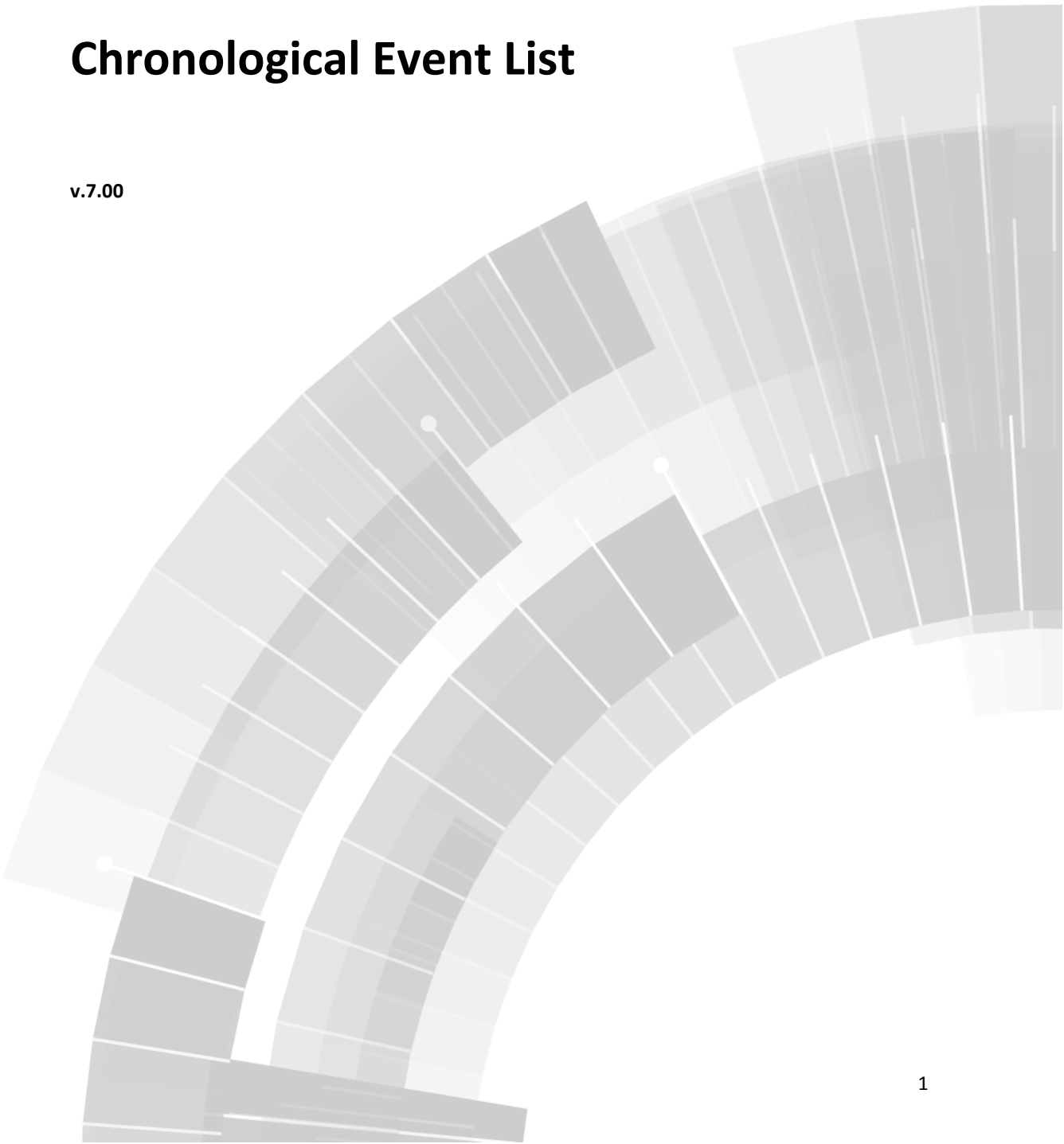
COPA-DATA
do it your way

zenon manual

Chronological Event List

v.7.00



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1. Welcome to COPA-DATA help

GENERAL HELP

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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.:

- Acknowledge alarm
- Delete alarm
- Set value
- Write recipe

- 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 26)
- with a screen of type `Chronological Event List Filter` (on page 13) adapt the available filter in the Runtime

RUNTIME

For the operation in the Runtime (on page 88) the following is used:

- Screen switch CEL (on page 71)
- Screen switch CEL filter (on page 73)

- die zenon CEL functions (on page 64)
- Use screen of type CEL Filter (on page 95)

3.1 Creating a screen of the type CEL

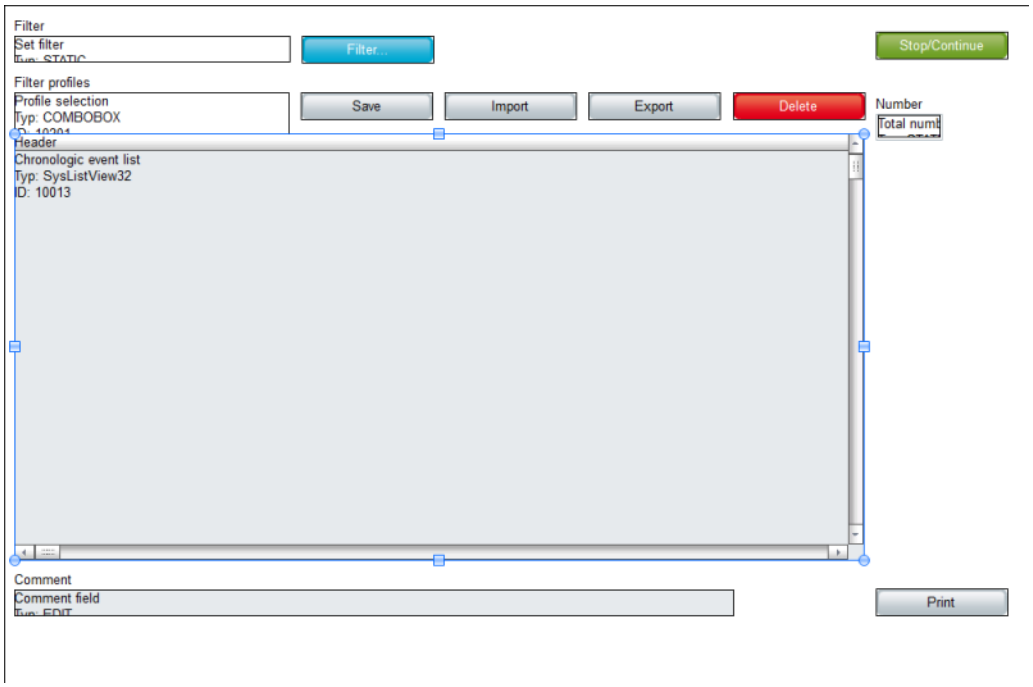
A **Chronological Event List** screen makes it possible to log and display system events and user operations in the Runtime. Which entries are displayed is defined via the engineering. The display can be changed by filters (on page 26) in the engineering and in the Runtime. Functions make it possible 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



Parameters	Description
Add 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 dragged onto the screen. Elements can be moved on the screen and arranged individually.
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 43) filter in screen switching or via the `Column settings CEL` property in the `Chronologic event list` group.
Display: Set filter	Displays the currently selected filter.
Filter...	Opens the filter dialog (on page 26).
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`.
Display relative time	`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 103) as it is currently displayed.
Print with dialog	Opens printer settings before printing.
Labeling: 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
Info: Status CEL	Displays the status of the CEL in the Runtime. active: Events are logged depending of the settings (on page 22) 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.
Labeling: 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 43).
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.

Info

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

For 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] corresponds to a day.

3.1.1 Customize CEL look

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

SCROLL BAR, HEADER AND GRID

To define size and look of the scroll bars and the header and to decide whether a grid is displayed for the table:

1. activate in the project property in group `Representation` property `Extended graphical settings`

2. define the desired properties in groups `Scroll bars` and `Header and grid` for element Chronological Event List in the screen

> **Info**
>
> *If you select `Graphics files` for property `Display style`, all elements for which no graphics file is selected are displayed with color gradient. You cannot use transparent graphics for control elements for lists.*

SORT IN THE RUNTIME

To mark the column which is relevant for the sorting in the Runtime and to define the sorting order, engineer graphical elements for the header:

1. for property `Display style` select value `Graphics files`
2. link properties `Sort ascending` and `Sort descending` each with a graphics file
3. in the Runtime the selected graphic for the corresponding sorting order is displayed in the column which is relevant for the sorting
4. Click on the graphic in order to change the sorting order
5. Click on header in order to activate the column for sorting

OPERATE HEADER IN THE RUNTIME

You can enable users to operate the header in the Runtime. With this an individual adjustment of the display in the Runtime is possible:

- Move columns
- Change size
- Change sorting order.

In the project settings go to group `Chronologic event list` and select at property `Header CEL` value `operable header`. As an alternative you can define the header as inoperable or invisible.

These settings are true for all headers in the project.

Info

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 property `Extended graphical settings` the header and the scroll bars are displayed as a preview in the Editor. Thus details such as color, filling effects, light effects or grid can be engineered 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 and 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 available in the filter (on page 26) for the function to switch the screen to the Chronological Event List screen (on page 71) 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 95) chapter.

For the definition of filter criteria, see Filter screen switch CEL Filter (on page 51) chapter.

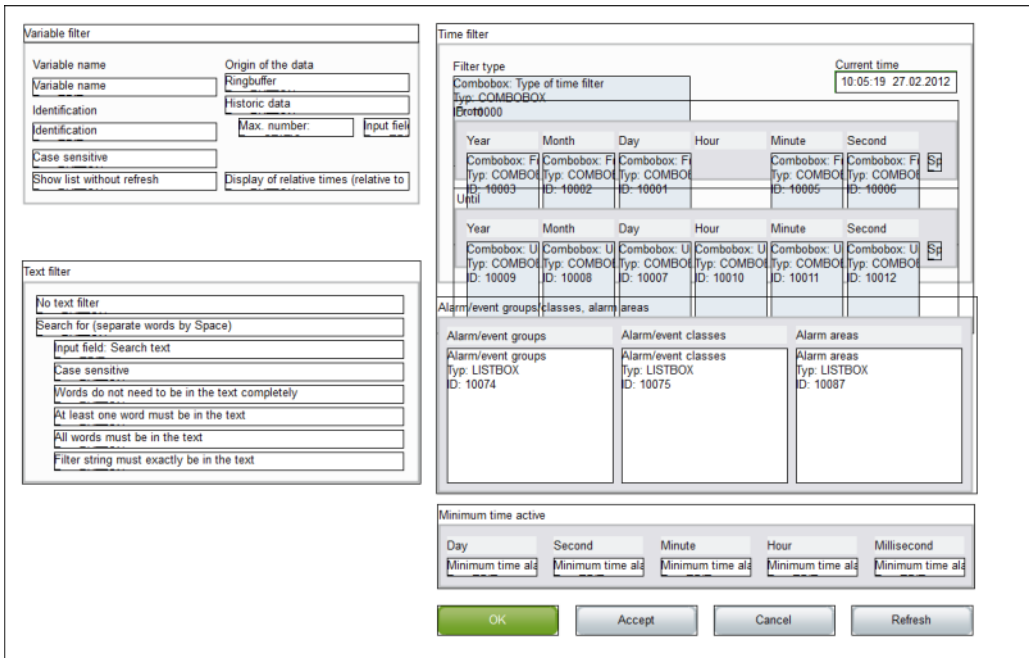
> **Attention**
>
> *Screens of type* ***Alarm Message List Filter****,* ***Chronological Event List Filter*** *and* ***Time Filter*** *must be engineered with an own frame. If they use the same frame as other screens, all screens based on this frame are closed when the screen is closed.*

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



ELEMENTS

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

Element	Description
Add 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 dragged onto the screen. Elements can be moved on the screen and arranged individually.
General filter	Drop-down list of different general filters.
Insert all elements: General filter	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.
▸ Note capitalization	Note capitalization when filtering the variables.
Origin of the data	Where does the data come from:
▸ Ring buffer	From the ring buffer (on page 62).
▸ Historical data	From an archive.
▸ Labeling: Maximum number	Text for **Maximum number** input field
▸ Input field: Maximum 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.
▸ Display relative time	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 60).
Insert all elements: Absolute time period - classic display	Inserts all elements for the definition of absolute time periods: Each element contains its own field.
Insert all elements: Absolute time period - small display	Inserts elements for the definition of absolute time periods in compact display.
Insert all elements: Relative time period	Inserts all elements for the definition of relative time periods.
Insert all elements: From HH:MM:SS o' clock	Inserts all elements for the definition of "from" time points in hours-minutes-seconds format.
Insert all elements: From day - HH:MM:SS time	Inserts all elements for the definition of "from" time points in day-hours-minutes-seconds format.
Insert all elements: From day, month - HH:MM:SS time	Inserts all elements for the definition of "from" time points in day-month-hours-minutes-seconds format.
Labeling: Time filter type	Labeling for time filter type.
Combobox: Time filter type	Combobox time filter type
Display: Time filter type	Field for time filter type display.
Time from	Fields and labeling for stating "from" time.
▸ Labeling: From year	
▸ Combobox: From year	
▸ Labeling: From month	
▸ Combobox: From month	
▸ Labeling: From day	
▸ Combobox: From day	
▸ Labeling: From hour	
▸ Combobox: From hour	
▸ Labeling: From minute	
▸ Combobox: From minute	
▸ Labeling: From second	

▸ Combobox: From second	
▸ Spin control: From	
Time to	Fields and labeling for stating "to" time.
▸ Labeling: To year	
▸ Combobox: To year	
▸ Labeling: To month	
▸ Combobox: To month	
▸ Labeling: To day	
▸ Combobox: To day	
▸ Labeling: To hour	
▸ Combobox: To hour	
▸ Labeling: To minute	
▸ Combobox: To minute	
▸ Labeling: To second	
▸ Combobox: To second	
▸ Spin control: To	
Absolute time filter	Fields and labeling for stating absolute time filter.
▸ Labeling: From	
▸ Calendar display: From date	
▸ Date display: From date	
▸ Time display: From time	
▸ Labeling: To	
▸ Calendar display: To date	
▸ Date display: To date	

▸ Time display: To time	
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 (words separated by spaces)	Radio button to activate the search
Labeling: Search text	Labeling for search field.
Input field: Search text	Field for input of search term.
Options	Search options
▸ Note capitalization	Capitalization must be noted.
▸ Words do not have to appear in the text in full	Fragments can also be searched for.
▸ At least one word must be present in the text	At least one search term from several must be in the result.
▸ All words must be present in the text	All search terms must be included in the result.
▸ Filter text must appear in the text exactly	Exact text from the input field must be contained in the result.
OK	Accept inputs and close screen.
Cancel	Reject inputs and close screen.
Accept	Accept inputs and leave screen open for further inputs.
Refresh	Refresh 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**
>
> *If a different* `time period` *than* `Set filter for time filter type` *is selected for the Alarm Message List or the Chronological Alarm List, the time of the screen to be called up cannot be transferred over in Runtime.*

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 Filter screens`**) are 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.

> **Info**
>
> **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 `Chronologic 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.

Parameter	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 Chronologic event list.
PFS/Scheduler	The Production and 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 Chronologic 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.

> **Info**
>
> *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`.

ENTRY IN CEL

- Function Write set value

For the entry in the CEL you must activate property `Function Set SV` in node `Chronologic 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: For dBase export the length is limited 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 26)
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 30).
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 51).

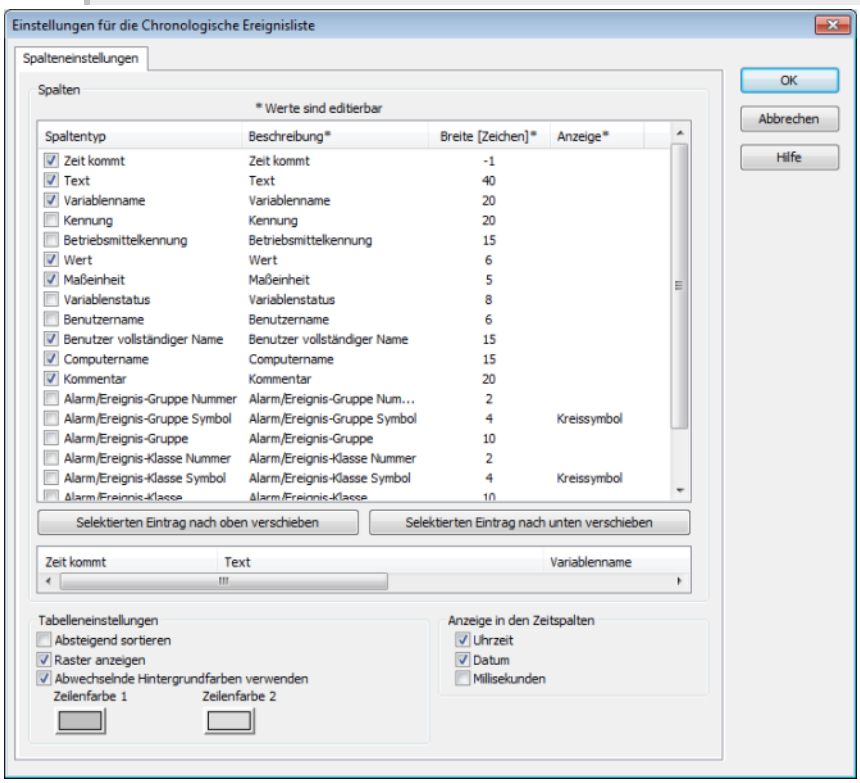
3.4.1 Column settings for Chronological Event List

Which pieces of information are displayed in the CEL in the Runtime, you can define in the column settings. You can define them at a screen switch function in the filter criteria or directly in the properties of the Alarm Message List in the project:

1. in the project properties open node `Chronologic event list`
2. click on property `Column settings CEL`
3. the dialog for the **`column setting`** is opened
4. **Note:** For calculating the column width the average character width of the selected font is used.

> **Info**
>
> *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. The setting is stored in the ***project.ini*** *file.*



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. **Changing the 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 **Hint:** 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 settings apply for switching to the screen. You can change the sorting order in Runtime by clicking on the column head. 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.
▸ Line 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.
▸ Line 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. Filter can be defined in the Editor and - depending on the settings in the Editor - in the Runtime.

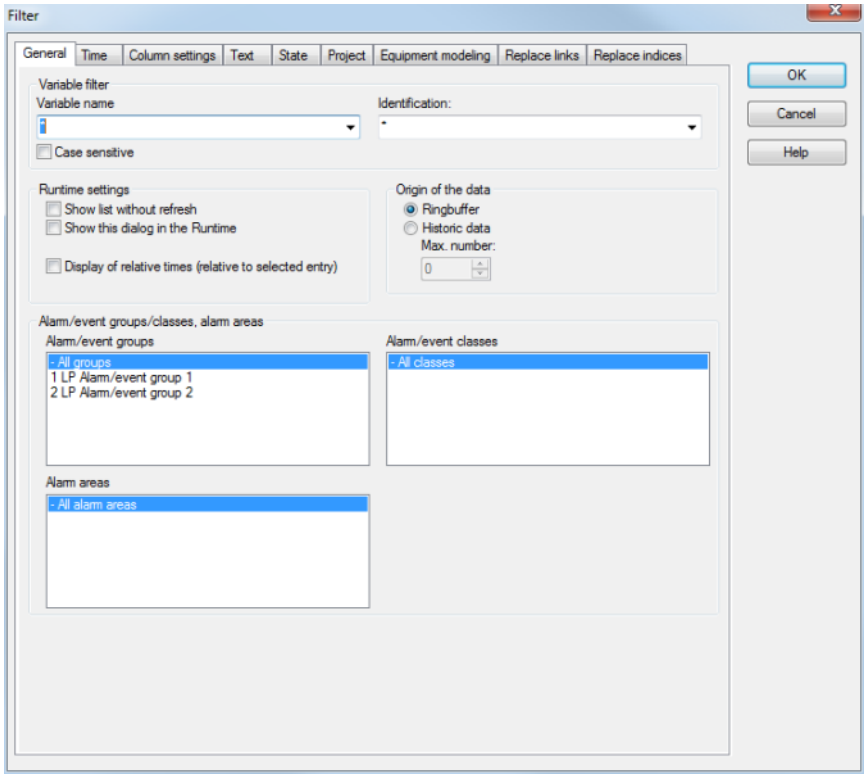
To tailer the filter selection in the Runtime to the needs of the operator, use screen of type Chronological Event List Filter (on page 13) instead of Chronological Event List (on page 7).

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 31)
   - Time (on page 34)
   - Column settings (on page 43)
   - Text (on page 47)
   - Status (on page 49)
   - Project (on page 50) (only available in the integration project of the multi-project administration.)
   - Equipment modeling (on page 50)

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

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



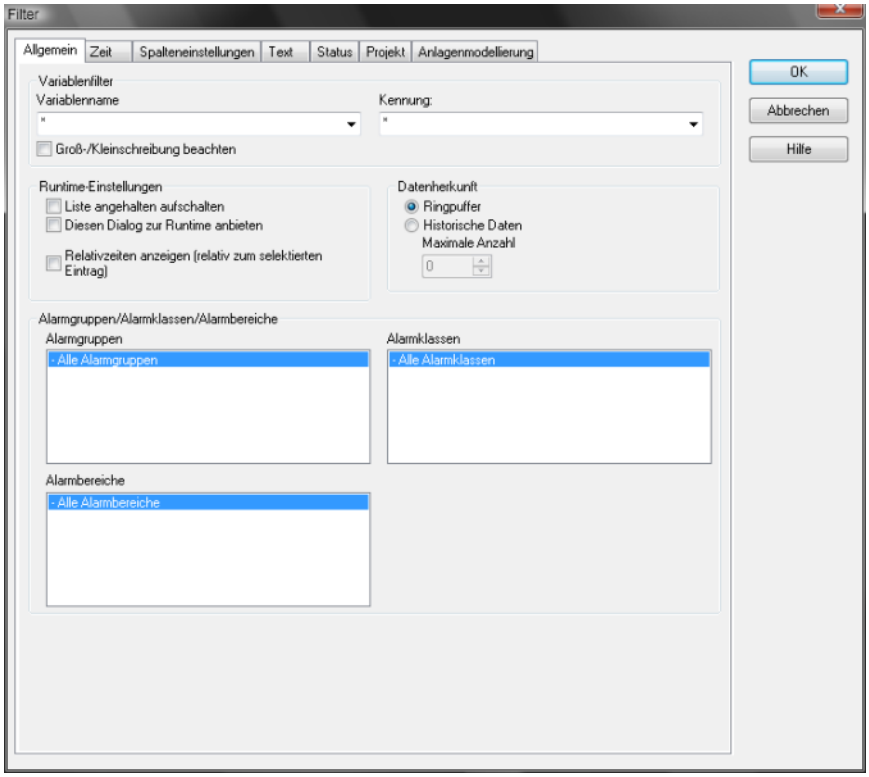
General

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
- Data origin

- Variables
- Alarm/event groups, classes and alarm areas

The following properties are available:



Parameter	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. Wild card * is possible. **Note:** Wild cards are only allowed as prefix or suffix, i.e. *xxx or xxx*
Identification	Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible. **Note:** Wild cards are only allowed as prefix or suffix, i.e. *xxx or xxx*
Note capitalization	Active: Capitalization is recognized when filtering for variable name and/or identification.
Data origin	Display current or current and historical events.
Ring buffer	Active: Only data from the ring buffer (on page 62) 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** (on page 76).)
Open 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 temporally distance to the selected entry. The stated time is the time difference which has passed since the selected event. The selected entry automatically receives 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 and 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.

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

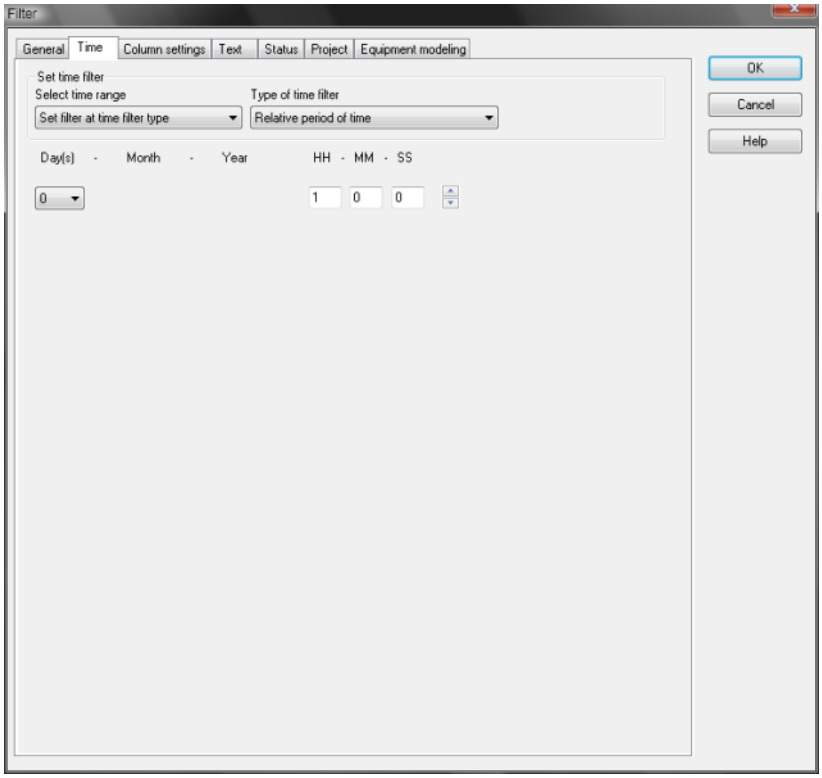
The time filters provide an easy possibility to limit the data to be displayed or exported. The time filters are very flexible to implement and can be pre-set in the editor or adjusted in Runtime.

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

The mechanisms described here are applicable for screen switching as well as export for:

- Alarm Message List
- Chronological Event List (on page 5)
- Archive revision
- Extended Trend
- Report Generator

- Report Viewer



Time filtering can be carried out in two ways:

1. Define time period in the Editor
   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
   Pre-defined times are used. The time filter is defined in the Editor and can be changed in Runtime as desired.

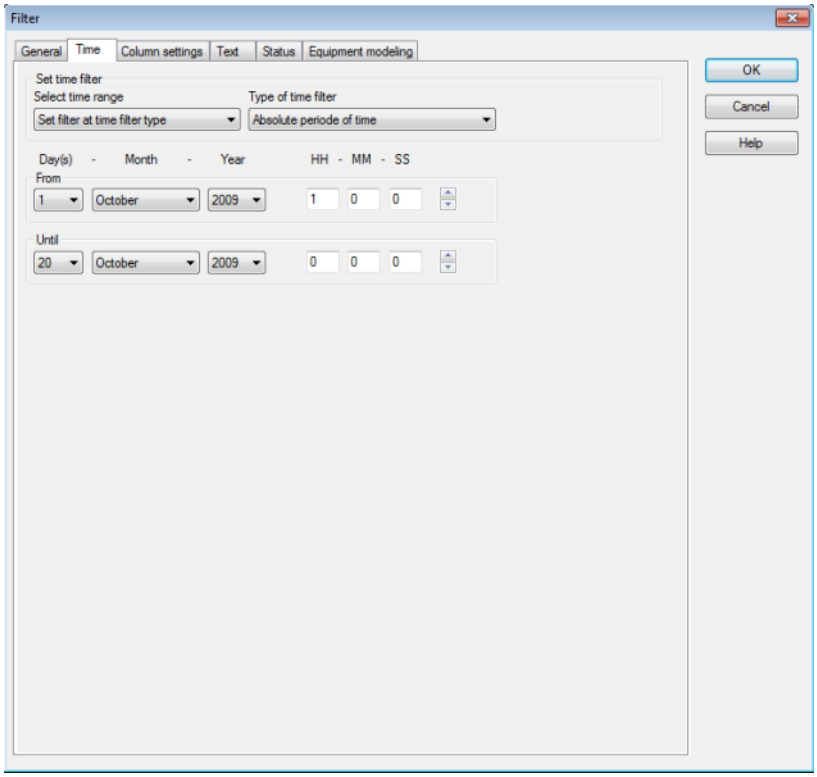
> **Info**
>
> *If a screen that does not have a time filter is referenced, the time filters are deactivated.*
>
> *For the setting* `Set filter for time filter type` *the option* `Display filter dialog in Runtime` *can be selected, but it is not available in runtime.*

Time filter changeable in the Runtime (use pre-engineered times)

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

1. create a picture switch function.
2. The screen must have **`Filter`** and **`Display filter`** buttons
3. Select, from the `Time period selection` drop-down list, the `Set filter for time filter type` setting

   Note: The option `Display filter dialog in Runtime` can be selected, but is not available in Runtime to set the `Set filter for time filter type` option.
4. Select the time period from the `Time filter type` drop-down list



Parameters	Options	Description
Absolute period of time		A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used. Example: If you want to see all alarms from January 1, 2011 to December 31, 2011, then you must enter the corresponding data at From and To. **Note:** Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
	From	Defines the start time in day, month, year, hour (HH), minute (MM), second (SS)
	To	Defines the end time in day, month, year, hour (HH), minute (MM), second (SS)
Relative time period		A relative time period is entered. **Attention!** this filter is constantly updated. It is therefore carried over. For example: You set up a relative time of 10 minutes and switch to an Alarm Message List Screen with this time filter at 12:00. Then you are shown the alarms from 11:50 to 12:00 when switching. If the Alarm Message List screen stays open, the filter is automatically updated. At 12:01, you see the alarms from 11:51-12:01 etc.
	Time	Defines the relative period in days, hours (HH), minutes (MM) and seconds (SS)
from HH:MM:SS o' clock		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. **Attention!** 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.
	Time	Defines the start time period in hours (HH), minutes (MM) and seconds (SS)

Parameters	Options	Description
From day - HH:MM:SS time		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. **Attention!** The start time 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.
	Time	Defines the start point in hours (HH), minutes (MM), seconds (SS)
From day, month - HH:MM:SS time		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 Month October,Day5- 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. **Attention!** 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 on October 5 is reached. The end time point is not defined with this filter, it is carried over.
	Time	Defines the start point in months, days, hours (HH), minutes (MM), and seconds (SS)
No time filter		No time filter is used. At the Report Viewer and in the Archive revision all entries since 1.1.2000 are displayed with this setting.

Attention

If a different time period than Set filter for time filter type is selected for the Alarm Message List or the Chronological Alarm List, the time of the screen to be called up cannot be transferred over in Runtime.

Define 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.

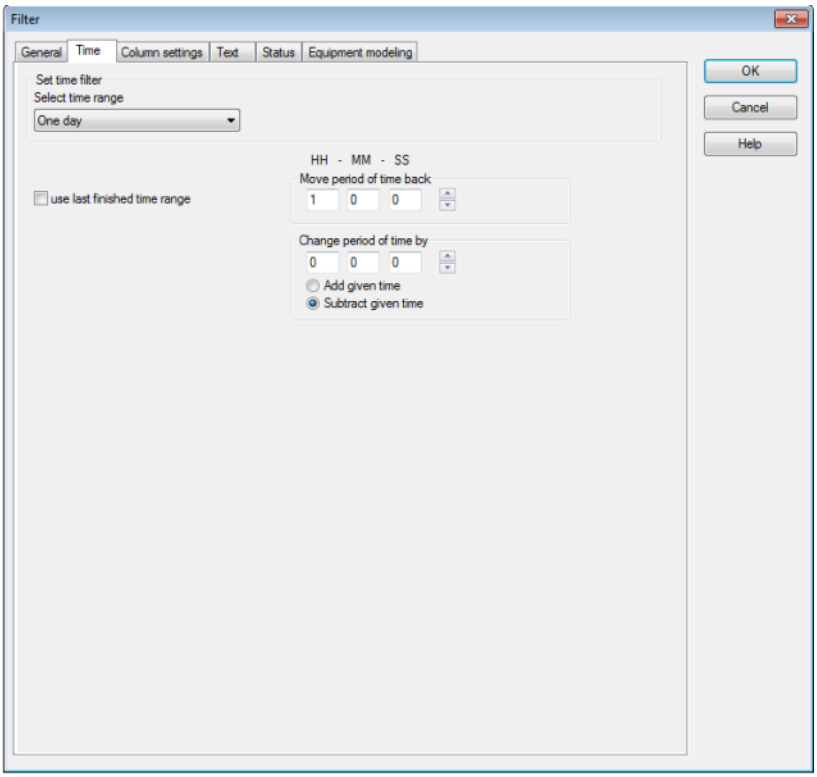
> **Attention**
>
> *When using this type of filter, you can also no longer amend all other filters in Runtime that are available in the* ***General*** *tab. It is still possible to filter for text, status and equipment.*

To create the filter:

1. create a picture switch function.
2. The screen must have the **Filter** button to start the filter in Runtime

   Hint: Activate the `Display filter dialog in Runtime` option in the **General** tab. 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.
3. Select `Time period selection` from the drop-down list;
   Exception: `Set filter for time filter type` - this is envisaged for the Time filter can be adapted in Runtime option

4. Configure the selected time period



Parameters	Description
Set filter for filter type	Activates the possibility to Amend Runtime.
One day	A whole day is filtered: 00:00:00 to 23:59:59.
One week	A whole week is filtered: Monday 00:00:00 to Sunday 23:59:59.
Two weeks	Two whole weeks are filtered: Monday 00:00:00 of the first week to Sunday 23:59:59 of the second week.
One month	A whole month is filtered: The first of the month at 00:00:00 to the last day of the month at 23:59:59.
One year	A whole year is filtered: January 1 of the year at 00:00:00 to December 31 of the year at 23:59:59.
15 minutes	A 15 minute time period is filtered.
30 minutes	A 30 minute time period is filtered.
60 minutes	A 60 minute time period is filtered.
Relative time period	For these filters, you must set the Display filter dialog in Runtime option on the **General** tab to active. if the option is not set, the time period in Runtime is set to 0. When carrying out the function, a dialog is displayed with which a relative time period in days, hours (HH), minutes (MM) and seconds (SS) can be given. **Attention!** the selected time period relates to the activation time. The filtered time period is then fixed. Example: It is 10:23:00 when calling the function. You set a relative time period of an hour. The filter is set to 9:23:00 - 10:23:00.
Absolute period of time	For these filters, you must set the Display filter dialog in Runtime option on the **General** tab to active. if the option is not set, the time period in Runtime is set to 0. When executing the function, a dialog is displayed with which an absolute period of time can be entered. In doing so, you set the start and end time in day, month, year, hour (HH), minute (MM), second (SS). **Note:** Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
Batches	For these filters, you must set the Display filter dialog in

	Runtime option on the **General** tab to active. if the option is not set, the time period in Runtime is set to 0. When carrying out the function, a dialog is displayed with which you can select a batch. The time filter is then set to the time period of the batch. You can therefore filter according to all alarms or all CEL entries which occur in a batch, for example. Note: The filter only displays closed batches.
Relative batches	**Extended Trend** only. Display always starts from zero point. Enables several batches to be compared directly.

OPTIONS

The following settings are possible to adapt the time period for all time periods (except absolute and relative time period, as well as batches):

Parameters	Options	Description
Use last concluded time period		Active: The current time period is always used. The previous time period is displayed if the option is set. Example: You have set a 30 minute filter. It is 10.45 when the function is activated. If the option is deactivated, the filter is set to the current time period of 10:30:00 AM to 10:59:59 AM. If the option is activated, the filter is set to the previous time period of 10:00:00 to 10:29:59.
Move time period back by		Active: The whole time period is moved back by the given time. The time period remains unaffected by this setting. Example: You have selected a 60 minute filter and enter a time of 5 minutes here. In Runtime, the filter is now now started at each whole hour, but always five minutes later, for example at 10:05:00, at 11:05:00 etc. Filtering takes place in 60 minute intervals as before, i.e. to 11:04:59, to 12:04:59 etc.
	Time	Defines the time difference in hours (HH), minutes (MM) and seconds (SS)

Change time period by		Active: The filtered time period is shortened or extended. Example: You have selected a 60 minute filter and enter a time of 5 minutes here. The Add time stated option is set. In Runtime Filters are no longer carried out for 60 minutes but for 65 minutes, i.e. from 10:00:00 to 11:04:59.
	Time	Defines the time by which the time period is shortened or extended. in hours (HH), minutes (MM) and seconds (SS)
	Add time stated	The selected time period is extended by the time stated
	Deduct time stated	The selected time period is shortened by the time stated

Attention

If a different time period than Set filter for time filter type is selected for the Alarm Message List or the Chronological Alarm List, the time of the screen to be called up cannot be transferred over in Runtime.

Column settings

In this dialog you define which columns you want to display in what form, succession and sort order.

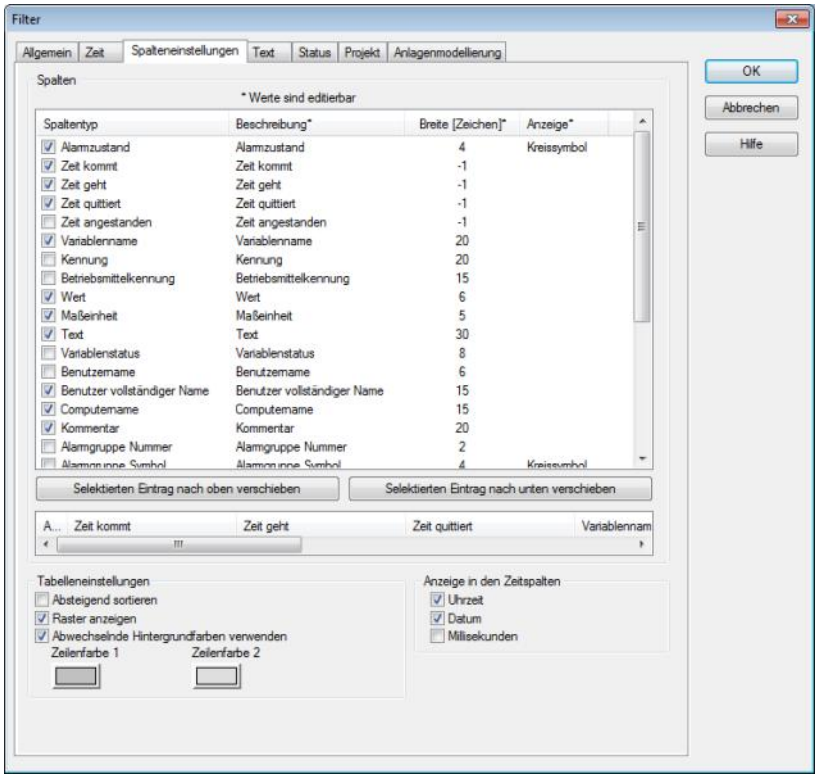
Note: All settings which you make in this tab are default settings for:

- Screen of type Alarm Message List
- Alarm Message List Screen
- Alarm status line
- Chronological Event List screen
- Screen Chronological Event List Filter

These default settings can be changed at the definition of each individual alarm function/CEL function.

Info

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. The setting is stored in the* **`project.ini`** *file.*



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. **Changing the 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 **Hint:** 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 settings apply for switching to the screen. You can change the sorting order in Runtime by clicking on the column head. 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.
▸ Line 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.
▸ Line 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

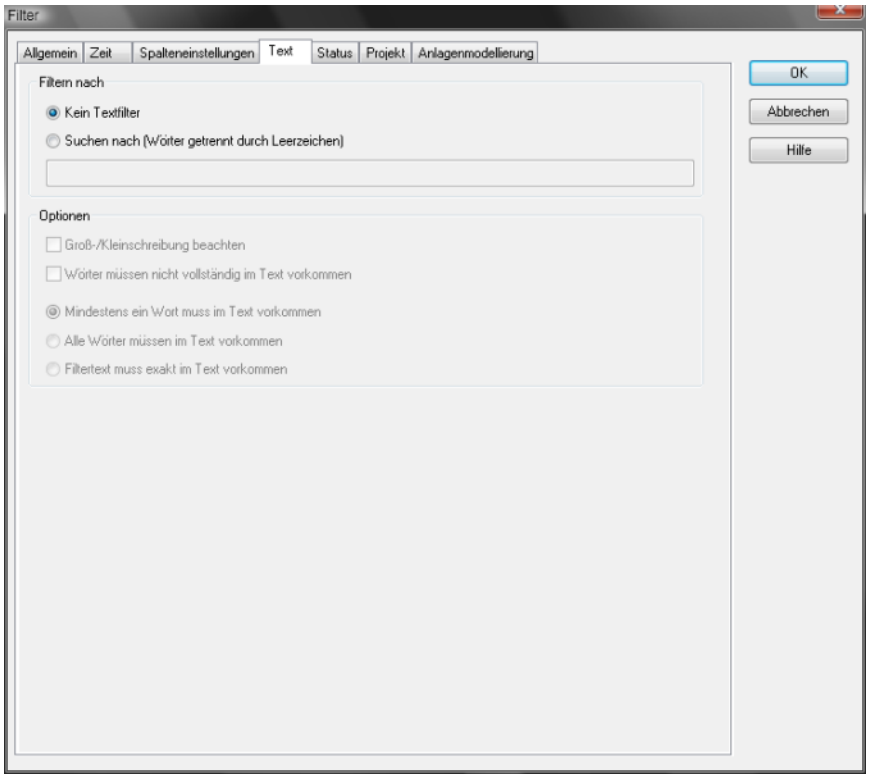
The column width is given in characters and is dependent on the font used. If the column width is not a multiple of the character width of the used font, the actual column width can differ from the set column width. This can result in the text being cut of or an empty space being created.

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

Info

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.*

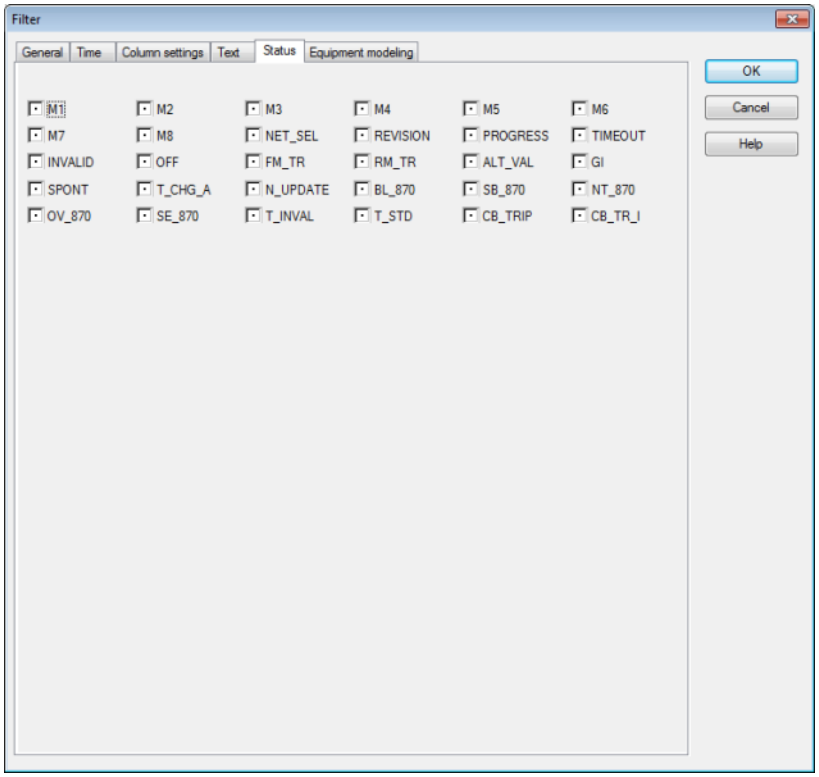
Text



Parameters	Description
Filter according to	
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	
Note capitalization	Active: A distinction is made between upper case and lower case when filtering.
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 present 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.

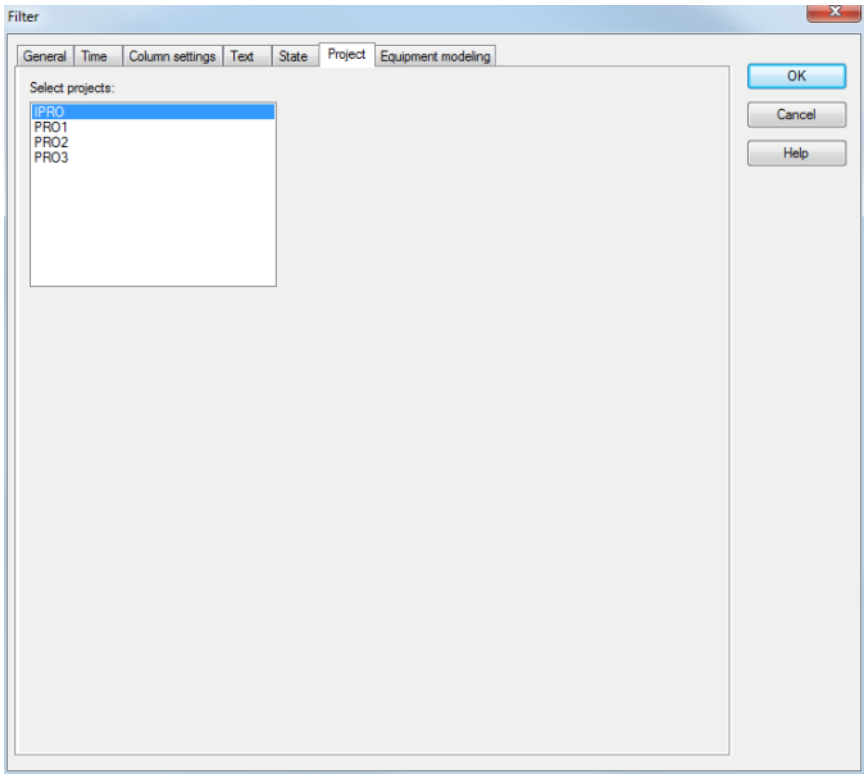
Example

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

Hint: *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:

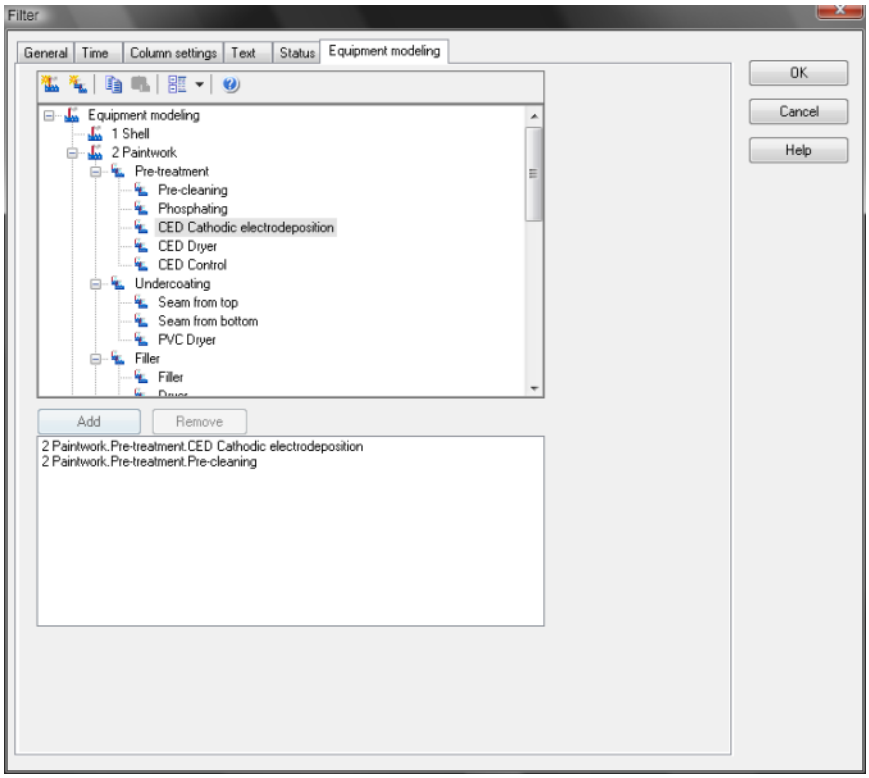
1. select the desired element
2. click on button **Add**

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
   (Multi-select: Hold and press Ctrl or Shift and select the desired elements)

2. click on button **Remove**

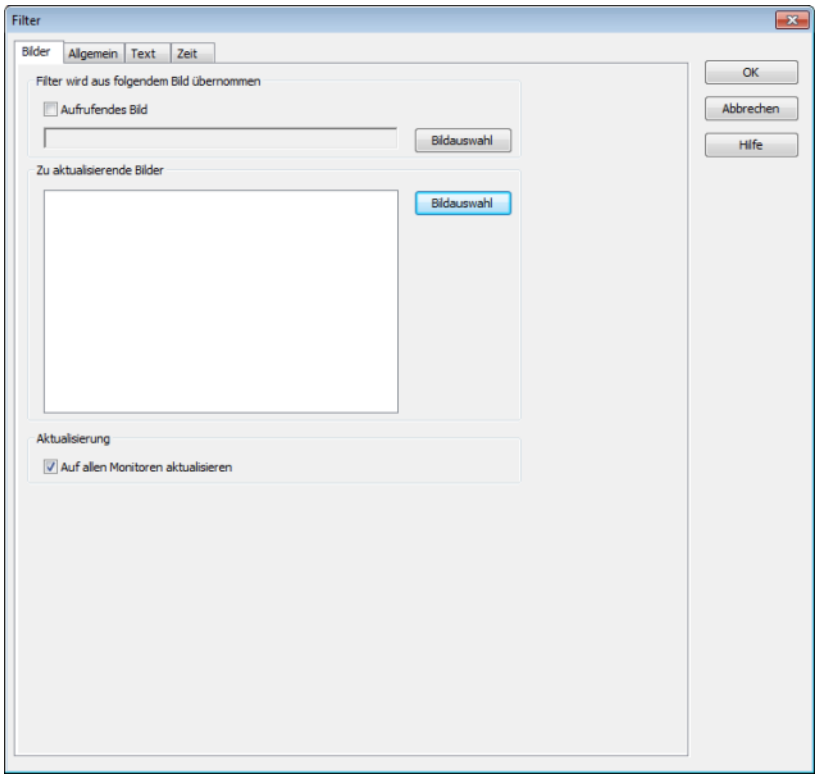


Element	Description
Equipment model	provides models and groups for selection
Add	adds selected groups to the filter list
Remove	removes selected groups from the filter list

3.4.3 Filters for screen switch CEL filter

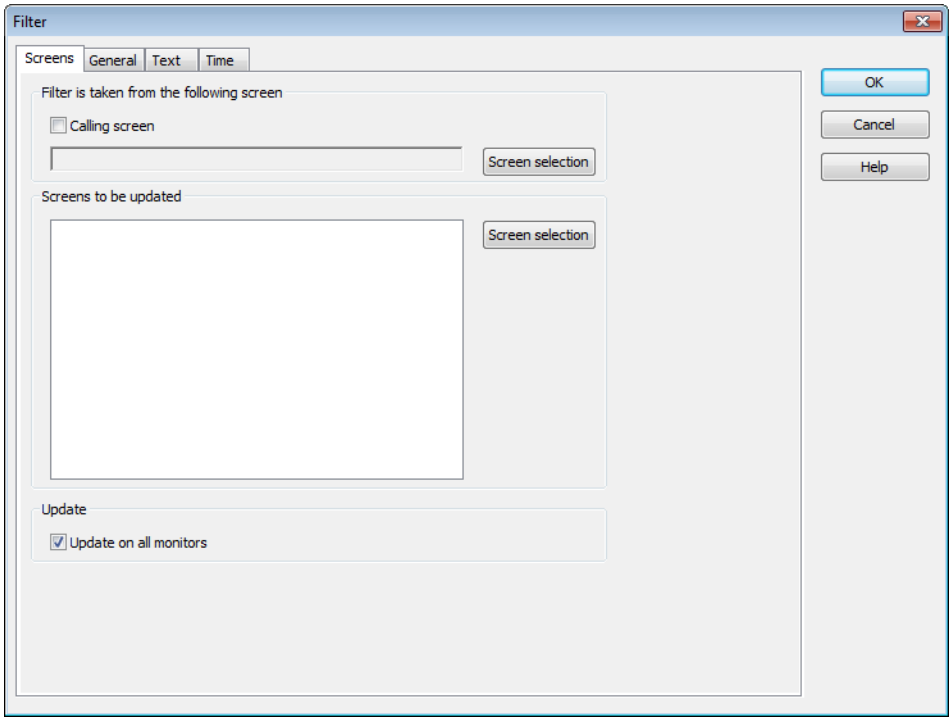
In order to engineer a screen of type `Chronological Event List Filter`:

1. engineer a function `screen switch` to a screen of type `Chronological Event List Filter (on page 13)`
2. the filter is displayed with all tabs:
   - Screens (on page 53)
   - General (on page 54)
   - Text
   - Time (on page 60)



Screens

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



The following settings are available:

Parameters	Description
The filter is taken from the following screen	
`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.
`Screen selection`	Click on button opens the Screen selection dialog. Select the screen from which the filter - when clicking button **`Update`** during Runtime - should be read. **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	
`Screen selection`	Click the button to open dialog Screen selection of the filter screens. Select the desired screen.
Updating	
`Update on all monitors`	`Active`: The screens from the list of the screens which must be updated are updated on all accessible monitors.

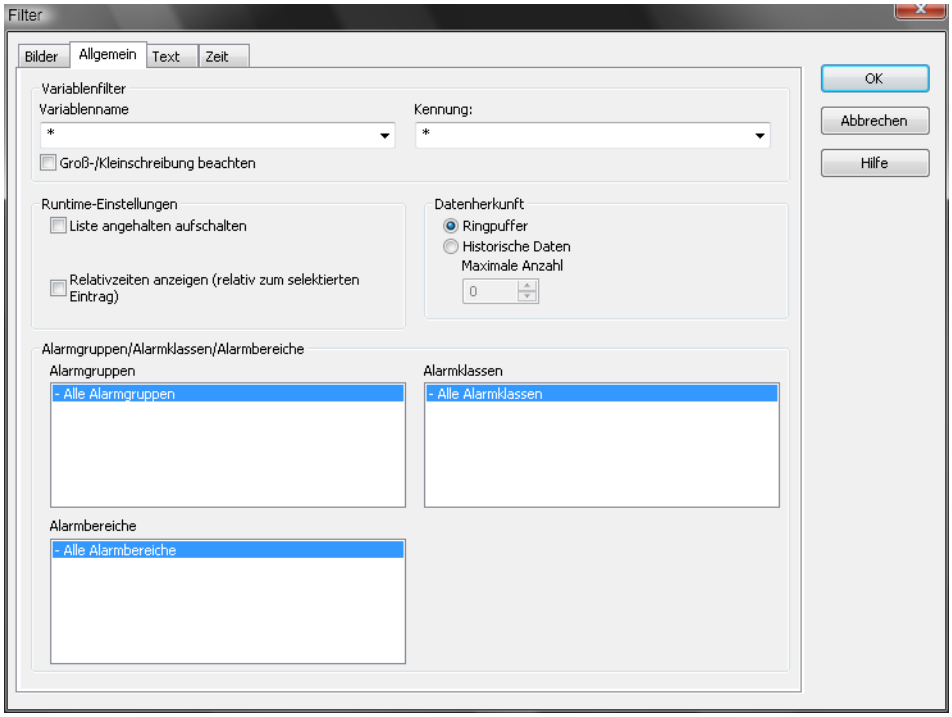
General

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
- Data origin
- Variables

- Alarm/event groups, classes and alarm areas

The following properties are available:



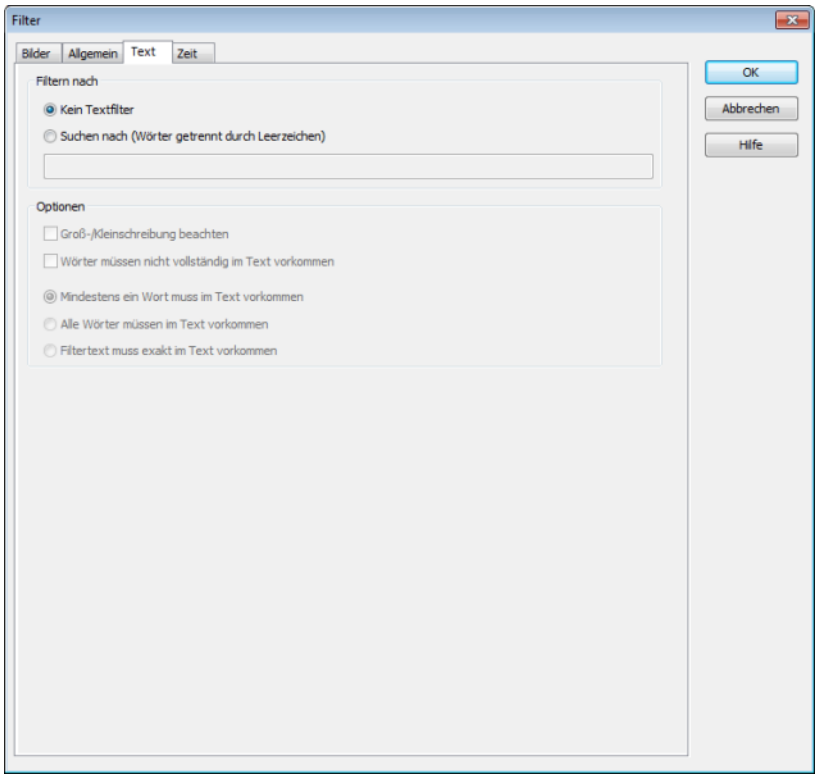
Parameter	Description
Variable filter	Restrictions to events of certain variables
Variable name	Enter the name or part of the name of the variabel you want to filter. Wild card * is possible. **Note:** Wild cards are only allowed as prefix or suffix, i.e. *xxx or xxx*
Identification	Enter the identification or part of the identification of the variables you want to filter. Wild card * is possible. **Note:** Wild cards are only allowed as prefix or suffix, i.e. *xxx or xxx*
Note capitalization	Active: Capitalization is recognized when filtering for variable name and/or identification.
Data origin	Display current or current and historical events.
Ring buffer	Active: Only data from the ring buffer (on page 62) 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**.)
Open 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 temporally distance to the selected entry. The stated time is the time difference which has passed since the selected event. The selected entry automatically receives 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 and 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.

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.*

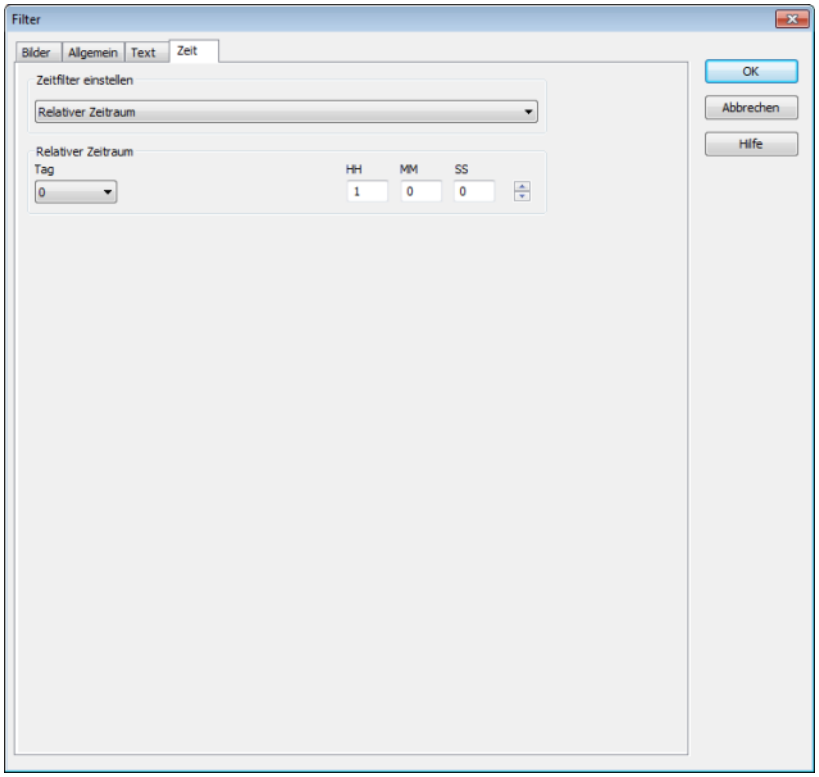
Text


Filter
Bilder
Allgemein
Text
Zeit
Filtern nach
Kein Textfilter
Suchen nach (Wörter getrennt durch Leerzeichen)
Optionen
Groß-/Kleinschreibung beachten
Wörter müssen nicht vollständig im Text vorkommen
Mindestens ein Wort muss im Text vorkommen
Alle Wörter müssen im Text vorkommen
Filtertext muss exakt im Text vorkommen
OK
Abbrechen
Hilfe

Parameters	Description
Filter according to	
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	
Note capitalization	Active: A distinction is made between upper case and lower case when filtering.
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 present 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 can define the time area which is to be used when the filter screen is opened.



The following settings are available:

Parameters	Options	Description
`Absolute period of time`		A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used. Example: If you want to see all alarms from January 1, 2011 to December 31, 2011, then you must enter the corresponding data at `From` and `To`. **Note:** Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
	`From`	Defines the start time in day, month, year, hour (HH), minute (MM), second (SS)
	`To`	Defines the end time in day, month, year, hour (HH), minute (MM), second (SS)

Relative time period		A relative time period is entered. **Attention!** this filter is constantly updated. It is therefore carried over. For example: You set up a relative time of 10 minutes and switch to an Alarm Message List Screen with this time filter at 12:00. Then you are shown the alarms from 11:50 to 12:00 when switching. If the Alarm Message List screen stays open, the filter is automatically updated. At 12:01, you see the alarms from 11:51-12:01 etc.
	Time	Defines the relative period in days, hours (HH), minutes (MM) and seconds (SS)
from HH:MM:SS o' clock		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. **Attention!** 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.
	Time	Defines the start time period in hours (HH), minutes (MM) and seconds (SS)
From day - HH:MM:SS time		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. **Attention!** The start time 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.
	Time	Defines the start point in hours (HH), minutes (MM), seconds (SS)

From day, month - HH:MM:SS time		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 Month October,Day5-23:00:00. 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. **Attention!** 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 on October 5 is reached. The end time point is not defined with this filter, it is carried over.
	Time	Defines the start point in months, days, hours (HH), minutes (MM), and seconds (SS)
No time filter		No time filter is used.

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 RING BUFFER

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 75).

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 64).*

4.1 Network functions

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

> **Info**
>
> *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.
   - `Server`: Function will be executed on the server.
   - `Standby`: Function will be executed on the 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
  - Server
  - Standby
  - Client

Function	Adjustable	Current computer	Server	Stand by	Client
AML and CEL					
Alarms: ackn. flashing	-	O			
Alarms: delete	-		O	O	
Alarms: Acknowledge	-		O	O	
Activating/deactivating an alarm/event group	-	O			
Activate/deactivate alarm message list / alarm/event groups / alarm/event classes	-		O	O	
Active alarm message list	-		O		
Alarm Message List active/inactive	-		O		
Alarm message list inactive	-		O		
Export AML	+	O			
Save AML and CEL ring buffer	-		O	O	
Export CEL	+	O			
Print alarm list or CEL	+	O			
Create/print IPA document	-		O		
Switch online printing on/off	-		O	O	
Start online printing on a new page	+	O			
Switch online printer	-		O		
Application					
Select printer	+	O			
Start EMS	-		O		
Stop EMS	-		O		
Print extended trend diagram	+	O			
Switch color palette	+	O			

Functions with active limit values	-		O	O	
Functions with active/inactive limit values	-		O	O	
Functions with inactive limit values	-		O	O	
Open Help	+	O			
Reload	+	O			
Determine open maintenances	-		O		
PFS - execute user-defined event	+	O			
Activate/deactivate project simulation	-	O			
Simulate right mouseclick	+	O			
Save remanent data	+	O			
Stopping the Runtime	+	O			
Analyze S7 Graph heuristics	+	O			
Execute SAP function	+	O			
Language switch	+	O			
Topology - ground fault search	-		O		
Topology - LoadShedding	-		O		
Historian					
Archive: Stop	-		O	O	
Index Archive	-		O		
Archive: Start	-		O	O	
Export archive	-	O			
Display open archive	-		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			
Screen : close	+	O			
Screen: Return to last	-	O			
Screen: Move center	+	O			
Screen switch	+	O			
Focus: Activate input to the element with the focus	+-	O			
Focus: set to frame	+	O			
Move focus	-	O			
Focus: Delete from frame	+	O			
Show menu	+	O			
Monitor assign	+	O			
Runtime profiles	+	O			
Close the frame	+	O			
Set point input for keyboard screen	-	O			
Displaying the overview window	+	O			
Error detection in the electric network					
Acknowledge ground fault message	+	O			
End ground fault search	+	O			
Start ground fault search	+	O			
Acknowledge ground fault message	+	O			
Message Control					

Note: Place of execution can be set freely in theory. Changes have no effect however. Message Control is always executed on the server.					
Show recipient-database	+	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	+				
Execute report	+				
Export report	+				
Recipes					
Recipegroup Manager	-	O			
Standard Recipe	-	O			
Standard recipe single directly	+	O	O	O	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 a dBase-file	+	O			

Print current values	+	O			
Unit conversion	+	O			
Trend-Values on	-		O	O	
Trend-Values off	-		O	O	
Trend values inactive/active	-		O	O	
Send value to hardware	-		O		
Driver commands	-	O			
Transfer simulation image to 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 30)

In the Runtime you can modify the filter properties. Exception: In the Editor fixed time filter (on page 39) was defined.

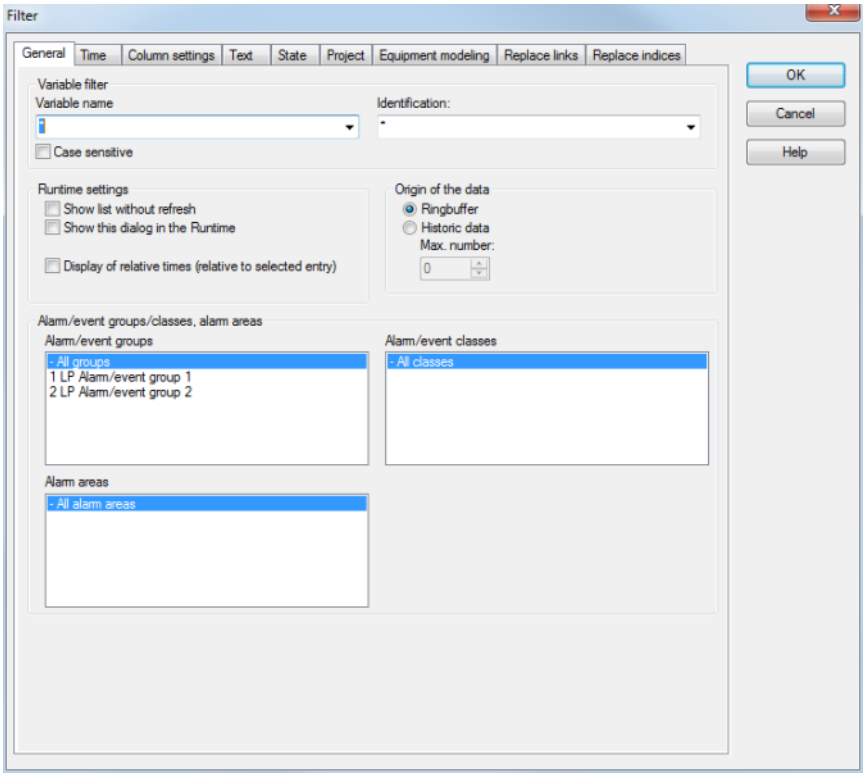
ENGINEER SCREEN SWITCH

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 31)
   - Time (on page 34)
   - Column settings (on page 43)
   - Text (on page 47)
   - Status (on page 49)
   - Project (on page 50) (only available in the integration project of the multi-project administration.)
   - Equipment modeling (on page 50)

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

- Replacing links
- Replacing indexes



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

> **Info**
>
> *If there is a reference to a screen which does not have a time filter, the time filter 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 13):
2. create a screen switch function for this screen
3. define the desired filter properties (on page 51)

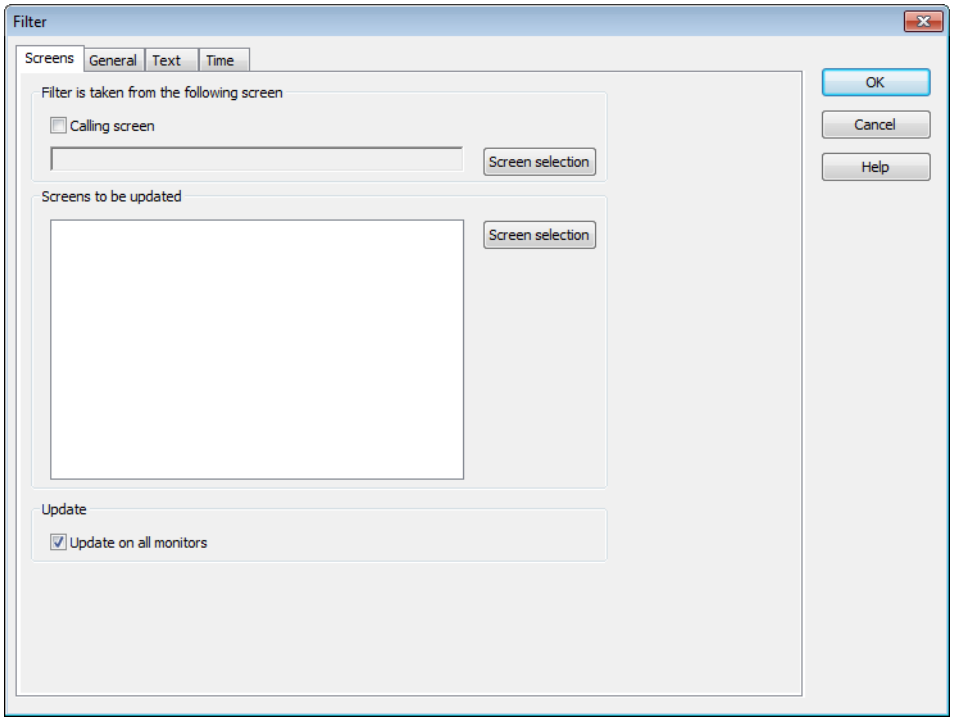
In the Runtime the filter properties can only be controlled via the buttons defined in the screen.

ENGINEER SCREEN SWITCH

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 53)
   - General (on page 54)
   - Text (on page 58)

- Time (on page 60)



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

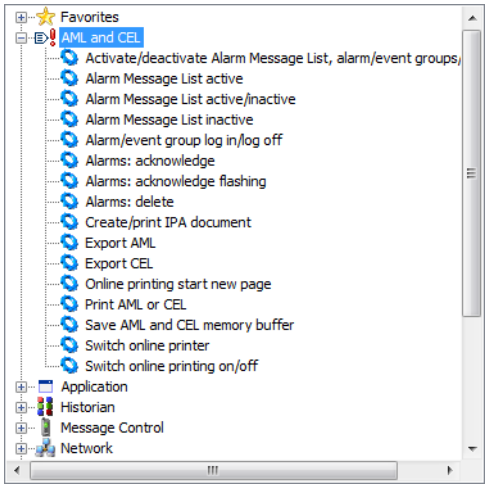
4.4 Functions for Chronological Event List

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 ring 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 (on page 76)
   - General (on page 31)
   - Time (on page 34)
   - Project (on page 50)
5. link the function to a button

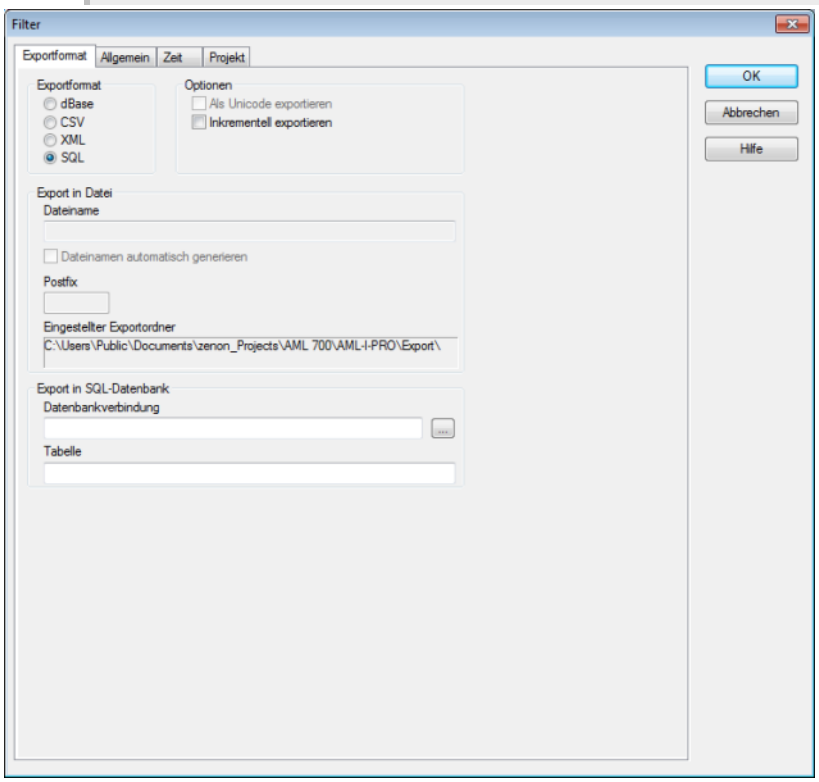
Export format

Exports are possible in various formats:

- dBase
- CSV
- XML
- SQL

Info

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



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	
Export as Unicode	An export to ASCII format is performed in Unicode
Export incrementally	Only differences since the last backup are exported.
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 automatic 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.
Defined export path	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.
General tab	General filter. See Alarm configuration using filters chapter, General section
Time tab	Time filter. See Alarm configuration using filters chapter, Time section.
Project	Project filter. Only available in the Integration project of multi-project administration. For configuration, see Alarm configuration using filters chapter, Project section.

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, 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 `Chronologic 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.

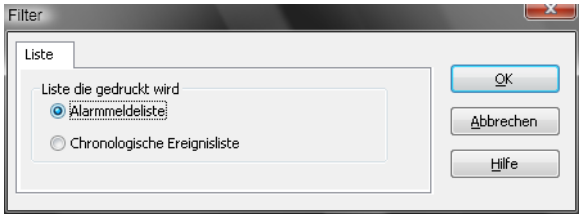
4.4.3 Print AML or CEL

With this function you can print the saved events with filter options.

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 31)
   - Time (on page 34)
   - Font: Selection from the fonts defined in zenon
7. link the function to a button

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

LINE LAYOUT

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 106) and in section Operation in the Runtime (on page 88).

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						
@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, 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 `Chronologic 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.

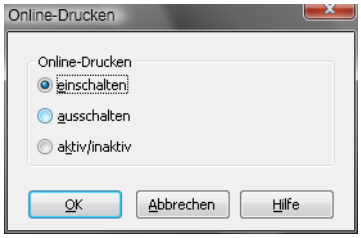
4.4.4 Switch online printing on/off

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

- Switching on: Switches online printing on
- Switching 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 list opens.



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

4.4.5 Start online printing on a 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

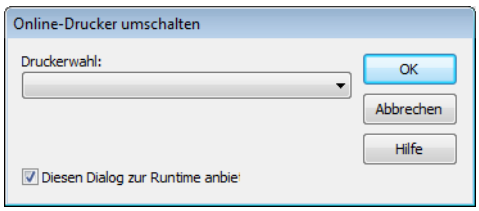
2. Select **`Start online printing on a new page`**
3. link the function to a button

4.4.6 Switch online printer

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

To configure the function:

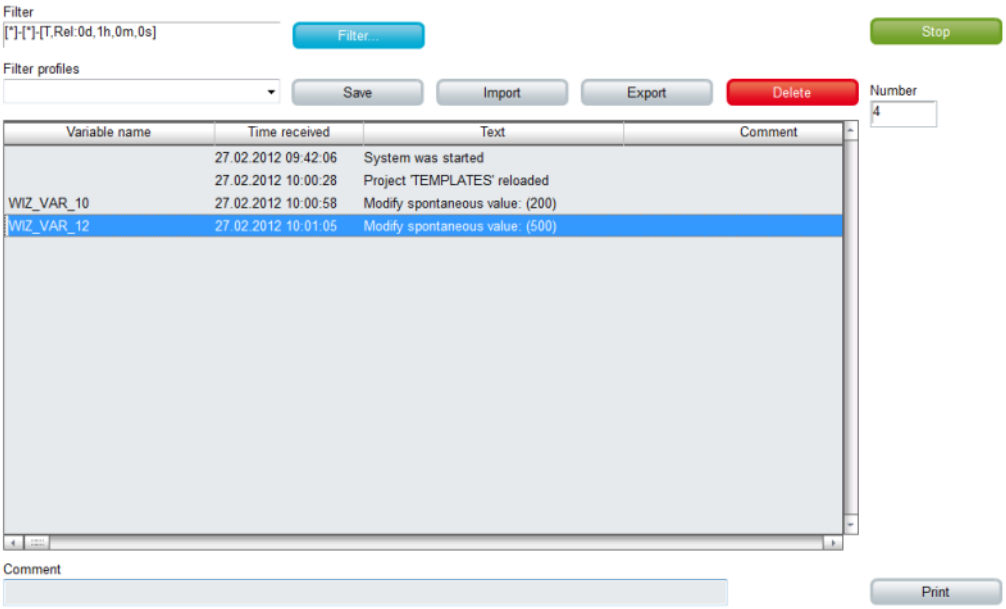
1. Create a new function
2. Select **`Switch online printer`**
3. The dialog for selection of the user opens
4. Select the desired screen printer from the drop-down list
5. link the function to a button



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 71).



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

Parameters	Description
Add 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 dragged onto the screen. Elements can be moved on the screen and arranged individually.
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 43) filter in screen switching or via the `Column settings CEL` property in the `Chronologic event list` group.
Display: Set filter	Displays the currently selected filter.
Filter...	Opens the filter dialog (on page 26).
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`.
Display relative time	`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 103) as it is currently displayed.
Print with dialog	Opens printer settings before printing.
Labeling: 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
Info: Status CEL	Displays the status of the CEL in the Runtime. active: Events are logged depending of the settings (on page 22) 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.
Labeling: 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 43).
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.

Info

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

For 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] corresponds to a 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 -> `Chronologic event list` -> `Column settings CEL` (only tab **Column settings** (on page 26))

or

- Function screen switch to a screen of type **AML** (all tabs (on page 30))

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)

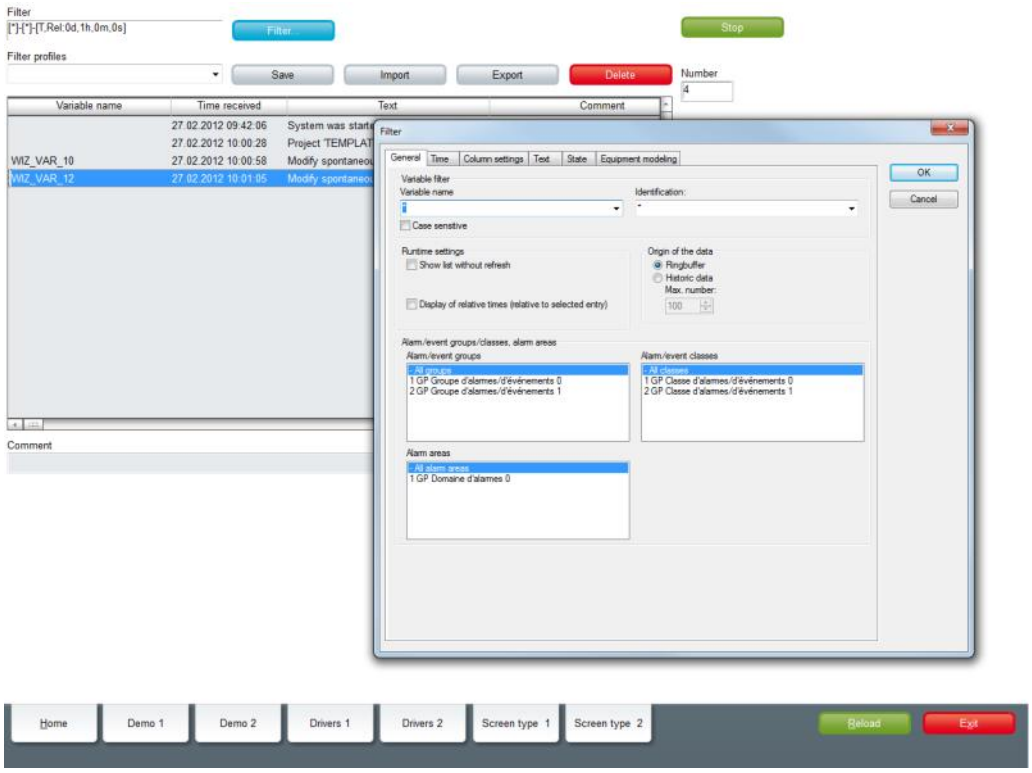
screen switch with filter for call up of a screen of type CEL (on page 7)

- screen switch to a screen of type Chronological Event List Filter (on page 13)

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 30) of the CEL will be opened



Set filter can be saved in profiles (on page 93).

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 26)for function screen switch to a screen of type CEL (on page 71)
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 SWITCH TO A SCREEN OF TYPE ALARM MESSAGE LIST FILTER

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 13). To do this:

1. engineer a screen switch to a screen of type Chronological Event List Filter (on page 73)
2. call up the CEL via this function in the Runtime
3. the user has a tailor-made (on page 51) Alarm Message List

5.1.1 Filter profiles

Filter profiles are filter settings which can be saved and called up by the user in the Runtime.

To use filter profiles, you must engineer the following control elements:

Parameter	Description
`Filter profiles`	Profile administration
`Profile selection`	Select saved profile (drop-down list)
`Save`	Save settings as profile (button)
`Delete`	Delete profile (button **`x`**)

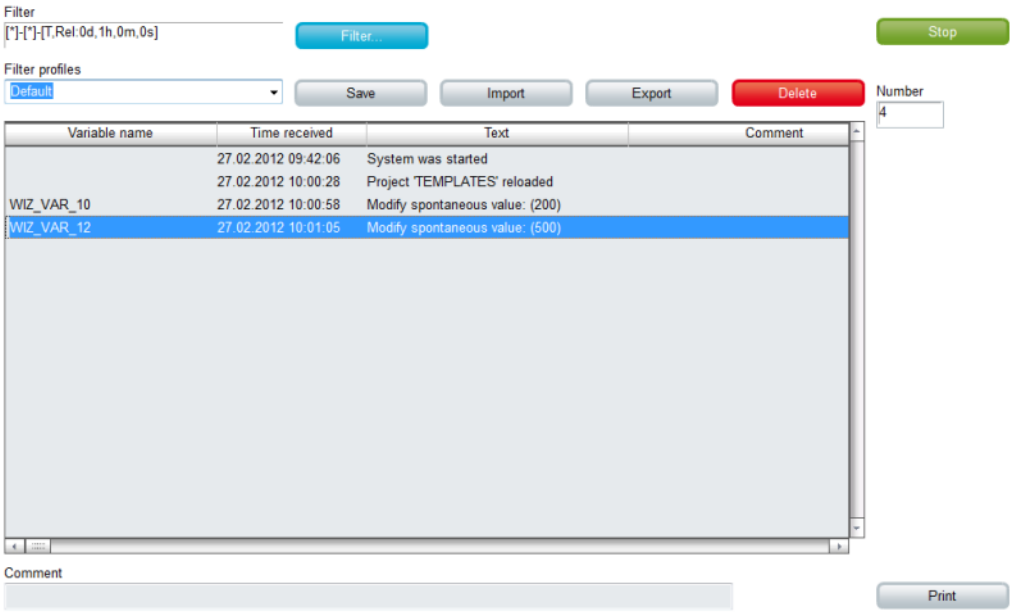
With this you can in the Runtime:

- save filters
- use saved filters
- delete filter profiles

SAVE A 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**

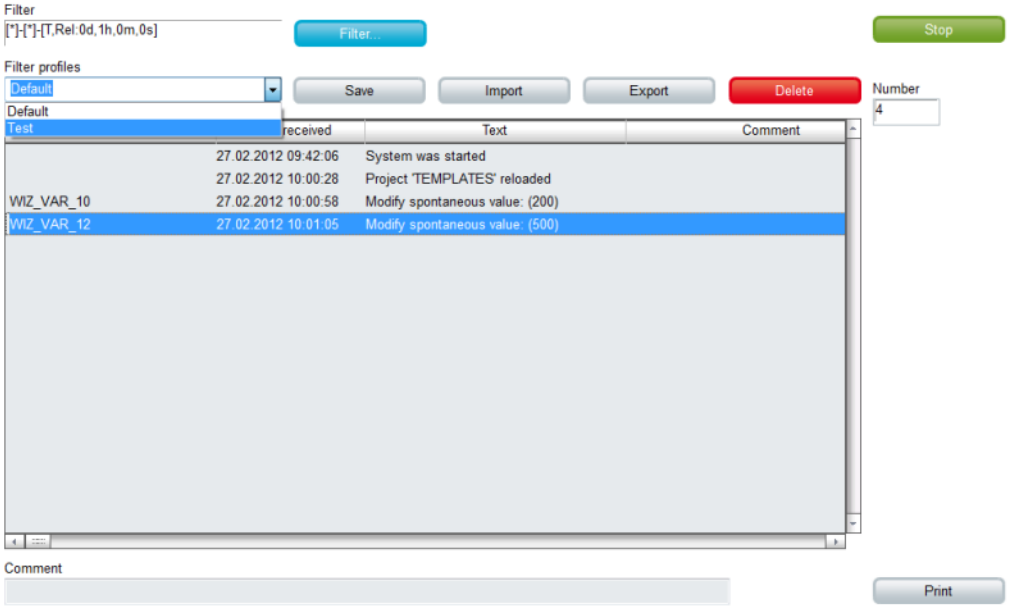


USE FILTER PROFILE

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 13) 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 26) for function screen switch to the screen of type CEL (on page 71).

With this:

- only the necessary filters are engineered and made available to the user.
- the user sees only these filters; the overview is enhanced
- the look can be tailor-made and for example an easy touch screen operation is possible

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**
>
> *If a different* `time period` *than* `Set filter for time filter type` *is selected for the Alarm Message List or the Chronological Alarm List, the time of the screen to be called up cannot be transferred over in Runtime.*

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 Filter screens`**) are 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.

> **Info**
>
> **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.*

UPDATING

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 99): each event is printed on a line printer when it is displayed in the list
- CEL Print offline (on page 103): the CEL is printed in the current state as completed list
- Export (on page 110) 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 106) 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 Printing active property
4. at property Printing for select Chronological Event List from the drop-down list
5. with the help of property Lines per page define the line number (default: 72)
6. configure **BTB.frm** (on page 106)
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 86) is executed

HALT PRINTING

To halt or to continue online printing:

- carry out function Switch online printer on/off (on page 86).

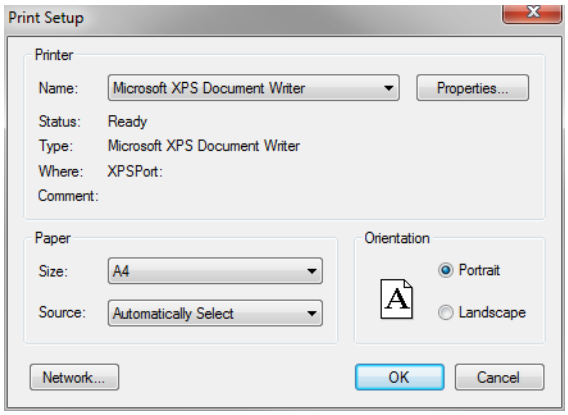
CHANGING AND SETTING UP A PRINTER

To change the printer in Runtime:

- Carry out the Switch online printer (on page 87) 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


Print Setup
Printer
Name:
Microsoft XPS Document Writer
Properties...
Status:
Ready
Type:
Microsoft XPS Document Writer
Where:
XPSPort:
Comment:
Paper
Size:
A4
Source:
Automatically Select
Orientation
Portrait
Landscape
Network...
OK
Cancel

Parameters	Description
Printers	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	Configuration of the printout.
Size	Select paper format from drop-down list.
Source	Select paper feed from drop-down list.
Alignment	Select paper alignment. Possible parameter: • Portrait Format • Landscape format
Network	Opens dialog for selecting a printer in the netwok.
OK	Accepts configuration and closes 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 106) 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 o'clock**	**Text**
Date/Time received	**Time cleared**	**Information text**	**Status text**
20.03.2011 13:00:00	20.03.2011 13:03:59	Message 1	Limit exceeded
20.03.2011 13:00:00	13:05:35	Demo information	Limit 750 reached
20.03.2011 13:03:59		Message 2	Limit
20.03.2011 13:11:23		Message 3	off
20.03.2011 13:03:59	13:12:45	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 106)
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

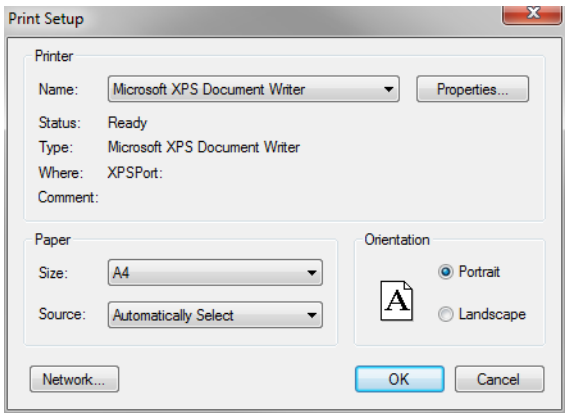
CHANGING AND SETTING UP A PRINTER

To change the printer in Runtime:

- Carry out the Switch online printer (on page 87) 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



Parameters	Description
Printers	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	Configuration of the printout.
Size	Select paper format from drop-down list.
Source	Select paper feed from drop-down list.
Alignment	Select paper alignment. Possible parameter: • Portrait Format • Landscape format
Network	Opens dialog for selecting a printer in the netwok.
OK	Accepts configuration and closes 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 o'clock	Text
Date/Time received	Time cleared	Information text	Status text
20.03.2011 13:00:00	20.03.2011 13:03:59	Message 1	Limit exceeded
20.03.2011 13:00:00	13:05:35	Demo information	Limit 750 reached
20.03.2011 13:03:59		Message 2	Limit
20.03.2011 13:11:23		Message 3	off
20.03.2011 13:03:59	13:12:45	Demo information	off
	Page	1	

5.2.3 FRM configuration file

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

An FRM file has three parts:

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

BASIC PRINCIPLES

Note, when editing FRM files:

- Separation of list parts:
  - Header and list part and list part and footer are separated by %%.

  This separation marking must be used only once for the list part and the base part.
  - **Attention:** There must be at least two empty paragraphs after the last line. Otherwise the footer is not printed!
- Positioning of the individual entries:
  Only empty characters can be used, no tabs.
- Editing the FRM file in a text editor:
  Automatic line break must be deactivated, otherwise unwanted effects can occur in the formatting.

KEY WORDS

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						
@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 76)
2. link the function to a button
3. execute the function in the Runtime

Info

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