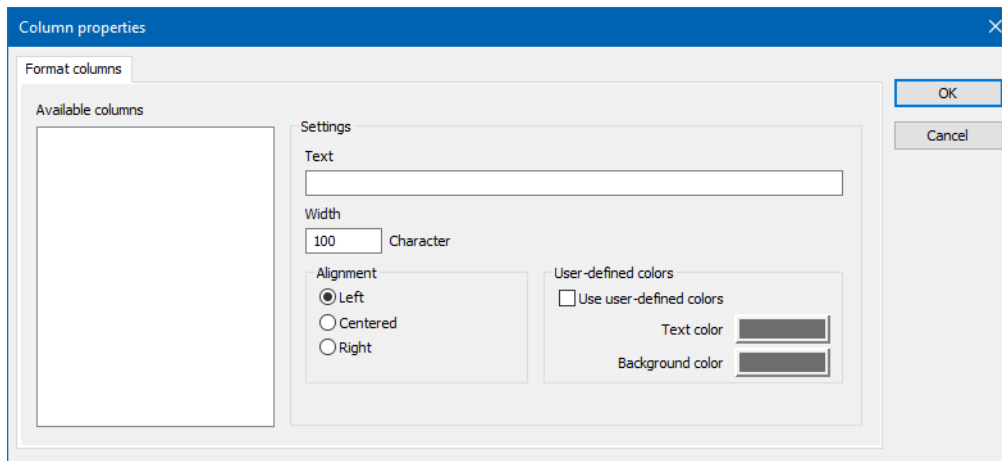
Option	Function
Available columns	List of columns that can be displayed in the table.
Selected columns	Columns that are displayed in the table.
Add ->	Moves the selected column from the available ones to the selected items. After you confirm the dialog with OK, they are shown in the detail view.
Add all ->	Moves all available columns to the selected columns.
<- Remove	Removes the marked columns from the selected items and shows them in the list of available columns. After you confirm the dialog with OK, they are removed from the detail view.
<- Remove all	All columns are removed from the list of the selected columns.
Up	Moves the selected entry upward. This function is only available for unique entries, multiple selection is not possible.
Down	Moves the selected entry downward. This function is only available for unique entries, multiple selection is not possible.

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Column Format

Configuration of the properties of the columns for configurable lists. The settings have an effect on the respective list in the Editor or - when configuring screen switching - in Runtime.



AVAILABLE COLUMNS

Option	Description
Available columns	List of the available columns via Column selection . The highlighted column is configured via the options in the Settings area.

SETTINGS

Option	Description
Settings	Settings for selected column.
Labeling	Name for column title. The column title is online language switchable. To do this, the @ character must be entered in front of the name.
Width	Width of the column in characters. Calculation: Number time average character width of the selected font.
Alignment	Alignment. Selection by means of radio buttons. Possible settings: <ul style="list-style-type: none"> ▶ Left: Text is justified on the left edge of the column. ▶ Centered: Text is displayed centered in the column. ▶ Right: Text is justified on the right edge of the column.
User-defined colors	Properties in order to define user-defined colors for text and background. The settings have an effect on the Editor and Runtime. Note: <ul style="list-style-type: none"> ▶ These settings are only available for configurable lists. ▶ In addition, the respective focus in the list can be signaled in Runtime by means of different text and background colors. These are configured using the project properties (on page 161).
User defined colors	Active : User-defined colors are used.
Text color	Color for text display. Clicking on the color opens the color palette to select a color.
Background color	Color for the display of the cell background. Clicking on the color opens the color palette to select a color.

Lock column filter in the Runtime	<ul style="list-style-type: none"> ▶ Active: The filter for this column cannot be changed in Runtime. <p>Note: Only available for:</p> <ul style="list-style-type: none"> ▶ Batch Control ▶ Extended Trend ▶ Filter screens ▶ Message Control ▶ Recipe Group Manager ▶ Shift Management ▶ Context List
--	--

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

18.8 Message Box

You can have system messages displayed in Runtime by means of message boxes. Five different system messages can be configured in Runtime:

- ▶ **Message Box [Ok]**
- ▶ **Message Box [Yes, No]**
- ▶ **Message Box [Yes, No, Yes to All, No to All]**
- ▶ **Message Box [Ok, Cancel]**
- ▶ **Message Box [Yes, No, Cancel]**

Note: The listed message box types are only called up if they are called up from a zenon screen directly. The message boxes that are called up from a dialog remain unchanged.

18.8.1 Create a screen of type Message box

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `Message box` in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.



Attention

Be sure to have the following settings for the selected frame:

- ▶ Activate the option **Frame can be opened multiple times**
- ▶ Activate the option **Do not close after losing focus**
- ▶ The `Message box` screen must not be based on the same frame as other screens!
- ▶ Deactivate the **Min./max.** option **Buttons** in the **Frame** project properties.

Note the following information for the message box screen:

- ▶ No screen switching can be configured in the screen.
- ▶ The `message box` screen must not be called up by means of a screen switching function.

18.8.2 Operating during Runtime

The following control elements are available:

Control element	Action
Message box header	Message box header.
Message box text	Message box content.
Buttons	Opens the dialog for selecting an action.
Ok	Confirms action and closes the dialog.
Cancel	Discards action and closes the dialog.
Yes	Applies changes and closes the dialog.
No	Discards changes and closes the dialog.
Yes all	Applies all changes and closes the dialog.
No all	Discards all changes and closes the dialog.
Icons	Some system messages have an icon to symbolize their type.
Exclamation mark	Appears in the form of a warning in the system message.
Information	Appears in the form of information in the system message.
Question	Appears in the form of a question in the system message.
Error	Appears in the form of an error in the system message.

Note: Icons are implemented as buttons without a function. Replace the labeling with graphics files to achieve the desired display.

18.9 HTML

Makes it possible to display a screen in HTML. The Microsoft Web Browser Control currently installed on the computer is used as the rendering engine.



Information

The possibilities for browsers are limited in Windows CE. Pages may not be displayed as expected.

COMPATIBILITY MODE

The behavior of compatibility mode can be amended using the Windows Registry.

EXAMPLE: SET COMPATIBILITY MODE FOR INTERNET EXPLORER 11:

1. Navigate to the key `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Main\FeatureControl\FEATURE_BROWSER_EMULATION`
2. Add the following DWORD value: `Zenrt32.exe`
(note capitalization)
3. Set its **decimal value** to: 11001

Note: On a 64-bit computer, add the same DWORD value in the following key:

`HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Internet Explorer\Main\FeatureControl\FEATURE_BROWSER_EMULATION`

GPU RENDERING

The behavior can be amended using the Windows Registry.

EXAMPLE: SET GPU RENDERING:

1. Navigate to the key `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Main\FeatureControl\FEATURE_GPU_RENDERING`
2. Add the following DWORD value: `Zenrt32.exe`
(note capitalization)
3. Set its **decimal value** to: 00000001

Note: On a 64-bit computer, add the same DWORD value in the following key:

`HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Internet Explorer\Main\FeatureControl\FEATURE_GPU_RENDERING`

18.9.1 Creating a screen of the type HTML

CREATING A SCREEN OF THE TYPE HTML

Engineering

There are two procedures for the creation of a screen from zenon version 8.00:

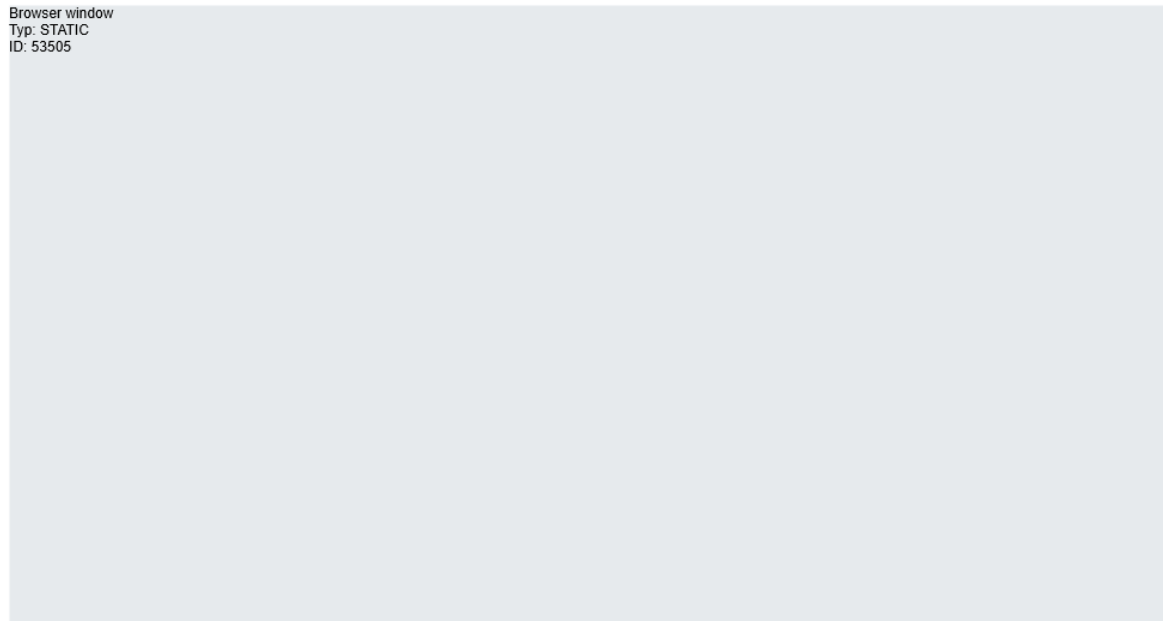
- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools**, **Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `HTML` in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

HTML SCREEN

Browser window
Typ: STATIC
ID: 53505



Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type. Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p>
Browser	Control elements for the browser.
Browser Window	The browser is displayed.
Address field	Field for entry of the address (URL).
Home page	The start page is called up.
Search forward	Go forward.
Search back	Go back.
Refresh search	Refresh display.

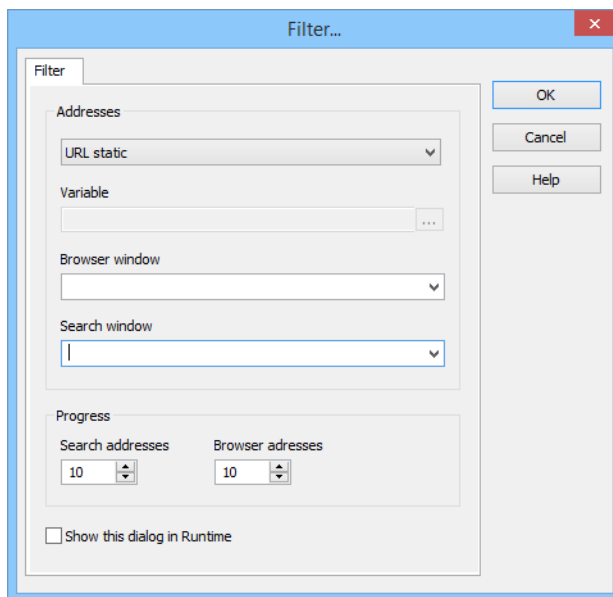
Cancel	Stop navigation.
Search	Control elements for the search. When clicking a link in the Search field, the corresponding page is shown in the browser. So e.g. in the field Search a navigation bar or the results of a search engine can be displayed without changing the contents, when a link is activated.
Search window	Display of the search.
Search field	Search for address or file.
Home	Back to home in the search area.
Forward	Page down in the search area.
Search back	Page up in the search area.
Refresh	Refresh display in search area.
Stop	Cancel search action.
Filter	Open filterbox.

18.9.2 Screen switch to an HTML screen

To create a function to call up an `HTML` screen:

- ▶ Select **New function**.
- ▶ Select **Screen switching**.
- ▶ Select the `HTML` screen (on page 423)
- ▶ The configuration dialog is opened.
- ▶ Configure the parameters for browser and search.
The browser address can be statically configured or transferred from a variable.
- ▶ Confirm the configuration by clicking on **OK**.

HTML SCREEN SWITCH FUNCTION



ADDRESSES

Parameter	Description
Addresses	<p>Selection of the type of address entry for the home page:</p> <ul style="list-style-type: none"> ▶ <code>Static URL</code>: Enter a fixed address in the browser window or select from its drop-down list. ▶ <code>URL from variable</code>: Selection of a variable in the Variable field, which transfers the address in Runtime.
Variable	<p>Enter the variables that transfer the URL of the home page in Runtime. Click on button ... in order to open the dialog for selecting a variable. The variables can only be entered in the field directly.</p> <p>Only available if, for Addresses, <code>URL from variable</code> has been selected.</p>
Browser Window	<p>Enter the URL that is to be opened in Runtime as a home page. Selection by means of a drop-down list or direct input in the field.</p> <p>Only available if, for Addresses, <code>Static URL</code> has been selected.</p>
Search window	<p>Selection of the URL that is used for search in the Internet. Selection by means of a drop-down list or direct input in the field.</p>

PROGRESS

Parameter	Description
Progress	Number of addresses that are available for the drop-down list.
Search addresses	<p>Number of addresses that are noted for the search range and are available in the drop-down list.</p> <p>Minimum: 0 Maximum: 20 Default: 10</p> <p>Note: The number is only used for the remanent saving in the project.ini (at closing and restarting the Runtime) however not for the running Runtime.</p>
Browser addresses	Number of addresses that are noted for the home page.

	Minimum: 0 Maximum: 20 Default: 10 Note: The number is only used for the remanent saving in the project.ini (at closing and restarting the Runtime) however not for the running Runtime.
--	---

GENERAL

Parameter	Description
Show this dialog in the Runtime	<ul style="list-style-type: none"> ▶ Active: Opens the dialog when the screen is opened in the Runtime. Settings can be amended. ▶ Inactive: The settings made here are applicable in Runtime. These can no longer be amended.

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

18.10 Notepad

With the notepad you can display text files and (optionally) edit them.

18.10.1 Creating screen Notepad

CREATING SCREEN NOTEPAD

The display size of the screen Notepad is taken from the frame size (on page 203). The file which is opened must be determined during the definition of the Screen switch (on page 433).

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `HTML` in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.

4. Create a screen switch function.

File...

Save

Save as

Close

Refresh

Comment
Typ: EDIT
ID: 10007

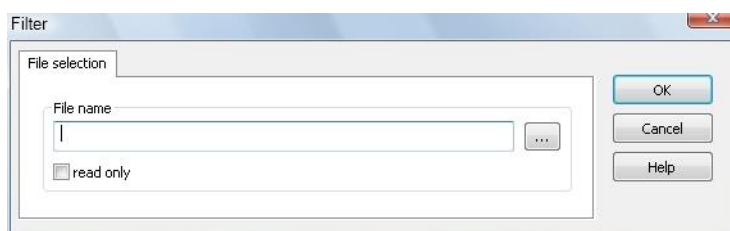
Print

Control element	Action
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p>
Notepad window	Displays the selected notepad.
Notepad functions	Control elements for using the notepad.
File...	Opens the dialog for selecting a file.
Refresh search	Refreshes the selected window.
Save	Saves the text file in the given folder.
Save as...	Opens the dialog for selecting a save path and name.
Close	Closes the current window.
Print	Prints the content of the notepad on the defined printer.
Print with dialog...	Opens the dialog to select a printer before printing.
Navigation	Control element for navigation.
Line up	Goes one line up in the text file.
Line down	Goes one line down in the text file.
Column right	Goes one column right in the text file.
Column left	Goes one column left in the text file.
Page up	Goes one page up in the text file.
Page down	Goes one page down in the text file.
Page right	Goes one page right in the text file.
Page left	Goes one page left in the text file.

18.10.2 Function screen switch to Notepad

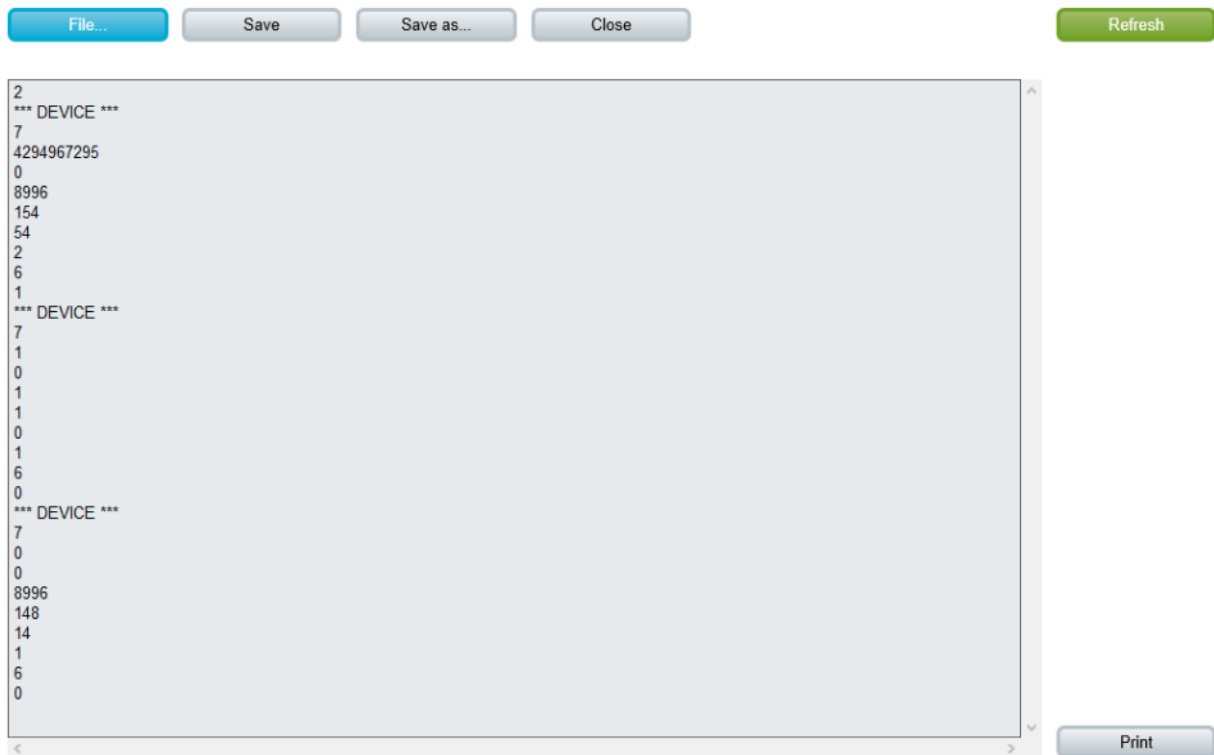
In order to create a function to switch to the screen Notepad:

- ▶ select New Function
- ▶ Select Screen switching
- ▶ select the screen Notepad (on page 429)
- ▶ a dialog for defining the file which should be displayed is opened



Parameters	Description
File name	Selection of the file which is to be displayed Click on ... button to open the selection dialog. The file must have already been created in the project manager in the File/Texts and formats node. If no appropriate file has been created, you can select on in the dialog using symbol Add file . Allowed file types: TXT, HTM, HTML, FRM.
read only	Active: In the Runtime the text can only be read but not edited.

18.10.3 Operating during Runtime



The following control elements are available:

Control element	Action
Notepad window	Displays the selected notepad.
Notepad functions	Control elements for using the notepad.
File...	Opens the dialog for selecting a file.
Refresh search	Refreshes the selected window.
Save	Saves the text file in the given folder.
Save as...	Opens the dialog for selecting a save path and name.
Close	Closes the current window.
Print	Prints the content of the notepad on the defined printer.
Print with dialog...	Opens the dialog to select a printer before printing.
Navigation	Control element for navigation.
Line up	Goes one line up in the text file.
Line down	Goes one line down in the text file.
Column right	Goes one column right in the text file.
Column left	Goes one column left in the text file.
Page up	Goes one page up in the text file.
Page down	Goes one page down in the text file.
Page right	Goes one page right in the text file.
Page left	Goes one page left in the text file.

18.11 Context List

Context Lists allow central administration of hierarchically-structured texts in Runtime. They can be used for the central administration of alarm causes. To do this, a Context List entry is linked to one or several entries in the Alarm Message List.

If you want to edit the list directly using the monitor, activate the Multi-Touch functionality. You can find detailed information in relation to this in the Configure interactions chapter.

Possible alarm causes can be pre-defined centrally with the help of the **Context List**. This also simplifies evaluation, for example in reports. Texts that are also required (alarm causes) can be easily added in runtime using the zenon `Context List` screen.

The following is applicable for context lists:

► Levels

Several nodes can be arranged in parallel or hierarchically in a Context List. Each node can contain several entries.

Restrictions:

- maximum 5 hierarchy levels
- no language switch

► Persistence

Context Lists are persistent. They therefore cannot be deleted, only hidden from the user. Gaps in reports are thus avoided.

DISPLAY OF LONGER TEXTS IN LISTS

Longer texts can also be displayed in Runtime over several lines using the **Automatic word wrap** property.

In the Editor, go to **Representation** in the properties of the respective list properties and activate the checkbox of the **Automatic word wrap** property.

The line height must be amended manually.

CONTEXT LISTS IN THE NETWORK

When using a **Context List** in a network project, saving is carried out on the server. Clients are synchronized automatically.

If a list is processed on several clients at the same time, the last-saved version is used by the server and distributed to all clients.

If the client loses the connection to the server, the **Context List** is emptied on the client and the screen elements are grayed out for editing. Linked entries in the Alarm Message List are shown with the text **<Alarm cause does not exist>**.

As soon as there is a connection to the server, the **Context List** is shown and the screen elements are released for editing.

Hint: In the network, use tokens for operating authorizations; for details, see the Context List in the network (on page 456) chapter.

AML

When calling up an alarm list, the "Alarm Cause" can be displayed as empty (**<Alarm cause does not exist>**), if the update has not yet been sent by the server. As soon as the first update comes from the server, the alarm causes are shown correctly.

CEL

Changes in the Context List can be logged in the CEL. To do this, activate, in the project properties for the **Chronological Event List** group, the logging for **Context lists**.

18.11.1 Creating a screen of the type Context List

ENGINEERING

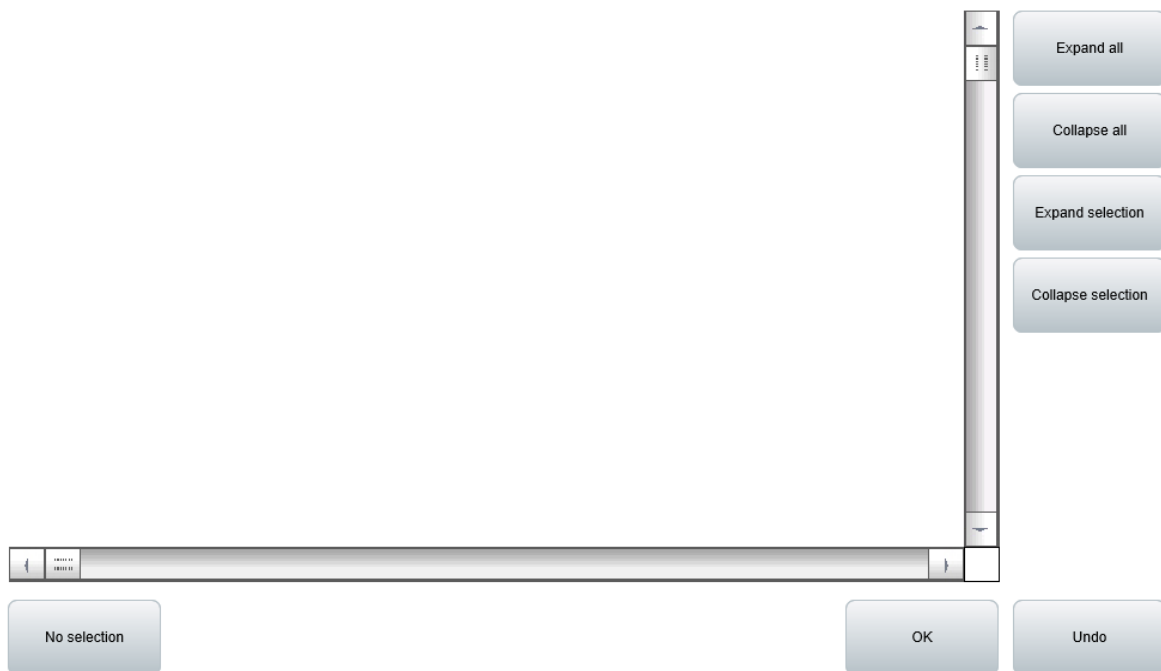
There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select `Context List` in the **Screen type** property.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) select menu item **Control elements** from the menu bar
 - b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
 - c) Remove elements that are not required from the screen.
 - d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.
4. Create a screen switch function.

SCREEN OF THE TYPE CONTEXT LIST



INSERT TEMPLATE

Control element	Description
Insert template	<p>Opens the dialog for selecting a template (on page 272) for the screen type.</p> <p>Templates are shipped together with zenon and can also be created by the user.</p> <p>Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created.</p> <p>Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.</p>

CONTROL ELEMENTS

Control element	Description
Context List	Display of the Context List with its entries and the columns defined during screen switching.
Column selection	<p>Opens the dialog for selecting the columns to be displayed.</p> <p>Only available in Runtime if the list is shown in the screen.</p>
Column format	<p>Opens the dialog for configuration of the individual columns.</p> <p>Only available in Runtime if the list is shown in the screen.</p>
Name	<p>Entry of the name for a node or a text.</p> <p>The following is applicable for names:</p> <ul style="list-style-type: none"> ▶ The name for nodes must be unique in the Context List within a level. ▶ The name for texts must be unique within a node. ▶ Maximum length: 256 characters ▶ The following characters are not permitted: \:*?<> '""#%
Description	Entry of the description for a node or a text.
Insert root node	Inserts a node at the first level.
Add node	Inserts a node under the selected element and switches the selection to the newly-created element.
Add text	Adds text to the selected element. The selection of the element remains.

Save	Saves the Context List.
Show texts marked as "deleted"	<p>Switch element to configure the display of entries that are marked as deleted.</p> <ul style="list-style-type: none"> ▶ On: Deleted entries are shown in the context list. ▶ Off: No display of deleted entries in the context list. <p>Default: depends on the setting in screen switching (on page 443).</p>
Expand/collapse node	<p>Allows all or selected nodes to be expanded or collapsed. Selection:</p> <ul style="list-style-type: none"> ▶ Expand all: Opens all nodes of all levels. ▶ Reduce all: Collapses all nodes of all levels. ▶ Expand selected: Opens all entries at the selected level. ▶ Reduce selected: Reduces all entries at the selected level.
Export XML	Exports the Context List as an XML file.
Import XML	<p>Imports a Context List from an XML file.</p> <p>Existing Context Lists are replaced completely during import. No texts are combined. Pre-existing texts are deleted.</p>
OK	<p>Applies the settings and closes the screen.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>
Cancel	<p>Discards all changes and cancels configuration.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>
No selection	<p>Discards the selection and closes the screen.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>

Use of a Context List screen to select alarm causes.

Context List screens can be used in Runtime to select alarm causes.

ENGINEERING

To use a `Context List` screen to elect alarm causes, proceed as follows:

CREATION OF THE SCREEN

1. Create a new screen.

To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.

2. Change the properties of the screen:

- a) Name the screen in the **Name** property.
- b) In the properties select **Screen type** `Context List`.
- c) Select the desired frame in the **Frame** property.

Hint: To call up the screen in dialog form, it is recommended that a template with the **Border type** setting set to `Size fixed` is used.

3. Configure the content of the screen:

- a) select menu item **Control elements** from the menu bar
- b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
- c) Remove elements that are not required from the screen.

4. If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.

5. If necessary, activate the **Modal dialog** setting in the **Display** group for the screen.

USE OF THE SCREEN

In order to be able to use the screen in Runtime to select alarm causes, select the previously-created screen in the project settings in the **Alarm Message List** group for the **Alarm cause selection screen** setting. The default dialog to select alarm causes is replaced by this screen as a result.

USE IN RUNTIME

Use the **OK**, **Cancel** and **None** control elements to assign entries from the Context List (alarm causes) to the alarms selected in the Alarm Message List.

In Runtime, only the control elements to select alarm causes, the control elements for column settings and the control elements to expand and reduce nodes are active in the screen. All other control elements for editing the Context List, if present in the screen, grayed out.

18.11.2 Configuring screen switching

ENGINEERING

Steps to create the function:

1. Create a new function:

In the toolbar or in the context menu of the Functions node, select **New function**.
The dialog to select a function is opened.

2. Navigate to node **Screens**

3. Select the **Screen switch** function.

The dialog for selecting a screen is opened.

4. Select the desired picture.

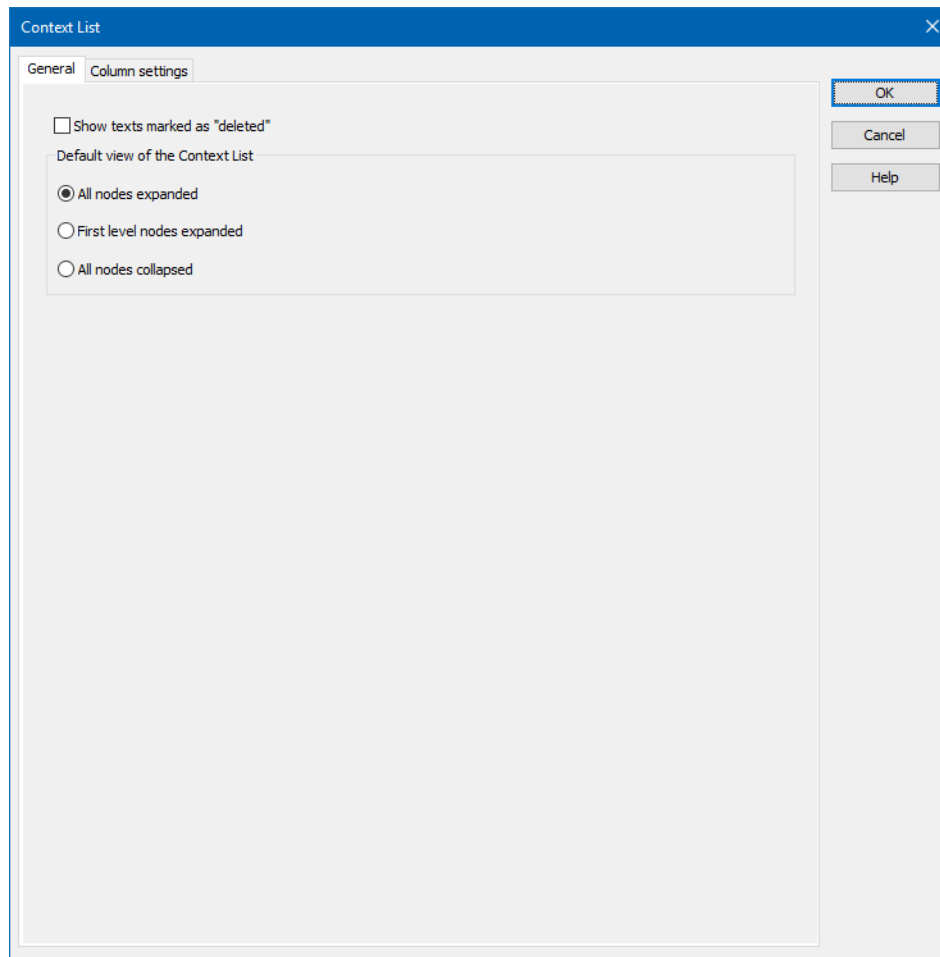
Note: If you select a screen from another project, ensure that the project has been started in Runtime.

5. Configure the filter.

6. Name the function in the **Name** property.

General

Configuration of the general properties.



Option	Description
Show texts marked as "deleted"	<p>Configuration of the display of entries that have been marked as deleted.</p> <ul style="list-style-type: none"> ▶ active: Display in the Context List. ▶ Inactive: Not displayed in the Context List. <p>Default: Inactive</p> <p>Note: If a corresponding control element has been configured for the screen, it is configured along the same lines as this setting.</p>
Standard view in the Context List	<p>Configuration of the view in which the Context List is opened in Runtime.</p> <p>Selection by means of radio buttons:</p> <ul style="list-style-type: none"> ▶ All nodes expanded: All entries of all nodes are shown. (Default.) ▶ First level nodes expanded: The first level is shown as opened. ▶ All nodes collapsed: Only the first level of the node is visible.

CLOSE DIALOG

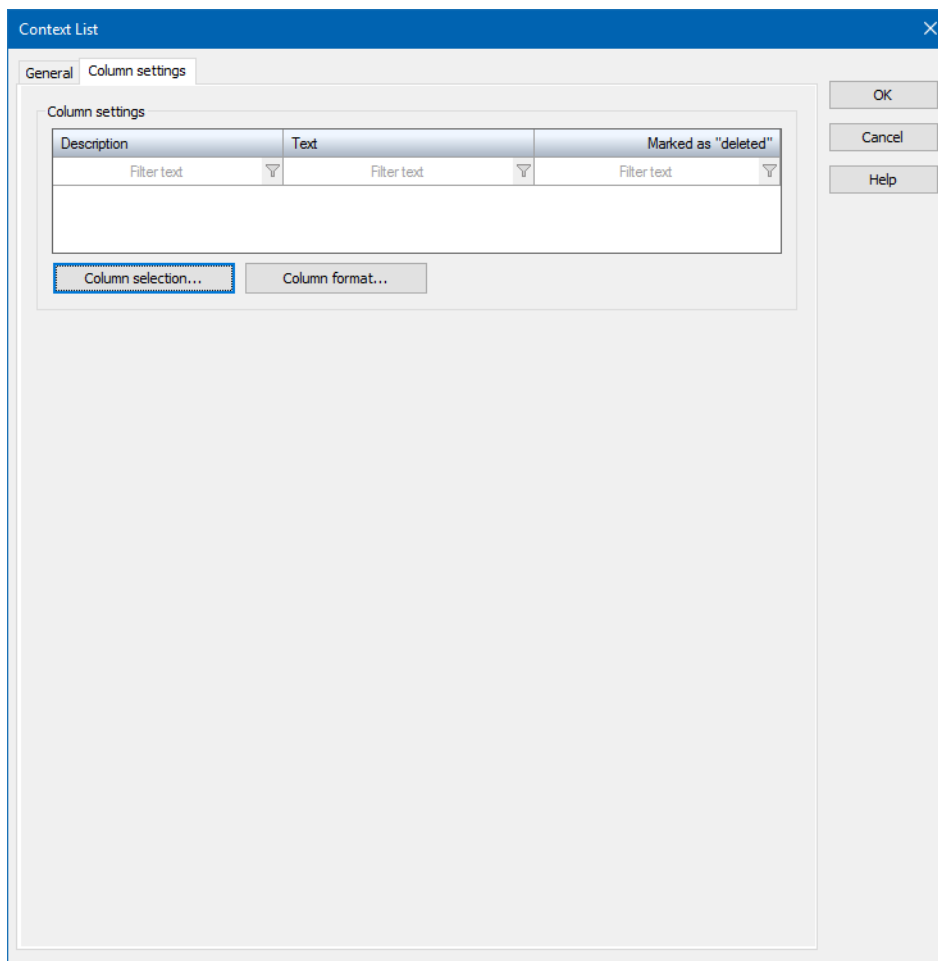
Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Column settings

Configuration of the view of the Context List in Runtime. Select the columns to be displayed and configure its appearance.

The configuration can be amended in Runtime, either by clicking or by means of the corresponding control elements.

The **Column selection** and **Column format** options are only available in the screen if the list is displayed in the screen.



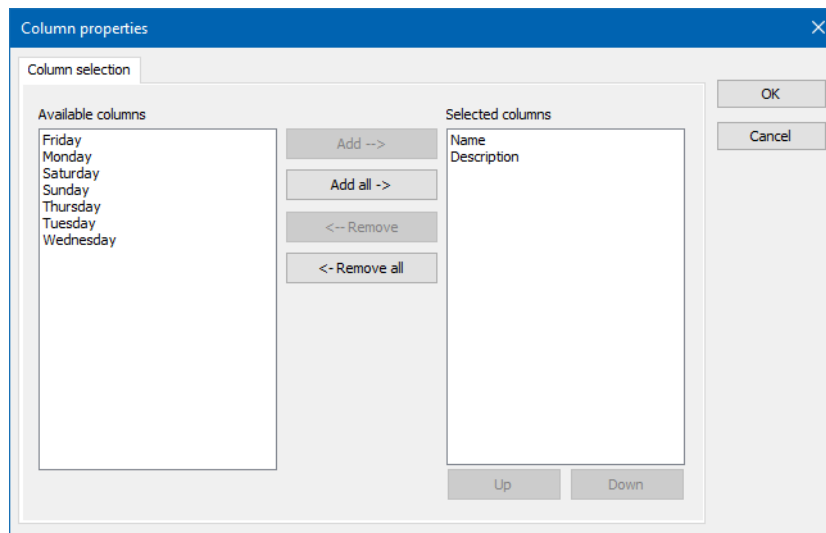
Parameter	Description
List field	Display of the configured columns.
Column selection	Opens the dialog for selecting the columns.
Column Format	Opens a dialog to format the columns.
OK	Applies all changes and closes dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Column selection

You configure the columns to be displayed in Runtime here.



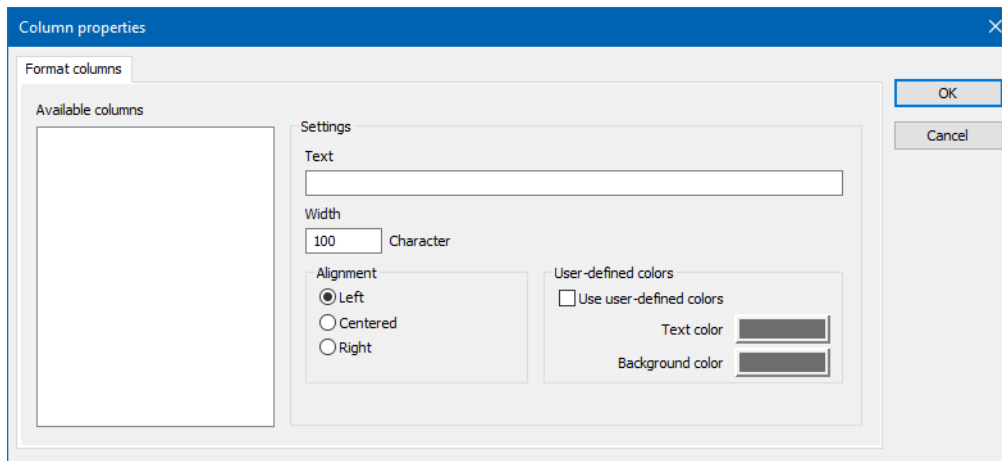
Option	Function
Available columns	List of columns that can be displayed in the table.
Selected columns	Columns that are displayed in the table.
Add ->	Moves the selected column from the available ones to the selected items. After you confirm the dialog with OK, they are shown in the detail view.
Add all ->	Moves all available columns to the selected columns.
<- Remove	Removes the marked columns from the selected items and shows them in the list of available columns. After you confirm the dialog with OK, they are removed from the detail view.
<- Remove all	All columns are removed from the list of the selected columns.
Up	Moves the selected entry upward. This function is only available for unique entries, multiple selection is not possible.
Down	Moves the selected entry downward. This function is only available for unique entries, multiple selection is not possible.

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Column Format

Configuration of the properties of the columns for configurable lists. The settings have an effect on the respective list in the Editor or - when configuring screen switching - in Runtime.



AVAILABLE COLUMNS

Option	Description
Available columns	List of the available columns via Column selection . The highlighted column is configured via the options in the Settings area.

SETTINGS

Option	Description
Settings	Settings for selected column.
Labeling	Name for column title. The column title is online language switchable. To do this, the @ character must be entered in front of the name.
Width	Width of the column in characters. Calculation: Number time average character width of the selected font.
Alignment	Alignment. Selection by means of radio buttons. Possible settings: <ul style="list-style-type: none"> ▶ Left: Text is justified on the left edge of the column. ▶ Centered: Text is displayed centered in the column. ▶ Right: Text is justified on the right edge of the column.
User-defined colors	Properties in order to define user-defined colors for text and background. The settings have an effect on the Editor and Runtime. Note: <ul style="list-style-type: none"> ▶ These settings are only available for configurable lists. ▶ In addition, the respective focus in the list can be signaled in Runtime by means of different text and background colors. These are configured using the project properties (on page 161).
User defined colors	Active: User-defined colors are used.
Text color	Color for text display. Clicking on the color opens the color palette to select a color.
Background color	Color for the display of the cell background. Clicking on the color opens the color palette to select a color.

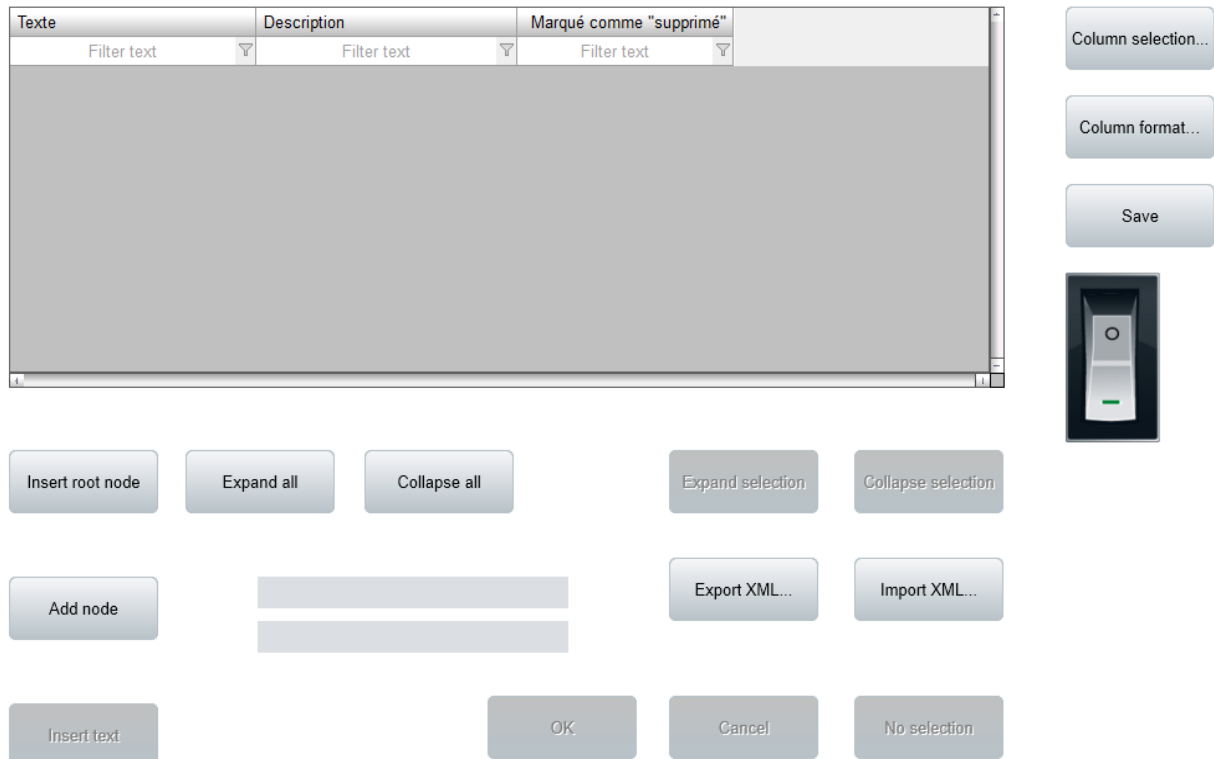
Lock column filter in the Runtime	<ul style="list-style-type: none">▶ Active: The filter for this column cannot be changed in Runtime. <p>Note: Only available for:</p> <ul style="list-style-type: none">▶ Batch Control▶ Extended Trend▶ Filter screens▶ Message Control▶ Recipe Group Manager▶ Shift Management▶ Context List
--	--

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

18.11.3 Use the Context List in the Runtime

The Context List shows nodes and texts in up to 5 levels in Runtime. The columns that are shown by default are configured using the screen switching. Depending on the configuration, the columns are moved and amended by means of the corresponding control elements or by clicking.



CONTROL ELEMENTS

Control element	Description
Context List	Display of the Context List with its entries and the columns defined during screen switching.
Column selection	Opens the dialog for selecting the columns to be displayed. Only available in Runtime if the list is shown in the screen.
Column format	Opens the dialog for configuration of the individual columns. Only available in Runtime if the list is shown in the screen.
Name	<p>Entry of the name for a node or a text. The following is applicable for names:</p> <ul style="list-style-type: none"> ▶ The name for nodes must be unique in the Context List within a level. ▶ The name for texts must be unique within a node. ▶ Maximum length: 256 characters ▶ The following characters are not permitted: \: * ? < > ' " # %
Description	Entry of the description for a node or a text.
Insert root node	Inserts a node at the first level.
Add node	Inserts a node under the selected element and switches the selection to the newly-created element.
Add text	Adds text to the selected element. The selection of the element remains.
Save	Saves the Context List.
Show texts marked as "deleted"	<p>Switch element to configure the display of entries that are marked as deleted.</p> <ul style="list-style-type: none"> ▶ On: Deleted entries are shown in the context list. ▶ Off: No display of deleted entries in the context list. <p>Default: depends on the setting in screen switching (on page 443).</p>
Expand/collapse node	<p>Allows all or selected nodes to be expanded or collapsed. Selection:</p> <ul style="list-style-type: none"> ▶ Expand all: Opens all nodes of all levels. ▶ Reduce all:

	<p>Collapses all nodes of all levels.</p> <ul style="list-style-type: none"> ▶ Expand selected: Opens all entries at the selected level. ▶ Reduce selected: Reduces all entries at the selected level.
Export XML	Exports the Context List as an XML file.
Import XML	Imports a Context List from an XML file. Existing Context Lists are replaced completely during import. No texts are combined. Pre-existing texts are deleted.
OK	<p>Applies the settings and closes the screen.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>
Cancel	<p>Discards all changes and cancels configuration.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>
No selection	<p>Discards the selection and closes the screen.</p> <p>Note: Only available in Runtime if the screen to select alarm causes is used.</p>

DISPLAY OF THE LEVELS

Each Context List can contain up to 5 levels. The display of the levels can be controlled by clicking on the node symbols in the list or by means of a button.

Buttons:

- ▶ **Expand all:**
Opens all entries of the next closed level.
- ▶ **Expand all nodes:**
Opens all entries of all levels.
- ▶ **Reduce all:**
Collapses all nodes of all levels.
- ▶ **Expand selected:**
Opens all entries at the selected level.
- ▶ **Reduce selected:**
Collapses all entries of the selected level.

FILTERING OF ENTRIES

The entries in the Context List can be shown as filtered.
You can combine the filter of several columns.

To filter a Context List:

1. Enter the filter text into the filter line.
In doing so, you can use the placeholders ? and *.
2. Press the `Enter` key.

The Context List is shown after filtering

SORTING OF ENTRIES

The entries in the Context List can be shown as sorted. In doing so, all nodes and subnodes are sorted.

To sort, click on the corresponding column overview.

It is possible to sort according to:

- ▶ Text
- ▶ Description
- ▶ Marked as "deleted"

In ascending and descending order.

Editing nodes and texts

Up to 5 levels can be created in the Context List. Nodes can contain as many texts as you wish. Text names must be unique within a node. Names and descriptions can be added and amended. Nodes and texts can be highlighted as deleted.

CREATING AND EDITING ENTRIES

CREATING NODES

To create a node:

1. For a node at the uppermost level, nothing can be selected in the Context List.
For a node in a sublevel, highlight a node in the superordinate level.
2. In the **Name** field, enter a name that is unique within the Context List.
Maximum length: 256 characters.
Note:: The following characters are not permitted: \: * ? < > ! | " ' # %
3. Confirm the entry by pressing the `Enter` key.

- Click on the **Add node** button.

The node is created and has the focus. This is how you can easily create a hierarchy or new texts for the new node.

CREATING TEXT

To create a text:

- Highlight a node in the Context List.
- In the **Name** field, enter a name that is unique within the level.
Maximum length: 256 characters.
Note:: The following characters are not permitted: `^:*?<>!"'""#%`

- Confirm the entry by pressing the `Enter` key.
- Click on the **Add text** button.

The text is added in the level.

The focus remains on the superordinate node. This is how you can create several texts after one another.

Note: The button is deactivated if no entry is selected in the Context List.



Hint

To create nodes and texts: In the **Name** and **Description** fields, select the `Element` option for the **Write set value via** property.

EDIT ENTRIES

To edit an entry:

- Highlight the entry in the Context List.
- Open the field for editing with a double click.
- Amend the entry.
- Accept the change by pressing the `Enter` key or clicking next to the field.
- Save the change by clicking on the **Save** button.

SAVING ENTRIES

To save changes in the Context List, press the **Save** button.

If there are unsaved changes when leaving the screen, a dialog is called up that offers to save the changes. To save the changes, the dialog must be confirmed within 15 seconds by clicking on **Yes**. Otherwise all unsaved changes are discarded.

HIGHLIGHT ENTRIES AS DELETED

Entries in a Context List cannot be deleted; they can only be marked as deleted.

To mark an entry as deleted:

1. Highlight the desired elements in the Context List.
Multiple selection is possible.
2. Click twice on the checkbox in the **Mark as "deleted"** column or press the `Del` key.
With multiple selection, click on the `Del` key.
The checkbox is shown with a tick.

The elements are marked as deleted.
Depending on the setting for the **Show texts marked as "deleted"** control element, the elements from the list are removed or shown as grayed out.

If a node is marked as deleted, then all its subelements are marked as deleted. As soon as an entry has been marked as deleted, the name and description can no longer be changed.

The marking can be removed again.

To remove a marking:

1. Highlight the element.
Note: For subelements of elements marked as deleted, the marking cannot be removed as long as the higher-level element is still marked as deleted.
2. Click twice on the checkbox in the **Mark as "deleted"** column. The checkbox can no longer be ticked.

This element can then be edited.

Note: The name and description can always be changed using the API.

Selection of alarm causes

If the screen to select alarm causes is used, you can assign entries from the Context List (alarm causes) to the alarms currently selected in the Alarm Message List using the **OK**, **Cancel** and **None** entries.

In Runtime, only the control elements to select alarm causes, the control elements for column settings and the control elements to expand and reduce nodes are active in the screen. All other control elements for editing the Context List, if present in the screen, grayed out.

Context Lists in the network

When using a **Context List** in a network project, saving is carried out on the server. Clients are synchronized automatically.

If a list is processed on several clients at the same time, the last-saved version is used by the server and distributed to all clients.

If the client loses the connection to the server, the **Context List** is emptied on the client and the screen elements are grayed out for editing. Linked entries in the Alarm Message List are shown with the text **<Alarm cause does not exist>**.

As soon as there is a connection to the server, the **Context List** is shown and the screen elements are released for editing.

WITH OPERATING AUTHORIZATIONS ACTIVATED

If the **Operating authorization in the network** property is configured for the **Network** group accordingly (`Global` or `via equipment model`), this leads to the following behavior in Runtime:

- ▶ If there is operating authorization for the computer, all actions can be carried out as described in Editing nodes and texts (on page 454).
- ▶ If there is no operating authorization, these actions are prohibited and a notice dialog is called up.
- ▶ If there is operating authorization during editing, but not when closing the screen if there are unsaved changes, a notice dialog is called up and the changes are discarded.

You can find further information on operating authorizations in the Operating authorizations in the network chapter.

Alarm causes

The **Context List** module is available for the Alarm Message List for the configuration and display of **alarm causes**.

API Textlist Manager

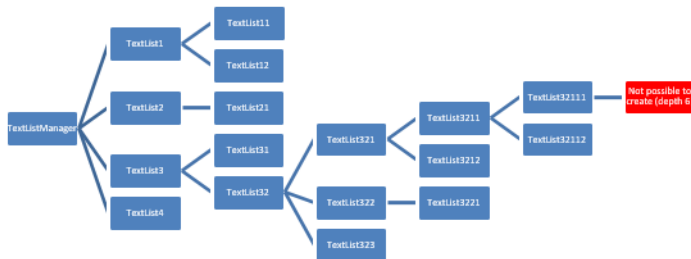
Access to the Context Lists via the API is possible using the **Textlist Manager**. In doing so, nodes and texts can be created. The **Textlist Manager** creates a unique GUID for each entry in the Context List. These elements can be accessed via this GUID. An empty string is output if a GUID is invalid. If the GUID is not found, the notice "**alarm cause does not exist**" is output.

Texts can be created in several levels. The individual texts are combined for output in the **Alarm Cause** column in the Alarm Message List, separated with periods (.).

For example: **Alarm causes.Filler.Bottle broken**

Maximum number of levels: 5

Example:



The elements colored blue are correct, the ones colored red are no longer used, because the permitted number of levels is exceeded.



Attention

*The **Text List Manager** object in the API corresponds to the Context List in zenon. The **Text List** objects correspond to the nodes and texts in zenon.*

The following script creates this text list.

SCRIPT

Option Explicit

Public Sub CreateTree()

Dim TM As TextListManager

Set TM = thisProject.TextListManager

' ##### T1 #####

Dim T1 As TextList

Set T1 = TM.Create("T1 Name", "T1 Description")

Dim T11 As TextList

Set T11 = T1.Create("T11 Name", "T11 Description")

Dim T12 As TextList

Set T12 = T1.Create("T12 Name", "T12 Description")

' ##### T2 #####

Dim T2 As TextList

Set T2 = TM.Create("T2 Name", "T2 Description")


```
Dim T21 As TextList
Set T21 = T2.Create("T21 Name", "T21 Description")

' ##### T3 #####
Dim T3 As TextList
Set T3 = TM.Create("T3 Name", "T3 Description")

Dim T31 As TextList
Set T31 = T3.Create("T31 Name", "T31 Description")

Dim T32 As TextList
Set T32 = T3.Create("T32 Name", "T32 Description")

Dim T321 As TextList
Set T321 = T32.Create("T321 Name", "T321 Description")

Dim T3211 As TextList
Set T3211 = T321.Create("T3211 Name", "T3211 Description")

Dim T32111 As TextList
Set T32111 = T3211.Create("T32111 Name", "T32111 Description")

'##### This will not work - because of Level depth #####
'Dim T321111 As TextList
'Set T321111 = T32111.Create("T321111 Name", "T321111 Description")

Dim T32112 As TextList
Set T32112 = T3211.Create("T32112 Name", "T32112 Description")

Dim T3212 As TextList
Set T3212 = T321.Create("T3212 Name", "T3212 Description")
Dim T322 As TextList
Set T322 = T32.Create("T322 Name", "T322 Description")

Dim T3221 As TextList
Set T3221 = T322.Create("T3221 Name", "T3221 Description")

Dim T323 As TextList
Set T323 = T32.Create("T323 Name", "T323 Description")
```



```

' ##### T4 #####
Dim T4 As TextList
Set T4 = TM.Create("T4 Name", "T4 Description")

'##### Test Item Function of TextListManager
#####
Dim textlisttest As TextList
Set textlisttest = TM.Item(0)
thisProject.Cel.WriteCelString (textlisttest.Name() + textlisttest.Description() +
textlisttest.Guid())
'##### Saving TextLists
#####
Dim answ As Boolean
answ = thisProject.TextListManager.Save()
End Sub

```

18.12 Video

Video recordings - online and from saved data - can be shown in zenon with the use of a screen for video display and video recording. The format used is **.avi**.

Videos are played back in Runtime in the center of the assigned frame. They are controlled using control elements.

Note: The codec required to play back videos must be installed on the computer.



Information

The control of videos integrated into notebooks via the manufacturer's driver does not always work properly with zenon. In this case:

- ▶ Install a camera from a third-party provider
- ▶ Then select the integrated camera as a source

18.12.1 Creating a screen of the type Video

ENGINEERING

There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog (on page 21)
- ▶ The creation of a screen using the properties

Steps to create the screen using the properties if the screen creation dialog has been deactivated in the menu bar under **Tools, Settings** and **Use assistant**:

1. Create a new screen.

To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.

2. Change the properties of the screen:

- a) Name the screen in the **Name** property.
- b) Select `Video` in the **Screen type** property.
- c) Select the desired frame in the **Frame** property.

3. Configure the content of the screen:

- a) select menu item **Control elements** from the menu bar
- b) Select `Insert template` in the drop-down list.
The dialog to select pre-defined layouts (on page 272) is opened. Certain control elements are inserted into the screen at predefined positions.
- c) Remove elements that are not required from the screen.
- d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.

4. Create a screen switch function.





Information

Add template adds pre-defined control elements to pre-defined locations in the screen. All control elements can be added, deleted and freely positioned. Other dynamic elements and vector elements can also be added.

18.12.2 Screen switch - video

With screen **Video** you can display two types of videos in the Runtime:

1. saved videos (*.avi)
2. Videos of a surveillance camera

Which video is shown depends on which tab was shown when you saved the dialog.



Information

If video files and online video should be displayed, create to screen switch functions.

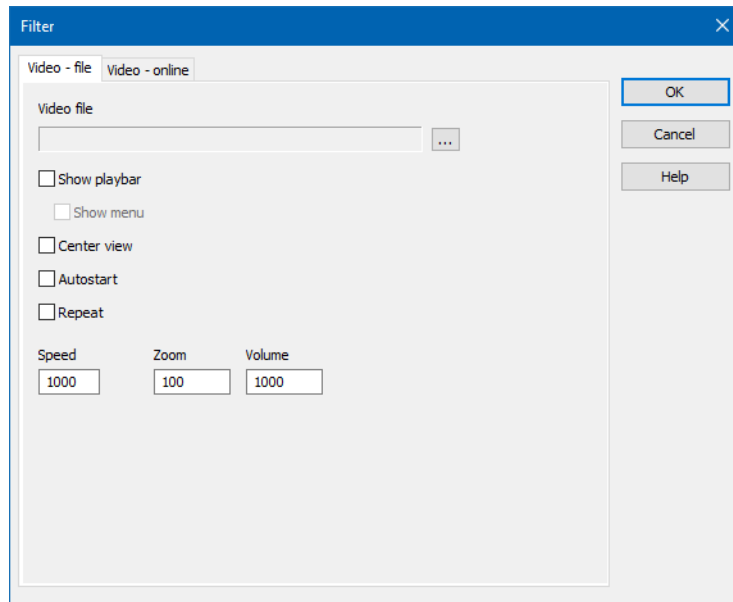
In order to create a function to switch to the screen **Video**:

- ▶ select New Function
- ▶ Select Screen switching
- ▶ select the screen **Video** (on page 461)
- ▶ a dialog for the definition of the video source opens.
 - Video file (on page 462)
 - Video online (on page 465)

Video file

The parameters needed for the display of screen **Video** for showing a surveillance camera are the following:

- ▶ Set the video which should be shown
- ▶ Settings for position, speed, volume and zoom factor of the display



Option	Description
Video file	<p>Selection of the saved video file which is to be displayed. Click on button ... in order to open the dialog for selecting a file.</p> <p>Attention: Consider the maximum path length on your system when naming the video files.</p>

OPTIONS AND PARAMETERS

Option	Description
Show playbar	Display of a slider in the video screen.
Show menu	<p>Display a menu for controlling the video with the playback bar.</p> <p>Only available if Display playback bar has been activated.</p>
Center view	<p>Reference point for the position of the video display in zooming actions.</p> <ul style="list-style-type: none"> ▶ Active: The zoomed video is placed in the center of the frame. ▶ Inactive: The video display is zoomed to bottom right.
Autostart	▶ Active: Video file is automatically started when opening the screen
Repeat	▶ Active: Video file is restarted after each end.
Speed	<p>Playback speed in thousandths of the original speed.</p> <p>Default: 1000 (original speed)</p>
Zoom	<p>Zoom factor for correctly-proportioned zooming in or zooming out as a percentage of the original size.</p> <p>Default: 100 (original size)</p>
Volume	<p>Volume in thousandths of the original volume.</p> <p>Default: 1000 (original volume)</p>

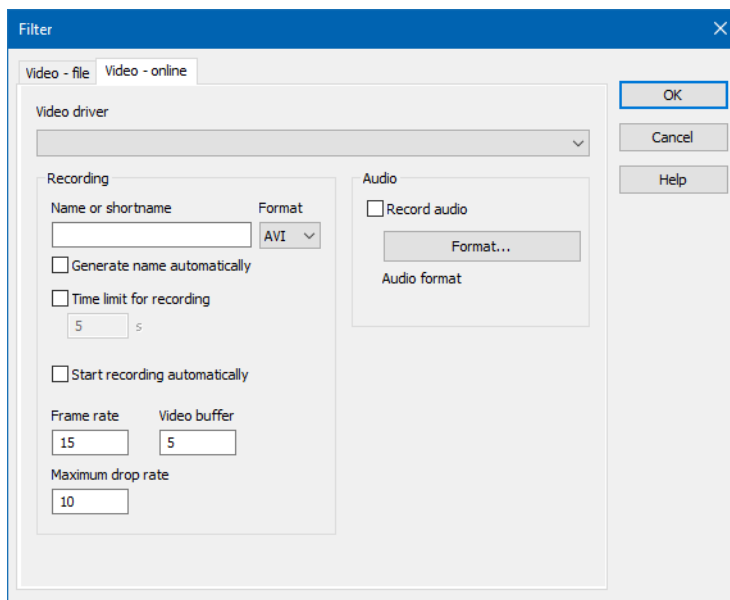
CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Video online

The parameters needed for the display of screen Video for showing a surveillance camera are the following:

- ▶ Setting of the video driver
- ▶ Setting of the recording options if the video should be recorded



Option	Description
Video - drivers	Selection of the video driver used from the drop-down list. It contains the installed and supported drivers. Note: The driver has to support Microsoft Capturing.

RECORDING

Options for the recording and saving of the video as an AVI-file or Bitmaps.
If only online video should be displayed, there are no settings needed.

Option	Description
Video driver	Selection of the video driver from a drop-down list. Driver-specific settings. Depending on the driver, additional properties are available: <ul style="list-style-type: none"> ▶ Display ▶ Format ▶ Compress ▶ Source
Name or shortname	Name of the file to be saved.
Format	Selection of the video format from the drop-down list. <ul style="list-style-type: none"> ▶ AVI ▶ BMP
Generate name automatically	<ul style="list-style-type: none"> ▶ Active: Name is automatically created on recording. Syntax: [System time].[Format]
Time limit for recording	Time limit in seconds of how long the recording lasts. Enter in field. Default: 5
Frame rate	Number of pictures per second for recording Input in field. Default: 15
Video buffer	Reserved buffer for video recording in MB. Input in field. Default: 5
Maximum drop rate	Maximum allowed drop rate for frames per second in percent during the recording. If the maximum value is exceeded, a warning is issued. <ul style="list-style-type: none"> ▶ Value: 0 to 100 Default: 10

AUDIO

Settings for the sound recording

Option	Description
Record audio	Active: Audio will be recorded.
Format	Selection of the format. Possible setting depends on the selected driver in Video driver .

18.12.3 Operating during Runtime

Videos are displayed as centered in the frame.



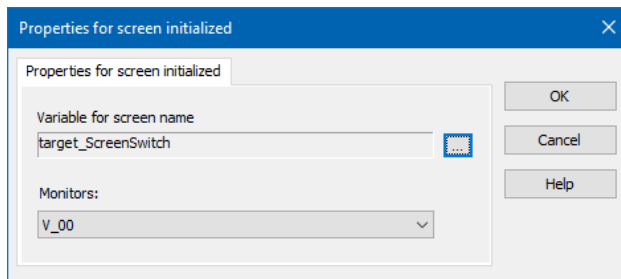
Control element	Description
Filter	Filter settings.
Control	Control elements to control the videos.
Play	Play video.
Stop	Stop playback/resume playback.
Recording	Record video.
Pause	Stop video during playback.
Video - online	Elements for controlling an online video.
Format	Output format.
Source	Data source.
Display	Display Video.
Compression	Data compression.
Video - file	Elements for controlling a video file.
Magnification	Enlargement of the section.
Speed	Speed.
>> (forward)	Jumps one step (frame) further.
<< (back)	Jumps one step back.
Eject	Eject.

19. Screen Functions

When the standard function is created from the context menu in the detail view, zenon creates a function **screen switch** (on page 475) for the selected screen. Other functions can be configured using the **Functions** node and the **New function** command.

19.1 Screen with index

With this function, a screen is called up in Runtime whose name is defined by a string variable. The variable is selected with this function.



Parameter	Description
Variable for screen name	<p>Linked variables with the name of the zenon screen to which this function is switched.</p> <p>Click on button ... in order to open the dialog for selecting variables. A string variable is to be selected from the list of variables as a transfer parameter.</p>
Monitor	<p>Target monitor of the screen switch.</p> <p>Select from drop-down list:</p> <ul style="list-style-type: none"> ▶ <code>Current monitor</code> Screen is switched to the current, calling monitor. ▶ <code>Name of virtual Monitor 1</code> Screen is switched to the 1st virtual monitor. ▶ <code>Name of virtual Monitor x</code> Screen is switched to the xth virtual monitor. <p>The selection corresponds to the configuration in the Monitor administration property in the Graphical design project properties group.</p> <p>Note: not visible if no virtual monitor has been configured.</p>

CLOSE DIALOG

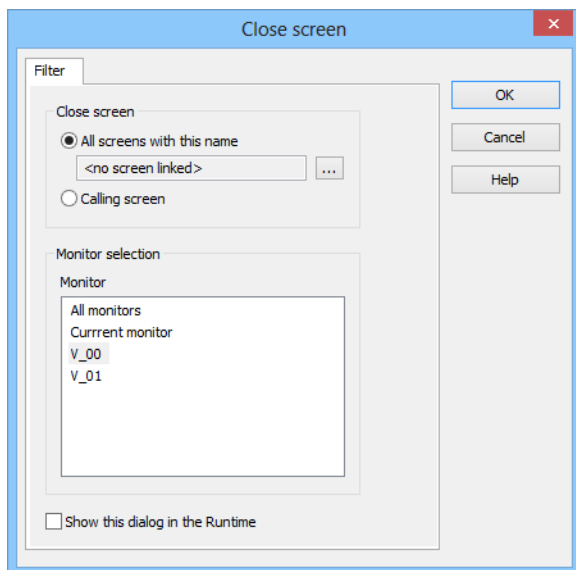
Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

19.2 Close screen

A defined screen in Runtime is closed with this screen. If, with a multiple-monitor projects, a screen is switched to several monitors, it is possible to select which screen is closed on which monitor.

To configure the function:

1. Select, in the list of functions, in the **Screens** node, the **Close screen** function
2. select the desired picture
3. Select, with multiple-monitor projects, the virtual monitor on which the screen is to be closed from list:
 - All
 - current monitor
 - designated virtual monitor



CLOSE SCREEN

Parameter	Description
Close screen	Configuration of which screens are closed when the function is called up.
All screens with the name	<p>All opened screens with the selected name are closed.</p> <p>Click the ... button and a dialog opens to select a screen. For further details, see the screen selection dialog section.</p>
Calling screen	<p>The calling screen is closed.</p> <p>This also happens if several screens with the same name are opened; only the screen from which the call comes is closed. With this option selected, the monitor selection cannot be configured manually.</p> <p>Recommendation: Suitable for closing pop-ups.</p>

MONITOR SELECTION

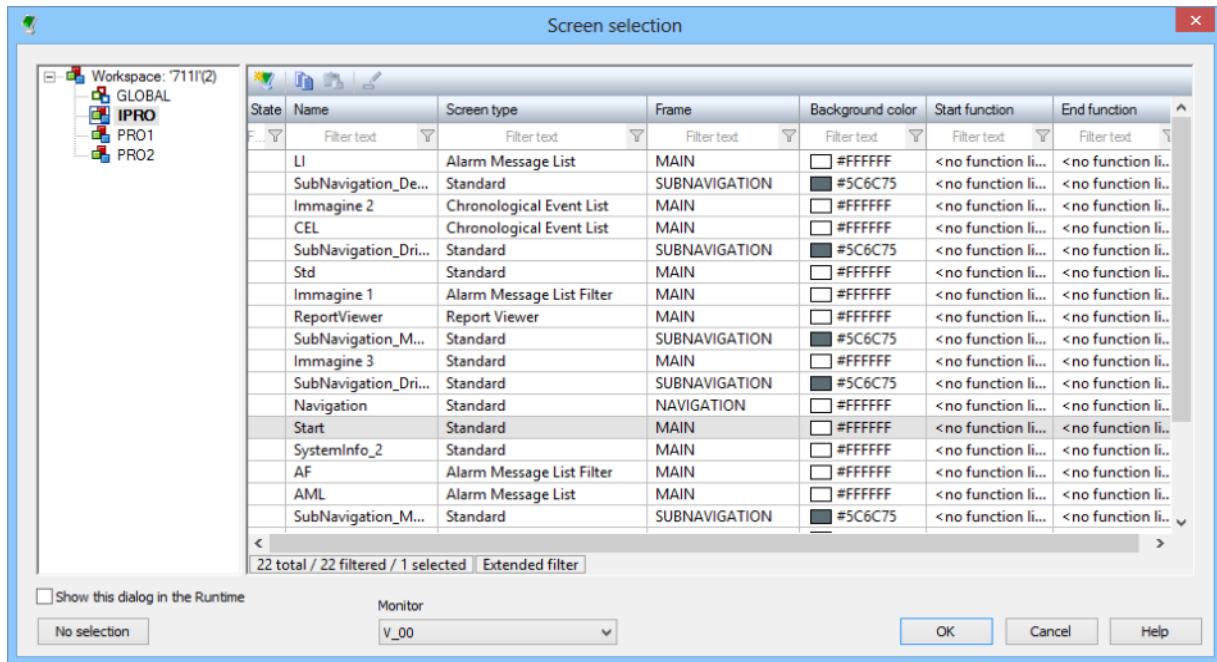
Parameter	Description
Monitor selection	Configuration of the monitor for which the closing of the screen is to be configured.
Monitor	<p>Selection of the monitor from the list:</p> <ul style="list-style-type: none"> ▶ All monitors ▶ Current monitor ▶ Selection of a virtual monitor (Note: the real existing monitors are displayed when called up in Runtime.) <p>Only available for multi-monitor systems and only for the All screens with the name option.</p>
Show this dialog in the Runtime	Active: This dialog is opened in Runtime before the function is executed.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

SCREEN SELECTION DIALOG

In the screens selection dialog, screens can be selected for the execution of functions from:

- ▶ Current project
- ▶ Subprojects

- All projects in the workspace with the **Keep project in memory** option active



Parameters	Description
Project tree window	Displays all projects in the workspace. Screens can be selected from the current project and from all projects with the Keep project in memory option active
Screens window	Selection of the screen. If several screens are selected, the screen at the top of the list is used for the execution of the function.
No selection	Removes selection and closes dialog.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

19.3 Screen: Return to last

With this function, it is possible to switch to the screen of a template previously called up and since closed during online operation. These screens that were previously open are administered in a buffer after they have been closed. When opened again, the same function that is used to to open the screen is executed once again. This means that screen filters are not saved but have to be recreated. By executing the **Screen switching** function, the screens of the corresponding frames (on page 203) are stored in the memory.

Attention: Each call of the **screen switch** function counts, even if the screen switch does not ensue directly but is entered in the screen properties as a start function.

To configure the function:

1. Define the frames to be taken into account in the **Main frames** project property in the **Graphical design/Runtime general** group.
2. Define the number of screens that are to be gone back by with the **Number for function** \"Screen: Return to last\" project property in the **Functions** group.
3. Configure the **Screen: Return to last** function.
In the selected functions function, **Main frames** must also be selected in the project property.
Note for multi-monitor systems: The function always relates to all monitors. A monitor selection is not possible.



Information

A screen is only entered into the previous screen list if it is closed. Templates that are open in the background are not considered closed screens however. If screens are switched in several templates above one another, then the previous screen list remains empty because all screens are still open.

Hint: In general, never place the templates directly above one another.

DELETE PATH

The path-back screen can be deleted in Runtime:

- ▶ Automatically when the user is changed using the **Delete "Screen: Return to last" path during userchange** project property in the **User Administration** group.
- ▶ Individually by configuring the **Delete path-back screen** (on page 473) function.

19.4 Delete path for "Screen: Return to last"

with this function, the path of the **Screen: Return to last** function (on page 472) can be deleted in Runtime.

To configure the function:

1. Select, in the list of functions, in the **Screen: Return to last** node, the **Delete path-back screen** function.
2. The function is created.
3. Link the function to a button in the screen.

Note: The Screen-back path can also be deleted automatically in Runtime in the event of a user change. To do this, the **Delete "Screen: Return to last" path during userchange** project property in the **User Administration** group must be configured.

19.5 Screen: Move center

With this function, the screen center can be moved or the zoom factor can be changed in the Worldview.

Requirements:

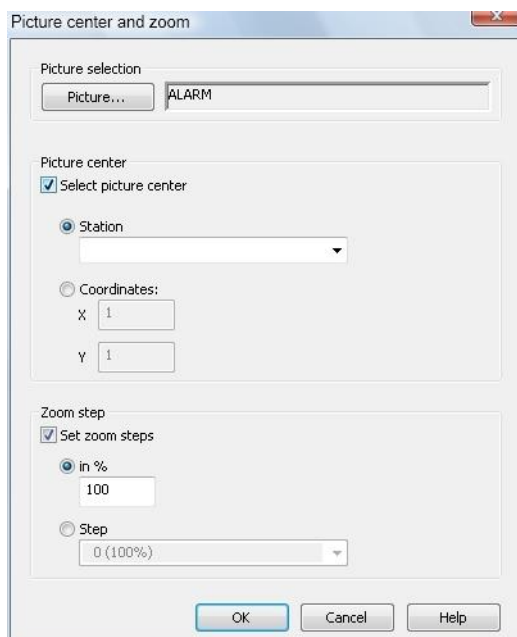
- ▶ The screen must be larger than the frame
- ▶ In the screen properties, the **Screen size from frame** must be deactivated in the **Frame** group
- ▶ The size must be defined using the **Width [pixels]** and **Height [pixels]** properties



Information

This function is not available under Windows CE.

SCREEN CENTER AND ZOOM DIALOG



Parameter	Description
Screen	Selection of the screen for the new center Clicking on the button opens the dialog to select the screen.
Select screen center	Settings for the screen center
Object name	Set desired center of the screen via an object from the object list
Coordinates	Enter desired screen center in coordinates (x,y)
Set zoom steps	Settings for the zoom factor.
in %	Set desired zoom factor in percent.
Step	Set desired zoom factor via the defined zoom steps.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Note: If the Worldview is called up several times, this function is only applied to the last screen called up.

19.6 Screen switch

The **screen switch** function makes it possible to switch between process screens in runtime



Example

In a project, there is a **Start** screen and a screen of type **Alarm Message List**. During runtime, it should be possible to switch between these two screens. So, for example, a button is created in the **Start** screen and a function of type **screen switching** in the **Alarm Information list** screen. After this, the function is linked to the button, for example by dragging & dropping. Now during runtime, the **Start** screen can be left by pressing the button and the **Alarm Message List** can be switched on.

CONFIGURE SCREEN SWITCHING

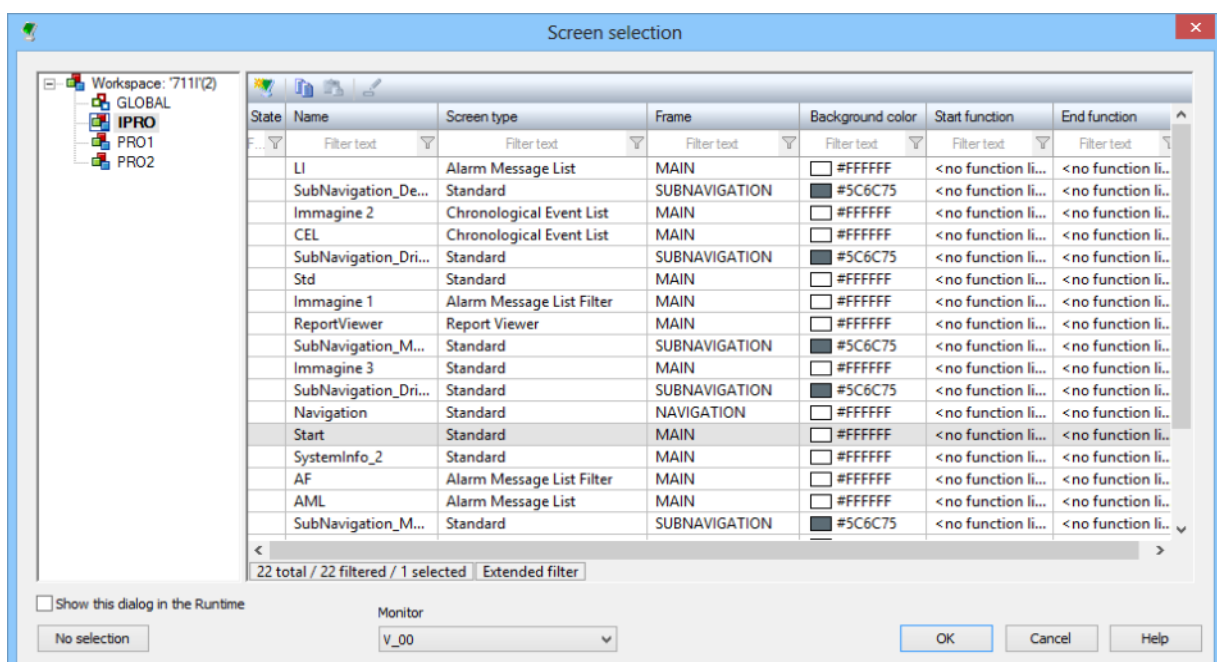
To configure the function:

1. Create a new function
2. navigate to the node **Screens**
3. Select the **Screen switch** function
4. The dialog for selecting a screen is opened
5. Select a screen
6. The dialog to replace variables and functions (on page 177) is opened.
Note: By replacing the link several functions can reuse the same screen in order to display different part of the equipment, e.g. for `Motor1` and also for `Motor2`.
7. Close the dialog by clicking on OK
8. Allocate a button to the function

SCREEN SELECTION DIALOG

In the screens selection dialog, screens can be selected for the execution of functions from:

- Current project
- Subprojects
- All projects in the workspace with the **Keep project in memory** option active



Parameters	Description
Project tree window	Displays all projects in the workspace. Screens can be selected from the current project and from all projects with the Keep project in memory option active
Screens window	Selection of the screen. If several screens are selected, the screen at the top of the list is used for the execution of the function.
No selection	Removes selection and closes dialog.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

19.7 Activate input to the element with the focus

This function activates the element that is being focused on in the frame selected.

19.8 Set focus to frame

This function sets the focus to a defined frame when operating the keys in Runtime.

To configure the function:

1. Select, in the list of functions, in the **Screens** node, the **Set focus to frame** function.
The dialog for selecting a frame is opened.
2. Select the frame you wish to assign
3. For multi-monitor projects, select the virtual monitor for opening the frame.
4. Close the dialog by clicking on OK.
5. Define the screen element that is to get the focus.
To do this:
 - a) Open the dialog for **Move sequence for focus** with **Sequence for left/right**.
 - b) Define the element that should be triggered first.

Behavior in Runtime:

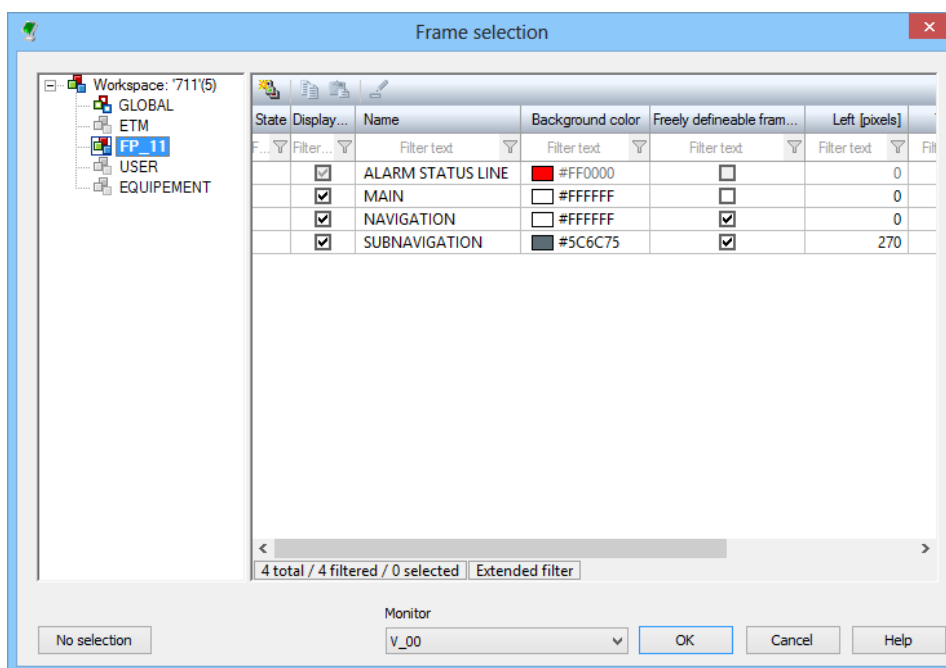
- The frame with a focus is displayed with a border. The line width and color of the frame are defined in the **Graphical design/Screens** node in project properties.

- In the screen, the element gets the focus that has been defined as the first element in the sequence for **left/right**. The sequence for **top/bottom** is ignored.

FRAME SELECTION DIALOG

In the **frame selection** dialog, frames can be selected for the execution of functions, from:

- Current project
- Subprojects
- All projects in the workspace with the **Keep project in memory** option active



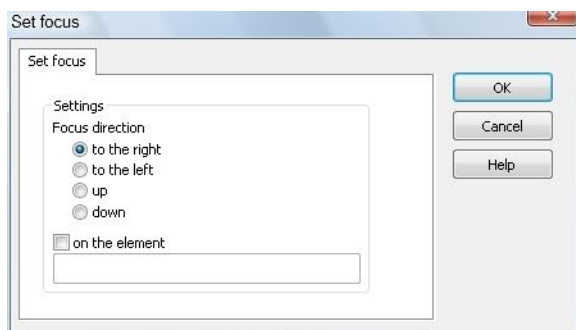
Parameter	Description
Project tree window	Displays all projects in the workspace. Frames can be selected from the current project and from all projects with the Keep project in memory option active.
Frames window	Selection of a frame. If several frames are selected, the frame at the top of the list is used to execute the function.
No selection	Removes selection and closes dialog.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

SET FOCUS ON FRAME WHEN CALLING UP FRAMES SEVERAL TIMES

If a frame is displayed on a monitor several times (on page 216), then the focus is switched in the reverse of the switching sequence each time the functions of the focus are executed. If, for example, with a frame that is called up several times, the screens **Screen1**, **Screen2** and **Screen3** are open and then the focus is set to this frame, the focus goes to the last screen opened, **Screen3**. When the **Set focus to frame** function is called up again, the focus is set to **Screen2** etc.

19.9 Move focus

This function set the focus on a particular element in runtime with keyboard operation and can therefore be used to navigate within a frame.



Property	Action
Direction	Define the direction in which the focus should be moved. The following defined sequence applies in the editor in the context menu or under Edit/change focus sequence...
on the element	Definition of the element for the focus. Enter the object name of the element.

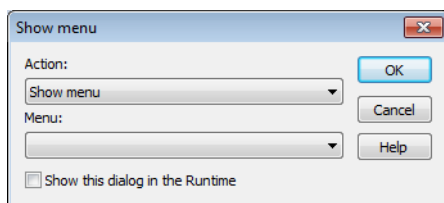
19.10 Take focus away from frame

This function takes the focus from the current frame in runtime. To continue operating the keyboard, the focus must be set to a frame again.

19.11 Show menu

This function controls the display of main menus.

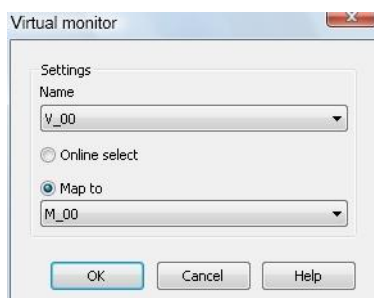
1. Create a new function with **New function**
2. In the **Screens** node, select the **Display menu** function
3. Define the action to be carried out and the main menu



Parameters	Description
Action	Selection of the action:
Show menu	The selected menu is displayed.
Hide menu	The selected menu is hidden.
Change menu	The current menu is hidden and the selected menu is displayed instead.
If no menu exists	The selected menu is displayed, if no menu is displayed at the moment.
Menu	Selection of menu.
Show this dialog in the Runtime	<i>Active</i> : This dialog is opened when the function is carried out in Runtime.

19.12 Assign monitor

In a multi-monitor-environment you can assign a certain virtual monitor to a single real existing monitor.



19.13 Move frame to foreground

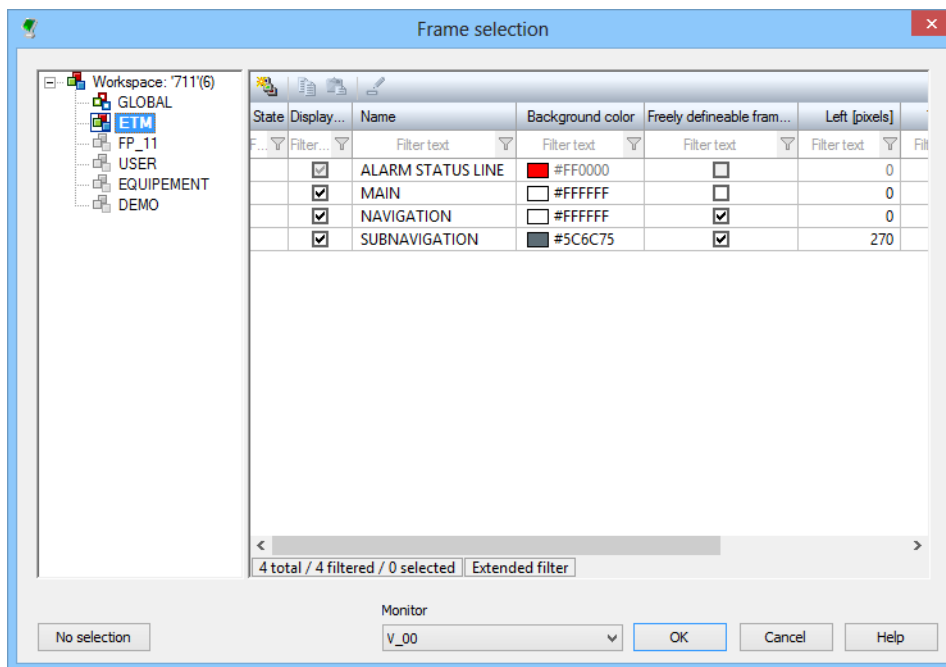
With this function, screens that are covered by other screens in Runtime can be moved to the foreground. A frame is selected - and a monitor assignment if multiple monitors have been configured. In Runtime, when executed, all instances of the defined frame are moved to the foreground of the selected monitor. This function is mainly useful for screens and frames that are called up with a title bar.

To configure the function:

1. in the context menu of the **function** node, select **New function**
2. Open the **Screens** node in the selection dialog.
3. Select the **Move frame to foreground** function.

4. The dialog for selecting a frame is opened
5. Highlight the desired frame and confirm them by clicking **OK**
6. Link the function to a button.

SELECTION DIALOG FOR FRAME



Parameter	Description
Project tree window	Displays all projects in the workspace. Frames can be selected from the current project and from all projects with the Keep project in memory option active.
Frames window	Selection of a frame. If several frames are selected, the frame at the top of the list is used to execute the function.
No selection	Removes selection and closes dialog.
Monitor	For multi-monitor systems , the selection of the monitor for which this function is configured from a drop-down list: <ul style="list-style-type: none"> ▶ All monitors ▶ Current monitor ▶ Designated virtual monitor
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

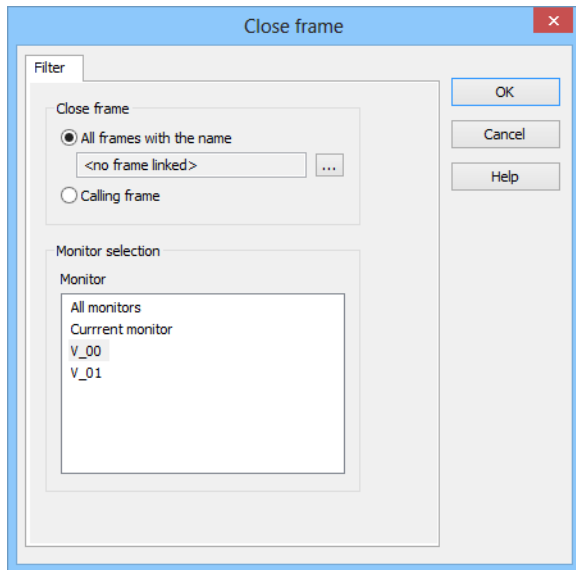
19.14 Close frame

With this function, the selected frame (on page 203) with all screens that are based on it are closed. In contrast to the Close screen (on page 470) function, the precise screen name need not to be given in this case. If, with a multiple-monitor projects, a frame is switched to several monitors, it is possible to select which frame is closed on which monitor.

To configure the function:

1. Select, in the list of functions, in the **Screens** node, the **Close frame** function
2. select the frame you wish to assign
3. Select, with multiple-monitor projects, the virtual monitor on which the frame is to be closed, from the drop-down list:
 - All
 - current monitor

- designated virtual monitor



CLOSE FRAME

Parameter	Description
Close frame	Configuration of which frames are closed when the function is called up.
All frames with the name	All opened frames with the selected name are closed. Click on the ... button to open the dialog to select a frame. For details, see the Frame selection dialog (on page 485) section.
Calling frame	The calling frame is closed. This also happens if several frames with the same name are opened; only the frame from which the call comes is closed. With this option selected, the monitor selection cannot be configured manually.

MONITOR SELECTION

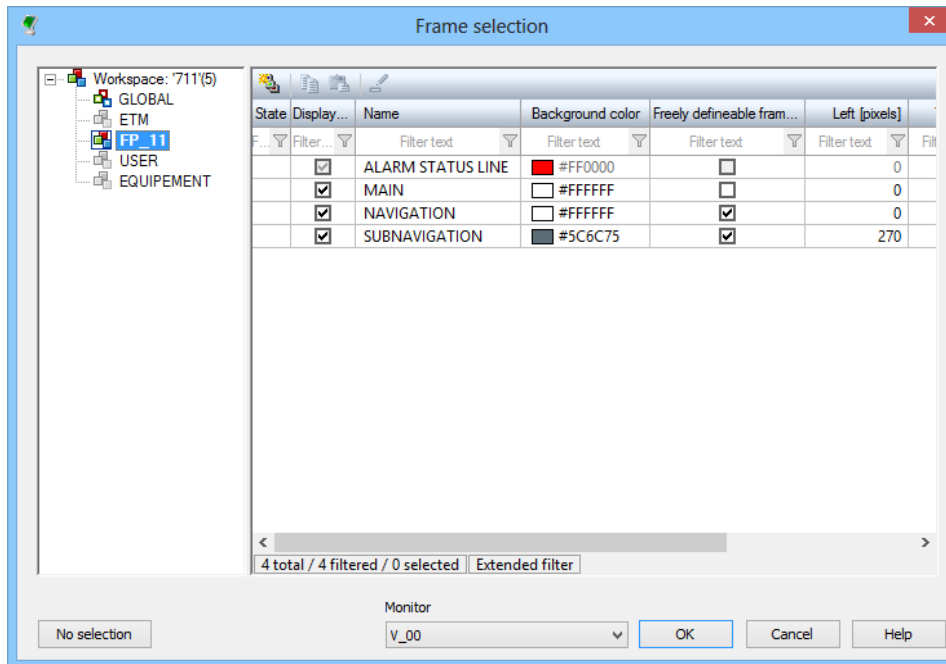
Parameter	Description
Monitor selection	Configuration of the monitor for which the closing of the frame is to be configured.
Monitor	Selection of the monitor from the list: <ul style="list-style-type: none"> ▶ All monitors ▶ Current monitor ▶ Selection of a virtual monitor (Note: the real existing monitors are displayed when called up in Runtime.) Only available for multi-monitor systems and only for the All frames with the name option.
Show this dialog in the Runtime	Active: This dialog is opened in Runtime before the function is executed.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

19.14.1 Frame selection dialog

In the **frame selection** dialog, frames can be selected for the execution of functions, from:

- ▶ Current project
- ▶ Subprojects

- All projects in the workspace with the **Keep project in memory** option active

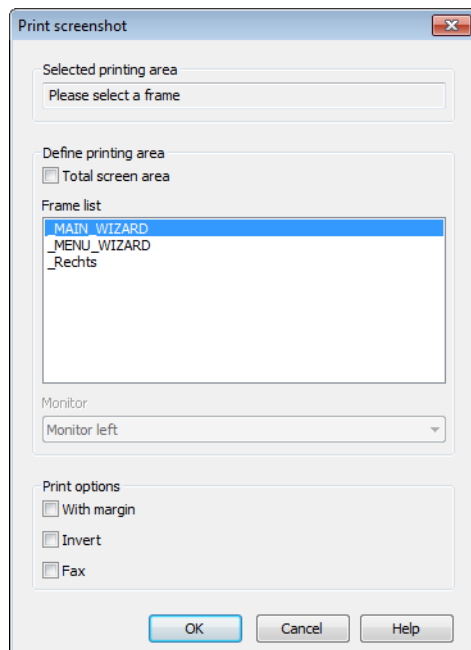


Parameter	Description
Project tree window	Displays all projects in the workspace. Frames can be selected from the current project and from all projects with the Keep project in memory option active.
Frames window	Selection of a frame. If several frames are selected, the frame at the top of the list is used to execute the function.
No selection	Removes selection and closes dialog.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

19.15 Print screenshot

This function is used to make a screenshot of the entire screen or of frames (process screens, lists, trend curves, etc.) in the Runtime.

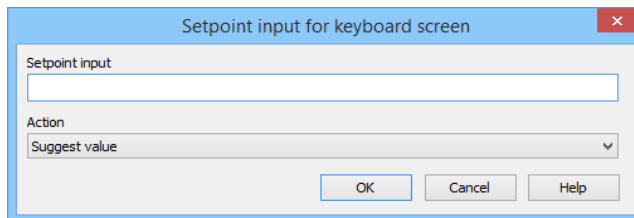
Give the frame and the additional options as the transfer parameters. This function is configured via the following dialog.



Property	Description
Selected print area	Display of the selected area.
Define print area	Selection of the area which should be printed.
Total screen area	Prints screenshot of the whole screen. For multi-monitor systems the contents of the default monitor is printed.
Frame list	<p>Only available if the Total screen area property is inactive.</p> <p>Select the desired frame via double click. It is displayed in field Selected print area.</p> <p>Note: If the selected frame is not active during Runtime, nothing is printed.</p>
Monitor	<p>Only available if a frame has been selected and the Total screen area property is inactive.</p> <p>Select the desired monitor from the drop-down list:</p> <ul style="list-style-type: none"> • All • current monitor • designated virtual monitor <p>Note: If you have selected a frame which covers more than one screen , you must select <code>current monitor</code> in order to print the whole frame.</p>
Print options	
With margin	At printing a margin is left for tacking.
Inverted	Reverses bright/dark areas.
Fax	The hardcopy is rerouted to the fax. For this you must select a fax device as printer for screenshots in the Printer settings.

19.16 Setpoint input for keyboard screen

The **Setpoint input for keyboard screen** function is not available for the keyboard screen. In addition the text field **Set value** must have been created. It makes it possible to set or set and send a previously defined value.



Parameters	Description
Setpoint input	Input of the target value.
Action	Selection of action from drop-down list. (for possible actions, see the following table.)
OK	Accepts inputs, closes dialog and creates functions with value and action.
Cancel	Discards inputs, closes dialog and creates functions without setpoint and action.
Help	Opens online help.

Actions in the drop-down list:

Action	Description
Suggest value	The setpoint default is written to the keyboard screen.
Accept value	<p>The following happens:</p> <ul style="list-style-type: none"> ▶ the set value default is written to the keyboard screen ▶ The keyboard screen is closed with OK
RGM: Accept and send value	<p>If the keyboard screen is called up from the Recipe Group Manger recipe table, then:</p> <ul style="list-style-type: none"> ▶ The setpoint default is written to the keyboard screen ▶ The keyboard screen is closed with OK ▶ The recipe value is written to the variable
RGM: Accept value and save recipe	<p>If the keyboard screen is called up from the Recipe Group Manger recipe table, then:</p> <ul style="list-style-type: none"> ▶ The setpoint default is written to the keyboard screen ▶ The keyboard screen is closed with OK ▶ The recipe is saved
RGM: Write and send value and save recipe	<p>If the keyboard screen is called up from the Recipe Group Manger recipe table, then:</p> <ul style="list-style-type: none"> ▶ The setpoint default is written to the keyboard screen ▶ The keyboard screen is closed with OK ▶ The recipe value is written to the variable ▶ The recipe is saved

19.17 Display overview window

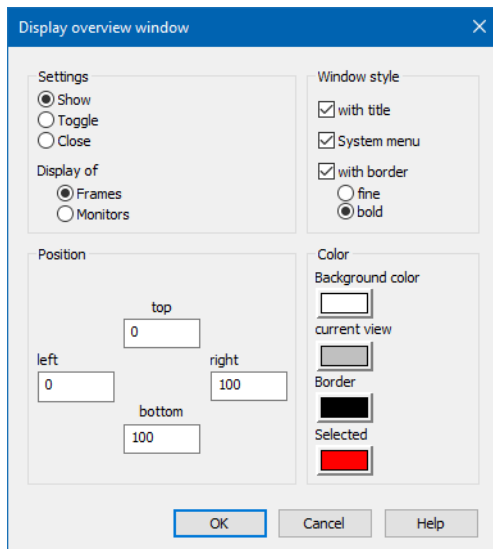
The **Display overview window** function displays the overview window in Runtime, which shows the real existing monitors or frames in a multi-monitor system. A monitor or a frame can be activated by means of a mouse click.

To configure the function:

1. Create a new function
2. navigate to the node **Screens**
3. Select the **Display overview window** function
4. the dialog for configuring the overview window is opened
5. Select your configuration

6. Close the dialog by clicking on OK
7. Allocate a button to the function

DISPLAYING THE OVERVIEW WINDOW



SETTINGS

Parameter	Description
Settings	The function can either open, close or toggle the overview window. Selection is carried out by means of radio buttons:
Display	The overview window is opened.
Toggle	The display is switched between open and closed.
Close	The overview window is closed.

DISPLAY OF

Parameter	Description
Display of	Selection of display in the overview window. Either frames or monitors are displayed.
Frames	The overview window divides the screen into frames.
Monitors	The overview window divides the display into monitors.
Position	Position of the overview window on the screen, calculated in pixels from the upper left edge.

WINDOW STYLE

Parameter	Description
Window style	
with title	Active: The overview window has a Windows title bar.
System menu	Active: A system menu is displayed if the title bar is activated.
with border	Active: Overview window is displayed with a border. The window size can be adjusted in Runtime by dragging the border. Selection of the border width by means of radio buttons:
fine	Fine border.
bold	Bold border.

COLORS

Parameter	Description
Colors	Definition of the colors in the overview screen. Clicking on Color opens the palette.
Background color	Color of window background
current view	Currently displayed frames/monitors.
Border	Color of border.

Selected	Selected frames/monitors.
OK	Accepts settings, closes dialog and creates functions with assignment.
Cancel	Discards settings, closes dialog and creates functions with standard settings.
Help	Opens online help.