



COPADATA
do it your way

zenon manual

Extended Trend

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. 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. Extended Trend

The Extended Trend is used for the representation of online and historical values(Archive values) of process variables and derived process variables in form of curves. It makes it possible to reread historic data. Scrolling in the Extended Trend provides a ruler and zoom function together with a trend analysis. In contrast to the **trend** dynamic element, it is possible to zoom, browse, query and scale online values and values from archives.

EXTENDED TREND STARTER EDITION

In the standard package of zenon, a reduced version of Extended Trend with limited functionality is included with the Starter Edition.

The Starter Edition has the following limitations:

- ▶ no XY trend
- ▶ no second time axis
- ▶ number of curves limited to 8
- ▶ no logarithmic representation
- ▶ Scanning with a cursor

For additional limitations on use in Windows CE projects, the zenon Operator under Windows CE manual, Limitations for zenon chapter.



Attention

You cannot use any functions that exceed the limitations mentioned above if you have only the Starter Edition license in the Editor.

If you only have the Extended Trend Starter Edition license in the Runtime, you cannot use screen switch functions that do not follow the rules mentioned above. The `Extended Trend` screen will then be loaded with the default filter (=empty filter). An entry in the Diagnosis Server is made.

Example: *You try to perform a screen switch to an Extended Trend Module screen with 10 curves in Runtime with the Starter Edition. The Extended Trend screen will be opened, but no curves will be shown.*

3. Engineering in the Editor

To use Extended Trend in Runtime, the following must be carried out in the Editor:

- ▶ An Extended Trend (on page 6) screen is created
- ▶ A screen switch function (on page 16) is created
- ▶ Curves (on page 95) are configured

3.1 Creating screens of type Extended Trend

The `Extended Trend` screen is for operating **Extended Trend** in Runtime.

ENGINEERING

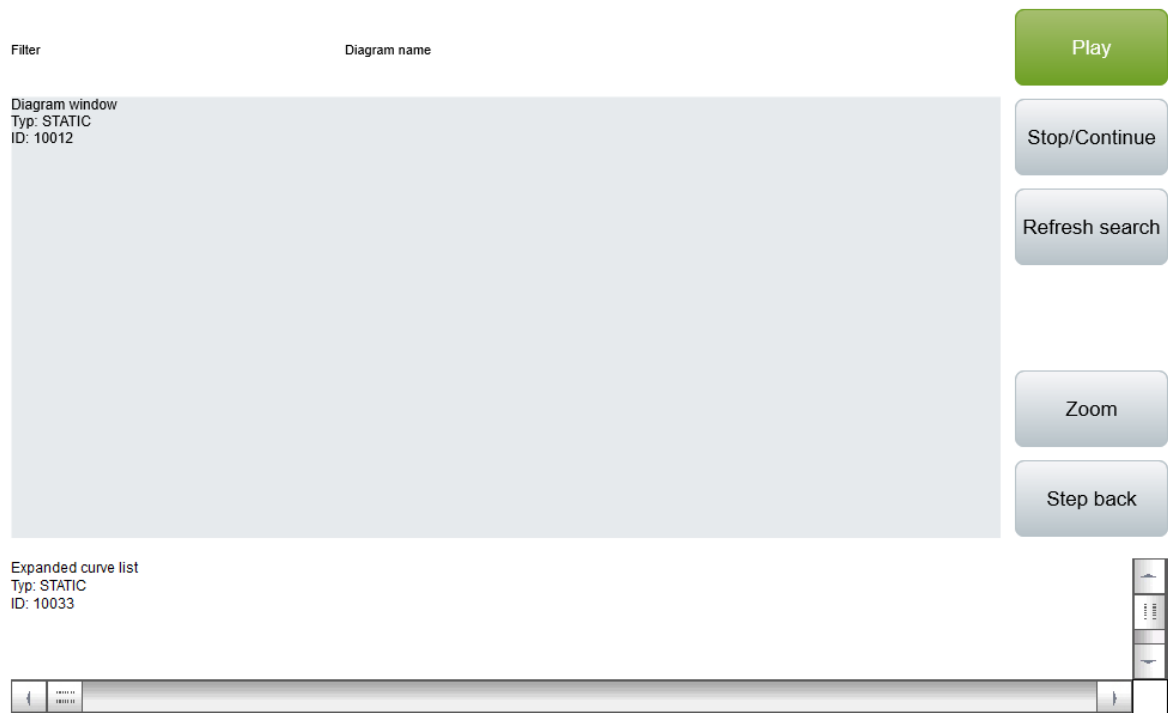
There are two procedures for the creation of a screen from zenon version 8.00:

- ▶ The use of the screen creation dialog
- ▶ 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 `Extended Trend` 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 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

INSERT TEMPLATE

Control element	Description
Insert template	<p>Opens the dialog for selecting a template 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>

WINDOW

Selection of the window to be displayed for diagrams and curves in Runtime.

Control element	Description
Diagram	<p>Window to display trend curve</p> <p>Not available if the screen has been called up with the Display lot selection dialog -> Relative lot selection option activated.</p>
Diagram name	<p>Shows the diagram name.</p> <p>Note: Element of the type <code>Dynamic text</code>. Functionality is assigned using the Screen type specific action property.</p>
Set filter	<p>Displays the status of the current time filter in Runtime.</p> <p>Note: Element of the type <code>Dynamic text</code>. Functionality is assigned using the Screen type specific action property.</p>
Cursor Output list	<p>Shows the position of the cursor in the diagram window and the values set in diagram settings and cursor output (on page 90)</p>
Extended curve list	<p>Curve list that can be edited in Runtime (on page 126). The following can be edited:</p> <ul style="list-style-type: none"> ▶ Active ▶ Color ▶ Area display ▶ Fill color ▶ Curve name ▶ Sorting order ▶ Title ▶ Transparency fill color ▶ Variable name ▶ Variable identification ▶ Y-Axis <p>Note: Not available under Windows CE. Is replaced by the curve list (outdated) there.</p>
Activate curve	<p>Activates the selected curve in the extended curve list. The curve in the screen is shown/hidden in the screen and the list is updated by activation/deactivation. Multiple selection is possible. The button is deactivated if no curve has been selected in the curve list.</p>
Activate axis	<p>Activates the selected axis in the extended curve list. The axis in the screen is shown/hidden in the screen and the list updated by activation/deactivation. Multiple selection is possible. The button is deactivated if no curve has been selected in the curve list.</p>
Curve color	<p>Allows the setting of the desired color for the respective curve. When the color is changed, the curve is redrawn in the screen and the list is updated. The button is only activated if no curve has been selected in the extended curve list.</p>

DIAGRAM FUNCTIONS

Pre-defined controls for diagrams.

Control element	Description
Filter	Display of set filter.
Chart settings	Activates the dialog (on page 90) for diagram settings and cursor output
Curves	Change curve parameters.
x-axis	opens the dialog (on page 45) for x-axis settings. Not available if the screen has been called up with the Display lot selection dialog -> Relative lot selection option activated.
Update	Refreshes the display.
Stop	Do not refresh screen.
Next	Update screen
Cursor on/off	Query values
Double cursor on/off	Display (on page 113) values that are between two cursors.
Print	Prints diagram. Note: Printouts made using the Print button of the Extended Trend screen may be different to those made using the Screen switch - Extended Trend function or the Print Extended Trend diagram function. The functions assume a window size of 1000 x 700. Printing via the button is in the proportion defined in the Editor.
Print with dialog	Choose the printer before printing out the diagram.
Copy to clipboard	Copy representation into the intermediate store.
Export data displayed	exports (on page 123) all visible data of all curves as a CSV file.

DIAGRAM NAVIGATION

Buttons for navigation in the diagram.

Control element	Description
Move cursor one pixel to the left	Places cursor one pixel to the left. If the Shift key is pressed at the same time, the cursor is moved by 10 pixels.
Move cursor to the right one pixel	Places cursor one pixel to the right. If the Shift key is pressed at the same time, the cursor is moved by 10 pixels.
Backwards	Scroll backward on the time axis (history)

Quarter backwards	Moves the time period displayed back by a quarter of the measuring unit selected.
Forwards	Scroll forward on the time axis (current)
Quarter forwards	Moves the displayed time period forwards by a quarter of the unit selected.
Zoom	Zoom display
Step back	Reduce display
Zoom +	reduces display time intervals
Zoom -	Increases display time intervals
Zoom to 100 %	<p>Sets zoom factor to 100%.</p> <p>This zoom action is saved in the zoom history.</p> <p>For example: zooming is used</p> <ul style="list-style-type: none"> ▶ to zoom 2x into a selected area of the Extended Trend, ▶ then zoom content to 100% is selected and ▶ then a selected area is zoomed into again, <p>then there are 4 zoom events in the history. These can be jumped back step by step with the Step back button.</p>

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
Diagram name	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
Set filter	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
Curve list CE	<p>List of curves.</p> <p>Is used for CE for compatibility reasons. The extended curve list is recommended for all other projects.</p>

FILTER PROFILES

Buttons for filter settings in Runtime.

Control element	Description
Profile selection	Select profile from list.

Control element	Description
Save	Saves current setting as a profile. Note: The name can be a maximum of 31 characters long and must only contain valid characters. Prohibited are: ! \ / : * ? < > ""
Delete	Deletes selected profile.
Import	Imports filter profiles from export file.
Export	Exports filter profiles in the file.



Information

The cursor one pixel to the left and cursor one pixel to the right control elements move the cursor if it is active, not the trend.

Arrow keys on the keyboard can also be used instead of the control elements.

*If you hold down the **Shift** key when moving with the arrow keys, the movement is carried out in 10-pixel increments.*

3.1.1 Settings for the operation of Extended Trend with the mouse in Runtime

In the Editor, settings can be made to define the mouse functions in a **Extended Trend** screen in Runtime:

1. Open a **Extended Trend** screen type.
2. Click in the `diagram window` control element in Extended Trend.
The properties of the diagram window are shown.
3. Select the **Manipulation using mouse** property in the **Runtime** properties group.
4. Configure the desired behavior in Runtime with the respective properties.

Note: If a cursor is used for the display in the trend view, mouse interactions are deactivated in Runtime.

Parameter	Description
Drag with left mouse button	<p>The choices are:</p> <ul style="list-style-type: none"> ▶ No reaction ▶ Drag zoom borders ▶ Move ▶ Move horizontally <p>Note: The Zoom button is not available if the drag zoom borders setting has been selected for Drag with left mouse button.</p>
Drag with right mouse button	<p>The choices are:</p> <ul style="list-style-type: none"> ▶ No reaction ▶ Drag zoom borders ▶ Move ▶ Move horizontally
Mouse wheel	<p>The choices are:</p> <ul style="list-style-type: none"> ▶ No reaction ▶ Move vertically ▶ Move horizontally
Alt + mouse wheel	<p>The choices are:</p> <ul style="list-style-type: none"> ▶ No reaction ▶ Move vertically ▶ Move horizontally
Ctrl + mouse wheel	<p>The choices are:</p> <ul style="list-style-type: none"> ▶ No reaction ▶ Zoom ▶ Zoom X/T axis

3.2 Preparations to call up an ETM screen

The following possibilities are available to call up a **Extended Trend** screen type:

- ▶ Using the screen switching function (standard function)
- ▶ Using a dynamic element with context menu

PREPARATIONS FOR CALLING UP AN ETM SCREEN USING A DYNAMIC ELEMENT WITH CONTEXT MENU

If several dynamic elements are linked to a context menu to call up an ETM screen, the variable of the dynamic element from which the context menu has been opened is always shown in the ETM screen.

Engineering:

1. Navigate to the **Menus** node in the project tree.
The detail view is opened.
2. Create a new context menu with the desired name.
The symbol of the context menu is shown on the right side.
3. Click on the symbol with the left mouse button.
The properties window of the symbol is opened.
4. Under **Representation/type** and **Text**, enter the text that is to be displayed in Runtime in the context menu.
This text is also shown in the symbol.
Note: If you click in the highlighted area below the text, you can enter further text in the properties. A further function can then be connected with this context menu entry.
5. Set `Show extended trend` in **Action type**.
6. In the project properties, go to the **Extended Trend** node.
7. Under **Screen**, select, using the selection button **...**, a **Extended Trend** screen.
Note: A tick is shown in front of the text of the context menu by activating the **Check mark** checkbox. Otherwise this checkbox has no effect.
8. Set the desired time under **Time filter relative**.
Default: 0d 00:00:00
9. Select the desired style under **Style group chart** using the **...** selection button.
10. Open the screen in which the dynamic element that is to be linked to the context menu is located.
11. Click on the dynamic element with the left mouse button.
The properties window of the element is opened.
12. Select the desired context menu under **Runtime** and **Context Menu**.
13. Start the Runtime.
14. Right-click on the dynamic element with the context menu.
The context menu is opened.
15. Left-click on the desired entry.

The ETM screen is opened. The variable of the dynamic element is already visible in the curve list and created as a curve.

3.3 Screen switch - Extended Trend

The parameters for the trend diagram to be displayed in Runtime are defined with the screen switching. Each trend curve is provided with its own name. We recommend not displaying too many trend curves at the same time, so you can maintain a good overview. Several variables can be configured for the configuration of curves, which can then be freely activated in Runtime.

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 the node **Screens**.
3. Select the **Screen switch** function.

The dialog for selecting a screen is opened.

4. Select the desired screen.

Note: If you select a screen from another project, ensure that the project is running in Runtime.

5. Configure the filter.
6. Name the function in the **Name** property.

FILTER DIALOG SCREEN SWITCH

Filter...

DataRepresentationX axisTimeLotsShiftColumn settingsPrinter settings

Origin of the data

☒ Online data

☐ Block array

☐ Archive data

Options

☐ Sort data

☒ Delta data only

☐ Use archives from read-back folder

☒ Select suitable aggregation archive automatically

OK

Cancel

Help

Curves

Curve name	Title	Color	Fill color	Transpa...	Area dis...	Y
Filter text	Filter text	Filter text	Filter text	Filter t...	Filter t...	Filter t

<

>

Add...

Edit...

Replace...

Proposal for harddisk data storage

Number

Cycle time

60

60.0 sec

Current values

Variable name	Number of values	Cycle time
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☒ Accept proposal

Tab	Description
Data (on page 18)	Configuration of the source of data and curve administration.
Display (on page 34)	Configuration of the diagram display.
X-Axis (on page 40)	Configuration of the x-axis.
Time (on page 52)	Configuration of the time filter.
Lots (on page 67)	Configuration of the lot filter.
Shift (on page 75)	Configuration of the shift filter. Cannot be active together with the lot filter.
Column setting (on page 84)	Configuration of the columns to be displayed:
Printer settings (on page 92)	Configuration of the settings for printing diagrams or saving them as a screen.
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.

3.3.1 Data

Configuration of data origin and curves and how they are displayed in Runtime.

The possible options vary depending on the origin of the data.

- ▶ Online data
- ▶ Block array
- ▶ Archive data

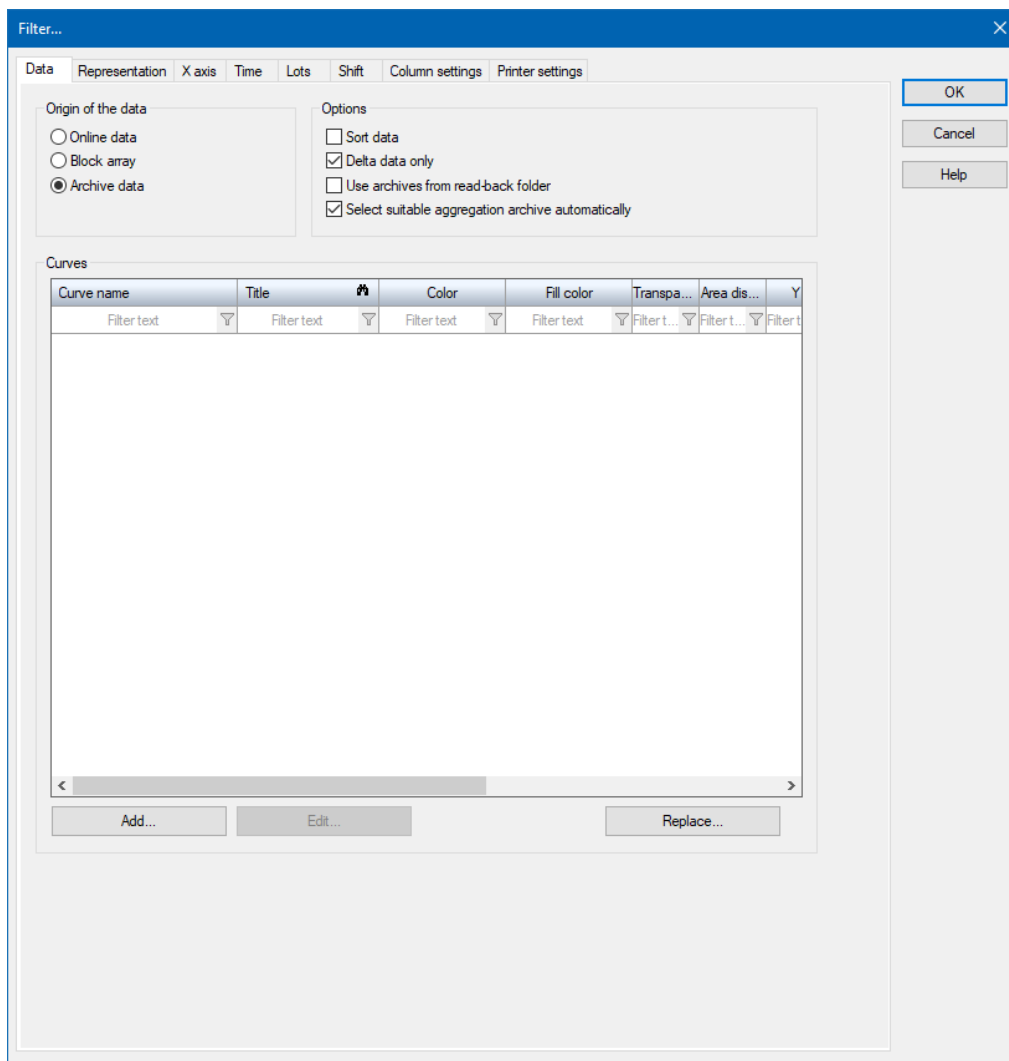


Information

Extended Trend supports the display of cross-project data. In doing so, both the display of data from subprojects in an integration project, as well as the reverse direction, are supported. This is possible for all types of data origin.

You can find further information on cross-project exchange of data in the Multi-Project Administration chapter.

CONFIGURATION OF DATA



Note: The **Replace...** button is only available if **Archived data** has been selected for **Data origin**.

ORIGIN OF THE DATA

Parameter	Description
Origin of the data	<p>Selection of the data origin:</p> <ul style="list-style-type: none"> ▶ Online data ▶ Block array ▶ Archive data <p>Can only be selected as long as no curves have been configured.</p>
Online data	<p>Active: Current online values and saved values are used for the display.</p>
Block array	<p>Active: Variables with array values are used for the display. You can limit the display of variables to those that are based on a driver that supports variables with array values using this.</p> <p>The display of variables with array values works just like the XY display. However, you may not select a time filter or X variable. Enter, in the X-axis (on page 45) tab (XY-display) for Scale From and To the corresponding array indexes of the source data.</p> <p>Note: Block array corresponds to the Block array size property that can be set for a variable and is not identical to array variables.</p>
Archive data	<p>Active: Archive values saved in the database (in ARX format or SQL data) are used for the display.</p> <p>Note: Archives in XML, dBase or TXT formats are no longer displayed after the storage cycle has expired.</p>

OPTIONS

Parameter	Description
Options	Configuration of options, depending on the origin of the data.
Sort data	<p>Only available for online data and archive data.</p> <p>Active: The data is sorted depending on its time stamp after loading.</p> <p>Note: The use of this option can impair the performance, because the data must be re-sorted each time.</p> <p>Recommendation: Use this option if the data comes from an external source and it cannot be ensured that the sequence is correct.</p>

Delta data only	<p>Only available for archive data .</p> <p>Active: When switching or updating the trend, only archives with amended data are loaded.</p>
Use archives from read-back folders	<p>Only available for archive data .</p> <p>The historical data from the readback folder is used for the display.</p> <p>When loading archive data from the readback folder, the archive data from the Runtime path and from all subfolders of the readback folder is also read.</p>
Automatically select appropriate aggregated archive	<p>Only available for archive data .</p> <p>Active: The appropriate aggregation archive is automatically selected in Runtime.</p> <p>How it works in Runtime</p> <ul style="list-style-type: none"> ▶ Zoom: If a very large time range is selected in the base archive or zooming out of the view is carried out very often with the Zoom - button, then very large amounts of data are generally required. With this option active, only the data from the next aggregated archive is displayed. If the diagram is zoomed in on again (with the Zoom + button), the diagram switches back to the previous archive. ▶ Threshold: If the threshold cannot be determined, 15 values is used as a default. Calculation of threshold value: $\text{Root from diagram width} = \text{number of values from the aggregated archive}$. Example: Diagram width 625 pixel results in a threshold of 25 values. ▶ Aggregated archive The aggregated variable that appears first in the following sequence is selected from the aggregated archives: - Average - Maximum - Minimum - Sum Attention: If the variable for the diagram is selected from an aggregated archive then: - Only the same function is taken into account in the trend display - Only the data from the aggregated archive is now used. Display of the data that is based on the aggregation variable is no longer possible. These are also therefore not taken into account with Zoom - for example. If several aggregated archives on a level with the same aggregation function are no longer present, it is always the

	<p>first one that is selected.</p> <ul style="list-style-type: none">▶ Only one sum variable If only one sum variable is found for a variable from the basic archive, there is a warning in the Diagnosis Viewer and in the output window of the Editor. <p>Default setting:</p> <ul style="list-style-type: none">▶ active▶ With the exception of projects that were created before version 7.11 and converted to the current version.
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CURVES

Parameter	Description
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Curves	<p>Display and activation of the configured curves. Double clicking on the entry opens the dialog for configuring the curve.</p> <p>The display in Runtime can be activated and deactivated here and the sequence of the display can be configured.</p> <p>The displayed columns in the curve list correspond to the current configuration of the extended curve list in the Column settings (on page 84) tab.</p> <p>Important columns:</p> <ul style="list-style-type: none"> ▶ Curve name: The curve name is displayed. ▶ Title: The configured curve title is displayed. ▶ Color: The configured curve color is displayed. ▶ Y-Axis: Activation/deactivation of the display of the Y-axis in Runtime by clicking in the checkbox. If the checkbox has been deactivated, the Y-axis for the curve can be selected and displayed in Runtime in the Extended Trend screen. ▶ Active: Activation/deactivation of the display of the curve in Runtime by clicking in the checkbox. If the checkbox has been deactivated, the curve can be selected and displayed in Runtime in the Extended Trend screen. ▶ Variable name : The variable name is displayed. ▶ Variable identification: The variable identification is displayed. ▶ Sorting order: Defines the sequence in which the curves are displayed in this tab and in Runtime. The sequence can be changed by clicking in a cell and entering a number. Alternatively, the sequence can be changed by clicking on the column heading and then using Drag&Drop. Minimum: 1 Maximum: Number of curves. Sorting is instigated by clicking on the column heading. The sequence can also be configured in Runtime (on page 126). ▶ Source: Provides information on the original location of the variables shown. The naming of the original archive is carried out according to the following rule: <Short description> + "-" + <Name> + ", "+" <Grouping> + " (" + <Source> + ")". Example: A1-ARCHIVE1,SU(AA-ARCHIVE1) ▶ Note: ▶ The permitted number of curves depends on the license. ▶ When selecting an <code>string</code> archive variable, the Gantt display (on page 103) option is automatically displayed in
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the **Curve settings** (on page 96) dialog.

- ▶ Sorting according to other columns as a **sequence** does not have an effect on the sequence of the curve display.

Add...	<p>Opens the dialog to select a variable, depending on the origin of the data:</p> <ul style="list-style-type: none"> ▶ Online data: numeric variables ▶ Block array: numeric variables ▶ Archive data: Variables of existing archives
Edit...	<p>Opens the dialog to configure curves (on page 95).</p> <p>This dialog can also be opened by double clicking on a curve in the Curves list.</p>
Delete	Allows the removal of entries.
Replace...	<p>Opens the Substitute filter objects (on page 28) dialog.</p> <p>The following objects can be substituted:</p> <ul style="list-style-type: none"> ▶ Curve data (archive variable) ▶ Axis title (Y axis / X axis) ▶ Curve title ▶ Visibility variable of the curve ▶ X axis data (archive variable for XY diagram)

PROPOSAL FOR HARD DISK DATA STORAGE

Parameter	Description
Proposal for hard disk data storage	<p>Only available for online data.</p> <p>Offers the values proposed by the properties of the Harddisk data storage group in the zenon Editor.</p> <p>The calculation of the proposal is directly related to the refresh rate (Display tab). For YT display (on page 41), the time configured in the time filter is also included in the calculation.</p>
Number	Number of values that are written. Corresponds to the value that is entered in the Number of values property.
Cycle time	Cycle time in seconds. Corresponds to the value that is entered in the Cycle time [s] property.
Preview	Displays the current value of variables that are to be replaced by the proposed values.

Accept proposal	<p>Active: Writes the proposed values to the respective properties of the variables when the dialog is closed with OK.</p> <p>Note: It is activated if the Harddisk data storage active property is deactivated.</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.

Note: The options available for this filter for import and export up to version 7.10 have been temporarily removed. The import of filters from projects created in other versions is thus not possible at present.

HARDDISK DATA STORAGE

If online variables are to be displayed in Extended Trend, it is recommended that the values for saving the variable values are coordinated on the hard drive. If, when configuring the screen switching to an **Extended Trend** screen, the option **Online data** is selected, the system proposes optimal values for saving the variable values to the hard disk. These values can also be adapted manually.

In the zenon Editor, you can find these properties in the **Harddisk data storage** group. This includes the properties:

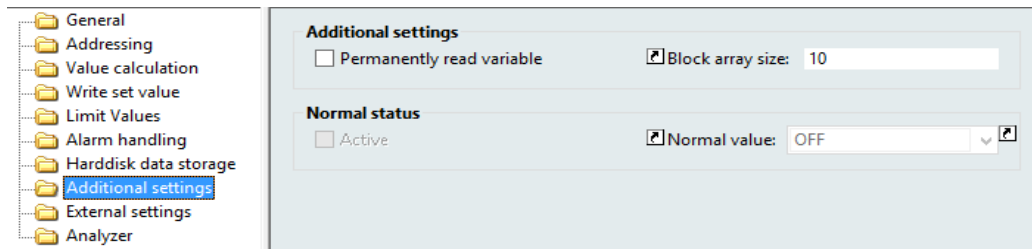
- ▶ **Harddisk data storage active:** Switches data saving on or off.
- ▶ **Number of values:** Number of values that are saved.
- ▶ **Cycle time [s]:** Cycle time in seconds.
- ▶ **Recording type:** type of saving:
 - `Hard disk data (cyclical)` :: Cyclical writing of values to the hard disk.
 - `Resorted values (RDA)` :: The values are written blockwise by the driver on to the hard disk.
 Suitable for post mortem analysis. The control unit must therefore be configured to save data in the event of an error and to write this to the hard drive once back in operation.

If hard disk data backup is not used, data is not saved in Runtime.

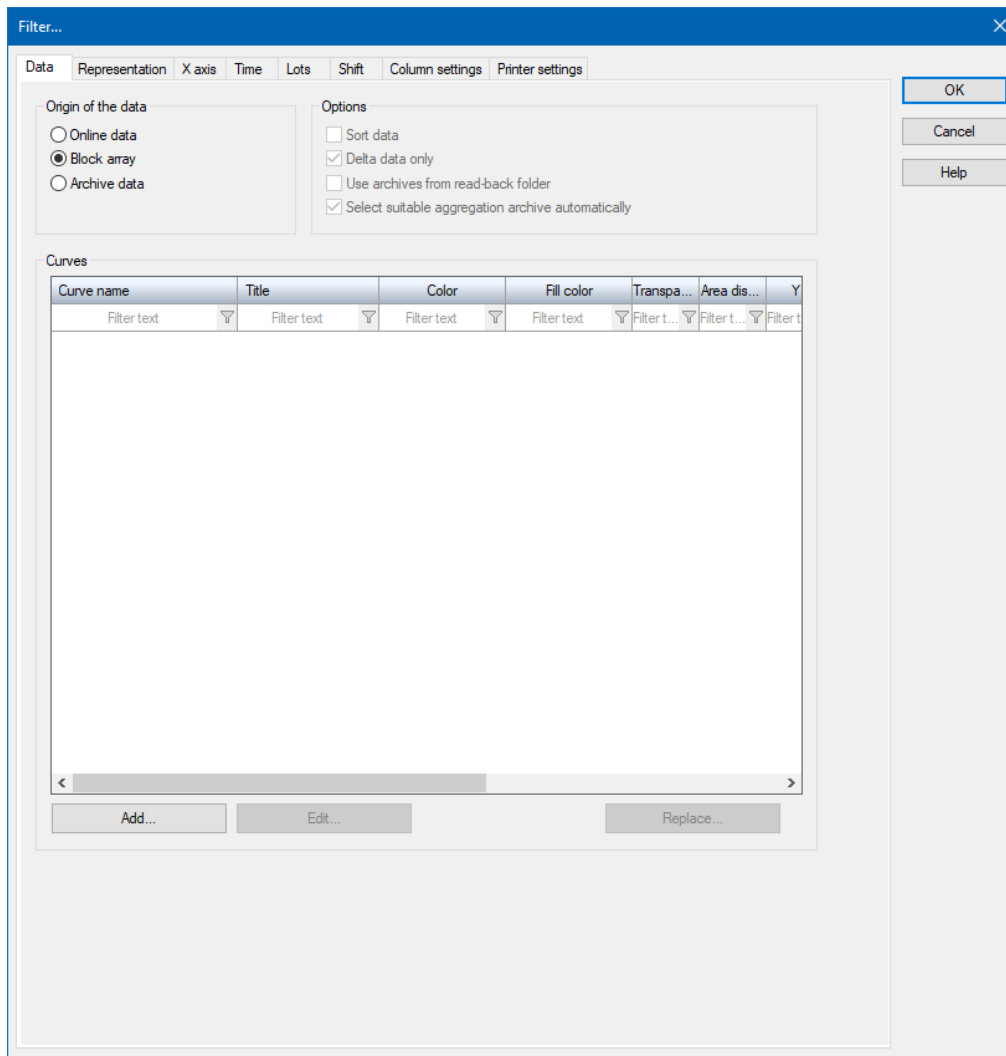
Block array

To set up variables with array data:

- Define the **Block array size** property in the **Additional settings** group for the corresponding variable, for example 10



- Select, for the **screen switching** function, the **Block array** property on the Extended Trend screen:



- ▶ Axis title (Y axis / X axis)
- ▶ Curve title
- ▶ Visibility variable of the curve
- ▶ X axis data (archive variable for XY diagram)

In this dialog, you can for instance use a curve setting that has already been defined in the Editor for the display in the ETM for further variables.

The variables of the curve that have already been defined are replaced with the desired variable.

There is then a curve available in Runtime with the same settings.

The procedure is used for two examples for the replacement of variables.

When configuring substitution in the Editor, the entry of the archive channel is identified uniquely with the following string:

ArchiveProject#ArchiveShortName|Aggregation(PossibleSubAggragation).ProjectOfVariable#VariableName

You can do the following in the respective tab of the **Substitute filter objects** dialog:

- ▶ **Replace links** (on page 29)
- ▶ **Replace indices** (on page 32)

PREPARATION TO REPLACE LINKINGS OR INDICES

Preparatory work:

1. Select the variable that is to be replaced in the filter dialog of the screen switching function of the ETM. To do this, click on the **Add...** button in the **Data** tab.

The **Archive variable selection** dialog is opened.

2. Select the desired variable and click on the **Insert** button

Example: Variable1

3. Confirm the selection by clicking on **OK**.

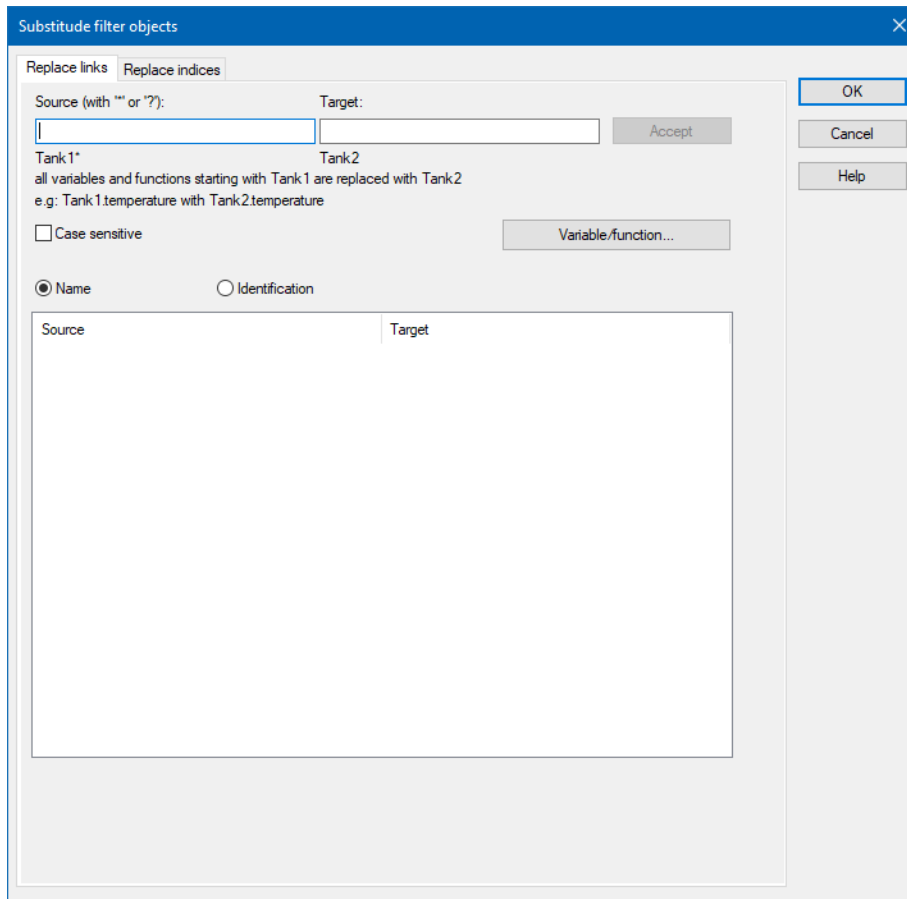
The dialog is closed. The selected variable is visible under **Curves**.

Replace links

There are two procedures available.

- ▶ Replacement of linkings using the **Apply...** button

- Replacement of linkings using the **Variable/function...** button



REPLACEMENT OF LINKINGS USING THE APPLY BUTTON

Example: **Variable1** is to be replaced by **Variable2**.

Engineering:

1. Carry out the preparations to replace linkings or indices (on page 28).
2. Then click on the **Replace...** button in the **Filter...** dialog in the **Data** tab.
The dialog to substitute filter objects is opened.
3. Enter the origin of the linking to be replaced in the input field under **Source (with '*' or '?')**.

Example: **Variable1***

The variable is visible under **Source** and **Target**.

Initially, **Source** and **Target** are filled with the same variable.

4. Enter the variable with which Variable1 is to be replaced in the input field under **Target**.

Example: **Variable2**

Note: **Variable 2** given in the example must have already been created and must be an archive variable.

5. Click on **Accept**.

A dialog shows how many connections have been replaced.

6. Confirm the dialog by clicking on **OK**.

The variable that replaces the source variable is now entered under target.

7. Click on **OK** to close the dialog.

8. Click on **OK** to close the filter dialog.

The next time Runtime is opened, the curve is available in the ETM with the replaced variable (**Variable 2**).

REPLACEMENT OF LINKINGS USING THE VARIABLE/FUNCTION BUTTON

Example: **Variable1** is to be replaced by **Variable2**.

Engineering:

1. Click on **Variable/Function...** in the **Substitute filter objects** dialog.

The **Archive variable selection** dialog is opened.

2. If there are entries in the lower list area of the dialog, highlight these by clicking on the left mouse button.

3. Click on the **Delete** button to remove the entries.

4. From the archive variable displayed, select the variable that you want to replace with the source variable.

5. Confirm the selection by clicking on **Insert**.

The selection is shown in the lower list area.

6. Click on **OK** to close the dialog.

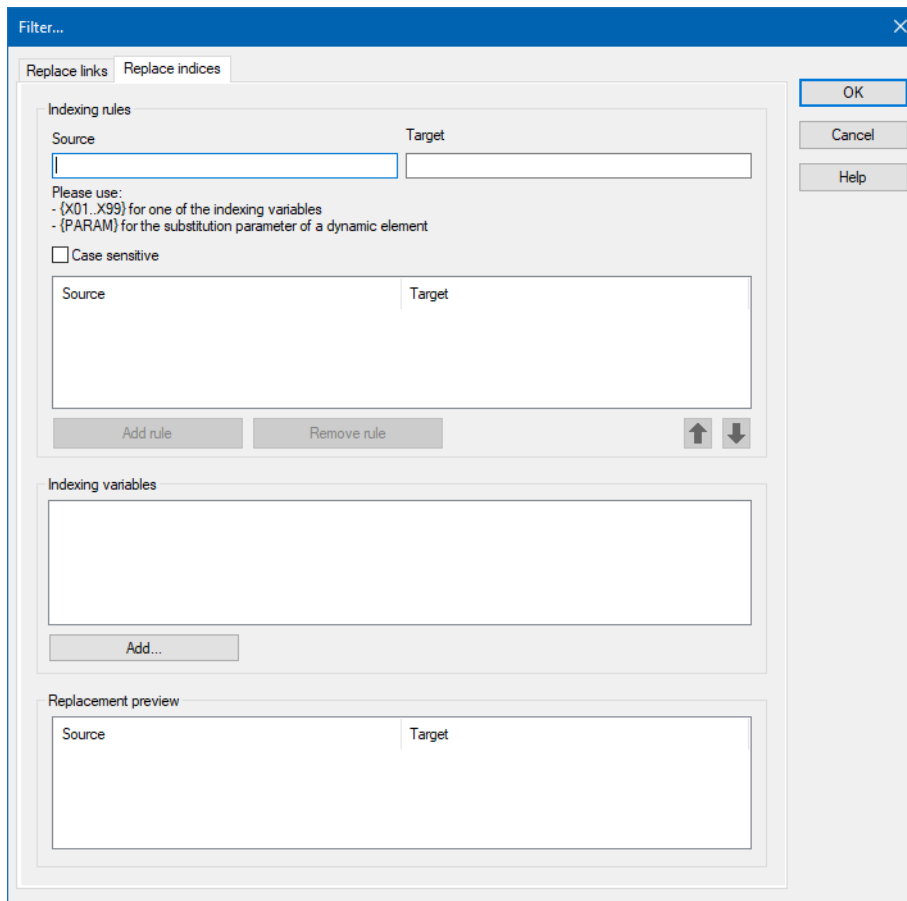
The selected variable is now visible in the **Substitute filter objects** dialog under **Target**.

7. Click on **OK** to close the dialog.

8. Click on **OK** to close the filter dialog.

The next time Runtime is opened, the curve is available in the ETM with the replaced variable (**Variable 2**).

Replace indices



There are two procedures available:

- ▶ Replace indices with indexing variables (X01–X99)
- ▶ Replace indices with substitution parameters of a dynamic element {PARAM}

Example: Variable1 is to be replaced with an indexing variable or the substitution parameter of a dynamic element.

REPLACEMENT OF INDICES

Engineering:

1. Carry out the preparations to replace linkings or indices (on page 28).
2. Click on the **Replace indices** tab in the **Substitute filter objects** dialog.

The variable to be replaced is shown in the **replacement preview** under **Source**.

Example: Variable1

3. In the **replacement preview**, click on the variable to apply this to the **indexing rules** in **Source** and **Target**.
4. To work with indexing variables (x01–x99), change the naming of the variable under **Target** as desired.

Example: Variable(X01)2 The indexing variable x01 is used.

Note: Always start with x01, because variable assignment under indexing variables automatically starts upwards.

5. Click on the **Add rule** button to apply the information in **Source** and **Target** from the indexing rules.
6. Click on the **Add...** button under **Indexing Variables**.

The **variable selection** dialog is opened.

7. Select the variable that is to be replaced.
8. Click on **Add** to accept the variable.
9. Click on **OK** to close the dialog.

The x01 assigned variable is visible under **Indexing Variables**.

10. You can add further rules if you rename the variable in the **indexing rules** under **Target** and click on **Add Rule**.

You can also use the substitution parameters of a dynamic element {PARAM} for this.

Example: Variable{PARAM}2

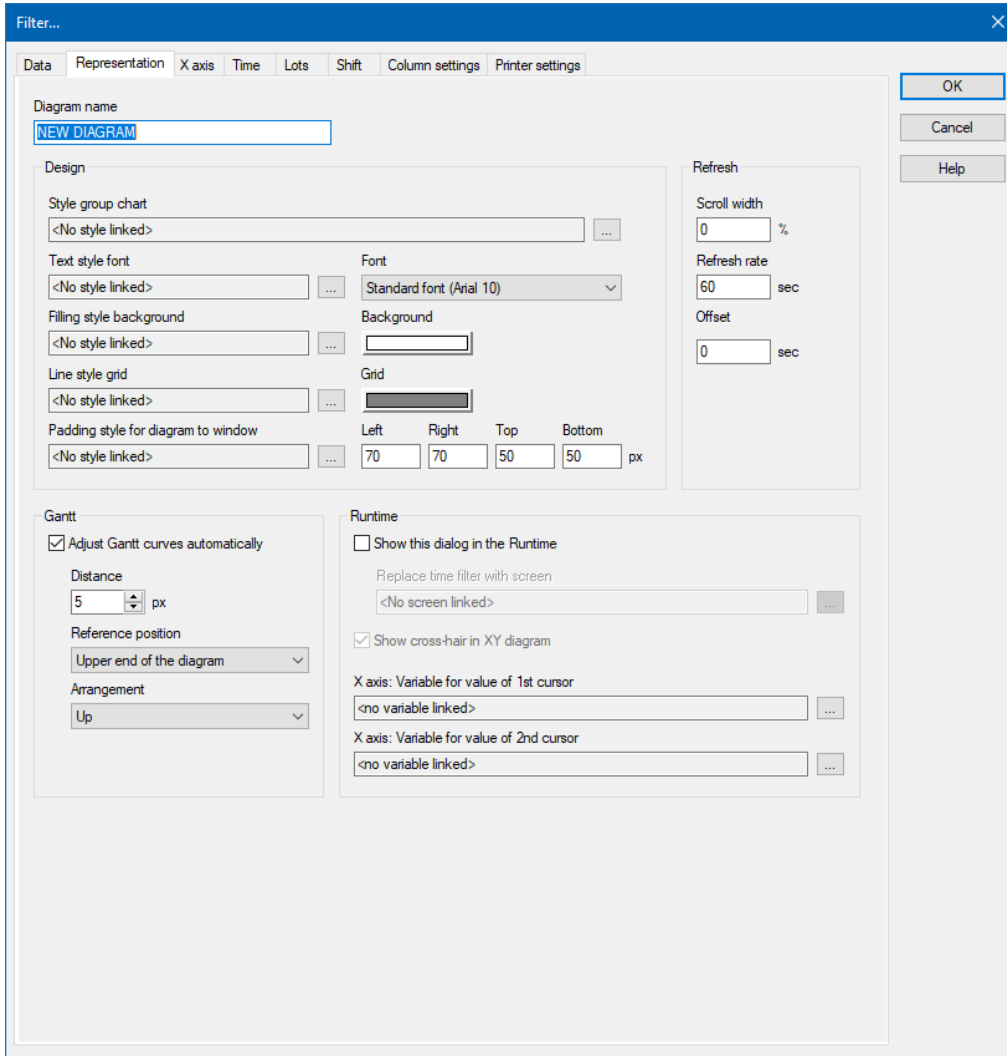
11. Click on **OK** to close the filter dialog.

The next time Runtime is opened, the curve is available in the ETM with the replaced variable.

Note: If there are several indexing rules, these are gone through from top to bottom. The first applicable rule is executed. The order of the rules can be amended with the arrow keys.

3.3.2 Display

Settings for the display of the diagram in Runtime:



Filter...

Diagram name:

Design

Style group chart:

Text style font: Font:

Filling style background: Background:

Line style grid: Grid:

Padding style for diagram to window: Left: Right: Top: Bottom: px

Refresh

Scroll width: %

Refresh rate: sec

Offset: sec

Gantt

☒ Adjust Gantt curves automatically

Distance: px

Reference position:

Arrangement:

Runtime

☐ Show this dialog in the Runtime

Replace time filter with screen:

☒ Show cross-hair in XY diagram

X axis: Variable for value of 1st cursor:

X axis: Variable for value of 2nd cursor:

OK Cancel Help

DIAGRAM NAME

Parameter	Description
Diagram name	<p>Freely-configurable diagram name.</p> <p>Maximum length: 30 characters</p> <p>Integrate lot names dynamically: The diagram name can contain lot names. To do this, insert the character sequence %c% into the name. In Runtime, each %c% is replaced by the lot names that replace the filter requirements.</p> <p>For example: The diagram name Diagram1_%C%_End results in Diagram1_Lot1_End in Runtime</p>

DESIGN

Parameter	Description
Design	Settings for the design of the diagram.
Style group for diagram	<p>A pre-defined style group for the diagram can be selected using the ... selection button.</p> <p>If a style group is selected and thus linked, all styles in the style group are applied and grayed out.</p> <p>If a style group is deselected, the styles linked to the style group are also deselected.</p>
TEXT STYLE FOR FONT	A pre-defined text style for the font in the diagram can be selected using the ... selection button.
Font	Selection of the user-defined font for the axis labels and the value indicators from a drop-down list
Fill style for background	A pre-defined fill style for the background of the diagram can be selected using the ... selection button.
Background	<p>Selection of the background color for the displayed graphics.</p> <p>Clicking on the button opens the dialog to select the screen.</p>
Line style for grid	A pre-defined line style for the grid of the diagram can be selected using the ... selection button.
Grid	<p>Selection of the color for the overlaid grid.</p> <p>Clicking on the button opens the dialog to select the screen.</p>

Padding style from diagram to the window	<p>A pre-defined padding style for the determination of the distance between diagram and window border can be selected using the ... selection button.</p> <p>Respective minimum: 10 px</p> <p>Respective maximum: 2000 px</p>
Left	<p>Distance between the left edge of the control element and the Y-axis (Origin 0%-X-axis)</p> <p>(Attention: take the room for the left-hand side labeling of the Y-axis for the configured user-defined font into account)</p>
Right	<p>Distance between the left edge of the control element and the y-axis (Origin 100%-X-axis)</p> <p>(Attention: take the room for the right-hand side labeling of the Y-axis for the configured user defined font into account)</p>
Top	<p>Distance between the upper edge of the control element and the trend curves represented inside it.</p> <p>(Attention: Room for later optional showing of stored details with active pointer)</p>
Bottom	<p>Distance between the lower edge of the control element and the X-axis (Origin 0%-Y-axis)</p> <p>(Attention: space for two-line labeling of the X-axis for the configured user defined font will be considered)</p>

UPDATE

Parameter	Description
Update	Settings for the allocation of the monitors.
Scroll width	<p>Stipulation of the screen scrolling in percent if the right edge of the diagram has been reached.</p> <p>Possible values: 0 to 100:</p> <p>Attention Only available for YT display (on page 41).</p>

Refresh rate	<p>Set the refresh rate in seconds.</p> <ul style="list-style-type: none"> ▶ The value must be greater than 0 for online data and block array. ▶ The screens cannot be loaded statically for online data and block array. ▶ For archive data, the refresh rate automatically adapts to the loading time of the data. If loading lasts longer than half of the refresh interval, the refresh rate is doubled. Alternatively, the value for the refresh rate can be set to 0 for archive data. This results in the displayed data not being updated. This setting is helpful if a large amount of data is to be displayed in the ETM. If, in this case, Refresh rate is set to a low value, this can lead to an infinite loop. <p>Respective maximum: 3600 s</p> <p>Optimize refresh rate: When reading archive data, a log message is created at the start and the end by the server (including standalone servers) and the client. The log message can be read with the help of the Diagnosis Viewer. With this it can be determined how long the reading lasts and the Refresh rate and be defined accordingly.</p>
Offset	<p>Moving the zero point of the time axis to the stated value in seconds.</p> <p>Maximum: 65535 s</p> <p>Not available for block array data source.</p>

GANTT

Parameter	Description
Gantt	Settings for the design of the Gantt chart.
Adjust Gantt curves automatically	<p>Allows the adjustment of Gantt curves according to self-defined requirements.</p> <p>The following properties can be set if the checkbox is activated:</p> <ul style="list-style-type: none"> • Distance • Reference position • Arrangement <p>Note: If an older project is converted to zenon version 8.00, the checkbox is automatically deactivated. The checkbox is automatically deactivated if the function is</p>

	newly created.
Distance	<p>Setting of the distance value.</p> <p>Only available if the adjust Gantt curves automatically property has been activated.</p> <p>Possible values: 0 to 20 px</p>
Reference position	<p>Selection of the position from which the distance value is to be calculated.</p> <p>Only available if the adjust Gantt curves automatically property has been activated.</p> <p>The following options are available for selection:</p> <ul style="list-style-type: none"> ▶ Upper end of the diagram ▶ Lower end of the diagram
Arrangement	<p>Selection of the position of the Gantt curve.</p> <p>Only available if the adjust Gantt curves automatically property has been activated.</p> <p>The following options are available for selection:</p> <ul style="list-style-type: none"> ▶ Up ▶ Down <p>Note: With several Gantt curves and a configuration with "Upper end of the diagram" and "Up", the upper distance from the diagram to the window must be selected as correspondingly large.</p>

RUNTIME

Parameter	Description
Runtime	Settings for action in Runtime.
Show this dialog in the Runtime	<p>Requirement: A time period (on page 61) is defined in the time filter. If, in the X axis (on page 40) tab for the XT display (on page 41), the option Comparison with 2nd time period is activated, two time filters for both X-axes are offered.</p> <p>Active: Before every call of the screen the filter dialog is opened. The filter settings can be modified. This option is not</p>

	<p>available with Windows CE.</p> <p>Note: If, in the Lots tab, the Show lot selection dialog option is also selected, then the lot selection dialog is called up in Runtime. This is no longer displayed after reloading.</p> <p>Notes for time range filters:</p> <p>Show this dialog in the Runtime active:</p> <ul style="list-style-type: none"> ▶ The filter is opened in Runtime in screen switching. The filter is no longer offered on reloading. This behavior can differ for individual screen types if the dialog was displayed in screen switching and canceled. ▶ The last time period that has finished is always used. <p>Show this dialog in Runtime inactive:</p> <ul style="list-style-type: none"> ▶ Use last finished time range active: The last time period that has finished is always used ▶ Use last finished time period inactive: The current time period is used.
Replace time filter with screen	<p>Only available if the Show this dialog in Runtime option has been activated.</p> <p>Replaces the dialog with a <code>time/lot/shift filter</code> screen in Runtime. The currently-linked screen is displayed. In doing so, only a <code>time/lot/shift filter</code> screen can be selected. .</p> <p>Click the ... button and the dialog opens to select a screen. Only screens from the project calling them up and <code>time/lot/shift filter</code> screens are offered.</p> <p>For details on replacement with a shift filter, see the shift management manual, Extended Trend chapter.</p> <p>When selecting a filter screen, the BOX SCREEN information is also shown in the detail view of the function in the Parameter column; without a linked screen, only BOX is displayed.</p>
Display cross-hair in XY diagram	<p>Display of the cross-hair in Runtime:</p> <ul style="list-style-type: none"> ▶ Active: switched on ▶ Inactive: switched off <p>Only available if XY display has been activated in the X-axis tab.</p>
X-Axis: Variable for value of the 1st cursor	<p>Variable for abscissa of the first cursor (on page 120).</p> <p>Clicking on the ... button opens the dialog to select a LREAL or DWORD/DINT/UDINT variable.</p> <p>When calling up and moving the cursor in Runtime, its abscissa (time or X value) is written to the assigned</p>

	variable. In doing so, the values are saved in Unix time format (number of seconds passed since 1 January 1970 00:00 UTC).
X-Axis: Variable for value of the 2nd cursor	<p>Variable for abscissas of the second cursor (on page 120).</p> <p>Clicking on the ... button opens the dialog to select a LREAL or DWORD/DINT/UDINT variable.</p> <p>When calling up and moving the cursor in Runtime, its abscissa (time or X value) is written to the assigned variable. In doing so, the values are saved in Unix time format (number of seconds passed since 1 January 1970 00:00 UTC).</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.

3.3.3 X-Axis

Settings for the X-axis. This can be configured in two different forms:

- ▶ **YT-display** (on page 41): Display of the trend curves over the configured time range.
When configuring the time axis, the time range, the lots and the axis display can be defined.
- ▶ **XY display** (on page 45): Display of the values by means of a variable or derived variable (location curves, working points etc.)
Only available if, in the **Lots** (on page 67) tab, the **Relative lot selection** option is not active.

YT display

Filter...

×

DataRepresentationX axisTimeLotsShiftColumn settingsPrinter settings

X axis

☒ YT display

☐ XY-display

Variable for X axis

Axis titles

Static

Scale style

<No style linked>

Position

0

% of the height of the Y axis

Color

☐ Show vertical grid lines

☐ Comparison with 2nd time period (for archive with filter for time period or lot only)

Text

☐ Above the axis

☒ Below the axis

Type of axis

Linear

Scaling

Number of main ticks

4

Length of main ticks

6

px

Number of sub-ticks

6

Tick calculation

Linear

Sizing handle cursor

Diameter

0

px

Scale

☒ Variable timestamp

☒ YY

☒ MM

☒ DD

☒ HH

☒ MM

☒ SS

☐ MS

OK

Cancel

Help

X-AXIS

Option	Description
X-Axis	Selection of display type.
YT display	<p>Active: The display of the curves over time is configured.</p> <p>The defined main ticks of the time axis are only considered a suggestion. To get a clear display, ticks are automatically created or removed after the respective request. This action also takes effect with the zoom function.</p> <p>With the time stamp variable activated: The space available on the time axis in Runtime is divided evenly. On the left side of the time axis, there is the time period that has already passed (for example -0 01:00:00), on the right side is the time stamp 0 00:00:00. Both indicators need not be a main tick however.</p> <p>Summer time is automatically played back correctly.</p>
XY-display	<p>Active: Display of the curves using another variable is configured.</p> <p>With the XY display activated, the variable time stamp and the further selection possibilities YY, MM, DD, HH, MM, SS and MS are not available.</p>
Variable for X-Axis	(Not available for YT display.))
Axis title	(Not available for YT display.))
Scale style	<p>Possibility to select a style for the scale using the ... selection button to the right of the display field.</p> <p>Note: Elements that belong to the selected style cannot be changed.</p>
Position	<p>Entry of a percentage value for the positioning of the X-axis in relation to the height of the Y-axis.</p> <p>Possible values: -100 to 100.</p> <p>For example:</p> <ul style="list-style-type: none"> ▶ 0 %: Positioning at the lower end of the Y-axis. ▶ 100 %: Positioning at the upper end of the Y-axis. ▶ 50 %: Positioning in the middle of the Y-axis.
Color	<p>Definition of the axis color. Click on the color and a dialog opens to select a color.</p> <p>Note: Can be configured independently of the trend curve color.</p>
Show vertical grid lines	Active: Vertical assistance lines are displayed at the main ticks in Runtime.

Comparison with 2nd Period	<p>Active: Display comparison with a second time period.</p> <p>Note: Set the parameters for the view of the diagram in the Display tab in order to show all information in the diagram in Runtime. The parameters for the distances of the diagram to the window can be set individually using Left, Right, Top and Bottom.</p> <p>Only for archives with a filter for a time range or a lot. When using a 2nd time period in conjunction with lots, a lot variable must be linked to the archive.</p> <p>A comparison with relative lot filter is not possible.</p> <p>Two time ranges are displayed at the same time for each per archive variable (e.g. comparison over a week).</p> <p>Two trends are called up when it is called up. The second time range is displayed on the opposite labeling side of the time axis in the color of the grid (on page 34).</p> <p>Only available with a full license.</p>
Label	Position of the axis labeling.
Above the axis	Axis labeling above the axis.
Below the axis	Axis labeling below the axis.
Type of axis	(Not available for YT display.))
Linear	(Not available for YT display.))
Logarithmic	(Not available for YT display.))
Scaling	Definition of the axis subdivision.
Number of main ticks	<p>Number of main subdivisions with value indication.</p> <p>Maximum: 60</p>
Length of main ticks	<p>Length of main tick lines in pixels.</p> <p>Maximum: 10</p>
Number of sub-ticks	<p>Number of subdivisions between two main subdivisions.</p> <p>Maximum: 60</p>
Tick calculation	(Not available for YT display.))

SIZING HANDLE CURSOR

Option	Description
Sizing handle cursor	<i>Definition of the circle-shaped sizing handle displayed in the middle to make it easier to use the rulers, such as in touch operation.</i>

Diameter	<p><i>Diameter of the sizing handle in pixels.</i></p> <ul style="list-style-type: none"> ▶ 0: no sizing handle (compatible with projects from versions before version 7) ▶ >0: Sizing handle is displayed according to the value entered <p><i>Default: 0</i></p> <p><i>Maximum: 100</i></p>
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SCALE

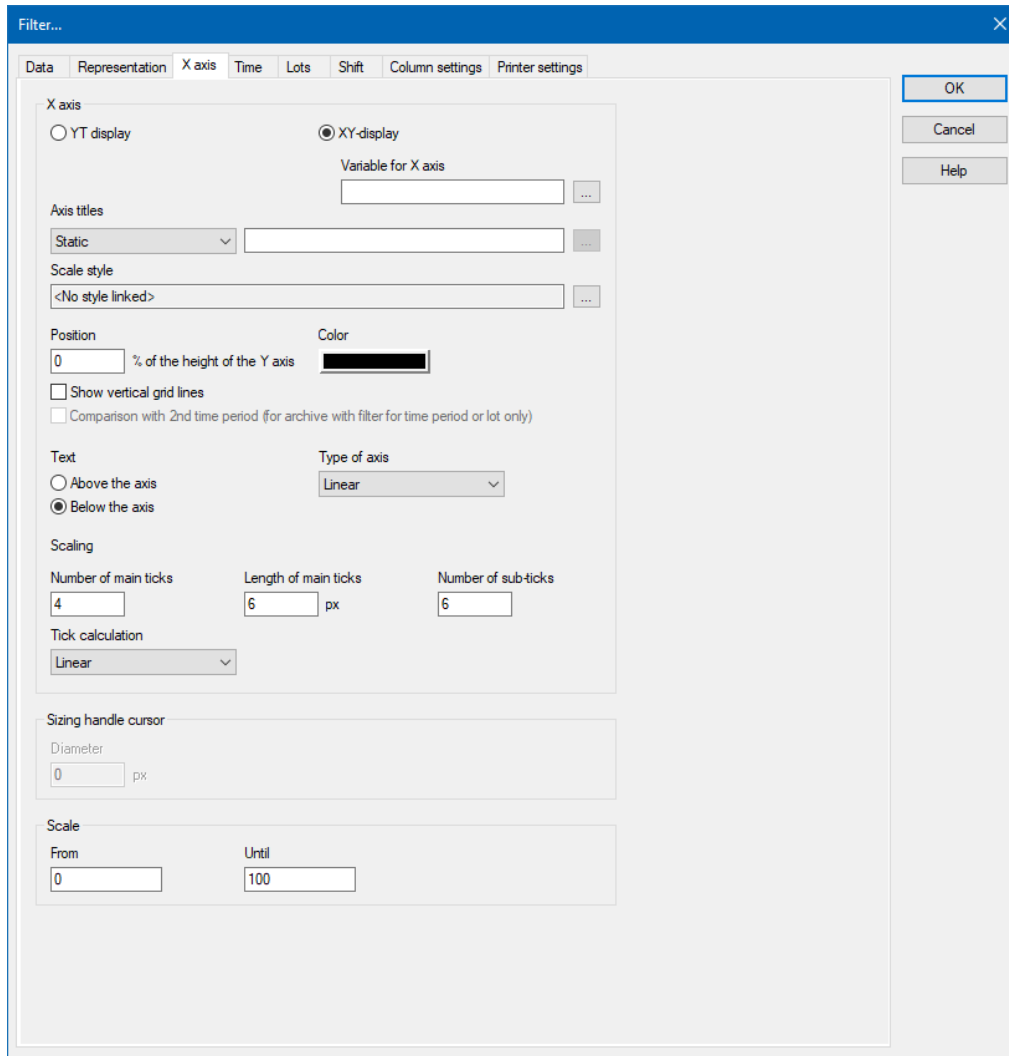
Option	Description
Variables timestamp	<p>Display of the time stamp of the variable in Runtime.</p> <ul style="list-style-type: none"> ▶ active: The axis is labeled with the existing time markers. ▶ Inactive: The switch-on time is defined as 00:00. Values before this are labeled relatively in the past (-01:00) . ▶ Default: active
YY	Year
MM	Month
DD	Day
HH	Hours
MM	Minutes
SS	Seconds
MS	<p>Milliseconds</p> <p>The MS checkbox is activated by default.</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.

XY display

Only available if, in the **Lots** (on page 67) tab, the **Relative lot selection** option is not active.



The image shows the 'Filter...' dialog box with the 'X axis' tab selected. The dialog has a blue title bar and a close button (X) in the top right corner. The tabs at the top are: Data, Representation, X axis (selected), Time, Lots, Shift, Column settings, and Printer settings. The 'X axis' section contains the following options:

- X axis:** Two radio buttons: 'YT display' (unselected) and 'XY-display' (selected).
- Variable for X axis:** A text input field with a dropdown arrow.
- Axis titles:** A dropdown menu set to 'Static' and a text input field with a dropdown arrow.
- Scale style:** A text input field set to '<No style linked>' with a dropdown arrow.
- Position:** A text input field set to '0' followed by '% of the height of the Y axis'.
- Color:** A color selection box showing black.
- Text:** Two radio buttons: 'Above the axis' (unselected) and 'Below the axis' (selected).
- Type of axis:** A dropdown menu set to 'Linear'.
- Scaling:** Three text input fields: 'Number of main ticks' (4), 'Length of main ticks' (6 px), and 'Number of sub-ticks' (6).
- Tick calculation:** A dropdown menu set to 'Linear'.
- Sizing handle cursor:** A text input field set to '0' followed by 'px'.
- Scale:** Two text input fields: 'From' (0) and 'Until' (100).

On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

Option	Description
X-Axis	Selection of display type.
YT display	Active: The display of the curves over time is configured.
XY display	Active: Display of the curves using another variable is configured.
Variable for X-Axis	<p>Selection and marking of one of the variables allocated to the diagram. It is used for the X axis.</p> <p>Clicking on the ... button opens the dialog for variable selection, depending on the origin of the data.</p>
Axis title	<p>Text of axis labeling in Runtime.</p> <p>Maximum length: 30 characters</p> <p>The following possibilities are available for selection:</p> <ul style="list-style-type: none"> ▶ Static: The title can be entered freely. The text field is available. The ... selection button is grayed out. ▶ From variable: The title is taken from a linked variable. The text field is not available. The ... selection field is active. ▶ Variable name : The name of the variable is taken as a title. The text field is not available. The ... selection button is grayed out. <p>Static is set by default.</p>
Scale style	<p>Possibility to select a style for the scale using the ... selection button to the right of the display field.</p> <p>Note: Elements that belong to the selected style cannot be changed.</p>
Position	<p>Entry of a percentage value for the positioning of the X-axis in relation to the height of the Y-axis.</p> <p>Possible values: -100 to 100</p> <p>For example:</p> <ul style="list-style-type: none"> ▶ 0 %: Positioning at the lower end of the Y-axis. ▶ 100 %: Positioning at the upper end of the Y-axis. ▶ 50 %: Positioning in the middle of the Y-axis.
Color	<p>Definition of the axis color. Click on the color and a dialog opens to select a color.</p> <p>Note: Can be configured independently of the trend curve color.</p>
Show vertical grid lines	Active: Vertical assistance lines are displayed at the main ticks in Runtime.

Comparison with 2nd Period	(Not available for XY display.)
Variables timestamp	(Not available for XY display.)
Label	Position of the axis labeling.
Above the axis	Axis labeling above the axis.
Below the axis	Axis labeling below the axis.
Type of axis	Selection of the display of the axis: <ul style="list-style-type: none"> ▶ Linear ▶ Logarithmic
Linear	Active: Linear display of the axis.
Logarithmic	Active: Logarithmic display of the axis. Only available with a full license.
Scaling	Definition of the axis subdivision.
Number of main ticks	Number of main subdivisions with value indication. Maximum: 100
Length of main ticks	Length of main tick lines in pixels. Maximum: 4 – 10
Number of sub-ticks	Number of subdivisions between two main subdivisions. Maximum: 4 – 10
Tick calculation	Amendment possibility to calculate the ticks shown: <ul style="list-style-type: none"> ▶ Fitted - Minimum value and maximum value are the extreme limits of the axis. The labeling of the display is automatically rounded to visually-clear figures and the ticks are amended accordingly. A small deviation to the set main ticks can occur if the space available on the axis can be divided evenly. ▶ Automatic - the calculation is less precise than with Automatically optimized. The configured axis limits in the Editor can be changed in the process. ▶ Linear - an even distribution of the ticks on the axis is carried out. ▶ Optimized automatically - This setting is only applied in Runtime and does not change any configured axis limits in the Editor. To round the values, the most obvious round range of values is used. Default: Fitted

SIZING HANDLE CURSOR

Sizing handle cursor	<i>(Not available for XY display.)</i>
Diameter	<i>(Not available for XY display.)</i>

SCALE

Scale	<p>Stipulation of the values for the scale by activating the checkboxes:</p> <ul style="list-style-type: none"> ▶ YY: Year ▶ MM: Month ▶ DD: Day ▶ HH: Hour ▶ MM: Minutes ▶ SS: Second ▶ MS: Millisecond
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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.



Information

Display of X-axis in the diagram from version 6.51

Archive data for the X-axis is no longer loaded for performance reasons. To display the X-axis in the diagram anyway:

- ▶ Add the variable selected for the **variable for X-axis** as well as the curve (on page 16) in the diagram
- ▶ Deactivate the display for this curve



Information

If an XY display is configured, then only the respective current value is shown when the scanning is started. This cannot be updated. The cursor cannot be moved.

Archive variable selection for X axis

Archive variable selection

Workspace: 'Arbeitsbereich'(2)

GIS_PROJECT

PROJEKT_A

Status	Name	Identification	Measur...	Net address	Data
	Filtertext	Filter text	Filter...	Filter text	Filter t
	Mixingtank 1			0	
	Mixingtank 1.T_IL1_setting_value	inlet Fluid 1	L / sec	0	
	Mixingtank 1.T_IL2_setting_value	inlet Fluid 2	L / sec	0	
	Mixingtank 1.T_IL_S_setting_value	inlet solvent	L / sec	0	

4 total/4 filtered/0 selected 36 TAGs used/unlimited TAGs licensed Extended filter

AddDelete

Project name	Name	Identification	Equipment Groups	Active curve
Filtertext	Filter text	Filter text	Filter text	Filter text
PROJEKT_A	Mixingtank 1.T_IL_S_setting_value	inlet solvent		<input type="checkbox"/>
PROJEKT_A	Automatic archive selection			<input type="checkbox"/>
PROJEKT_A	AA - MIXINGTANK			<input checked="" type="checkbox"/>

Expand allCollapse allActivateDeactivateInstantiate

You can select a variable from an archive in order to use this as the X axis in an XY display.

Option	Description
Workspace	<p>Tree view of the current workspace.</p> <p>All current projects are displayed.</p> <p>Selection of the project by clicking.</p>
Variable list	<p>List of all variables of the selected project that are in archives.</p> <p>This list can be sorted and filtered.</p> <p>Additional columns can be displayed by means of a context menu. You get this context menu if you right in a column heading.</p> <p>Information about available variables and the selected variable is shown in the footer of the variable list as text.</p> <p>The variable list has the following columns:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Name ▶ Identification ▶ Equipment Groups ▶ Active curve <p>Note: If the checkbox of the Active curve property is activated with naming <code>automatic archive selection</code>, an archive is automatically selected in Runtime in order to find the best-possible solution for the time period in question. This setting depends on the Select suitable aggregation archive automatically property.</p>
List for usage of the selected variable	Shows the selected variable. This can be stored in several archives.
Add	<p>Adds selected variable from the variable list to the List for usage of the selected variable.</p> <p>Note: A variables from the variable list can also be accepted by double clicking.</p>
Delete	Removes the selected variable from the List for usage of the selected variable .
Expand all	Opens subnode of the selected variable.
Collapse all	Closes subnode of the selected variable.
Activate	Selects the variable in the desired archive.
Deactivate	Resets the selection.

Instantiate	Creates a copy of a variable for a curve.
--------------------	---

CLOSE DIALOG

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

Instanting of archive variables

In the **Archive variable selection** dialog, you can now create one or more instances of an archive variable for curves using the **Instance** button. The new entries are shown in the lower list and given ascending numbers. The copies made this way can be shown in Runtime as curves.

Engineering:

1. In the **Filter...** dialog, click on the **Add...** button in the **Data** tab.
The **archive variable selection** dialog is opened.
2. Highlight the desired archive variable in the list in the top window.
3. Click on the **Insert** button.
The copy of the archive variable is inserted into the list in the lower window.
4. In the list in the lower window, highlight the archive variable that is to be instanced (copied).
The **Instance** button is activated.
5. Click on **Instance** to create a further instance.
The entry is added below the original file and given an ascending number in order to distinguish it.
6. Carry out this procedure until you have the desired number of instances available.
7. Close the dialog by clicking on **OK**.

Note: If no active curves have been configured for entered archive variables in the list in the lower window, an error message is given. The corresponding variables and already-linked curves are removed.

Preparatory work for variable selection of the X-axis in Runtime

In order to also be able to use the archive variable selection in Runtime, the following preparatory work is necessary:

1. Open the **Extended Trend** screen from which you want to access the variable selection.
 2. Add a diagram function (**X axis...** for example) to your **Extended Trend** screen.
 3. Save the changes by clicking on **Save screen** in the context menu or with **Ctrl+S**.
- The preparatory work is complete.

3.3.4 Time

Configuration of the time filter. Not available for **block array** data source.

Note: Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.

Time filters can be pre-set in both the Editor and in Runtime for:

- ▶ Absolute time period (on page 56)
- ▶ Relative period of time (on page 57)
- ▶ From (on page 59)
- ▶ Time period (on page 61)

Time filtering can be carried out in two ways:

1. Define time period in the Editor (on page 64)
Fixed time areas are used. A time period is given in the editor. It is only possible to filter according to this time period in Runtime. Other filters - such as filtering according to variable name, alarm/event groups and alarm/event classes etc. can no longer be amended in Runtime.
2. Time filter configurable in Runtime (on page 65)
The time filter is defined in the Editor and can be changed in Runtime as desired.

TIME FILTER

Filter...

Data Representation X axis Time Lots Shift Column settings Printer 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

0 1 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>
--------------------	--

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.
-------------	--------------------

Note: The **No time filter** option is not available for Extended Trend.

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

1February2018100

Until

8February2018000

OK

Cancel

Help

56

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	<p>Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime.</p> <p>Selection of the relative time period in days, hours, minutes and seconds.</p>

CLOSE DIALOG

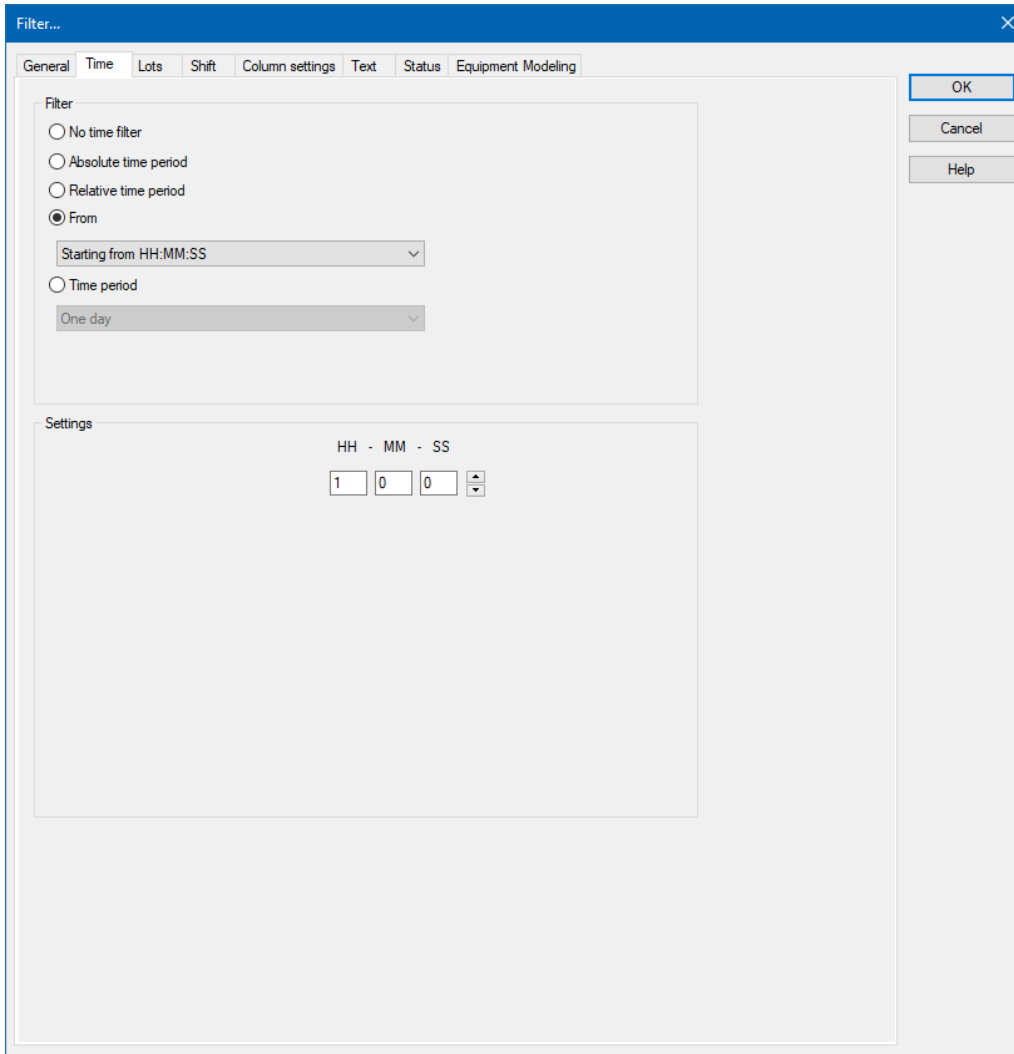
Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

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...

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

HH - MM - SS

1 0 0

OK

Cancel

Help

Parameter	Description
Settings	Configuration of the time filter.
[Date/Time]	<p>Depending on the settings of the Off option, the time from which the filter is effective is configured here:</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>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.</p>
▶ Starting from HH:MM:SS	A time from which the filter is effective is stated. If the time is

	<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

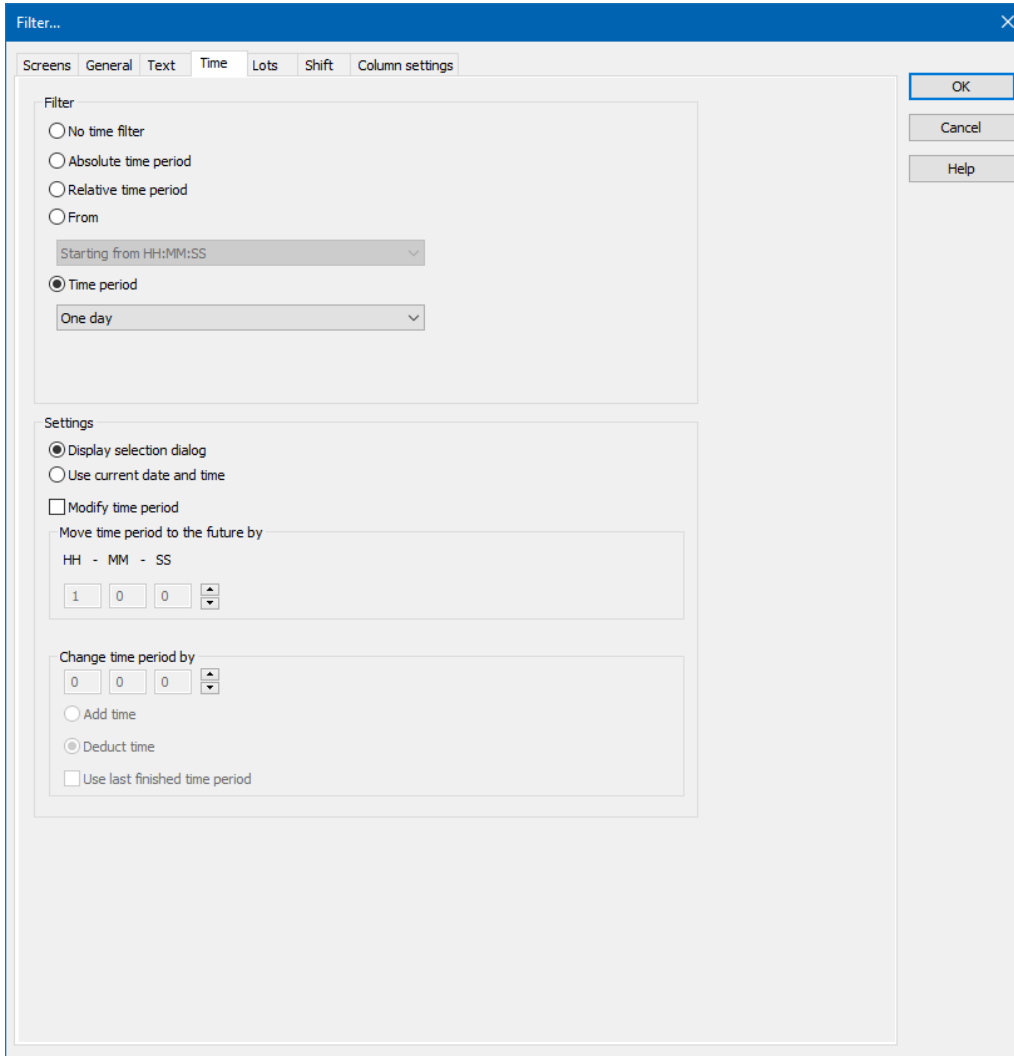
Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

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.



Filter...

Screens General Text **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

☒ 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

OK Cancel 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.

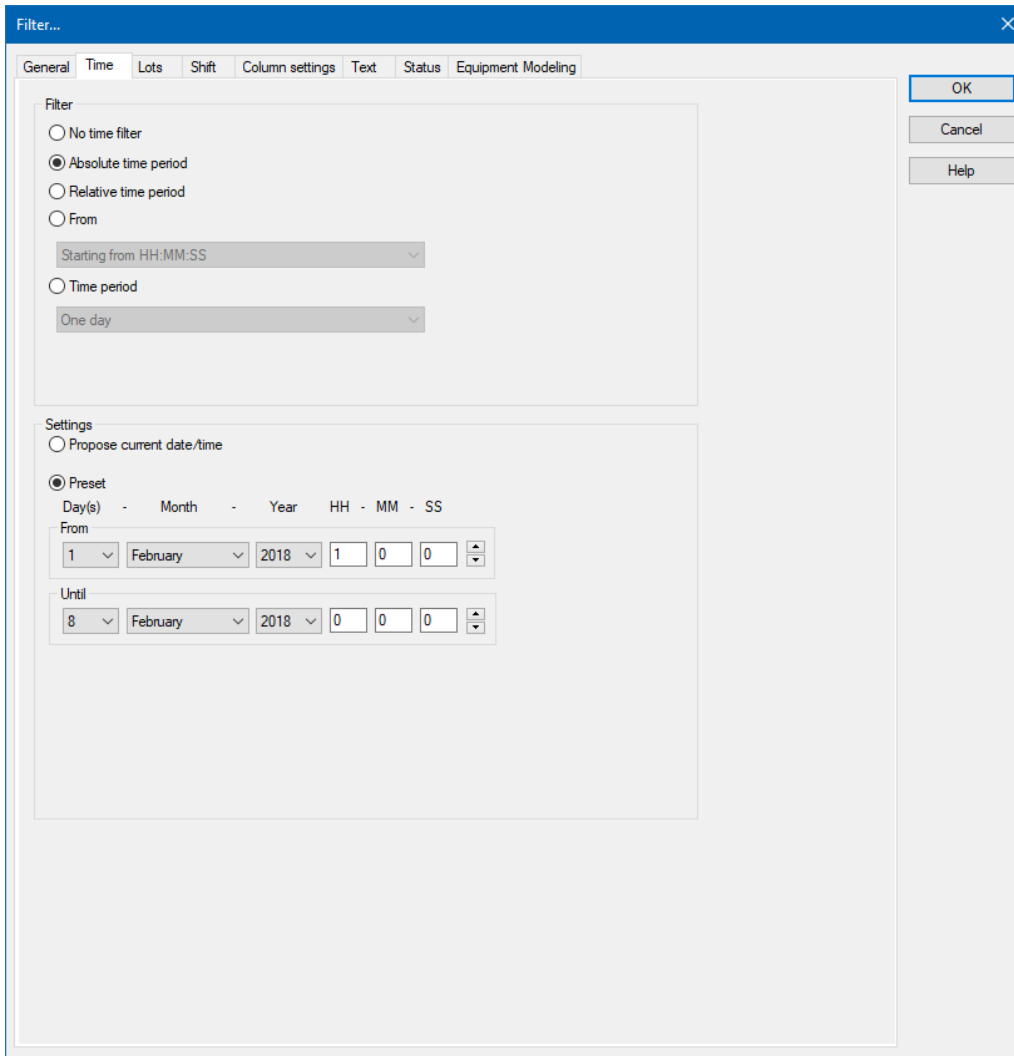


Attention

*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



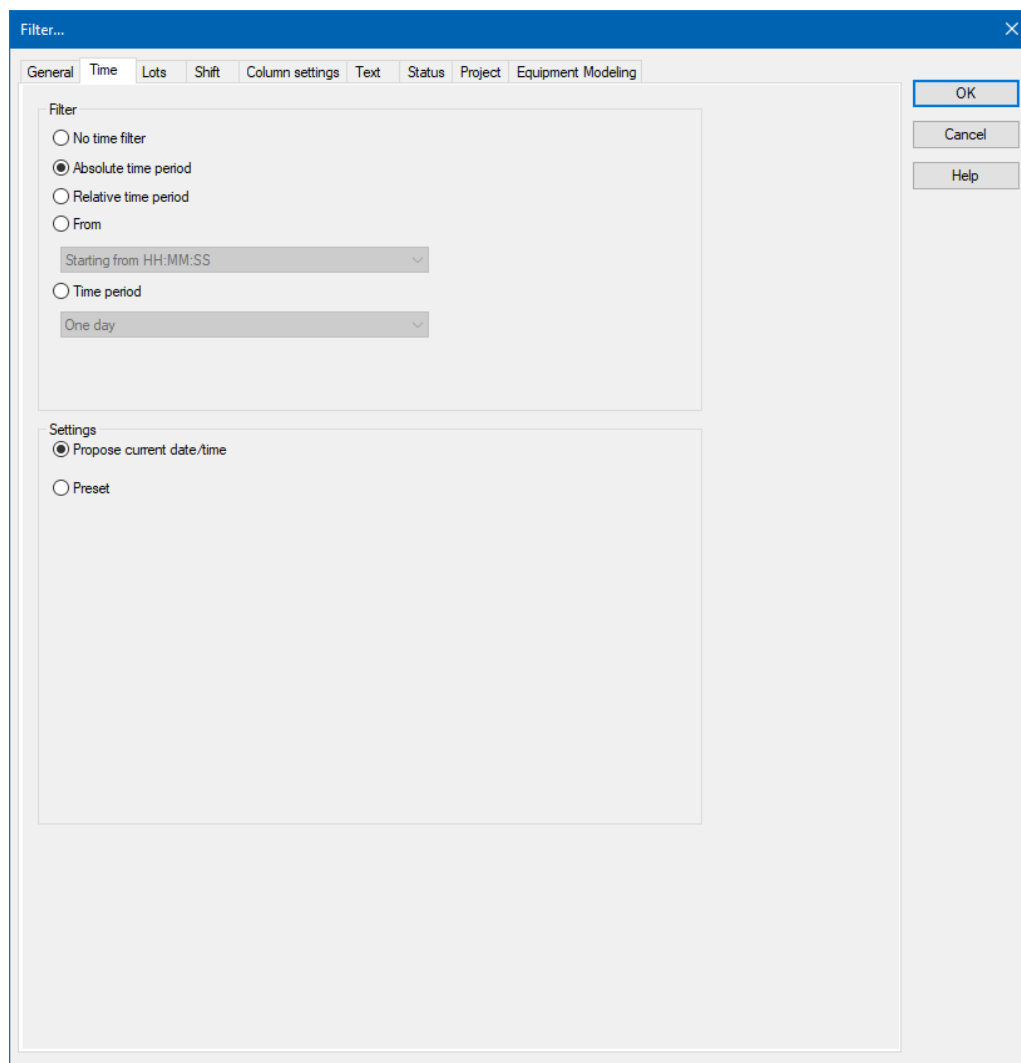
Tip for time period: Activate the `Show this dialog in Runtime` option in the filter dialog. This way you can amend the start time before the function is carried out. Do not have the filter displayed in Runtime when the function is turned on; this way the current time period is always used. If you have 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



3.3.5 Lots

You configure the limitation of the display to certain lots in this tab. The lot information is also applied to the existing filter. Only available for **archive data** data source.



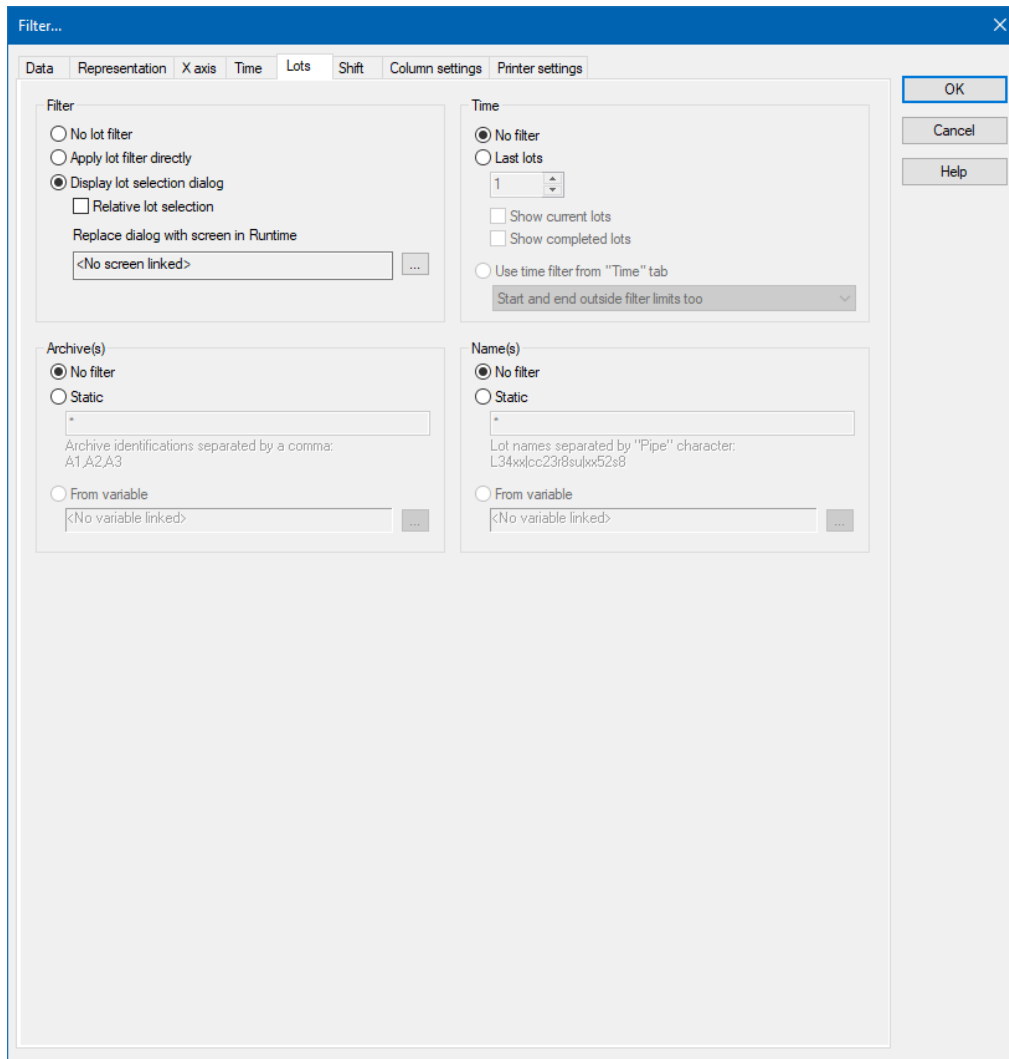
Information

Some filters in zenon can be configured independently of one another and then combined in Runtime. This is only possible to a limited extent with the lot filter.

The lot filter can offer a list of existing lots in Runtime. It is Runtime data that is not available in the Editor.

*When configuring the screen switching in the Editor, the **time filter** tab can only be used in conjunction with the lot filter as a prefilter for the lot selection dialog. If you then select a lot from this list in Runtime, the time filter is overwritten with the data from the selected lot, in order to achieve precise filtering for the selected lot.*

That means: If the lot selection dialog is used in Runtime and a lot is selected, the time filter displayed does not correspond to the one configured in the Editor.



Note: The **Relative lot selection** option is only available for the **YT axis** and only if no curves have been configured.

FILTER

Settings for the application of the lot filter. Selection of one of the options:

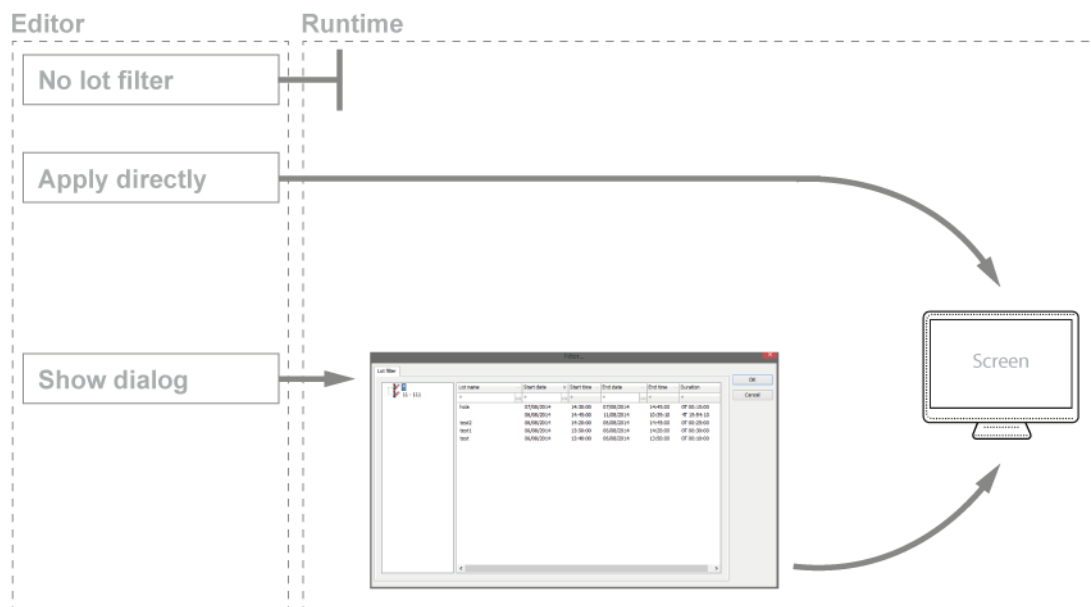
- ▶ **No lot filter**
- ▶ **Apply lot filter directly**
- ▶ **Display lot selection dialog**

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	<ul style="list-style-type: none"> ▶ Active: The lot filter is deactivated and cannot be configured. Filtering for lots is not carried out in Runtime.
Apply lot filter directly	<ul style="list-style-type: none"> ▶ Active: The filter configured here is applied in Runtime directly. <p>Note: There is no possibility to have all lots in a list displayed and to select one manually. If a certain lot is to be shown, the filter for the archives, name and time must be configured accordingly. This requires the existing data to be known very well. Alternatively, it is recommended that the Show lot selection dialog option is selected.</p>
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>
Replace dialog with screen in Runtime	<p>Only available if the Show lot selection dialog option has been selected.</p> <p>Definition of a screen that is to be called up in Runtime instead of the lot selection dialog. Only <code>time/lot/shift filter</code> screens are offered.</p> <p>Click the ... button and the dialog opens to select a screen.</p> <p>If the linked screen is not found in Runtime, a search is made for corresponding screens with specific names.</p> <p>Note: A lot filter screen can also be selected using the Show this dialog in Runtime option. However this is not used as a lot filter here, but as a time filter screen. The lot filter options are not correctly applied at this position.</p>
Relative lot selection	<p>Attention: This option is only available for Extended Trend. With faceplates, it is displayed for all screen types, but here it is also only available for ETM.</p> <p><u>Configuration for ETM:</u></p> <p>In order for the option to be available, the Show lot selection dialog option must be activated and the Windows CE project property must be deactivated in the project properties.</p> <ul style="list-style-type: none"> ▶ Active: Enables several lots to be compared directly.

	<p>Display always starts from the zero point.</p> <p>Note: If the option is activated, the Diagram and X-axis buttons are not available in Runtime. This also applies for the right-click functionality.</p>
--	--

Overview of the implementation of configuration in Runtime:



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.</p> <p>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) Lots can start before the start time configured in the Time

	<p>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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ARCHIVES

Configuration of filtering for archives. This filter is applied as a prefilter for the lot selection dialog.

Selection of one of the following options:

- ▶ **No filter**
- ▶ **Static**
- ▶ **From variable**

Option	Description
No filter	<ul style="list-style-type: none"> ▶ Active: Filtering for archive names is not carried out.
Static	<ul style="list-style-type: none"> ▶ Active: Archives whose identification corresponds to the character string entered in the input field are filtered for. <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	<ul style="list-style-type: none"> ▶ Active: The value of the variables linked here is applied as a filter for archive names in Runtime. <p>Click on button ... in order to open the dialog for selecting a variable.</p> <p>Available for AML and CEL modules if the Apply lot filter directly option has been selected: Other modules use their own configurations.</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>

Note for ETM: In the ETM, the archives are established by the curves configured in screen switching. This is only possible in Runtime with the **relative lots** option. With this, the variables must be selected in Runtime, which is in turn stipulated by the possible selection of archives. The archive, once filtered, must be one of the archives that relate to the configured curves. No data is displayed if this is not the case. This setting can also be used to limit the displayed curves. However these remain shown in the curve list.

ETM example:

Configured curves	Data source	Archive prefiltering in the lot filter	Result in the screen
A	AR	AR	Is shown in the curve list and drawn in the trend.
B	EA		Is only shown in the curve list.
C	EP		Is only shown in the curve list.

Note archive revision: The archive for which the screen is opened is already selected in the screen switching function. Because only 1 archive can be selected, further limitation makes no sense.

Example of archive revision:

Configured archive	Archive prefiltering in the lot filter	Result in the screen
AR	EA	No data is displayed.

NAMES

Configuration of the filtering to names. Selection of one of the options:

- ▶ **No filter**
- ▶ **Static**
- ▶ **From variable**

Option	Description
No filter	<ul style="list-style-type: none"> ▶ Active: Filtering for lot names is not carried out.
Static	<ul style="list-style-type: none"> ▶ Active: Lot names that correspond to the character string entered in the input field are filtered for. <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 (). ▶ Note: Lot name must not contain a character! ▶ * or empty: All lots of all displayed archives, no filter.
From variable	<ul style="list-style-type: none"> ▶ Active: The value of the variable linked here is applied as a filter for lot names in Runtime. <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. ▶ 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 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.

3.3.6 Shift

The tab can only be configured with:

- ▶ **Data origin** Archive data
- ▶ Configured time filter

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.
Note: If, in the **General** tab, the **Show this dialog in Runtime** option is activated at the same time, the complete configuration dialog with all tabs is called up instead of the shift selection. The user can then redefine all options.
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

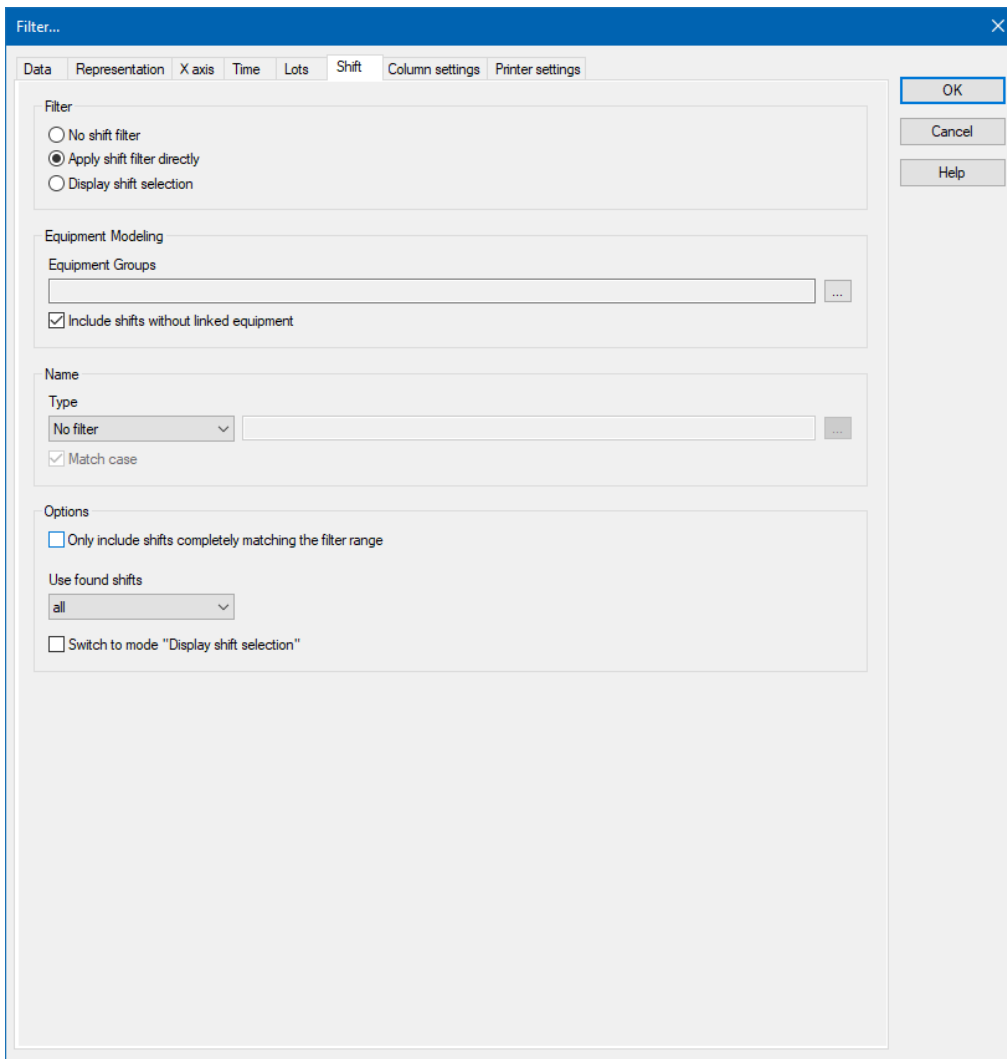
SCREEN SWITCHING TO A LINKED SCREEN

Screen switching to a linked filter screen can also be carried out. Shift filters can be used in the process. To do this:

1. Define, for screen switching, the desired filter screen in the **General** tab in the **Replace dialog with screen in Runtime** option.
2. Ensure that the filter screen contains the necessary control elements for the shift list.
3. Define the desired time filter.
4. Activate, in the **Shift** tab, the **Show shift selection** option.
5. Define the shift filter.

The linked filter screen is called up in Runtime during screen switching. The shifts are shown in the shift list as defined in the screen switching. Control elements for lots are not shown.

SHIFT DIALOG



Filter...

Data Representation X axis Time Lots Shift Column settings Printer 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. The shift list and Update button are not shown in Runtime.
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. Note: The dialog is not shown on reloading. <p>Attention: At least 1 shift must be selected in Runtime in order to call up the page or to be able to configure the filter.</p> <p>If, in the General tab, the Show this dialog in Runtime option is activated at the same time, the complete configuration dialog is called up.</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> ▶ Shift 2 is used
Switch to "Show shift selection" mode	▶ 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. Default: Inactive <u>Behavior in Runtime:</u> 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.

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.

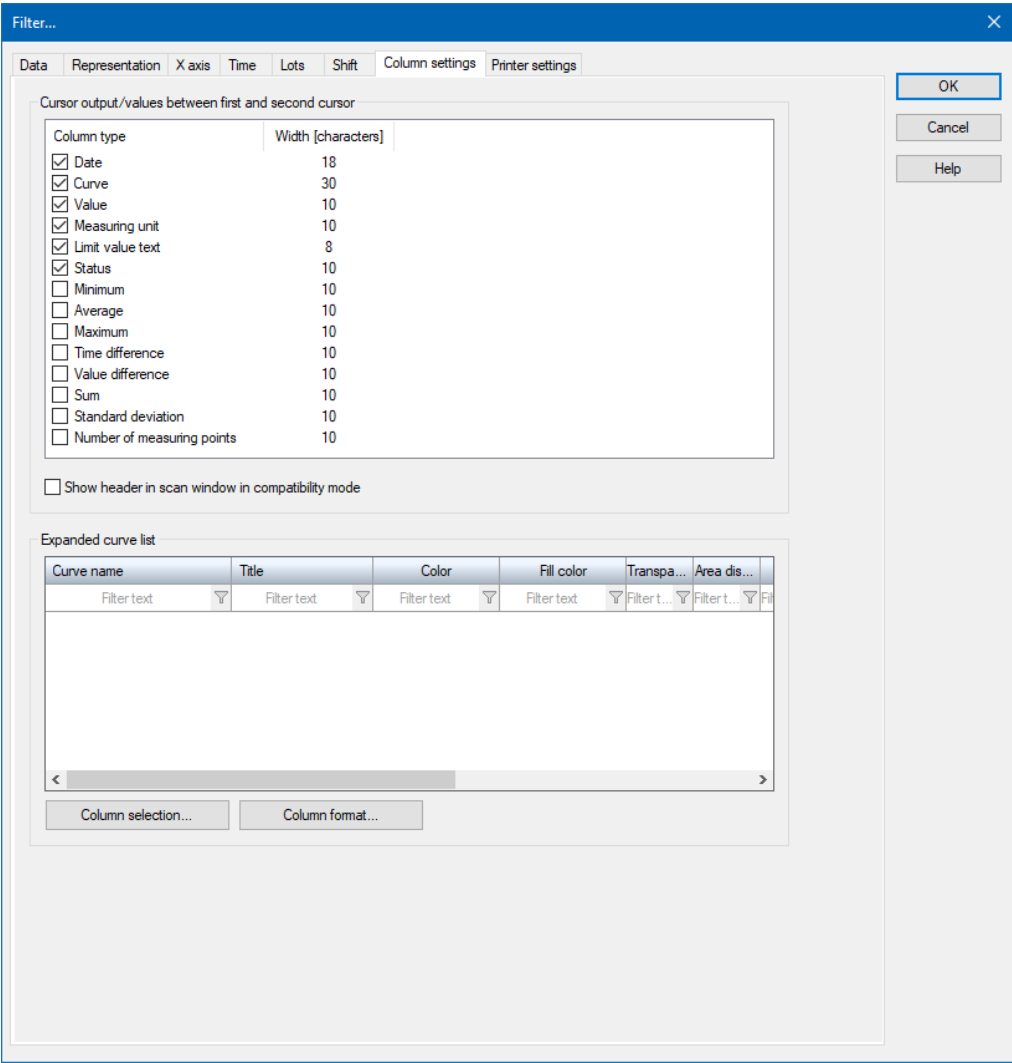
BEHAVIOR IN RUNTIME

The following is applicable for the shift filter in Runtime:

- ▶ When comparing to a second time range, one shift filter is used for both time ranges. If a new filter is assigned to the screen, both filters are overwritten with the same value.
- ▶ A `No time filter` time filter is not permitted.
- ▶ If the time filter is configured as relative, the shifts to be displayed are only determined at the time they are called up.
That means:
 - At a later point in time, shifts that have been newly added or that have already expired are not taken into account.
 - Only the shift that was the earliest or latest at the time of being called up is taken into account. This then moves from the display of the scale as time passes.
- ▶ If the shift filter is configured as **apply shift filter directly** plus **switch to the "show shift selection" mode**, but no shifts can be found, then:
 - The time filter becomes invalid
 - The time filter is automatically set to the default value: **Relative time period 1 h**
 - The automatic correction is shown in the filter dialog when the **Diagram** button is pressed

3.3.7 Column settings

Configuration of the column settings for the extended curve list.



Parameter	Description
Cursor output / values between first and second cursor	Configuration of the column types and column widths to be displayed.
Column type	<p>Column types available:</p> <p>Cursor output</p> <ul style="list-style-type: none"> ▶ Date ▶ Curve ▶ Value ▶ Measuring unit ▶ Limit value text ▶ Status <p>Values between first and second cursor</p> <ul style="list-style-type: none"> ▶ Minimum ▶ Average ▶ Maximum ▶ Time difference ▶ Value difference ▶ Sum ▶ Standard deviation ▶ Number of measuring points <p>Clicking in the checkbox activates/deactivates the display of the type in Runtime.</p>
Width	<p>Column width of the column output or column width of the measuring points between first and second cursor in the cursor output list. The value corresponds to the number of the characters.</p> <p>Clicking in the value allows it to be edited.</p>
Show header in scan window in compatibility mode	<p>Active: For zenon versions previous to 6.51 SP0, column headings are shown for "scan window in compatibility mode". Is used to display converted projects in Runtime, for example.</p> <p>Not necessary for projects from version 6.51 onwards. All column titles are displayed in the Scan list.</p>
Extended curve list	Configuration of the column settings for the extended curve list.
List field	Display of the configured columns.
Column selection	Opens dialog to select the columns (on page 86).
Column format	Opens dialog to format the columns (on page 87).
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.



Information

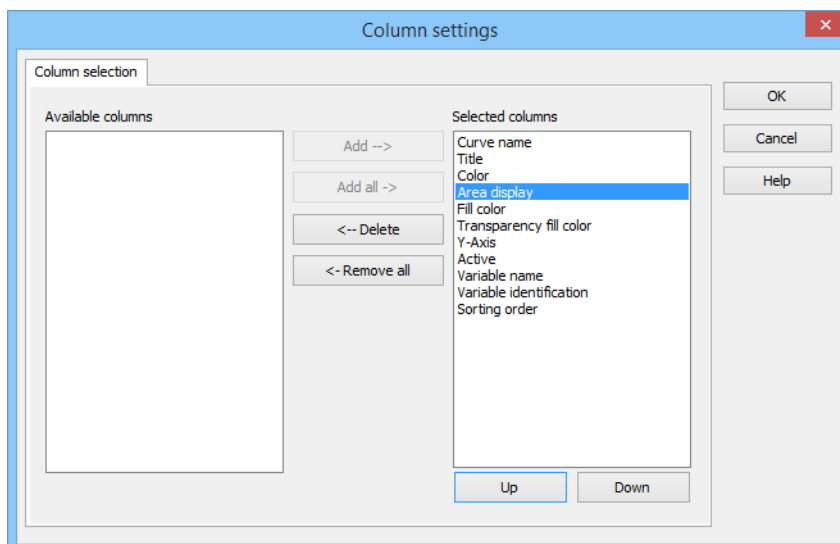
The title of the header of the cursor output list can be changed with the help of the language switch.

*To provide the header also when converting projects of older versions, you can either delete the existing cursor output list and replace it with the new element or you activate checkbox **Display header**.*

If you create projects for zenon version earlier than 6.51 SP0, you can insert the respective cursor output list after you selected the desired Runtime version.

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.

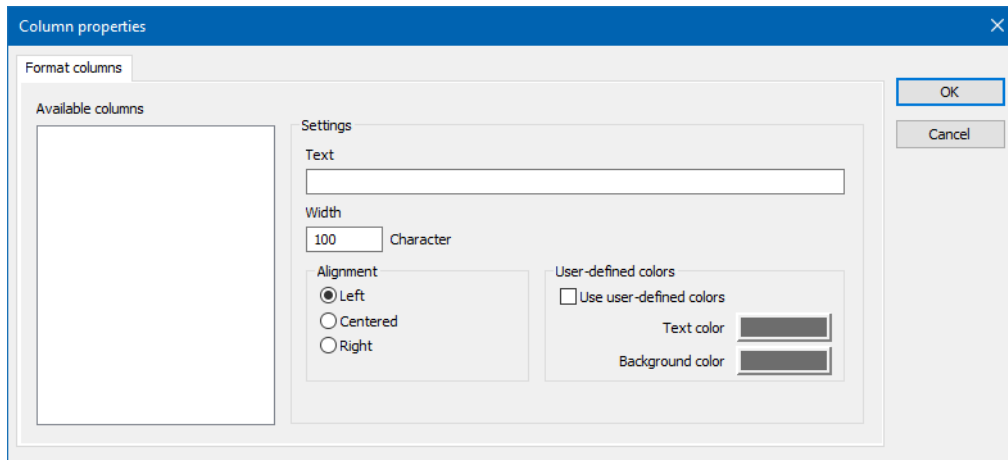
CLOSE DIALOG

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

Column Format

The columns are formatted here.

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.
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	<p>▶ Active: The filter for this column cannot be changed in Runtime.</p> <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.

Amend appearance of lists

The appearance of the extended curve list and the cursor output list can be adapted to individual requirements:

SCROLL BARS, HEADERS AND GRIDS

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

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



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.*

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 the `Graphics files` for the **Display style** property.
2. Link the **Sort ascending** and **Sort descending** properties with a graphics file.

The selected graphic for the respective sorting direction is displayed in Runtime for the sorting of relevant columns

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

OPERATING THE HEADER IN RUNTIME

For the extended curve list, you also have properties for arrangement and sorting of the columns with a mouse click available.

You can make it possible for users to operate the header in Runtime. With this an individual customization of the look is possible in the Runtime:

- ▶ Move columns with Drag&Drop
- ▶ Change column width with the mouse
- ▶ Change sorting

To do this, use the following properties:

- ▶ **Freeze column location:** Controls the possibility to amend or move the width of table columns in Runtime with mouse actions.
 - `active`: The columns cannot be moved with Drag&Drop and the width cannot be amended.
 - `Inactive`: The columns can be arranged by means of Drag&Drop and the width of the columns can be amended by dragging with the mouse
- ▶ **Disable sorting:** Controls the possibility to sort table columns in Runtime.
 - `active`: The table cannot be sorted.
 - `Inactive`: The table can be sorted by clicking on the header.

The **Freeze column location** property is available for the cursor output list.

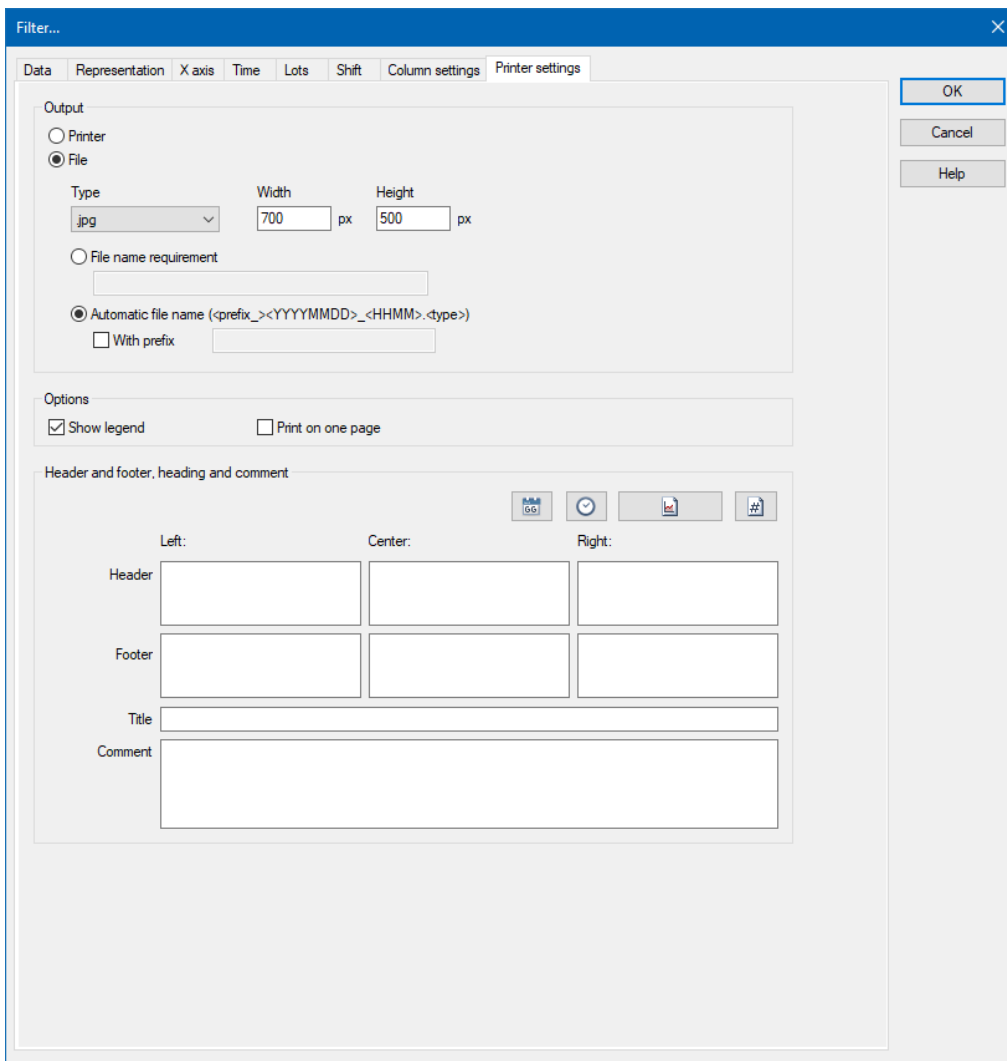
PREVIEW

The header and the scroll bars are shown as a preview in the Editor by activating the **Extended graphical settings** property. 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.

3.3.8 Printer settings

Configuration of the settings for the print-out or output to a file.



Filter...

Data Representation X axis Time Lots Shift Column settings **Printer settings**

Output

☐ Printer

☒ File

Type: Width: px Height: px

☐ File name requirement

☒ Automatic file name (<prefix><YYYYMMDD>_<HHMM>.<type>)

☐ With prefix

Options

☒ Show legend ☐ Print on one page

Header and footer, heading and comment

Left: Center: Right:

Header:

Footer:

Title:

Comment:

OK Cancel Help

OUTPUT

Parameter	Description
Output	Configuration of the output type and the corresponding options.
Printer	Active: The diagram is output to the printer that is defined in the General configuration of zenon by default for screenshots . See also the chapter on printers.
File	<p>Active: The diagram is saved as a file. Configure the output with the options:</p> <ul style="list-style-type: none"> ▸ Type ▸ Width ▸ Height ▸ Stipulation of file name ▸ Automatic file name ▸ With prefix <p>These options are only available for output to a file.</p>
Type	<p>Selection of the file type from the drop-down list. The following are available:</p> <ul style="list-style-type: none"> ▸ JPG ▸ BMP
Width	Entry of the width of the graphics file in pixels.
Height	Entry of the height of the graphics file in pixels.
Stipulation of file name	Active: Entry of any desired file name.
Automatic file name	<p>Active: The filename is issued automatically.</p> <p>Format: <Prefix_><YYYYMMDD>_<HHMM>.<Type></p>
With prefix	<p>Only available if automatic file name has been activated.</p> <p>Enter a desired prefix for the automatically-created filename. This is prefixed by the name separated by an underscore (_).</p>

OPTIONS

Parameter	Description
Options	Configuration of the options.
Show key	Active: A key is printed out with the diagram. This informs you of the curves and their colors, for example.
Print on one page	Active: The key is output on the same page as the diagram.

HEADER AND FOOTER, HEADING AND COMMENT

Parameter	Description
Header and footer, heading and comment	<p>For printing an Extended Trend diagram, additional information can be configured for the header and footer, as well as a heading and comments.</p> <p>Four buttons are available for easier input:</p> <ul style="list-style-type: none"> ▶ Date ▶ Time ▶ Diagram name ▶ Page number
Header	<p>Entry of information for the header in the following areas:</p> <ul style="list-style-type: none"> ▶ Left: ▶ Center ▶ Right
Footer	<p>Entry of information for the footer in the following areas:</p> <ul style="list-style-type: none"> ▶ Left: ▶ Center ▶ Right
Title	Entry of a title.
Comment	Entry of a comment.
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.

Note: Printouts made using the **Print** button of the **Extended Trend** screen may be different to those made using the **Screen switch - Extended Trend** function or the **Print Extended Trend diagram** function. The functions assume a window size of 1000 x 700. Printing via the button is in the proportion defined in the Editor.

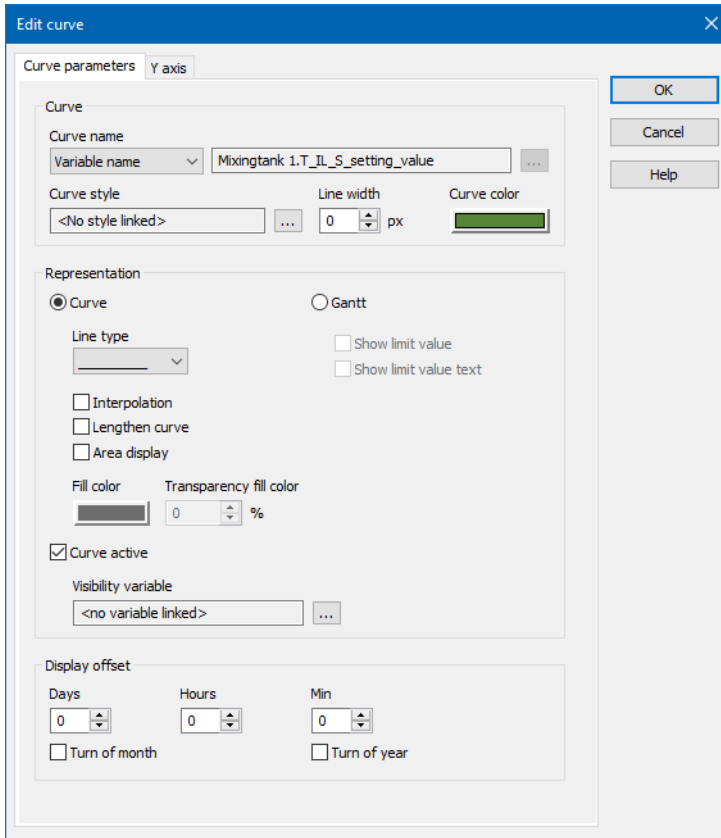
3.4 Configuring curves

Curves are created by clicking on the **Add** button in the **Data** (on page 18) tab.

To configure curves:

1. Highlight the curve in the list
2. Double-click on the highlighted curve or click on the **Edit** button.
The **Edit curve** dialog to configure the curve is opened.
3. Configure:
 - a) Curve parameters (on page 96)
 - b) Y-axis parameter (on page 99)
4. Confirm the changes by clicking on **OK**.

3.4.1 Curve parameters



For each trend curve the curve features can be parameterized.

CURVE

Parameter	Description
Curve	Configuration of the curve.
Curve name	<p>Freely definable curve name.</p> <p>The following possibilities are available for selection:</p> <ul style="list-style-type: none"> ▶ Static: The title can be entered freely. The text field is available. The ... selection button is grayed out. ▶ From variable: The title is taken from a linked variable. The text field is not available. The ... selection field is active. ▶ Variable name : The name of the variable is taken as a title. The text field is not available. The ... selection button is grayed out. <p>The variable name is used by default.</p>
Curve style	<p>Configuration of the style applied in the curve. Click on the ... selection button to open the style selection dialog.</p> <p>Note: Elements that belong to the selected style cannot be changed.</p>
Line width [Pixel]	Defines the width of the curve in pixels.
Curve color	Configuration of the curve color. Clicking on Color opens the color selection dialog.

TYPE OF DISPLAY

Parameter	Description
Display	Selection of the display type (curve or Gantt)
Curve	Configuration of the curve display.
Line type	<p>Definition of line type for trend curve. Possible formats:</p> <ul style="list-style-type: none"> ▶ Line ▶ Dashes ▶ Dots ▶ Dash-dot ▶ Dash-dot-dot <p>Note: If, in the Graphics quality property, Windows basis was selected, only solid lines can be displayed in Extended Trend for a line width of greater than 1.</p>
Interpolation	<p>Active: Values are connected using polylines (supporting positions).</p> <p>Inactive: Value changes are displayed as line jumps (stepped display).</p>
Lengthen curve	Active: The curve is extended from the last available datapoint to the current time.

Area display	Active: The values are displayed as surfaces instead of lines.
Fill color	Configuration of the fill color. Clicking on Color opens the color selection dialog. Only effective if the Area display option has been activated.
Transparency fill color	Stipulation of the transparency of the fill color in percent. This can prevent curves being overlaid by curves with area display. <ul style="list-style-type: none"> ▶ 0 %: no transparency ▶ 100 %: fully transparent Note: Not available for Windows CE.
Curve active	Active: The curve and the attendant vertical axis are active in the Extended Trend in Runtime. The curves and the axis are deactivated by deactivating the checkbox. The entry in the curve list is retained. The status of the curve is visible in the curve list in the Active column. Note: As soon as a visibility variable is linked to the curve, it is used for the visibility of the curve and the axis in Runtime. A change to the status via the curve list is not possible in this case.
Visibility variable	Controls the visibility of the curve in Runtime and the attendant vertical axis in the Extended Trend.
Gantt	Active: Gantt display for this curve is activated. For details on limitations, see the Gantt display (on page 103) and Y-axis parameters (on page 99) sections.
Display limit value	Only available for Gantt display . Active: The numerical limit value is displayed.
Display limit value text	Only available for Gantt display . Active: The description of the limit value is displayed.
Distance from the top frame [Pixel]	Only available for Gantt display . Definition of the distance in pixels from the Gantt curve to the top diagram border. Positive values move the curve upwards, negative values move it downwards.

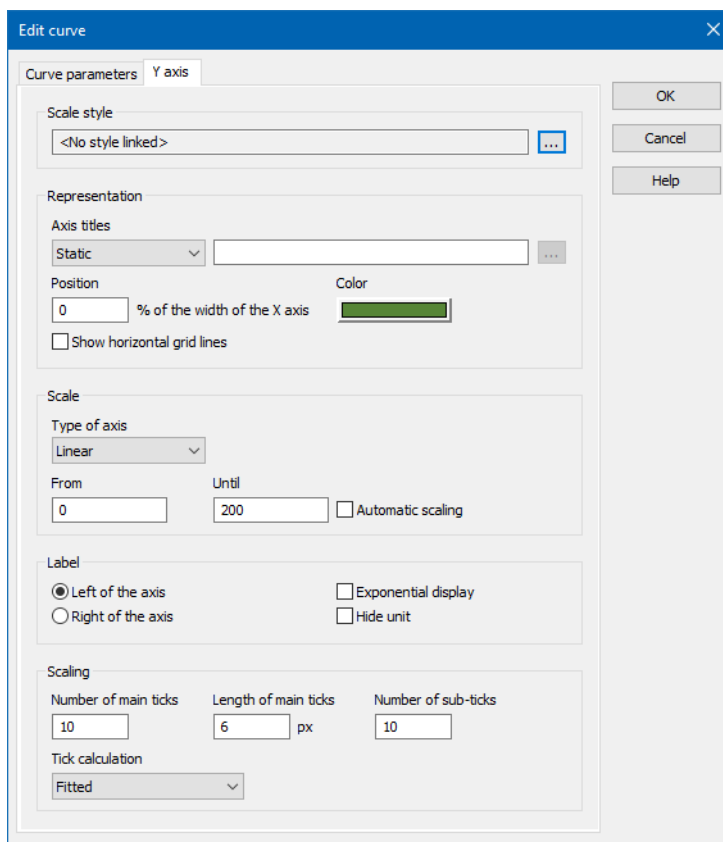
DISPLAY OFFSET

Parameter	Description
Display offset	Configuration of the display offset
Days	Moves the curve by the set number of days.
Hours	Moves the curve by the set number of hours.
Minutes	Moves the curve by the set number of seconds.

Turn of month	Moves the curve by a month.
Turn of year	Moves the curve by a year.
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.

3.4.2 Y-axis parameter

The curve parameters are defined in this dialog and the curve parameters (on page 96) dialog.



The screenshot shows the 'Edit curve' dialog box with the 'Y axis' tab selected. The dialog is divided into several sections:

- Scale style:** A dropdown menu showing '<No style linked>' with a blue ellipsis button to its right.
- Representation:**
 - Axis titles:** A dropdown menu showing 'Static' with a grey ellipsis button to its right.
 - Position:** A text input field containing '0' followed by '% of the width of the X axis'.
 - Color:** A color selection bar showing a green color.
 - ☐ Show horizontal grid lines
- Scale:**
 - Type of axis:** A dropdown menu showing 'Linear'.
 - From:** A text input field containing '0'.
 - Until:** A text input field containing '200'.
 - ☐ Automatic scaling
- Label:**
 - ☒ Left of the axis
 - ☐ Right of the axis
 - ☐ Exponential display
 - ☐ Hide unit
- Scaling:**
 - Number of main ticks:** A text input field containing '10'.
 - Length of main ticks:** A text input field containing '6' followed by 'px'.
 - Number of sub-ticks:** A text input field containing '10'.
 - Tick calculation:** A dropdown menu showing 'Fitted'.

On the right side of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

SCALE STYLE

Parameter	Description
Scale style	<p>Configuration of the style applied in the scale. Click on the ... selection button to open the style selection dialog.</p> <p>Note: Elements that belong to the selected style cannot be changed.</p>

REPRESENTATION

Parameter	Description
Representation	Parameters for display of curves in Runtime.
Axis title	<p>Name of the axis.</p> <p>The following possibilities are available for selection:</p> <ul style="list-style-type: none"> ▶ Static: The title can be entered freely. The text field is available. The ... selection button is grayed out. ▶ From variable: The title is taken from a linked variable. The text field is not available. The ... selection field is active. ▶ Variable name : The name of the variable is taken as a title. The text field is not available. The ... selection button is grayed out.
Position	<p>Positioning of the Y-axis on the X-axis in percentage of the length of the X-axis.</p> <ul style="list-style-type: none"> ▶ 0: left, ▶ 100: right
Color	<p>Configuration of the axis color. Clicking on Color opens the color selection dialog.</p> <p>Attention: Can be configured independently of the trend curve color.</p>
Display horizontal grid lines	<p>Display of help lines on the main ticks.</p> <p>not available for Gantt display.</p>

SCALE

Parameter	Description
Scale	Define representation range of the process variables within their configured technical limits (zoom function).

	not available for Gantt display.
Type of axis	<p>Defining of the scaling of the Y-axis.</p> <p>The following are available:</p> <ul style="list-style-type: none"> ▶ Linear: Linear division of the Y-axis. ▶ Logarithmic: Logarithmic division of the Y-axis <p>not available for Gantt display.</p>
From	Scaling start value.
To	Scaling end value.
Automatic scaling	<p>Active: The scaling of the axis is automatically determined for this curve in Runtime. The min/max values of the area to be displayed are used as axis limits.</p> <p>If the checkbox is activated, the input fields for the scaling (From/To) are no longer available for individual configuration.</p>

LABEL

Parameter	Description
Label	Position of the axis labeling
Left of the axis	Values are displayed to the left of the axis.
Right of the axis	Values are displayed to the right of the axis.
Exponential display	<p>Values are displayed exponentially.</p> <p>not available for Gantt display.</p>
Hide unit	<p>Active: Unit for axis labeling is not displayed. Allows the display of several variables with different units.</p> <p>Default: <i>Inactive</i></p> <p>not available for Gantt display.</p>

SCALING

Parameter	Description
Scaling	Definition of the axis subdivision. not available for Gantt display.
Number of main ticks	Number of main ticks with value indication.
Length of main ticks (in pixels)	Length of main ticks in pixels.
Number of sub-ticks	Number of main subsidiary ticks with value indication.
Tick calculation	<p>Amendment possibility to calculate the ticks shown:</p> <ul style="list-style-type: none"> ▶ Fitted - Minimum value and maximum value are the extreme limits of the axis. The labeling of the display is automatically rounded to visually-clear figures and the ticks are amended accordingly. A small deviation to the set main ticks can occur if the space available on the axis can be divided evenly. ▶ Automatic - the calculation is less precise than with Automatically optimized. The configured axis limits in the Editor can be changed in the process. ▶ Linear - an even distribution of the ticks on the axis is carried out. ▶ Optimized automatically - This setting is only applied in Runtime and does not change any configured axis limits in the Editor. To round the values, the most obvious round range of values is used. <p>Default: Fitted</p>
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.

The display of curve and Y-axis are configured using the checkboxes for **Y-axis** and **Active** in the Data tab.

3.4.3 Assignment of a scale style

You can assign a style to axes and displays, which is then applied in Runtime in the Editor.

This possibility exists for the following axes and displays:

- ▶ X-Axis (on page 40)
 - YT display (on page 41)
 - XY display (on page 45)
- ▶ Y-Axis (on page 99)

ENGINEERING

1. To do this, click in the dialog on the ... selection button next to the **scale style** text field.
The **style selection** dialog is opened.
2. Select the desired style. If no style has been created yet, you can create a new style group and a new style yourself.
3. Confirm the selection by clicking on **OK**.
4. The scale style is applied in Runtime.

Note: Elements that belong to the selected style cannot be changed.

3.4.4 Gantt display

With the help of the Gantt display you can visualize the state of a piece of equipment in the **Extended Trend**. For example it can be displayed when a piece of equipment has been in operation, in maintenance, idle and so one. With the display in the **Extended Trend** it is possible to compare the states of a piece of equipment with the characteristic curve of the process. Thus you can make conclusion about the behavior of a piece of equipment. For example you detect an abnormal behavior of the characteristic curve of the process but you see according to the Gantt chart that the equipment was in maintenance at that time.

ENGINEERING

With the Gantt display, the limit values and reaction matrices are taken into consideration for the evaluation, not the actual values of the respective variables. The display reflects the status of a piece of equipment; the exact value does not play a role.

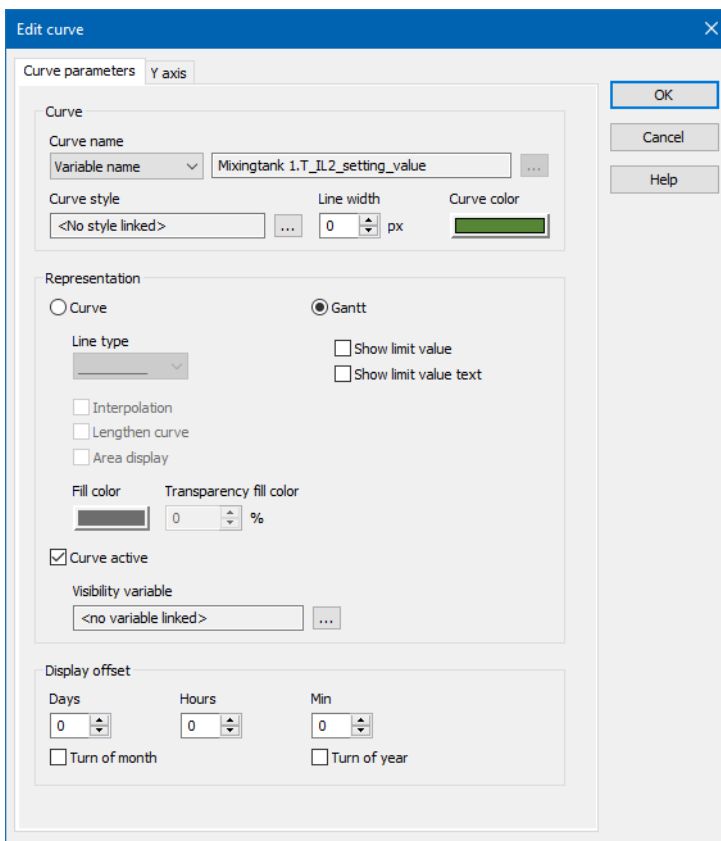
The individual Gantt charts are displayed in the top frame of the control element. Take care that you engineer the frame large enough so that no display problems arise.

As a basis for the color of the respective Gantt charts the violated limit value or reaction matrix is used. In doing so, the currently-configured limit values and states of the **Reaction matrix** are always used for this. If you change them, even historic evaluations are displayed with the current values. There is no history for the limit values or the states of a **Reaction matrix**.

Note: If a **Gantt curve** is also intended to show the current status then, in the configuration of the archiving in the **Recording type** tab, the **Save process image on startup** option must be activated.

CURVE PARAMETERS

The curve settings for the Gantt display are changed using the same dialog as the general curve configuration. The parameters to be set differ in part:



Edit curve

Curve parameters Y axis

Curve

Curve name
Variable name ▼ Mixingtank 1.T_IL2_setting_value ...

Curve style Line width Curve color
<No style linked> ... 0 px

Representation

☐ Curve ☒ Gantt

Line type
▼

☐ Interpolation
☐ Lengthen curve
☐ Area display

Fill color Transparency fill color
0 %

☒ Curve active

Visibility variable
<no variable linked> ...

Display offset

Days Hours Min
0 0 0

☐ Turn of month ☐ Turn of year

OK
Cancel
Help

Parameter	Description
Curve name	<p>The curve name is used as the labeling and is freely definable.</p> <p>The following possibilities are available for selection:</p> <ul style="list-style-type: none"> ▶ Static: The title can be entered freely. The text field is available. The ... selection button is grayed out. ▶ From variable: The title is taken from a linked variable. The text field is not available. The ... selection field is active. ▶ Variable name : The name of the variable is taken as a title. The text field is not available. The ... selection button is grayed out. <p>The variable name is used by default.</p>
Curve style	<p>Configuration of the style applied in the curve. Click on the ... selection button to open the style selection dialog.</p> <p>Note: Elements that belong to the selected style cannot be changed.</p>
Show limit value	<p>Only available for Gantt display.</p> <p>Active: The numerical limit value is displayed.</p>
Display limit value text	<p>Only available for Gantt display.</p> <p>Active: The description of the limit value is displayed.</p>
Distance from the top edge	<p>Only available for Gantt display.</p> <p>Definition of the distance in pixels from the Gantt curve to the top diagram border. Positive values move the curve upwards, negative values move it downwards.</p> <p>Note: The option is only shown if, in the screen switching Display tab, the checkbox for the Automatically align Gantt curves property has been deactivated.</p>
Curve active	<p>Active: The curve and the attendant vertical axis are active in the Extended Trend in Runtime.</p> <p>The curves and the axis are deactivated by deactivating the checkbox. The entry in the curve list is retained. The status of the curve is visible in the curve list in the Active column.</p> <p>Note: As soon as a visibility variable is linked to the curve, it is used for the visibility of the curve and the axis in Runtime. A change to the status via the curve list is not</p>

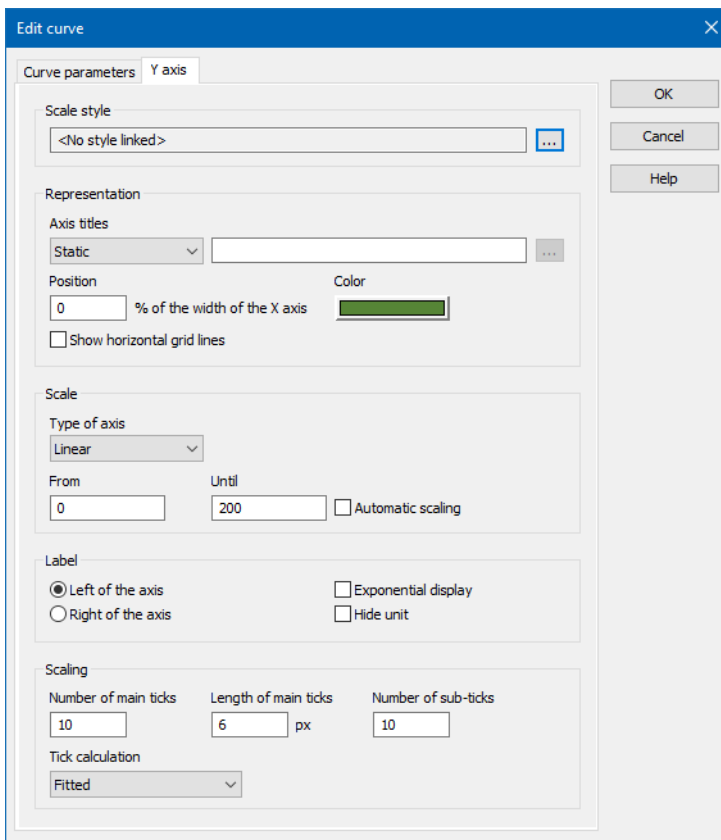
	possible in this case.
Visibility variable	Controls the visibility of the curve in Runtime and the attendant vertical axis in the Extended Trend.

Note: If the options **Display limit** and **Display limit text** are used together, the display is:
Limit text/limit value

Y-AXIS

The Y-axis is configured using the same dialog as the general curve configuration. The label is configured here.

- ▶ **Color**
- ▶ **Position in % of the width of the X-axis (measured from the left)**



Edit curve [X]

Curve parameters | **Y axis**

Scale style
 <No style linked> [...]

Representation
 Axis titles: Static [] [...]
 Position: 0 % of the width of the X axis []
 Color: [Green bar]
☐ Show horizontal grid lines

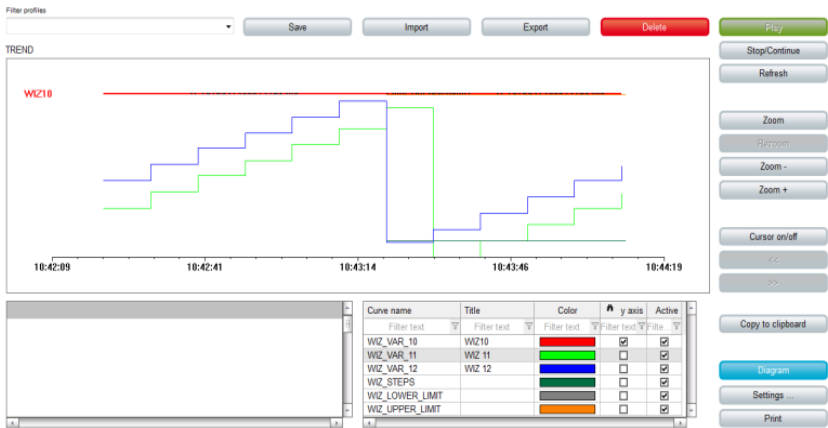
Scale
 Type of axis: Linear []
 From: 0 Until: 200 ☐ Automatic scaling

Label
☒ Left of the axis ☐ Exponential display
☐ Right of the axis ☐ Hide unit

Scaling
 Number of main ticks: 10 Length of main ticks: 6 px Number of sub-ticks: 10
 Tick calculation: Fitted []

OK Cancel Help

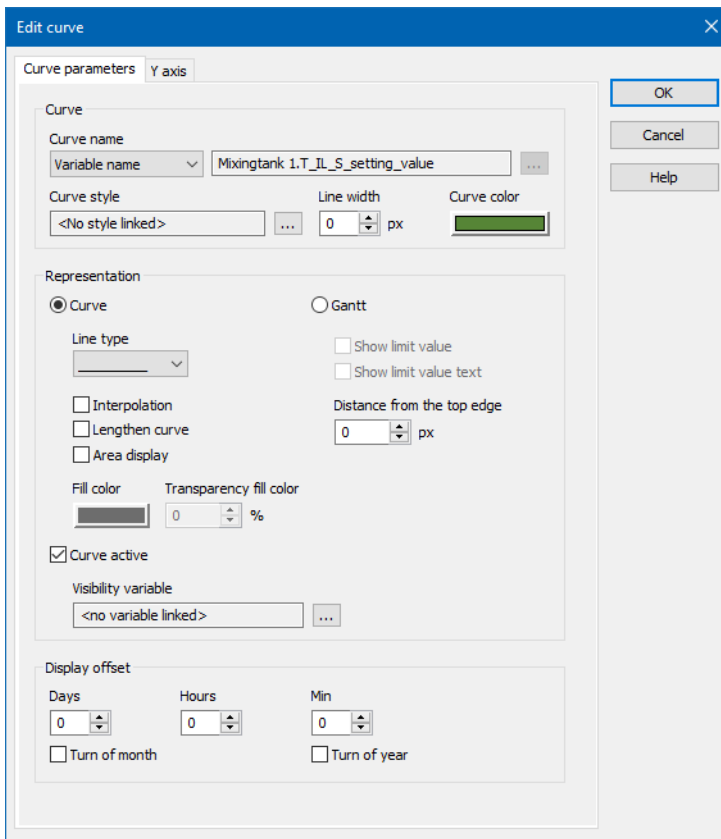
Display during Runtime:



GANTT DISPLAY FOR STRING VARIABLES

The configuration of the curve settings for Gantt display for `string` archive variables is different from the configuration of other Gantt displays in these aspects:

Parameter	Description
Show limit value	Inactive
Show limit value text	Inactive
Alternative color	replaces the fill color property and is initialized with a color that differs from the curve color



In the Runtime:

Display with this Gantt display is as with a conventional Gantt display, however with the following differences:

- ▶ For each new value of the variable, the bar changes color between **curve color** and **alternative color**
- ▶ The string value of the variables is displayed as a text

NOTES ON CONFIGURATION OF THE GANTT DISPLAY FOR STRING VARIABLES

For Gantt curves with text, the **line width** is not amended automatically. The default value 0 here corresponds to a width of 1 pixel. The font is taken from the settings in the **Display** (on page 34) tab; the font color is black.

If, for the recording of string variables in the archive, **record on change** has been selected and the current status is to be displayed, then the **Save process screen on startup** option must be activated.

If Runtime files are created for a version before zenon 7.11, then:

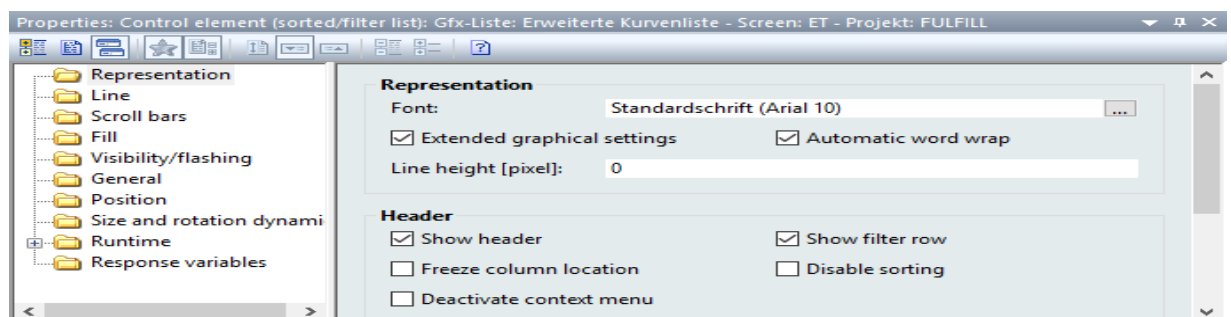
- ▶ The Gantt display curve for string variables is not removed
- ▶ A bar without text is displayed for as long as the variable has a value

3.4.5 Setting the line height with automatic carriage return

In order to be able to display particularly long text in lists, there is the possibility to set an automatic carriage return. However, the output of the desired text must be undertaken manually by setting the number of cells. This happens using the line height.

Procedure to set the line height:

1. Activate the checkbox of the **Automatic word wrap** property in the properties of the corresponding list under the **Representation** node.
2. Enter the desired line height in the properties of the list under the **Representation** and **Line height [pixel]** nodes.



If:

- The line height entered is suitable for a multi-line display and the text has spaces, the text is divided into several lines.
- The text is nevertheless too long, it is cut off and ... is shown at the end.

Example: The Arial 10 font has a height of 10 points. Because 1 point corresponds to 1.333 pixels, 10 results in a height of 13 pixels.

Enter a line height of 34 pixels to get a two-line output.

The following assignment is applicable:

Pixel	Text lines
34	2
50	3
66	4
82	5
98	6

From the second line on, 16 pixels must be added for each subsequent line.

3.5 Filter profiles

Filter profiles are filter settings that the user can save and call up in Runtime in relation to a certain screen.

To be able to use filter profiles, the following control elements must be configured:

Control element	Description
Filter profiles	Profile administration in Runtime.
Profile selection	Selection of a saved profile from a drop-down list.
Save	Clicking on the button in the Runtime saves the filter settings as a profile. Note: The name can be a maximum of 31 characters long and must only contain valid characters. Prohibited are: ! \ / : * ? < > ""
Delete	Clicking on button in Runtime deletes the selected profile.

With this you can in the Runtime:

- ▶ save filters
- ▶ use saved filters
- ▶ delete filter profiles

Filter profiles can also be exported and imported with further control elements.

3.6 "Print Extended Trend diagram" function

With the help of the **Print Extended Trend diagram** function, you can print Extended Trend diagrams or save them in a file (JPG or BMP) without opening the `Extended Trend` screen.

To configure the function:

1. Create a new function
2. navigate to the Applications node
3. Select Print Extended Trend diagram

The function will be created along the lines of screen switching (on page 16).

Note: Printouts made using the **Print** button of the **Extended Trend** screen may be different to those made using the **Screen switch - Extended Trend** function or the **Print Extended Trend diagram** function. The functions assume a window size of 1000 x 700. Printing via the button is in the proportion defined in the Editor.

3.7 Entries in the project.ini

The following entries are possible in the `project.ini` file for the extended trend.

Parameters	Description
[DEFAULT]	General settings
MILLISEK=	<ul style="list-style-type: none"> ▶ 1: Display in millisecond grid ▶ 0: minimal in the update grid
[EW_TREND]	
ANZEIGE_GWTEXT=	<ul style="list-style-type: none"> ▶ 1: Display limit value text (default) ▶ 0: do not display
[ARCHIV]	Archive configuration
ARCHDIGITS=	Number of decimal places when exporting archives in TXT , XML or DBF format and for export to a SQL server. Default: 1
TRENNZEICHEN=	Separator for export to ASCII file. Default: ;
SPEICHER=	Maximum number of values that are read in for Extended Trend, archive revision and reports. Default: 1000
SQL_MAXROWS=	Maximum number values which can be read from the SQL. Entry is ensued in 1000 steps. 100 = 100.000 values. As of version 6.50, there is an automatic check that there is always at least 10% free memory left.

4. Operating during Runtime

In online operation the window for the Extended Trend is opened via a function call . The screen pre-defined in the Editor (on page 6) is called up.



With extended curve list:



There are different control elements available to operate the extended trend and the displays, depending on the engineering (on page 6).

WINDOW

Selection of the window to be displayed for diagrams and curves in Runtime.

Control element	Description
Diagram	<p>Window to display trend curve</p> <p>Not available if the screen has been called up with the Display lot selection dialog -> Relative lot selection option activated.</p>
Diagram name	<p>Shows the diagram name.</p> <p>Note: Element of the type <code>Dynamic text</code>. Functionality is assigned using the Screen type specific action property.</p>
Set filter	<p>Displays the status of the current time filter in Runtime.</p> <p>Note: Element of the type <code>Dynamic text</code>. Functionality is assigned using the Screen type specific action property.</p>
Cursor Output list	<p>Shows the position of the cursor in the diagram window and the values set in diagram settings and cursor output (on page 90)</p>
Extended curve list	<p>Curve list that can be edited in Runtime (on page 126). The following can be edited:</p> <ul style="list-style-type: none"> ▶ Active ▶ Color ▶ Area display ▶ Fill color ▶ Curve name ▶ Sorting order ▶ Title ▶ Transparency fill color ▶ Variable name ▶ Variable identification ▶ Y-Axis <p>Note: Not available under Windows CE. Is replaced by the curve list (outdated) there.</p>
Activate curve	<p>Activates the selected curve in the extended curve list. The curve in the screen is shown/hidden in the screen and the list is updated by activation/deactivation. Multiple selection is possible. The button is deactivated if no curve has been selected in the curve list.</p>
Activate axis	<p>Activates the selected axis in the extended curve list. The axis in the screen is shown/hidden in the screen and the list updated by activation/deactivation. Multiple selection is possible. The button is deactivated if no curve has been selected in the curve list.</p>
Curve color	<p>Allows the setting of the desired color for the respective curve. When the color is changed, the curve is redrawn in the screen and the list is updated. The button is only activated if no curve has been selected in the extended curve list.</p>

DIAGRAM FUNCTIONS

Pre-defined controls for diagrams.

Control element	Description
Filter	Display of set filter.
Chart settings	Activates the dialog (on page 90) for diagram settings and cursor output
Curves	Change curve parameters.
x-axis	opens the dialog (on page 45) for x-axis settings. Not available if the screen has been called up with the Display lot selection dialog -> Relative lot selection option activated.
Update	Refreshes the display.
Stop	Do not refresh screen.
Next	Update screen
Cursor on/off	Query values
Double cursor on/off	Display (on page 113) values that are between two cursors.
Print	Prints diagram. Note: Printouts made using the Print button of the Extended Trend screen may be different to those made using the Screen switch - Extended Trend function or the Print Extended Trend diagram function. The functions assume a window size of 1000 x 700. Printing via the button is in the proportion defined in the Editor.
Print with dialog	Choose the printer before printing out the diagram.
Copy to clipboard	Copy representation into the intermediate store.
Export data displayed	exports (on page 123) all visible data of all curves as a CSV file.

DIAGRAM NAVIGATION

Buttons for navigation in the diagram.

Control element	Description
Move cursor one pixel to the left	Places cursor one pixel to the left. If the Shift key is pressed at the same time, the cursor is moved by 10 pixels.
Move cursor to the right one pixel	Places cursor one pixel to the right. If the Shift key is pressed at the same time, the cursor is moved by 10 pixels.
Backwards	Scroll backward on the time axis (history)

Quarter backwards	Moves the time period displayed back by a quarter of the measuring unit selected.
Forwards	Scroll forward on the time axis (current)
Quarter forwards	Moves the displayed time period forwards by a quarter of the unit selected.
Zoom	Zoom display
Step back	Reduce display
Zoom +	reduces display time intervals
Zoom -	Increases display time intervals
Zoom to 100 %	<p>Sets zoom factor to 100%.</p> <p>This zoom action is saved in the zoom history.</p> <p>For example: zooming is used</p> <ul style="list-style-type: none"> ▶ to zoom 2x into a selected area of the Extended Trend, ▶ then zoom content to 100% is selected and ▶ then a selected area is zoomed into again, <p>then there are 4 zoom events in the history. These can be jumped back step by step with the Step back button.</p>

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
Diagram name	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
Set filter	Static Win32 control element. Was replaced by a <code>dynamic text</code> field. For the description, see current element.
Curve list CE	<p>List of curves.</p> <p>Is used for CE for compatibility reasons. The extended curve list is recommended for all other projects.</p>

FILTER PROFILES

Buttons for filter settings in Runtime.

Control element	Description
Profile selection	Select profile from list.

Control element	Description
Save	Saves current setting as a profile. Note: The name can be a maximum of 31 characters long and must only contain valid characters. Prohibited are: ! \ / : * ? < > ""
Delete	Deletes selected profile.
Import	Imports filter profiles from export file.
Export	Exports filter profiles in the file.



Information

The cursor one pixel to the left and cursor one pixel to the right control elements move the cursor if it is active, not the trend.

Arrow keys on the keyboard can also be used instead of the control elements.

*If you hold down the **Shift** key when moving with the arrow keys, the movement is carried out in 10-pixel increments.*

If in Extended Trend archive values are displayed or if the continuous updating of the online data is switched off then the current values of the curves up to the current time are re-read in by pressing the **Refresh** button. Or it is updated according to the refresh times defined in **Diagram**.

Paging in extended trend beyond the represented X-axis is possible with the use of the << button (display older values) or >>(display more recent values). If online data is displayed, a maximum entry depth as defined for the process variables can be shown. For archive values, the configuration of the archives stored in the database is decisive.



Information

The refresh rate dynamically adjusts to the loading time of the data for archive trend. If loading lasts longer than half of the refresh interval, the refresh rate is doubled.

ZOOM

Clicking on the **Zoom +** button plus dragging an area on the diagram displays the values in a more detailed resolution and at a smaller interval (X and Y axis). Zooming is only possible if the selected area covers at least one subdivision per axis. Multiple zooming is possible. Clicking on the **Rezoom** button switches the zoom factor back to the levels at which they were previously defined.

ONLINE DATA

With Online data and refreshing the visualization changes with each refresh corresponding to the most current entry. To be able to scroll through, ongoing refreshing must be switched of by means of the

Stop button. If the continuous updating should be reactivated then the **Next** button is to be pressed. With the diagram's next refresh cycle the new data and the new X-axis range are updated.



Information

Online variables in Extended Trend:

The online variables for Extended Trend are configured in the Editor and can no longer be changed in Runtime. The HDD ring buffer is also configured for the variable during configuration in the editor. It is not possible to create or change the ring buffer for variables in Runtime. Online variables therefore cannot be adapted in Runtime.

Variables from archives can also continue to be added in Runtime.

4.1 Mouse

In Runtime, you can use the mouse to work in the diagram window of the Extended Trend.

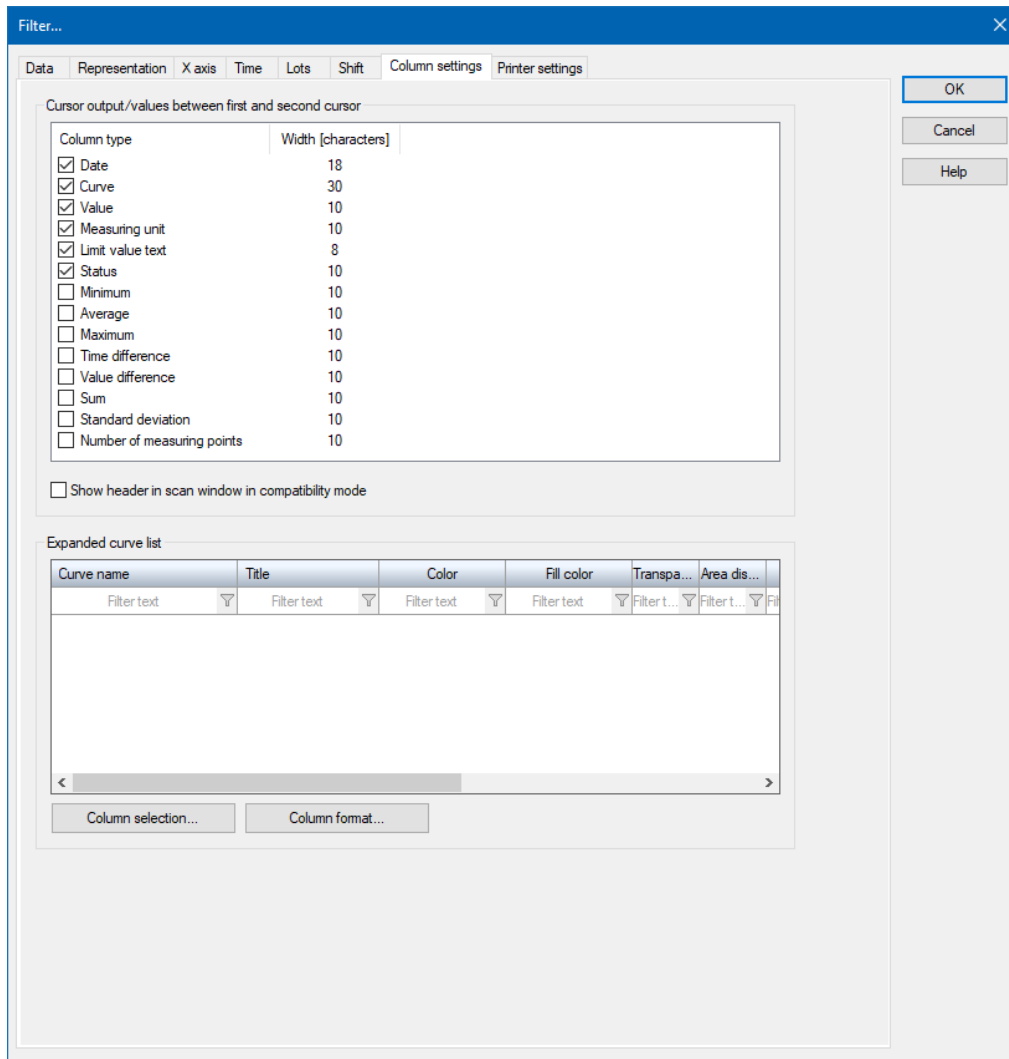
You can set the behavior of the mouse when a button is pressed or when the wheel is moved (on page 13) in the editor.

4.2 Cursor

Click on button **Cursor on/off** in order to start the scanning mode. A cursor appears in the middle of the diagram. You can move the cursor by left-clicking on it and moving the mouse while still pressing the mouse button. You can also use the keyboard. Press **Left** or **Right** to move the cursor in small steps. To carry out larger steps, press the **Shift** key at the same time. You can see the respective value in the cursor output window. Click on button **Cursor on/off** again in order to exit the scanning mode. The following information can be displayed in the cursor output window:

Parameter	Description
Date	Date/Time of the saved value Minimal scaling: Milliseconds
Variable	Name of the variable from which the value comes.
Value	value.
Unit	Unit of the saved value
Limit Text	Condition text (limit value text) of the saved value.
Status	Status of the saved value .
Minimum	Minimum of the period of representation (optional).
Average	Average of the period of representation (optional).
Maximum	Maximum of the period of representation (optional)
Time difference	Time difference. Minimal scaling: Milliseconds
Value difference	Difference between the values.
Sum	Sum
Standard deviation	Standard deviation.
Number of measuring points	Number of measuring points

In order to change the displayed information and the according column widths, click on the button **Diagram...** The dialog to configure the Extended Trend (on page 16) is opened.



In the **Column settings** tab, you can set the column widths for the different entries in the cursor output window. With the help of the checkbox you decide which columns you want to display.



Information

If an XY display is configured, then only the respective current value is shown when the scanning is started. This cannot be updated. The cursor cannot be moved.

DOUBLE CURSOR ON/OFF

If you engineered the control element **Double cursor on/off**, you have the possibility to use a second cursor in the diagram. With this a scanning with two separate cursors is possible. Click on button **Double cursor on/off** in order to display two cursors on at the left end and one at the right end of the diagram. You can move the second cursors either with the help of the mouse or the keyboard. In order to do this, press and hold the **Ctrl** key and press **Left** or **Right** to move the cursor in small steps. To carry out larger steps, press the **Shift** key at the same time.

The values between the first and the second cursor are displayed in the cursor output window. You can customize the available columns as desired in the **Diagram settings and cursor output** dialog. Open the dialog by clicking on the **Settings...** button in the ETM screen.



Information

*The double cursor is not available for the **block array** data type.*

WRITING ABSCISSAS IN VARIABLES

Two variables can be defined for the cursors, in which the abscissas are written for calling up and moving the cursors (time or X values). The variables can be **LREAL** or **DWORD/DINT/UDINT** variable and are configured in the screen switching in the **Display** (on page 34) tab. In doing so, the values are saved in Unix time format (number of seconds passed since 1 January 1970 00:00 UTC).

4.3 Export data

For the extended trend an **Export displayed data...** button can be inserted as a control element and can be used in Runtime. In doing so, all visible data of all curves displayed is saved in a text file in CSV format.

FORMAT OF CSV FILE

- ▶ The output is in the form of a Unicode text file.
- ▶ Separator: Semi-colon (;)
- ▶ You are free to choose storage location and file name in the save dialog.
- ▶ The file has no header.
- ▶ The data is displayed in this order in the text file:

Variable name;Identification;Value;Unit;Status;Time

Property	Format
Variable name:	Character string
Identification:	Character string
Value:	<ul style="list-style-type: none"> ▶ Up to 8 digits before the decimal separator, ▶ 8 digits behind the decimal separator
Unit:	Character string
Status:	Character string
Time:	dd.mm.yyyy hh:mm:ss.ms

There is no output if an exported variable property is empty.

Example: MyVarREAL_4;;978.45000000;;SPONT;09.09.2011 09:37:44.443

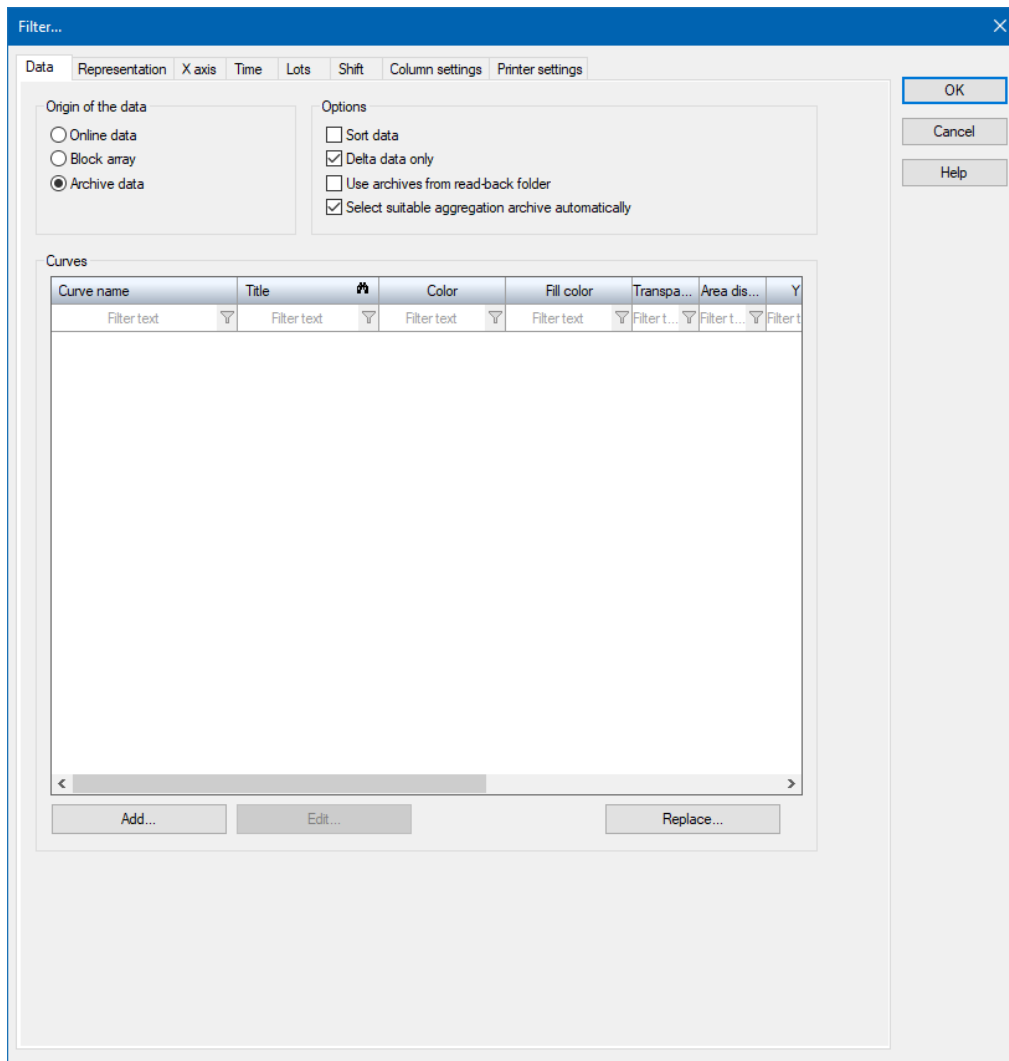


Attention

If many curves are selected for export, the data collection can require a considerable amount of time.

4.4 Chart settings

From the existing configuration, which was done in the editor, temporary changes (without saving) can be carried out in runtime. To open the dialog for configuration, click on the **Diagram** button.



Important amendment options:

Parameter	Description
Data: <i>Curve > active</i>	Activates and deactivates the display of the curve.
Data: <i>Curves -> Y-axis</i>	Representation of the curve's y-axis
Data: <i>Curve -> editing</i>	Editing the settings of the selected trend curve.
Column settings	Settings of the diagram parameters.
Representation: Design	User defined font for x- and y-axis labeling and value indication
Representation: Refresh	Updating of the diagram for online data

4.5 Operate extended curve list

If the extended curve list is configured in the Editor, curves can be edited in Runtime. It is possible:

- ▶ To filter for:
 - Activation
 - Color
 - Curve name
 - Sorting order
 - Title
 - Variable name
 - Variable identification
 - Y-Axis
 - Source
- ▶ To edit curve names
- ▶ To edit titles
- ▶ To edit colors
- ▶ To activate or deactivate the Y-axis
- ▶ To activate or deactivate curves
- ▶ To change the display sequence

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.

To edit an element, double click in the corresponding cell of the list.

Curve name	Title	Color	y axis	Active	Variable name	Variable identification
Filter text	Filter text	Filter text	Filter text	Filter...	Filter text	Filter text
WIZ_VAR_12			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WIZ_VAR_12	
WIZ_VAR_11			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WIZ_VAR_11	
WIZ_VAR_10			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WIZ_VAR_10	
WIZ_UPPER_LIMIT			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WIZ_UPPER_LIMIT	
System			<input type="checkbox"/>	<input checked="" type="checkbox"/>	System	Sys

If you want to display longer texts in a list in Runtime, activate the checkbox of the **Automatic word wrap** property in the properties of the corresponding list under the **Representation** node. The line height must be amended manually (on page 109).



Information

The extended curve list cannot be displayed with Windows CE and is replaced by the normal curve list.

SORT CURVES

The sequence in which the curves are logged in the ETM can be defined:

- ▶ In the Editor: while configuring the screen switch function, in the Data (on page 18) tab, in the configuration of the curve list
- ▶ In Runtime: in the extended curve list

The **Sequence** column must be displayed in the curve list in order to be able to change the sequence.

IN THE RUNTIME

To change the sequence in which the curves are drawn:

1. Click in the extended curve list window.
2. Select the curve to be changed.
3. Click in the cell of the **Sequence** column.
4. Enter the desired number. The other curves are rearranged automatically. A low position means that the curve is drawn earlier (displayed further back); a higher position means that the curve is drawn later (displayed further forwards):
 - Minimum: 1
 - Maximum: Number of curves

Sorting is carried out by clicking on the column header. Sorting according to other columns as a **sequence** does not have an effect on the sequence of the curve display.

USE OF THE ACTIVATE CURVE, ACTIVATE AXIS AND CURVE COLOR BUTTONS

With multiple selection of curves in the **curve list**, the following rules are applicable for the use of the **Activate Curve** and **Activate Axis** buttons:

1. If the respective checkboxes (**Y-axis** or **Active** column) have been activated for all selected curves, they are deactivated by clicking on one of the two buttons.
2. If the respective checkboxes (**Y-axis** or **Active** column) have been deactivated for all selected curves, they are activated by clicking on one of the two buttons.
3. If some checkboxes (**Y-axis** or **Active** column) of the selected curves have been activated and some deactivated, the respective checkboxes of the curves are activated the first time a button is clicked on. The behavior described in points 1 and 2 is applicable for all subsequent clicks.

Note: All three buttons are inactive if no curve has been selected in the **curve list**. The **Curve Color** button is also inactive if more than one curve has been selected.



Information

If the old and the new list are present together in the screen, the pre-set rules are only applicable for the extended curve list.

DRAG&DROP

Under certain circumstances, the curve list can be sorted in the editor and in Runtime by means of Drag&Drop:

1. Sort the list according to the **Sequence** column.
Attention: The list is also sorted according to a sequence when it is first shown. However for Drag&Drop, the column header must be explicitly clicked for sorting! It has no effect whether sorting is ascending or descending.
2. Ensure that there are no groupings.
3. Click in the line with the desired curve.
4. Drag the curve to the desired place. The place where it is inserted is shown with a red border.

DESIGNING CHECKBOXES WITH GRAPHICS

Checkboxes with graphics can be designed individually. To do this, assign the desired graphics to the corresponding properties of the curve list in the editor. The graphics must already be created in the **Files\graphics** node. Properties to be configured in the **Representation** group:

- ▶ **On**
- ▶ **On (inactive)**
- ▶ **Off**
- ▶ **Off (inactive)**

The defined graphics are drawn in the Runtime with the aspect ratio being taken into account.

4.6 Filter for screen switch

The filter settings configured in screen switching can be modified in Runtime. For that

1. Open the screen switching function in the Editor.
2. Activate the **Offer this dialog in the Runtime** option in the **Display** tab.

In Runtime, the following is displayed when the screen is called up, depending on the configuration:

- ▶ Complete configuration dialog
- ▶ Lot filter activated: Lot filter is offered
- ▶ Lot filter deactivated, **time range** time filter: Time filter is offered

CONFIGURATION OF LOT FILTER

If you set option `no time filter` as time filter type, all Runtime entries since 1. 1. 2000 will be displayed.



Attention

All configured lot archives are offered in the list of archives. The same archive as in the screen switching must be selected here. Only then is data also displayed.

Filter...

Lot filter

*

A1 - BASIC 1

Lot name	Start date	Start time	End date	End time	Duration
*	...	*	*	...	*
7.20	17.12.2014	00:00:00	17.12.2014	12:47:24	OT 12:47:24

OK

Cancel

Parameter	Description
Lot filter	Selection of the recipe group that is to be imported. The filter consists of the two lists: <ul style="list-style-type: none"> ▶ List of archives: List of archives ▶ List of lots: List of lots allocated to the selected archive.
List of archives	Selection of the desired archive node *: <ul style="list-style-type: none"> ▶ Collects all lots of the displayed archive. ▶ The key is the lot name. ▶ The start time is the start time of the earliest lot. ▶ The end time is the latest end time of all lots.
List of lots	Display of the lots allocated to the selected archive. Filtering through entry of text, date, time or time range - depending on type. Sort by clicking on the header.
Lot name	Displays the name of all available lots. Filter: Entry of a character sequence. Only lots matching the respective character string will be displayed.
Start date	Shows the start date of all available lots. Filter: Entry of a start date or selection from a calendar.
Start time	Only available if you entered a start date. Display of the start time of all available lots. Filter: Entry of a start time. * means 12:00:00 AM o'clock.
End date	Shows the end date of all available lots. Filter: Entry of an end date or selection from a calendar.
End time	Only available if you entered an end date. Display of the end time of all available lots. Filter: Entry of an end time. * means 11:59:59 PM o'clock.
Duration	This column displays the duration for each available lot. Display only.



Information

Still open lots are also displayed if they match the set filter criteria.



Information

The value of the lot variable is written in the index file and in the header of the ARX file at the start of the lot. These entries are adjusted with every change of the variable. When the lot is closed, the value of the lot variable at this moment is finally written in the index file and in the header.

Thus the lot name is final when the lot is closed.

SQL

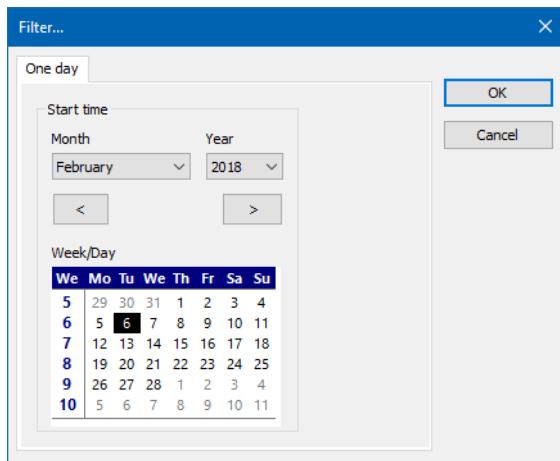
Lot filtering to archive values evacuated into SQL is carried out by means of a time filter. This time filter contains all values of the archive between the start time and end time of the lot. The lot start time and lot end time are also included. Milliseconds are not taken into account with this time filtering.

CONFIGURATION OF TIME RANGE

The filter dialog for the time setting can be offered in Runtime as specialized for a time range. To do this:

1. Open the screen switching function in the Editor.
2. Click on **Filter**.
3. Open the Time tab
4. Select the **Time period** option.

In Runtime, instead of the complete dialog, only one dialog to configure the time range is offered. For example, for the `One day` setting:



Filter...

One day

Start time

Month: February Year: 2018

< >

Week/Day

We	Mo	Tu	We	Th	Fr	Sa	Su
5	29	30	31	1	2	3	4
6	5	6	7	8	9	10	11
7	12	13	14	15	16	17	18
8	19	20	21	22	23	24	25
9	26	27	28	1	2	3	4
10	5	6	7	8	9	10	11

OK Cancel

EXAMPLE

With this setting, individual time ranges, such as shifts, can quickly be called up and configured.

For example: Shift from 6:00 AM until 2:00 PM.

1. Select, as a time period: `One day`.

As a default a day lasts from 00:00 till 00:00.

2. Set the postponement of the time range to `six hours`.

Now the day lasts from 6:00 a.m. till 6:00 a.m. the next day.

3. Now set the time period to `16 hours`.

4. Keep the option **Deduct time**.

This means that there will be back-calculation from 06:00 on the next day by 16 hours. Now the day lasts from 6:00 a.m. till 2:00 p.m., which corresponds exactly to a morning shift.

5. Transfer the new Runtime files.
6. Restart the Runtime.
7. Select the desired day in the screen switching.

You get the data of the selected day from 06:00 am to 2:00 pm.

4.7 Fast change of axis parameters in the online operation

To determine the value of displayed curves precisely, the X-axis and Y-axis can be moved. Moving is possible by means of:

- ▶ Dragging & dropping with the left mouse button
 - Moving the x-axis vertically
 - Moving the y-axis horizontally

The y-axis is duplicated when moved: The original axis remains in place when the copy is moved.
- ▶ Click on the axis with the right mouse button to open the configuration dialog:
 - X-axis tab ,YT display (on page 41)
 - Y-axis dialog (on page 99)

The movement is reset when the screen is reopened.

4.8 Display differences of the evacuation methods

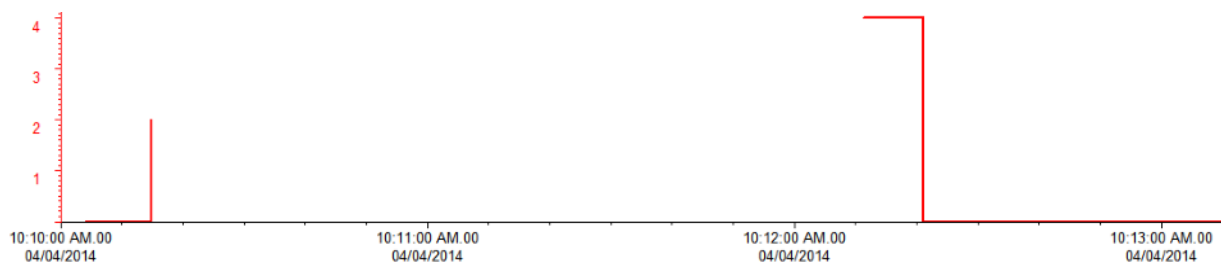
The display of data from evacuate archives in Runtime depends on the configured evacuation methods:

- ▶ ARX evacuation method
The trend draws a constant line between a change to a value
Evacuated archives without value changes are not connected. There is an empty space during display in Runtime.
- ▶ SQL database evacuation method
The trend draws a constant line between a change to a value.
Evacuated archives are connected to one another.

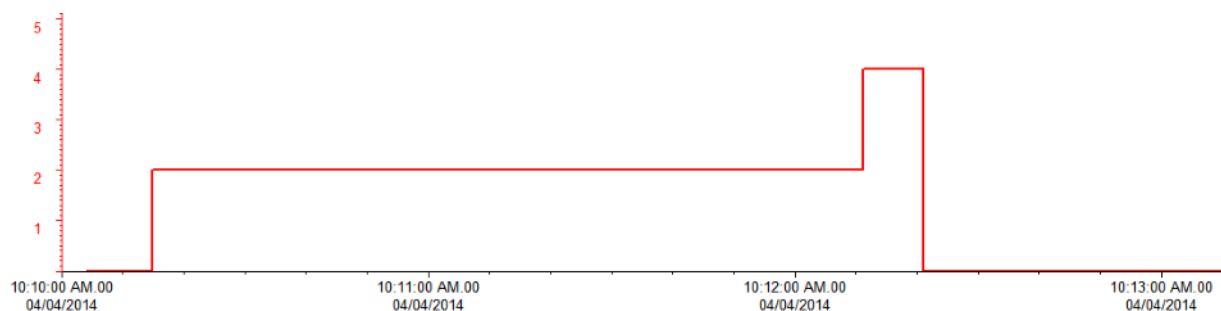
Following example:

- ▶ Recording type:
On value change
- ▶ Saving cycle:
Cyclical, each minute

EXAMPLE FOR ARX EVACUATION METHOD



EXAMPLE FOR SQL DATABASE EVACUATION METHOD



4.9 Archive variable selection for X axis

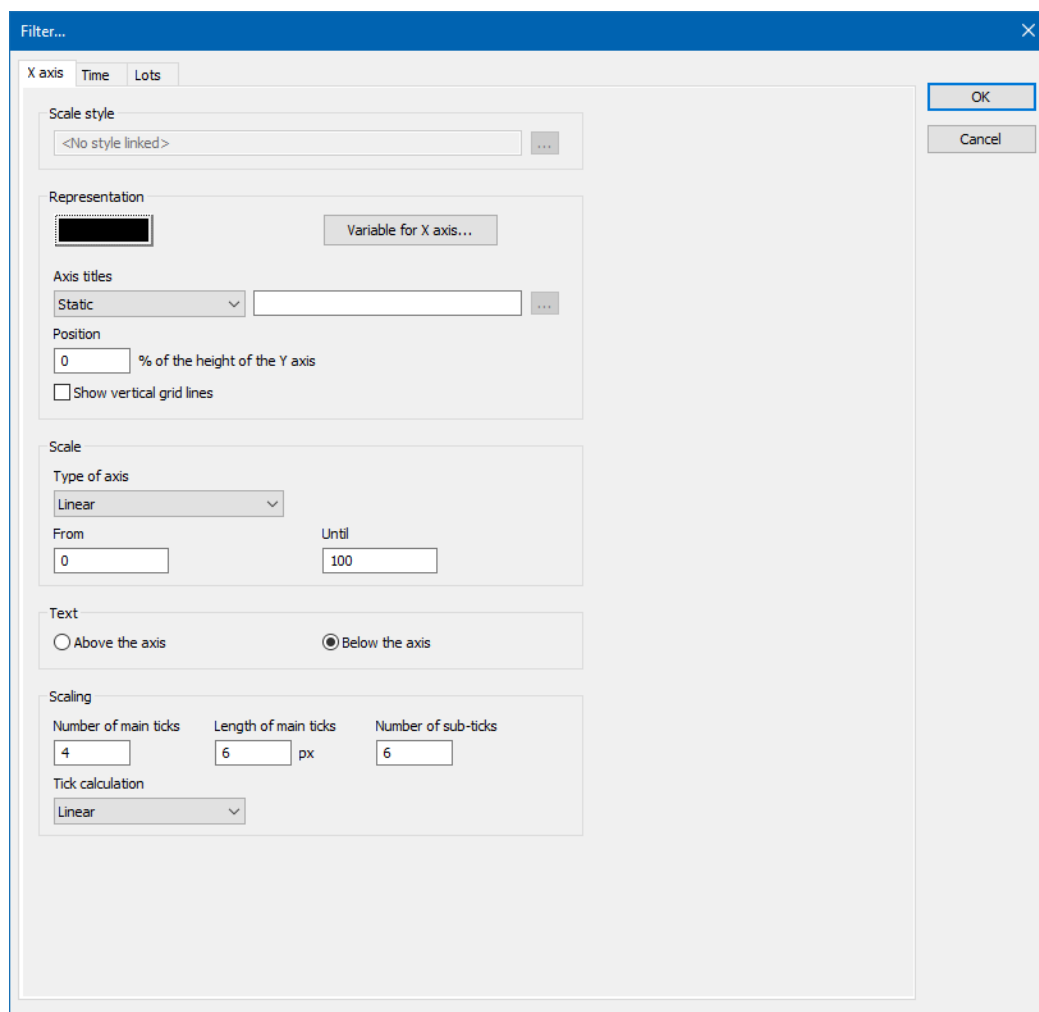
You can select a variable from an archive in Runtime in order to use this as the X-axis in an XY display.

Note: A requirement for this is that the preparatory work has already been carried out in the Editor. You can find details on this in the Preparatory work for variable selection of the X-axis in Runtime (on page 51) chapter.

Engineering:

1. Click on a diagram function in Runtime (for example **X-axis...**).

The **Filter** dialog is opened.



2. Click, in the **X-axis** tab under **Display**, on **Variable for X-axis...**.

The **Archive variable selection** (on page 49) dialog is opened.

3. Select the desired variable by highlighting it with the left mouse button.
4. Confirm the selection by clicking on the **Insert** button.

5. Close the selection dialog by clicking on **OK**.
6. Select the name of the axis title. The following possibilities are available for selection:
 - **Static**
 - **From variable**
 - **Variable name**
7. Close the **Filter...** dialog by clicking on **OK**.

4.10 Calling up an ETM screen by means of a context menu

ETM screens can be called up using a context menu in Runtime for dynamic elements.

The corresponding variable is shown as a curve in the **Extended Trend** screen.

The corresponding configuration (on page 14) must be carried out in the Editor beforehand.

Engineering:

1. Right-click on the dynamic element with the context menu to call up an ETM screen.
The context menu is opened.
2. Click on the context menu with the left mouse button.
The ETM screen is opened. The variable of the dynamic element is already visible in the curve list and created as a curve.