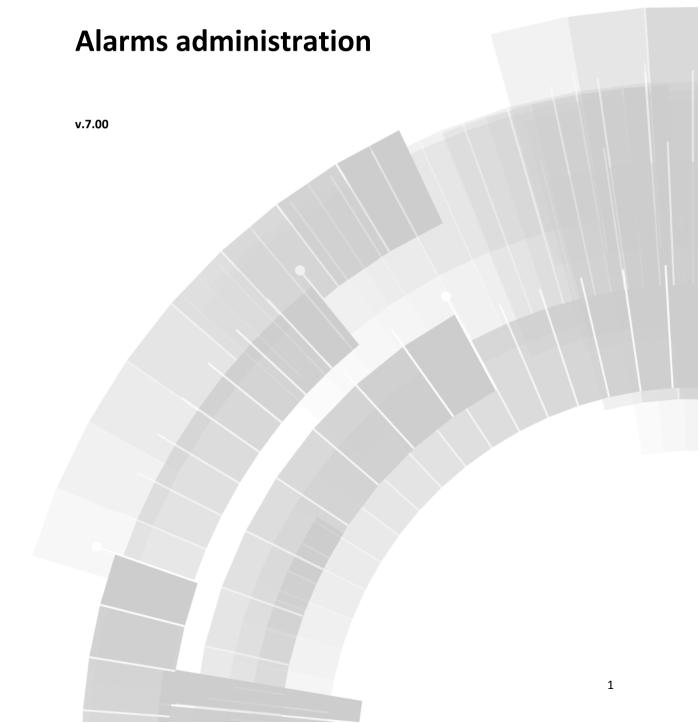


zenon manual





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1. Welcome to COPA-DATA help

GENERAL HELP

If you miss any information in this help chapter or have any suggestions for additions, please feel free to contact us via e-mail: documentation@copadata.com (mailto:documentation@copadata.com).

PROJECT SUPPORT

If you have concrete questions relating to your project, please feel free to contact the support team via e-mail: support@copadata.com (mailto:support@copadata.com)

LICENSES AND MODULES

If you realize that you need additional licenses or modules, please feel free to contact the sales team via e-mail: sales@copadata.com (mailto:sales@copadata.com)

2. Alarms administration

Alarm administration informs you of faults that occur such as limits being exceeded. It comprises:

- Alarm status line: (on page 107)
 Information line that is always shown in the foreground in Runtime and contains, depending on the configuration, the most recent or oldest unacknowledged alarms.
- Alarm Message List (AML) (on page 109):
 Administers the alarms in a list in Runtime. The AML:



- Displays alarms and their causes in an unfiltered or filtered list
- Enables localization of the cause of the alarm
- Enables acknowledgement of alarms
- Enables deletion of alarms.
- Enables printing and saving of alarms

Configure (on page 21) alarms by means of:

- Setting limits for variables
- ▶ With reaction matrices
- ▶ Properties of the alarms



Part of the standard license of the Editor and Runtime.

3. Configuring alarms

Alarm administration is operated in Runtime using alarm message list screens and alarm message list filters as well as the alarm status line. The alarm status line is automatically created as a template.

EDITOR

To be able to use alarms in Runtime, the following must be carried out in the Editor:

- ▶ A screen of alarm message list type (on page 7) can be configured
- ▶ Limit breaches of variables or reaction matrixes are defined

In addition, you can:

- ► Configure alarms using filters (on page 37)
- ▶ Grouping (on page 25) alarms
- ▶ Adapt the screens of alarm message list type (on page 12) that are available in Runtime



RUNTIME

The following are used for operation in Runtime (on page 104):

- ► AML screen switching (on page 79)
- ► AML filter screen switching (on page 81)
- ► The zenon alarm functions (on page 82)
- Using Alarm Message List screens (on page 120)
- ► Alarm status line (on page 107)

3.1 Creating an Alarm Message List screen

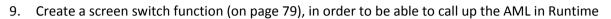
An Alarm Message List screen makes it possible to display and log current and past alarms. The display can be changed using a filter. Functions make it possible to export and print the displayed alarms.

CREATING AN ALARM MESSAGE LIST FILTER SCREEN

To create an Alarm Message List screen:

- 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 Alarm Message List from the drop down list
- 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







The following elements are available:

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.
Alarm Message List	Display of the alarms. The appearance is configurable (on page 11). Columns are defined via the Column settings (on page 54) filter in screen switching or via properties Column settings AML in the project settings in group Alarm Message List.
Display: Set filter	Display of the currently-selected filter conditions.
Filter	Opens dialogs for filter selection.
Acknowledge/delete	Groups of buttons for acknowledging and deleting alarms
<pre>Acknowledging</pre>	Acknowledging alarm messages in Runtime.
Acknowledging page	All alarms displayed on the current page are acknowledged.



Element	Description	
Acknowledge all	All alarms for the current filter criteria are acknowledged	
	Note for multi-user project: Alarms are only acknowledged for projects for which the user has authorizations. (for details on multi-user projects, see Distributed engineering chapter)	
<pre>Delete</pre>	Deletes alarm from the Alarm Message List in Runtime. Alarm must already be acknowledged.	
Delete page	Deletes all acknowledged alarms that are displayed on the current page.	
Delete all	Deletes all acknowledged alarms that correspond to the current filter criteria.	
Stop/continue	Switch for filling the list:	
	Stop: New elements are no longer added automatically.	
	Next: New elements are added automatically.	
	Attention: The font of the button can be changed in the editor but is not carried over to Runtime. You can configure changes to the font using Language switching.	
Close	Closes Alarm Message List	
Print	Prints filtered list.	
Print with dialog	Opens printer settings before printing.	
Display: Linked function	Displays the message allocated to the alarm message.	
Execute function	Executes the functions configured for the alarm in Runtime.	
	Note: With the Start program function, the variable name of the selected alarm can be transferred as a parameter for the program to be started using the key word @alarm.name.	
Open Help	Calls up configured Help.	
Display	Status and elements of alarm administration.	
Total number	Time number of all alarms.	
Number unacknowledged	Displays number of unacknowledged alarms.	
<pre>Info: Status of Alarm Message List</pre>	Display if Alarm Message List is active or not (Project property Alarm Message list active).	



Element		Description
•	Comment field	Input of free text (comment) by the user for the selected alarm. This text can be displayed in the list (Comment option in the Column settings of alarm administration.)
Na	vigation	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.
Fi	lter profiles	Filter settings that can be saved by the user in Runtime.
•	Profile selection	Select profile from list.
•	Save	Saves current setting as a profile.
•	Delete	Deletes selected profile.



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.



Changing the appearance of the AML 3.1.1

The table view of the Alarm Message List can be adapted to individual requirements:

SCROLL BARS, HEADERS AND GRIDS

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

- 1. In project properties, select the Extended graphical settings property in the Representation group
- 2. Define the desired properties in the groups Scroll bars and Header and grid for the Alarm Message List element on the screen



Info

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

SORTING IN RUNTIME

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

- 1. Select the Graphics files for the Display style property
- 2. Link the Sort ascending and Sort descending properties with a graphics file
- 3. The selected graphic for the respective sorting direction is displayed in Runtime for the sorting of relevant columns
- 4. Clicking on the graphic changes the sorting sequence
- 5. Clicking on the column title activates the column for sorting

OPERATING THE HEADER IN RUNTIME

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



- Moving columns
- Change size
- Changing sorting.

To do this, navigate to Alarm Message list group in the settings and select, in the Header AML property, Operable headers. Alternatively, you can also switch the header to inoperable or invisible here.

These settings apply for all headers in the project.



Info

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

PREVIEW

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

Attention: Because the size of the scroll bar in the preview matches the size in Runtime, the size of the whole list in the Editor may deviate from the size in Runtime. This is also true for the size of the header and the font of the header.

3.2 Creating an Alarm Message List filter screen

It is possible to adjust filter settings for the Alarm Message List in Runtime with the help of the Alarm Message List Filter screen. Only the filter elements that are actually required are configured and provided to the user The appearance can also be freely defined and thus adapted to different end devices. All filter settings that are available in the filter (on page 37) for the function to switch the screen to the Chronological Event List screen (on page 79) can be configured.

Therefore:

Only the filter elements that are actually required are configured and provided to the user



- The user only has these filters displayed and has an overview
- The appearance can be freely defined and can, for example, ensure ease of use by means of a touch screen.

For details of use in Runtime, see Using the Alarm Message List Filter (on page 120) chapter.

For the definition of filter criteria, see Filter Alarm Message List Filter (on page 62) 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.

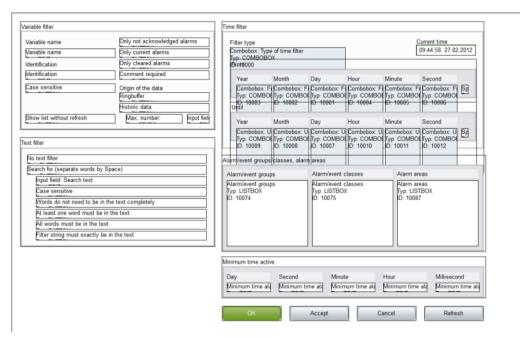
CREATING AN ALARM MESSAGE LIST FILTER SCREEN

To create an Alarm Message List filter screen:

- 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 Alarm Message List filter from the drop down list
- 4. Select your own template (AML filter cannot be based on the same template 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







ELEMENTS

The Alarm Message filter screen 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 (on page 66).	
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.	
Alarm type	Which alarms are displayed:	
▶ Only unacknowledged alarms	Only unacknowledged	
▶ Only historical alarms	Only historical	
▶ Only current alarms	Only current	
▶ Comment required	Alarms that require a comment when acknowledged	
▶ Minimum time for current alarms - days	Only alarms that have been current for at least the given number of days.	
▶ Minimum time for current alarms - hours	Only alarms that have been current for at least the given number of hours.	
▶ Minimum time for current	Only alarms that have been current for at least the given number of minutes.	



alarms - minutes	
Minimum time for current alarms - seconds	Only alarms that have been current for at least the given number of seconds.
▶ Minimum time for current alarms - milliseconds	Only alarms that have been current for at least the given number of milliseconds.
Origin of the data	Where does the data come from:
▶ Ring buffer	From the ring buffer.
▶ 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.
Alarm/event groups/alarm/event classes/alarm areas	List field for grouped display (on page 25):
▶ 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 70).	
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.	
<pre>Insert all elements: From day, month - HH:MM:SS time</pre>	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 Of 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	Т	Т	Т
Extended Trend	Т	Т	Т
Time filter	Т	Т	х
Alarm Message List Filter	Х	С	Т
Chronological Event List Filter	С	X	Т
Alarm Message List	Х	С	Т
Chronological Event List	С	Х	Т

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
- 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 **Defining alarms**

Define alarms using:

- Limit values and statuses with variables
- Reaction matrixes

ALARMING USING VARIABLES

Define the limits for variables (see Variables manual, Limits chapter). If these are breached in Runtime, an alarm is generated and displayed in the alarm status line (on page 107). You configure further properties for alarm configuration with:

- <u>Variable properties of the group Limits and the subgroups for each limit value contained therein:</u>
 - In Alarm Message List: The alarm is incorporated into the AML. When it is there as displayed, control it in Runtime using the alarm message list (on page 109) or an alarm message list filter (on page 120).
 - To acknowledge: the alarm must be acknowledged before it is removed from the ring buffer (on page 23).

- To delete: the alarm must be deleted manually before it is removed from the ring buffer (on page 23).
- Print: Prints alarm to defined printer. Either the CEL or the AML is printed. You define which of the two lists is printed in project properties under Printing for.
- Alarm/event group: allocation of an alarm/event group (on page 26).
- Alarm/event class: allocation of an alarm/event class (on page 29).
- Variable properties of the group Alarm handling:
 - Alarm area: allocation of an alarm area (on page 32).
 - Acknowledgement variable: Sets the value 0 or 1 for the variables defined here when an alarm is acknowledged.
 - Acknowledgement value: value of the variable defined in Acknowledgement variable.
 - Save in IPA database: Alarm is available in the Industrial Performance Analyzer for evaluation.
- ▶ <u>Project properties of the group AML</u> and CEL:
 - Selection with border: selected lines are emphasized by a frame in Runtime.
 - Same comments: comments that are entered in Runtime for an alarm are also accepted in the CEL.
 - Printing active: activates online printing.
 - Printing for: defines if AML or CEL is printed online.
- ▶ <u>Project properties of the group</u> Alarm Message list

There are many properties to configure alarms available here. Primarily:

- AML activation
- AML data saving
- Signalization of alarm states
- · Activation of alarm status line

You can find details of the individual settings in the embedded help pages.

ALARMING VIA REACTION MATRIXES

You use a reaction matrix to evaluate limit states and status bits (see Variables manual, Reaction matrixes). Breaches of the established rules lead to an alarm. As with variables, you can also define the



action to be carried out when an alarm is raised with reaction matrixes. To do this, activate the corresponding properties in the configuration dialog of the reaction matrixes.

3.4 Alarm handling

Alarms are saved in a ring buffer (alarm.bin) and in an alarm file (*.aml) in the Runtime folder as soon as they occur.

RING BUFFER

The ring buffer includes all active alarms. At this the following things are managed:

- ▶ Time received in milliseconds as unique signature
- ▶ additional information such as cause, value, etc.
- ▶ Time cleared
- ▶ Time acknowledged

When acknowledging alarms, all alarms of a variable with the same limit violation are deleted at the same time from the ring buffer.

As soon as the alarm is acknowledged, it is deleted from the ring buffer. Exception: If property To delete is set, the alarm must be deleted by the user decidedly.

SIZE OF THE RING BUFFER

The size of the ring buffer must be set to an appropriated size in the project properties via property Size of the ringbuffer.

Recommended: At least number of variables for which alarms can occur.

The ring buffer is automatically saved as file alarm.bin when the Runtime is closed. If the Runtime is closed due to an unexpected event, e.g. power outage, data will be lost. To prevent this, the ring buffer can be saved manually via the Save ringbuffer on change property whenever a new entry is added or via the Save AML and CEL ring buffer (on page 95) function.



Attention: In the Runtime the ring buffer is handled dynamically in the memory. Via the defined number of alarms, even alarms which do not have a cleared time stamp can be displayed. Thus alarms are displayed which exceed the size of the ring buffer.



- ▶ Size of the ring buffer: 100 entries
- Active alarms in the Runtime without cleared time stamp: 120
- Display in the AML in the Runtime: 120

ALARM FILE

All alarms are written in an alarm file (*.aml) at the same time as in the ring buffer. It is created automatically for each calendar day and can be managed via property Save AML data. The name of the alarm file is put together by the letter A, followed by the date in form JJMMDD and the suffix .aml; e.g. A100623.aml. These files are created for each day automatically and must be transferred or deleted by the user if storage capacity is limited. *.aml files are saved in the ...\Projektordner\Computername\Projektname folder.

SYNCHRONIZING RING BUFFER AND ALARM FILE

Ring buffer and alarm file are synchronized. This synchronization ensues from the ring buffer to the alarm file. All changes such as acknowledging are only carried out in the ring buffer and are then synchronized with the alarm file. Thus for example all unacknowledged alarms can be displayed in the alarm file and the acknowledge can be induced. The action however is taking place in the ring buffer.

MEMORY TIME PERIODS

The alarm file *.aml is saved each time a new entry is made.

The ring buffer (*.bin) is saved:

- ▶ When Runtime is ended
- ▶ After each entry is made is the Save ringbuffer on change property is active
- ▶ When the Save AML and CEL memory buffer function is executed

Note: If the Save ringbuffer on change option is deactivated, the entries in the AML and in the ring buffer may no longer correspond.



Attention

If the ring buffer overflows because it is too small, unacknowledged entries remain in the alarm file. They are displayed during filtering but they cannot be acknowledged anymore. The attempt to acknowledge them can trigger the acknowledgement on the ring buffer if the alarms concern the same variable and the same limit violation.

3.5 **Grouping of alarms**

Alarms can be grouped and prioritized by means of:

- Alarm/event groups (on page 26): Group alarms (or events) together logically
- Alarm/event classes (on page 29): Serve to prioritize alarms (or events) and are used to colorcode alarms in the AML and by events in the CEL
- ▶ Alarm areas (on page 32): Enable detailed evaluation of alarm/event classes by means of a combined element

Each group or class can be assigned a name, a number, a color, a function, a status variable, a graphic and an equipment group.

Alarms can be exported and imported via XML using the context menu.



💡 Info

A maximum of 65536 alarm/event classes and 65536 alarm/event groups can be created.



PROJECT MANAGER ALARM CONTEXT MENU

Menu item	Action
Export XML all	Exports all entries as an XML file.
Import XML	Imports entries from an XML file.
Help	Opens online help.

Info

Use clear, different IDs in the global project, the integration project and subprojects for alarm/event groups, class and alarm areas. You avoid clashes this way. These can lead to incorrect displays.

3.5.1 Alarm/event groups

Alarm/event groups combine related messages.

CREATING ALARM/EVENT GROUPS

To create a new alarm/event group:

- 1. In the Project Manager, right click on the Alarm/Event Groups Subnode
- 2. Select the command: New alarm/event group

(alternatively select the corresponding symbol in the toolbar (on page 28) or press on the Ins button)

Each group can be allocated additional information via its properties:



Parameters	Description
Name	Name of alarm/event group.
	Is displayed in the filter condition of AML and CEL.
No.	Number of the alarm/event group is automatically given by zenon.
Color	Color of alarm/event group.
	A click on the button opens the palette for color selection
Description	Name of alarm/event group.
Status variable	Bit variable which which the zenon Runtime indicates whether the group is active or whether the alarms of this group are ignored at the moment.
	Activation/deactivation is carried out via the Alarm/event group connection active/inactive (on page 83) function. The status of this group is logged in the Chronologic Event List (CEL).
	Clicking on the button opens the dialog for variable selection.
Function	Function that is to be executed if an alarm of this group is activated. Click on the button to open the dialog to select the function.
Graphics file	Selection of a graphic that represents the alarm/event group in the AML.
	To display the graphic in the AML, select in the AML filter, in the column settings (on page 54) tab for the Alarm/event group symbol the Graphics file display type.
	Note: the column height in the AML depends on the selected font. The selected graphics are also scaled and adapted to the column height.
Equipment groups	Links equipment model to the alarm/event group.
Aronba	Define the membership of an equipment group. Click on the button to open the dialog to select the equipment group.

DELETING ALARM/EVENT GROUPS

To delete an alarm/event group:

1. Select the alarm/event group



- 2. Select Delete in the context menu or in the tool bar
- 3. confirm this when requested to do so

Note: All linked variables lose their group assignment when deleted.

Context menus and alarm/event-groups toolbar

PROJECT MANAGER CONTEXT MENU

Menu item	Action
New alarm/event group	Creates a new alarm/event group.
Editor profile	Opens the drop-down list that includes pre-defined editor profiles.
Help	Opens online help.

DETAIL VIEW OF CONTEXT MENU AND TOOLBAR





Menu item	Action
New alarm/event group	Inserts a new alarm/event group into the list.
Сору	Copies selected entries to the clipboard.
Paste	Pastes the contents of the clipboard. If an entry with the same name already exists, the content is pasted as "Copy of".
Delete	Deletes selected entries.
Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line.
Replace text in selected column	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window for the selected entry.
Remove all filters	Removes all filter settings.
Help	Opens online help.

3.5.2 Alarm/event classes

Alarm/event classes serve the following purpose:

- ▶ To prioritize alarms for the screen alarming
- ► To determine the alarm color in the alarm message list
- As a filter criterion in the alarm list and the Chronological Event List
- ► To trigger acoustic alarms, for example

CREATING ALARM/EVENT CLASSES

To create a new alarm/event class:

- 1. In Project Manager, right click on the Alarm/Event classes Subnode
- 2. Select the command: New alarm/event class



(alternatively select the corresponding symbol in the toolbar (on page 28) or press on the ${\tt Ins}$ button)

Each can can be allocated additional information via the properties:

Parameters	Description
Name	Name of alarm/event class.
	Is displayed in the filter condition of AML and CEL.
No.	Number of the alarm/event class is automatically given by zenon.
Color	Color of the alarm/event class can be used for labeling in the AML. A click on the button opens the color palette.
	Note: Color is used for long description and status text in the AML and screen alarming
Description	Description of alarm/event class.
Status variable	Bit variable which which the zenon Runtime indicates whether the class is active or whether the alarms of this class are ignored at the moment.
	Activation/deactivation is carried out via the Alarm/event group connection active/inactive (on page 83) function. The status of this group is logged in the Chronologic Event List (CEL).
	Clicking on the button opens the dialog for variable selection.
Function	Function that is to be executed if an alarm of this class is activated.
	Click on the button to open the dialog to select the function.
Graphics file	Selection of graphics that represent the alarm/event class in the AML.
	To display the graphic in the AML, select in the AML filter, in the column settings (on page 54) tab for the Alarm/event class symbol the
	Graphics file display type.
	Note: In the AML, the column height is aligned to the selected font; for this reason, the graphics selected are scaled if necessary and adjusted to suit the column height.
Equipment	Links equipment model to the alarm/event class.



groups	Click on the button to open the dialog to select the equipment group.

DELETING ALARM/EVENT CLASSES

To delete an alarm/event class:

- 1. Select the alarm/event class
- 2. Select Delete in the context menu or in the tool bar
- 3. confirm this when requested to do so

Note: All linked variables lose their class assignment when deleted.

Alarm/event classes context menus and alarm/event-groups toolbar

PROJECT MANAGER CONTEXT MENU

Menu item	Action
New alarm/event class	Creates a new alarm/event class.
Editor profile	Opens the drop-down list that includes pre-defined editor profiles.
Help	Opens online help.

DETAIL VIEW OF CONTEXT MENU AND TOOLBAR





Menu item	Action
New alarm/event class	Inserts a new alarm/event class into the list.
Сору	Copies selected entries to the clipboard.
Paste	Pastes the contents of the clipboard. If an entry with the same name already exists, the content is pasted as "Copy of".
Delete	Deletes selected entries.
Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line.
Replace text in selected column	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window for the selected entry.
Remove all filters	Removes all filter settings.
Help	Opens online help.

3.5.3 Alarm areas

Alarm areas make flexible alarming possible using status variables. These can be evaluated using a combined element, for example.

Alarm areas are broken down into area entries. The number of possible area entries corresponds to the number of existing alarm/event classes.

CREATING ALARM AREAS

To create a new alarm area:

- 1. In Project Manager, right click on the Alarm areas subnode
- 2. Select the command: New alarm area

(alternatively select the corresponding symbol in the toolbar (on page 28) or press on the Ins button)

3. Select the desired variables in the General node

4. Create a new area entry in the Class linking node by clicking on {New class link} (the number of possible area entries is limited to the number of existing alarm/event classes)

PROPERTIES FOR ALARM AREAS

Parameters	Description
General	
Name	Name of the alarm area.
	Is displayed in the filter condition of AML and CEL.
Status variable	Byte variable:
	First bit: Displays if the alarm area contains active alarms. Second bit: Displays if this alarm area contains unacknowledged alarms. For details, see "status variable bits". The button opens the dialog for variable selection.
Number of active alarms	Variable that displays the number of active alarms in this alarm area as a numerical value. Button opens the dialog for variable selection.
Number of unacknowledged alarms	Variable that contains the number of unacknowledged alarms in this alarm area as a numerical value.



No.	Number of configured area entries. Display only.
Equipment groups	Links equipment model to the alarm area.
	Define the membership of an equipment group. Click on the button to open the dialog to select the equipment group.
Class linking	Collects area entries. A Class linking summarizes the status variable and number of active and unacknowledged alarms for an alarm/event class. Area entries are created via the {New class link} property.
{New class link}	Creates a new area entry (on page 35).
Alarm/event class	Alarm class for the area entry.
{Delete class linking}	Deletes the area entry.
Alarm/event class	Selection of alarm/event class for area entry from drop- down list. Alarm/event class must already have been created.
Further entries are similar to general settings per area entry with:	
▶ Status variable	
▶ Number of active alarms	
Number of unacknowledged alarms	

STATUS VARIABLE BITS

Bit	Meaning
0	1 = Alarms are active
	0 = No alarms are active
1	1 = Unacknowledged alarms present
	0 = No unacknowledged alarms

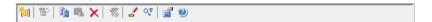


Alarm area context menus and tool bar

PROJECT MANAGER CONTEXT MENU

Menu item	Action
New alarm area	Creates a new alarm area.
Editor profile	Opens the drop-down list that includes pre-defined editor profiles.
Help	Opens online help.

DETAIL VIEW OF CONTEXT MENU AND TOOLBAR



Menu item	Action
New alarm area	Inserts a new alarm area into the list.
Сору	Copies selected entries to the clipboard.
Paste	Pastes the contents of the clipboard. If an entry with the same name already exists, the content is pasted as "Copy of".
Delete	Deletes selected entries.
Edit selected cell	Opens the selected cell for editing. The binocular symbol in the header shows which cell has been selected in a highlighted line.
Replace text in selected column	Opens the dialog for searching and replacing texts.
Properties	Opens the Properties window for the selected entry.
Remove all filters	Removes all filter settings.
Help	Opens online help.

Configuring alarm areas

To create an alarm area:

1. Click on { New class link }



- 2. Select the desired Alarm/event class
- 3. Define for the area
 - Status variable
 - Variable for Number of active alarms and
 - Variable for Number of unacknowledged alarms

Note: Alarms are allocated to an alarm area in the Alarm area properties of the variables in the Alarm handling group.

EXAMPLE ALARM AREA

Class linking	Alarm/e vent class	Status variable	Number of active alarms	Number of unacknowledged alarms
1	Warning	Status_warn_1	Active_warn_1	Unackn_warn_1
	Disturbanc e	Status_error_1	Active_error_1	Unackn_error_1
2	Warning	Status_warn_2	Active_warn_2	Unackn_warn_2
	Disturbanc e	Status_error_2	Active_error_2	Unackn_error_2

EXAMPLE APPLICATION, ENERGY

An alarm area is a group of objects. These are summarized in one screen. For an energy supplier, each transformer station is represented by a screen. Transformer stations A to T are displayed in four subpages. All alarm areas are displayed in a joint overview.

- ▶ If a limit is breached in transformer station A, the button for transformer stations flashes in the overview screen.
- ► The button flashes on the group screen, which leads to the page with the transformers stations A, B, C, D and E.
- ▶ The button for transformer station A flashes in the detailed screen.



3.5.4 Alarms in global project and integration projects

Each project saves its own IDs for alarm classes, alarm groups and alarm areas. There can therefore be overlaps with global projects, integration projects and subprojects. If the same IDs are used in different projects, this can lead to entries being overwritten in the filter selection dialogs.

to avoid this, ensure that different IDs are used in all projects. To do this, create "dummy" groups/classes/areas, which you then delete again.

3.6 Alarm engineering with filters

You configure the display of alarms using the filter. You have several possibilities to do this:

- 1. Define information that is displayed in Runtime in the Alarm Message List:
 - With this, you define the information that is shown for an alarm.
 - For details, see: Column setting for Alarm Message List (on page 37).
- 2. Filter alarms for the Alarm Message List when switching and modify them in Runtime:
 - With this, you pre-define filters, giving the user at the machine the possibility to define their own filters.
 - For details, see: Filter for Alarm Message List screen switching. (on page 41)
- 3. Define fixed filters for Runtime:
 - With this, you create filters that are adapted to actual use and hide the filter criteria that are not required.
 - For details, see: Filter Alarm Message List filters (on page 62).

3.6.1 Column setting for Alarm Message List

You define the information that is displayed in Runtime in the Alarm Message List in the column settings. You configure these for a screen switching function in the filter criteria or directly in the properties of the Alarm Message List in the project:

1. Open the Alarm Message list node in Project Properties

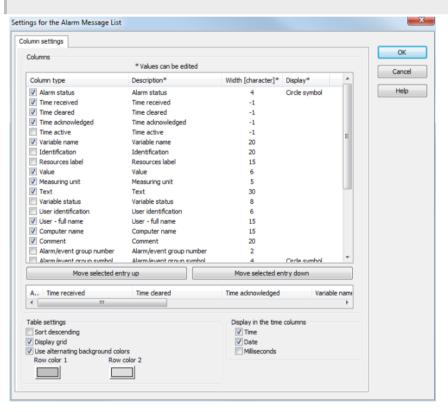


- 2. Click on the Column settings AML property
- 3. The dialog for the column settings (on page 54) is opened

Note: The average character width of the selected font type is used to calculate the column width.



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
▶ Checkbox:	Selected entry up and Move selected entry down. 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.

3.6.2 Filter for Alarm Message List screen switching.

You define which alarms are to be displayed in Runtime using filters and which are to be hidden. Filters can be defined in the editor and - depending on the requirements in the Editor - in Runtime.

To tailor the filter selection to the requirements of the operator in Runtime, use an Alarm Message List filter (on page 62) screen instead of an Alarm Message List screen.

To configure screen switching for an Alarm Message List (on page 7) screen:

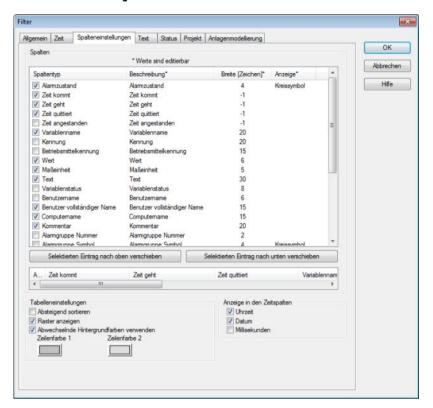
- 1. Create a Screen switching function on an Alarm Message List Screen
- The filter dialog is opened and offers several tabs with filter criteria:
 - General (on page 42)
 - Time (on page 45)
 - Column settings (on page 54)
 - Text (on page 58)
 - Status (on page 60)
 - Project (on page 61) (only available in the integration project of multi-project administration.)
 - Equipment modeling (on page 61)

The following tabs can be optionally displayed if linked variables or indices are present:

- Replacing links
- Replace indices



For details on this, read screens in the Linking variables and replacing functions Section and Linked symbols.



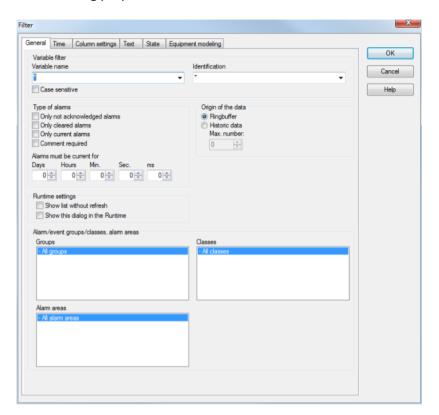
General

With the general filter, you define which alarms are shown and what access you have to the setting in Runtime. To do this, alarms are classified according to:

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



The following properties are available:





Parameters	Description
Variable filter	Limitation to alarms of certain variables
Variable name	Enter the name or part of the name of the variable you want to filter. Use of a wildcard * is possible.
	Hint: Wildcards are only allowed as prefix or suffix; e.g. *xxx or xxx*.
Identification	Enter the identification or partial identification of variables according to which you would like to filter. Use of a wildcard * is possible.
	Hint: Wildcards are only allowed as prefix or suffix; e.g. *xxx or xxx*.
Note capitalization	Active: Upper and lower case is only taken into account when filtering for variable name and/or identification.
Alarm type	Type of alarm that is displayed.
Only unacknowledged alarms	Active: Only alarms that have not yet been acknowledged by the user are displayed.
Only historical alarms	Active: Only alarms that have already passed, i.e. whose values no longer in the critical range, are displayed.
Only current alarms	Active: Only alarms that are still active, i.e. whose values are still in the critical range, are displayed.
Comment required	 Active: Only alarms are shown for which it is necessary to leave a comment (on page 114) are displayed.
Alarms must at least be active	Use the spin control to define the minimum time that an alarm should be active in order for it to be displayed. Possible settings:
	▶ Days
	▶ Hours (hr.)
	▶ Minutes (min.)
	▶ Seconds (sec.)
	Milliseconds (ms)
Origin of the data	Display of current or current and historical alarms.



Ring buffer	Active: Only data from the ring buffer (on page 23) is displayed.
Historic data Maximum number	Active: Data from the ring buffer and historical data from the AML are displayed.
	The maximum amount of data to be displayed includes the data from the ring buffer.
Runtime settings	Behavior of the AML in Runtime
Show list without refresh	Active: No new entries are added as long as the list is displayed.
	(not available for Export AML (on page 90) function.)
Show this dialog in the Runtime	Active: The filter dialog is opened each time before a screen is called up. The filter settings can be modified.
Alarm/event groups/classes, alarm areas	Selection of groups, classes and alarm areas
Alarm/event groups	Select, from the alarm/event groups (on page 26) present, the one from which alarms are to be displayed.
Alarm/event classes	Select, from the alarm/event classes (on page 29) present, the one from which alarms are to be displayed.
Alarm areas	Select, from the alarm areas (on page 32) present, the one from which alarms are to be displayed.
	1

Attention

Regarding zenon and Windows CE: CE system on which the filter dialog is to be displayed must have a resolution higher than 800 x 600 pixels in order for the dialog to be displayed in full.

Time

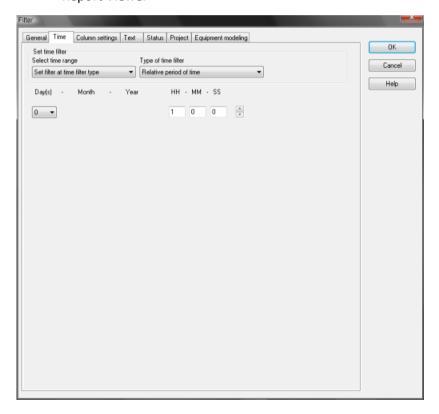
The time filters provide an easy possibility to limit the data to be displayed or exported. The time filters are very flexible to implement and can be pre-set in the editor or adjusted in Runtime.

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 (on page 5)
- ► Chronological Event List
- Archive revision
- Extended Trend
- Report Generator
- ▶ Report Viewer



Time filtering can be carried out in two ways:

Define time period in the Editor (on page 47)
 Fixed time areas are used. A time period is given in the editor. It is only possible to filter according to this time period in Runtime. Other filters - such as filtering according to variable name, alarm/event groups and alarm/event classes etc. can no longer be amended in Runtime.



2. Time filter amendable in Runtime (on page 51) 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.

Specify time area 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 (on page 42) 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.

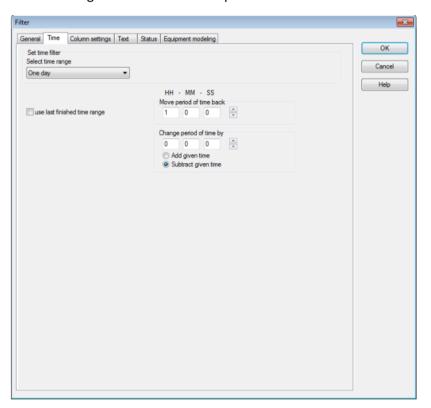
For example: You have set a 30 minute filter. It is 10.45 when the function is activated. If the Use last closed time period option is deactivated, the filter is set to the current time



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 (on page 51) option
- 4. Configure the selected time period





Parameters	Description	
Set filter for filter type	Activates the possibility to Amend Runtime (on page 51).	
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		Active: The current time period is always used. The previous time period is displayed if the option is set.
period		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.

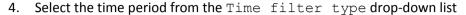
Time filter can be amended in Runtime

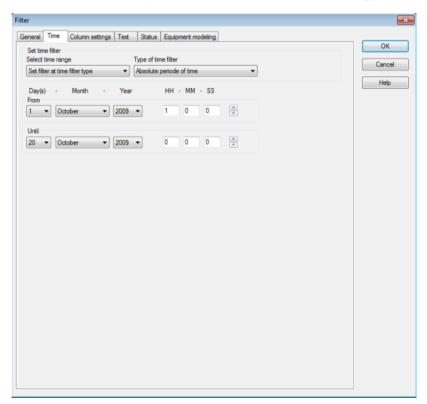
With this method, you stipulate a time filter in the Editor. This can be amended in Runtime before execution. To create the filter:

- 1. 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.







Parameters 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)



Parameters	Options	Description
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)
	-	1



Parameters	Options	Description
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, Day 5-23:00:00. 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.



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:

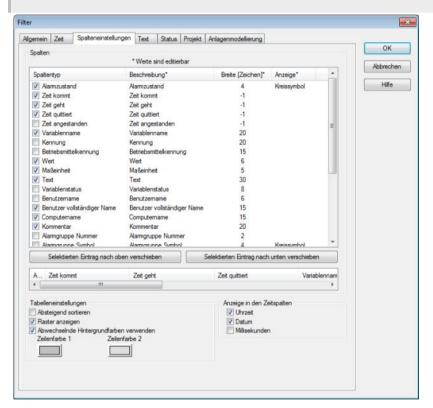
- ► Screen of type Alarm Message List
- Alarm Message List Screen
- ► Alarm status line
- ► Chronological Event List screen
- Screen Chronological Event List Filter



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



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.

Text

The text filter makes it possible to limit the display to messages that contain certain search terms.



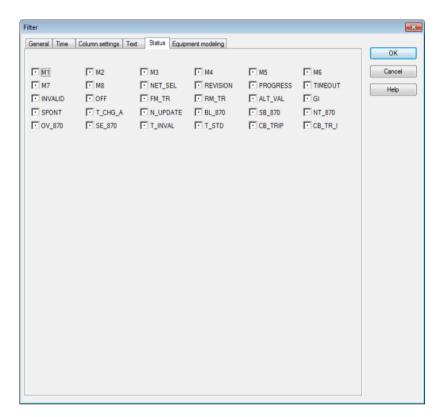


Parameters	Description	
Filter according to		
No text filter	The text filter is not used.	
Search for (words separated by	The text filter filter is used.	
spaces)	Further options are activated.	
Input field	Enter the corresponding words or character strings.	
Options		
Note capitalization	Active: A distinction 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.



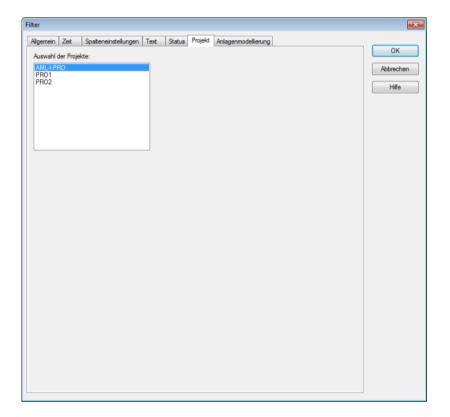
If the checkbox SPONT is set to 1, only the alarms are shown that are triggered by spontaneous values are displayed.

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



Project

Selection of projects that are to be taken into account for the AML. The filter to select subprojects is only available in the integration project of multi-project administration.



Selection from the integration project and all subprojects is carried out using multiselect by holding the ctrl button and clicking on the desired projects with the mouse.

Equipment modeling

All equipment models that have already been created are displayed in the filter. New models or groups can be created using the context menu or menu bar.

To add groups to the filter:

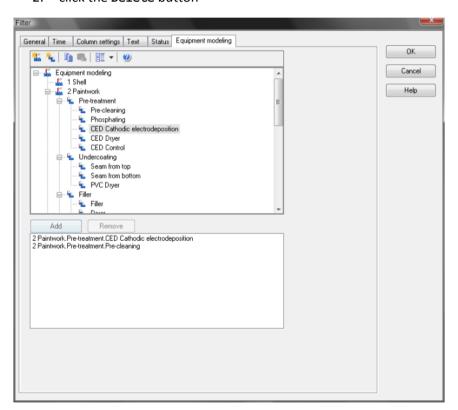
- 1. Select the desired element
- 2. Click on the Add button



3. Repeat the process until all desired groups are contained in the list (multiselect is not possible)

To remove groups from the filter:

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



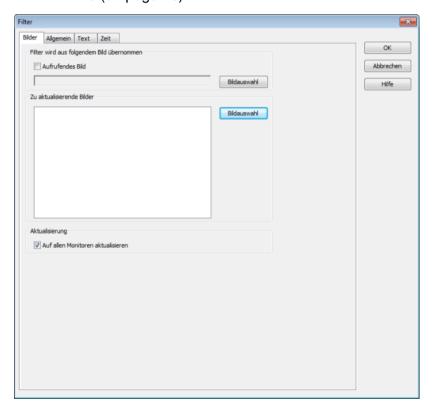
Element	Description
Equipment model	provides models and groups for selection
Add	adds selected groups to the filter list
Remove	removes selected groups from the filter list

3.6.3 Filter for Alarm Message List screen switching filter.

To create an Alarm Message List filter (on page 12) screen:



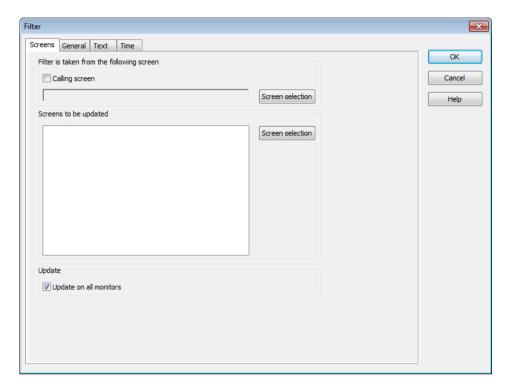
- 1. Create a Screen switching function on an Alarm Message List filter screen
- 2. The filter is displayed with all tabs:
 - Screens (on page 64)
 - General (on page 66)
 - Text (on page 68)
 - Time (on page 70)





Screens

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



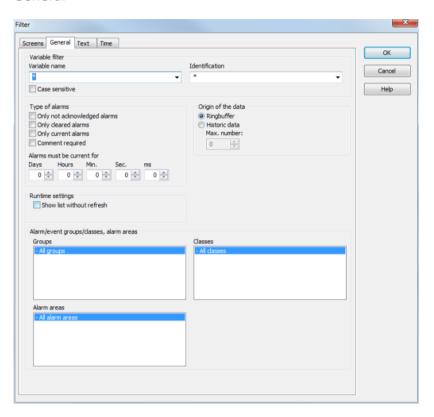
The following settings are available:



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



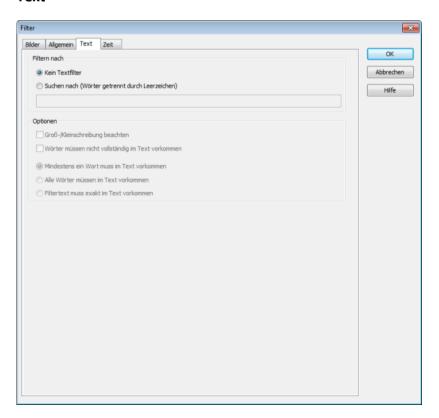


Parameters	Description
Variable filter	Limitation to alarms of certain variables
Variable name	Enter the name or part of the name of the variable you want to filter. Use of a wildcard * is possible. Hint: Wildcards are only allowed as prefix or suffix; e.g. *xxx or xxx*.
Identification	Enter the identification or partial identification of variables according to which you would like to filter. Use of a wildcard * is possible. Hint: Wildcards are only allowed as prefix or suffix; e.g. *xxx or xxx*.
Note capitalization	Active: Upper and lower case is only taken into account when filtering for variable name and/or identification.
Alarm type	Type of alarm that is displayed.
Only unacknowledged alarms	Active: Only alarms that have not yet been acknowledged by the user are displayed.
Only historical alarms	Active: Only alarms that have already passed, i.e. whose values no longer in the critical range, are displayed.
Only current alarms	Active: Only alarms that are still active, i.e. whose values are still in the critical range, are displayed.
Alarms must at least be active	Use the spin control to define the minimum time that an alarm should be active in order for it to be displayed. Possible settings: Days Hours (hr.) Minutes (min.) Seconds (sec.) Milliseconds (ms)
Origin of the data	Display of current or current and historical alarms.
Ring buffer	Active: Only data from the ring buffer (on page 23) is displayed.



Historic data Maximum number	Active: Data from the ring buffer and historical data from the AML are displayed. The maximum amount of data to be displayed includes the data from the ring buffer.
Runtime settings	Behavior of the AML in Runtime
Show list without refresh	Active: No new entries are added as long as the list is displayed.
Alarm/event groups/classes, alarm areas	Selection of groups, classes and alarm areas
Alarm/event groups	Select, from the alarm/event groups (on page 26) present, the one from which alarms are to be displayed.
Alarm/event classes	Select, from the alarm/event classes (on page 29) present, the one from which alarms are to be displayed.
Alarm areas	Select, from the alarm areas (on page 32) present, the one from which alarms are to be displayed.

Text



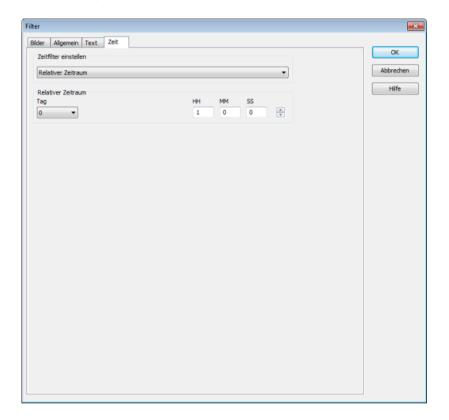


Parameters	Description
Filter according to	
No text filter	The text filter is not used.
Search for (words separated by	The text filter filter is used.
spaces)	Further options are activated.
Input field	Enter the corresponding words or character strings.
Options	
Note capitalization	Active: A distinction 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	Option s	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)
	То	Defines the end time in day, month, year, hour (HH), minute (MM), second (SS)



Relative time		A relative time period is entered.
period		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)
	1 1111	Defines the start point in hours (init), fillitates (wilvi), seconds (55)



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, Day 5-23:00:00. 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.

Functions 3.7

The display and handling of the Alarm Message List is controlled in Runtime using functions.



Attention

If functions are used in a network, note the place of execution (on page 72).

3.7.1 **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	Adjustabl e	Current computer	Serv er	Stand by	Cli
AML and CEL					
Alarms: ackn. flashing	-	0			
Alarms: delete	-		0	0	
Alarms: Acknowledge	-		0	0	
Activating/deactivating an alarm/event group	-	0			
Activate/deactivate alarm message list / alarm/event groups / alarm/event classes	-		0	0	
Active alarm message list	-		0		
Alarm Message List active/inactive	-		0		
Alarm message list inactive	-		0		
Export AML	+	0			
Save AML and CEL ring buffer	-		0	0	
Export CEL	+	0			
Print alarm list or CEL	+	0			
Create/print IPA document	-		0		
Switch online printing on/off	-		0	0	
Start online printing on a new page	+	0			
Switch online printer	-		0		
Application					
Select printer	+	0			
Start EMS	-		0		
Stop EMS	-		0		
Print extended trend diagram	+	0			
Switch color palette	+	0			



Functions with active limit values	-		0	0	
Functions with active/inactive limit values	-		0	0	
Functions with inactive limit values	-		0	0	
Open Help	+	0			
Reload	+	0			
Determine open maintenances	-		0		
PFS - execute user-defined event	+	0			
Activate/deactivate project simulation	-	0			
Simulate right mouseclick	+	0			
Save remanent data	+	0			
Stopping the Runtime	+	0			
Analyze S7 Graph heuristics	+	0			
Execute SAP function	+	0			
Language switch	+	0			
Topology - ground fault search	-		0		
Topology - LoadShedding	-		0		
Historian					
Archive: Stop	-		0	0	
Index Archive	-		0		
Archive: Start	-		0	0	
Export archive	-	0			
Display open archive	-		0	0	
User administration					
Change user	+	0			
Login with dialog	+	0			



Login without password	+	0		
Logout	+	0		
Change password	-	0		
Screens				
Change ALC source color	+	0		
Indexed screen	-	0		
Screen : close	+	0		
Screen: Return to last	-	0		
Screen: Move center	+	0		
Screen switch	+	0		
Focus: Activate input to the element with the focus	+-	0		
Focus: set to frame	+	0		
Move focus	-	0		
Focus: Delete from frame	+	0		
Show menu	+	0		
Monitor assign	+	0		
Runtime profiles	+	0		
Close the frame	+	0		
Set point input for keyboard screen	-	0		
Displaying the overview window	+	0		
Error detection in the electric network				
Acknowledge ground fault message	+	0		
End ground fault search	+	0		
Start ground fault search	+	0		
Acknowledge ground fault message	+	0		
Message Control				



	1	1	ı	1	
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	+	0			
Send a Message	+	0			
Send Message: activate	+	0			
Send Message: deactivate	+	0			
Network					
Authorization in network	+	0			
Redundancy switch	-			0	
Report Generator					
Print report	+				
Execute report	+				
Export report	+				
Recipes					
Recipegroup Manager	-	0			
Standard Recipe	-	0			
Standard recipe single directly	+	0	0	0	0
Standard recipe single with dialog	-	О			
Standard recipe single with online dialog	-	0			
Script					
Script: Execute	+	0			
Script: Select online	+	0			
Variable					
Export data	-		0		
Read a dBase-file	+	0			



Print current values	+	О			
Unit conversion	+	0			
Trend-Values on	-		0	0	
Trend-Values off	-		0	0	
Trend values inactive/active	-		0	0	
Send value to hardware	-		0		
Driver commands	-	0			
Transfer simulation image to standby	-				0
Write time to variable	+	0			
Read time from variable	+	0			
VBA					
Open PCE editor	-		0		
Open VBA Editor	+	0			
Execute VBA Macro	+	0			
Show VBA macro dialog	+	О			
VSTA					
Open VSTA editor	+	0			
Execute VSTA macro	+	0			
Show VSTA macro dialog	+	0			
Windows					
Play audio file	+	0			
File operations	+	0			
Start continuous tone	+	0			
Stop continuous tone	+	0			
Window to the background	-	0			
Window to foreground	-	0			
Print screenshot	+	0			



Start program	+	0		

3.7.2 AML screen switching

To open an Alarm Message List filter in Runtime:

- 1. Create an Alarm Message List (on page 7) screen
- 2. Create a Screen switch function for this screen
- 3. Define the desired filter properties (on page 37)

The filter properties can be modified in Runtime. Exception: Fixed time filters (on page 47) were defined in the Editor.

CONFIGURE SCREEN SWITCHING

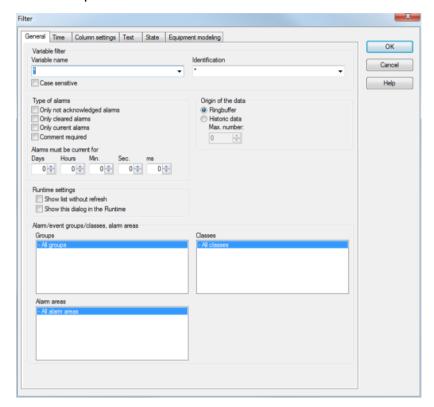
To configure screen switching for an AML screen:

- 1. Select, in the context menu of the Function node, the New function Command
- 2. Click ON Screen switching
- 3. The dialog for screen switching is displayed
- 4. Select the Alarm type screen or create it in this dialog by clicking on the New screen symbol
- 5. The filter is displayed with all tabs:
 - General (on page 42)
 - Time (on page 45)
 - Column settings (on page 54)
 - Text (on page 58)
 - Status (on page 60)
 - Project (on page 61) (only available in the integration project of multi-project administration.)
 - Equipment modeling (on page 61)



The following tabs can be optionally displayed if linked variables or indices are present:

- Replacing links
- · Replace indices



- 6. Define the filter that is to be pre-defined in Runtime
- 7. Confirm the settings and close the dialog by clicking on ox
- Link the function with a button, in order to be able to switch to the screen in Runtime and offer the filter properties





AML screen switching filter

Several filters are offered when screen switching is created for an AML screen. For details, see the Alarm configuration using filters (on page 37) section, in the Filters for Alarm Message List screen switching (on page 41) chapter.

3.7.3 AML filter screen switching

To open an Alarm Message List filter screen in Runtime:

- 1. Create an Alarm Message List filter (on page 12) screen
- 2. Create a Screen switch function for this screen
- 3. Define the desired filter properties (on page 82)

The filter properties can only be controlled in Runtime using the buttons defined on the screen.

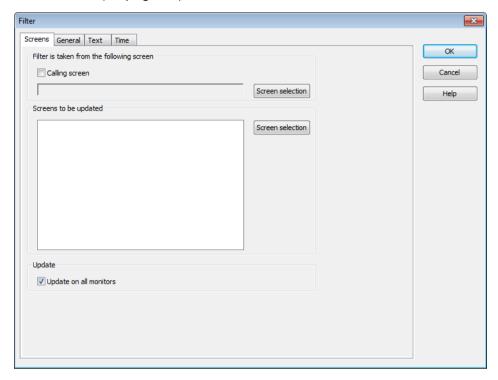
CONFIGURE SCREEN SWITCHING

To configure screen switching for an Alarm Message List filter screen:

- 1. Select, in the context menu of the Function node, the New function command
- 2. Click on Screen switching
- 3. The dialog for screen switching is displayed
- 4. Select Alarm Message List filter Screen or create it in this dialog by clicking on the New screen symbol
- 5. The filter is displayed with all tabs:
 - Screens (on page 64)
 - General (on page 66)
 - Text (on page 68)



• Time (on page 70)



- 6. Define the filter that is to be pre-defined in Runtime
- 7. Confirm the settings and close the dialog by clicking on ox
- 8. Link the function with a button, in order to be able to switch to the screen in Runtime and offer the filter properties

AML filter screen switching filter

Several filters are offered when screen switching is created for an AML screen. For details, see Alarm configuration using filters (on page 37) section, Filters for Alarm Message List filter (on page 62) section.

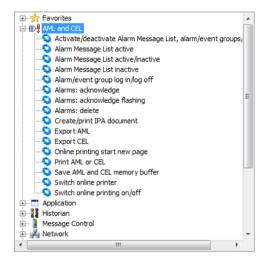
3.7.4 Functions for alarm administration

Different functions make it possible to handle alarms in Runtime.

To create a function for alarm administration:



- Navigate to the Functions node
- 2. Select New function in the context menu or in 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

Activating/deactivating an alarm/event group

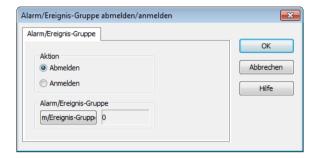
To optimize the performance of the connection, alarm/event groups (on page 26) that are not required can be deactivated. Their variables are then no longer required by the driver.

For this function, you must:

1. Define the action: Deactivate or activate



Define the alarm/event group (Only one group per function can be defined)



Parameters	Description
Action	Defines action. Available actions:
	▶ Deactivate: Deactivates the alarm/event group
	▶ Activate: Activates the alarm/event group
Alarm/event group	Selection of alarm/event group. Click the button and a dialog opens to select the group.
OK	Confirms inputs and closes dialog.
Cancel	Discards changes and closes dialog.
Help	Opens online help.

EXAMPLE

An alarm group bit is created in the PLC. If this bit is set, the Alarm group active function is called via the limit administration. The variables are requested and the corresponding limits in zenon are checked. The bit can be reset in the PLC. The alarm/event group can be deactivated again above a certain limit value. On program start all limit variables are polled.

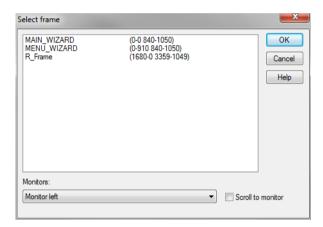
Alarms: ackn. flashing

When flash-acknowledging (on page 115) in Runtime, only the flash attribute of the process variables and the flashing of all graphic elements on the screen are reset. The entry in the alarm list is not acknowledged - except if the Flashing acknowledgement property is active.

To acknowledge the flashing of alarms in Runtime:



- 1. Create a new function (on page 82)
- 2. Select flash-acknowledge alarms.
- 3. The dialog for the selection of templates opens
- 4. select the frame you wish to assign
- 5. Select the desired monitor for multi-monitor systems
- 6. link the function to a button



Parameters	Description
Select frame	Frames that are to be flash-acknowledged.
Monitor	For multi-monitor projects, select the virtual monitor for execution: Current monitor Designated virtual monitor
Scroll to monitor	Active: Scroll bars are shown in Runtime, which make it possible to scroll to the monitor.

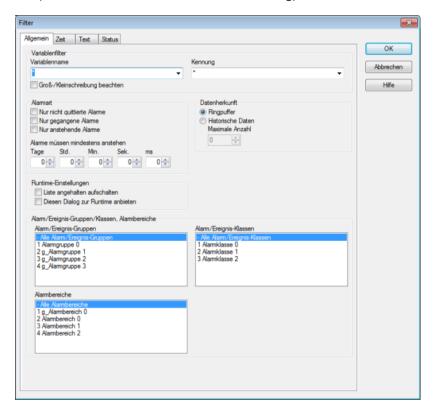
Alarms: delete

To delete (on page 115) alarms collectively using filter criteria, use the Delete alarms function:

- 1. Create a new function (on page 82)
- Select Delete alarms.



3. The dialog to select the filter criteria opens (similar to filter criteria in screen switching)



- 4. Define the criteria for:
 - General (on page 42)
 - Time (on page 45)
 - Text (on page 58)
 - Status (on page 60)
- 5. link the function to a button

USER AUTHORIZATION

The functions Acknowledge alarms (on page 87) and Delete alarms (on page 85) can be assigned to a user group via Function authorization. Only authorized user can acknowledge and delete alarms.

In addition, an additional operating right can be set via the To delete property in the respective subgroup of the Limits group. Selected alarms can only be removed from the Alarm Message List by users with the necessary rights.



If the To delete property is set, alarms are then only removed from the list of active alarms if they are deleted. Acknowledgement alone is not sufficient.



Info

Alarms can only be deleted, if they have been acknowledged before.

Alarms: Acknowledge

With this function, you acknowledge Runtime alarms from the Alarm Message List. Most importantly, global acknowledgement (on page 112) is possible with this.

When executing this function in Runtime, the flashing attribute of the variables and therefore screen alarming (only SICAM 230) will also be reset. The selected alarms are acknowledged.

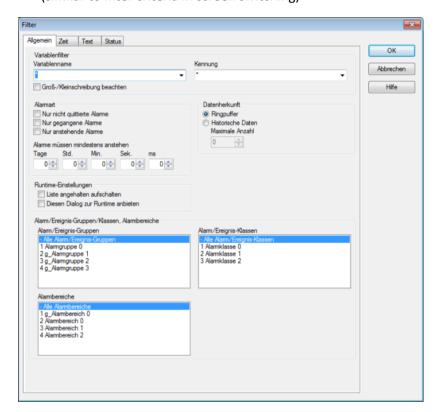
For transfer parameters see chapter Alarm engineering with filters (on page 37).

To acknowledge alarms with this function:

- 1. Create a new function (on page 82)
- 2. Select acknowledge alarms.



3. The dialog to select the filter criteria opens (similar to filter criteria in screen switching)



- 4. Define the criteria for:
 - General (on page 42)
 - Time (on page 45)
 - Text (on page 58)
 - Status (on page 60)
- 5. link the function to a button

USER AUTHORIZATION

The functions Acknowledge alarms (on page 87) and Delete alarms (on page 85) can be assigned to a user group via Function authorization. Only authorized user can acknowledge and delete alarms.

In addition, an additional operating right can be set via the To delete property in the respective subgroup of the Limits group. Selected alarms can only be removed from the Alarm Message List by users with the necessary rights.



If the To delete property is set, alarms are then only removed from the list of active alarms if they are deleted. Acknowledgement alone is not sufficient.



💡 Info

Alarms can only be deleted, if they have been acknowledged before.

Active alarm message list

This function switches the status of the Alarm Message List in Runtime to active when selected.

Alarm Message List active/inactive

This function switches the status of the Alarm Message List in Runtime between active and inactive when selected.

Alarm message list inactive

This function switches the status of the Alarm Message List in Runtime to inactive when selected.

Activating/deactivating alarm message list, alarm/event groups/classes

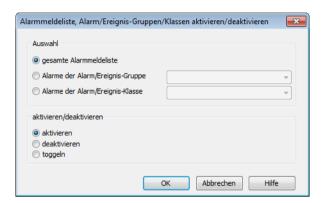
The function makes it possible to activate or deactivate alarms of a certain group or class (on page 25) or all alarms of the AML or to switch between these two states.

To activate or deactivate alarms:

- 1. Create a new function (on page 82)
- Select Alarm message list, Activate/deactivate alarm/event groups/classes
- 3. The dialog to select alarms opens



- 4. Define the criteria for the function
- 5. link the function to a button



Parameters	Description
Selection	Selection of the alarms.
Whole alarm message list	Function applies for the whole alarm message list.
Alarms of the alarm/event	Function applies for a certain group.
group.	Selection: Clicking on the button opens a drop-down list.
Alarms of the alarm/event	Function applies for a certain class.
class	Selection: Clicking on the button opens a drop-down list.
Activate/deactivate	Action of the function.
activate	Activates selected element.
Deactivate	Deactivates selected element.
Toggle	Switches status (active/inactive).

Export AML

With this function, the saved alarms and filter conditions can be exported in Runtime to a file or database.

To export alarms:

1. Create a new function (on page 82)



- 2. Select Export AML
- 3. The dialog to select the filter criteria opens
- 4. Define the criteria for:
 - Export format (on page 91)
 - General (on page 42)
 - Time (on page 45)
 - Project (on page 61)
- 5. link the function to a button

Export format

Exports are possible in various formats:

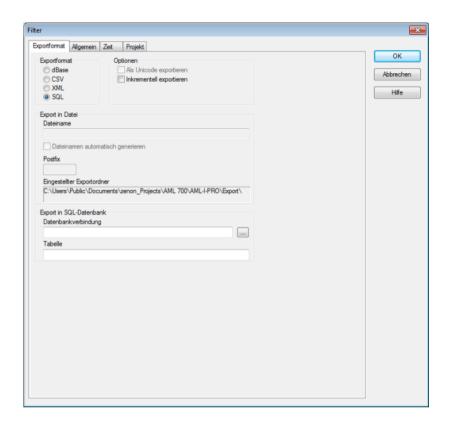
- ▶ dBase
- ► CSV
- ➤ XML
- ▶ SQL



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 (on page 37) chapter, General (on page 42) section
Time tab	Time filter. See Alarm configuration using filters (on page 37) chapter, Time (on page 45) section.
Project	Project filter. Only available in the Integration project of multiproject administration.
	For configuration, see Alarm configuration using filters (on page 37) chapter, Project (on page 61) section.

CODING NAME FOR AUTOMATIC NAMING

Name	AJJMMTTP.XXX
А	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 (on page 54). 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.

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 (on page 82)
- 2. Select Save AML and CEL ring buffer
- 3. link the function to a button

Print alarm list or CEL

The saved alarms and their filter conditions can be output to a printer with this function

To configure the function:

- 1. Create a new function (on page 82)
- 2. Select Print AML or CEL
- 3. The dialog for selecting the list opens.



- 4. Select Alarm Message List
- 5. The dialog to select the filter criteria opens
- 6. Define the criteria for:
 - General (on page 42)
 - Time (on page 45)



- Font: Select 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 STRUCTURE

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

The keywords available for the formatting file (ALAR.FRM for online printing and ALAR G.FRM for offline printing) and examples of these being used can be found in the FRM configuration file (on page 131) chapter in the Operation in Runtime (on page 104) section.

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 by means of the ALARM.frm or ALAR G.frm or BTB.frm files

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.
- ► TheUse reactivated time option must be activated in order to be able to use the keywords that evaluate the reactivations (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 offlin e	CEL offlin e	AML online	CEL onlin e	Description
Key words for the I	Key words for the list part					
@DATZEITKOMMT	@DTRECEIVED	х	X	X	Х	Time and Date when the alarm occurred
@DATZEITGEHT	@DTCLEARED	Х	-	Х	-	Time and Date when the alarm ended
@DATZEITOK	@DTACK	Х	-	Х	-	Time and Date when the alarm was acknowledged
@DATZEITREAKT	@DTREACTIVATE	х	-	х	-	Time and Date of reactivating: The Use reactivated time property must be activated in Project Properties.
@DATZEIT	@DTLASTEVENT	-	-	X	-	Time and date of alarm received or cleared or acknowledged or reactivated
@ZEIT	@TLASTEVENT	-	-	Х	х	Time of alarm received or cleared or acknowledged or reactivated
@ZEITOK	@ТАСК	х	-	х	-	only displays time of acknowledging
@ZTKOMMT	@TRECEIVED	х	Х	х	X	only displays time of alarm received
@ZTGEHT	@TCLEARED	х	-	х	-	only displays time of end of alarm
@ZTREAKT	@TREACTIVATE	х	-	х	-	only displays time of reactivating
@TIMELASTING	@TACTIVE	x	-	х	-	Time active (difference time received - time cleared)
@ANWENDUNG	@PROJECTNAME	х	Х	Х	х	Project name
@KANALNAME	@VARNAME	х	Х	х	X	Variable name CEL: Only entries with



						variables
@AK	@ACLASSNR	Х	Х	Х	Х	Alarm/event class name
@AG	@AGROUPNR	Х	Х	Х	Х	Alarm/event group number
@AGNAME	@AGROUPNAM E	X	Х	Х	х	Name of alarm/event group
@AKNAME	ACLASSNAME	х	Х	Х	Х	Name of alarm/event class
@TAGNR	@IDENTIFICATIO N	х	Х	Х	х	Identification (company- specific label)
@AMELDUNG	@ТЕХТ	Х	Х	Х	Х	Alarm message text
@REAKTANZ	@NRREACTIVAT E	Х	-	Х	-	Number of reactivations
@STATUS	@STATUS	Х	Х	Х	Х	Status information as in Alarm Message List
@WERT	@VALUE	Х	Х	Х	Х	Variable value of alarm
@REAKTIONSTEXT	@COMMENT	Х	X	X	X	Commentary from the Alarm Message List. Only available when using dynamic limit value texts if Long dynamic limit texts AML or Long dynamic limit texts CEL is activated.
@USER	@USERID	Х	Х	Х	Х	AML: User who acknowledged alarm.
@RECHNER	@COMPUTER	Х	Х	Х	Х	AML: Computer on which alarm was acknowledged.
Key words for header and footer						
@ANWENDUNG	@PROJECTNAME	Х	Х	Х	х	Project name
@SEITE	@PAGE	Х	Х	Х	х	Page number
@HEADDATZEIT	@DTSYSTEM	Х	Х	Х	Х	System date and system time
@HEADDATUM	@DSYSTEM	Х	Х	Х	х	System date
@HEADZEIT	@TSYSTEM	Х	Х	Х	Х	System time



@USER	@USERID	Х	Х	х	х	User who prints
@USERNAME	@USERNAME	х	х	х	Х	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)

MILLISECONDS SETTING



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 (on page 54). 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.



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 (on page 82)
- 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

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 (on page 82)



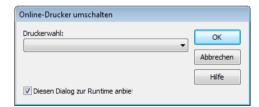
- 2. Select Start online printing on a new page
- 3. link the function to a button

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 (on page 82)
- 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

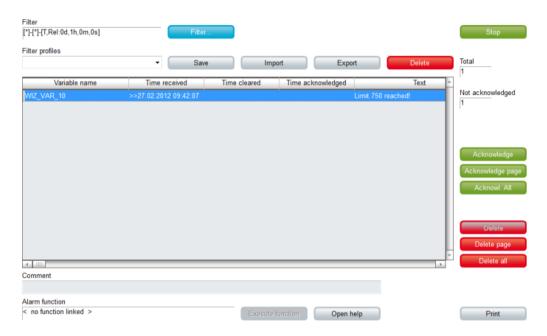


Parameters	Description
select printer	Selection of the desired printer from the drop-down list.
Show this dialog in the Runtime	Active: When this function is executed, the dialog is opened and the printer can be defined in Runtime.



4. Operating during Runtime

The Alarm Message List is called up in Runtime via a screen switching function (on page 79).



The available control elements and appearance are configured in the Editor (on page 7).



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.
Alarm Message List	Display of the alarms. The appearance is configurable (on page 11). Columns are defined via the Column settings (on page 54) filter in screen switching or via the Column settings AML property in the Alarm Message list group.
Display: Set filter	Display of the currently-selected filter conditions.
Filter	Opens dialogs for filter selection.
Acknowledge/delete	Groups of buttons for acknowledging and deleting alarms
<pre>Acknowledging</pre>	Acknowledging alarm messages in Runtime.
Acknowledging page	All alarms displayed on the current page are acknowledged.
Acknowledge all	All alarms for the current filter criteria are acknowledged
	Note for multi-user project: Alarms are only acknowledged for projects for which the user has authorizations. (for details on multi-user projects, see Distributed engineering chapter)
> Delete	Deletes alarm from the Alarm Message List in Runtime. Alarm must already be acknowledged.
Delete page	Deletes all acknowledged alarms that are displayed on the current page.
Delete all	Deletes all acknowledged alarms that correspond to the current filter criteria.



Stop/continue	Switch for filling the list:
	Stop: New elements are no longer added automatically.
	Next: New elements are added automatically.
	Attention: The font of the button can be changed in the editor but is not carried over to Runtime. You can configure changes to the font using Language switching.
Close	Closes Alarm Message List
Print	Prints filtered list.
Print with dialog	Opens printer settings before printing.
Display: Linked function	Displays the message allocated to the alarm message.
Execute function	Executes the functions configured for the alarm in Runtime.
	Note: With the Start program function, the variable name of the selected alarm can be transferred as a parameter for the program to be started using the key word @alarm.name.
Open Help	Calls up configured Help.
Display	Status and elements of alarm administration.
> Total number	Time number of all alarms.
Number unacknowledged	Displays number of unacknowledged alarms.
Info: Status of Alarm Message List	Display if Alarm Message List is active or not (Project property Alarm Message list active).
▶ Comment field	Input of free text (comment) by the user for the selected alarm. This text can be displayed in the list (Comment option in the Column settings of alarm administration.)
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.
	I



▶ 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 current setting as a profile.
> Delete	Deletes selected profile.

CONFIGURATION OF THE DISPLAY

You configure which information is displayed in the alarm status line and Alarm Message List using the alarm configuration column setting. The column settings can be reached via:

► Project properties -> Alarm Message list -> Column settings AML (Column settings (on page 54) tab only)

or

► Screen switching to an AML screen (all tabs (on page 37))

FUNCTIONS FOR LIMITS AS ALARM

When Runtime starts, a check is made to see if the alarm for the limit value has already occurred before Runtime was ended. If this is the case, the linked function is not carried out again.

Hint: If the limit is not an alarm, execution of the limit value function when Runtime starts may be influenced by the Execute limit function at RT start project setting in the Functions group. This setting is only influences limits that are not alarms.

4.1 Alarm status line

The alarm status line display alarms that cannot be acknowledged during runtime as a red bar with black text. It contains information on the variables to be triggered and the time. The alarm status line is defined as the uppermost Windows window and thus covers all zenon screens, as well as all other applications.

WIZ_VAR_10 >>01.02.2011 09:57:40 <<01.02.2011 09:57:40



Alarms are acknowledged (on page 112) by double-clicking the right mouse button.

CONFIGURING THE ALARM STATUS LINE

To display the alarm status line in Runtime, activate the Status line active property in the Alarm Message list group in product properties.

The actions of the alarm status line in Runtime and the font to be used are defined in project properties of the Alarm status line in the Alarm Message list group:

- ▶ display next: defines the alarm status line as a ring. The Size of the ringbuffer property is used as a ring size. If this property is deactivated, the alarm status line always contains only one alarm.
- Display: defines if the oldest filter or the most recent alarm is displayed. The selection is made form the drop-down list.
 - oldest alarm: FIFO buffer
 - Most recent alarm: LIFO buffer



Attention

Behavior in multi-project administration:

The setting in the integration project defines the behavior for sub-projects, regardless of the setting of the sub-projects.

- If the alarm status line is deactivated in a subproject, but not in the integration as a start project, the alarm status line nevertheless continues to be displayed.
- If the alarm status line is activated in the superordinate project then it is also displayed in the subproject, even if it has been deactivated here.
- The alarm status line of the uppermost project is always used in Runtime.

POSITIONING

By default, the alarm status line is displayed on the top border of the screen (height=18 pixels with standard font). You can change its size and position in the frames. In order to do this, select the alarm status bar and deactivated option Use standard position. After that you can position the alarm status bar - in the same way as a frame - anywhere on the screen.

For multi-project administration, the alarm status line of the integration project determines the position. The settings of the subprojects are ignored.



STATUS MESSAGES IN BLUE STATUS LINE

You can define three status messages to inform the user that the number of alarms has exceeded a certain number, or that the ring buffer of the alarm information list is going to overflow soon. The status messages cover the red alarm status line until they are acknowledged. You can acknowledge them by double-clicking them with the right mouse button. For that, the user must be in the according authorization group. These can be set in the user administration using the function authorizations.

The following applies for opening up the blue status bar:

- ▶ The blue line has higher priority for the display than the red alarm status line.
- ▶ The blue line only reacts to the total number of entries in the list
- The maximums for the overall number of entries in the list can be defined using the properties of the Alarm status line group. Each maximum can be allocated a message that is displayed from the bottom when it is exceeded.
- ▶ The highest possible maximum is active at any time.
- ► The blue line can only be deactivated with a right mouse click. In doing so, the adjacent maximum is only then triggered if it has been explicitly reached.
- ▶ A deactivated maximum is only then reactivated again when it is exceeded again.

4.2 Alarm Message List

The alarm information list shows alarm messages line by line during runtime.

To create and display the AML, activate the Alarm Message list active property in the Alarm Message list group.

You can configure the display format in the filter of the screen switch function to an alarm screen in the Column settings (on page 54) tab.

Alarms are saved in a ring buffer (alarm.bin) and in an alarm file (*.aml) in the Runtime folder as soon as they occur.

RING BUFFER

The ring buffer includes all active alarms. At this the following things are managed:



- ▶ Time received in milliseconds as unique signature
- ▶ additional information such as cause, value, etc.
- Time cleared
- ▶ Time acknowledged

When acknowledging alarms, all alarms of a variable with the same limit violation are deleted at the same time from the ring buffer.

As soon as the alarm is acknowledged, it is deleted from the ring buffer. Exception: If property To delete is set, the alarm must be deleted by the user decidedly.

SIZE OF THE RING BUFFER

The size of the ring buffer must be set to an appropriated size in the project properties via property Size of the ringbuffer.

Recommended: At least number of variables for which alarms can occur.

The ring buffer is automatically saved as file alarm.bin when the Runtime is closed. If the Runtime is closed due to an unexpected event, e.g. power outage, data will be lost. To prevent this, the ring buffer can be saved manually via the Save ringbuffer on change property whenever a new entry is added or via the Save AML and CEL ring buffer (on page 95) function.

Attention: In the Runtime the ring buffer is handled dynamically in the memory. Via the defined number of alarms, even alarms which do not have a cleared time stamp can be displayed. Thus alarms are displayed which exceed the size of the ring buffer.



- ▶ Size of the ring buffer: 100 entries
- Active alarms in the Runtime without cleared time stamp: 120
- Display in the AML in the Runtime: 120

ALARM FILE

All alarms are written in an alarm file (*.aml) at the same time as in the ring buffer. It is created automatically for each calendar day and can be managed via property Save AML data. The name of the alarm file is put together by the letter A, followed by the date in form JJMMDD and the suffix .aml; e.g. A100623.aml. These files are created for each day automatically and must be transferred or deleted



by the user if storage capacity is limited. *.aml files are saved in the ...\Projektordner\Computername\Projektname folder.

SYNCHRONIZING RING BUFFER AND ALARM FILE

Ring buffer and alarm file are synchronized. This synchronization ensues from the ring buffer to the alarm file. All changes such as acknowledging are only carried out in the ring buffer and are then synchronized with the alarm file. Thus for example all unacknowledged alarms can be displayed in the alarm file and the acknowledge can be induced. The action however is taking place in the ring buffer.

MEMORY TIME PERIODS

The alarm file *.aml is saved each time a new entry is made.

The ring buffer (*.bin) is saved:

- When Runtime is ended
- After each entry is made is the Save ringbuffer on change property is active
- When the Save AML and CEL memory buffer function is executed

Note: If the Save ringbuffer on change option is deactivated, the entries in the AML and in the ring buffer may no longer correspond.



Attention

If the ring buffer overflows because it is too small, unacknowledged entries remain in the alarm file. They are displayed during filtering but they cannot be acknowledged anymore. The attempt to acknowledge them can trigger the acknowledgement on the ring buffer if the alarms concern the same variable and the same limit violation.

AML IN RUNTIME

Alarms in the Alarm Message List can have three states:

- 1. Not cleared
- 2. Not acknowledged
- 3. Not deleted



Alarms can require acknowledgement and/or require deletion.

Acknowledgement resets the flashing attribute of the variables. The deletion of an entry can only be made with a prior acknowledgment of a gone alarm event. Configuration of the acknowledgement and/or requirements for deletion is carried out via the To acknowledge and To deleteproperties in the Limits/AML/CEL nodes of variable configuration

Example for the structure of the alarm information list in the runtime:

Variable	Date / Time received	Date/Time goes	Date/Time acknowledged	Information text
Motor1_failure	20.06.2010 13:00:04	20.06.2010 13:05:35	20.06.2010 13:05:40	Motor's protective relay activated

Each row can be acknowledged (on page 112) by double-clicking it with the right mouse button. For that, the user must be in the according authorization group.

When the Alarm Message List is opened, the status of the alarm management is shown in the upper left corner (active or inactive).



Info

The variables for not acknowledged alarms, acknowledged alarms and number of alarms is stored in a local list in the memory.

See variable 'Not acknowledged alarms' in the chapter Definition of the alarm (on page 42) and CEL filters.

4.3 **Alarms: Acknowledge**

For the information "acknowledged" to be displayed in the AML, the following must apply:

- 1. The To acknowledge property must be activated for the variables
- 2. the alarm must be acknowledged

Alarms can be acknowledged via:

double right-click on the alarm status bar



- double right-click on an entry in the Alarm Message List
- Function Acknowledge alarms
- Button in alarm message list

When acknowledging an alarm:

- All alarms of a variable with the same limit are acknowledged together.
- Name and ID of the user who deletes the alarm are written in the Alarm Message List
- the name of the computer from which the alarm was acknowledged is written in the Alarm Message List
- acknowledging the alarm can be written in the Chronological Event List additionally

Alarms are saved in the ring buffer up to when they are acknowledged. At the same time they are written to a filterable alarm file (*.aml) and kept synchronized.

Attention: The Size of the ringbuffer property must be chosen appropriately. If alarms are no longer saved in the ring buffer (on page 23) due to a buffer overflow, unacknowledged alarms remain in the alarm file. For details see chapter Alarm Message List (AML) (on page 5).



Info

If alarms require a comment (on page 114), these can only be acknowledged if a comment was entered. The user must be authorized to carry out the necessary function.

FUNCTION ACKNOWLEDGE ALARMS

The acknowledge alarm (on page 87) function makes it possible to

- acknowledge alarms from the AML using a function call
- global acknowledgement

When using this function in Runtime, the flashing attribute of the variables and therefore screen alarming (only SICAM 230) will also be reset. The selected alarms are acknowledged. For details, see Acknowledging alarms (on page 87) chapter.



USER AUTHORIZATION

The functions Acknowledge alarms (on page 87) and Delete alarms (on page 85) can be assigned to a user group via Function authorization. Only authorized user can acknowledge and delete alarms.

In addition, an additional operating right can be set via the To delete property in the respective subgroup of the Limits group. Selected alarms can only be removed from the Alarm Message List by users with the necessary rights.

If the To delete property is set, alarms are then only removed from the list of active alarms if they are deleted. Acknowledgement alone is not sufficient.



Info

Alarms can only be deleted, if they have been acknowledged before.

Required comments for acknowledgement 4.3.1

It is possible to make it necessary to enter a comment for alarms that require acknowledgement before the alarm can be acknowledged. To be able to enter a comment, the user needs to enter the corresponding function authorization alarm comment.

To make an alarm require a comment, the corresponding option can be set at:

- The configuration of the reaction matrixes
- The Comment required property in the Limits group of the variables

Comments that require alarms can subsequently only be amended by users with the Change alarm comment function authorization. If comments are changed, an entry into the CEL is made, stating the variable name and the original and amended comment.

Alarms that require a comment are checked for comments with all acknowledgment possibilities (including VBA). The necessary authorization is also checked when changes are made. The Alarm Message List can be filtered for alarms that require a comment by means of:

- Alarm Message List (on page 42) filter
- Alarm Message List filter (on page 12) screen



4.4 Alarms: ackn. flashing

In addition to acknowledging alarms (on page 87) from the alarm message list, screens with alarms can also be acknowledged by template. Flash acknowledgement is called up using the flash-acknowledge alarms (on page 84) function or by double clicking on the corresponding element with the right mouse button. In doing so, only the flash attribute of the variables and the flashing of all graphic elements on the screen is reset. The entries are not however acknowledged in the AML.

FLASH-ACKNOWLEDGEMENT WITH ACKNOWLEDGEMENT IN AML

A flash-acknowledgement acknowledges the alarms in the AML if the Flashing acknowledgement option is also set in alarm administration.

Only for SICAM 230: The acknowledgement in the alarm message list or on the alarm line level at the upper screen edge also acknowledges the alarm in the screen and screen alarm guidance.

FLASH-ACKNOWLEDGING IN INTEGRATION PROJECTS

If alarms are to be acknowledged in integration projects using the flash-acknowledge function, all affected screens must be opened.

If screens in superordinate and subordinate project templates have the same name, the screens in the subordinate project are not opened. If the template names are different, the screens of the sub-project in the background are opened and can be flash-acknowledged.



If flash-acknowledgement is used in the network, it is only executed locally at the respective client.

4.5 Alarms: delete

The following is required to delete an alarm:



- ▶ A delete alarm (on page 85) function is executed or
- ▶ the Delete button on the screen of the alarm message list type is pressed

Alarms can only be deleted if they have been acknowledged (on page 112) beforehand.

If for Limits, the To delete property was set, alarms are removed from the list of active alarms when they are deleted. Acknowledging the alarms is not enough.

USER AUTHORIZATION

The functions Acknowledge alarms (on page 87) and Delete alarms (on page 85) can be assigned to a user group via Function authorization. Only authorized user can acknowledge and delete alarms.

In addition, an additional operating right can be set via the Todelete property in the respective subgroup of the Limits group. Selected alarms can only be removed from the Alarm Message List by users with the necessary rights.

If the To delete property is set, alarms are then only removed from the list of active alarms if they are deleted. Acknowledgement alone is not sufficient.



Info

Alarms can only be deleted, if they have been acknowledged before.

4.6 **Filtering alarms**

Alarms can be displayed with a filter in Runtime using:

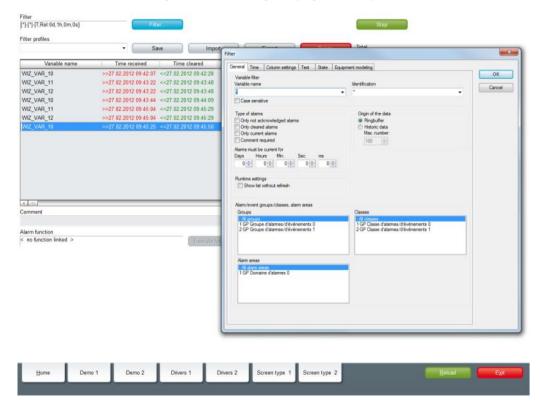
- Filter application in Runtime
- Screen switching with pre-defined filter to a screen of alarm message list (on page 7) type
- Screen switching with with filter when calling up a screen of alarm message list (on page 7) type
- Screen switching to a screen of alarm message list filter (on page 120) type



FILTERING DURING RUNTIME

Filters can be used in Runtime in screens of the alarm message list type. To filter the alarms displayed in the AML:

- 1. the Filter button must be configured
- 2. Click on the button
- 3. The alarm message list filter dialog (on page 37) is opened



Filters that have been set can be saved in Profiles (on page 118).

SCREEN SWITCHING TO A SCREEN OF ALARM MESSAGE LIST TYPE

Alarms can be displayed after pre-filtering. To do this:

- 1. Configure a filter (on page 37) for the screen switching to an alarm message list screen (on page 79) function
- 2. The alarm message list is displayed in a filtered state when called up



- 3. If the option Offer this dialog in Runtime is activated for the function, the filter can only be redefined before display
- 4. Further filter settings in Runtime are possible using the button filter

SCREEN SWITCHING TO A SCREEN OF ALARM MESSAGE LIST FILTER TYPE

In order to only offer users the filters they need in Runtime, use an alarm message list filter (on page 120) screen. To do this:

- 1. Configure screen switching to an alarm message list filter screen (on page 81)
- 2. Call up the AML in Runtime using this function
- 3. The user has an alarm message list tailored (on page 62) to their requirements

4.6.1 Filter profiles

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

The following control elements must be configured in order to be able to use filter profiles:

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

With this, you can do the following in Runtime:

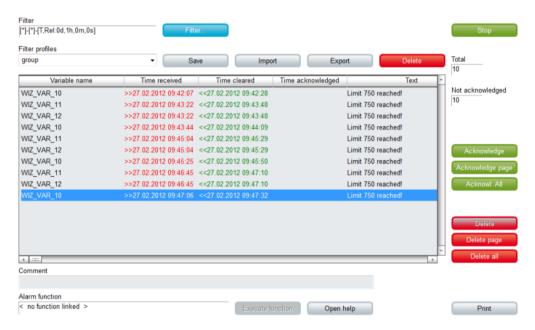
- Save filter
- ► Apply saved filter
- Delete filter profiles



SAVE FILTER PROFILE

To create a filter profile:

- 1. Define filter conditions in Runtime
- 2. Give it a name in the Filter profile property
- 3. Click on save



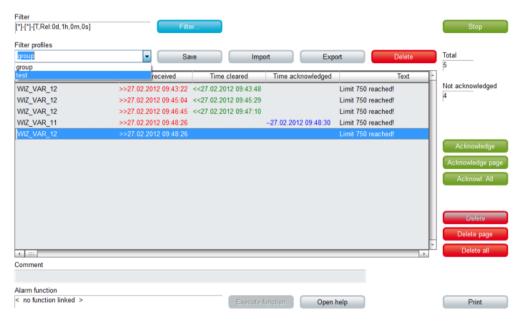
APPLY FILTER PROFILE

To create a filter profile:

1. Select a filter from the Filter profile property drop-down list







DELETING A FILTER PROFILE

To delete a filter profile:

- 1. Select a filter from the Filter profile property drop-down list
- 2. Click on the x button
- 3. The profile is deleted.
- 4. The deleted filter continues to be used until a new filter is defined or selected

4.6.2 Use alarm message list filter

It is possible to adjust filter settings for the Alarm Message List in Runtime with the help of the Alarm Message List Filter (on page 12) screen. All filter settings that are available in the filter (on page 37) for the function to switch the screen to the Chronological Event List screen (on page 79) 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.

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 Of 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	Т	Т	Т
Extended Trend	Т	Т	Т
Time filter	Т	Т	Х
Alarm Message List Filter	Х	С	Т
Chronological Event List Filter	С	X	Т
Alarm Message List	Х	С	Т
Chronological Event List	С	Х	Т

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 <code>vpdate</code> button. If the filter screen is not called up by a screen element or if the <code>Calling screen</code> 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.

4.7 Printing and exporting alarms

AML alarms can be documented and archived by:

- ▶ AML online printing (on page 124): Each alarm is sent to a line printer when displayed in a list
- ► AML (on page 124)offline printing: (on page 128)The AML is printed out as a list in its current state
- ► Export (on page 135) contents of AML (filtered)

The printer used for print-outs is defined using the menu path 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 131) chapter.

4.7.1 Online printing

With online printing, any alarm that occurs is immediately sent to the printer.

Attention: Online printing is line-by-line in accordance with the ESC/P (Epson Standard Code for Printers) and needs an Epson-compatible printer.

To print out alarms online:

- 1. Define a printer
- 2. navigate to the AML and CEL node in properties
- 3. Activate the Printing active property
- 4. Select the Printing for property in the Alarm Message List drop-down list
- 5. Define the number of lines with the Lines per page property (default: 72)
- 6. Configure ALARM.frm (on page 131)
- 7. Add ALARM.frm to the Files/texts and formats node



CONTROL THE PRINT AND PRINTER IN RUNTIME

PAGE CHANGE

A form feed is carried out if:

- ► A page has been written to in full
- ▶ Runtime is ended during active online printing
- ▶ The Start new page with online printing (on page 102) function is carried out

PAUSE PRINTING

To pause or restart online printing:

► Carry out the Switch online printer on/off (on page 102) function

CHANGING AND SETTING UP A PRINTER

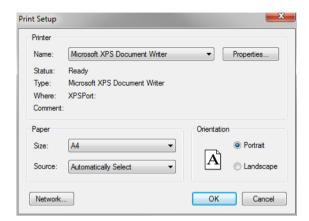
To change the printer in Runtime:

► Carry out the Switch online printer (on page 103) 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 (on page 131) in ${\tt ALARM.FRM:}$



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

Printout to 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		

4.7.2 Offline printing

Offline printing means that the Alarm Message List is printed out as it is displayed at the time in Runtime. This printout is a snapshot including all set filters and their limitations. Printing is carried regardless of whether the variables have the Print option.

PRINT

To print the Alarm Message List offline:



- 1. Define a printer
- 2. Configure ALAR_G.frm (on page 131)
- 3. Add ALAR G.frm to the Files/texts and formats node
- 4. Click on the 'Print' button or 'Print with dialog' button in Runtime

SETTING UP AND CHANGING THE PRINTER

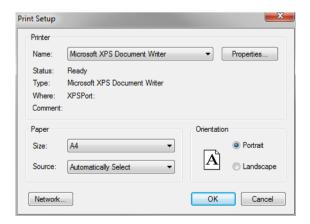
CHANGING AND SETTING UP A PRINTER

To change the printer in Runtime:

► Carry out the Switch online printer (on page 103) 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 ALAR_G.frm:



Date: @DSYSTEM	Closed AML demo project	Time @TSYSTEM o'clock	Text
Date / Time received	Time cleared	Information text	Status text
%%			
@DTRECEIVED	@TCLEARED	@IDENTIFICATION	@ТЕХТ
%%			
	Page	@PAGE	

Printout to the printer:

Date: 20.03.2011	Closed AML 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		

4.7.3 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:

- ► <u>Separation of list parts:</u>
 - 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 offlin e	CEL offlin e	AML online	CEL onlin e	Description		
Key words for the list part								
@DATZEITKOMMT	@DTRECEIVED	Х	X	X	X	Time and Date when the alarm occurred		
@DATZEITGEHT	@DTCLEARED	х	-	Х	-	Time and Date when the alarm ended		
@DATZEITOK	@DTACK	x	-	Х	-	Time and Date when the alarm was acknowledged		
@DATZEITREAKT	@DTREACTIVATE	Х	-	x	-	Time and Date of reactivating: Property Use reactivated time in the project properties must be activated.		
@DATZEIT	@DTLASTEVENT	-	-	Х	-	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	@ТАСК	Х	-	Х	-	only displays time of acknowledging		
@ZTKOMMT	@TRECEIVED	х	Х	Х	X	only displays time of alarm received		
@ZTGEHT	@TCLEARED	x	-	Х	-	only displays time of end of alarm		
@ZTREAKT	@TREACTIVATE	х	-	Х	-	only displays time of reactivating		
@TIMELASTING	@TACTIVE	х	-	Х	-	Time active (difference time received - time cleared)		
@ANWENDUNG	@PROJECTNAME	Х	Х	Х	Х	Project name		
@KANALNAME	@VARNAME	х	х	Х	Х	Variable name CEL: Only entries with		



						variables
@AK	@ACLASSNR	х	Х	Х	Х	Alarm/event class name
@AG	@AGROUPNR	х	Х	Х	Х	Alarm/event group number
@AGNAME	@AGROUPNAM E	Х	Х	Х	X	Name of alarm/event group
@AKNAME	ACLASSNAME	х	Х	Х	Х	Name of alarm/event class
@TAGNR	@IDENTIFICATIO N	Х	Х	Х	Х	Identification (company- specific label)
@AMELDUNG	@ТЕХТ	Х	Х	Х	Х	Alarm message text
@REAKTANZ	@NRREACTIVAT E	Х	-	Х	-	Number of reactivations
@STATUS	@STATUS	Х	Х	Х	Х	Status information as in Alarm Message List
@WERT	@VALUE	Х	Х	Х	Х	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	Х	Х	Х	AML: User who acknowledged alarm.
@RECHNER	@COMPUTER	Х	Х	Х	X	AML: Computer on which alarm was acknowledged.
Key words for head	er and footer					
@ANWENDUNG	@PROJECTNAME	Х	Х	Х	Х	Project name
@SEITE	@PAGE	Х	Х	Х	Х	Page number
@HEADDATZEIT	@DTSYSTEM	Х	Х	X	Х	System date and system time
@HEADDATUM	@DSYSTEM	Х	Х	Х	Х	System date
@HEADZEIT	@TSYSTEM	Х	Х	Х	Х	System time



@USER	@USERID	Х	Х	Х	Х	User who prints
@USERNAME	@USERNAME	х	х	х	Х	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)

Exporting alarms 4.7.4

Alarms can be exported in different formats:

- dBase
- CSV
- XML
- SQL

EXPORT

To export alarms

- 1. Create an Export AML (on page 90) function
- 2. link the function to a button
- 3. Executes the function in Runtime



Info

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