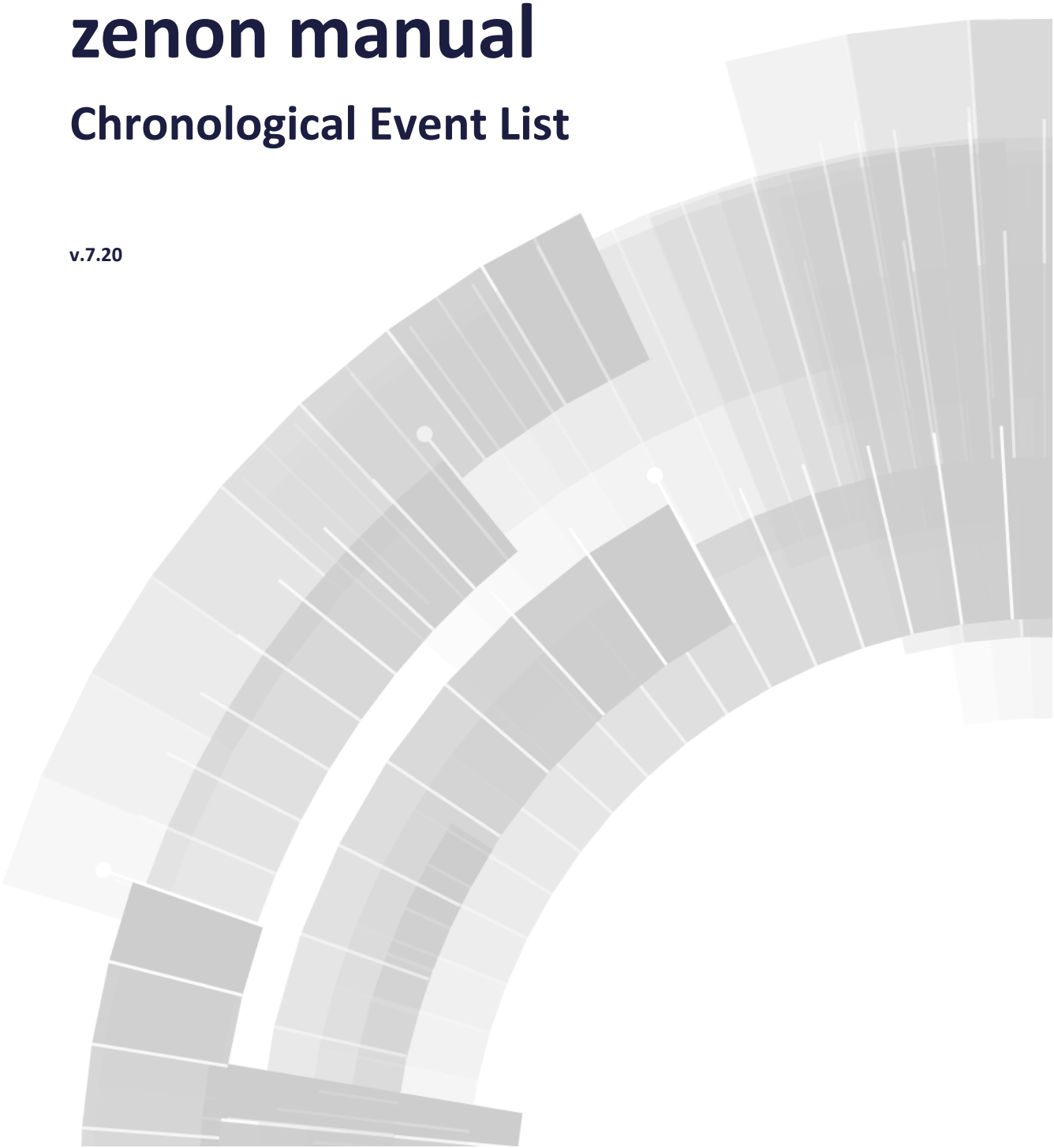
COPADATA
do it your way

zenon manual

Chronological Event List

v.7.20



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1. Welcome to COPA-DATA help

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 (mailto:documentation@copadata.com).

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2. Chronological Event List (CEL)

In the Chronological Event List (CEL) system events and user inputs can be logged, e.g.:

- Alarm acknowledgement
- Delete alarms
- Set value
- Send recipes
- Change recipe
- Archive data

- User action
- Network action

The entries are made in the language in which the zenon Runtime runs.

License information

Part of the standard license of the Editor and Runtime.

3. Engineer CEL

The handling of the Chronological Event List is carried out via screens of type `Chronological Event List` and `Chronological Event List Filter` in the Runtime.

EDITOR

To display and filter events in the Runtime, you must do the following in the Editor:

- engineer a screen of type `Chronological Event List` (on page 7)

In addition you can:

- control the display of events via filter (on page 31)
- with a screen of type `Chronological Event List Filter` (on page 12) adapt the available filter in the Runtime

RUNTIME

For the operation in the Runtime (on page 118) the following is used:

- Screen switch CEL (on page 99)
- Screen switch CEL filter (on page 100)
- die zenon CEL functions (on page 91)
- Use screen of type CEL Filter (on page 125)

3.1 Creating a screen of the type CEL

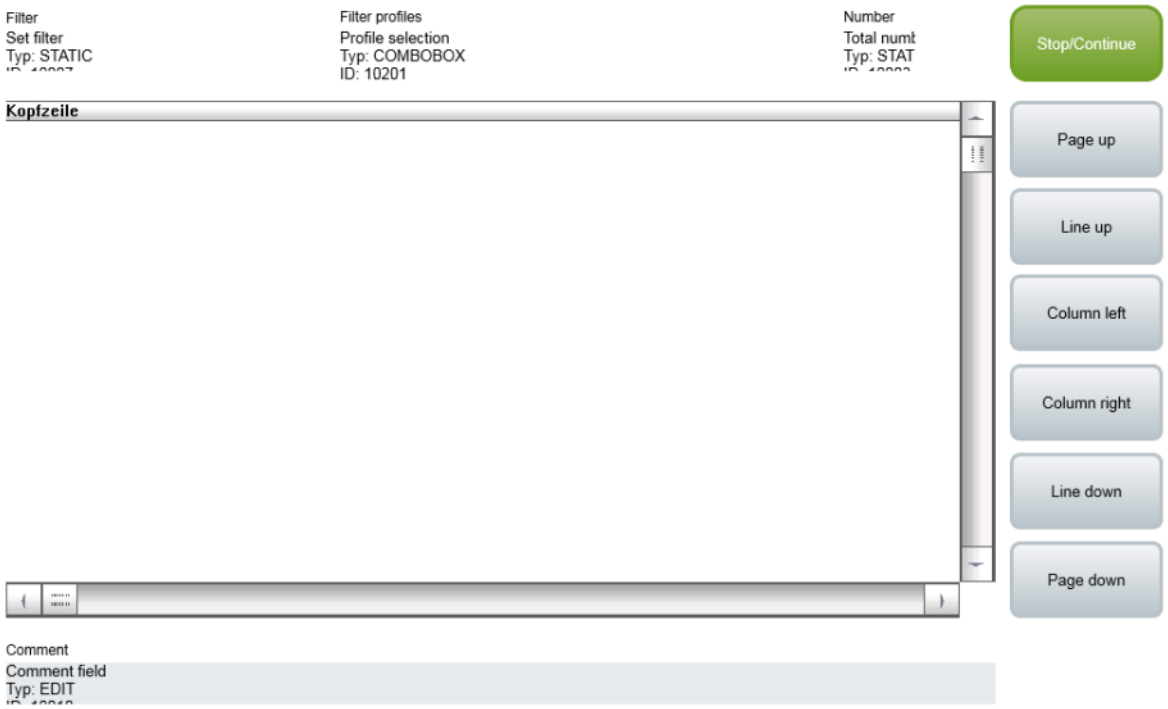
A **Chronological Event List** screen makes it possible to log and display system events and user operations in the Runtime. Which entries are displayed is defined via the engineering. The display can be changed by filters (on page 31) in the engineering and in the Runtime. Functions make it possible to export and print the displayed events.

CREATE A SCREEN OF TYPE CHRONOLOGICAL EVENT LIST

To create a screen of type **Chronological Event List**:

1. Select, in the toolbar or in the context menu of the **Screens** node, the **New Screen** command
2. An standard empty screen is opened
3. Change the screen type in the detail view; to do this:
   a) click on **Standard** in the **Screen type** column
   b) Select **Chronological Event List** from the drop down list
   c) do not select the main frame if you want to close the screen in the Runtime via button **Close**
4. Click in the screen.
5. Select the **Control elements** menu item in the menu bar
6. Click on **Add template** in the drop-down list
7. The standard elements are inserted
8. Select additional elements as required and insert them into the desired place on the screen

9. create a screen switch function, in order to be able to call up the CEL in the Runtime



3.1.1 Control elements

INSERT TEMPLATE

Parameters	Description
Insert template	Opens the dialog for selecting a template for the screen type. Templates are shipped together with zenon and can also be created by the user. Templates add pre-defined control elements to pre-defined locations 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 palced in the screen. Elements can be moved in the screen and placed individually.

CONTROL ELEMENTS

Parameters	Description
Chronological Event List	Display field for the list with its events. The appearance is configurable (on page 11). Columns are defined via the Column settings (on page 61) filter in screen switching or via the **Column settings CEL** property in the **Chronological Event List** group.
Set filter	Displays the currently selected filter.
Filter...	Opens the filter dialog (on page 31).
Sort	After calling up the CEL in the Runtime, new entries are not sorted in chronological order but added to the bottom of the list. Click on the button to newly sort the list. To help you differentiate between sorted and unsorted entries you can assigned different colors via properties **sorted text** and **unsorted text**.
Show relative times	Active: The relative times are displayed without the focus being lost in the selected entry.
Stop/continue	Controls adding new events to the list while it is displayed: **Stop**: No new entries are added to the list. The button changes its caption to **Continue**. **Continue**: New entries are added to the list. The button

	changes its caption to **Stop**. To sort the new entries chronologically, you must click on button **Sort**.
Close	Ends the display of the Chronological Event List and closes the screen and the frame. In order that after the closing the screen which was opened before is displayed, you must engineer the screen of type CEL with its own frame.
Print	Prints list (on page 131) as it is currently displayed.
Print with dialog	Opens printer settings before printing.
Text: Total number	Adds text "Total" in the Runtime. Must be followed by list field **Total number**.
Total number	Number of all events in the list
Status	Displays the status of the CEL in the Runtime. active: Events are logged depending of the settings (on page 27) in the project inactive: Events are not logged You define the status with the help of property **CEL active**. Changes take effect after the Runtime has been restarted.
Text: Comment field	Adds text "comment" in the Runtime. Must be followed by list field **Comment field**.
Comment field	List field for entering a freely definable text by the user for the selected event. As soon as the field loses focus, the text is taken over. To display the text in the CEL, you must activate column comment in the column definition (on page 61).
Button Stop/Continue	
Navigation	Controls elements of the list.
▸ **Line up**	Scrolls one line up.
▸ **Line down**	Scrolls one line down.
▸ **Column right**	Scrolls one column to the right.
▸ **Column left**	Scrolls one column to the left.
▸ **Page up**	Scrolls one page up.
▸ **Page down**	Scrolls one page down.
▸ **Page right**	Scrolls one page to the right.
▸ **Page left**	Scrolls one page to the left.
Filter profiles	Filter settings that can be saved by the user in Runtime.

Profile selection	Select profile from list.
Save	Saves an online setting in a profile.
Delete	Deletes selected profile.

Information

The current filter is displayed with the ***Show filter*** *control element.*

With a:

- Text filter, the expression **[Txt]** is displayed
- Relative time filter: is displayed as a print-out with the following scheme:
  [T,Rel:%dd,%dh,%dm;%ds]
  Example: [T,Rel:1d,0h,0m,0s] equals one day.

3.1.2 Customize CEL look

The table view of the Chronological Event List can be customized individually:

SCROLL BARS, HEADERS AND GRIDS

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

1. Activate, in the **Representation** group, the **Extended graphical settings** property
2. define the desired properties in groups **Scroll bars** and **Header and grid** for element Chronological Event List in the screen

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

3. The selected graphic for the respective sorting direction is displayed in Runtime for the sorting of relevant columns
4. Clicking on the graphic changes the sorting sequence
5. Clicking on the column title activates the column for sorting

Note: In the case of sorting according to time stamp, entries with the same time stamp are also sorted according to the time of creation.

OPERATING THE HEADER IN RUNTIME

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:

- Moving columns
- Change size
- Changing sorting.

To do this, navigate to **Chronological Event List** group in the settings and select, in the **Header CEL** property, `Operable headers`. Alternatively, you can also switch the header to inoperable or invisible here.

These settings apply for all headers in the project.

> **Information**
>
> *You can prevent the operability and the visibility of the header for each screen of type Chronological Event List by deactivating property **Show header** or **Make header editable** for the tabular view.*

PREVIEW

By activating the **Extended graphical settings** property in the Editor, the header and scroll bars can be previewed. This way, details such as color fill effects, light effects or grids can 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.

3.2 Create a screen of the type CEL Filter

It is possible to adjust filter settings for the Chronological Event List in Runtime with the help of the `Chronological Event List Filter` screen. Only the filter elements that are actually required are configured and provided to the user The appearance can also be freely defined and thus adapted to

different end devices. All filter settings that are also available in the filter (on page 31) for the function to switch the screen to the Chronological Event List screen (on page 99) can be configured.

Therefore:

- Only the filter elements that are actually required are configured and provided to the user
- The user only has these filters displayed and has an overview
- The appearance can be freely defined and can, for example, ensure ease of use by means of a touch screen.

For details of use in the Runtime, see Using the CEL Filter (on page 125) chapter.

For the definition of filter criteria, see Filter screen switch CEL Filter (on page 70) chapter.

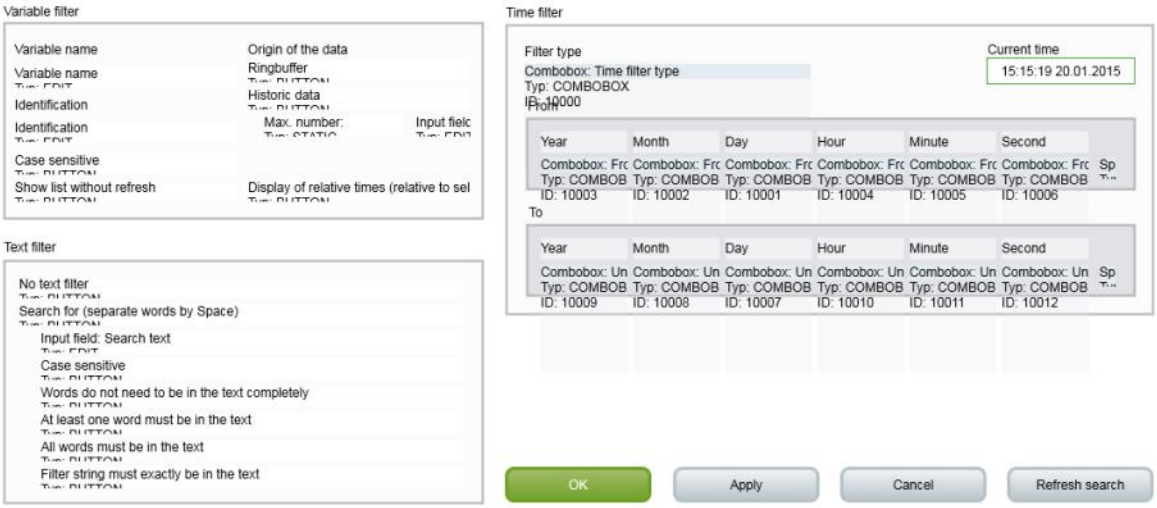
> **Attention**
>
> *Screens of type **Alarm Message List Filter**, **Chronological Event List Filter** and **Time Filter** must be engineered with an own frame. If they use the same frame as other screens, all screens based on this frame are closed when the screen is closed.*

CREATE A SCREEN OF TYPE CHRONOLOGICAL EVENT LIST FILTER

To create a screen of type `Chronological Event List Filter`:

1. Select, in the toolbar or in the context menu of the **Screens** node, the **New Screen** command
2. An standard empty screen is opened
3. Change the screen type in the detail view; to do this:
   a) click on **Standard** in the **Screen type** column
   b) select **Chronological Event List Filter** from the drop-down list
4. select your own frame
   (CEL filter cannot be based on the same frame as other screens)
5. Click in the screen.
6. Select the **Control elements** menu item in the menu bar
7. Click on **Add template** in the drop-down list
8. The dialog for selecting a template is opened
9. select the desired template
10. Select additional elements as required and insert them into the desired place on the screen
11. Name the screen according to the selected filter
    To do this:
    a) Click on the screen name in the detail view in the **name** column
    b) Select a suitable pre-defined name from the drop-down list it give it a name of your own

12. Create a screen switch function in order to be able to call up the screen in Runtime



3.2.1 Control elements

The screen of type `Chronological Event List Filter` can contain the following control and display elements.

Element	Description
Insert template	Opens the dialog for selecting a template for the screen type. Templates are shipped together with zenon and can also be created by the user. Templates add pre-defined control elements to pre-defined locations 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 palced in the screen. Elements can be moved in the screen and placed individually. You can read more about templates for this screen type in the **Templates** (on page 24) chapter.
General filters	Drop-down list of different general filters.
Always display system messages in list	Shows a checkbox in Runtime to display or filter system messages. System messages are messages that do not relate to a variable. Operation in Runtime: ▸ Active: System messages are always displayed in Runtime. This also applies if they are to be filtered out by the text or variable filter. Exception: However system messages are not shown despite the checkbox being activated if they are filtered out by the **time filter** or the filters for **data origin** (ring buffer or historic data). Example: Only messages with the text "XY" are to be displayed. However if the option is active, system messages that do not contain the term are also displayed.
Insert all elements: General filters	Inserts all elements from the area of general filters into pre-defined places. Elements can be arranged individually.
Variable filter	Alarms of which variables are displayed:
▸ **Variable name**	Filter according to names of variables.
▸ **Identification**	Filter according to identification of variables.
▸ **Case sensitive**	Note capitalization when filtering the variables.
Origin of the data	Where does the data come from:

▸ **Ringbuffer**	From the ring buffer (on page 90).
▸ **Historical data**	From an archive.
▸ **Text: Max. number:**	Text for **Maximum number** input field
▸ **Input field: Max. number:**	Input of the maximum alarms to be displayed when historical alarms are displayed. 0: displays all
Runtime settings	
▸ **Show list without refresh**	Switches the AML in stopped state. New alarms are not added.
▸ **Show relative times**	Switches between the normal display and the relative-time display without the entries losing focus. Relative time: All entries are displayed in the time distance to the selected entry. The displayed time is the difference time passed since the selected entry. The selected entry automatically gets the time stamp 0. The other events have a: ▸ positive time difference to the selected entry if they occurred later ▸ negative time difference to the selected entry if they occurred earlier
Alarm/event groups/alarm/event classes/alarm areas	List field for grouped display:
▸ **Alarm/event groups**	Alarm/event groups
▸ **Alarm/event classes**	Alarm/event classes
▸ **Alarm areas**	Alarm areas
Time filter	Drop-down list of different time filters (on page 78).
Insert all elements	Opens drop-down list to select pre-defined elements for certain time periods.
Absolute period of time: classic display	Elements for the absolute time period in classic display.
Absolute period of time: compact display	Elements for the absolute time period in compact display.
Relative period of time	Elements for the relative time period.
Starting from HH:MM:SS	Elements for a time period from a defined time.
Starting from day - HH:MM:SS	Elements for a time period from a defined day at a defined time.
Starting from day, month - HH:MM:SS	Elements for a time period from a defined day in a

	defined month at a defined time.
`Time period: 15/30/60 minutes`	Elements for a time period of 15, 30 or 60 minutes.
`Time period: one day`	Elements for a time period of one day.
`Time period: 1 or 2 weeks`	Elements for a time period over one or two weeks. Each week can be selected, both for the view for a week as as well as for the view for two weeks. With the two-week view, a time period of 14 days is selected, depending on the week selected.
`Time period: one month`	Elements for a time period of one month.
`Time period: one year`	Elements for a time period of one year.
`Insert all elements (Touch)`	Opens the drop-down list to select pre-defined elements for certain time periods, which have been optimized for touch operation. Like **`Insert all elements`**, the following are available: ▸ Absolute period of time: classic display ▸ Relative period of time ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - HH:MM:SS ▸ Time period: 15/30/60 minutes ▸ Time period: one day ▸ Time period: 1 or 2 weeks ▸ Time period: one month ▸ Time period: one year
`Time filter type (label)`	Labeling for time filter type.
`Time filter type (combobox)`	Combobox: Time filter type
`Time filter type (display)`	Field for time filter type display.

Time filter type (radio group)	Radio buttons that show or hide certain elements in Runtime: ▸ No filter ▸ Absolute time filter ▸ Relative time filter ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - HH:MM:SS ▸ Time period 15 minutes ▸ Time period 30 minutes ▸ Time period 60 minutes ▸ Time period 1 day ▸ Time period 1 week ▸ Time period 2 weeks ▸ Time period 1 month ▸ Time period 1 year
Time from	Fields and labeling for stating "from" time. ▸ From year (label) ▸ From year (combobox) ▸ From month (label) ▸ From month (combobox) ▸ From day (label) ▸ From day (combobox) ▸ From hour (label) ▸ From hour (combobox) ▸ From minute (label) ▸ From minute (combobox) ▸ From second (label) ▸ From second (combobox) ▸ From (spin control)

Time to	Fields and labeling for stating "to" time. ▸ To year (label) ▸ To year (combobox) ▸ To month (label) ▸ To month (combobox) ▸ To day (label) ▸ To day (combobox) ▸ To hour (label) ▸ To hour (combobox) ▸ To minute (label) ▸ To minute (combobox) ▸ To second (label) ▸ To second (combobox) ▸ To (spin control)
Time from (Touch)	Fields and labeling for stating "from" time, optimized for touch operation. ▸ From year (label) ▸ From year (combobox) ▸ From month (label) ▸ From month (combobox) ▸ From day (label) ▸ From day (combobox) ▸ From hour (label) ▸ From hour (combobox) ▸ From minute (label) ▸ From minute (combobox) ▸ From second (label) ▸ From second (combobox) ▸ From (spin control)

Time to (Touch)	Fields and labeling for stating "to" time, optimized for touch operation. ▸ To year (label) ▸ To year (combobox) ▸ To month (label) ▸ To month (combobox) ▸ To day (label) ▸ To day (combobox) ▸ To hour (label) ▸ To hour (combobox) ▸ To minute (label) ▸ To minute (combobox) ▸ To second (label) ▸ To second (combobox) ▸ To (spin control)
Filter absolute time	Fields and labeling for stating absolute time filter. ▸ From (label) ▸ From date (calendar display) ▸ From date (date display) ▸ From time (time display) ▸ To (label) ▸ To date (calendar display) ▸ To date (date display) ▸ To time (time display)
Time period	Fields and labeling for stating time periods. ▸ From year (label) ▸ From year (combobox) ▸ From month (label) ▸ From month (combobox) ▸ Week (label) ▸ Week (combobox) ▸ From day (label) ▸ From day (combobox) ▸ Start time (label)

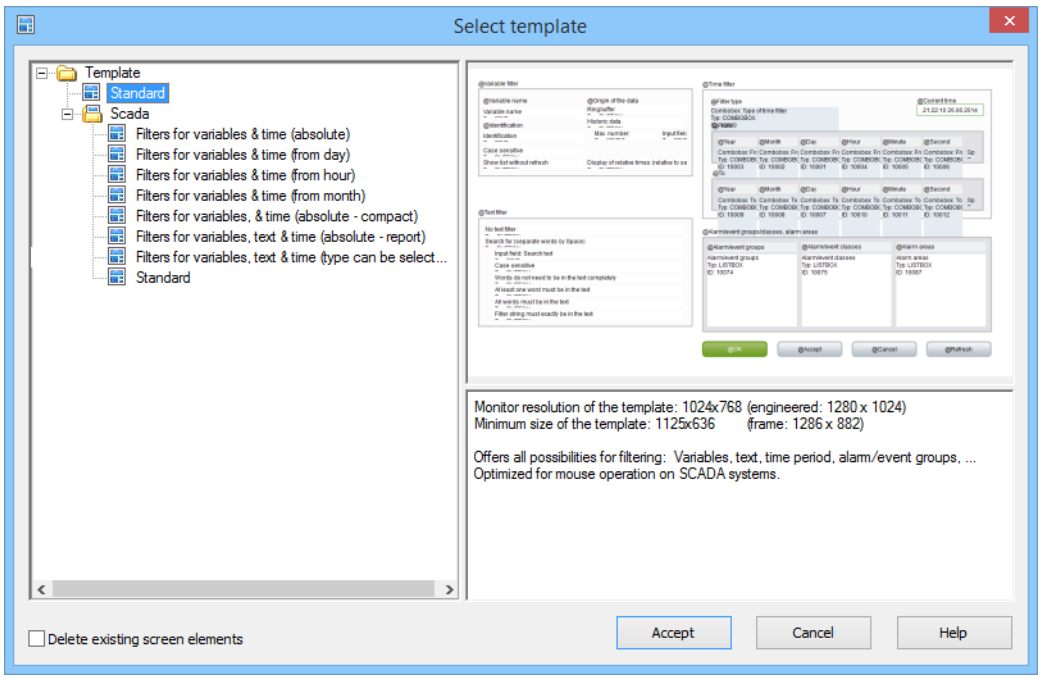
	▸ Start time (combobox)

Time period (Touch)	Fields and labeling for stating "from" time, optimized for touch operation. ▸ From year (label) ▸ From year (up) ▸ From year (touchbox) ▸ From year (down) ▸ From month (label) ▸ From month (up) ▸ From month (touchbox) ▸ From month (down) ▸ Week (label) ▸ Week (up) ▸ Week (touchbox) ▸ Week (down) ▸ From day (label) ▸ From day (up) ▸ From day (touchbox) ▸ Button: From day (down) ▸ Start time (label) ▸ Start time (up) ▸ Start time (touchbox) ▸ Start time button (down)
Lots	Elements for lot selection in Runtime.
Archive list	List of archives available in Runtime.
Archive list status	Status of the archive list with number for: ▸ available ▸ filtered ▸ displayed
Lot list	List of available lots.
Lot list status	Status of the lot list with number for: ▸ available ▸ filtered ▸ displayed
Apply time filter to lot list.	Applies the configured time filter to the selection in the

	lot list.
Lot name filter (Input field)	Entry of a character sequence for filtering the lot names in the lot list.
Lot name filter (Button)	Button to execute filtering for lot names.
Text filter	Drop-down list of different text filters.
Insert all elements: Text filter	Inserts all elements for text filters.
No text filter	Radio button to deselect text filter.
Search for (separate words by Space)	Radio button to activate the search
Text: Search text	Labeling for search field.
Input field: Search text	Field for input of search term.
Options	Search options
▸ `Case sensitive`	Capitalization must be noted.
▸ `Words do not need to be in the text completely`	Fragments can also be searched for.
▸ `At least one word must be in the text`	At least one search term from several must be in the result.
▸ `All words must be in the text`	All search terms must be included in the result.
▸ `Exact filter text must be in the text`	Exact text from the input field must be contained in the result.

OK	Button: Applies the filter settings and closes the screen. Note on faceplates: In faceplates, `AML filter`, `CEL filter` and `time/lot filter` screens can be used. When configuring these in Runtime, clicking on **OK** closes the complete faceplate. If the filter settings are to be saved and the faceplate is to stay open, click on **Accept**.
Cancel	Button: Cancels the configuration of the filter settings.
Apply	Button: Accepts the filter settings.
Refresh search	Button: Updates the filtered display.

3.2.2 Template



Template	Description
List field templates (left)	Displays all pre-defined and user-defined template.
Preview and description (right)	Shows preview and description of the selected template.
Standard	Inserts standard elements.
Scada	Special templates, optimized for mouse operation.
Standard	Inserts standard elements.
Filters for variables, text & time (absolute - compact)	Adds elements for filtering for variables, text and absolute time range in compact form.
Filters for variables, text & time (absolute)	Adds elements for filtering for variables, text and absolute time range.
Filters for variables, text & time (from month)	Adds variables for filtering for variables, text and relative time range `from month`.
Filters for variables, text & time (from hour)	Adds variables for filtering for variables, text and relative time range `from hour`.
Filters for variables, text & time (from day)	Adds variables for filtering for variables, text and relative time range `from day`.
Filters for variables, text & time (absolute - table)	Adds elements for filtering for variables, text and absolute time range.
Filters for variables, text & time (type can be selected)	Adds elements for filtering for variables, text and selectable time range.

CLOSE DIALOG

Parameters	Description
Delete existing screen elements	`Active`: Already existing elements in the screen are deleted when taking over the template.
Apply	Inserts the elements of the selected template in the screen and closes the dialog.
Cancel	Closes dialog without inserting elements.
Help	Opens online help.

3.2.3 Pre-defined names

Pre-defined names are available for time filters.

Attention: The pre-defined names are not available under Windows CE.

To select a name:

1. In the detail view, define as a `time filter`, `chronological event list filter` or `alarm message list filter`
2. Click twice in the name field in the 'Name' column
3. Select the desired pre-defined name from the drop-down.
    - CEL_Filter
    - TIMEFILTER_ABSOLUTE
    - TIMEFILTER_DAY
    - TIMEFILTER_HOUR
    - TIMEFILTER_MONTH
    - TIMEFILTER_PERIOD
    - TIMEFILTER_PERIOD_DAY
    - TIMEFILTER_PERIOD_MINUTE
    - TIMEFILTER_PERIOD_MONTH
    - TIMEFILTER_PERIOD_WEEK
    - TIMEFILTER_PERIOD_YEAR
    - TIMEFILTER_RELATIVE

3.2.4 Filter screens

FILTER SCREENS

Filter screens make it possible to transfer a preset filter from one screen to another. The filter of the source screen is set using the target screen. The screens can also be of a different screen type.

> **Attention**
>
> *In order for the time to be taken from the screen to be called up in Runtime, the following **time range** must be selected in the Editor for the screen switching function for the Alarm Message List or the Chronological Event List in the **`time filter`**: `Set filter at time filter type`*

CALL DEFINITION

The following requirements must be met for the set filters to be used:

1. `Set filter for time filter type` is selected as a **time period** for the time filter.

2. The screen (**`Alarm Message List Filter`**, **`Chronological Event List filter`** or **`Time/Lot Filter`** screen) is activated using a button or a combined element. Only in this way can the relationship between filter screen and source screen be maintained.
3. The source screen and filter screen must be configured on different frames or monitors. The filter for the filter screen can only be updated if the source screen is open. This is only possible if both screens do not use the same frame or the same monitor.
4. The screen to be called up must be compatible with the filter screen to be called up (see table).

Source screen	AML filter	CEL filter	Time filter
Archive revision	T	T	T
Extended Trend	T	T	T
Time filter	T	T	X
Alarm Message List Filter	X	C	T
Chronological Event List Filter	C	X	T
Alarm Message List	X	C	T
Chronological Event List	C	X	T

Key:

- C: Common settings are updated.
- T: Time settings are updated.
- X: All settings are updated.

> **Information**
>
> **No filtering**
>
> *The filter screen is not filtered, but opened with the configured values, if:*
>
> - One of the conditions 1 to 3 is not met or
> - The **Screen to call up** setting is not activated for the **`Screen switching`** function or
> - The screen is not called up via a screen element
>
> *In this case, the **`Accept`**, **`Close`** and **`Update`** buttons are grayed out in Runtime and have no function.*

3.3 Define events for CEL

Which events are logged in the Chronological Event List is defined via:

1. Properties of group **Logging** in node **Chronological Event List** in the project settings
   - **Delete alarms**
   - **Alarm acknowledgement**
   - **Function Set SV**
   - **Send recipes**
   - **Change recipes**
   - **Archive data**
   - **Archive evacuation [h]**
2. Properties of the variables
   - **AML/CEL** in group **Limits**
   - Group **Logging in CEL** in node **Write set value**

LOG SET VALUE CHANGES

Set value changes are possible via different mechanisms. These are logged in the CEL according to the settings and the module.

Parameters	Description
Logging of `set value` write set value	You can define the logging of set value changes for every variable. For this the following options are available at property **Logging** in group **Write set value**: `All`: All changes via dynamic elements and function **`Write set value`** are logged. `Nothing`: Changes are not logged. `Only via dynamic elements:` Logs only write set value via dynamic elements but not via function **`Write set value`**.
Old and new value	With property **Old and new value** you define whether only new or also old values are written in the protocol. This property affects write set value via: ▸ dynamic element ▸ function Write set value ▸ Write set value via VBA
Write set value via VBA	If function **Setting values with VBA** is activated, set value changes via VBA are logged in the CEL.
Standard recipes and Recipegroup Manager	For the standard recipes and the recipegroup manager the logging is controlled via the properties of group **Logging** in node **Chronological Event List**.
PFS/Scheduler	The Production & Facility Scheduler and the Scheduler log all set value changes in the CEL. This setting cannot be changed. Note: Only `new value` is logged. Property **Chronological Event List** is not considered.

3.3.1 Check write set value

When writing values, the value receives a status bit that is has been written. If the writting process is successful, the corresponding status bit is set:

- WR-ACK

  The driver received a value for writing.

- WR-SUC

  Value `1`: Writing successful.

  Value `0`: Writing not successful. The value could not be written.

> **Information**
>
> *In case of reload or Server-Standby switch, the currently active responses or writing affirmations are discarded.*

This status combination are active until the next value change is triggered. Then both states are set to `0` until the writing action is finished. For evaluation the following bit combination must be requested in the reaction matrix:

`WR-ACK, WR-SUC`

Result:

- WR-ACK `1`, WR-SUC `1`: Writing action successful.
- WR-ACK `1`, WR-SUC `0`: Writing action not successful.

> **Attention**
>
> *The mechanism only shows, that the writing action was successful (or not successful) to the PLC. This does not mean, that the value has indeed been changed in the PLC, since the PLC can reset/overwrite the value immediately. (For example for writing the outputs or the transient bits which are only set for a short time.)*

MODULES

This mechanism can be used in the following modules:

- function **`Write set value`**: Activate option **Wait for writing confirmation** in the configuration dialog of the function.
- **`Standard recipes`**: Activate property **Write synchronously**.
- **`Recipegroup Manager:`** Activate property **Write synchronously**.
- Command Processing

ENTRY IN CEL

- Function Write set value

  For the entry in the CEL you must activate property **Function Set SV** in node **Chronological Event List** in the project settings. After this the positive or negative response the execution of the function is written to the CEL.

- Standard recipes and Recipegroup Manager

  For the entry in the CEL a system driver variable is used which is set to `1` when a recipe is written successfully. A global variable is evaluated on the Server, a local variable on every Client in order to determine when the recipe executed last was written completely.

With this variables a CEL entry can be created via limit or reaction matrix. The query is carried out via a multi analog or a multi binary reaction matrix.

3.3.2 Length static limit text CEL

Via property **Length static limit texts CEL** you define how many characters may be used for the message text in the CEL. For each CEL file the allowed number of characters of the message texts is saved in the header. The change of this property take effect when a new CEL file is created.

Note: With dBase export the length is restricted to 254 characters.

CEL.BIN AND NETWORK

In file CEL.BIN message texts are saved as variables with variable length and are transferred as such in the network. This means that CEL entries from the ring buffer are not limited in the length independent of property **Length static limit texts CEL**.

3.4 CEL engineering via filter

You can engineer the display of the events in the Runtime via filters. For this you have several possibilities:

1. Define information which is displayed in the CEL in the Runtime:
   With this you define what information is displayed together with an event.
   For details see: Column settings for Chronological Event List (on page 32)
2. Filter event for CEL at call up and modify in the Runtime:
   With this you define filter and give the operator at the machine the possibility to create own filters.
   For details see: Filters for screen switch CEL (on page 35).
3. Fixed filters for the Runtime:
   With this you create filters which are tailor-made for the actual use and hide unnecessary filter criteria.
   For details see: Filters for screen switch CEL filter (on page 70).

3.4.1 Column settings for Chronological Event List

You define the information that is displayed and also exported in the CEL in Runtime in the column settings. You configure these in the properties of the Chronological Event List in the project:

1. Open the **Chronological Event List** node in project settings.
2. Click on the **Column settings CEL** property.
3. The dialog for the **column setting** is opened.
4. Configure the desired columns.
   Note: When configuring the screen switching, this configuration is accepted by default and can be individually adapted in the column settings (on page 61) tab.
5. Note: For calculating the column width the average character width of the selected font is used.

Information

In project settings, you can set a default setting for the sequence and size of columns using the ***Column settings AML*** *property or the* ***Column settings CEL*** *property. If you create a new screen switching function from an Alarm Message List screen or Chronological Event List screen, this setting is used as a default and can be amended in the corresponding tab. The setting is stored in the* ***project.ini*** *file.*

COLUMN CONFIGURATION

Parameters	Description
Columns	In the list field of this tab all available column types are displayed. You can change the sequence of column types by dragging & dropping in the list field: ▸ Click in the **Column type** column ▸ Move the individual entries as desired Alternatively, you can adjust the sequence with the **Move selected entry up** and **Move selected entry down**.
▸ **Checkbox:**	Select which column types are displayed.
▸ **Description:**	Free text entry for a description of the column. Change description: left-click on the corresponding area. Enter the desired value in the editing field. Note: for column descriptions, zenon language switching is available.
▸ **Column width:**	Defines the width of the column in characters. Change column width: left-click on the corresponding area. Enter the desired value in the editing field. `-1` Width is calculated in Runtime using average character width Note: For compatibility reasons, the columns with widths that could not be changed in earlier zenon versions (date and time), have the value `-1`.
▸ **Display:**	For column types ▸ **Alarm/event class symbol** ▸ **Alarm/event group symbol** ▸ **Alarm status** Actual form of display can be selected in Runtime. Select the desired form from the drop-down list.
Move selected entry up	Moves selected entry up one place.
Move selected entry down	Moves selected entry down one place.

Preview field	Displays the columns defined in the list field in the width displayed there. You can also adjust the column widths here by left clicking on the right end of a column, holding down the mouse button and moving the mouse to the left or right accordingly.
Table settings	
Sort descending	Sorts the entries in the list according to the **Time received** column in decreasing order. These setting apply for showing a screen. You can change the sorting order in Runtime by clicking on the column header. The sorting sequence currently being used is shown by an arrow on the column header.
Display grid	shows a grid when the list is displayed in Runtime.
Use alternating background colors	Uses **line color 1** and **line color 2** alternately as background colors for the list in Runtime.
Row color 1	Color that is used as a background color in in the list Runtime for all uneven numbers (1, 3, 5 etc.), if you have activated **Alternating Background Colors**.
Row color 2	Color that is used as a background color in in the list Runtime for all even numbers (2, 4, 6 etc.), if you have activated **Alternating Background Colors**.
Display in the time columns	
Time	Displays the time for a list entry in the following form: HH:MM:SS
Date	Displays the date for a list entry in the following form: TT:MM:YYYY
Milliseconds	Expands the time entry by milliseconds. Note: Must be activated if milliseconds are to be provided in exports or print-outs.

Hint: If you activate the automatic keyboard in Runtime, it is turned on when an editing field appears. You can also use this to configure the columns if you are using a computer without a keyboard.

Attention

The column width is given in characters and is dependent on the font used. If the column width is not a multiple of the character width of the used font, the actual column width can differ from the set column width. This can result in the text being cut of or an empty space being created.

Solution: Use proportional fonts, such as 'Courier New', for example.

3.4.2 Filters for screen switch CEL

With filters you define which events should be displayed in the Runtime and which should be hidden. Filters can be defined in the editor and - depending on the requirements in the Editor - in Runtime.

To tailer the filter selection in the Runtime to the needs of the operator, use screen of type Chronological Event List Filter (on page 12) instead of Chronological Event List (on page 7).

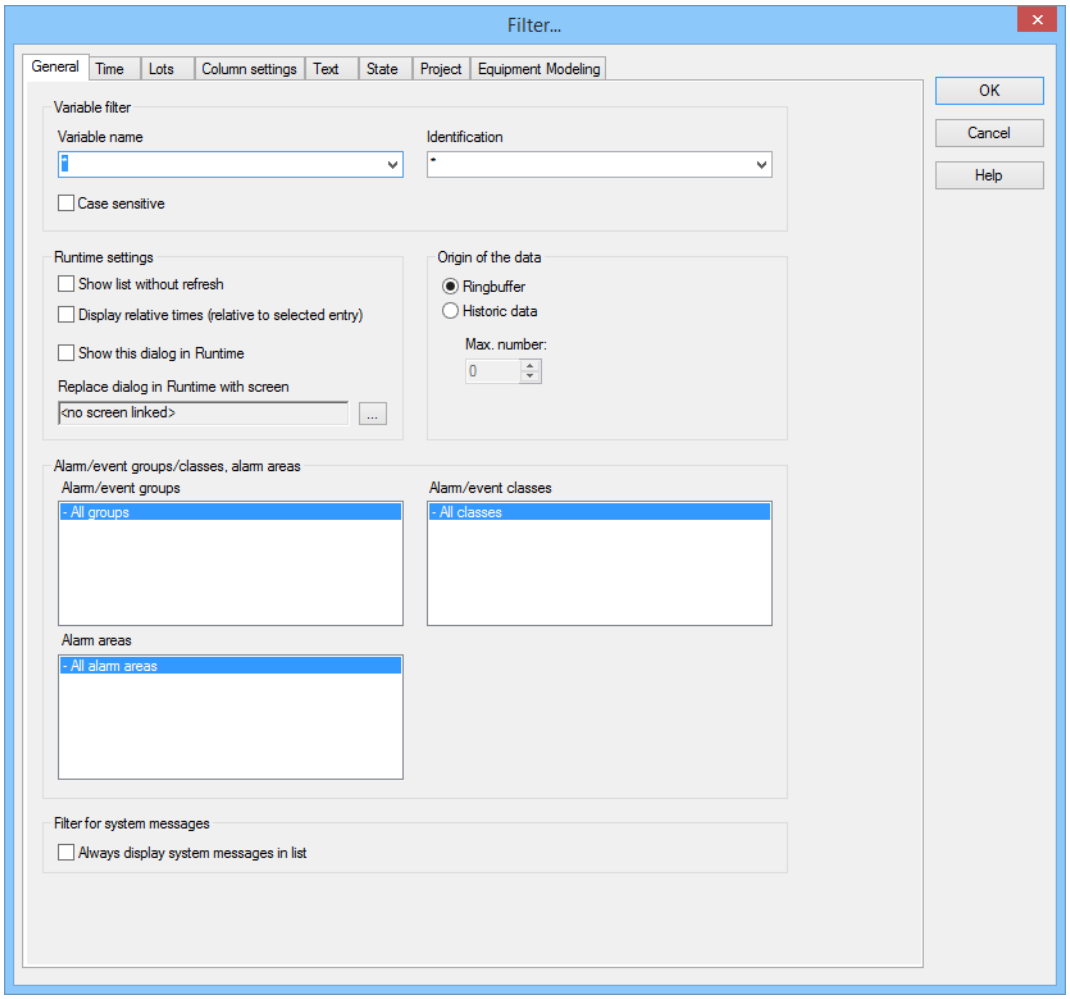
To create a screen switch to a screen of type Chronological Event List:

1. engineer a function screen switch to a screen of type Chronological Event List
2. the filter dialog is opened and offers several tabs with filter criteria:
    - General (on page 36)
    - Time (on page 41)
    - Lots (on page 55)
    - Column settings (on page 61)
    - Text (on page 65)
    - Status (on page 67)
    - Project (on page 68) (only available in the integration project of the multi-project administration.)
    - Equipment Modeling (on page 68)

If linked variables or indexes are available, the following tabs can be displayed as an option.

- Replace links
- Replace indices

For details see in chapter **Screens** sections **Replace links of variables and functions** and **symbols**.

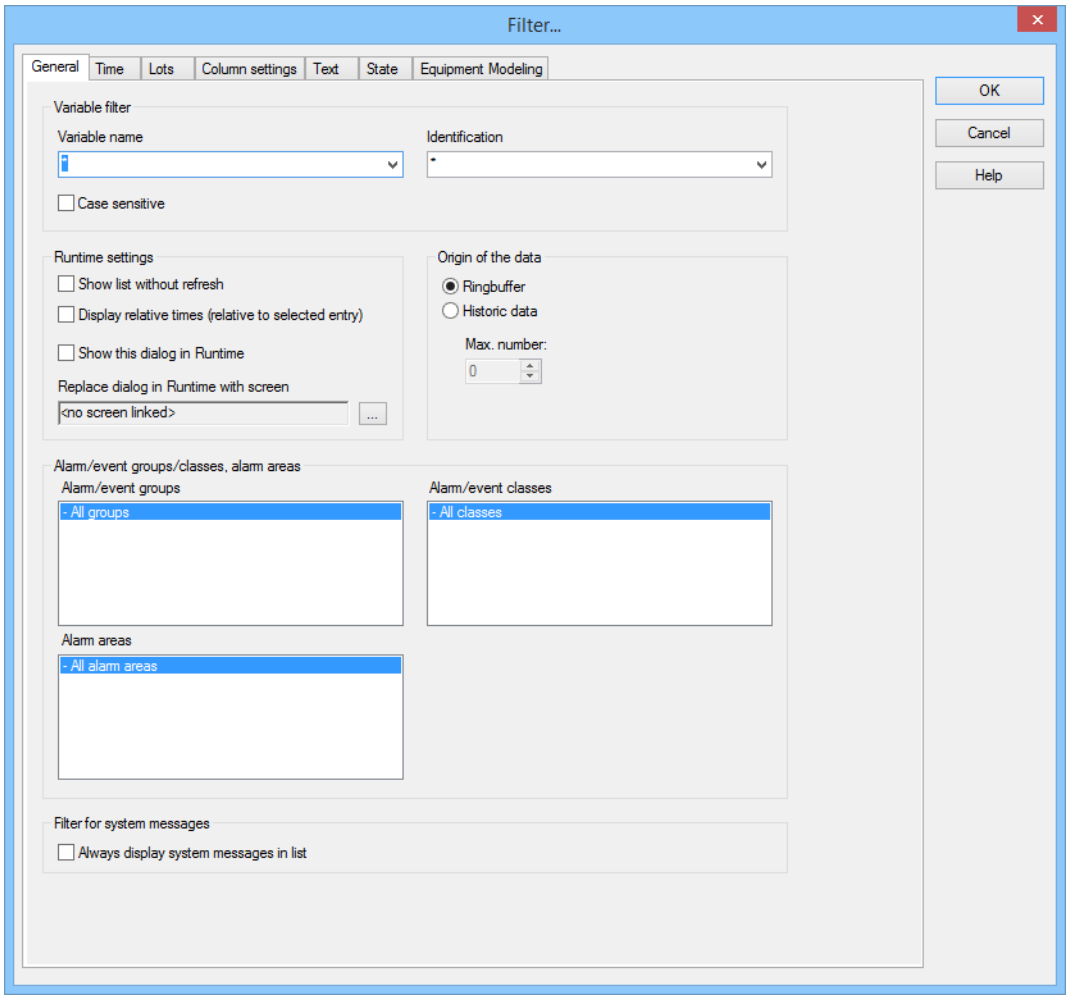


General

With the general filter you define which events are displayed and what kind of access you have to the settings in the Runtime. To this you differentiate events according to:

- Type
- Origin of the data
- Variables
- Alarm/event groups, classes and alarm areas

The following properties are available:



VARIABLE FILTER

Parameters	Description
Variable filter	Restrictions to events of certain variables
Variable name	Enter the name or part of the name of the variable you want to filter. Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. ***xxx** or **xxx***. Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in **zenon6.ini** and are available for selection in the drop-down list.
Identification	Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible. Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. ***xxx** or **xxx***. Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in **zenon6.ini** and are available for selection in the drop-down list.
Case sensitive	Active: Capitalization is recognized when filtering for variable name and/or identification.

RUNTIME SETTINGS

Parameters	Description
Runtime settings	Behavior of the CEL in the Runtime
Show list without refresh	Active: As long as the list is displayed no new entries are added. (Not available for function **Export CEL** (on page 104).)
Display relative time	All entries are displayed in the time distance to the selected entry. The displayed time is the difference time passed since the selected entry. The selected entry automatically gets the time stamp 0. The other events have a: ▸ positive time difference to the selected entry if they occurred later ▸ negative time difference to the selected entry if they occurred earlier
Show this dialog in the Runtime	Active: Before every call of the screen the filter dialog is opened. The filter settings can be modified. This option is not available with Windows CE. 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. Notes for time range filters: **Show this dialog in the Runtime**`active`: ▸ 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-concluded time period is always used. **Show this dialog in the Runtime**`not active`: ▸ **Use last finished time range**`active`: The last-concluded time period is used ▸ **Use last finished time range**`not active`: The current time period is used.
Replace dialog in Runtime with screen	Definition of a screen that is to be switched in Runtime instead of the dialog if the **Offer this dialog in Runtime** option is active. Only screens of the type `CEL Filter` or `Time filter` will be offered. Click the `...` button and a dialog opens to select a screen. If the linked screen is not found in Runtime, a search is made for corresponding screens with specific names.
Origin of the data	Display current or current and historical events.
Ringbuffer	`Active`: Only data from the ring buffer (on page 90) are displayed.
Historical data **Maximum number**	`Active`: Data from the ring buffer and historical data from the CEL are displayed. The maximum number of the data which should be displayed includes the data from the ring buffer.

ALARM/EVENT GROUPS/CLASSES AND ALARM AREAS

Parameters	Description
Alarm/event groups/classes, alarm areas	Selection of groups, classes and alarm area.
Alarm/event groups	From the existing alarm/event groups select the one from which alarms should be displayed.
Alarm/event classes	From the existing alarm/event classes select the one from which alarms should be displayed.

Alarm areas	From the existing alarm areas select the one from which alarms should be displayed.

FILTER FOR SYSTEM MESSAGES

Parameters	Description
`Filter for system messages`	Filter settings for system messages. System messages are messages that do not relate to a variable.
Exclude system messages from filter	Setting for the display of system messages regardless of the filter settings. - `Active`: System messages are always displayed in Runtime. This also applies if they are to be filtered out by the text or variable filter. Exception: However system messages are not shown despite the checkbox being activated if they are filtered out by the **time filter** or the filters for **data origin** (`ring buffer` or `historic data`). Example: Only messages with the text "XY" are to be displayed. However if the option is active, system messages that do not contain the term are also displayed.

CLOSE DIALOG

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

Attention

*Concerns zenon under Windows CE: CE systems on which the filter dialog should be displayed must have a screen resolution higher than 800*600 pixel for the dialog to be displayed completely.*

Time

Time filters make it possible to limit the data to be displayed or exported. The time filters are very flexible to implement and can be pre-set in the editor or adjusted in Runtime.

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

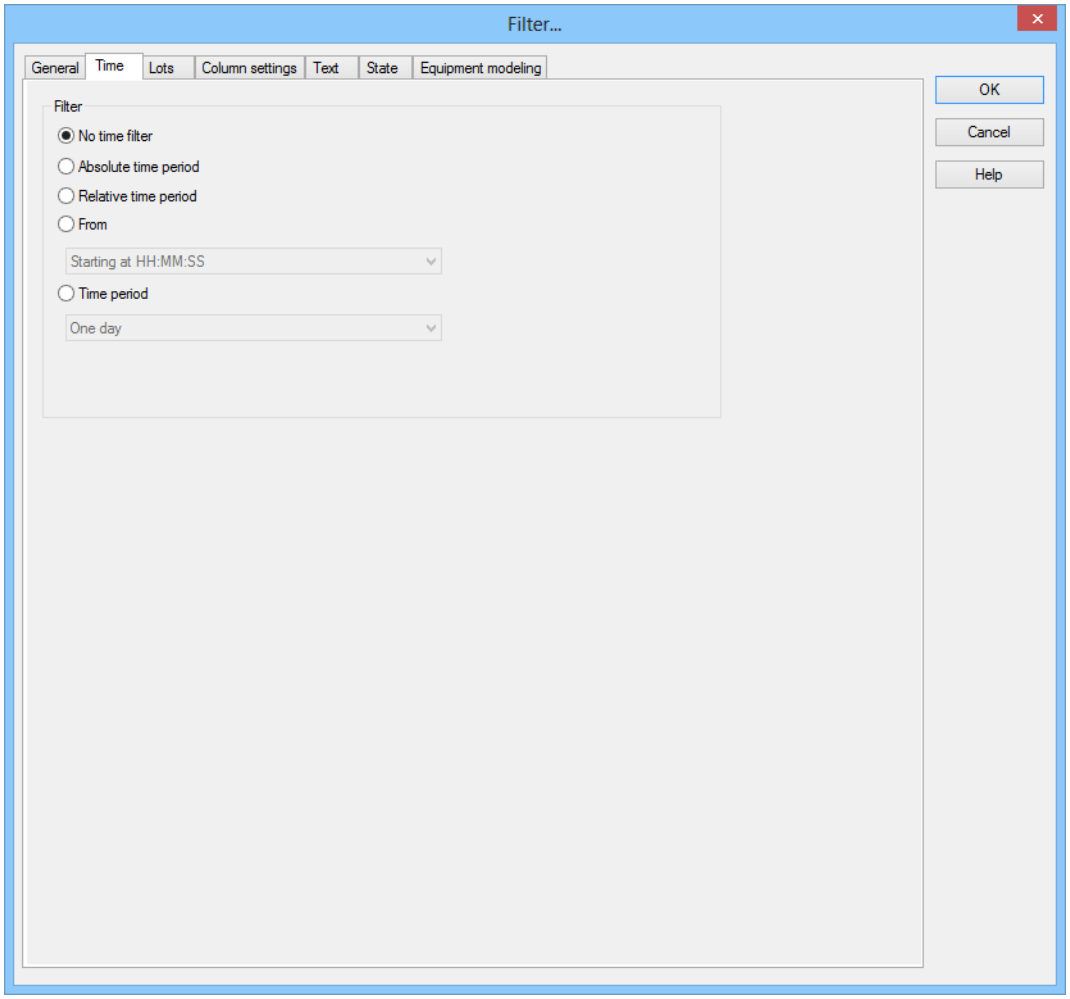
Time filters can be pre-set in both the Editor and in Runtime for:

- Absolute period of time (on page 44)
- Relative period of time (on page 46)
- From (on page 48)
- Time period (on page 51)

Time filtering can be carried out in two ways:

1. Define time period in the Editor (on page 53)
   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 amendable in Runtime (on page 54)
   Pre-defined times are used. The time filter is defined in the Editor and can be changed in Runtime as desired.

TIME FILTER


Filter...
General
Time
Lots
Column settings
Text
State
Equipment modeling
Filter
No time filter
Absolute time period
Relative time period
From
Starting at HH:MM:SS
Time period
One day
OK
Cancel
Help

FILTER

Selection of the filter.

Parameters	Description
No time filter	`Active`: No time filter is used. Note: all Runtime entries since 1. 1. 1990 are displayed.
Absolute filter	`Active`: A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used. In the settings section, the corresponding options can be shown and configured there. Note: Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
Relative period of time	`Active`: A relative time period is entered. In the settings section, the corresponding options can be shown and configured there. Attention: this filter is constantly updated.
From	`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. Selection of the area mode from drop-down list: ▸ From HH:MM:SS o'clock ▸ From day - HH:MM:SS o'clock ▸ Starting on day, month at HH:MM:SS In the settings section, the corresponding options can be shown and configured there. Attention: The start point of this filter is not updated automatically. Only the existing times are used when shown. The end time point is not defined with this filter, it is carried over.
Time period	`Active`: A fixed time period is entered. Selection of the area mode from drop-down list: ▸ One day ▸ One week ▸ Two weeks ▸ One month ▸ One Year ▸ 15 minutes ▸ 30 minutes ▸ 60 minutes

	In the settings section, the corresponding options can be shown and configured there.

CLOSE DIALOG

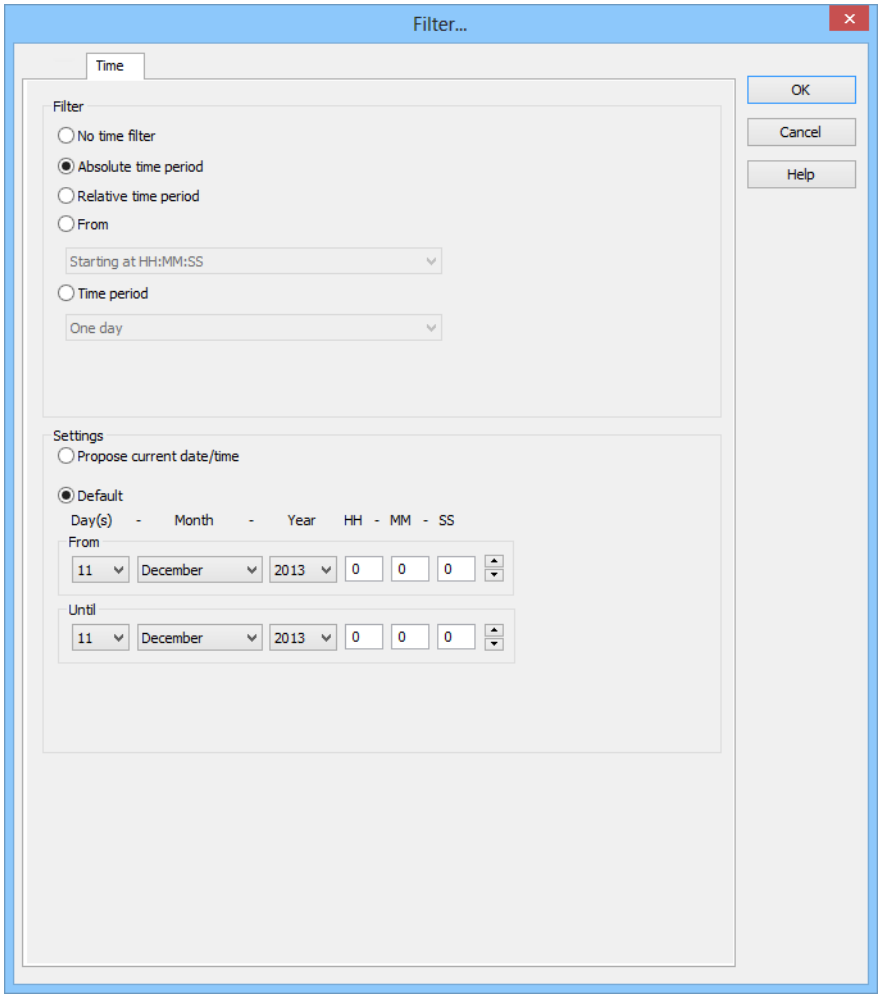
Parameters	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Absolute period of time

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



Parameters	Description
Settings	Configuration of the time filter.
Propose current date/time	Active: Time filter is displayed in Runtime.
Preset	Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime.
From	Start time of the filter. Selection of day, month, year, hour, minute and second
To	End time of the filter. Selection of day, month, year, hour, minute and second

CLOSE DIALOG

Parameters	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

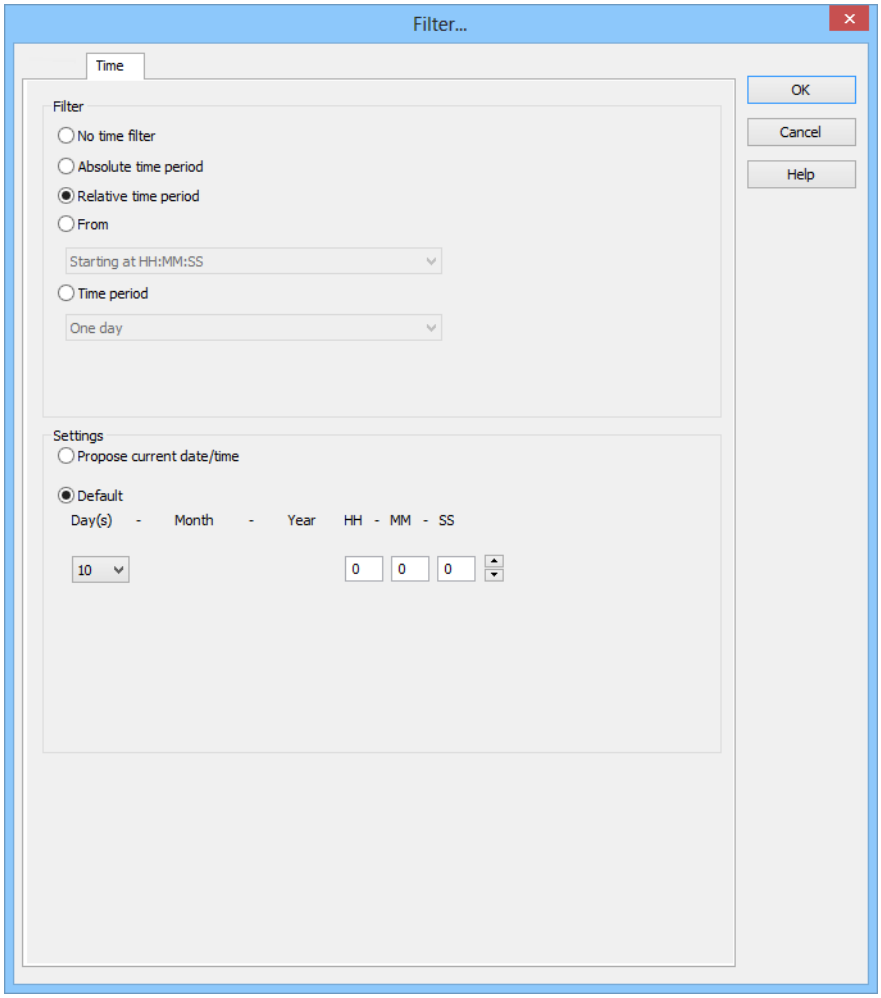
A relative time period is entered.

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



Parameters	Description
Settings	Configuration of the time filter.
Propose current date/time	Active: Time filter is displayed in Runtime.
Preset	Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime. Selection of the relative time period in days, hours, minutes and seconds.

CLOSE DIALOG

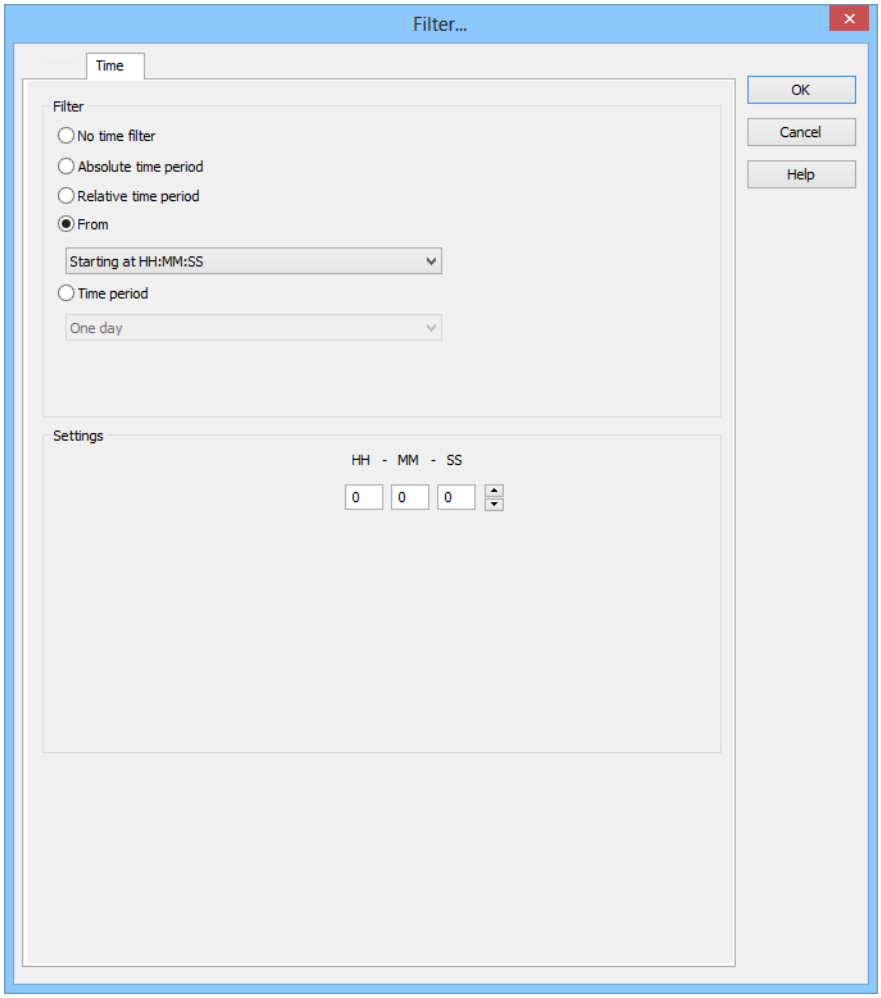
Parameters	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

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.
   - From HH:MM:SS o'clock
   - From day - HH:MM:SS o'clock
   - Starting on day, month at HH:MM:SS

3. Configure the desired time in the **Settings** section



Parameters	Description
Settings	Configuration of the time filter.
[Date/Time]	Depending on the settings of the **Off** option, the time from which the filter is effective is configured here: ▸ Starting from HH:MM:SS ▸ Starting from day - HH:MM:SS ▸ Starting from day, month - HH:MM:SS 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.
▸ Starting from HH:MM:SS	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. 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.
▸ Starting from day - HH:MM:SS	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. 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.
▸ Starting from day, month - HH:MM:SS	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. 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.

CLOSE DIALOG

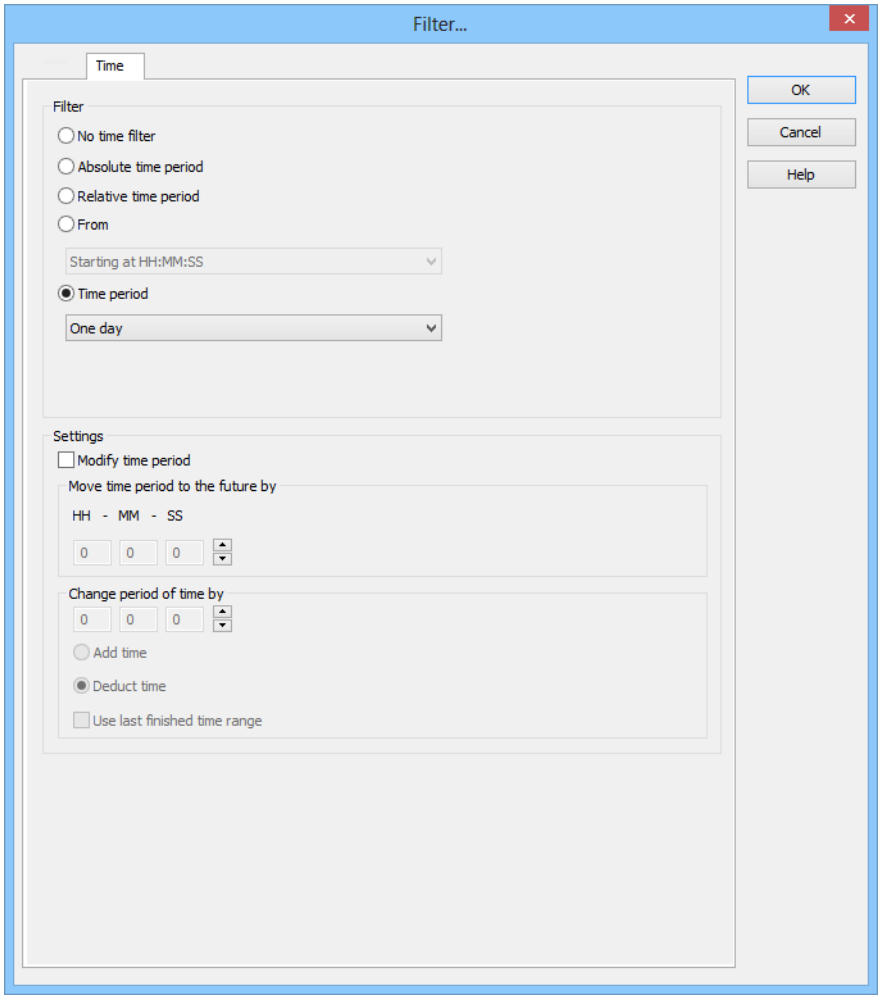
Parameters	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

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



Parameters	Description
Settings	Configuration of the time filter.
Time period	Selection of a time range from a drop-down list. Filtering for this time range is carried out in Runtime. The filter relates to the time of screen switching. For example: The value `60 minutes` shows all archives of the last hour. If this dialog is offered in Runtime, the start time of the time range can be selected.
Modify time period	Allows amendments to cycles, postponements and extensions of time periods. `Active`: Evaluation is carried out in accordance with the following rules: ▶ 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. `Inactive`: No changes to the time period are made. Attention: With version 7.10, filter actions on the basis of this function led to different results than those in the versions before.
Move time period to the future by	`Active`: The time period defined in the filter is postponed to the future. Given in `hours - minutes - seconds`. If a postponement that is the same or greater than the selected **time period** is set, a note to check the configuration is displayed.
Change period of time by	`Active`: The time period defined in the filter is modified. Given in `hours - minutes - seconds`. 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.
Add time	`Active`: The time stated in **Change time period by** is added to the time defined in the **Time range** option.
Deduct time	`Active`: The time stated in **Change time period by** is deducted from the time defined in the **Time range** option.
Use last finished time period	`Active`: The last finished time period is used.

CLOSE DIALOG

Parameters	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.

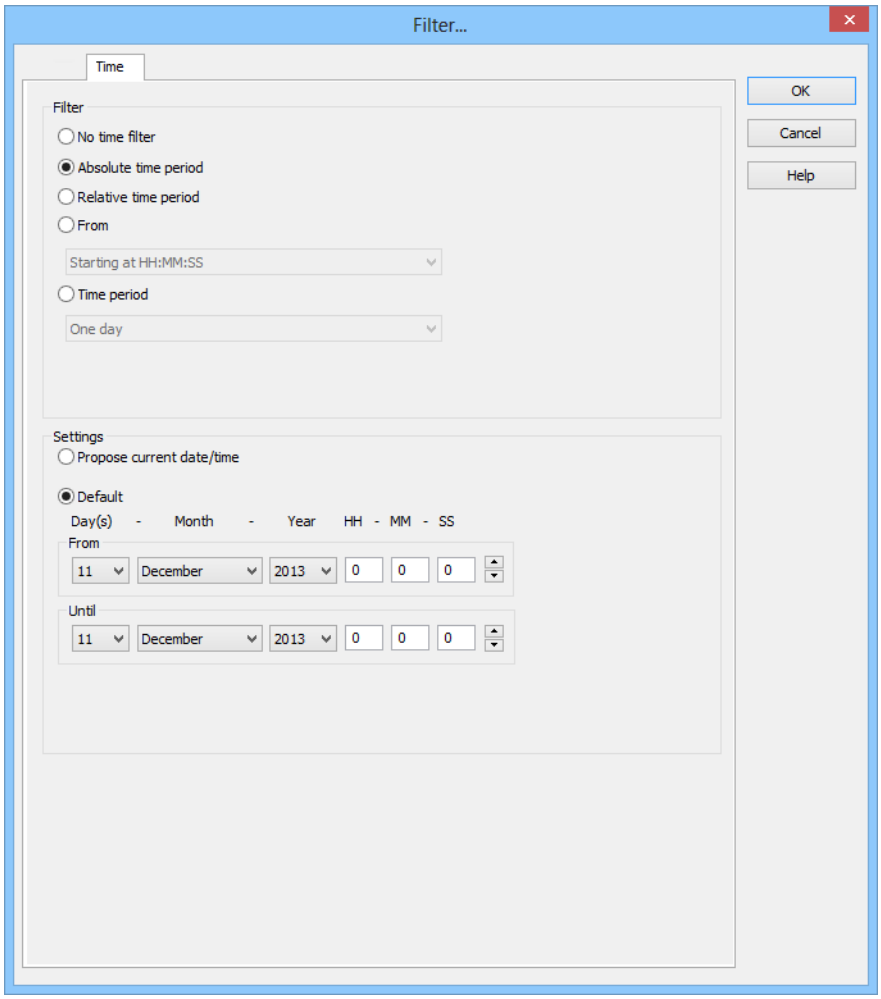
For example: You set a 30 minute time filter. In Runtime, you can now only set when this 30 minute time period is to start. However, you cannot change the filter to a day filter.

> **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 `Offer 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.

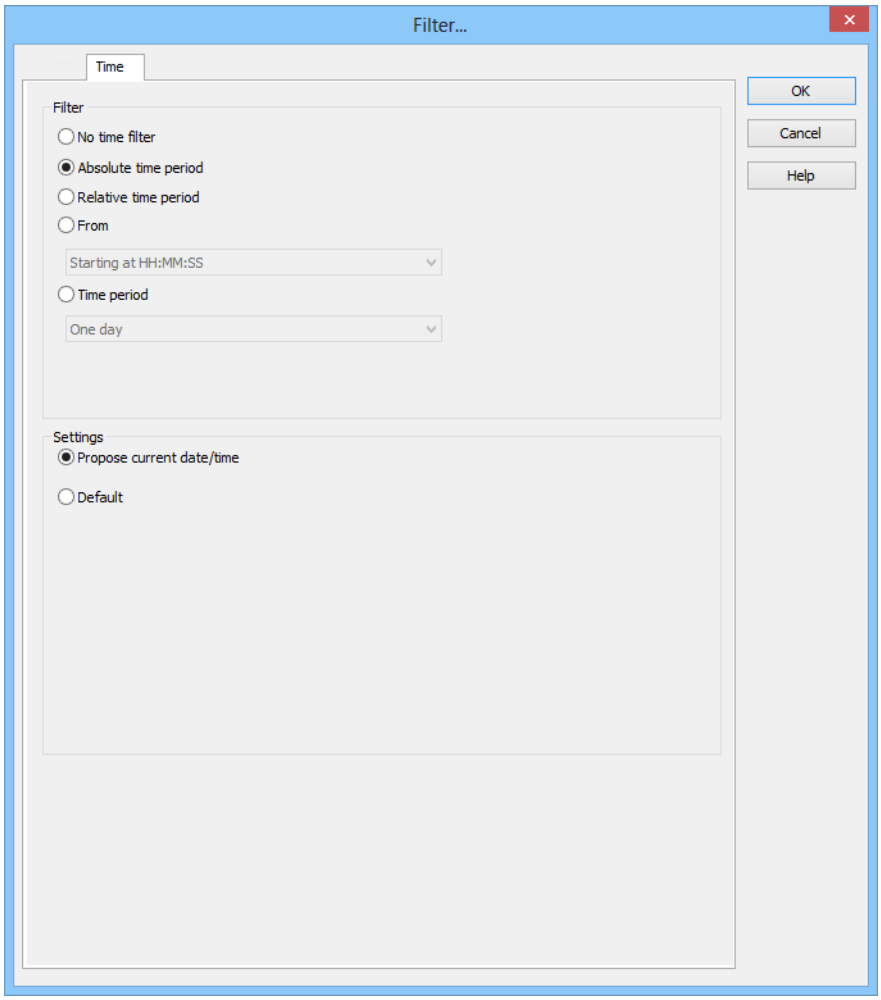
Time filter can be configured in Runtime

With this method, you stipulate a time filter in the Editor. This can be amended in Runtime before execution. To create the filter:

1. The screen must have **`Filter`** and **`Display filter`** buttons
2. select the desired filter:

- Absolute period of time
- Relative period of time

3. Select, in the Settings section, the option **`Propose current date/time`**
4. The filter dialog is opened in Runtime with the current date and time

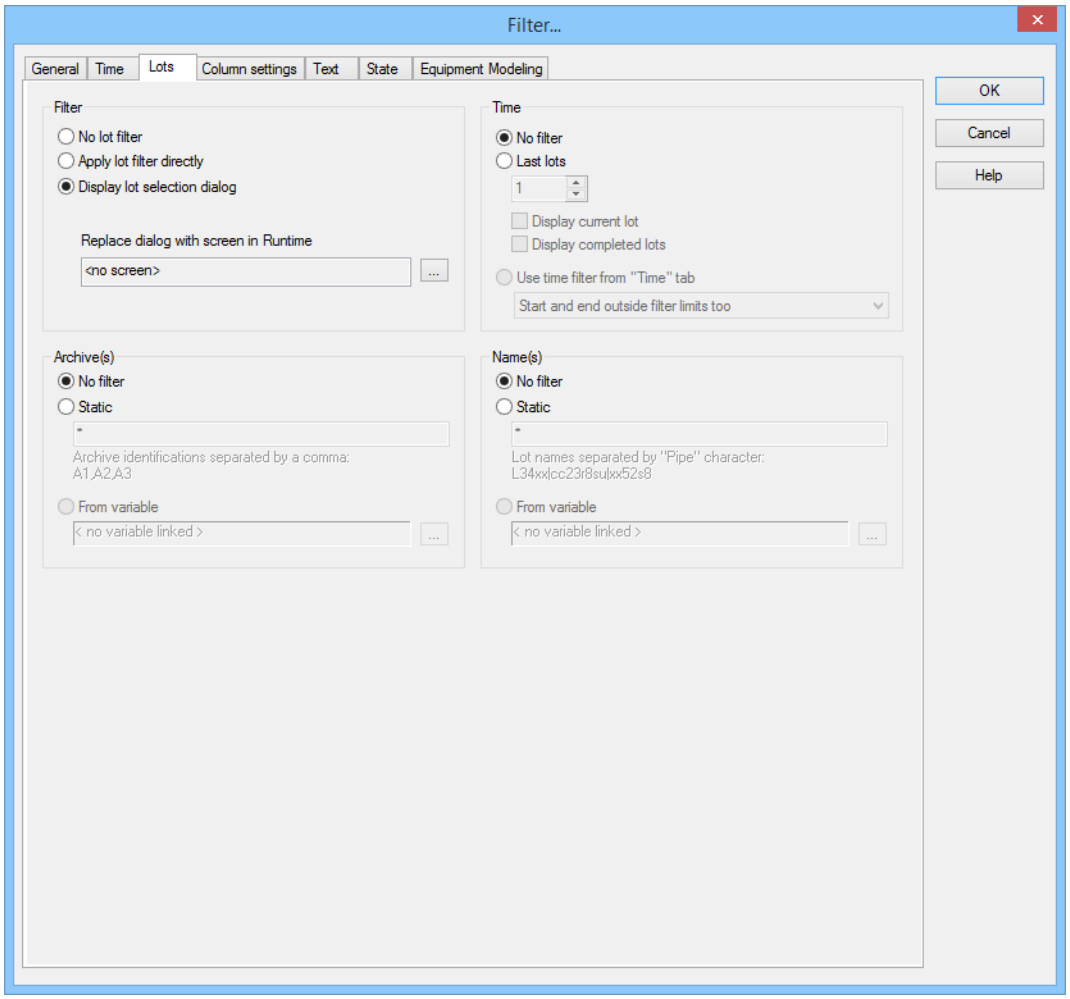


Lots

You configure the limitation of the display to certain lots in this tab.

The lot information is also applied to the existing CEL filter. If the lot filter is activated, a list of all configured lots that correspond to the configured time period is obtained from the archive server in Runtime in advance when the CEL is loaded.

Attention: All variables and archives that belong to an item of equipment and the lot archive must be linked to the same equipment in the equipment model.



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**

Parameters	Description
No lot filter	`Active`: The lot filter is deactivated and cannot be configured. Filtering for lots is not carried out in Runtime.
Apply lot filter directly	`Active`: The filter configured here is applied in Runtime directly.
Display lot selection dialog	`Active`: The dialog for lot selection is shown in Runtime when: ▸ Clicking on **`Filter`** or ▸ screen switching, if the **Offer this dialog in Runtime** option has been activated (not available for each function/screen type) Note: The dialog is not shown on reloading. Options can be pre-selected in the Editor.
Replace dialog in Runtime with screen	Not available if the **Show lot selection dialog** option has been selected. Definition of a screen that is to be called up in Runtime instead of the **lot selection dialog**. Only `time/lot filter` screens are offered. Click the `...` button and the dialog opens to select a screen. If the linked screen is not found in Runtime, a search is made for corresponding screens with specific names.
Relative lot selection	Only available for **`Extended Trend`** and **`faceplates`** and only if the option **Display lot selection dialog** has been activated. The **Windows CE project** property must be deactivated in the project properties. ▸ `Active`: Enables several lots to be compared directly. Display always starts from the zero point.

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**

Parameters	Description
No filter	`Active`: The time range set in the **`Time`** tab is not taken into account. All completed and current lots are displayed.
Last lots	`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 cursor keys. The option allows the combination of both options **Display current lots** and **Display completed lots**. Example: 3 lots are to be displayed, 2 are running and 10 have been completed. The following is shown: the two that are current and one that has been completed. Attention: At least one of the two options **Display current lots** or **Display completed lots** must be activated. If both options have been deactivated, this corresponds to the **No filter** setting. Note on compatibility: If the current lots or the combination of current and completed lots are selected and the project is compiled for a version before 7.11, the completed lots are shown in Runtime.
Display current lots	`Active`: The current lots are displayed. Note: If the number of lots to be displayed is greater than the number of current lots, lots that have been completed are also shown until the set limit has been reached. Example: 3 lots are to be displayed. 1 lot is running, 5 have been completed. The one current lot and two completed lots are displayed.
Display completed lots	`Active`: The completed lots are displayed. 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.
Use time filter from "Time" tab	`Active`: Pre-filtering is carried out with the settings of the **`Time`** tab. The effective range of the filter can be amended within this time range. Select from drop-down list: ▸ `Start and end also outside filter limits`: (Default) Lots can start before the start time configured in the **`Time`** filter and end after the configured end time. ▸ `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.

ARCHIVES

Configuration of filtering for archives. Selection of one of the options:

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

Note: Only available for the following modules if the **Apply lot filter directly** option has been selected:

- Archive revision
- ETM
- Report Generator
- Report Viewer

Parameters	Description
No filter	`Active`: Filtering for archive names is not carried out.
Static	`Active`: Archives whose identification corresponds to the character string entered in the input field are filtered for. Input of the archive identifications in the input field: ▸ Several identifications are separated by a comma (,). ▸ * or empty: All archives, no filter.
From variable	`Active`: The value of the variables linked here is applied as a filter for archive names in Runtime. Click on button `...` in order to open the dialog for selecting a variable. Only available for all modules if the **Apply lot filter directly** option has been selected: Notes for variables in Runtime: ▸ 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. 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.

NAMES

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

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

Parameters	Description
No filter	`Active`: Filtering for lot names is not carried out.
Static	`Active`: Lot names that correspond to the character string entered in the input field are filtered for. Input of the lot name in the input field: ▸ Several entries are separated by a pipe character (`|`). ▸ `*` or empty: All lots of all displayed archives, no filter.
From variable	`Active`: The value of the variable linked here is applied as a filter for lot names in Runtime. Click on the `...` button to open the dialog for selecting a variable. Not available if the option **Apply lot filter directly** has been selected. Notes for variables in Runtime: ▸ 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. 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.

CLOSE DIALOG

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

Column settings

In this dialog, you define which columns you want to have displayed, including the form, sequence and sorting.

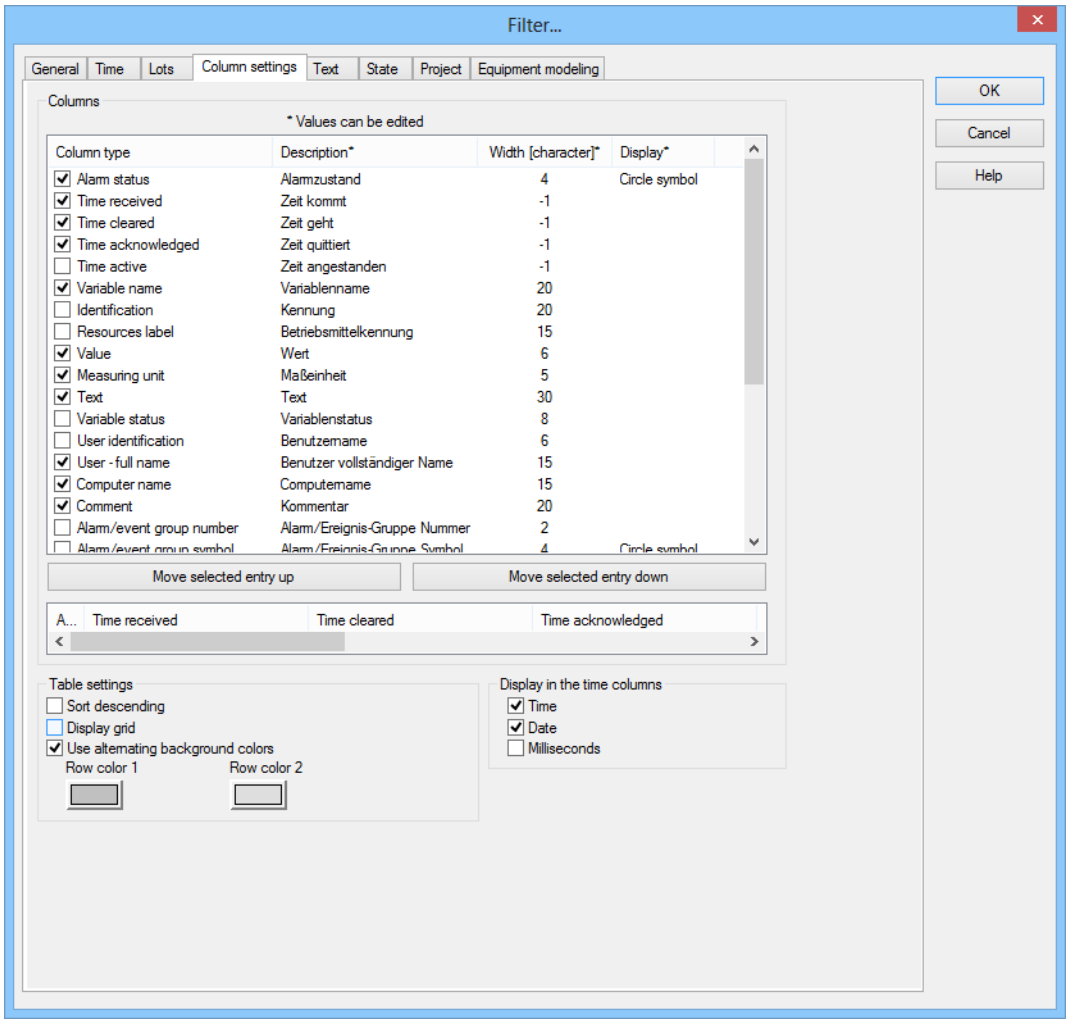
Note: All settings which you make in this tab are default settings for:

- Chronological Event List screen
- Chronological Event List Filter screen
- Export (on page 104) to CSV, dBase or XML

These default settings can be changed when defining the individual CEL functions.

Information

In project settings, you can set a default setting for the sequence and size of columns using the ***Column settings AML*** *property or the* ***Column settings CEL*** *property. If you create a new screen switching function from an Alarm Message List screen or Chronological Event List screen, this setting is used as a default and can be amended in the corresponding tab. The setting is stored in the* `project.ini` *file.*



Columns Parameters	Description
Columns	In the list field of this tab all available column types are displayed. You can change the sequence of column types by dragging & dropping in the list field: ▸ Click in the **Column type** column ▸ Move the individual entries as desired Alternatively, you can adjust the sequence with the **Move selected entry up** and **Move selected entry down**.
▸ **Checkbox:**	Select which column types are displayed.
▸ **Description:**	Free text entry for a description of the column. Change description: left-click on the corresponding area. Enter the desired value in the editing field. Note: for column descriptions, zenon language switching is available.
▸ **Column width:**	Defines the width of the column in characters. Change column width: left-click on the corresponding area. Enter the desired value in the editing field. `-1` Width is calculated in Runtime using average character width Note: For compatibility reasons, the columns with widths that could not be changed in earlier zenon versions (date and time), have the value `-1`.
▸ **Display:**	For column types ▸ **Alarm/event class symbol** ▸ **Alarm/event group symbol** ▸ **Alarm status** Actual form of display can be selected in Runtime. Select the desired form from the drop-down list.
Move selected entry up	Moves selected entry up one place.
Move selected entry down	Moves selected entry down one place.
Preview field	Displays the columns defined in the list field in the width displayed there. You can also adjust the column widths here by left clicking on the right end of a column, holding down the mouse button and moving the mouse to the left or right accordingly.
Table settings	
Sort descending	Sorts the entries in the list according to the **Time received** column in decreasing order. These setting apply for showing a screen. You can change the sorting order in Runtime by clicking on the

	column header. The sorting sequence currently being used is shown by an arrow on the column header.
Display grid	shows a grid when the list is displayed in Runtime.
Use alternating background colors	Uses **line color 1** and **line color 2** alternately as background colors for the list in Runtime.
Row color 1	Color that is used as a background color in in the list Runtime for all uneven numbers (1, 3, 5 etc.), if you have activated **Alternating Background Colors**.
Row color 2	Color that is used as a background color in in the list Runtime for all even numbers (2, 4, 6 etc.), if you have activated **Alternating Background Colors**.
Display in the time columns	
Time	Displays the time for a list entry in the following form: HH:MM:SS
Date	Displays the date for a list entry in the following form: TT:MM:YYYY
Milliseconds	Expands the time entry by milliseconds. Note: Must be activated if milliseconds are to be provided in exports or print-outs.

Hint: If you activate the automatic keyboard in Runtime, it is turned on when an editing field appears. You can also use this to configure the columns if you are using a computer without a keyboard.

Attention

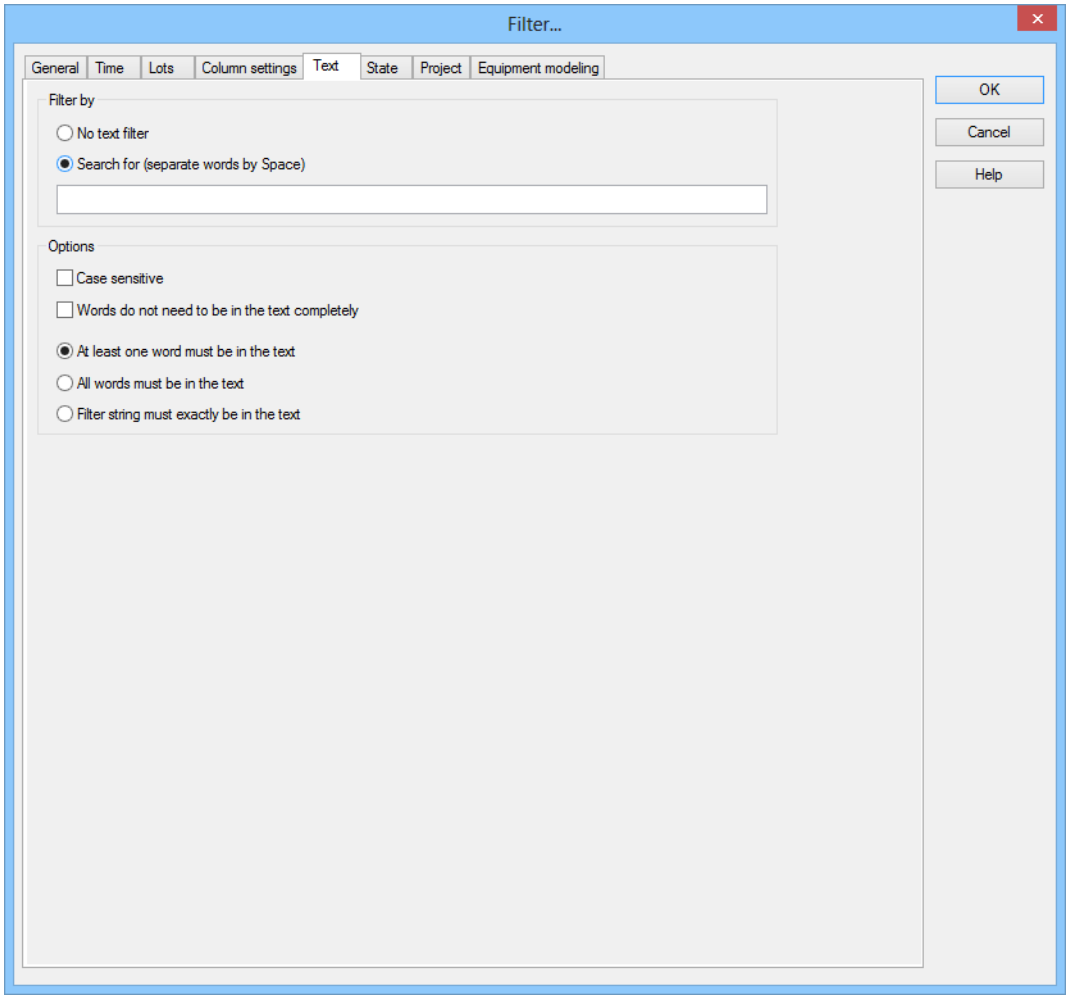
The column width is given in characters and is dependent on the font used. If the column width is not a multiple of the character width of the used font, the actual column width can differ from the set column width. This can result in the text being cut of or an empty space being created.

Solution: Use proportional fonts, such as 'Courier New', for example.

Information

*If you engineered variables with measuring units, the measuring unit of the variable is displayed in the Chronological Event List. Prerequisite for this is that column type **Unit** is displayed.*

Text


Filter...
General
Time
Lots
Column settings
Text
State
Project
Equipment modeling
Filter by
No text filter
Search for (separate words by Space)
Options
Case sensitive
Words do not need to be in the text completely
At least one word must be in the text
All words must be in the text
Filter string must exactly be in the text
OK
Cancel
Help

FILTER BY

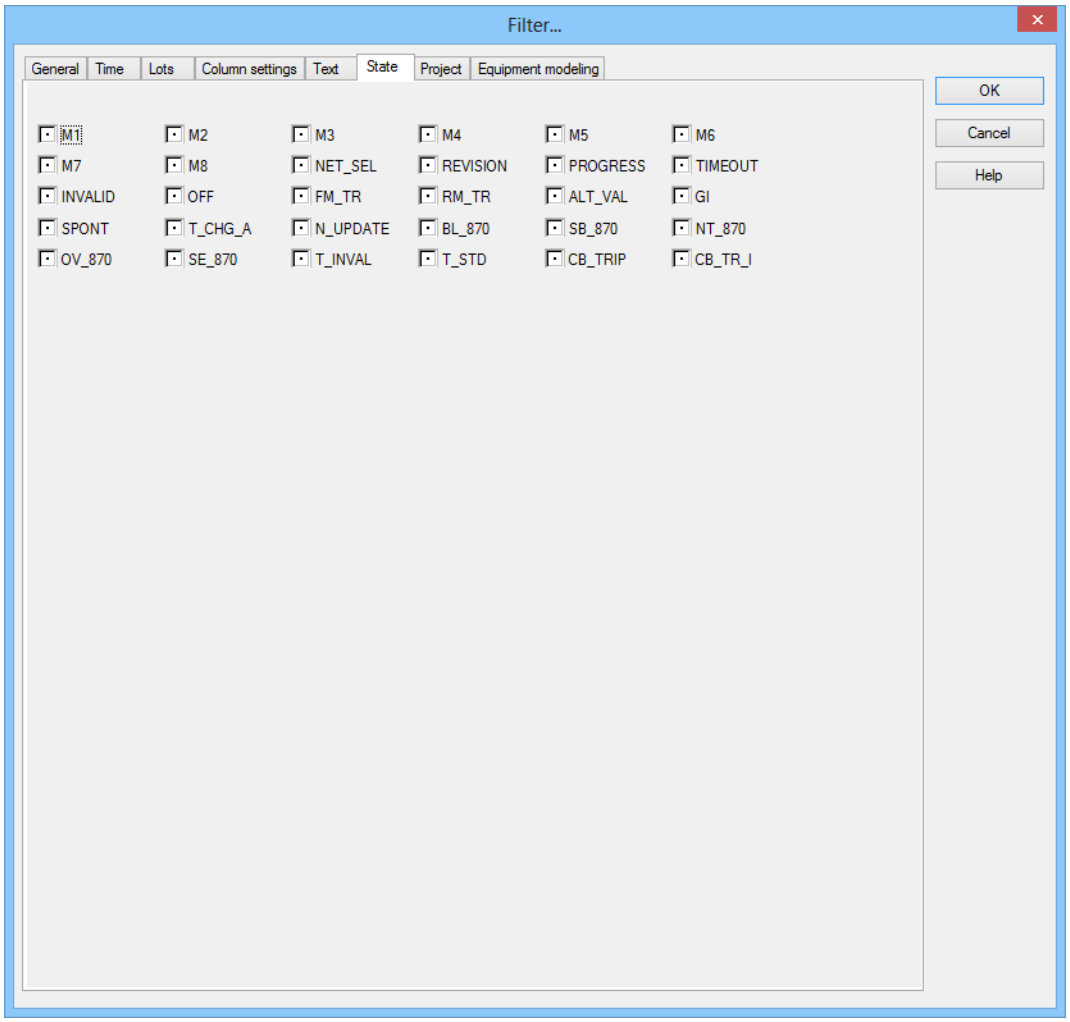
Parameters	Description
Filter by	
No text filter	The text filter is not used.
Search for (words separated by spaces)	The text filter filter is used. Further options are activated.
Input field	Enter the corresponding words or character strings.

OPTIONS

Parameters	Description
Options	
Note capitalization	`Active`: The filtering is case-sensitive.
Words do not have to appear in the text in full	`Active`: Parts of words can also be taken into account during filtering.
At least one word must be in the text	`Active: At least` one word of the search string has to be in the text.
All words must be present in the text	`Active`: All words must be present in the search string. In doing so, the sequence plays no role.
Filter text must appear in the text exactly	`Active`: The text must be exactly as defined in the search string.

Status

The status of the checkbox indicates if the status bit is to be evaluated.



Status of checkbox	Description
Black dot	The status bit is not evaluated.
0	Only the entries where the status bit is set to `false` are displayed.
1	Only the entries where the status bit is set to `true` are displayed.

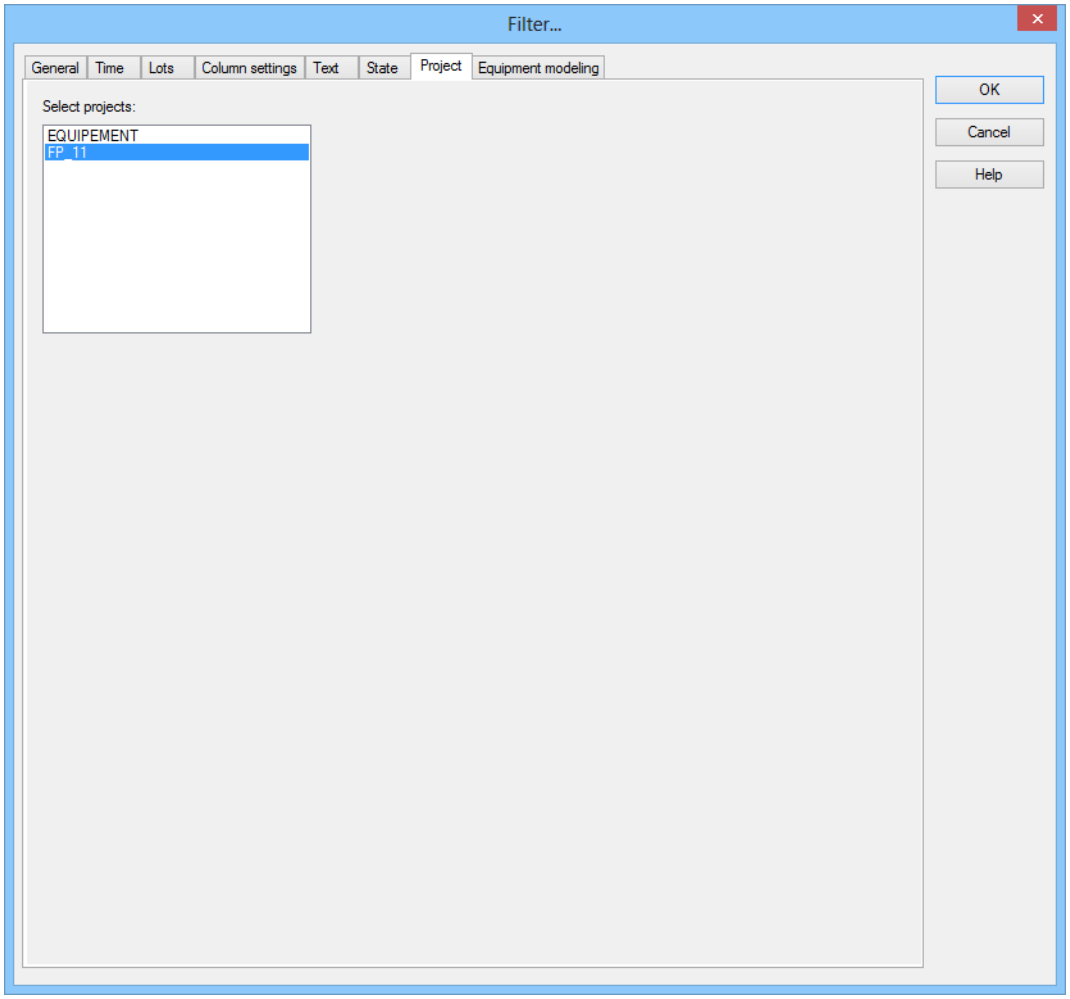
Example

*If the checkbox **SPONT** is set to `1`, only the alarms are shown that are triggered by spontaneous values are displayed.*

Note: *You can read details on status bits in the Status processing chapter.*

Project

Selection of the projects which should be considered for the CEL. The filter for selecting sub-projects is only available in the integration project of the multi-project administration.



the selection from the integration project and all sub-projects is carried out via multi-select by pressing and holding key `Ctrl` and mouse click on the desired projects.

Equipment Modeling

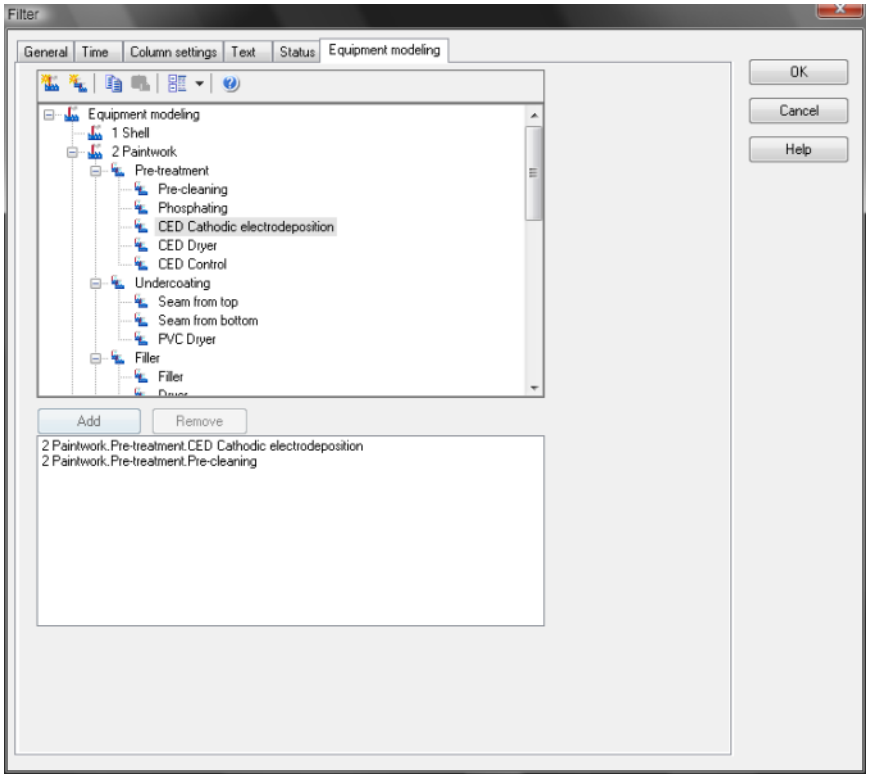
In the filter all already existing equipment models are displayed. Via the context menu or via tool bar, you can create new models and groups.

To add groups to the filter:

1. select the desired element
2. Click on the **Add** button
3. repeat the process until all necessary groups are available in the list
   (Multi-select is not possible)

To remove groups from the filter:

1. Select the desired element
   (multiselect: Ctrl button or hold down the shift key and click on the desired element)
2. click the **Delete** button



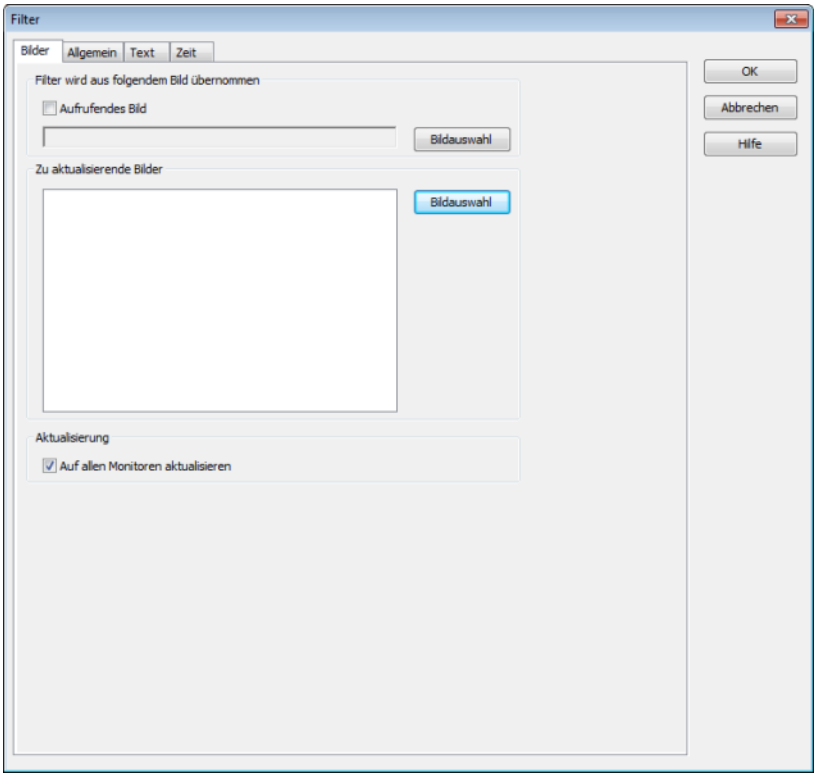
Element	Description
List of equipment models	provides models and groups for selection
Add	Adds selected groups to the filter list
Delete	removes selected groups from the filter list
Filter list	Shows all equipment groups that are to be filtered.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

3.4.3 Filters for screen switch CEL filter

In order to engineer a screen of type `Chronological Event List Filter`:

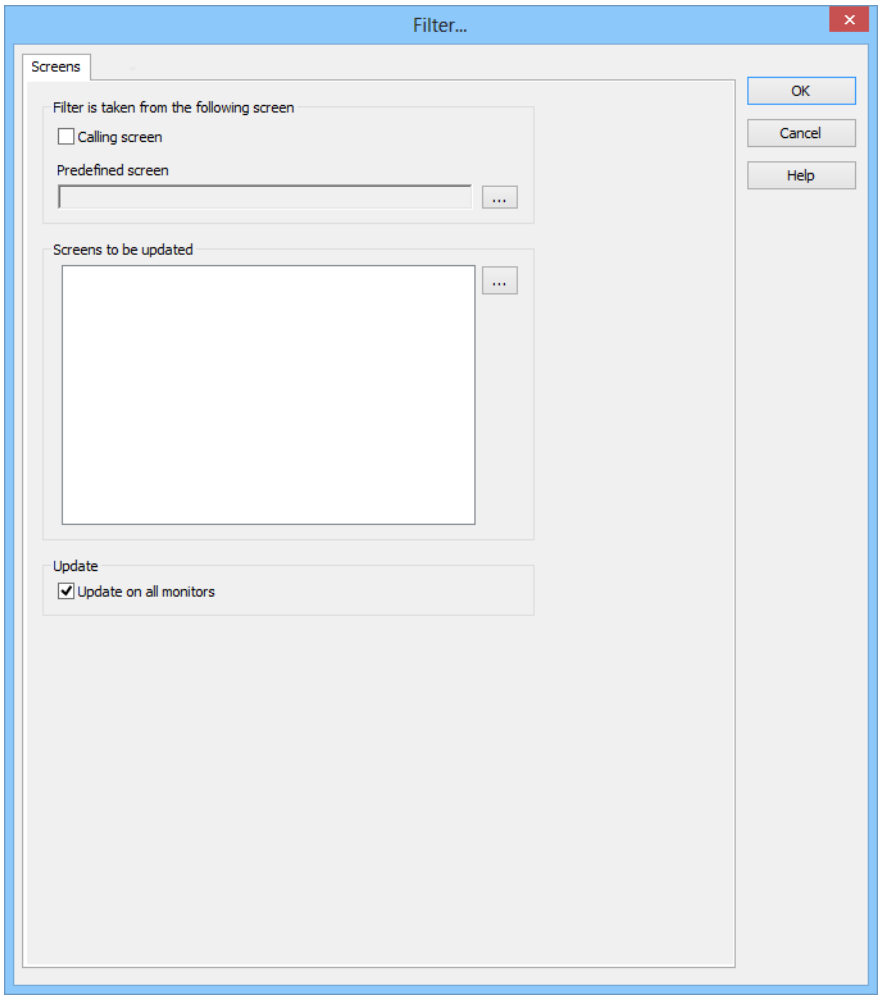
1. engineer a function **screen switch** to a screen of type `Chronological Event List Filter (on page 12)`
2. the filter is displayed with all tabs:
   - Screens (on page 72)
   - General (on page 74)
   - Text

- Time (on page 78)



Screens

On this tab, you can define the screens that are to be updated by the screen filter.



The following settings are available:

FILTER IS TAKEN FROM THE FOLLOWING SCREEN

Parameters	Description
Filter is taken from the following screen	Definition of the screen form which the filter is to be taken.
Calling screen	Active: The filter settings are take over from the screen from which the filter screen is called up. The screen button is grayed out. You cannot explicitly select a screen, because the filter is always updated from the calling screen with this setting. Note: Settings in the **General**, **Text** and **Time** tabs are locked.
Predefined screen	Click on button opens the Screen selection dialog. Select the screen from which the filter - when clicking button **Update** during Runtime - should be read. Subscreens of faceplates can be selected for screen switching to AML filter, CEL filter, time filter and equipment model. For these screens, the name of the faceplate screen is placed in front of the subscreen in order to clearly distinguish them from other screens. Attention: When the filter screen is first called up using the function, the filter configured in the function is used, not the filter of the screen stated here! Note: It therefore only makes sense to select a screen which can adopt or fill the screen filter. The screen selected is entered into the list of screens to be updated. If you delete it from the list, the next screen on the list is automatically entered here. Note: Not available if you have activated the **Calling screen** checkbox.

SCREENS TO BE UPDATED

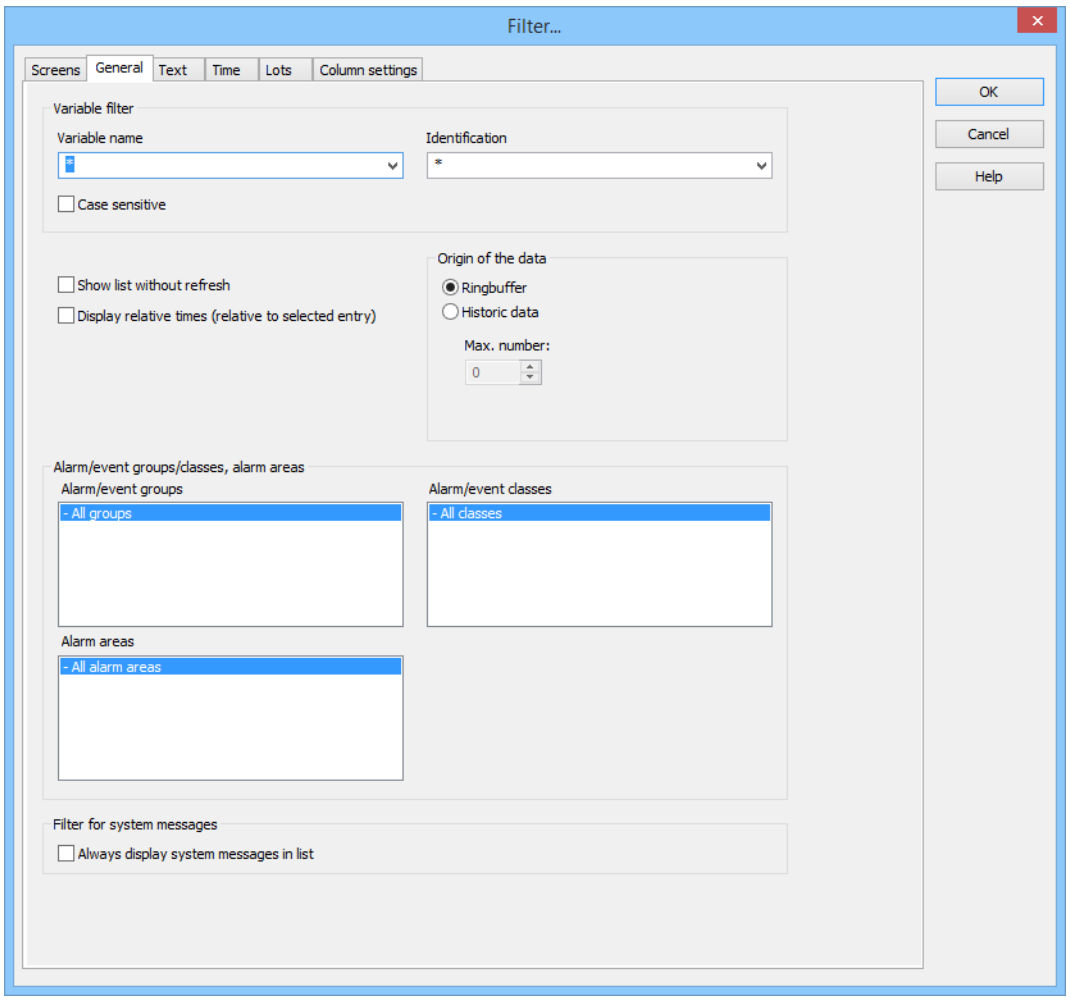
Parameters	Description
Screens to be updated	Selection of the screens that are to be updated. Subscreens of faceplates can be selected for screen switching to AML filter, CEL filter, time filter and equipment model. For these screens, the name of the faceplate screen is placed in front of the subscreen in order to clearly distinguish them from other screens.
Screen selection	Click the button to open dialog Screen selection of the filter screens. Select the desired screen.
Update	Stipulation of where the filter should take effect.
Update on all monitors	Active: The screens from the list of the screens which must be updated are updated on all accessible monitors.

General

With the general filter you define which events are displayed and what kind of access you have to the settings in the Runtime. To this you differentiate events according to:

- Type
- Origin of the data
- Variables
- Alarm/event groups, classes and alarm areas

The following properties are available:



VARIABLE FILTER

Parameters	Description
Variable filter	Restrictions to events of certain variables
Variable name	Enter the name or part of the name of the variable you want to filter. Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. ***xxx** or **xxx***. Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in **zenon6.ini** and are available for selection in the drop-down list.
Identification	Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible. Use of the wild card * is possible. Wildcards are only permitted as a prefix or suffix; e.g. ***xxx** or **xxx***. Note: Filter terms entered in Runtime or in the Editor are automatically saved on the local computer in **zenon6.ini** and are available for selection in the drop-down list.
Case sensitive	Active: Capitalization is recognized when filtering for variable name and/or identification.

ORIGIN OF THE DATA

Parameters	Description
Origin of the data	Display current or current and historical events.
Ringbuffer	Active: Only data from the ring buffer (on page 90) are displayed.
Historical data **Maximum number**	Active: Data from the ring buffer and historical data from the CEL are displayed. The maximum number of the data which should be displayed includes the data from the ring buffer.
Runtime settings	Behavior of the CEL in the Runtime
Show list without refresh	Active: As long as the list is displayed no new entries are added. (Not available for function **Export CEL**.)
Show this dialog in the Runtime	Active: Before every call of the screen the filter dialog is opened. The filter settings can be modified.
Display relative time	All entries are displayed in the time distance to the selected entry. The displayed time is the difference time passed since the

	selected entry. The selected entry automatically gets the time stamp `0`. The other events have a: ▸ positive time difference to the selected entry if they occurred later ▸ negative time difference to the selected entry if they occurred earlier

ALARM/EVENT GROUPS/CLASSES, ALARM AREAS

Parameters	Description
Alarm/event groups/classes, alarm areas	Selection of groups, classes and alarm area.
Alarm/event groups	From the existing alarm/event groups select the one from which alarms should be displayed.
Alarm/event classes	From the existing alarm/event classes select the one from which alarms should be displayed.
Alarm areas	From the existing alarm areas select the one from which alarms should be displayed.

FILTER FOR SYSTEM MESSAGES

Parameters	Description
Filter for system messages	Filter settings for system messages. System messages are messages that do not relate to a variable.
Exclude system messages from filter	Setting for the display of system messages regardless of the filter settings. ▸ `Active`: System messages are always displayed in Runtime. This also applies if they are to be filtered out by the text or variable filter. Exception: However system messages are not shown despite the checkbox being activated if they are filtered out by the **time filter** or the filters for **data origin** (`ring buffer` or `historic data`). Example: Only messages with the text "XY" are to be displayed. However if the option is active, system messages that do not contain the term are also displayed.

CLOSE DIALOG

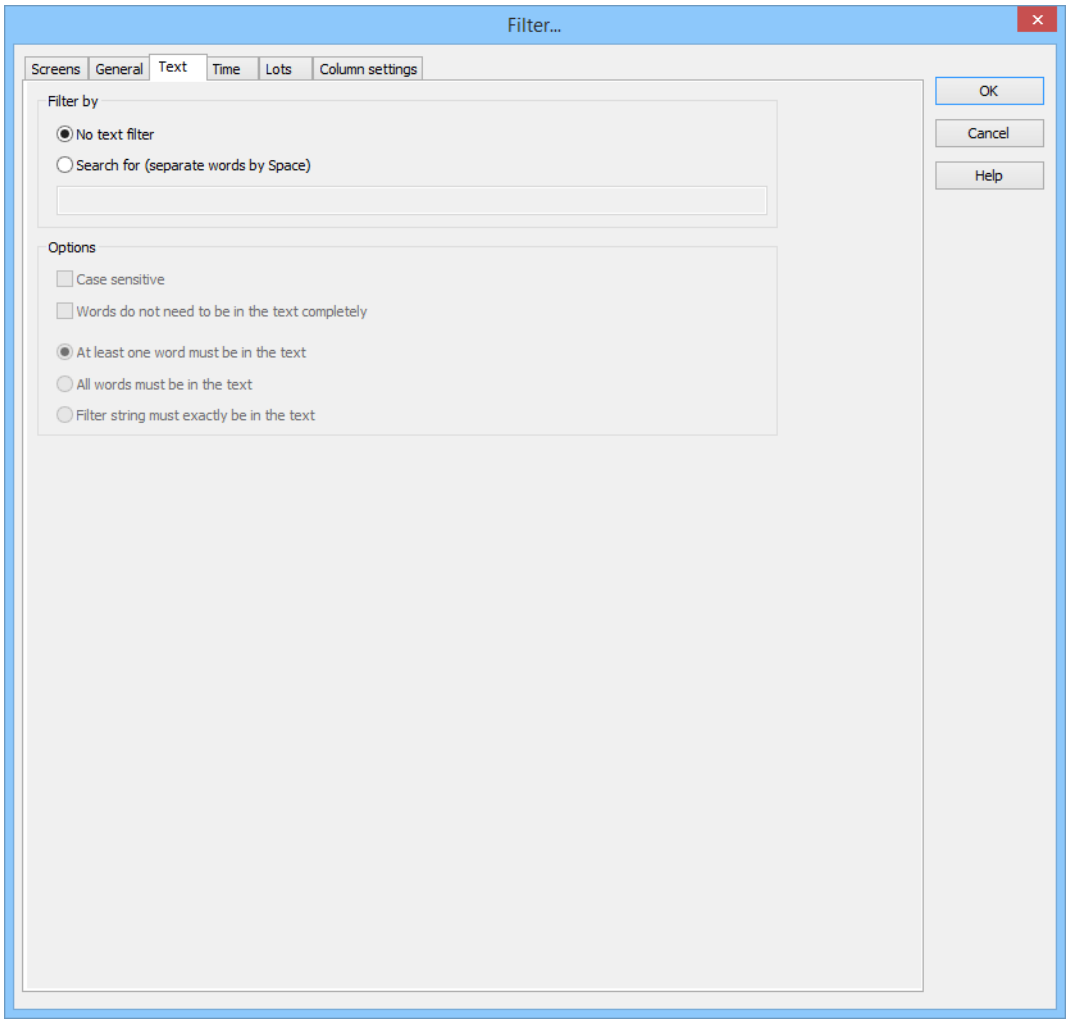
Parameters	Description

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

Attention

*For zenon under Windows CE, the following is applicable: CE systems on which the filter dialog should be displayed must have a screen resolution higher than 800*600 pixel for the dialog to be displayed completely.*

Text



FILTER BY

Parameters	Description
Filter by	
No text filter	The text filter is not used.
Search for (words separated by spaces)	The text filter filter is used. Further options are activated.
Input field	Enter the corresponding words or character strings.

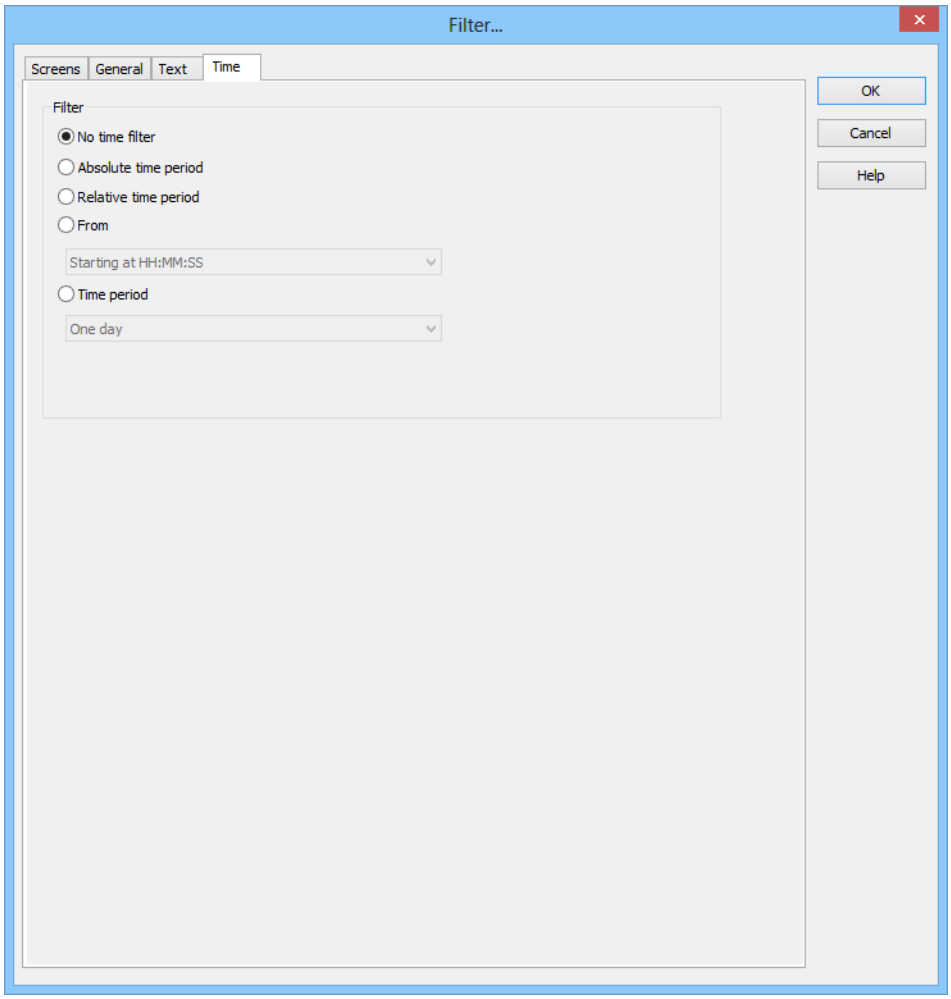
OPTIONS

Parameters	Description
Options	
Note capitalization	`Active`: The filtering is case-sensitive.
Words do not have to appear in the text in full	`Active`: Parts of words can also be taken into account during filtering.
At least one word must be in the text	`Active: At least` one word of the search string has to be in the text.
All words must be present in the text	`Active`: All words must be present in the search string. In doing so, the sequence plays no role.
Filter text must appear in the text exactly	`Active`: The text must be exactly as defined in the search string.

Time

On this tab, you define the time period that is to be used when the filter screen is opened.

You can read details of the time filter options in the Filter for screen switching, CEL (on page 35)/time (on page 41) chapter.



FILTER

Selection of the filter.

Parameters	Description
No time filter	`Active`: No time filter is used. Note: all Runtime entries since 1. 1. 1990 are displayed.
Absolute filter	`Active`: A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used. In the settings section, the corresponding options can be shown and configured there. Note: Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
Relative period of time	`Active`: A relative time period is entered. In the settings section, the corresponding options can be shown and configured there. Attention: this filter is constantly updated.
From	`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. Selection of the area mode from drop-down list: ▸ From HH:MM:SS o'clock ▸ From day - HH:MM:SS o'clock ▸ Starting on day, month at HH:MM:SS In the settings section, the corresponding options can be shown and configured there. Attention: The start point of this filter is not updated automatically. Only the existing times are used when shown. The end time point is not defined with this filter, it is carried over.
Time period	`Active`: A fixed time period is entered. Selection of the area mode from drop-down list: ▸ One day ▸ One week ▸ Two weeks ▸ One month ▸ One Year ▸ 15 minutes ▸ 30 minutes ▸ 60 minutes

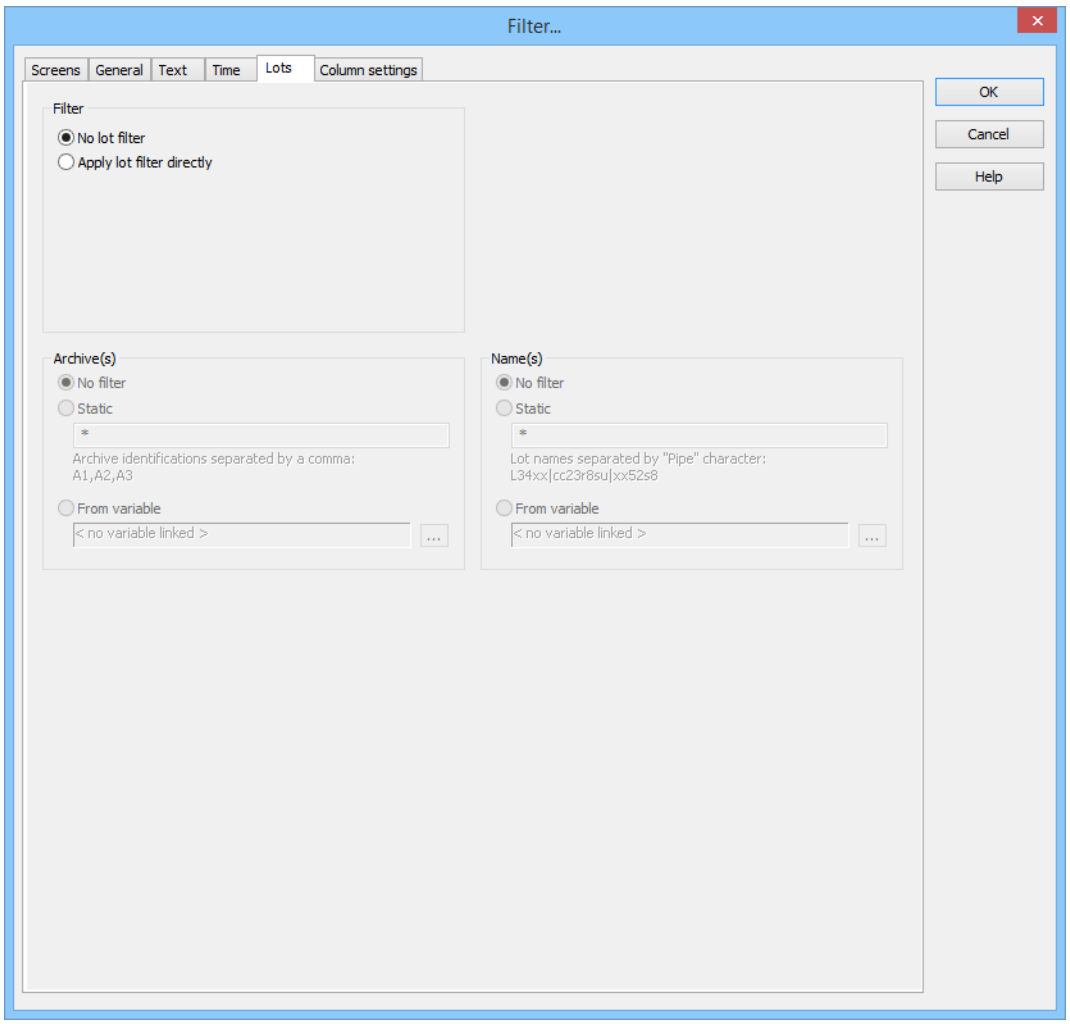
	In the settings section, the corresponding options can be shown and configured there.

CLOSE DIALOG

Parameters	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.

Lots

On this tab, you can define the lots that are to be displayed.



FILTER

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

- **No lot filter**
- **Apply lot filter directly**

Parameters	Description
No lot filter	`Active`: The lot filter is deactivated and cannot be configured. Filtering for lots is not carried out in Runtime.
Apply lot filter directly	`Active`: The filter configured here is applied in Runtime directly.

ARCHIVE(S)

Configuration of filtering for archives. Selection of one of the options:

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

Parameters	Description
No filter	`Active`: Filtering for archive names is not carried out.
Static	`Active`: Archives whose identification corresponds to the character string entered in the input field are filtered for. Input of the archive identifications in the input field: ▸ Several identifications are separated by a comma (,). ▸ * or empty: All archives, no filter.
From variable	`Active`: The value of the variables linked here is applied as a filter for archive names in Runtime. Click on button `...` in order to open the dialog for selecting a variable. Only available for all modules if the **Apply lot filter directly** option has been selected: Notes for variables in Runtime: ▸ 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. 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.

NAME(S)

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

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

Parameters	Description
No filter	`Active`: Filtering for lot names is not carried out.
Static	`Active`: Lot names that correspond to the character string entered in the input field are filtered for. Input of the lot name in the input field: ▸ Several entries are separated by a pipe character (`|`). ▸ `*` or empty: All lots of all displayed archives, no filter.
From variable	`Active`: The value of the variable linked here is applied as a filter for lot names in Runtime. Click on the `...` button to open the dialog for selecting a variable. Not available if the option **Apply lot filter directly** has been selected. Notes for variables in Runtime: ▸ 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. 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.

CLOSE DIALOG

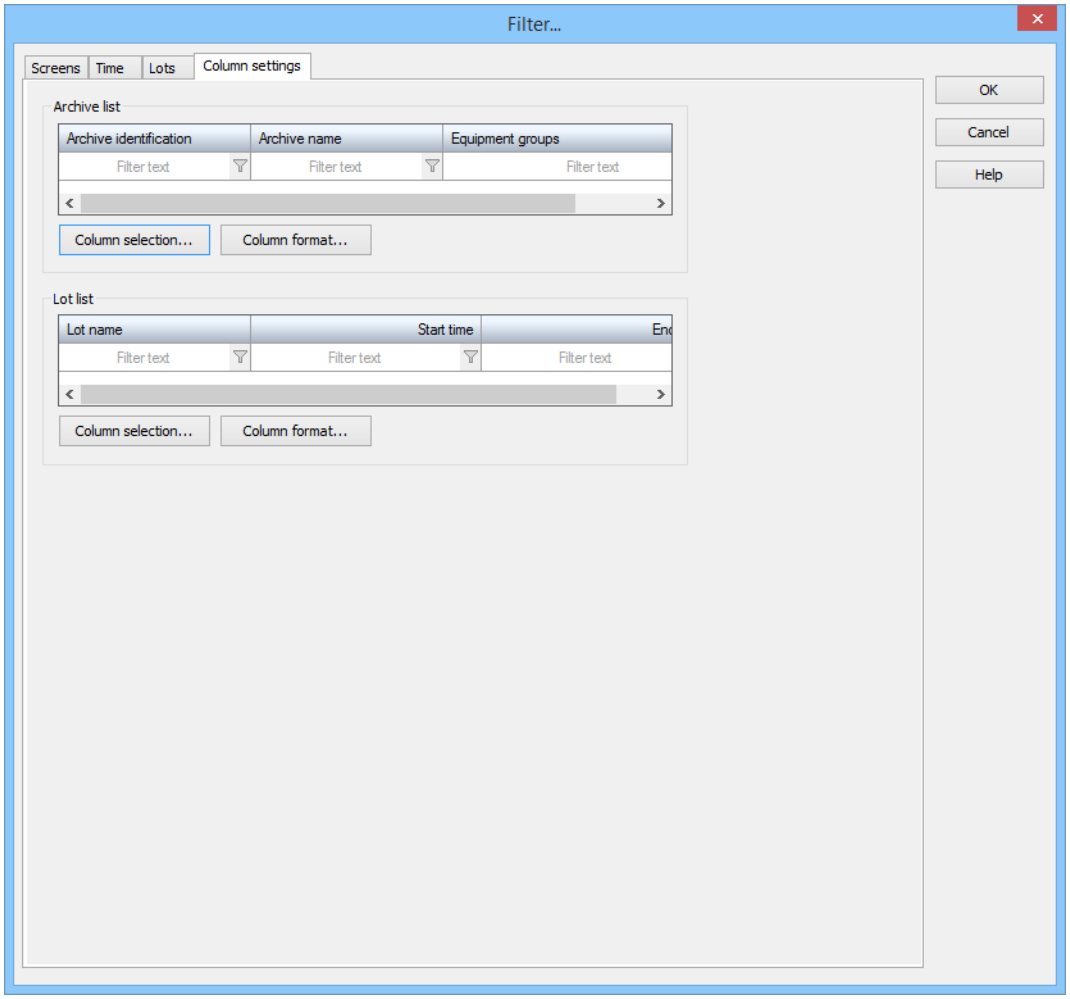
Parameters	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Column settings

In this tab, you define how the **archive list** and the **lot list** from the `time/lot filter screen` are displayed in Runtime:

- Selection of the columns to be displayed
- Sorting of the columns
- Formatting of columns:

- Labeling
- Width
- Alignment



ARCHIVE LIST

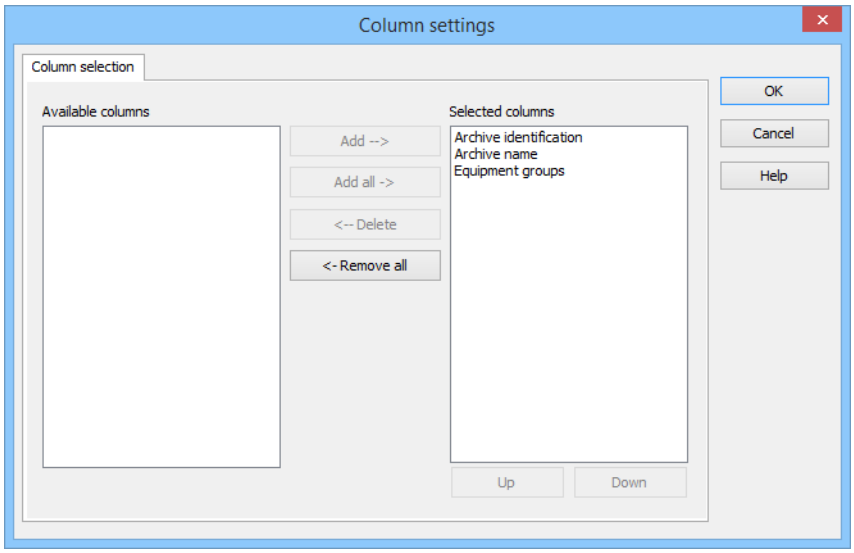
Parameters	Description
Archive list	Configuration of the archive list. Display of the configured columns.
Column selection	Clicking on the button opens a dialog to select and sort the columns.
Column Format	Clicking on the button opens a dialog to format the list.

LOT LIST

Parameters	Description
Lot list	Configuration of the lot list. Display of the configured columns.
Column selection	Clicking on the button opens a dialog to select and sort the columns.
Column Format	Clicking on the button opens a dialog to format the list.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Column selection

Selection and sequence of the columns.



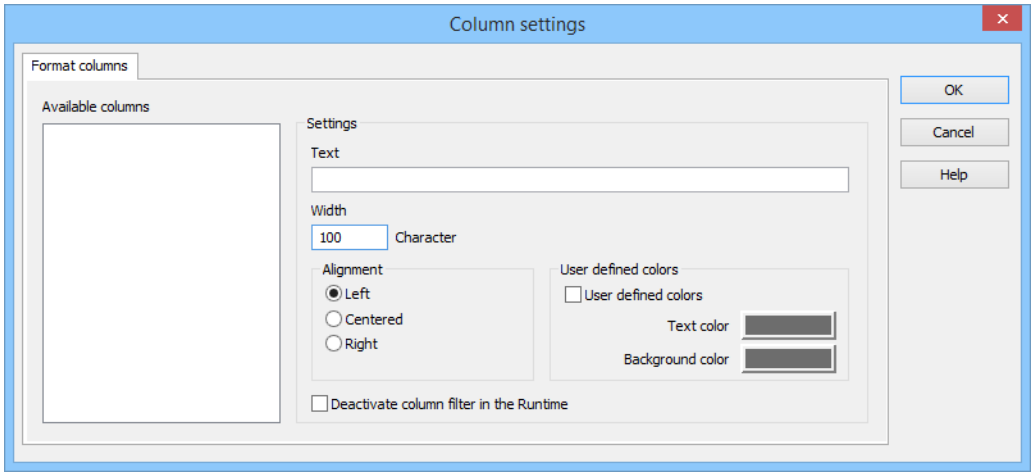
Button	Function
Available columns	List of columns that can be displayed in the table.
Selected columns	Columns that are displayed in the table.
Add	Moves the selected column from the available ones to the selected items. After you confirm the dialog with OK, they are shown in the detail view.
Add all	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

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

Column Format

Configuration of the properties of the columns for configurable lists. The settings have an effect on the respective list in the Editor or - when configuring screen switching - in Runtime.



AVAILABLE COLUMNS

Parameters	Description
Available columns	List of the available columns via **Column selection**. The highlighted column is configured via the options in the **Settings** area.

SETTINGS

Parameters	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: ▸ **Left-justified**: 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.
Deactivate column filter in the Runtime	Active: The filter for this column cannot be changed in Runtime. Note: Only available for: ▸ Batch Control ▸ Extended Trend ▸ Filter screens ▸ Message Control ▸ Recipegroup Manager
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: ▸ These settings are only available for configurable lists. ▸ In addition, the respective focus in the list can be signalized 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 palette to select a color.
Background color	Color for the display of the cell background. Clicking on the color opens the

	palette to select a color.

CLOSE DIALOG

Parameters	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.

3.5 CEL ring buffer

Events are saved in a ring buffer (cel.bin) and in an event file (*.cel) in the Runtime folder as soon as the occur.

RING BUFFER

The ring buffer contains all active events. These are managed via:

- **Time received** in millisecond as unique signature

SIZE OF THE RINGBUFFER

The size of the ring buffer must be large enough and is defined in the project settings with property **Size of the ringbuffer**.

In the Runtime old entries are kept in the list when the CEL screen is called up. As soon as new entries are added the number of the displayed entries can exceed the engineered size of the ring buffer. When the list is then called up again, the old entries are removed and the engineered size is adhered to. This behavior makes sure that no data is lost when the list is displayed.

Attention: The display of entries which exceed the defined values occupies additional memory. If the screen is called up again, the occupied memory is not freed but remains at the last peak.

SAVE RING BUFFER

The ring buffer is automatically saved as **cel.bin** when the Runtime is closed. If the Runtime is closed by an unexpected event such as a power outage, data loss occurs. To prevent this the ring buffer can be saved manually via property **Save ringbuffer on change** at every new entry or via function Save AML and CEL ring buffer (on page 103).

RESULT FILE

All alarms are written together with the ring buffer in an own CEL file (*.cel) at the same time. This file is created for every calendar day automatically and is managed via property **Save CEL data**. The name of the file consists of the letter **c**, followed by the date in from `JJMMTT` and the suffix `.cel`, e.g. **`c100623.cel`**. These files are created automatically for every day and must be evecuated or deleted by the user if the storage space is limited. `*.cel files` are saved in folder `...\Project folder\Computer name\Project name`.

SYNCHRONIZING RING BUFFER AND ALARM FILE

Ring buffer and CEL file are synchronized. This synchronization is always carried out from the ring buffer to the CEL file.

SAVING PERIODS

The Chronological Event List *.cel is saved with every new entry.

The ring buffer (*.bin) is saved:

- when the Runtime is closed
- after every new entry if property **Save ringbuffer on change** is active
- when function **Save AML and CEL memory buffer** is carried out

Note: If option **Save ringbuffer on change** is deactivated, it is possible that the entries in the CEL and in the ring buffer do not match after a power outage.

4. Functions

Via functions the display and the handling of the CEL are controlled in the Runtime.

> **Attention**
>
> *If functions are used in the network, regard their execution location (on page 91).*

4.1 Functions in the network

If network functions are used, the place of execution must be noted:

For functions that are used in the network:

- The place of execution can be freely configured in some cases
- The place of execution is stipulated in some cases

> **Information**
>
> *Scripts combine several functions. The place of execution then depends on the settings of the* ***Execute script*** *function. This setting overwrites the settings of the individual functions.*

CONFIGURE PLACE OF EXECUTION

For functions where the place of execution can be freely configured, the corresponding parameters are available in the properties of the function.

To define the place of execution:

1. navigate to the **Execution** group in the Properties.
2. Select the desired place of execution by checking the checkbox. Multiple selection is possible:
   - **Current computer**: Function will be executed on the current computer.
   - **Primary Server**: Function will be executed on the Primary Server.
   - **Standby Server**: Function will be executed on the Standby Server.
   - **Client**: Function will be executed on all clients.

OVERVIEW OF FUNCTIONS IN THE NETWORK

The following table shows which functions are executed and where they are executed.

Key:

- **Adjustable:** Behavior can be configured

  +: Yes

  -: No

  O: Default
- If not adjustable, O identifies the place of execution:
  - Active computer
  - Primary Server
  - Standby Server
  - Client

Function	Adjustable	Current computer	Primary Server	Standby Server	Client
AML and CEL					
Alarms: acknowledge flashing	-	O			
Alarms: delete	-		O	O	
Acknowledge alarms	-		O	O	
Alarm/event group log in/log off	-	O			
Activate/deactivate alarm message list / alarm/event groups / alarm/event classes	-		O	O	
Alarm Message List active	-		O		
Alarm Message List active/inactive	-		O		
Alarm message list inactive	-		O		
Export AML	+	O			
Save AML and CEL memory buffer	-		O	O	
Export CEL	+	O			
Print AML or CEL	+	O			
Create/print IPA document	-		O		
Switch online printing on/off	-		O	O	
Online printing start new page	+	O			
Switch online printer	-		O		

Application					
Select printer	+	O			
Start Load Management	-		O		
Stop Load Management	-		O		
Print Extended Trend diagram	+	O			
Switch palette	+	O			
Functions active at limit	-		O	O	
Functions active/inactive at limit	-		O	O	
Functions inactive at limit	-		O	O	
Open Help	+	O			
Reload project online	+	O			
Determine open maintenances	-		O		
PFS - execute user-defined event	+	O			
Activate/deactivate project simulation	-	O			
Simulate right click	+	O			
Save remanent data	+	O			
Exit Runtime	+	O			
Analyze S7 Graph heuristics	+	O			
Execute SAP function	+	O			

Language switch	+	O			
Topology - Search for ground fault	-		O		
Topology - LoadShedding	-		O		
Historian					
Archive: Stop	-		O	O	
Index archive	-		O		
Archive: Start	-		O	O	
Export archives	-	O			
Display open archives	-		O	O	
User administration					
Change user	+	O			
Login with dialog	+	O			
Login without password	+	O			
Logout	+	O			
Change password	-	O			
Screens					
Change ALC source color	+	O			
Indexed screen	-	O			
Close screen	+	O			
Screen: Return to last	-	O			
Screen: Move center	+	O			
Screen switch	+	O			
Activate input to the element with the focus	+	O			
Set focus to frame	+	O			
Move focus	-	O			
Take focus away from frame	+	O			
Show menu	+	O			
Monitor assign	+	O			
Runtime profiles	+	O			
Close frame	+	O			
Setpoint input for keyboard screen	-	O			

Displaying the overview window	+	O			
Fault locating in electric grids					
Acknowledge ground fault message	+	O			
Stop search for ground fault	+	O			
Start search for ground fault	+	O			
Acknowledge short-circuit message	+	O			
Message Control					
Save current queue	-		O		
Suppress groups/classes/areas/equipment	-		O		
Send a Message	-		O		
Send Message: activate	-		O		
Send Message: deactivate	-		O		
Network					
Authorization in network	+	O			
Redundancy switch	-			O	
Report Generator					
Print report	+				
Report: execute	+				
Export Report	+				
Recipes					
Recipegroup Manager	-	O			
Standard recipe	-	O			
Standard recipe single directly	+	O			
Standard recipe single with dialog	-	O			
Standard recipe single with online dialog	-	O			
Script					
Script: execute	+	O			
Script: select online	+	O			
Variable					
Export data	-		O		

Read dBase file	+	O			
Print current values	+	O			
Unit conversion	+	O			
HD administration active	-		O	O	
HD administration inactive	-		O	O	
HD administration inactive/active	-		O	O	
Write set value	-		O		
Driver commands	-	O			
Transfer driver simulation image to the standby	-			O	
Write time to variable	+	O			
Read time from variable	+	O			
VBA					
Open PCE editor	-		O		
Open VBA Editor	+	O			
Execute VBA macro	+	O			
Show VBA macro dialog	+	O			
VSTA					
Open VSTA editor	+	O			
Execute VSTA macro	+	O			
Show VSTA macro dialog	+	O			
Windows					
Play audio file	+	O			
File operations	+	O			
Start continuous tone	+	O			
Stop continuous tone	+	O			
Window to the background	-	O			
Window to foreground	-	O			
Print screenshot	+	O			
Start program	+	O			

4.2 Screen switch CEL

In order to call up a screen of type `Chronological Event List`:

1. create a screen of type `Chronological Event List` (on page 7):
2. create a screen switch function for this screen
3. define the desired filter properties (on page 35)

In the Runtime you can modify the filter properties. Exception: In the Editor fixed time filter was defined.

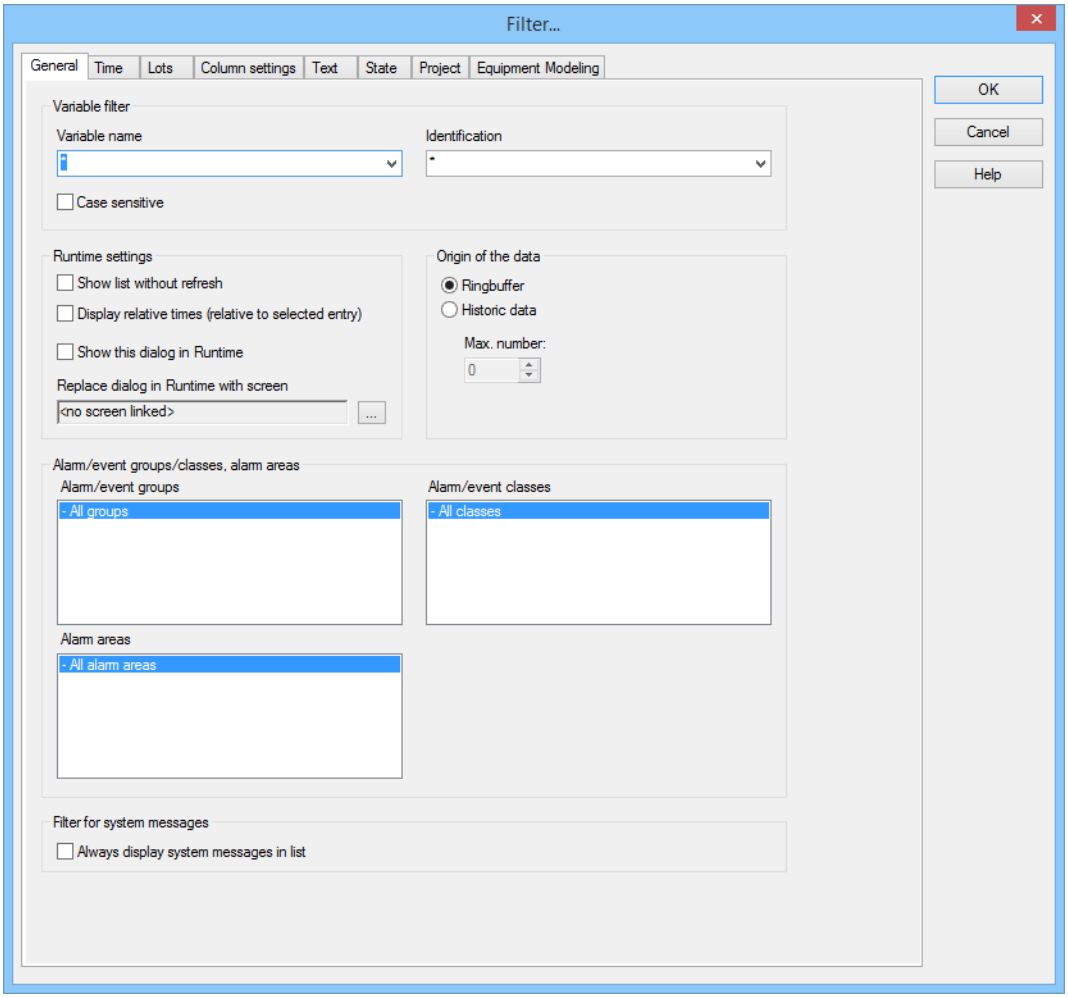
CONFIGURE SCREEN SWITCHING

To create a screen switch to a screen of type `CEL`:

1. in the context menu of node **`function`** select command **`New function`**
2. click on **`screen switch`**
3. the dialog for the screen selection will be opened
4. select the screen of type `CEL`
   or create it in this dialog by clicking symbol **`New screen`**
5. the filter is displayed with all tabs:
   - General (on page 36)
   - Time (on page 41)
   - Column settings (on page 61)
   - Text (on page 65)
   - Status (on page 67)
   - Project (on page 68) (only available in the integration project of the multi-project administration.)
   - Equipment Modeling (on page 68)

   If linked variables or indexes are available, the following tabs can be displayed as an option.
   - Replace links

- Replace indices



6. define the filters which should be pre-defined in the Runtime
7. confirm the settings and close the dialog by clicking ok
8. link the function with a button in order to call up the screen and to display the filter properties in the Runtime

> **Information**
>
> *If a screen that does not have a time filter is referenced, the time filters are deactivated.*

4.3 Screen switch CEL Filter

In order to call up a screen of type `Chronological Event List Filter` in the Runtime:

1. create a screen of type Chronological Event List Filter (on page 12):
2. create a screen switch function for this screen
3. define the desired filter properties (on page 70)

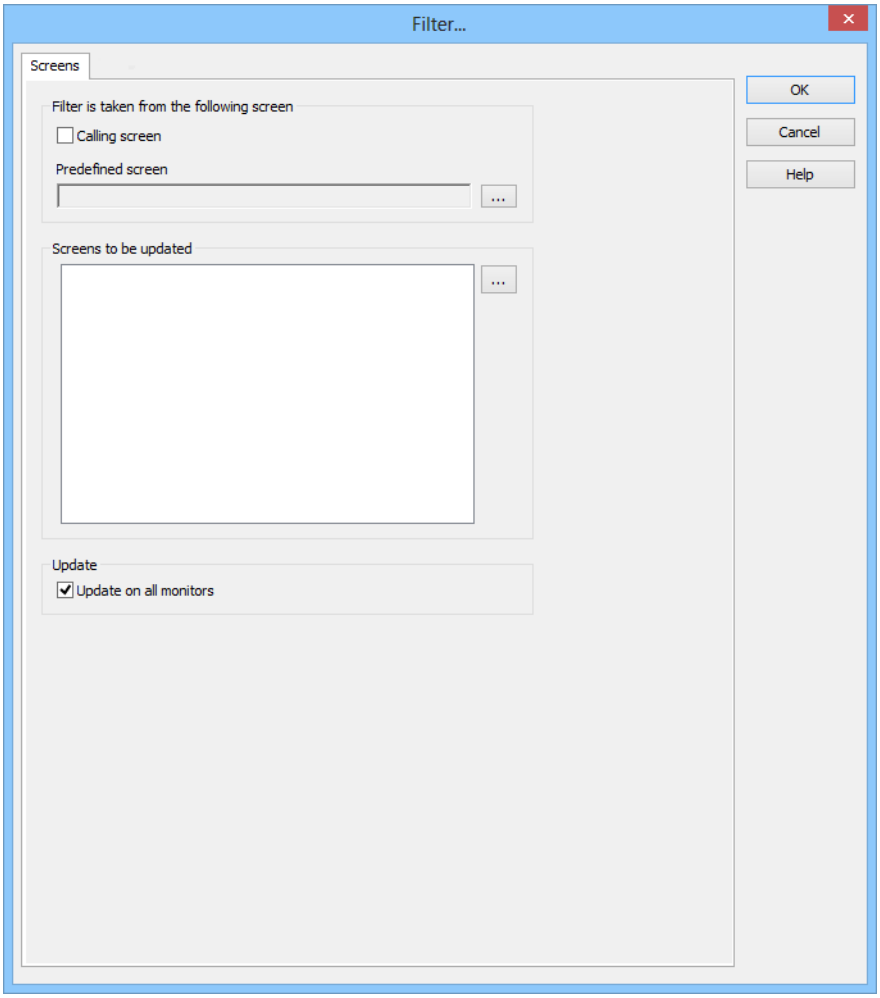
In the Runtime the filter properties can only be controlled via the buttons defined in the screen.

CONFIGURE SCREEN SWITCHING

To create a screen switch to a screen of type `Chronological Event List Filter`:

1. in the context menu of node **`function`** select command **`New function`**
2. click on **`screen switch`**
3. the dialog for the screen selection will be opened
4. select the screen of type `Chronological Event List Filter`
   or create it in this dialog by clicking symbol **`New screen`**
5. the filter is displayed with all tabs:
   - Screens (on page 72)
   - General (on page 74)
   - Text (on page 77)

- Time (on page 78)



6. define the filters which should be pre-defined in the Runtime
7. confirm the settings and close the dialog by clicking **OK**
8. link the function with a button in order to call up the screen and to display the filter properties in the Runtime

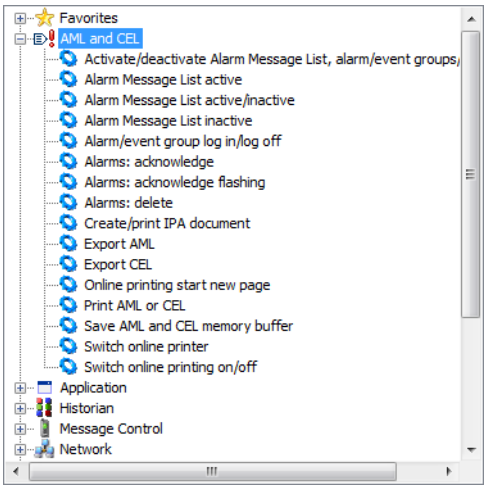
4.4 Functions for Chronological Event List

Different functions enable the handling of events in the Runtime.

To create a function for the Chronological Event List:

1. navigate to the **Functions** node

2. select **New function** in the context menu or from the tool bar
3. the dialog for selecting functions is opened
4. navigate to the **AML/CEL** node



5. select the desired function
6. configure the function if necessary
7. link the function to a button

4.4.1 Save AML and CEL memory buffer

With this function, the content of the ring buffer for alarms and events as well as the values of mathematical variables (counters) can be saved. The entries are saved in the following files:

File	Contents	The size can be set in Properties
ALARM.BIN	Alarms	**Size of the ringbuffer**
CEL.BIN	Chronological Event List entries	**Size of the ringbuffer**
SY_MA32.BIN	Values of mathematical variables (e.g. counters)	

To save the AML ring buffer:

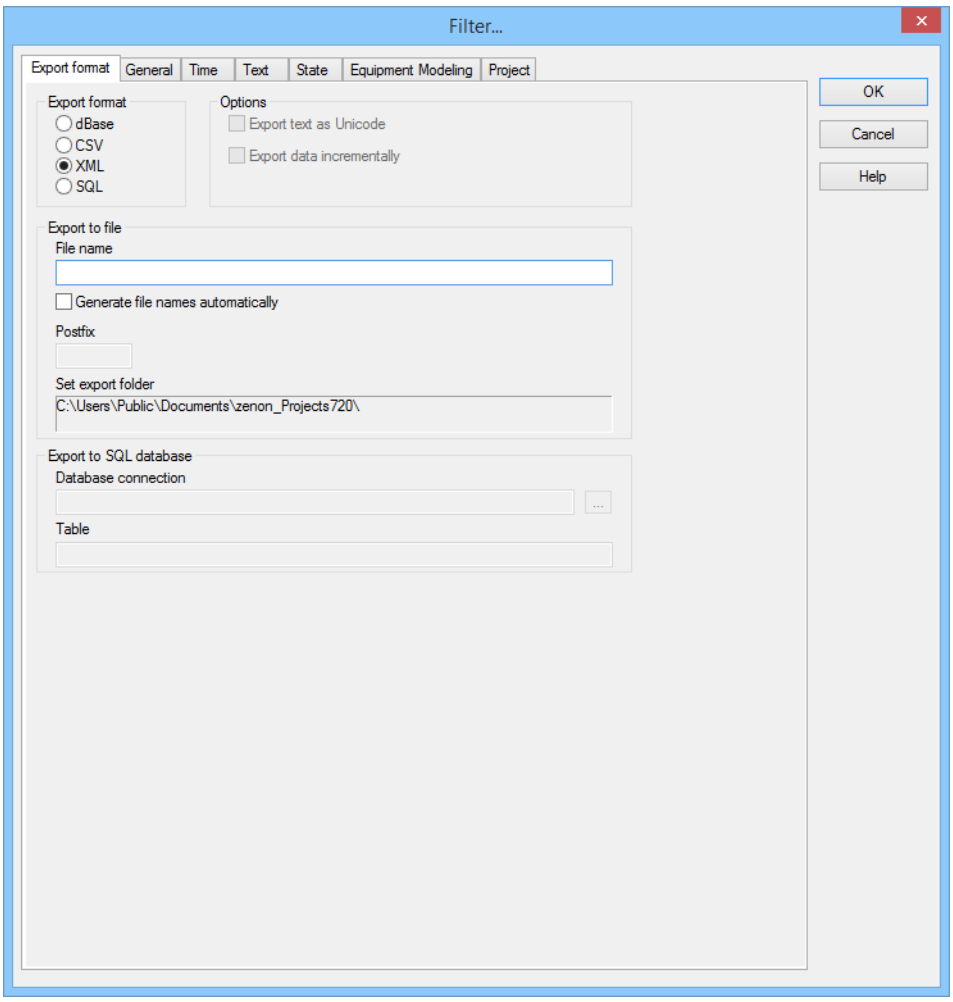
1. Create a new function
2. Select **Save AML and CEL ring buffer**
3. link the function to a button

4.4.2 Export CEL

With this function you can export the saved events with filter options to a file or database in the Runtime.

To export CEL entries:

1. Create a new function.
2. Select **`Export CEL`**.
3. The dialog for selecting filter criteria opens.



4. Define the criteria for:
   - Export format
   - General (on page 36)
   - Time (on page 41)
   - Text (on page 65)

- Status (on page 67)
- Equipment Modeling (on page 68)
- Project (on page 68)

5. Link the function to a button.

Export format

Exports can be carried out in different formats. Which columns are exported, and how, depends on the source (AML/CEL) and the export format:

Data is exported in different ways for:

- CSV (on page 110)
- dBase (on page 110)
- SQL (on page 111)
- XML (on page 111)

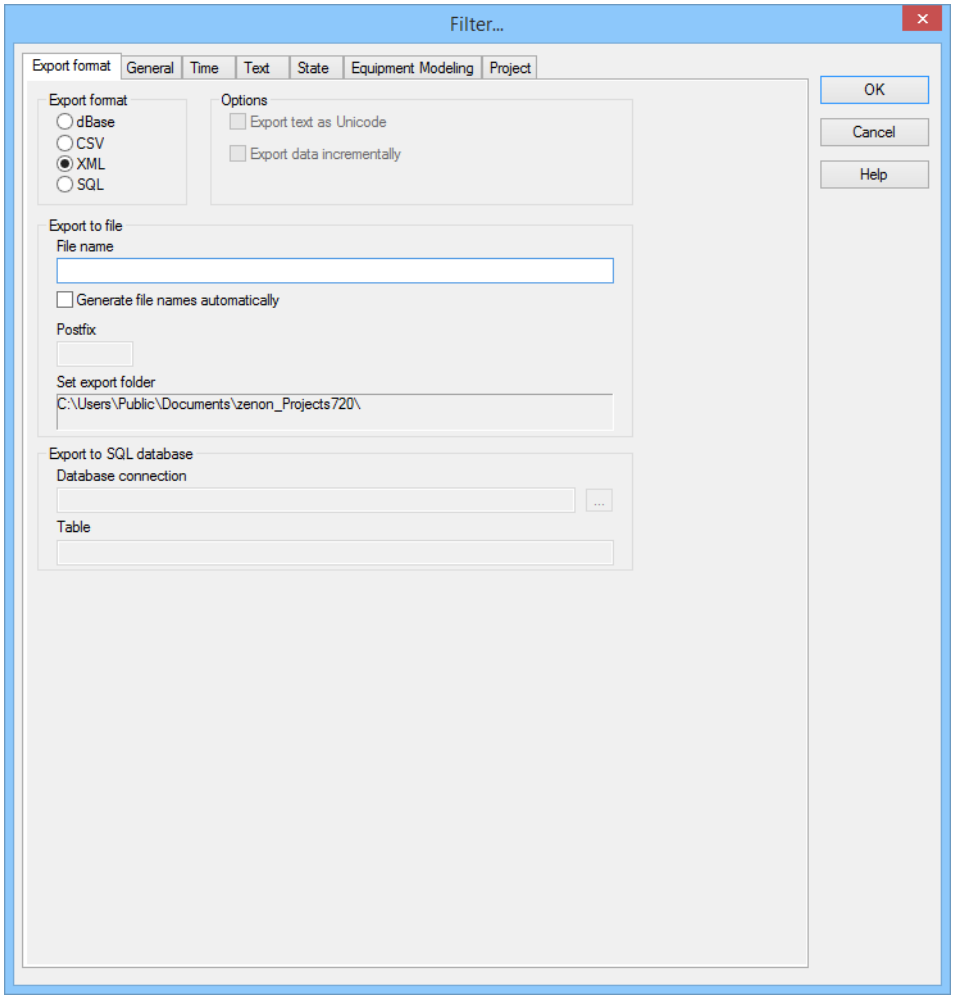
> **Information**
>
> *The export to SQL is incremental. If there is already exported data, only new and amended data is exported.*

COLUMN SELECTION

The selection of the columns to be exported depends on the export format:

- `CSV`, `DBF` and `XML`: Selection using the dialog of the **Column settings AML** project property for the AML and **Column settings CEL** for the CEL.
- `SQL`: Fixed settings for the incremental export, which cannot be configured further.
  Note: The **`RESLABEL`** column for the **Resources label** was added in version 7.20. Export tables that already exist can thus no longer be used. The table must be renamed for correct export.

CONFIGURE EXPORT



EXPORT FORMAT

Parameters	Description
Export format	Selection of the file type. Possible formats: ▸ dBase: DBaseIV format (*.dbf): ▸ CSV ▸ XML ▸ SQL Notes on dBase: ▸ Filenames cannot be longer than eight characters. ▸ Configured column width is used for export. If, for example, a value of 40 is set under **Column settings**, a maximum of 40 characters is then exported. ▸ A maximum of 255 characters are exported.

OPTIONS

Parameters	Description
`Options`	
Export as unicode	An export to ASCII format is performed in Unicode
Incremental export	Only differences since the last backup are exported.

EXPORT TO FILE

Parameters	Description
`Export to file`	Determining the file in which the export is saved.
File name	Define file name individually. A maximum of 32 alphanumeric characters including file suffix. Note: Existing files with the same names are overwritten.
Generate file name automatically	`Active`: The file name will be generated automatically from a short identifier, a date key and an individual postfix. `Inactive`: The file name is entered by the user under **`Filename`**. (existing files are not overwritten) For details, see the next table: **`Coding name for automatic naming`**
Postfix	Free, individual identification. Only available for **Generate filename automatically**. Possible entries:

	▸ dBase: 1 alphanumeric character ▸ ASCII and XML: 32 alphanumeric characters
Example	Display of the complete file name with automatic generation.
Set export folder	Display of the current export path configured in Project Properties. (**Runtime folder** property in the **General/Name/Folder** node.)
Export to SQL database	Parameters for export into a SQL database
Database connection	Configuration of the database connection. A click on the **...** button opens the configuration dialog.
Table	Selection of the table that is to be written in.

CODING NAME FOR AUTOMATIC NAMING

Name	AJJMMTTP.XXX
A	Short identification of the Alarm Message List
JJMMTT	Date input: ▸ YY: Year, two-digits ▸ MM: Month, two-digits ▸ DD: Day, two-digits
P	Free, individual identification: ▸ dBase: 1 alphanumeric character ▸ ASCII and XML: 32 alphanumeric characters
XXX	File ending: ▸ DBF: dBase ▸ TXT: CSV ▸ XML: XML

FORMAL MATTERS

- Format of the line entries: Is taken from the settings of the **Column settings AML** and **Column settings CEL** property.
- Column separator: Semi-colon (;)

Attention

Milliseconds for printing or export

If, when printing or exporting the AML or CEL to CSV, XML or dBase format, the time in milliseconds is to be given, this property must be activated in the dialog for the column settings. To do this:

- Navigate to the **Alarm Message List** or **Chronological Event List** nodes in properties.
- Click on the **. . .** button of the **Column settings AML** or **Column settings CEL** property.
- The dialog for the column settings is opened.
- Activate the checkbox in front of the **Milliseconds** property.

The additional setting must be made for both AML and CEL.

NOTES SQL

Attention

Ensure that the provider configured in the connection is also available on the Runtime computer in Runtime.

Note: An SQL client is also installed with the zenon Editor. Because the zenon Runtime does not need an SQL Server, no SQL client is automatically installed. This can be downloaded from the Microsoft website and must be installed individually.

Ensure you install the correct version when installing the provider. This must suit the zenon version being used. This means: If a 32-bit zenon Runtime is used, the provider must be a 32-bit version. This also applies if it is installed on a 64-bit operating system and also if the database itself is a 64-bit application.

Attention

When using **Native Client 10** and **11**, the password is not automatically carried over to the provider string. It must be entered manually

e.g.: ...;**User ID=sqlExampleUser1;Password=secretPassword;...**

CSV: Exported columns

Export to CSV is mostly for further processing in other applications. The data is exported according to the selection in **Column settings AML** or **Column settings CEL**:

- Only data from the selected columns is exported.
- The sequence in the export file corresponds to the one defined in the dialog.
- Separator: Semi-colon (;)
- Column titles are not exported.

dBase: Exported columns

For export in to a dBase file, the data is exported in accordance with the selection in **Column settings AML** or **Column settings CEL**:

- Only data from the selected columns is exported.
- The sequence in the export file is defined and cannot be changed.

Columns in exported sequence:

Column	Type	Size	Description
DATUM_KOMM	Date	8	Alarm occurred: Date.
ZEIT_KOMMT	Character	10	Alarm occurred: Time.
ALARMTEXT	Character	40	Limit value text.
TAG_NR	Character	40	Variable identification.
KOMMENTAR	Character	45	Comment.
STATUS	Character	4	Status of variable.
WERT	Character	10	Variable value.
USER	Character	6	User identification.
COMPUTER	Character	48	Computer name.
VAR_NAME	Character	32	Variable name.
RESLABEL	Character	15	Resources label.
PROJ_NAME	Character	31	Project name
CLASS	Character	31	Name of the alarm class.
GROUP	Character	31	Name of the alarm group.

SQL: Exported columns

For SQL export, the files are exported incrementally in a fixed, pre-defined sequence.

Columns in exported sequence:

Column	Type	Description
[VAR]	varchar(128)	Variable name.
[TAG]	varchar(128)	Variable identification.
[RESLABEL]	varchar(128)	Resources label.
[TEXT]	varchar(1024)	Limit value text.
[COMES_S]	int	Alarm occurred in Unix time (seconds since 01. 01. 1970).
[COMES_MS]	int	Alarm occurred: Milliseconds fraction.
[STATUS]	int	Status of variable.
[VALUE]	varchar(128)	Variable value.
[USERID]	varchar(128)	User identification.
[COMP]	varchar(128)	Computer name.
[ACT_TEXT]	varchar(128)	Alarm: Comment.
[PRJ]	varchar(128)	Project name.
[CLASS]	varchar(128)	Name of the alarm class.
[GROUP]	varchar(128)	Name of the alarm group.

XML: Exported columns

When exporting to an XML file, the data is exported in accordance with the selection in **Column settings AML** or **Column settings CEL**:

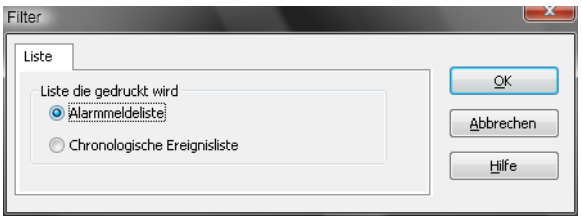
- Only data from the selected columns is exported.
- The sequence in the export file corresponds to the one defined in the dialog.
- Column titles are used as tags. All characters that are not permitted are removed and replaced in the process.
  Rules for replacement:
  - Space: Underscore (_).
  - Other non-permitted characters: Hyphen (-).

4.4.3 Print AML or CEL

The saved events and their filter conditions can be output to a printer in Runtime with this function

To configure the function:

1. Create a new function
2. select **`Print AML or CEL`**
3. the dialog for selecting the list opens



4. select **`Chronological Event List`**
5. the dialog for selecting filter criteria opens
6. define the criteria for:
   - General (on page 36)
   - Time (on page 41)
   - Text (on page 65)
   - Status (on page 67)
   - Font: Selection from the fonts defined in zenon
7. link the function to a button

> **Information**
>
> *In the Runtime you cannot switch between CEL and AML. To print both lists, you must engineer two functions.*

LINE STRUCTURE

Date/Time received	Date/Time cleared	Date/Time acknowledged	Long text	Status text

The keywords which are available for the format file (`BTB.FRM for online print and BTB_G.FRM for offline print`) and examples for their use can be found in chapter FRM configuration file (on page 134) and in section Operation in the Runtime (on page 118).

The FRM file has three parts:

- Header: at the beginning of the page
- List part: cyclic per line
- Footer: at the end of the page

PRINCIPLES

When editing FRM files regard the following:

- Separating the list parts:
  - Header and list part and list part and footer are seperated by `%%`.

    The separation marking must be used only once for the list and the footer.
  - Attention: The last line must be followed by at least two empty paragraphs. Otherwise the footer is not printed!
- Positioning the individual entries:
  You may only use space, no tabulators.
- Editing the FRM file in a text editor:
  Automatic line break must be deactivated otherwise undesired effects in the formatting may occur.

KEYWORDS

The setting for the page length is made in Project Properties under **AML and CEL** or via the `ALARM.frm or ALAR_G.frm` file for the AML or `BTB.frm and BTB_G.frm for the CEL.`

Please keep in mind:

- The number of the alarm entries per page results from the predetermined number of lines (e.g. **Lines per page** `72`), less the lines used for header and footer text.
- The **Use reactivated time** option must be activated in order to be able to use the keywords that evaluate the reactivation (time, number).
- Free texts and keywords can be used in the formatting file. Key words can be used either in German or in English. The use of English key words is recommended.
- Not every key word is suitable for every kind of printing (AML, CEL, online, offline).

The following list contains key words in English and German and their field of application.

German	English	AML offline	CEL offline	AML online	CEL online	Description
Key words for the list part						
@BMKENNUNG	@RESOURCELABEL	X	X	X	X	**Resources label**
@DATZEITKOMMT	@DTRECEIVED	X	X	X	X	Time and Date when the alarm occurred
@DATZEITGEHT	@DTCLEARED	X	-	X	-	Time and Date when the alarm ended
@DATZEITOK	@DTACK	X	-	X	-	Time and Date when the alarm was acknowledged
@DATZEITREAKT	@DTREACTIVATE	X	-	X	-	Time and Date of reactivating: Property **Use reactivated time** in the project properties must be activated.
@DATZEIT	@DTLASTEVENT	-	-	X	-	Time and date of alarm received or cleared or acknowledged or reactivated
@ZEIT	@TLASTEVENT	-	-	X	X	Time of alarm received or cleared or acknowledged or reactivated
@ZEITOK	@TACK	X	-	X	-	only displays time of acknowledging
@ZTKOMMT	@TRECEIVED	X	X	X	X	only displays time of alarm received
@ZTGEHT	@TCLEARED	X	-	X	-	only displays time of end of alarm
@ZTREAKT	@TREACTIVATE	X	-	X	-	only displays time of reactivating
@TIMELASTING	@TACTIVE	X	-	X	-	Time active (difference time received - time cleared)
@ANWENDUNG	@PROJECTNAME	X	X	X	X	Project name
@KANALNAME	@VARNAME	X	X	X	X	Variable name CEL: Only entries with variables
@AK	@ACLASSNR	X	X	X	X	Alarm/event class name
@AG	@AGROUPNR	X	X	X	X	Alarm/event group number
@AGNAME	@AGROUPNAME	X	X	X	X	Name of alarm/event group

@AKNAME	ACLASSNAME	X	X	X	X	Name of alarm/event class
@TAGNR	@IDENTIFICATION	X	X	X	X	Identification (company-specific label)
@AMELDUNG	@TEXT	X	X	X	X	Alarm message text
@REAKTANZ	@NRREACTIVATE	X	-	X	-	Number of reactivations
@STATUS	@STATUS	X	X	X	X	Status information as in Alarm Message List
@WERT	@VALUE	X	X	X	X	Variable value of alarm
@REAKTIONSTEXT	@COMMENT	X	X	X	X	Commentary from the Alarm Message List. If you use dynamic limit texts, this is only available if properties **Long dynamic limit texts AML** or **Long dynamic limit texts CEL** are activated.
@USER	@USERID	X	X	X	X	AML: User who acknowledged alarm.
@RECHNER	@COMPUTER	X	X	X	X	AML: Computer on which alarm was acknowledged.
Key words for header and footer						
@ANWENDUNG	@PROJECTNAME	X	X	X	X	Project name
@SEITE	@PAGE	X	X	X	X	Page number
@HEADDATZEIT	@DTSYSTEM	X	X	X	X	System date and system time
@HEADDATUM	@DSYSTEM	X	X	X	X	System date
@HEADZEIT	@TSYSTEM	X	X	X	X	System time
@USER	@USERID	X	X	X	X	User who prints
@USERNAME	@USERNAME	X	X	X	X	Full user name who triggered action
@RECHNER	@COMPUTER	X	X	X	X	Computer from which it is printed
[Text]	[Text]					Random text

Attention

Between the key words there must be enough space so that entries are not overwritten. In doing so, you make sure that long limit texts are also displayed correctly.

Example:

```
@TEXT
(spaces up to here)
```

SETTING MILLISECONDS

Attention

Milliseconds for printing or export

If, when printing or exporting the AML or CEL to CSV, XML or dBase format, the time in milliseconds is to be given, this property must be activated in the dialog for the column settings. To do this:

- Navigate to the **Alarm Message List** or **Chronological Event List** nodes in properties.
- Click on the . . . button of the **Column settings AML** or **Column settings CEL** property.
- The dialog for the column settings is opened.
- Activate the checkbox in front of the **Milliseconds** property.

The additional setting must be made for both AML and CEL.

4.4.4 Switch online printing on/off

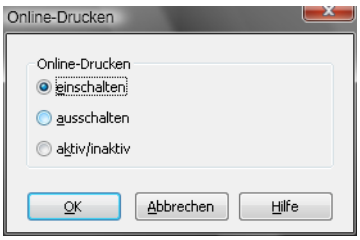
Online printing is set to a status when this function is used:

- on: Switches online printing on
- off: Switches online printing off
- active/inactive: Switches online printing

To configure the function:

1. Create a new function
2. Select `Switch online printing on/off`

3. the dialog for selecting the action opens



4. select the desired action
5. link the function to a button

4.4.5 Online printing start new page

With this function, you control the form feed in Runtime when printing online:

The configured footer will be printed onto the current page of the printout, and then the printout will advance to the beginning of a new page. The page counter will be reset to `1` and the header will be printed out.

To configure the function:

1. Create a new function
2. Select **`Start online printing on a new page`**
3. link the function to a button

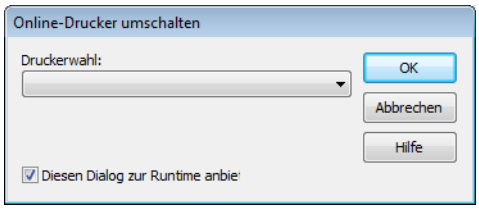
4.4.6 Switch online printer

With this function, the printer for online printing can be changed in Runtime.

To configure the function:

1. Create a new function
2. Select **`Switch online printer`**
3. The dialog for selection of the user opens
4. Select the desired screen printer from the drop-down list

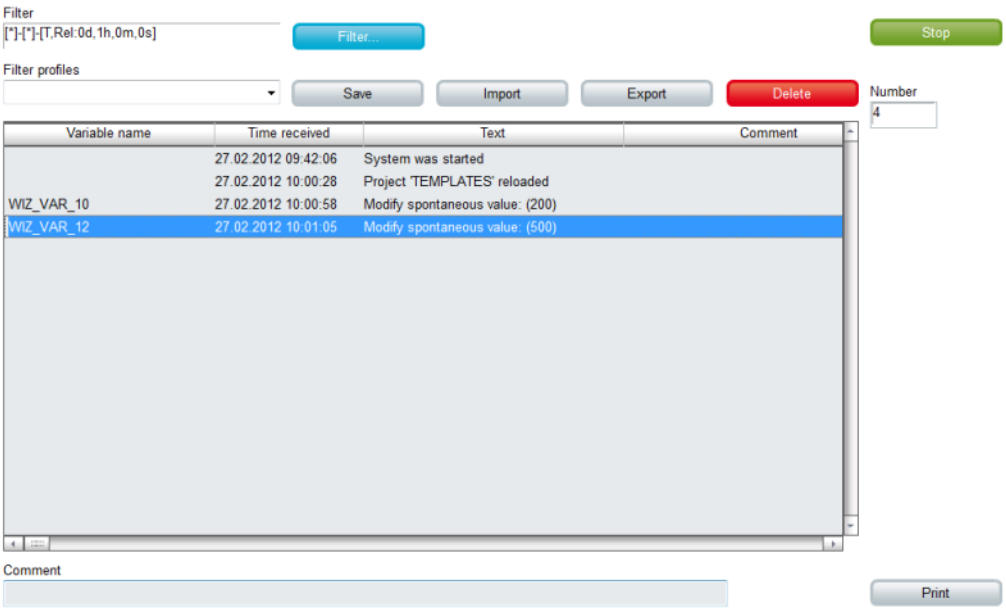
5. link the function to a button



Parameters	Description
select printer	Selection of the desired printer from the drop-down list.
Show this dialog in the Runtime	`Active`: When this function is executed, the dialog is opened and the printer can be defined in Runtime.

5. Operating during Runtime

In the Runtime the Chronological Event List is called via a screen switch function (on page 99).



The available control elements and the look are engineered in the Editor (on page 6).

Parameters	Description
Chronological Event List	Display field for the list with its events. The appearance is configurable (on page 11). Columns are defined via the Column settings (on page 61) filter in screen switching or via the **Column settings CEL** property in the **Chronological Event List** group.
Set filter	Displays the currently selected filter.
Filter...	Opens the filter dialog (on page 31).
Sort	After calling up the CEL in the Runtime, new entries are not sorted in chronological order but added to the bottom of the list. Click on the button to newly sort the list. To help you differentiate between sorted and unsorted entries you can assigned different colors via properties **sorted text** and **unsorted text**.
Show relative times	Active: The relative times are displayed without the focus being lost in the selected entry.
Stop/continue	Controls adding new events to the list while it is displayed: **Stop**: No new entries are added to the list. The button changes its caption to **Continue**. **Continue**: New entries are added to the list. The button changes its caption to **Stop**. To sort the new entries chronologically, you must click on button **Sort**.
Close	Ends the display of the Chronological Event List and closes the screen and the frame. In order that after the closing the screen which was opened before is displayed, you must engineer the screen of type CEL with its own frame.
Print	Prints list (on page 131) as it is currently displayed.
Print with dialog	Opens printer settings before printing.
Text: Total number	Adds text "Total" in the Runtime. Must be followed by list field **Total number**.
Total number	Number of all events in the list
Status	Displays the status of the CEL in the Runtime. active: Events are logged depending of the settings (on page 27) in the project inactive: Events are not logged You define the status with the help of property **CEL active**. Changes take effect after the Runtime has been

	restarted.
Text: Comment field	Adds text "comment" in the Runtime. Must be followed by list field **Comment field**.
Comment field	List field for entering a freely definable text by the user for the selected event. As soon as the field loses focus, the text is taken over. To display the text in the CEL, you must activate column comment in the column definition (on page 61).
Button Stop/Continue	
Navigation	Controls elements of the list.
▸ **Line up**	Scrolls one line up.
▸ **Line down**	Scrolls one line down.
▸ **Column right**	Scrolls one column to the right.
▸ **Column left**	Scrolls one column to the left.
▸ **Page up**	Scrolls one page up.
▸ **Page down**	Scrolls one page down.
▸ **Page right**	Scrolls one page to the right.
▸ **Page left**	Scrolls one page to the left.
Filter profiles	Filter settings that can be saved by the user in Runtime.
▸ **Profile selection**	Select profile from list.
▸ **Save**	Saves an online setting in a profile.
▸ **Delete**	Deletes selected profile.

Information

*The current filter is displayed with the **Show filter** control element.*

With a:

- Text filter, the expression **[Txt]** is displayed
- Relative time filter: is displayed as a print-out with the following scheme: **[T,Rel:%dd,%dh,%dm;%ds]**
  Example: [T,Rel:1d,0h,0m,0s] equals one day.

CONFIGURATION OF THE DISPLAY

The type of information which is displayed in the Runtime, you can configure via the column setting of the CEL. You can reach the column setting via:

- Project settings -> **Chronological Event List** -> **Column settings CEL** (only tab **Column settings** (on page 32))

  or

- Function screen switch to a screen of type **AML** (all tabs (on page 35))

DISPLAY IN THE VALUE COLUMN

Only values of numeric data types can be displayed in the **Value** column. The column remains empty for entries with a **String** data type.

5.1 Filter CEL

Events can be filtered and displayed in the Runtime via:

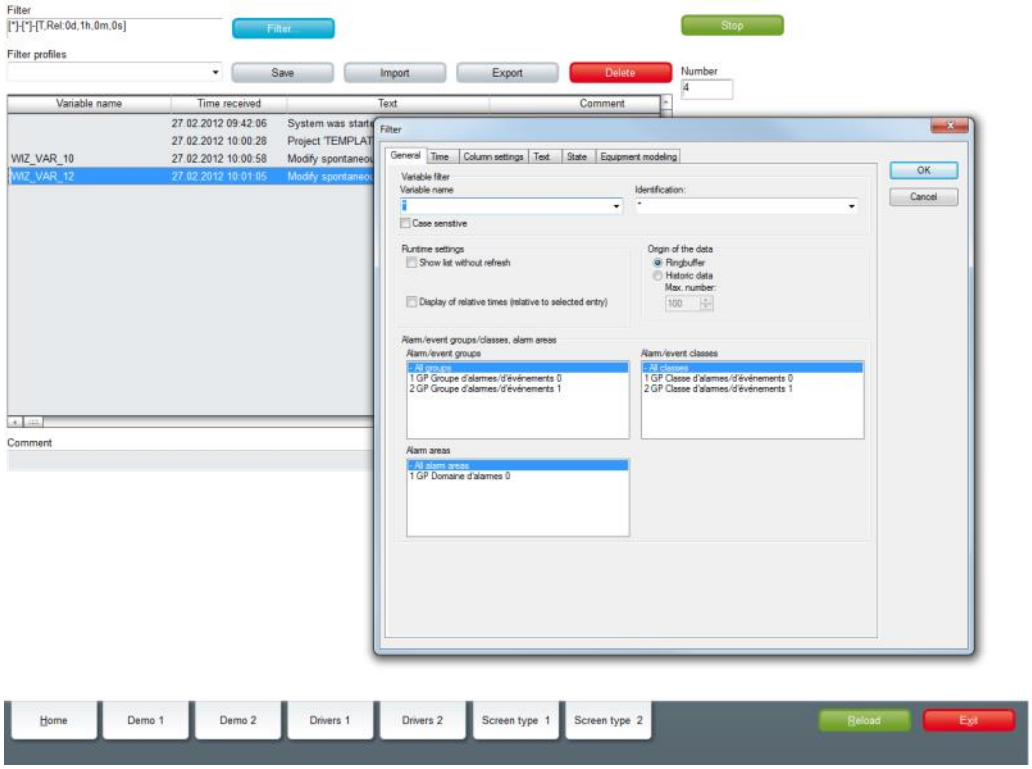
- filter use in the Runtime
- screen switch with pre-defined filter to a screen of type CEL (on page 7)
- screen switch with filter for call up of a screen of type CEL (on page 7)
- screen switch to a screen of type Chronological Event List Filter (on page 12)

FILTERING IN THE RUNTIME

In the screen of type CEL you can use filter in the Runtime. To filter the results displayed in the CEL:

1. you must have engineered button **Filter**
2. click on the button

3. the filter dialog (on page 35) of the CEL will be opened



Set filter can be saved in profiles (on page 123).

SCREEN SWITCH TO A SCREEN OF TYPE CHRONOLOGICAL EVENT LIST

Results can be displayed in a pre-filtered way. To do this:

1. engineer a filter (on page 31)for function screen switch to a screen of type CEL (on page 99)
2. the CEL is displayed in a filtered way when called
3. if the option **Display dialog in the Runtime** is activated for the function, you can newly define the filter before the display
4. in the Runtime further filter settings are possible via button filter

SCREEN SWITCHING TO AN ALARM MESSAGE LIST FILTER SCREEN

To make only the filter available in the Runtime, which the user needs, you can use the screen of type Chronological Event List Filter (on page 12). To do this:

1. engineer a screen switch to a screen of type Chronological Event List Filter (on page 100)
2. call up the CEL via this function in the Runtime
3. The user has an Alarm Message List that is tailor-made (on page 70) to their requirements.

5.1.1 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 in Runtime from a drop-down list.
Save	Clicking on the button in Runtime saves the filter settings as a profile.
Delete	Clicking on the (**x**) button in Runtime deletes the selected profile.

With this you can in the Runtime:

- save filters
- use saved filters
- delete filter profiles

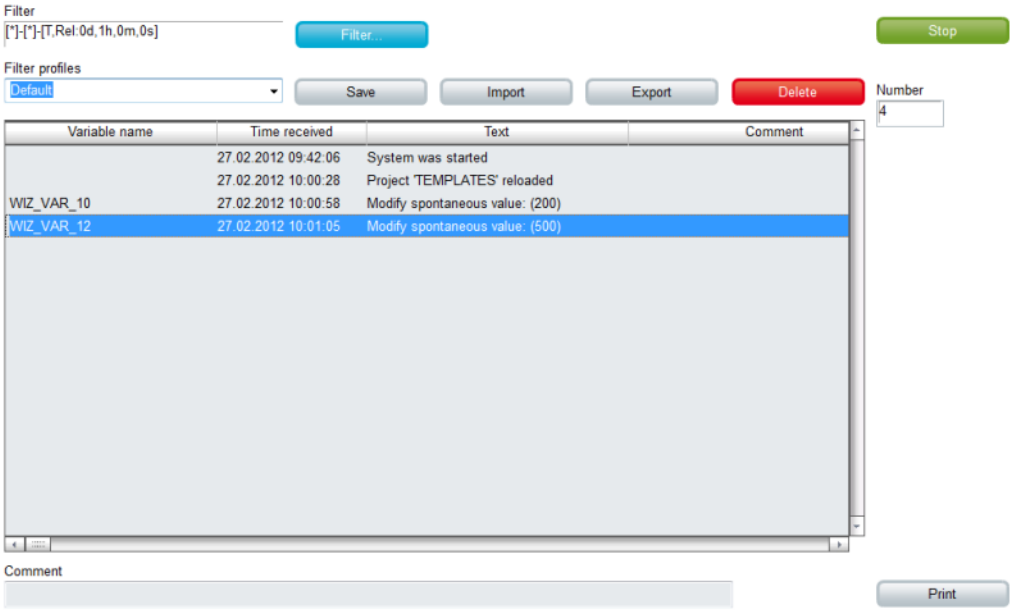
Filter profiles can also be exported and imported with further control elements.

SAVE FILTER PROFILE

To create a filter profile:

1. define filter conditions in the Runtime
2. assign a name using property **filter profiles**

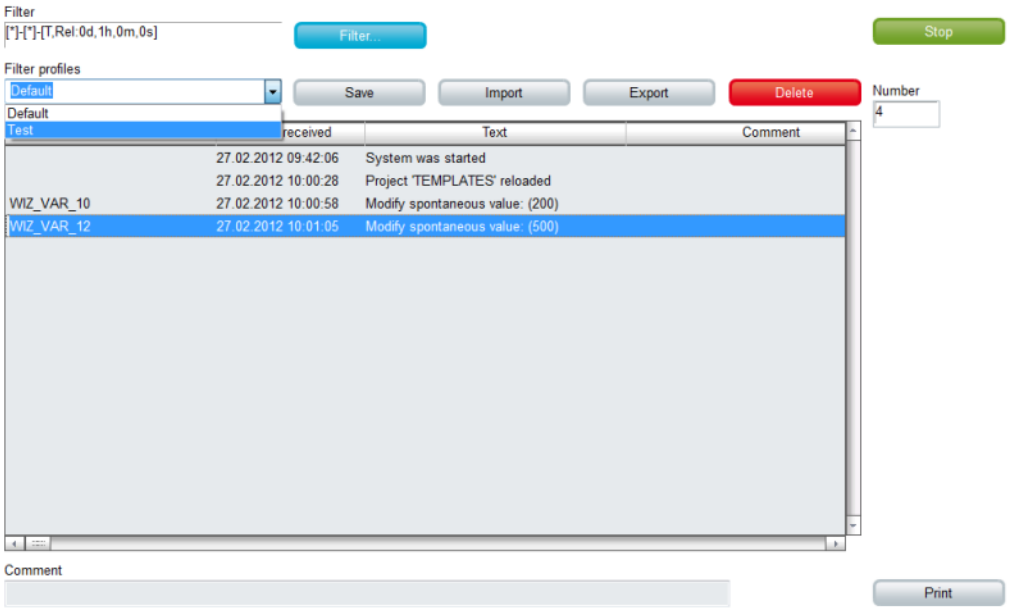
3. Click on **Save**



USE FILTER PROFILE

To use a filter profile:

1. select a filter from the drop-down list property **filter profiles**
2. the filter is immediately applied



DELETE FILTER PROFILE

To delete a filter profile:

1. select a filter from the drop-down list property **filter profiles**
2. click on button **x**
3. the profile is deleted
4. the deleted filter is still applied as long as a new filter is defined or selected

5.1.2 Use CEL filter

The screen of type Chronological Event List Filter (on page 12) enables you to make individual filter settings for the Alarm Message List in the Runtime. You can engineer all filter settings which are also available in the filter (on page 31) for function screen switch to the screen of type CEL (on page 99).

Therefore:

- Only the filter elements that are actually required are configured and provided to the user
- The user only has these filters displayed and has an overview
- The appearance can be freely defined and can, for example, ensure ease of use by means of a touch screen.

FILTER SCREENS

Filter screens make it possible to transfer a preset filter from one screen to another. The filter of the source screen is set using the target screen. The screens can also be of a different screen type.

> **Attention**
>
> *In order for the time to be taken from the screen to be called up in Runtime, the following **time range** must be selected in the Editor for the screen switching function for the Alarm Message List or the Chronological Event List in the **time filter**: `Set filter at time filter type`*

CALL DEFINITION

The following requirements must be met for the set filters to be used:

1. `Set filter for time filter type` is selected as a **time period** for the time filter.

2. The screen (**Alarm Message List Filter**, **Chronological Event List filter** or **Time/Lot Filter** screen) is activated using a button or a combined element. Only in this way can the relationship between filter screen and source screen be maintained.
3. The source screen and filter screen must be configured on different frames or monitors. The filter for the filter screen can only be updated if the source screen is open. This is only possible if both screens do not use the same frame or the same monitor.
4. The screen to be called up must be compatible with the filter screen to be called up (see table).

Source screen	AML filter	CEL filter	Time filter
Archive revision	T	T	T
Extended Trend	T	T	T
Time filter	T	T	X
Alarm Message List Filter	X	C	T
Chronological Event List Filter	C	X	T
Alarm Message List	X	C	T
Chronological Event List	C	X	T

Key:

- C: Common settings are updated.
- T: Time settings are updated.
- X: All settings are updated.

> **Information**
>
> **No filtering**
>
> *The filter screen is not filtered, but opened with the configured values, if:*
>
> - One of the conditions 1 to 3 is not met or
> - The **Screen to call up** setting is not activated for the **Screen switching** function or
> - The screen is not called up via a screen element
>
> *In this case, the **Accept**, **Close** and **Update** buttons are grayed out in Runtime and have no function.*

UPDATE

When a filter screen is called up (**Alarm Message List filter**, **Chronological Event List filter**, **time filter**), the screens configured in the **screen switching function** are updated in two ways:

- If the filter screen is called up via a screen element, the target screens on the same monitor as the source screen are updated.

- If the filter is called up in a different way or if the **Update on all monitors** setting is activated, all target screens configured are updated.

They are updated as soon as you click the **Accept** button or as soon as you closes the filter screen with the close **Close** button. The **Cancel** button discards the changes and closes the filter screen.

UPDATE FILTER SETTINGS

You update the current filter settings for the source screen using the **Update** button. If the filter screen is not called up by a screen element or if the **Calling screen** has not been activated, all monitors are searched for screens that can be used for updating. The first screen that is found is then this is used for updating.

5.2 Print and export events

Entries in the CEL can be documented and archived via:

- CEL Print online (on page 128): each event is printed on a line printer when it is displayed in the list
- CEL Print offline (on page 131): the CEL is printed in the current state as completed list
- Export (on page 138) content of the CEL (filtered)

The print used for printouts is defined via menu File -> General configuration -> Standard.

Attention

A configuration file *.frm is used for the print-out:

- online: ALARM.frm
- offline: ALAR_G.frm.

This FRM file must be in the project tree in the **File** section in the **Texts and formats** folder.

Templates for FRM files can be found in the zenon installation folder in the FRM_QRF subfolder. These can be inserted via the file in the **Texts and formats** section and edited there.

You can kind the key words for FRM files in the FRM configuration file (on page 134) chapter.

5.2.1 Online printing

At online printing each event with entry in the CEL is immediately sent to the printer.

Attention: The online printing takes place line by line in accordance with the ESC/P (Epson Standard for Printers) and demands an Epson compatible printer.

To online print entries from the CEL

1. define a printer
2. navigate to the **AML and CEL** node in properties
3. Activate the property **Printing active**
4. at property **Printing for** select `Chronological Event List` from the drop-down list
5. Define the number of lines with the **Lines per page** property (default: `72`)
6. configure **`BTB.frm`** (on page 134)
7. add file **`BTB.frm`** to node **`Files/texts and formats`**

CONTROL PRINT AND PRINTER IN THE RUNTIME

PAGE CHANGE

Form feed is carried out if:

- a page is fully written
- the Runtime is closed and online printing is active
- function Online printing start new page (on page 117) is executed

HALT PRINTING

To halt or to continue online printing:

- carry out function Switch online printer on/off (on page 116).

CHANGING AND SETTING UP A PRINTER

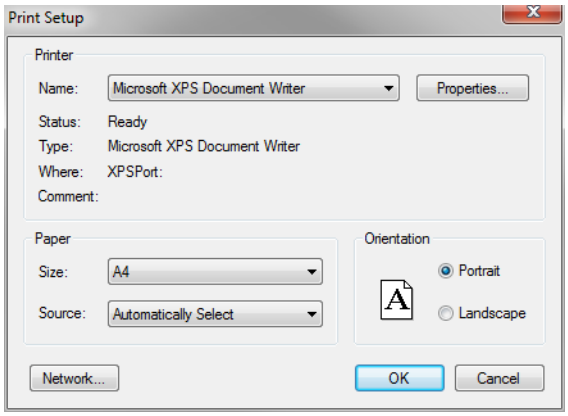
To change the printer in Runtime:

- Carry out the Switch online printer (on page 117) function

To set up the selected printer in Runtime:

1. Configure a **`Print with dialog`** control element for the screen
2. Click on the **`Print with dialog`** button in Runtime

3. The configuration dialog is opened



PRINTER

Parameters	Description
Printer	Settings for the printer.
Name	Selection of the printer from the drop-down list. The list contains all printers configured in the operating system.
Properties...	Opens printer configuration dialog.
Status:	Display printer state. For information only.
Type:	Display printer type. For information only
Location:	Display the location of the printer if configured. For information only.
Comment:	Display comment about printer if configured. For information only.

PAPER

Parameters	Description
Paper	Configuration of the printout.
Size	Select paper format from drop-down list.
Source	Select paper feed from drop-down list.

ALIGNMENT

Parameters	Description
Alignment	Select paper alignment. Possible parameter: • Portrait Format • Landscape
Network	Opens dialog for selecting a printer in the network.
OK	Applies configuration and closes the dialog. With this printing is started in the Runtime.
Cancel	Discards configuration and closes the dialog. In the Runtime this also cancels the printout.

FORMATTING EXAMPLE

Engineering (on page 134) in BTB.FRM:

Date: @DSYSTEM	Alarm inf. list/demo proj.	**Time** @TSYSTEM **o'clock**	**Text**
Date/Time received	**Time cleared**	**Information text**	**Status text**
%%			
@DTRECEIVED	@TCLEARED	@IDENTIFICATION	@TEXT
%%			
	Page	@PAGE	

Printout on the printer

Date: 20.03.2011	**Alarm inf. list/demo proj.**	**Time: 12:00 PM:**	**Text**
Date/Time received	**Time cleared**	**Information text**	**Status text**
20.03.2011 13:00:00	20.03.2011 1:03:59 PM	Message 1	Limit exceeded
20.03.2011 13:00:00	1:05:35 PM	Demo information	Limit 750 reached
20.03.2011 1:03:59 PM		Message 2	Limit
20.03.2011 1:11:23 PM		Message 3	off
20.03.2011 1:03:59 PM	1:12:45 PM	Demo information	off
	Page	1	

5.2.2 Offline printing

Offline printing means that the CEL is printed our as it is displayed at the moment in the Runtime. This print out is a snapshot including all set filters and their restrictions. The print out is carried out regardless of whether the variables concerned having option **print**.

PRINT

To print the CEL offline:

1. define a printer
2. configure **BTB_G.frm** (on page 134)
3. add file **BTB_G.frm** to node **Files/texts and formats**
4. in the Runtime click button print or print with dialog.

SET UP AND CHANGE PRINTER

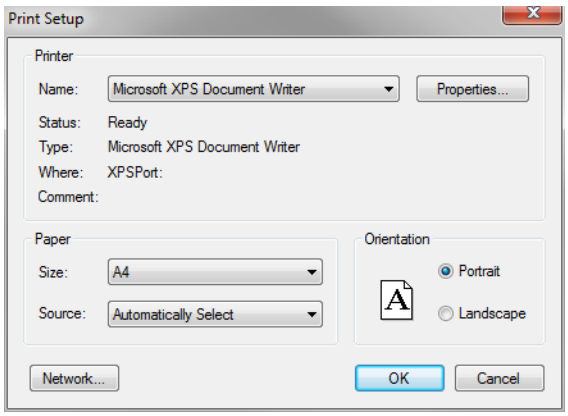
CHANGING AND SETTING UP A PRINTER

To change the printer in Runtime:

- Carry out the Switch online printer (on page 117) function

To set up the selected printer in Runtime:

1. Configure a **`Print with dialog`** control element for the screen
2. Click on the **`Print with dialog`** button in Runtime
3. The configuration dialog is opened



PRINTER

Parameters	Description
Printer	Settings for the printer.
Name	Selection of the printer from the drop-down list. The list contains all printers configured in the operating system.
Properties...	Opens printer configuration dialog.
Status:	Display printer state. For information only.
Type:	Display printer type. For information only
Location:	Display the location of the printer if configured. For information only.
Comment:	Display comment about printer if configured. For information only.

PAPER

Parameters	Description
Paper	Configuration of the printout.
Size	Select paper format from drop-down list.
Source	Select paper feed from drop-down list.

ALIGNMENT

Parameters	Description
Alignment	Select paper alignment. Possible parameter: • Portrait Format • Landscape
Network	Opens dialog for selecting a printer in the network.
OK	Applies configuration and closes the dialog. With this printing is started in the Runtime.
Cancel	Discards configuration and closes the dialog. In the Runtime this also cancels the printout.

FORMATTING EXAMPLE

Configuration in **BTB_G.FRM:**

Date: @DSYSTEM	Closed Alarm Message List Demo Project	Time @TSYSTEM o'clock	Text
Date/Time received	Time cleared	Information text	Status text
%%			
@DTRECEIVED	@TCLEARED	@IDENTIFICATION	@TEXT
%%			
	Page	@PAGE	

Printout on the printer

Date: 20.03.2011	Closed Alarm Message List Demo Project	Time: 12:00 PM:	Text
Date/Time received	Time cleared	Information text	Status text
20.03.2011 13:00:00	20.03.2011 1:03:59 PM	Message 1	Limit exceeded
20.03.2011 13:00:00	1:05:35 PM	Demo information	Limit 750 reached
20.03.2011 1:03:59 PM		Message 2	Limit
20.03.2011 1:11:23 PM		Message 3	off
20.03.2011 1:03:59 PM	1:12:45 PM	Demo information	off
	Page	1	

5.2.3 FRM configuration file

FRM files (format files) are configuration files for printing out lists.

The FRM file has three parts:

- Header: at the beginning of the page
- List part: cyclic per line
- Footer: at the end of the page

PRINCIPLES

When editing FRM files regard the following:

- Separating the list parts:

- Header and list part and list part and footer are seperated by %%.

  The separation marking must be used only once for the list and the footer.

- Attention: The last line must be followed by at least two empty paragraphs. Otherwise the footer is not printed!

- Positioning the individual entries:
  You may only use space, no tabulators.
- Editing the FRM file in a text editor:
  Automatic line break must be deactivated otherwise undesired effects in the formatting may occur.

KEYWORDS

The setting for the page length is made in Project Properties under **AML and CEL** or via the ALARM.frm or ALAR_G.frm file for the AML or BTB.frm and BTB_G.frm for the CEL.

Please keep in mind:

- The number of the alarm entries per page results from the predetermined number of lines (e.g. **Lines per page** 72), less the lines used for header and footer text.
- The **Use reactivated time** option must be activated in order to be able to use the keywords that evaluate the reactivation (time, number).
- Free texts and keywords can be used in the formatting file. Key words can be used either in German or in English. The use of English key words is recommended.
- Not every key word is suitable for every kind of printing (AML, CEL, online, offline).

The following list contains key words in English and German and their field of application.

German	English	AML offline	CEL offline	AML online	CEL online	Description
Key words for the list part						
@BMKENNUNG	@RESOURCELABEL	X	X	X	X	**Resources label**
@DATZEITKOMMT	@DTRECEIVED	X	X	X	X	Time and Date when the alarm occurred
@DATZEITGEHT	@DTCLEARED	X	-	X	-	Time and Date when the alarm ended
@DATZEITOK	@DTACK	X	-	X	-	Time and Date when the alarm was acknowledged
@DATZEITREAKT	@DTREACTIVATE	X	-	X	-	Time and Date of reactivating: Property **Use reactivated time** in the project properties must be activated.
@DATZEIT	@DTLASTEVENT	-	-	X	-	Time and date of alarm received or cleared or acknowledged or reactivated
@ZEIT	@TLASTEVENT	-	-	X	X	Time of alarm received or cleared or acknowledged or reactivated
@ZEITOK	@TACK	X	-	X	-	only displays time of acknowledging
@ZTKOMMT	@TRECEIVED	X	X	X	X	only displays time of alarm received
@ZTGEHT	@TCLEARED	X	-	X	-	only displays time of end of alarm
@ZTREAKT	@TREACTIVATE	X	-	X	-	only displays time of reactivating
@TIMELASTING	@TACTIVE	X	-	X	-	Time active (difference time received - time cleared)
@ANWENDUNG	@PROJECTNAME	X	X	X	X	Project name
@KANALNAME	@VARNAME	X	X	X	X	Variable name CEL: Only entries with variables
@AK	@ACLASSNR	X	X	X	X	Alarm/event class name
@AG	@AGROUPNR	X	X	X	X	Alarm/event group number
@AGNAME	@AGROUPNAME	X	X	X	X	Name of alarm/event group

@AKNAME	ACLASSNAME	X	X	X	X	Name of alarm/event class
@TAGNR	@IDENTIFICATION	X	X	X	X	Identification (company-specific label)
@AMELDUNG	@TEXT	X	X	X	X	Alarm message text
@REAKTANZ	@NRREACTIVATE	X	-	X	-	Number of reactivations
@STATUS	@STATUS	X	X	X	X	Status information as in Alarm Message List
@WERT	@VALUE	X	X	X	X	Variable value of alarm
@REAKTIONSTEXT	@COMMENT	X	X	X	X	Commentary from the Alarm Message List. If you use dynamic limit texts, this is only available if properties **Long dynamic limit texts AML** or **Long dynamic limit texts CEL** are activated.
@USER	@USERID	X	X	X	X	AML: User who acknowledged alarm.
@RECHNER	@COMPUTER	X	X	X	X	AML: Computer on which alarm was acknowledged.
Key words for header and footer						
@ANWENDUNG	@PROJECTNAME	X	X	X	X	Project name
@SEITE	@PAGE	X	X	X	X	Page number
@HEADDATZEIT	@DTSYSTEM	X	X	X	X	System date and system time
@HEADDATUM	@DSYSTEM	X	X	X	X	System date
@HEADZEIT	@TSYSTEM	X	X	X	X	System time
@USER	@USERID	X	X	X	X	User who prints
@USERNAME	@USERNAME	X	X	X	X	Full user name who triggered action
@RECHNER	@COMPUTER	X	X	X	X	Computer from which it is printed
[Text]	[Text]					Random text

Attention

Between the key words there must be enough space so that entries are not overwritten. In doing so, you make sure that long limit texts are also displayed correctly.

Example:

```
@TEXT
(spaces up to here)
```

5.2.4 Export events

Entries in the CEL can be exported to different formats:

- dBase
- CSV
- XML
- SQL

EXPORT

To export entries from the CEL

1. create function Export CEL (on page 104)
2. link the function to a button
3. execute the function in the Runtime

Information

The export to SQL is incremental. If there is already exported data, only new and amended data is exported.