COPADATA
do it your way

zenon manual

Historian

v.7.11

Contents

1. Welcome to COPA-DATA help

GENERAL HELP

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

PROJECT SUPPORT

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

LICENSES AND MODULES

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2. Historian

The archiving, the recording of process data and hence derived variables is carried out by module Historian in zenon. The Historian manages the recording of the desired data and provides several storage and export formats. With this the data for the eventual post process and evaluation - also outside zenon - are available.

In zenon, you can evaluate or process archive data with the help of the Extended Trend, the Report Generator, Report Viewer or `archive revision` screens.

License information

Must be licensed for Editor and Runtime (standalone, server, standby).

Note: *The function-reduced Historian Starter Edition (on page 6) is already part of the standard license.*

3. General

The module Historian is available in zenon in two versions: Historian Starter Edition (on page 6) and Historian licensed version (on page 7).

In general we differentiate in zenon between 3 standard archiving methods.

- Cyclic archiving
- Start/ stop archiving
- RDA (Realtime Data Acquisition)

3.1 Historian Starter Edition

The standard license of the TAG-based zenon version on the PC includes a reduced version of the Historian. The Starter Edition is based on the standard Historian but has the following restrictions:

- no lot archiving
- no RDA
- no record on change or event triggered scanning - only cyclical recording type
- no evacuation of data, only a ring buffer
- no Aggregated archive
- no manipulation of data via archive revision or Report Generator
- Export under CE only possible in ASCII format (this is also possible in XML and DBF format on a PC)

- Archive data can only be saved in the ARX format

Attention

- You cannot use any functions that exceed the limitations mentioned above if you have only the Starter Edition license for the Editor.
- You cannot start any archives that exceed the limitations mentioned above if you have only the Starter Edition license in the Runtime. An entry in the diagnosis server is created.
  No save operations can be carried out by the report or archive revision.
  Example: An archive with event triggered scanning is created. It is not started in Runtime. This means that no data is recorded for the archive.

3.2 Historian licensed version

The Historian Starter Edition on the PC can be upgraded to the full Historian version at any time, without compatibility problems (license extension).

- If both the Historian Starter Edition and the Historian are licensed, all functions of the Historian are available.
- For I/O licensed version, the Starter Edition is not available.
- Historian Starter Edition is available in combination with Extended Trend Starter Edition for Windows CE 6.0 Runtime (data export in CE only available in CSV format).
  For older Windows CE versions both modules are not available.

SQL EVACUATION

The licensed version of the Historian can be enhanced by SQL evacuation. For this you must purchase the license of the zenon SQL Server.

3.3 Cyclic archiving

At cyclic archiving an archive is started regularly and ended after a defined time period.

During this time period values can be written in the archive. The values can either be written to the archive with cyclic recording, event-triggered recording or record on change.

Information

Pay attention to the difference between cyclic archiving and cyclic recording.

Cyclic archiving means that in a defined cycle an archive is started and ended.

Example:

AN archive is started every day at 0:00:00 o'clock and ended at 23:59:59. o'clock

Cyclic recording means that at a certain time a value is written to the archive.

Example: The value of variable X is written to the archive every 10 minutes.

3.4 Starting and stopping archives via functions

You can control the archiving manually in the zenon Runtime via functions Start archive (on page 87) and End archive (on page 86).

As long as an archive is active, values can be written to the archive. The values can either be written to the archive with cyclic recording, event-triggered recording or record on change.

3.5 RDA - Real time Data Acquisition

The RDA functionality is used in order to read values which were archived in the control and to save them in a zenon archive. A typical application for this are archiving tasks of a control which is not permanently connected to zenon.

RDA can also be used for the Post-Mortem-Analysis at errors on the PLC. For this the control must be configured appropriately.

1. DEFINING VARIABLES IN THE PLC

A seperate, continuous, linear area has to be created in the PLC for each RDA variable.

In order to avoid problems, the data type of the variables should not be smaller than the one in which the PLC is organized!

The first variable of the area designated for the RDA in the PLC serves as switch for triggering the transfer process. This means if the variable is set to 1 by the PLC, the following values are loaded and archived in zenon - as defined in the header. Then the driver sets its value back to 0 automatically.

2. DEFINING THE VARIABLE IN ZENON

In zenon you can define the variables as usually. The variables have to come from a continuous, linear area in the PLC.

Keep in mind to set the property **`HD values`** in **`"Additional settings/Harddisk data storage"`** to **`"postsorted values (RDA)"`**.

3. CREATING AN ARCHIVE IN ZENON

Create an archive and select the RDA variables. The defined archive has to be an on-change archive.

3.5.1 PLC data format

Possible RDA data types (BYTE, WORD, DWORD, Float) depend on the used zenon driver e.g. S5PG32, PSUNI32, ...

> **Attention**
>
> *No future values can be read. This might occur, if the PLC and the PC have different system times. Therefore always synchronize the times.*

3.5.2 Sequence of archiving

Be aware that the data transfer takes some time. So after a trigger event a delay of several seconds may occur depending on the number of values.

Be aware that the PC works asynchronous to the SPC, so that not all trigger flags may be realized at the same time. This can lead to time slips within the data. (Can only occur with TYPE 1).

The solution for this problem is the time stamp in the SPC (TYPE2, TYPE3 and TYPE4)

With TYPE 4 other than with TYPE 2 and 3 only the starting time is transferred. Keep in mind that the order of the entries in TYPE 4 is just the other way round than in TYPE 1.

Attention

In redundant networks the upgrading of the server is done, after all projects have been loaded and aligned. As no redundancy buffer for data points from sub-projects is stored, these data are not up-to-date during a redundancy switch and during a reload!

Information

General (on page 8)

PLC data format (on page 9)

Header description (on page 11)

Type description (on page 12)

3.5.3 Description header

Parameters	Description
Index [0]	Size depends on datatyp in zenon . e. g.: (BYTE, WORD, DWORD, FLOAT) Trigger flag: is set to 1 by the PLC when user data are requested. It is automatically set back to 0 after zenon received the demanded data.
Index [1]	32bit Intel format Number of user data Is set by the PLC
Index [2]	32bit Intel format Cycle time in ms, only used by TYPE1 . Is set by the PLC
Index [3]	32bit Intel format Type 1...without time (only for compatibility reasons, should no longer be used) Type 2...with time format 1 Type 3...with time format 2 Type 4 Is set by the PLC
Index [4]	32Bit Intel Format index of the oldest value (only relevant for TYP 1) Set by the PLC and effects the archive as followed:
Index [5]	Reference data start. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)

3.5.4 Type description

TYPE 1

Parameters	Description
Index [5]	Reference data start. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)
Index [6]	
Index [...]	

Number	5	Result in archive					
Oldest value		**0**	**1**	**2**	**3**	**4**	**Archive**
Value SPS	**Index SPS**	**Value**	**Value**	**Value**	**Value**	**Value**	**Time**
1	0	1	2	3	4	5	12:00 AM
2	1	5	1	2	3	4	12:01 AM
3	2	4	5	1	2	3	12:02 AM
4	3	3	4	5	1	2	12:03 AM
5	4	2	3	4	5	1	12:04 AM

Attention

This type was replaced by Type 4 and should no longer be used. It only still exists for compatibility reasons.

TYPE 2

Parameters	Description
Index [5]	Reference data start. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)
Index [6]	4 byte long time format -->\ Byte1=hours 0 - 23 Byte2=minutes 0 - 59 Byte3=seconds 0 - 59 Byte4=hundredths of seconds 0 - 100
Index [7]	Reference data. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)
Index [8]	4 byte long time format -->\ Byte1=hours 0 - 23 Byte2=minutes 0 - 59 Byte3=seconds 0 - 59 Byte4=hundredths of seconds 0 - 100
Index [...]	

TYPE 3

Parameters	Description
Index [5]	Reference data start. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)
Index [6]	8 byte long time format --> Byte 1 = year 97,98, ... (HINT: The time format is used from 1900 in two digits, i.e. from 2000 on, we have three digits here) Byte2=month 1 – 12 Byte3=day 1 – 31 Byte4=hour 0 – 23 Byte5=minute 0 – 59 Byte6=second 0 – 59 Byte7=hundreth second 0 – 99 Byte8=res.
Index [7]	Reference data. Size depending on zenon data type e.g.: (BYTE, WORD, DWORD, FLOAT)
Index [8]	8 byte long time format --> Byte 1 = year 97,98, ... (HINT: The time format is used from 1900 in two digits, i.e. from 2000 on, we have three digits here) Byte2=month 1 – 12 Byte3=day 1 – 31 Byte4=hour 0 – 23 Byte5=minute 0 – 59 Byte6=second 0 – 59 Byte7=hundreth second 0 – 99 Byte8=res.
Index [...]	

TYPE 4

Parameters	Description
Index [5]	8 byte long time format -->\nByte 1 = year 97,98, ...\n(HINT: The time format is used from 1900 in two digits, i.e. from 2000 on, we have three digits here)\nByte2=month 1 – 12\nByte3=day 1 – 31\nByte4=hour 0 – 23\nByte5=minute 0 – 59\nByte6=second 0 – 59\nByte7=hundreth second 0 – 99\nByte8=res.
Index [6]	Reference data start. Size depending on zenon data type\ne.g.: (BYTE, WORD, DWORD, FLOAT)
Index [...]	

4. Format of archive files

Archives have the following data structure: The Archive Name is a connection of short term, carrier storage time in UTV in the format YYMMDDhhmmss and the file extension ARX.

The archive file ARX contains the canal definitions and numerical data. The ARS file contains the String data. The archive header contains the archive definition and may or may not contain values of lot variables. The memory that is reserved for the value of the lot variable is - in case the lot variable is a string - dependent on the string length; in case of numerical variables 32 characters. Lot strings are stored in Unicode. If no lot variable (on page 58) is defined, no memory is reserved.

The data record in ARX files has a length of 24 bytes and offers the possibility to store double values. The status information is 64 bit.

Due to the file structure, archives can be stored each second. For cyclic archives however we recommend saving cycle times of > 30 seconds.

When the format of the archive files has changed, there is a check at the start of the Runtime if there are any archive files (they are recognized by the file extension ARV) in the Runtime directory. After the

confirmation the files are converted to the new format. This conversion is done for all projects, before the projects start.

DATA STRUCTURE

The Archive Name is a connection of short term, carrier storage time in UTV in the format YYMMDDhhmmss and the file extension ARX.

Example

```
A1070405071200.ARX
```

A1	Name of the archive
07	Year
04	Month
05	Day
07	Hour (UTC)
12	Minuten
00	Second

UTC TIME AND LOCAL TIME

Archive use local time when saved.

The local time appointed at the computer consists of: UTC + time zone + standard time/daylight saving time

The zenon Runtime automatically considers the local time for archive requests.

FOR EXAMPLE: BERLIN IN THE SUMMER

Local time: 2:00 PM

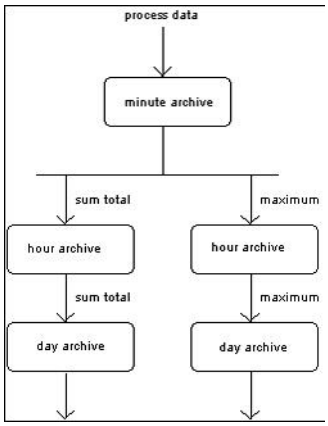
UTC: 14:00 minus 1 hour daylight saving time minus 1 hour time zone = 12:00.

The value which occurs at 14:00 local time is saved with time stamp 12:00.

You request values between 13:00 and 15:00 local time in Berlin. The Runtime then requests from the archive the values with a time stamp between 11:00 and 13:00 and displays them with the local time (13:00 to 15:00).

5. Cascading and data reduction

The archiving is based on the principle of cascading archives i.e. the desired variables are captured in an input archive and transferred into an aggregated archive (on page 47) via summarizing functions.



This process can be continued as often as desired. The summarizing function is initiated at the ending of the archive cycle. The following aggregating functions over the archiving cycle per archive variable are variable:

1. Summation
2. Average
3. Minimum
4. Maximum

In a project, several cascades can also work in parallel.

> **Attention**
>
> *Strings cannot be compressed.*

There are different types of archiving. The following triggers for the entries into the archives are available:

Parameters	Description
cyclic	Writing values to the archive is triggered by a predefined cycle.
event-triggered	Writing values to the archive is triggered by a defined bit variable.
on change	Writing values to the archive is triggered by a value change of one of the linked variables, i.e. the number of archived values depends on the frequency of change. The definition of a hysteresis for the variables can decrease the frequency.

Attention

In an archive of the type `On change` *variables are also saved on each status change.*

For example: If a driver is stopped all its variables receive the status OFF. Therefore stopping and starting a driver causes two entries.

- OFF
- SPONT or GI (on successful reconnect)

This also happens when the variable value does not change.

There are several possibilities for the exporting of an archive cycle.

Parameters	Description
Database	Ring buffer for each archive, in which the defined number of archive cycles is stored; post processing of the archive data within the ring; upon overflow of the ring store, optionally discard archive or export to file.
File export	After closing of an archive cycle it is immediately exported to a file.
Export function	The archive export i.e. the saving of archives to files with time filter, is done in standard file formats (ASCII, dBase, XML, SQL). The file names are issued independently from the system. The structure (YYMMDDhhmmsst/XML) encodes the export time with an identifier for archive, year, month, day, hour, minute and second. Files can be stored both locally and on a file server.

When the format of the archive files changed, at the start of the Runtime it is checked, if there are archive files (they are recognized by the file extension ARV) in the Runtime folder. After the confirmation the files are converted to the new format. This conversion is done for all projects, before the projects start.

The old archive files are renamed after the conversion. We recommend backing up the files before.

Server and standby server do the conversion parallelly before the data alignment.

6. Engineering in the Editor

You can find module Historian in the project manager. Create archives and manage them.

6.1 Archive detail view of context menu

TOOLBAR HISTORIAN AND ARCHIVES

Parameters	Description
New archive	Opens the wizard for creating an archive.
New aggregated archive	Opens the wizard to create an aggregated archive.
Edit archive	Opens the dialog for editing the selected archive.
Add variable	Opens the dialog for selecting variables.
Delete variable	Deletes a variable from the list without confirmation.
Delete	Deletes the selected archive.
Jump back to starting element	If you entered the list via function **linked elements**, the symbol leads back to the start element. Only available in the context menu when all linked elements are opened.
Export selected XML	Exports selected archives as an XML file.
Import XML	Imports XML files.
Rename archive	Makes it possible to change the name of the archive.
Help	Opens online help.

CONTEXT MENU HISTORIAN

Menu item	Action
New archive	Opens the wizard for creating a new archive.
Save	Saves changed archives.
Export XML all	Exports all archives as an XML file.
Import XML	Imports XML files.
Help	Opens online help.

CONTEXT MENU ARCHIVE

Menu item	Action
Edit archive	Opens the dialog for editing the selected archive.
Add variable	Opens the dialog for selecting variables.

New aggregated archive	Opens the wizard to create an aggregated archive.
Create template	Opens the dialog (on page 55) to create a template for aggregated archives.
Import template	Opens the dialog (on page 50) to import a template for aggregated archives.
Delete	Deletes the selected archive
Export selected XML	Exports selected archives as an XML file.
Import XML	Imports XML files.
Rename	Makes it possible to change the name of the archive.
Help	Opens online help.

AGGREGATED ARCHIVE CONTEXT MENU

Menu item	Action
Edit archive	Opens the dialog for editing the selected archive.
Add variable	Opens the dialog for selecting variables.
New aggregated archive	Opens the wizard to create an aggregated archive.
Delete	Deletes the selected archive
Export selected XML	Exports selected archives as an XML file.
Import XML	Imports XML files.
Rename	Makes it possible to change the name of the archive.
Help	Opens online help.

CONTEXT MENU VARIABLE LIST

Menu item	Action
Add variable	Opens the dialog for selecting variables.
Help	Opens online help.

CONTEXT MENU VARIABLE

Menu item	Action
Delete variable	Deletes variable from the list. Attention: There is no confirmation request.
Help	Opens online help.

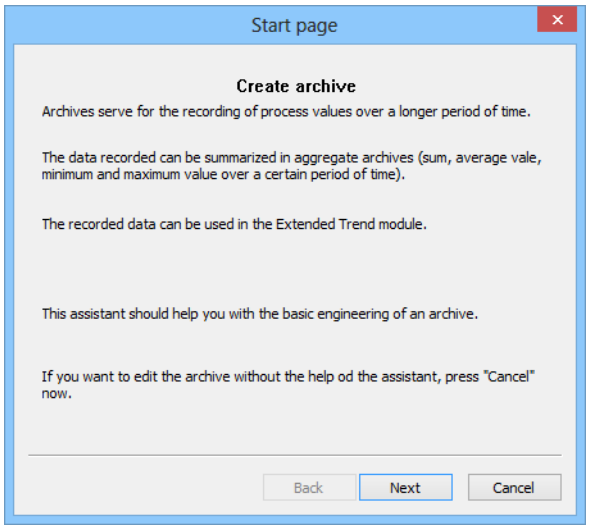
6.2 Creating a new archive

Create a new archive by selecting node Historian in the project manager. Then you can create a new archive either with the appropriated icon from the tool bar or menu item **New archive ...** from the context menu.

The assistant for creating an archive is opened (see Assistant (on page 22)). If you want to configure the archive without the help of the assistant, click on **Cancel**. Configure the new archive using the tabs in the **New archive** dialog. This corresponds to the dialog to edit (on page 26) an archive.

6.2.1 Assistant

The assistant supports you in the basic configuration of an archive. If you Create a new archive (on page 22) or define an aggregated archive, the assistant offers its help and leads you through the configuration step by step: It asks you for the name and short name of the archive, and enables you to select variables and make settings for the recording type of variable values.



Parameters	Description
Next	Leads you to the next page of the assistant.
Back	Leads you to the previous page of the assistant.
Finish	Only available at the end of the wizard. Ends the assistant. The new archive is entered in the archive tree (detail view of the project manager).
Cancel	All entered settings are lost. No archive is created.

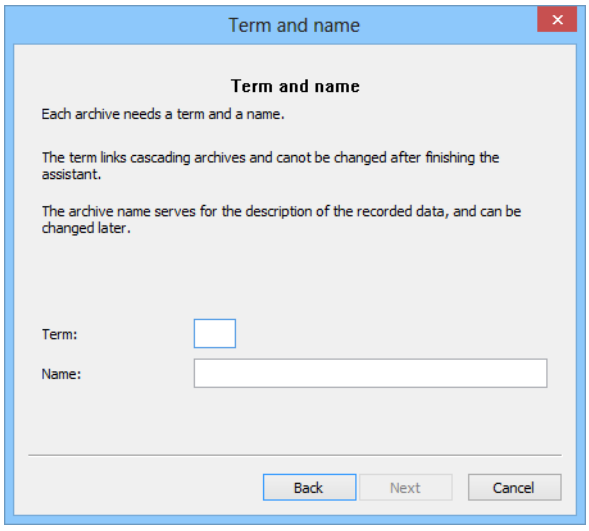
If you want to configure the archive without the help of the wizard, click on **Cancel**.

If the assistant is not displayed, then:

1. Open the **Menu** drop-down list in the Editor
2. Select **Settings**
3. Activate, in the **Settings** tab, the `Use wizard` option

CONFIGURATION WITH THE WIZARD

1. Click on the Next button once the wizard has been started. Configuration starts by giving a name and a short description.
2. Enter a short description (2 characters are obligatory) and a name.

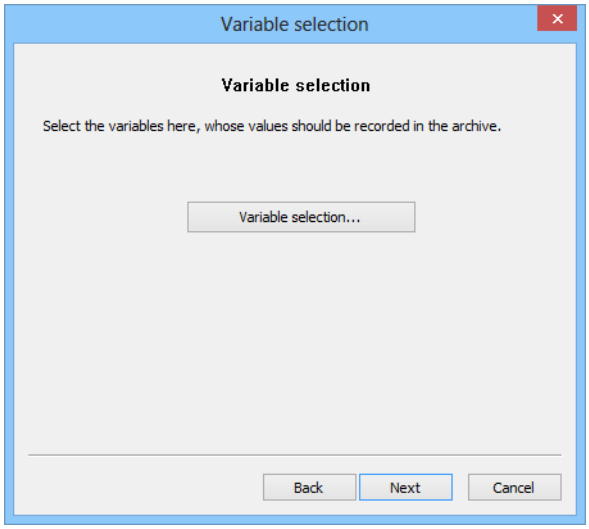


The short name cannot be changed later on. The name can be changed later on.

Note: The short description can only contain alphanumerical characters: all letters from A to a and figures from 0 to 9, but no umlauts or special characters.

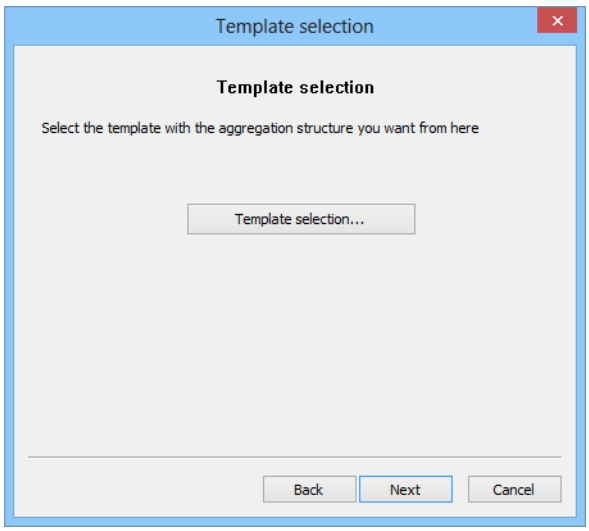
3. Click on **Next**.

4. Click on the **Variable selection** button. The dialog to select variables that are to be archived is opened.



5. Click on **Next**.

Selection of a template for setting an aggregated archive. Clicking on the **Template Selection** button opens the dialog to select a template (on page 50). Templates can only be imported for base archives with cyclical scanning. These archives cannot have any aggregated archives yet.

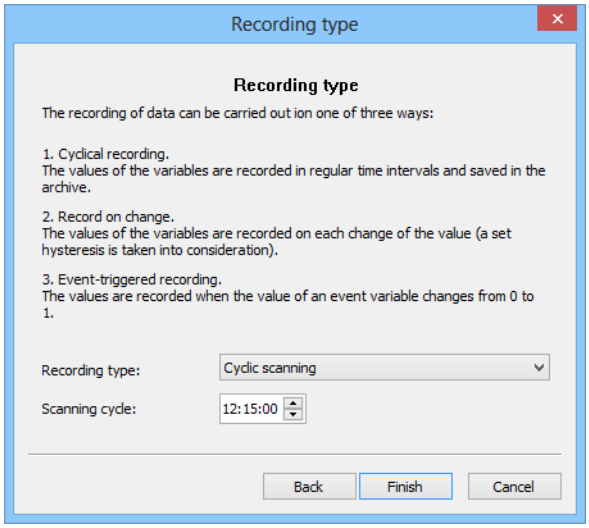


The dialog is only opened if at least one template is present.
Attention: No check to see if the template contains a valid aggregation structure is carried out.

6. Click on **Next**.

7. Configure the type of recording. Select from drop-down list.

POSSIBILITIES FOR TYPE OF RECORDING



Parameters	Description
`Cyclic scanning`	After that set the `Cycle time`.
`Event-triggered recording`	Provide an event variable by clicking on button `...`.
`Record on change`	No further inputs are needed here.

For details see recording type (on page 32) chapter.

Information

For a new archive, the dialog for recording type is displayed; it is not displayed for an aggregated archive, because an aggregated archive always has spontaneous as the recording type.

6.3 Edit archive

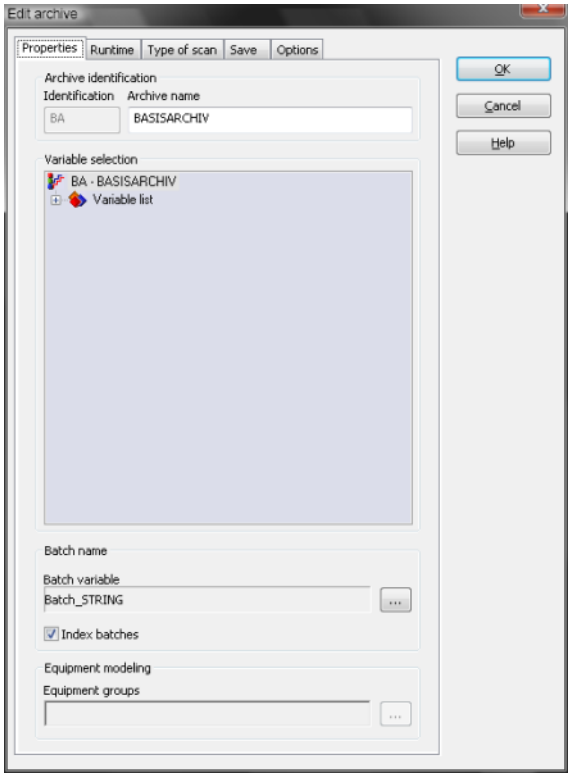
To edit archives:

1. Highlight the desired archive
2. Select 'Edit archive' in the context menu or in the toolbar, or press the Enter key
3. The dialog to configure an archive is opened

Note: This dialog is opened if a new archive is created and the wizard is deactivated.

6.3.1 Properties

On tab Properties the following settings are available.



Parameters	Description
Archive label	
Reference	Two-character unique identifier of the archive; relevant for automatic issuing of names with export functions. Attention: You cannot change the identification afterwards. Note: Use only alphanumerical characters (A-Z and 0-9) for the identification. With this you avoid possible problems during export or evacuation of the archive.
Archive name	Nam for the archives to be created.
Variable selection	Via context menu add variables which should be considered in the archive. You can add variables to the archive from all projects which are in the same workspace. Note: Redundancy is not supported. This can lead to data loss. Keep this in mind when creating your archives.
Lots	
Lot variable	Variable of type string. The value of the variable is used as lot name. Left-clicking on the button opens a dialog, in which you select the desired variable. Note: The value of the variable is used as lot name. While the archive is active, the value of the variable and therefore the lot name can change. Kindly note this at filtering. The value of the variable when ending the archive is used as final lot name.
Index lots (on page 58)	If you activate this check box, an automatic indexing of the lot values of the archive is carried out. With this a quick access to the lot values are possible.
Equipment modeling	
Equipment groups	Define the membership of an equipment group. Left-clicking on the button opens a dialog, in which you select the desired equipment group.

Info

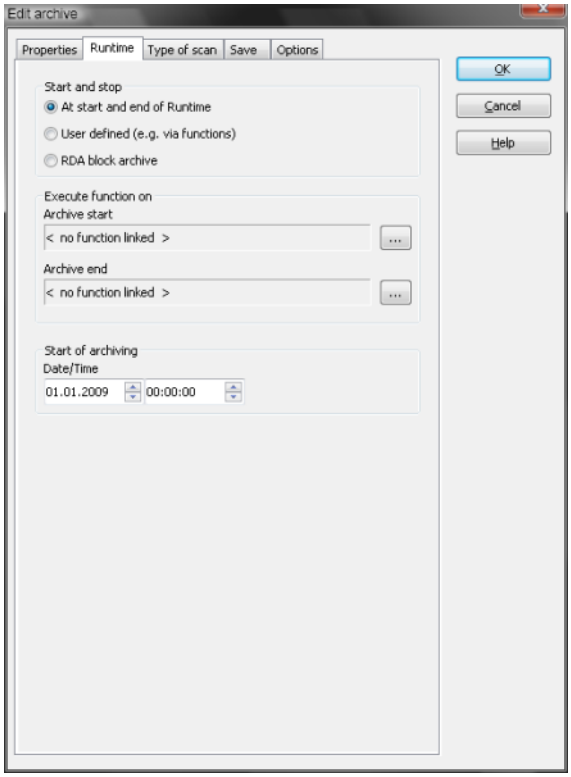
Archives can store variables from sub projects. Variables from sub-projects can be identified by the variable name that contains the project name.

For the lot variable (Lot archiving (on page 58)) and the event variable, you can use

variables from sub-projects.

6.3.2 Runtime

On tab Runtime the following settings are available.



Parameters	Description
Start and stop	
At start and end of Runtime	The archive is automatically started and terminated with the Runtime. Note: If you select this setting, do not stop or start the archive via Functions (on page 61). This can cause undesired behavior in the Runtime.
User-defined (e.g. via functions)	The archive is started or stopped via function Start archive (on page 87) and End archive (on page 86).
RDA block archive	You manage the archive via RDA (on page 8).
Execute function on	
Archive start	Define a function which is carried out at the start of the archive.
Archive end	Define a function which is carried out at the end of the archive.
Start of archiving	
Date/time	Definition of the starting time for the scan and storage cycle. The defined time does not affect the first recording type, but defines the first saving time of the files to be archived.

Example

There is the recording and save cycle (RSC) and the cycle time (CT). Do not confuse these two cycles.

The determination of the time of the first value (DTV) by rounding the scan and save cycle to the cycle time. By implementing this function a few special case are revealed which are not always easy to figure out:

Rounding the recording and save cycle to the first cycle time is carried out hours to hours, minutes to minutes and seconds to seconds. This means: If the time (H:M:S) of the recording and save cycle to be rounded is less than that of the cycle time, the latter is always 0!

If the cycle time is a day, the recording and save cycle is always taken as 0:0:0 o'clock -> recording starts at 0:00.

For monthly cycle time always is the first day of the month 00:00:00 o'clock.

Some examples:

SSC: Recording type and and save cycle
DTV: Time first value
SSCr: Scan and save cycle rounded
SC: Cycle time:

SSC: XX:XX:XX SC: 1D 00:00:00 -> DTV 00:00:00; SSCr 00:00:00 + SC 00:00:00 = DTV 00:00.00

SSC: 12:01:00 AM SC: 0D 23:59:00 -> DTV 23:59:00; SSCr 00:00:00 + SC 23:59:00 = DTV 23:59:00

SSC: 12:30:00 AM SC: 0D 12:30:00 AM -> DTV 1:00:00 AM; SSCr 12:30:00 AM + SC 12:30:00 AM = DTV 1:00:00 AM

SSC: 12:30:00 AM SC: 0D 12:29:00 AM -> DTV 12:58:00 AM; SSCr 12:29:00 AM + SC 12:29:00 AM = DTV 12:58:00 AM

SSC: 12:30:00 AM SC: 0D 12:05:00 AM -> DTV 12:35:00 AM; SSCr 12:30:00 AM + SC 12:05:00 AM = DTV 12:35:00 AM

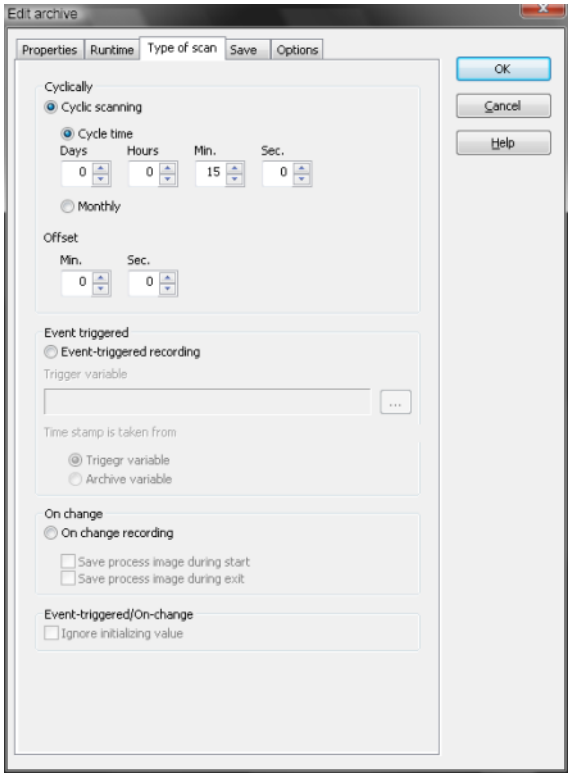
SSC: 12:29:00 AM SC: 0D 12:05:00 AM -> DTV 12:30:00 AM; SSCr 12:25:00 AM + SC 12:05:00 AM = DTV 12:30:00 AM

SSC: 00:00:00 SC: 2D 00:00:00 ->DTV 00:30:00; SSCr 00:00:00 + SC 2D 00:00:00 = DTV 3. 12:00:00 AM

Each new archive starts with the DTV according to the described calculation. The recording cycle does not span across archives, i.e. if the cycle time is not an integer part of the record and save cycle, there will be a hole in the recording when archives are changed.

6.3.3 Recording type

On tab Recording type the following settings are available.



Parameters	Description
Cyclical	
Cyclic scanning	Activate this radio button if you want a cyclic capture of the archive data. After that define the cycle time.
Cycle time:	Define in which cycle time (days, hours, minutes and seconds) values are read by the system.
Monthly	Reading in of the values is done at every month change
Offset	Define how long the archive should wait for the requested values. The offset does not influence the time stamp of the values. It mainly used for slow drivers. Note: Keep in mind that the offset must always be smaller than the cycle time.
Event-triggered	
Event-triggered recording	Activate this radio button if you want an event-triggered recording of the archive data.
Trigger variable	Define the variable which triggers the reading in of the values. The reading in is triggered by an rising edge (0->1) of the trigger variable.
Time stamp is taken over	With the help of both radio buttons you define whether the trigger variable or the archive variable is used for the time stamp.
On-change	
Record on change	Active: Variables are only written to the archive when their values change spontaneously. For the measuring range a hysteresis can be defined (see chapter Hysteresis in chapter Variables).
Save process image at start	Active: On creating a new archive file the current values of the variables are written into the archive. If a Gantt curve also displays the current status in the ETM, this property must also be activated.
Save process image at end	Active: On closing an archive file the current values of the variables are written into the archive. If a variable is read the first time (e.g. on starting Runtime or when the standby server upgrades to the server) an initialization value can be entered.

Event-triggered/On change	
`Ignore initializing value`	`Active`: The initialization value is not taken into account for the archive.

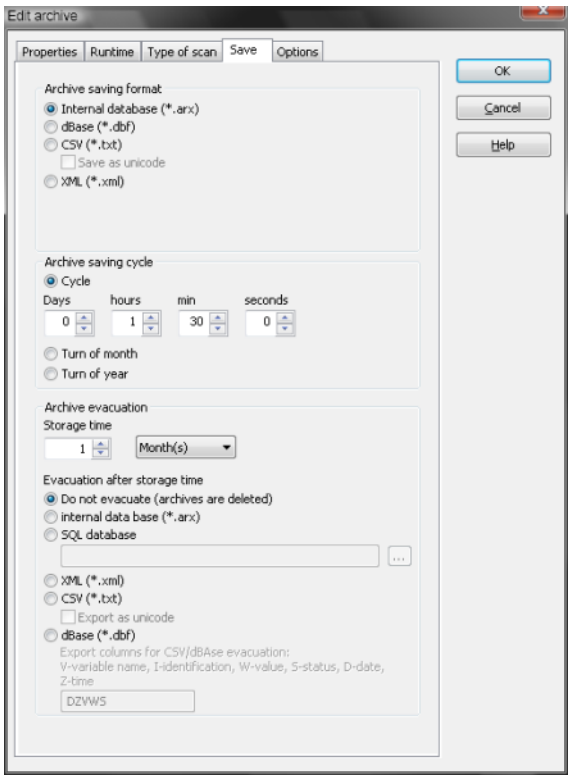
6.3.4 Save

With the help of the Extended trend, the Report Generator or the screen of type Archive revision (on page 97) you can process archive content. Define the saving behavior of each archive in order to edit the archive later.

Here the saving options for the archive are defined.

> **Attention**
>
> *When changing the type of storage or the cycle, the alpha archive, i.e. the archive file currently written by zenon, is deleted.*

On tab save the following setting are available.



Parameters	Description
Save format	
Internal data base (*.arx)	Data are available in a ring (FIFO) for postprocessing and evaluation; Data are stored behind the project path (...\\project path\\computer\\project name) and only shifted into the export path after evacuation
dBase (*.dbf)	At ending the archive, the data are immediately evacuated as a *.dbf file. (**Attention**: post-processing, log creation or line graphics no longer possible for evacuated archives!)
CSV text file (*.txt)	When the archive is closed, the data are immediately evacuated in a *.txt file. (**Attention**: post-processing, log creation or line graphics no longer possible for evacuated archives!)
Save as Unicode	If you activate this checkbox, the exported txt file is saved as Unicode.
XML (*.xml)	At ending the archive, the data are immediately evacuated as a *.xml file. (**Attention**: post-processing, log creation or line graphics no longer possible for evacuated archives!)
Saving cycle	
Cycle time	Activate this option field in order to define the length of the individual archives in days, hours, minutes, seconds. The length of the archives influences the file size and the number of archive files, and defines the cycle of aggregated archives.
Days	Define the save cycle for the archive.
Hours	Define the save cycle for the archive.
Minuten	Define the save cycle for the archive.
Seconds	Define the save cycle for the archive.
Month change	Activate this radio button in order to save the archive at every turn of the month. (monthly archive.)
Turn of year	Activate this radio button in order to save the archive at every turn of the year. (yearly archive)
Evacuation	
Storage time	Define the storage time of the archive in either hours, days, months or years. Pay attention that the storage time is directly associated with the

	saving cycle. A maximum of 65535 archives can be stored. **Example**: Cycle 1 second -> maximum storage time 18 hours. Cycle 1 minute -> maximum storage time 1092 hours or 45 days or 1 month.
Evacuation after storage time	
Do not evacuate (archives are deleted)	Activate this radio button if you want to the archives to be deleted after the storage time.
Internal data base (*.arx)	If you activate this radio button, the archives are evacuated in the internal database format *.arx. ARX files can be read and written in zenon.
SQL database	If you activate this radio button, the archives are evacuated in a SQL database. Define the SQL database by clicking .... **Attention**: Archives evacuted to SQL can only be read in zenon.
Create tables	Click on the button to create or - if necessary - to update the needed tables in SQL.
XML (*.xml)	If you activate this radio button, the archives are evacuated in the XML format.
CSV text file (*.txt)	If you activate this radio button, the archives are evacuated in the TXT format.
Export as Unicode	Activate this checkbox in order to save the evacuated TXT files as Unicode.
dBase (*.dbf)	If you activate this radio button, the archives are evacuated in the DBF format.
Exported columns in CSV/dBase evacuation: V-variable name, I-identification, W-value, S-status, D-date, Z-time	For the evacuation options dBase and CSV you have the possibility to evacuate several parameters of the archived variables. Enter the characters of the parameters which you want to evacuate in the text field. V = Variable name I = Identification W = Value S = State D = Date Z = Time As default all parameters are selected.

The configuring of the column separators (for ASCII export) and the decimals is done in the projekt.ini.

Parameters	Description
[ARCHIV]	
TRENNZEICHEN=,	Input of the possible separators

The file names of the archives to be exported are issued as follows:

Parameters	Description
nnYYMMDDHHMMSS.xxx	File name
– nn	Archive short identifier according to definition
– yy	Year (e.g. 05 for 2005)
– mm	Year (e.g. 03 for 2005)
– dd	Day
– hh	Hours in UTC/GMT time
– mm	Minute 01..59
– ss	Second 01..59
– xxx	File format (DBF, TXT)

Attention

For User defined Start and End of Archives:

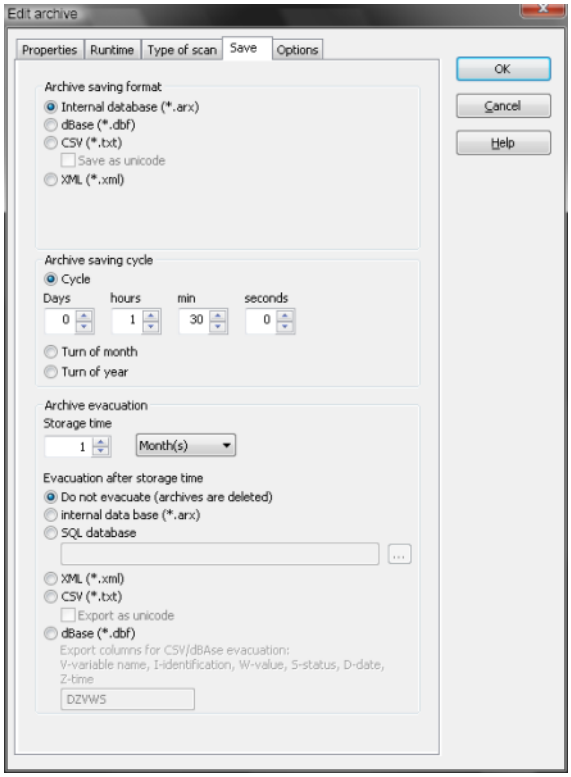
Settings in the section **Cycle** are not necessary, as starting and stopping of the archive files is done by hand (i.e. with functions). Therefore the value is ignored as far as the length of the files is concerned.

But the value has an impact on how many archive files are stored. The diverse length of archive files is not regarded. zenon calculates the number of archives to be stored in the following way:

*Example: 5 hours (**Keep archives**) / 15 minutes (**Cycle**) = 20 archive files to be stored*

Evacuate

On tab **Save** you define how you evacuate closed archives. For this you have several possibilities.



- Do not evacuate (archives are deleted)
- Internal data base (*.arx)
- SQL database

DO NOT EVACUATE (ARCHIVES ARE DELETED)

The old archive files are deleted.

> **Attention**
>
> *If the value 0 is entered in the property Keep archives, no archive is evacuated. The only existing archive is the current one.*

INTERNAL DATA BASE (*.ARX)

If the number of the archives, that want to be evacuated is reached, the oldest archives are stored in an ARX format. This file can then be imported in zenon again and it can be read and written there.

SQL DATABASE

If the number of the archives, that want to be evacuated is reached, the oldest archives are stored in the SQL-Server.
The evacuation into an SQL-data base has the advantage that the archive files can be used in trends and reports in zenon.
To store the data of an archive in a SQL database:

1. select in tab **Save** property SQL database
2. click on button . . . to open the dialog for database selection
3. click on button **Create table** in order to create tables

Via button **Create table** the tables can be created newly or adapted automatically at any time. If for example variables are added to or removed from an archive or the provider string is adapted manually.

If you configure an archive for SQL evacuation and reconfigure the archive at a later time, you must adapt the tables in SQL accordingly.

Example:
If you configured an archive for SQL evacuation, the tables have already been created in SQL and you then link a variable to the lot archiving, the tables in SQL must be created again. Otherwise the evacuation to SQL cannot be carried out. The table for the lot information does not exist. In this case a message is written to the CEL and the Diagnosis Server that the archive cannot be evacuated.

Every time you add or remove variables to or from archives which are configured for SQL evacuation, the tables must be updated in SQL.

> **Attention**
>
> Ensure that the provider configured in the connection is also available on the Runtime computer in Runtime.
>
> Note: An SQL client is also installed with the zenon Editor. Because the zenon Runtime does not need an SQL Server, no SQL client is automatically installed. This can be downloaded from the Microsoft Download Area and must be installed individually.
>
> Ensure you install the correct version when installing the provider. This must suit the zenon version being used. This means: If a 32-bit zenon Runtime is used, the provider must be 32-bit version, even if it is installed on a 64-bit operating system and even if the database itself is a 64-bit application.

On the contrary to dBase, ASCII or XML archives evacuated into a SQL database are automatically reloaded when necessary (e.g. for ETM).
The button . . . opens the Microsoft dialog for selecting the OLEDB provider and the definition of the connection.

> **Information**
>
> *See the Microsoft documentation for more detailed information.*

DATABASE TABLE

Format of the data table **`Project name_short name`**

Column	Type	Meaning
VARIABLE	int[4]	numerical variable ID
CALCULATION	int[4]	Type of data reduction in aggregated archives. Up to 4 values are possible: Sum, average value, minimum, maximum. When exporting the aggregated archive to a file (e.g. .csv), the values 1 to 4 are written as strings: ▸ 1=Sum ▸ 2=Average value ▸ 3=Minimum ▸ 4=Maximum At evacuation or export to SQL the values are written as Integer in ASCII code: ▸ 49=Sum ▸ 50=Average value ▸ 51=Minimum ▸ 52=Maximum
TIMESTAMP_S	int[4]	Time stamp in UNIX time format
TIMESTAMP_MS	int[4]	Milliseconds for the time stamp
VALUE	float[8]	Value
STATUS	int[4]	Status flag of the value (zenon state)
GUID	char[36]	Contains the project GUID of the variable from another project or is ZERO if in the own project.
STRVALUE	varchar	varchar; the length depends on the longest string variable to be archived. For numerical variables this field has the value ZERO.

The name of the database table **Projectname_VARIABLES** is combined from the project name and the short name of the archive. The two parts are connected with an underscore character. So if the project name is **ARV_IN_DB** and the archive short name is **A1**, the table name will be **ARV_IN_DB_A1**.

TABLE LOT NAME

The table with the lot names for SQL evacuated archives:

- has the name **[Project name]_[archive abbreviation]_BATCH**
- consists of 3 columns

Column	Type	Meaning
BATCH	varchar (128)	Lot name
START_S	int	Unix time stamp of the lot beginning
END_S	int	Unix time stamp of the lot end

FORMAT OF THE CROSS REFERENCE TABLE

Column	Type	Meaning
VARIABLE	int[4]	numerical variable ID
NAME	varchar[128]	Name of the variable
GUID	char[36]	char 36; takes the project GUID of the variable from another project or is ZERO if in the own project.

The name of the cross reference table is combined from the project name and the suffix "VARIABLES". The two parts are connected with an underscore character. So if the project name is "ARV_IN_DB", the table name will be "ARV_IN_DB_VARIABLES".

The columns GUID and STRVALUE either have to be added to the SQL database by hand, or they are added from the Editor. In the Editor you have to switch to tab Save in all concerned archives. There you open the connection string to the database and confirm the dialog. After closing the dialog the according changes in the database are performed.

> **Attention**
>
> *If these changes are not performed, no archive data will be evacuated to the SQL database.*

- XML (*.XML): If the number of the archives, that want to be evacuated is reached, the oldest archives are stored in an XML format.

- `CSV (*.txt)`: CSV (*.txt)If the number of the archives which you want to evacuate is reached, the oldest archives are saved in the CSV format in a TXT file.
  If you activate check box **`Als Unicode exportieren`**, the evacuated TXT file is saved in Unicode.
- `dBase (*.dbf)`: If the number of the archives, that want to be evacuated is reached, the oldest archives are stored in DBF format.

Information about the save cycle

The cycle, in which archive data is saved and evacuated (See chapter Saving (on page 34)), is determined automatically from the entered data. The system tries to find as many feasible values as possible for the storage cycle as possible, so that the resulting files do not exceed a useful size, yet there are still enough values for compression in aggregated archives.

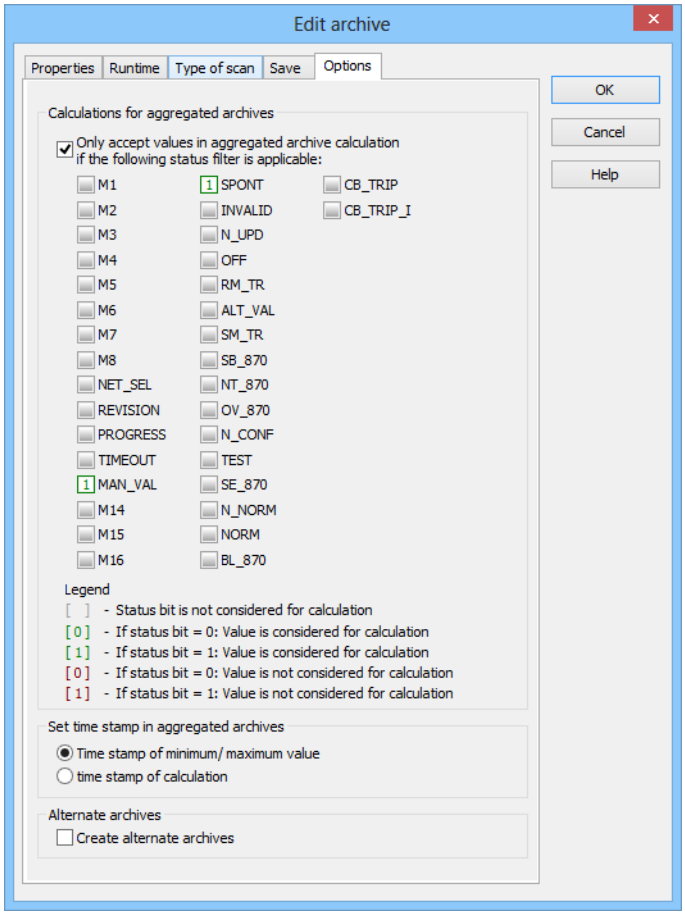
The storage cycle is calculated as follows:

- For archives with spontaneous and event-controlled recording type, the storage cycle is set to 2 hours.
- For archives with cyclical recording type or aggregated archives (which do have spontaneous recording types, but nevertheless contain cyclical values from the respective source archive), the saving cycle is selected in such a way that leads to no more than 65000 variables per archive file (for archives with a large amount of variables), but to at least 6 values per variable being recorded. This ensures that enough values are available for the aggregated archive.

  If less variables are recorded in the archive, the cycle is chosen in such a way that the size of the files does not exceed 65000 values and that the value of the cycle corresponds to an whole-numbered multiple of 1, 5, 10, 30 or 60 minutes.
- The storage time is set to 1 year (without evacuation).
- The date for the begin of the scan and storage cycle is set to 00:00:00 on the 1st of January of the running calendar year.

6.3.5 Options

On tab Options the following settings are available.



Parameters	Description
Calculation in the aggregated archive	
Only accept values in the aggregated archive calculation if the following status filter is true	Select this checkbox if you want to take into account status bits for the calculation of aggregated archives. The additional statuses are ▸ shown in the archive editor ▸ shown in the report and can also be set For the definition of the status, see the Status processing chapter Note: If you activate this checkbox, you must select at least one status bit.
Setting the time stamp in aggregated archives	
Time stamp of minimum and maximum value	Activate this option field if you want to use the time stamp of the found minimum or maximum.
time stamp of calculation	Activate this option field if you want to use the time stamp of the calculation.
Alternate archive	
Create alternate archives	Active: Missing archive files when Runtime is not active are created the next time Runtime starts. Note: To do this, cyclic recording must be selected. Inactive: Only the current cycle is filled up.

CREATING A STATUS FILTER

By clicking the checkbox next to each displayed status, you can decide for each value of the archive if it is to be used for the aggregated archive.

Example

In the aggregated archive, only values for which bit NORM is set and bit INVALID is not set are taken into account.

For this you set a green 1 for bit NORM and a red 1 for bit INVALID. The check boxes of all other bits remain gray.

You can explicitly include or exclude set or un-set bits.

Info

Not all status bits set during illustration are also visualized. Non-visualized bits are:

- T_EXTERN (status bit 21)
- T_INTERN (status bit 22)
- INFO (status bit 26)
- RES28 (status bits 28)
- RES31 (status bits 31)
- WR_ACK (status bit 40)
- WR_SUC (status bit 41)
- COT0 (status bit 32) to COT5 (status bit 37)
- T_STD (status bit 30)

Non-visualized status bits are:

- not saved as a TXT file or written as an XML
- Not printed when printing out
- Not shown in the recipegroup manager

You can find an overview of all status bits in the Status bits chapter

6.4 Archive columns in the detail view

The new archive is shown in the detail view. The following columns are displayed by default:

Archives
Start, stop
Start
Scan
Evacuate
Lots
Number
expected size

These columns are static and cannot be deleted.

6.4.1 Incremental search

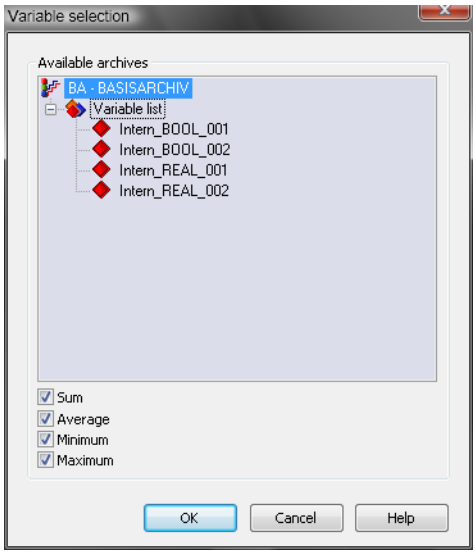
To start the incremental search, click on a column header in the detail view. The selected column is marked with the 'Spyglass' icon. You can enter a search term and the editor jumps to the appropriate entry.

7. Defining aggregate archives

Select the archive from which you want to create an aggregated archive and then click the icon for new aggregated archive in the menu bar. You can also select the New aggregated archive entry from the context menu and start with the definition for the aggregated archive.
As with creating an archive, there is an assistant (on page 22) available that guides you through the process.

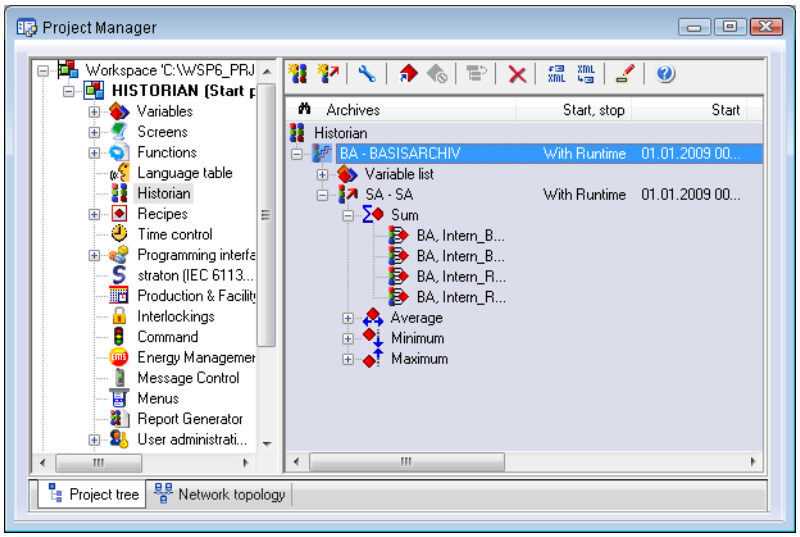
7.1 Archive and variable selection for aggregated archive

The following properties are available.



Parameters	Description
Available archive	Select, from the available archives, the variables that should be considered in the aggregated archive. Multi-select with Ctrl or Shift.
Sum	Activate this check box if you want to add up the values of the selected variables dependent on the memory cycle.
Average	Activate this check box if you want to form the average value of the selected variables.
Minimum	Activate this check box in order to determine the minimum for each selected variable.
Maximum	Activate this check box in order to determine the maximum for each selected variable.

The selected variables and the linked data reduction types are listed in the detail view of the archive. Here columns can be added or removed.



Additional variables can be added to an aggregated archive by dragging & dropping. Either single variables are selected in the base archive and then moved to the chosen data reduction type of the aggregated archive with the left mouse button held down, or the whole basis archive is moved to the aggregated archive in the same way, with all its variables being assigned when doing so.

In zenon, aggregated archives are automatically set to on change archiving. The scanning mode cannot be changed. The scan rate derives from the length of the basis archive. The values of the variables are always written to the aggregated archive whenever the basis archive is ended. All values of the basic archive are used for the calculation by default (i.e. also INVALID entries and hand values), if not changed in the definition of the basic archive in the Options section.

7.2 Templates for aggregated archives

Templates for aggregated archives make it possible to import existing aggregated archives into base archives. Structures that have already been configured can be easily reused this way.

There are pre-configured templates (on page 52) available that are supplied with zenon. In addition, individual configurations (on page 55) can be saved as templates.

Templates can only be imported for base archives with cyclical scanning. These archives cannot have any aggregated archives yet.

TEMPLATE PATHS

The templates are stored in two paths:

- Pre-defined templates:
  In the subfolder of the installation folder:
  `\Templates\Archives\<Language>\<Filename>.xml`
- User-defined Templates:
  `%programdata%\COPA-DATA\zenon7.11plates\Templates\Archives\<Language>\<Filename>.xml`

Note: Depending on the type of registration, this path can also be in the program folder. zenon automatically takes this into account.

FILE FORMAT

Templates are stored in XML format. The template contains metadata with:

- Description of the template
- Name of the template
- The main settings of the archive for each archive of the hierarchy

7.2.1 Importing templates

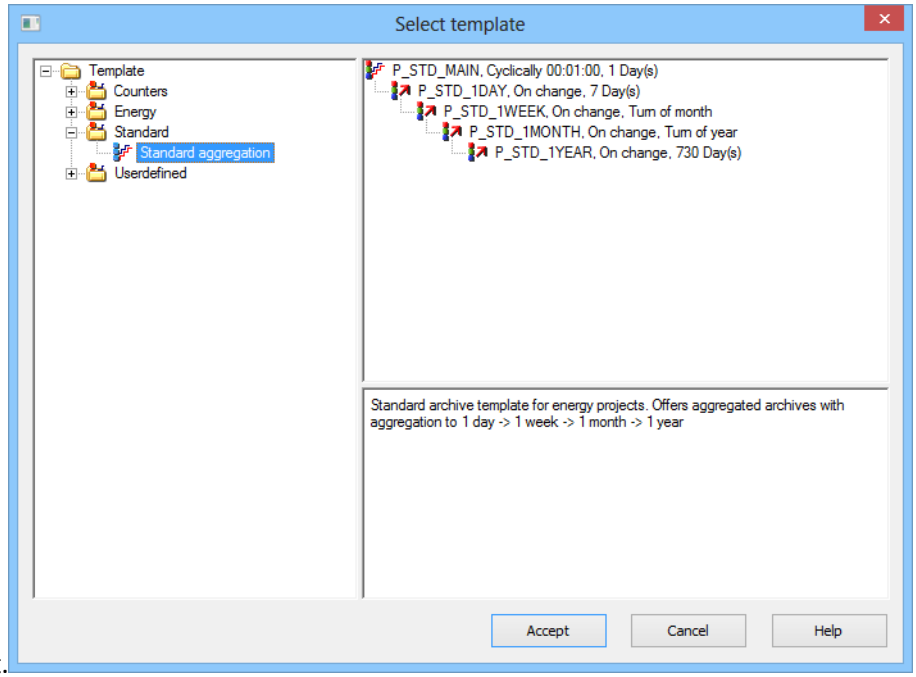
To import templates for aggregated archives:

1. Highlight the desired base archive.

2. Select the **Import template** command in the context menu.
3. The dialog for selecting a template is opened.
4. Select the desired template.
5. Click on the **Accept** button.
6. The aggregated archive is imported.

Information

Templates can only be imported for base archives with cyclical scanning. These archives cannot have any aggregated archives yet.



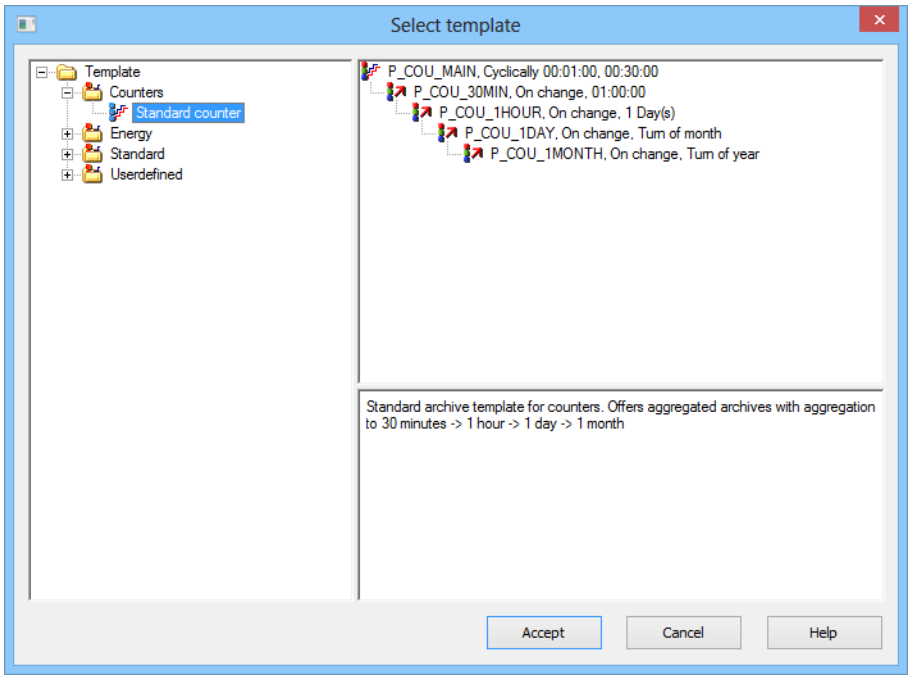
Parameters	Description
Templates window	Display of the templates present.
Selected templates window	Display of the selected aggregated archive.
Accept	Imports the aggregated archive into the base archive and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

7.2.2 Supplied templates

The following pre-configured templates are supplied with zenon:

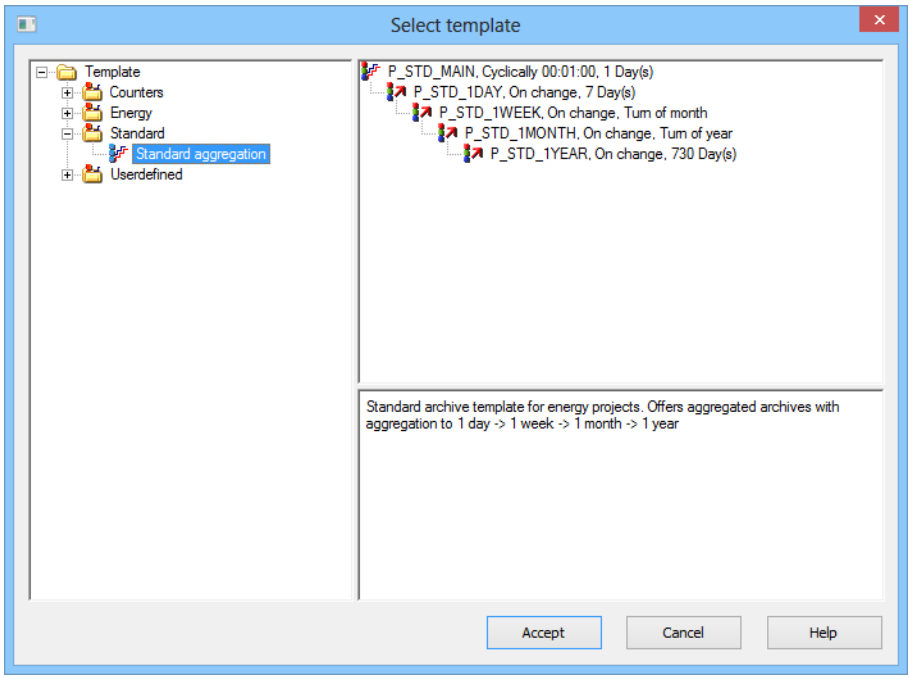
- **`Counter`**: Counting aggregated archive, which aggregates from one day over a week, a month and a year up to two years and stores the data for up to 10 years.
- **`Default`**: Standard aggregated archive, which aggregates from 30 minutes over an hour, a day and a month to one year and stores the data for up to 16 years.
- **`Energy`**: Aggregated archive for energy, which aggregates from 15 minutes over an hour, a day and a month to one year and stores the data for up to one year.

COUNTER AGGREGATED ARCHIVE



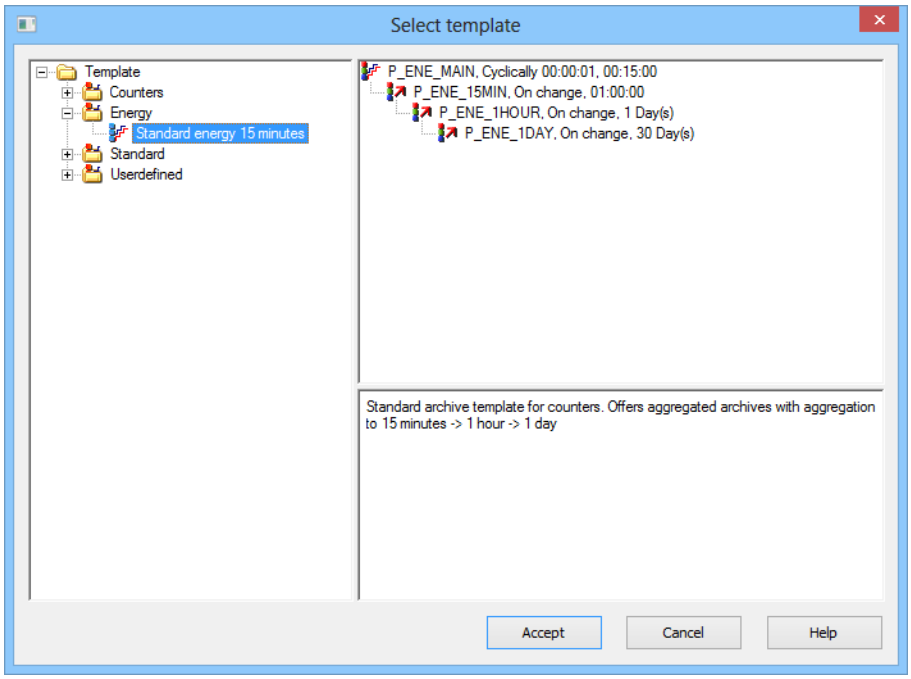
Archive level	Current aggregation level	Aggregated archive aggregation level	Storage
1: CO-P_COU_30MIN	30 minutes	1 hour	14 days
2: C2-P_COU_1HOUR	1 hour	1 day	6 months
3: C3-P_COU_1DAY	1 day	When the month changes	3 years
4: C4-P_COU_1MONTH	1 month	When the year changes	10 years

DEFAULT AGGREGATED ARCHIVE



Archive level	Current aggregated archive	Aggregated archive aggregation	Storage
1: DO-P_STD_1DAY	1 day	7 days	1 year
2: D2-P_STD_1WEEK	1 week	When the month changes	3 years
3: D3-P_STD_1MONTH	1 month	When the year changes	10 years
4: D4-P_STD_1YEAR	1 year	2 years	16 years

ENERGY AGGREGATED ARCHIVE



Archive level	Current aggregated archive	Aggregated archive aggregation	Storage
1: EO-P_ENE_15MIN	15 minutes	1 hour	14 days
2: E1-P_ENE_1HOUR	1 hour	1 day	6 months
3: E2-P_ENE_1DAY	1 day	30 days	1 year

7.2.3 Creating and editing templates

Templates can be created individually. Templates can only be created for base archives (first level) and only for archives with cyclic scanning. The menu item is deactivated for all other items, and not present for aggregated archives.

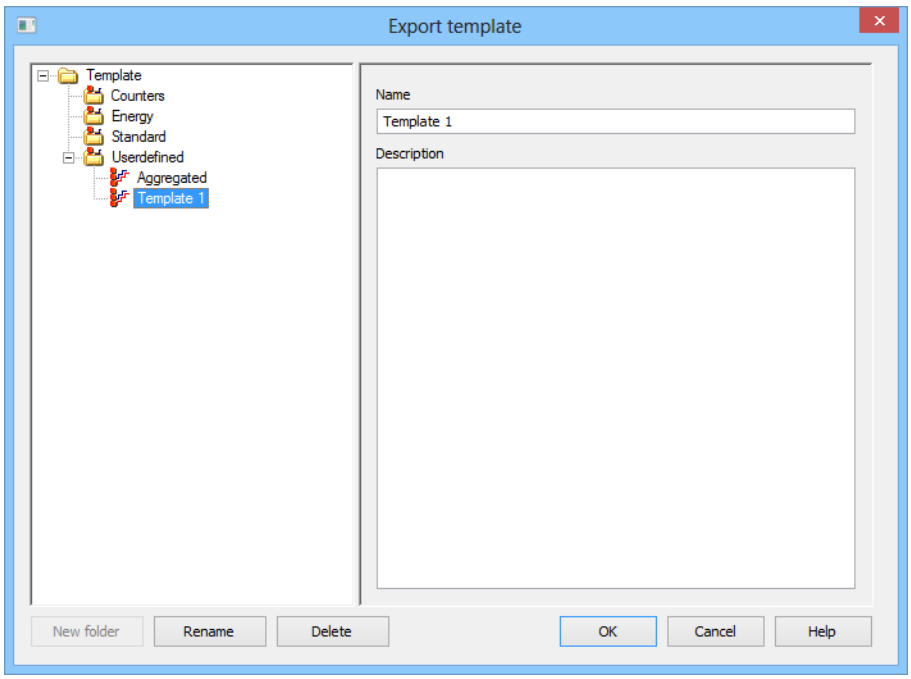
To create a separate template:

1. Highlight the desired aggregated archive in the detail view
2. Select **Create template** in the context menu.
3. The dialog for configuring templates is opened
4. Select the desired folder or create a new one
5. Assign a meaningful name for the template.
6. Confirm the new template by clicking on **OK**.

When creating a template, the complete hierarchy of the selected aggregated archive is used.

Note: Supplied templates and their folder structure cannot be edited or deleted.

CREATING AND EDITING TEMPLATES



Parameters	Description
List of templates	Contains a folder structure with all pre-defined templates. Templates can be selected and the **name** and **description** can be edited. Pre-defined elements cannot be edited.
Name	Name of the template. **Hint:** Select a meaningful name in order to quickly be able to find the correct template when importing.
Description	Detailed description of the template.
New folder	Creates a new folder in the highlighted folder. Keyboard operation: `Ins` key.
Rename	Opens the highlighted element for editing. Keyboard operation: `F2` key. Pre-defined elements cannot be renamed.
Delete	Deletes the selected element. Keyboard operation: `Del` key. Pre-defined elements cannot be deleted.
OK	Applies settings and closes the dialog. The template saves the settings of all aggregated archives to the selected archive.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

CREATE, EDIT AND DELETE ELEMENTS

CREATING A FOLDER

To create a new folder:

1. Highlight the existing folder
2. Click on the **New folder** button
   oder

Press the `Insert` key
or

Select `New folder` in the context menu of the superordinate folder

EDIT ELEMENT

To edit an element:

1. highlight the element
2. Change the name and/or description
   or

Select the corresponding command in the context menu of the element.

DELETE ELEMENT

To delete an element:

1. highlight the element
2. Click on the **`Delete`** button
   or

Press the `Del` key
or

Select the `Delete` element in the context menu of the element

CHANGING THE STRUCTURE

To change the structure:

1. Highlight the desired element (folder or template)
2. Drag it with the mouse to the folder where it is to be a subfolder

EDIT FOLDER AND TEMPLATES WITHOUT ACCEPTING THE ARCHIVE SETTINGS

You can also edit folders and templates without accepting the archive settings on closing

To do this, edit the elements in the left window with the list of templates.

8. Lot archiving

Lot archiving allows for the easy allocation of lot designations to an archive. With the help of the lot label you can filter archive data when furhter processing them in e.g. the Extended Trend or the Report Generator.

For quicker access to lots in the lot filter now one index of these data per archive is created. In order to use the automatic indexing the checkbox Index lots has to be activated in the archive definition. The index is stored in the file <short term>.ARI. If a lot archive is saved, an entry in the index file is generated. With the evacuation of archives the index also is updated.

For the evacuation to the ARX format the additional option internal format has been added.

If archives are deleted with the function File operations or from the operating system, a new indexing has to be executed with the new **`Index archive`** function.

The index is only created from archive file in the RT directory. If archives are read from the readback folder, still file by file is read.

With the function Index archves (on page 87) the lot index for an archive is newly generated. Generating the index file can be a time-consuming procedure depending on the amount of the archive files. In order not to block the Runtime, this is done in the background. If the new indexing is not finished but lot values are needed, this request has to wait until the procedure is finished. With the option Execute synchronously the function execution waits, until the new indexing is finished.

9. String archiving

String variables can be archived. They are stored in a file called **`[short description][time].ARS`**.

This file contains only the data of the strings and forms a logical unit with the **`ARX file`**. Information on whether a sting archive has to exist or not is stored in the **`ARX file`**.

Information

If no strings are stored in the archive, no ARS archive is created.

Operations have to include both files. If the **ARS file** is missing, the data from the **ARX file** is not loaded.

The string data is stored in Unicode with dynamic data length. This happens in order to save memory and is independent of the defined string length. In the data record of the ARX file, the position of the String record in the ARS file is stored. Assumptions about where strings are located in the ARS archive are misleading, as strings change their position when being edited.

An alternate value for strings is available in the variable properties, so that the archive is always supplied with values. The `String archive filler value` is used if zenon (e.g. for filling cyclic archives) needs a value for a string variable and no value is available. If no value was transferred, the defined alternate value is used otherwise the last valid value is used.

For the calculation of archive sizes, the editor calculates with maximal string length.

SIZE OF DATA FIELD

In general, the size of the data field is as large as the longest string variable in the archive. For this, the following applies:

- Archive evacuation:
  When creating the tables for archive evacuation with the zenon Editor, the column width is adjusted to the longest string.
- Archive export:
  The column width is fixed at 128 characters. Characters that go beyond this are ignored.

Note on system driver variables: *The string length is limited to 5 characters and cannot be changed. The string contents of the system driver variables can however be longer than 5 characters. Insert an additional string variable with a length of, for example,* `256 characters` *into the archive in order to avoid data loss.*

Attention

If the length of a string variable to be archived changes, this data field must be adapted when moving it to SQL or exporting it to SQL.

Note: *These changes must be made before the changes are accepted in Runtime. Otherwise the longer Strings could be archived shortened.*

AMEND DATA FIELD FOR SQL

Amendment can either be carried out manually with the data base administration tool (e.g. Management Studio for MS-SQL Server) or in the archive settings.

To amend the data field in the editor, carry out the following steps for each archive:

1. Select **Edit archive** in the context menu of the archive
2. Switch to the **Save** tab
3. Go to the evacuation section after storage duration
4. Click on **Create tables**

10. Display options

Parameters	Description
Report Generator	String Archive data can be displayed in reports.
Extended Trend	The selection of string variables as source data is disabled.
DBF recording:	If DBF has been selected as archiving format, the table gets an additional column with the name “Strwer”. As string length the longest string variable to be archived is taken, there is however a maximum of 255 characters.
SQL	The table <Project name>_<shortcut> gained two columns. GUID: char 36; takes the project GUID of the variable from another project or is ZERO if in the own project. STRVALUE: varchar; the length depends on the longest string variable to be archived. For numerical channels this field has the value ZERO. The table <project name>_VARIABLES got a new column. GUID: char 36; takes the project GUID of the variable from another project or is ZERO if in the own project. An additional table contains the lot information for the archive. In this table the following information is displayed: batch name, start and stop times.

Attention

If extensive archive data is loaded, this causes a loss of performance in the Runtime.

11. Filter profiles

Filter profiles are filter settings which can be saved by the user in the Runtime. In order to use the filter profiles there is a submenu **Filter profiles** in the menu **Control elements** with the following elements:

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

Now the filter settings can be changed in the Runtime. Then any unique name for the defined settings can be entered in the element **Profile selection**. With the button **Save** the profile is saved permanently and is available in future sessions.

After having selected a profile that is no longer needed in the **Profile selection** it can be deleted with the button **Delete**.

12. Functions

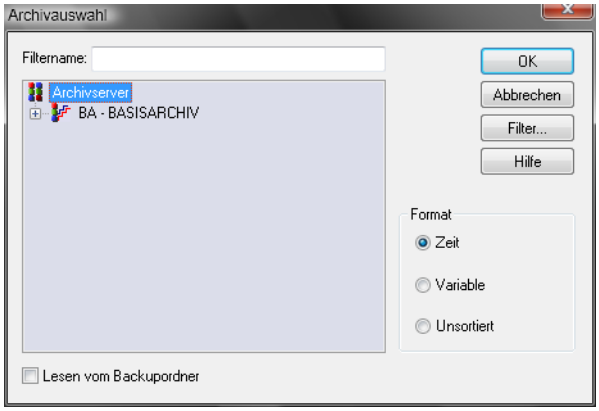
In zenon there are several functions to control the archiving.

12.1 Screen switch - archive revision

The filters can be preconfigured in the Editor for activating a screen of the screen type Archive revision (on page 97) (defined archive; archive with preselected status bits).

Info

The filter settings can be changed in the Runtime.



Configurable options are:

Parameters	Description
`Filter`	defines filter criteria (variables, value, status, etc.)
`Format`	display format and sorting of displayed archive entries
`Time`	sorting of all entries according to date and time
`Variable`	sorting according to variable name
`Unsorted`	No sorting
`Reading from Readback folder`	Activate this checkbox if you want to use archives from the readback folder. When loading archive data from the readback folder, the archive data from the Runtime path and from all subfolders of the readback folder is also read.

After having selected the archive, the filters can be defined.

Information

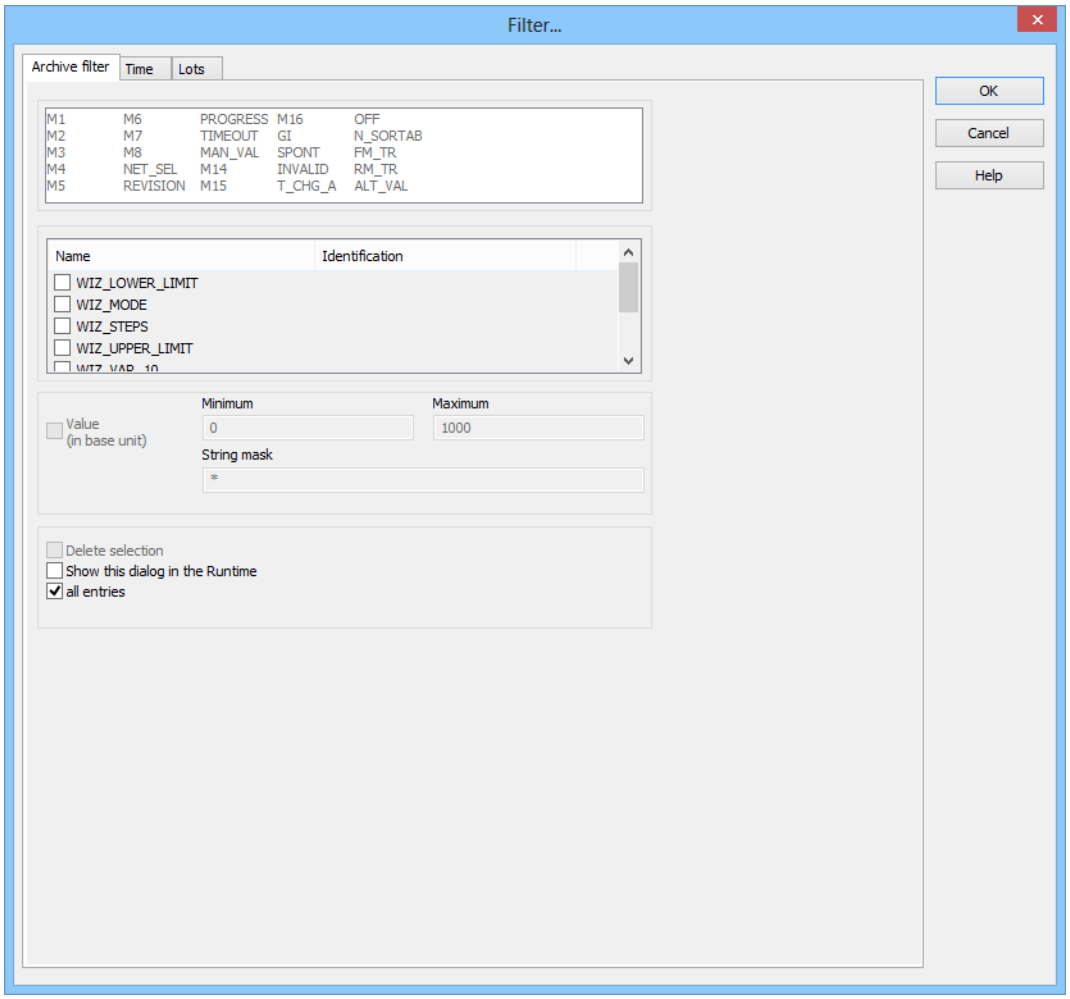
Take care that the desired evacuated archives are first copied to the readback folder before you can access them via `Read from Readback folder`.
At the evacuation archives are saved in folder ***`Evacuated archives`****. This folder does not comply with the readback folder.*
You can define the folders for file storage in dialog ***`Standard settings`*** *on tab* ***`Folder`****.*
You can find the dialog under `File -> General configuration -> Standard`.

12.1.1 Filter

The option filter opens a dialog with three tabs:

- Archive filter (on page 64)
- Time (on page 66)
- Lots (on page 80)

Archive filter



Configurable filters and combinations:

Parameters	Description
Status	Selection of the status bits that are to be filtered for. Selection and deselection by clicking on the respective status bit. Only available if the All entries option has been deactivated.
Variables	Variables that are to be called up from the selected archive. Select and deselect them by clicking in the checkbox in front of the variables. Only available if the All entries option has been deactivated.
Value (in base unit)	Active: Filtering of all archive values and their technical values between a minimum and maximum Input of: ▸ Minimum ▸ Maximum ▸ String mask Only available if the All entries option has been deactivated.
Delete selection	
Show this dialog in the Runtime	Active: This dialog is opened in Runtime before the function is executed.
All entries	Active: Settings apply for all statuses and variables.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Please note the memory limits (maximum size of representation) defined in the screen type Archive revision (on page 97) for editing archives.

'**Status**', '**Variables**' and '**min/max**' can only be selected if the '**All properties**' option is not activated in the **Filter** dialog.

Hint tab time: If you set option no time filter as time filter type, all Runtime entries since 1. 1. 2000 are displayed.

Time

Configuration of the time filter.

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

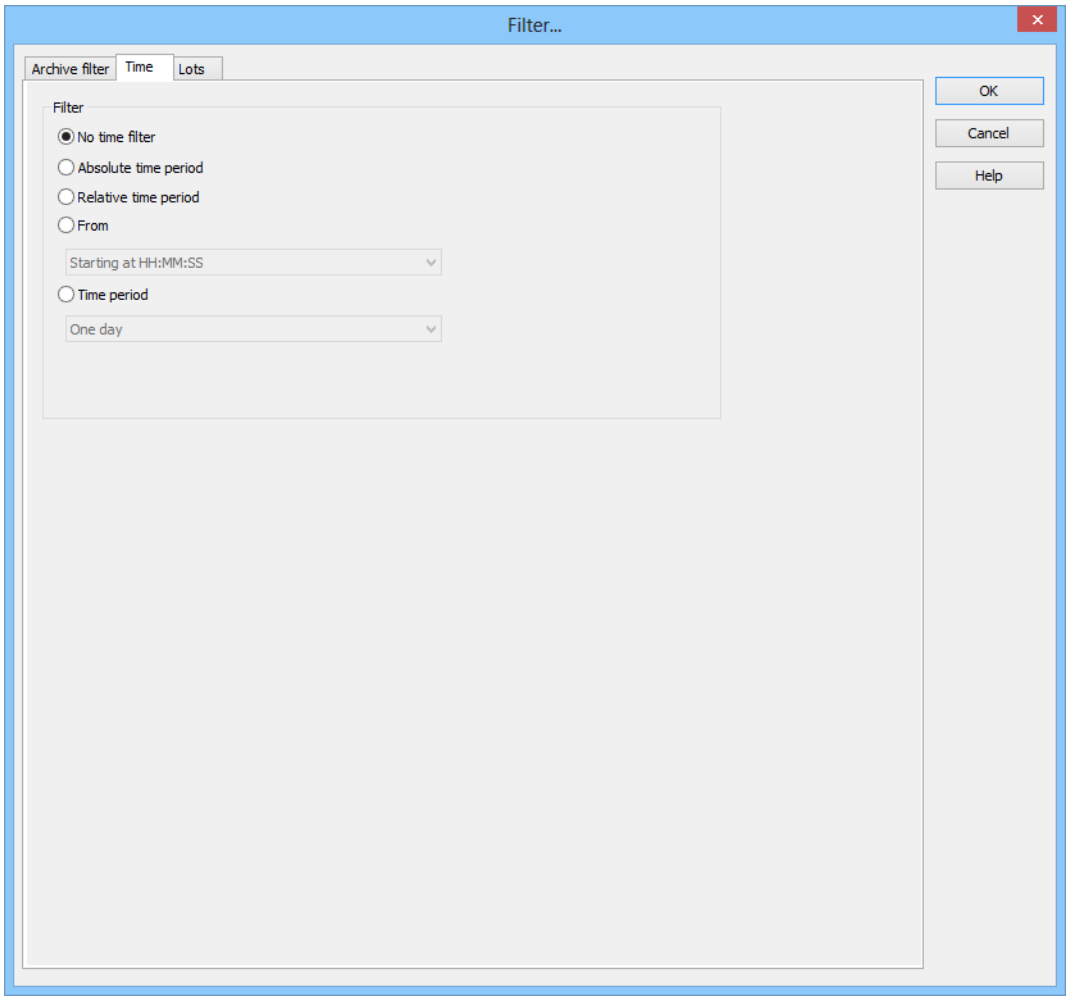
Time filters can be pre-set in both the Editor and in Runtime for:

- Absolute period of time (on page 69)
- Relative period of time (on page 71)
- From (on page 73)
- Time period (on page 76)

Time filtering can be carried out in two ways:

1. Define time period in the Editor (on page 78)
   Fixed time areas are used. A time period is given in the editor. It is only possible to filter according to this time period in Runtime. Other filters - such as filtering according to variable name, alarm/event groups and alarm/event classes etc. can no longer be amended in Runtime.
2. Time filter configurable in Runtime (on page 79)
   The time filter is defined in the Editor and can be changed in Runtime as desired.

TIME FILTER


Filter...
Archive filter
Time
Lots
Filter
No time filter
Absolute time period
Relative time period
From
Starting at HH:MM:SS
Time period
One day
OK
Cancel
Help

Parameters	Description
Filter	Selection of the filter.
No time filter	Active: No time filter is used. Not available for Extended Trend
Absolute filter	Active: A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used. In the settings section, the corresponding options can be shown and configured there. **Note:** Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
Relative period of time	Active: A relative time period is entered. In the settings section, the corresponding options can be shown and configured there. **Attention:** this filter is constantly updated.
From	Active: A time from which the filter is effective is stated. If the time is not reached on the current day, filtering takes place from the corresponding time the previous day. Selection of the area mode from drop-down list: ▸ From HH:MM:SS o' clock ▸ From day - HH:MM:SS o' clock ▸ From day, month - HH:MM:SS o' clock In the settings section, the corresponding options can be shown and configured there. **Attention:** The start point of this filter is not updated automatically. Only the existing times are used when shown. The end time point is not defined with this filter, it is carried over.
Time period	Active: A fixed time period is entered. Selection of the area mode from drop-down list: ▸ One day ▸ One week ▸ Two weeks

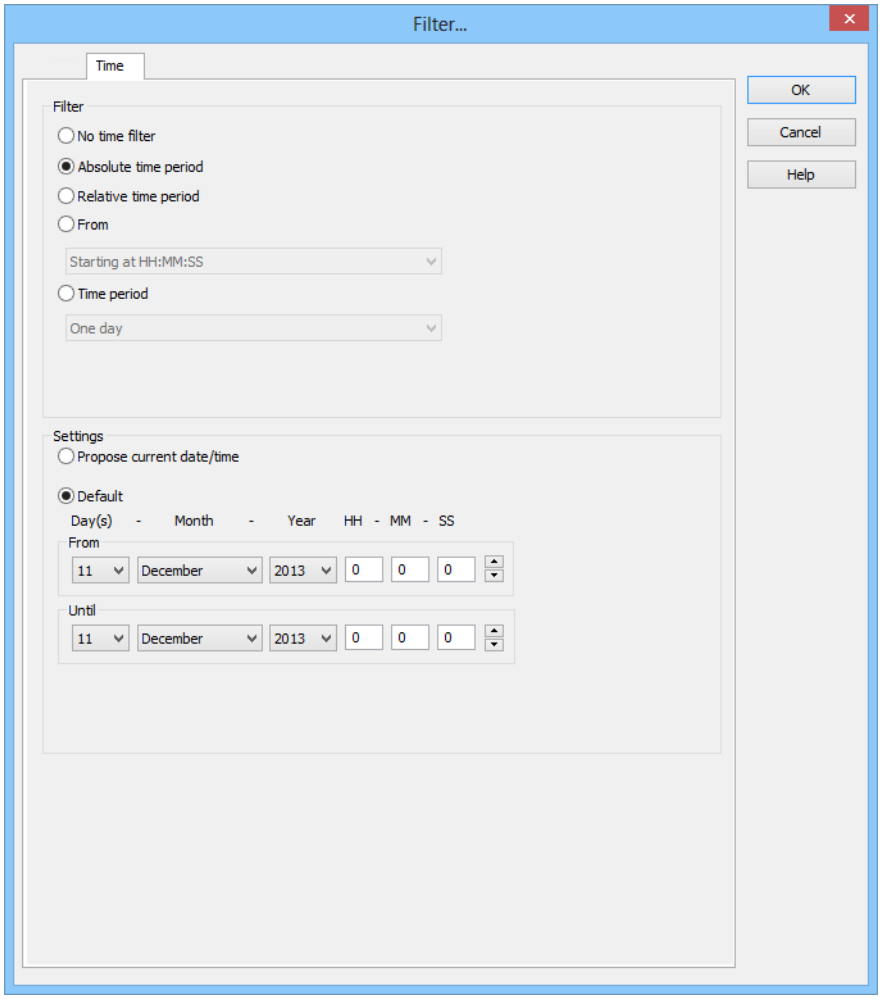
	▸ One month ▸ One Year ▸ 15 minutes ▸ 30 minutes ▸ 60 minutes In the settings section, the corresponding options can be shown and configured there.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Absolute time period

You define a fixed time period with the absolute filter. When the function is executed, the defined absolute time period is exactly used. To set the filter:

1. Select, in the **Filter** section, the `Absolute time period` option

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



Parameters	Description
Options	Configuration of the time filter.
Propose current date/time	Active: Time filter is displayed in Runtime.
Default	Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime.
From	Start time of the filter. Selection of day, month, year, hour, minute and second
To	End time of the filter. Selection of day, month, year, hour, minute and second
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Relative period of time

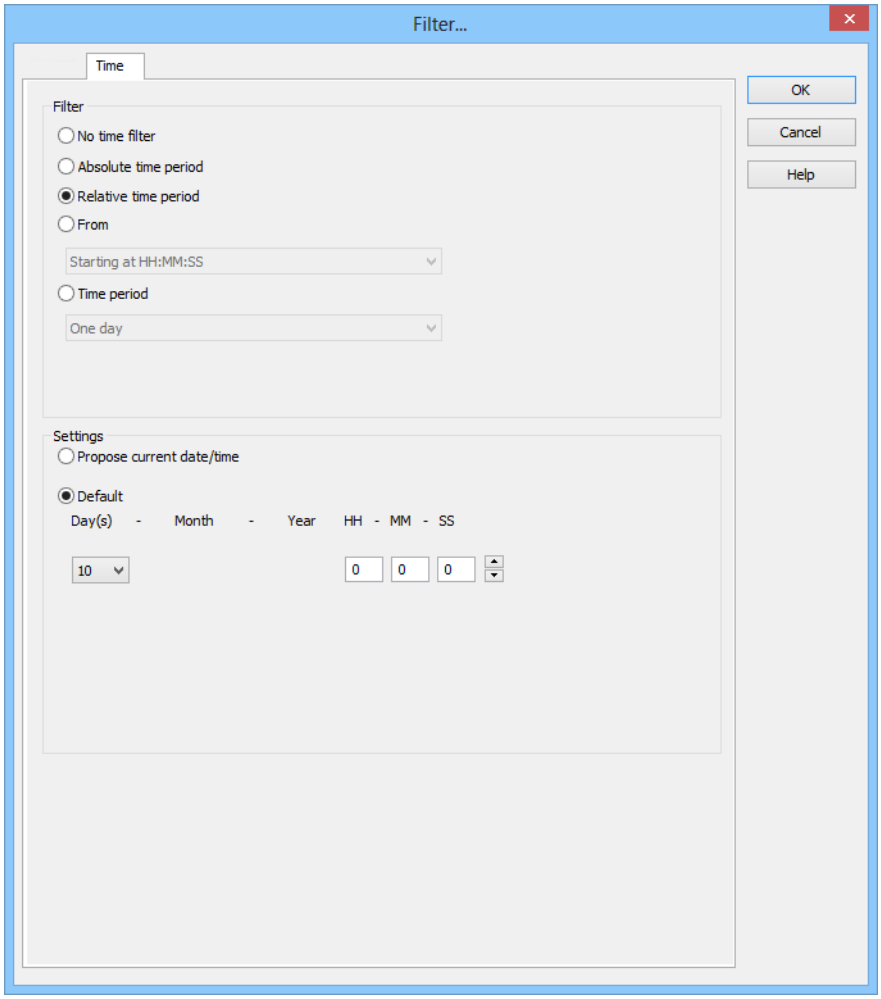
A relative time period is entered.

Attention: This filter is updated constantly and continues to run.
Example: You set a relative time of 10 minutes and switch to a screen with this time filter at 12:00. You are then shown the data from 11:50 to 12:00 when switching. If the screen stays open, the filter is automatically updated. At 12:01, you see the data from 11:51 – 12:01 etc.

To set the filter:

1. Select, in the **Filter** section, the Relative period of time option

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



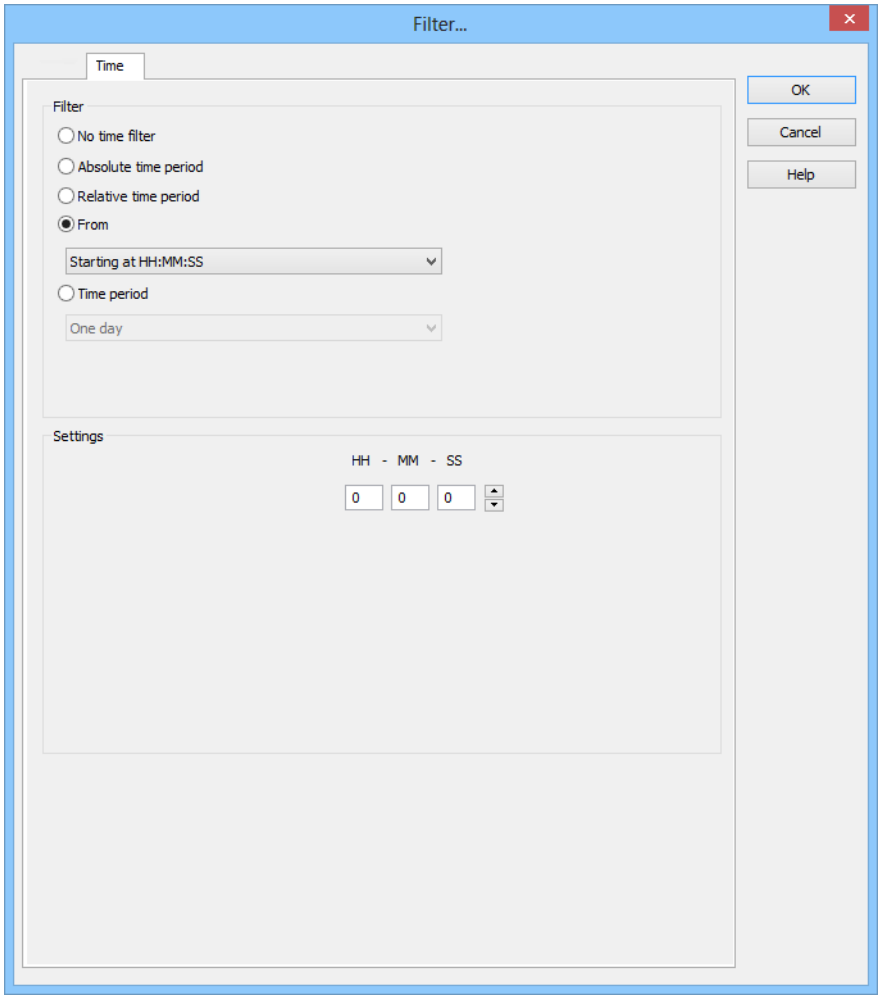
Parameters	Description
Options	Configuration of the time filter.
Propose current date/time	Active: Time filter is displayed in Runtime.
Default	Active: The time filter is prescribed in the Editor. Only the start time can still be configured in Runtime. Selection of the relative time period in days, hours, minutes and seconds.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

From

A time from which the filter is effective is defined. To set the filter:

1. Select, in the **Filter** section, the Off option
2. Select the desired filter from the drop-down list.
   - From HH:MM:SS o' clock
   - From day - HH:MM:SS o' clock
   - From day, month - HH:MM:SS o' clock

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

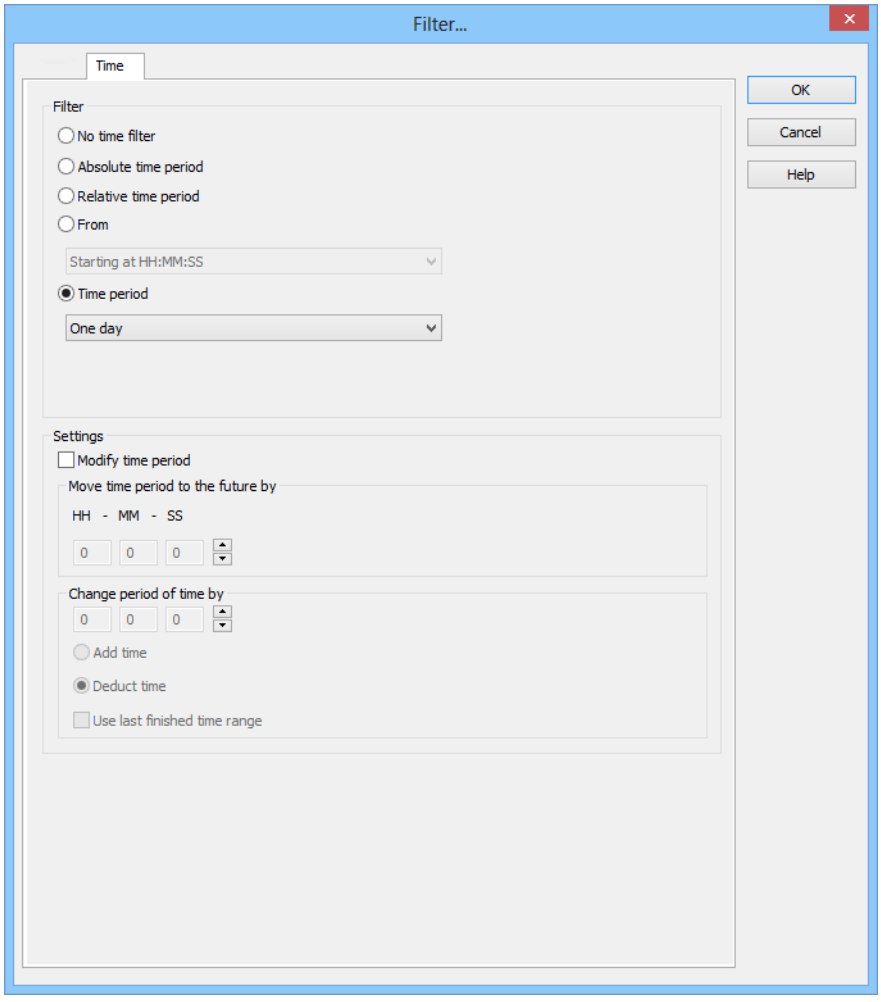


Parameters	Description
Options	Configuration of the time filter.
[Date/Time]	Depending on the settings of the Off option, the time from which the filter is effective is configured here: ▸ From HH:MM:SS o' clock ▸ From day - HH:MM:SS o' clock ▸ From day, month - HH:MM:SS o' clock **Attention!** The start 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.
▸ 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.
▸ From day - HH:MM:SS o' clock	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.
▸ From day, month - HH:MM:SS o' clock	A month, day and time for the start of the filter are entered. If the time stated has not been reached in the current year, the corresponding time from the previous year is used. **Example:** You enter Day 5, Month October - 23:00:00. If it is October 10th at 23:30, then filtering takes place from October 5th from 23:00:00 to the current time point. If, however, it is only October 4th, then filtering takes place from the 5th of the previous year to the current time point.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Time period

A time period in which the filter is effective is defined. To set the filter:

1. Select, in the **`Filter`** section, the `Time period` option
2. Configure the desired time in the **`Settings`** section



Parameters	Description
Options	Configuration of the time filter.
Modify time period	Allows amendments to cycles, postponements and extensions of time periods. Active: Evaluation is carried out in accordance with the following rules: ▶ First, the Use last finished time period option is evaluated. ▶ After this, Change time period by is used. ▶ Move time period to the future by is then applied. Inactive: No changes to the time period are made. **Attention:** With version 7.10, filter actions on the basis of this function led to different results than those in the versions before.
Move time period to the future by	Active: The time period defined in the filter is postponed to the future. Given in hours - minutes - seconds. If a postponement that is the same or greater than the selected time period is set, a note to check the configuration is displayed.
Change period of time by	Active: The time period defined in the filter is modified. Given in hours - minutes - seconds. If a change and a postponement that are the same or greater than the selected time period is set, a note to check the configuration is displayed.
Add time	Active: The time stated in Change time period by is added to the time defined in the Time range option.
Deduct time	Active: The time stated in Change time period by is deducted from the time defined in the Time range option.
Use last finished time period	Active: The last finished time period is used.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Help	Opens online help.

Define time period in the Editor

With this method, you enter a fixed time period into the editor, which is applied when the function is carried out in Runtime. You can then only define the start time in Runtime, but no further filter settings.

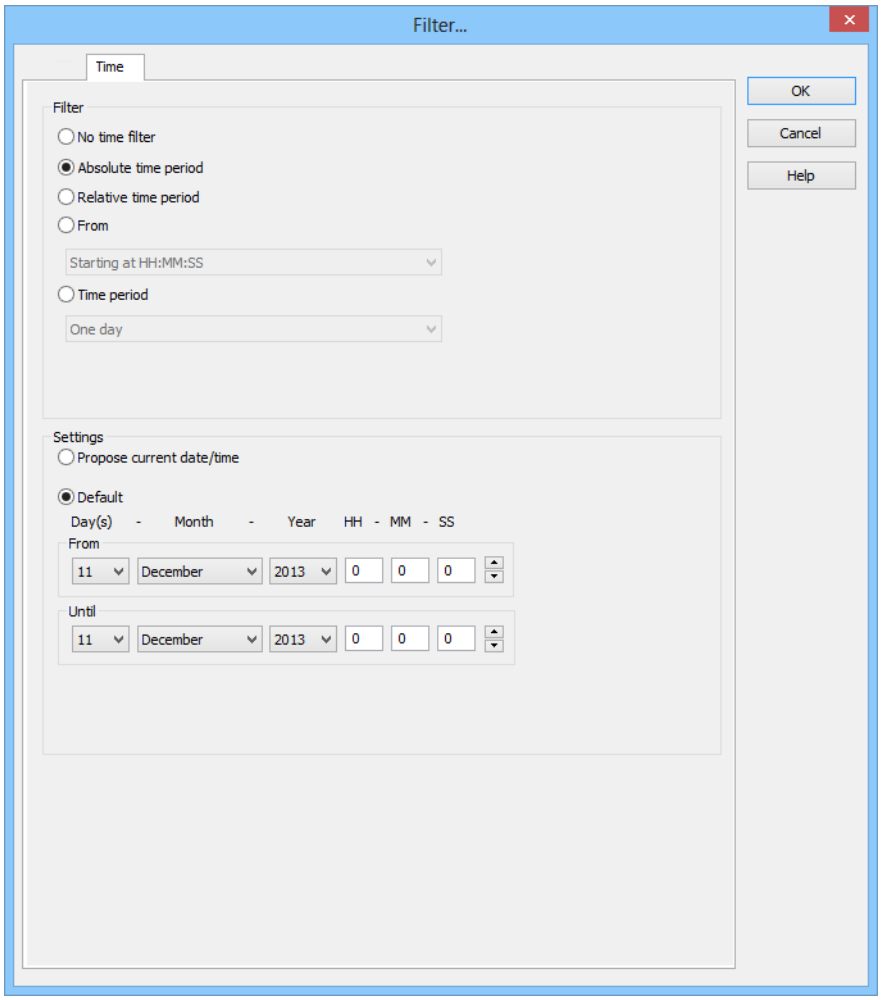
For example: You set a 30 minute time filter. In Runtime, you can now only set when this 30 minute time period is to start. However, you cannot change the filter to a day filter.

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

To create the filter:

1. The screen must have the **Filter** button to start the filter in Runtime
2. select the desired filter

3. Configure the selected time period

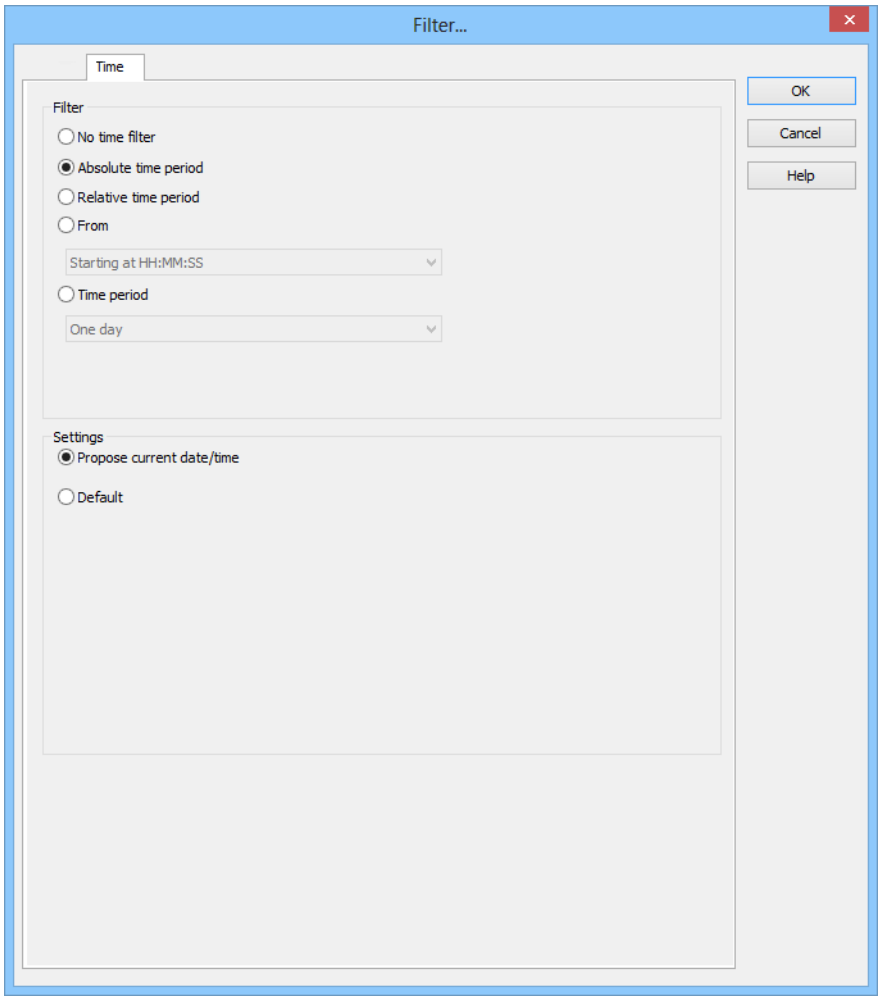


Tip for time period: Activate the `Offer this dialog in Runtime` option in the filter dialog. This way you can amend the start time before the function is carried out. Do not have the filter displayed in Runtime when the function is turned on; this way the current time period is always used. If you have activated the `Use last closed time period` option, the previous time period is shown.
For example: You have set a 30 minute filter. It is 10.45 when the function is activated. If the `Use last closed time period` option is deactivated, the filter is set to the current time period 10:30:00 to 10:59:59. If the option is activated, the filter is set to the previous time period of 10:00:00 to 10:29:59.

Time filter can be configured in Runtime

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

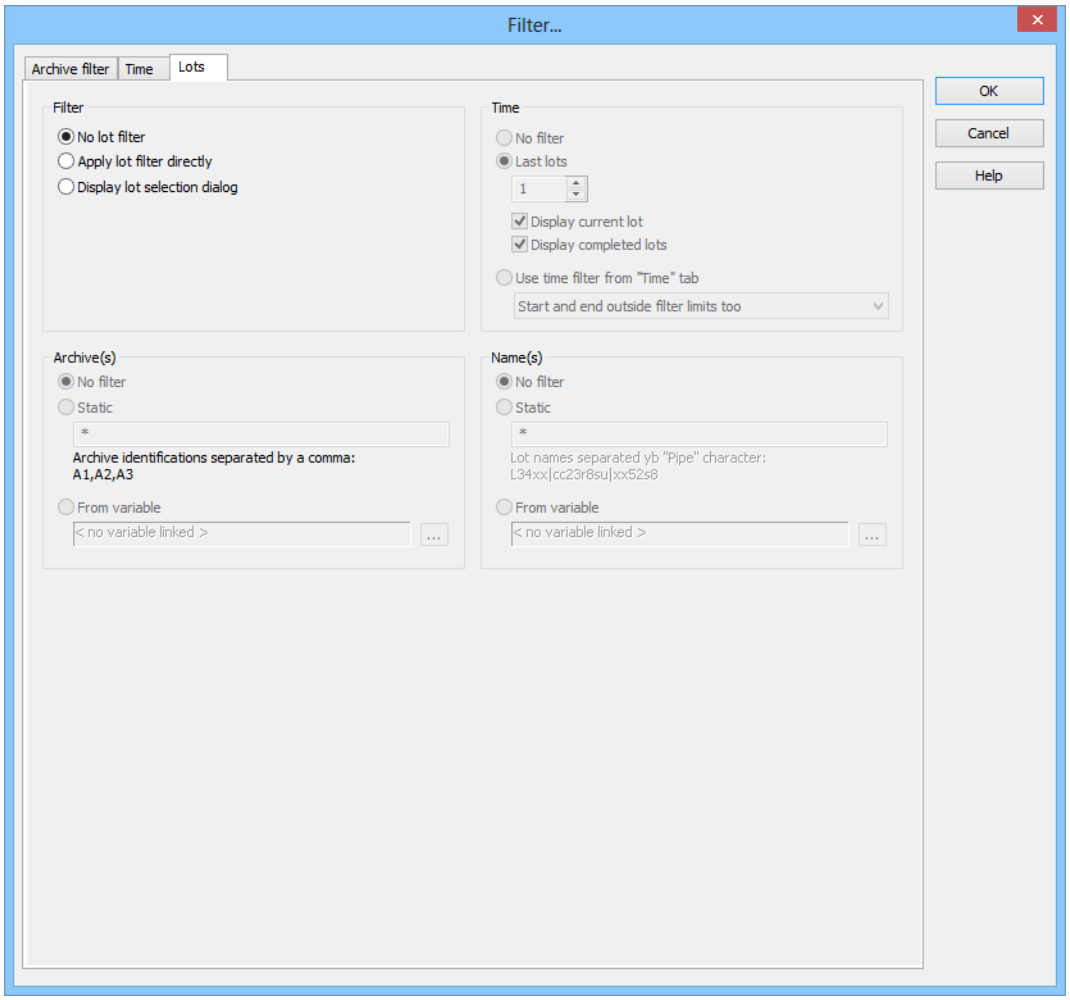
1. The screen must have **`Filter`** and **`Display filter`** buttons
2. select the desired filter:
   - Absolute time period
   - Relative period of time
3. Select, in the Settings section, the option **`Propose current date/time`**
4. The filter dialog is opened in Runtime with the current date and time



Lots

Configuration of the lot filter.

The lot information is also applied to the existing time filter. If the lot filter is activated, a list of all configured lots that correspond to the configured time period is obtained from the archive server in Runtime in advance and the list of archives is filtered for this.



Parameters	Description
Filter	Settings for the application of the lot filter. Selection of one of the options: ▸ No lot filter ▸ Apply lot filter directly ▸ Display selection dialog
No lot filter	Active: The lot filter is deactivated and cannot be configured. Filtering for lots is not carried out in Runtime.
Apply lot filter directly	Active: The filter configured here is applied in Runtime directly.
Display selection dialog	Active: The dialog for lot selection is shown in Runtime. Options can be pre-selected in the Editor.
Relative lot selection	Active: Enables several lots to be compared directly. Display always starts from the zero point. Only available for **Extended Trend** and **faceplates** and only if the option Display lot selection dialog has been activated. The Windows CE project property must be deactivated in the project properties.
Time	Configuration of the time filter for lot selection. Selection of one of the options: ▸ No filter ▸ Last lots ▸ Apply time filter from "Time" tab
No filter	Active: The time range set in the **Time** tab is not taken into account. All completed and current lots are displayed.
Last lots	Active: Input of the number of lots last concluded, according to what they should be filtered for. Input of the number in the number field or configuration via cursor keys. The option allows the combination of both options Display current lots and Display completed lots. Example: 3 lots are to be displayed, 2 are running and 10 have been completed. The following is shown: the two that are current and one that

	has been completed. **Attention:** At least one of the two options `Display current lots` or `Display completed lots` must be activated. If both options have been deactivated, this corresponds to the `No filter` setting. **Note on compatibility:** If the current lots or the combination of current and completed lots are selected and the project is compiled for a version before 7.11, the completed lots are shown in Runtime.
`Display current lots`	`Active`: The current lots are displayed. **Note:** If the number of lots to be displayed is greater than the number of current lots, lots that have been completed are also shown until the set limit has been reached. Example: 3 lots are to be displayed. 1 lot is running, 5 have been completed. The one current lot and two completed lots are displayed.
`Display completed lots`	`Active`: The completed lots are displayed. **Note:** If the number of lots to be displayed is greater than the number of completed lots, lots that have been completed are also shown until the set limit has been reached.
`Apply time filter from "Time" tab`	`Active`: Pre-filtering is carried out with the settings of the **`Time`** tab. The effective range of the filter can be amended within this time range. Select from drop-down list: ▸ `Start and end also outside filter limits`: (Default) Lots can start before the start time configured in the **`Time`** filter and end after the configured end time. ▸ `Start and end only outside filter limits`: Lots must start and end within the time points configured in the **`Time`** filter for the start and end. ▸ `Start also before filter limit`: Lots can start before the start time configured in the **`Time`** filter and end after the configured end time. ▸ `End also after the filter limit`: Lots can also end after the end time set in the **`time`** filter, but must start at or after the configured start time. ▸ `Adjust start and end to filter limits`: Lots are cut to the time points configured in the **`Time`** filter for the start and end.

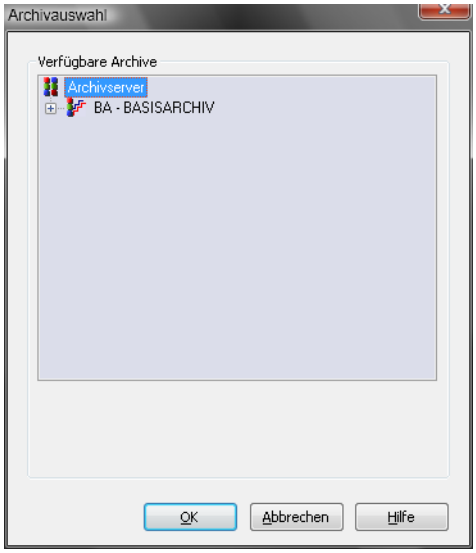
Archive(s)	Configuration of filtering for archives. Selection of one of the options: ▸ No filter ▸ Static ▸ From variable **Note:** Only available for the following modules if the option Apply lot filter directly has been selected: ▸ Archive revision ▸ ETM ▸ Report Generator ▸ Report Viewer
No filter	Active: Filtering for archive names is not carried out.
Static	Active: Archives whose identification corresponds to the character string entered in the input field are filtered for. Input of the archive identifications in the input field: ▸ Several identifications are separated by a comma (,). ▸ * or empty: All archives, no filter.
From variable	Active: The value of the variables linked here is applied as a filter for archive names in Runtime. Click on the ... button to open the dialog for selecting a variable. Only available for all modules if the Apply lot filter directly option has been selected: **Notes for variables in Runtime** The variable selection is only activated in Runtime if a valid variable has already been linked in Runtime. The ... button is always deactivated in Runtime. The option can be selected, but no new variable can be linked. If the variable is not signed into the driver at the time at which the lot filter is applied, the variable is signed in and read. This can lead to delays with slow driver connections/protocols. **Attention:** If the selected variable is not found in Runtime, there is no filtering for archive names. This also applies if the value of the variables

	cannot be determined. The filter then corresponds to the `No filter` setting.
Name(s)	Configuration of the filtering to names. Selection of one of the options: ▸ `No filter` ▸ `Static` ▸ `From variable`
`No filter`	`Active`: Filtering for lot names is not carried out.
`Static`	`Active`: Lot names that correspond to the character string entered in the input field are filtered for. Input of the lot name in the input field: ▸ Several entries are separated by a pipe character (|). ▸ * or empty: All lots of all displayed archives, no filter.
`From variable`	`Active`: The value of the variables linked here is applied as a filter for lot names in Runtime. Click on the `...` button to open the dialog for selecting a variable. Not available if the option `Apply lot filter directly` has been selected. **Notes for variables in Runtime** The variable selection is only activated in Runtime if a valid variable has already been linked in Runtime. The `...` button is always deactivated in Runtime. The option can be selected, but no new variable can be linked. If the variable is not signed into the driver at the time at which the lot filter is applied, the variable is signed in and read. This can lead to delays with slow driver connections/protocols. **Attention:** If the selected variable is not found in Runtime, there is no filtering for lot names. This also applies if the value of the variables cannot be determined. The filter then corresponds to the `No filter` setting.
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

12.2 Archive: Stop

This function is used to stop a running archive during online operation. After the archive has been stopped, the archive end script configured in the archive will be run.

As handover parameter enter the archive which should be ended. This function is configured via an input dialog.



Before this function is used, the archive must at least have been created in the Editor. Select the archive by selecting the appropriate archive in the archive selection and click on OK.

Give the archive's short identifier in the function administration after the system function as the transfer parameter (e.g.: End archive [01]).

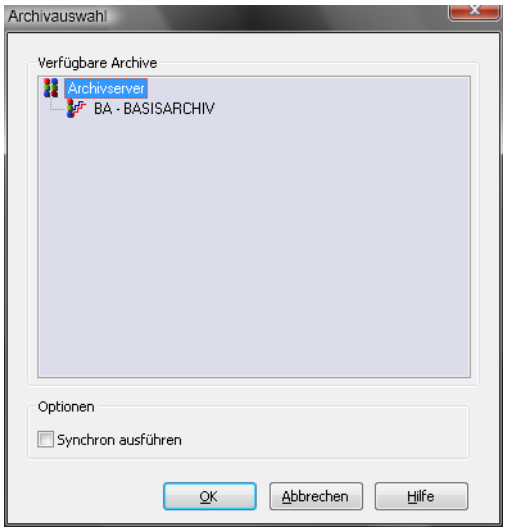
Attention

Attention: *If starting and stopping of the archive is defined via Start/End of the Runtime (on page 28), the manual starting or stopping of archives via functions can lead to undesired behavior of the Runtime.*

12.3 Index Archive

This function executes a later indexing of lot archives. (on page 58). This can make sense after deleting or editing of single archives.

As handover parameter enter the lot archive which should be indexed. This function is configured via an input dialog. Here only the existing lot archives are listed.



Parameters	Description
`Execute synchronously`	Is only valid when executed in a script. Activate this check box if you want the next function to start not before the other function is finished.

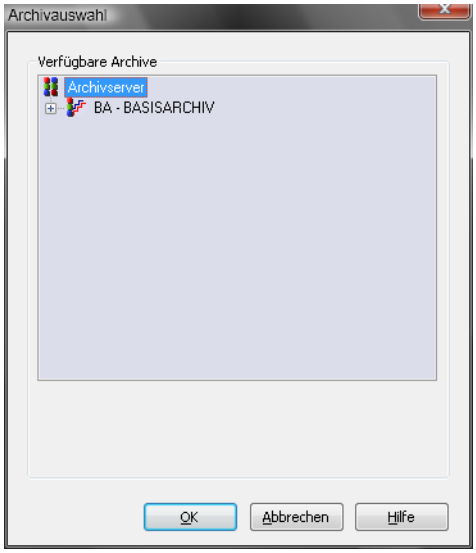
Info

Function ***`Index archive`*** *is always carried out at the process-leading server.*

12.4 Archive: Start

This function is used to start a running archive during online operation. After the archive has been started, the archive start function configured in the archive will be run.

As handover parameter enter the archive which should be started. This function is configured via an input dialog.



Before this function is used, the archive must at least have been created in the Editor. Select the archive by selecting the appropriate archive in the archive selection and click on OK.

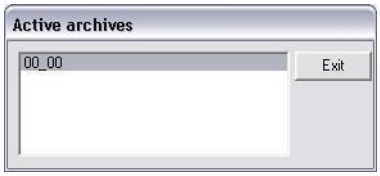
Give the archive's short identifier in the function administration after the system function as the transfer parameter (e.g.: Start an archive [01]).

Attention

Attention: *If starting and stopping of the archive is defined via Start/End of the Runtime (on page 28), the manual starting or stopping of archives via functions can lead to undesired behavior of the Runtime.*

12.5 Show active archives

In the Runtime this function displays a pre-defined system window of the currently active archives. The system window is always displayed in the foreground.



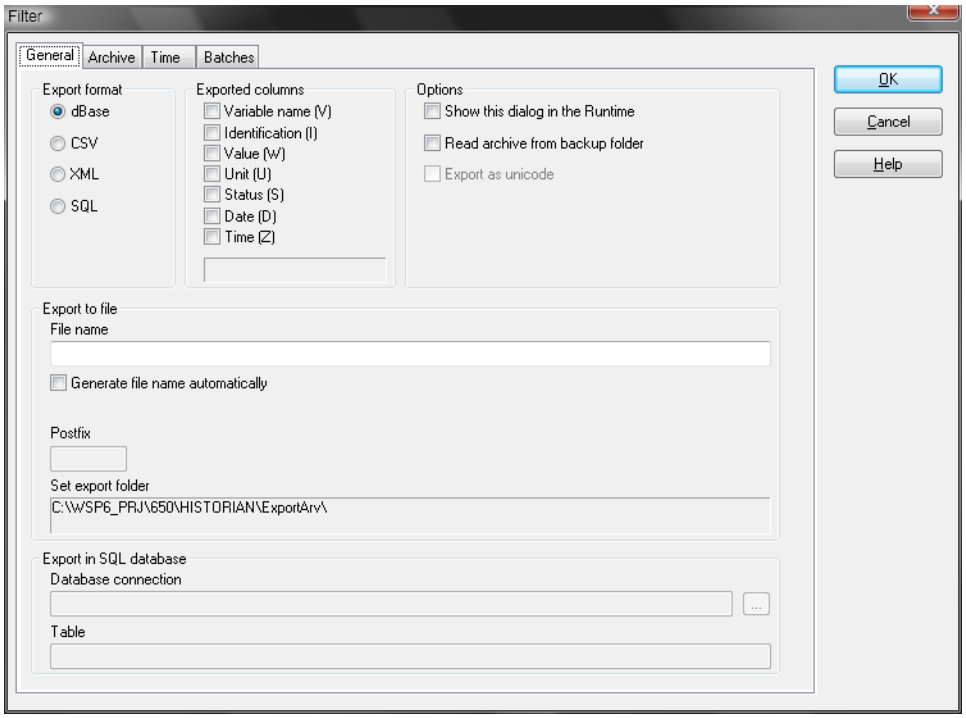
12.6 Export archive

This function is used to export the entries recorded in an archive to a file. Provide the file configuration (name, path, formatting, etc.), the archive and the time filter as the transfer parameters.

Attention: The file name may not contain any special characters. Prohibited are: `\ / : * ? " < > |`

To engineer the export:

1. in the project manager go to node Functions
2. select New function... in the context menu or in the tool bar
3. The dialog for selecting a function is opened
4. navigate to node Historian
5. Select Export archives
6. the dialog for configuring the export is opened



Configurable options are:

Parameters	Description
General (on page 91)	In this tab you can define: ▸ Export format ▸ Columns to be exported ▸ Options ▸ Export file
Archive (on page 94)	Selection of the archive to be exported
Time	Stipulation of the corresponding time range. For details, see the Time chapter in the Alarm administration manual.
Lots	Select desired lots

Information

If you export an active lot archive, the time of export is entered as end time. As lot name the current value of the lot variable is used.

Take care that these values must not comply with the values of the closed lot archive.

MEMORY CHECK AT READING BACK

When saved archives are read back the available memory is checked.

SQL

If less then 10% of the available memory is free, the read back of the data from the SQL Server is canceled.

ARX FILES

The space available is checked before archive data (*.arx) is read in. The read in is canceled if:

- less than 10% of the available memory is free

- the size of the reserved memory (SPEICHER=) defined in **project.ini** is exceeded

The cancelation is documented in the Diagnosis Viewer via an error message.

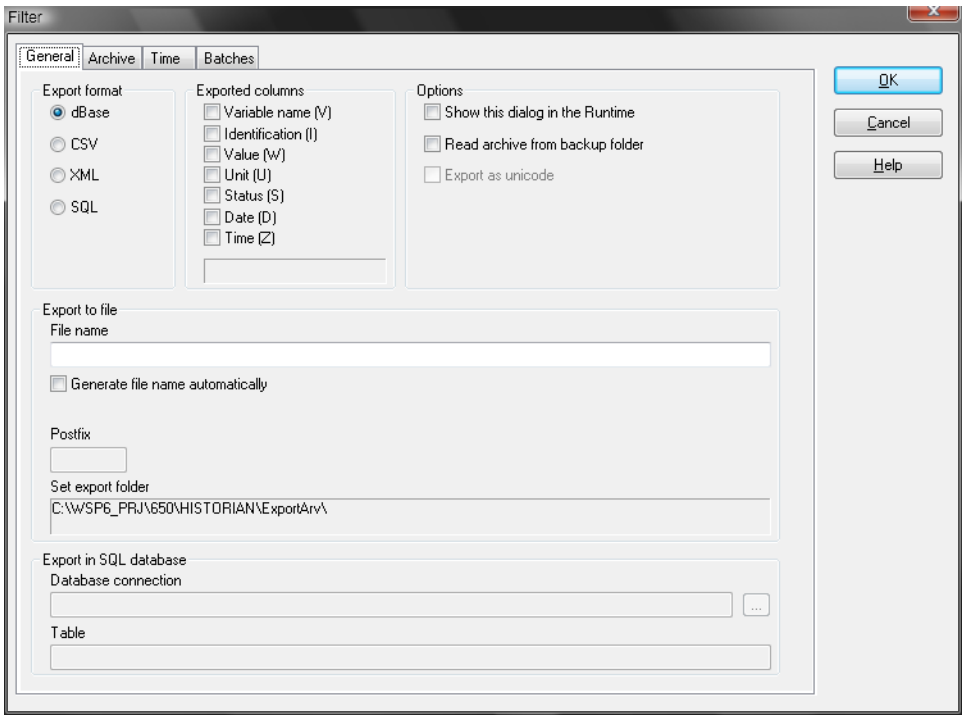
> **Attention**
>
> *If files are created in the Historian which exceed either the reserved memory in the project.ini or the 10% rule, these files cannot be read in.*

XML EXPORT

The columns Variable name (V) and Identification (I) contain only the corresponding name of the variable or the identification of the variable. In older zenon versions, information about e.g. the aggregation type for aggregated archives was saved in the variable name column. Take care that incompatibilities can occur at the XML export of older versions compared to the current version.

12.6.1 General

To export the data to a file, enter the file options and file properties.



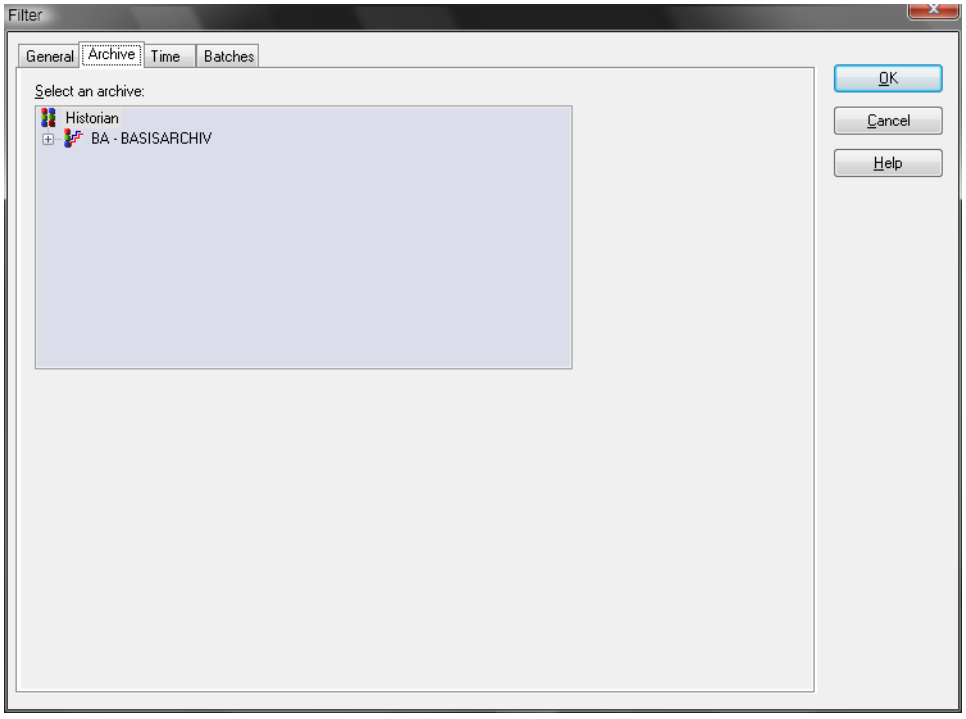
Parameters	Description
Export format	
dBase	dBase IV - file (*.dbf) **Attention:** DBF files must: ▸ conform with there name to the 8.3 DOS format (8 alphanumeric characters for name, 3 characters for extension, no space) ▸ be stored near the root directory
CSV	CSV text file (*.txt) Structure (–> stands for tabulator): Name –> identification –> value –> unit –> (state_HI_DWORD)(state_LO_DWORD) –> second
XML	XML file (*.xml)
SQL	Evacuating to SQL database **Note:** The export to a SQL database is only possible if you have the corresponding license for the Editor and the Runtime.
Exported columns	
Variable name (V)	Variable name
Identification (I)	Variable identification
Value (W)	recorded technical value
Unit (U)	according unit
Status (S)	corresponding variable status
Date (D)	corresponding date stamp
Time (Z)	corresponding time stamp
Options	
Show this dialog in the Runtime	If you activate this option, the dialog will be shown in the Runtime when the screen is called up.
Use archives from read-back folder	Archives to be exported are read from the readback folder. When loading archive data from the readback folder, the archive data from the Runtime path and from all subfolders of the readback folder is also read.

Export as Unicode	Only available if you have selected the export format CSV. If you activate this option, the exported files is saved as Unicode (UTF-16).
Export to file	Stipulation of the file to which archives are exported.
File name	user-definable file name which can be assigned freely (file is always imported to same name) **Note:** The name may not contain any special characters. Prohibited are: **\ / : * ? " < > |** The input field is not shown as soon as you activate the Generate file name automatically option.
Generate file name automatically	Generates file name automatically from a short identifier, a user identification and a day key.
Name	YMDHMM.yyy with
Y	Year (one-digit: 1..9, A, B, C, ...)
M	Month (one-digit: 1..9, A, B, C, ...)
D	Day (one-digit: 1..9, A, B, C, ...)
H	Hour (one-digit: 1..9, A, B, C, ...)
MM	Minutes (two digits)
yyy	file type (DBF, TXT, XML)
Generate name from lot name	Only visible if you activate option Generate file name automatically. the lot name is taken for the creation of the export file name **Note:** If you select this option, you must take care that the lot name does not contain special characters.
Postfix	free label (ASCII - 29 lines);is automatically attached to the filename. **Note:** only if the **Generate filename automatically** has been selected
Defined export path	Display of the defined export path. You can change it via menu item *File -> Standard configuration -> tab Standard Path exported archives*.
Export to SQL database	

Database connection	The database that is going to be used when exporting into a SQL database. **Note:** The export to a SQL database is only possible if you have the corresponding license for the Editor and the Runtime.
Table	The table that is going to be used when exporting into a SQL database. **Note:** The export to a SQL database is only possible if you have the corresponding license for the Editor and the Runtime.

12.6.2 Archive

Indicate the archive which will be exported after file configuration.



Information

The archive to be exported is selected with the mouse. Before this function is used, the archive must at least have been created in the Editor.

In the function management the short name is displayed as handover parameter (e.g. Export archive ([auto] 01 [T]ascii').

12.6.3 Time

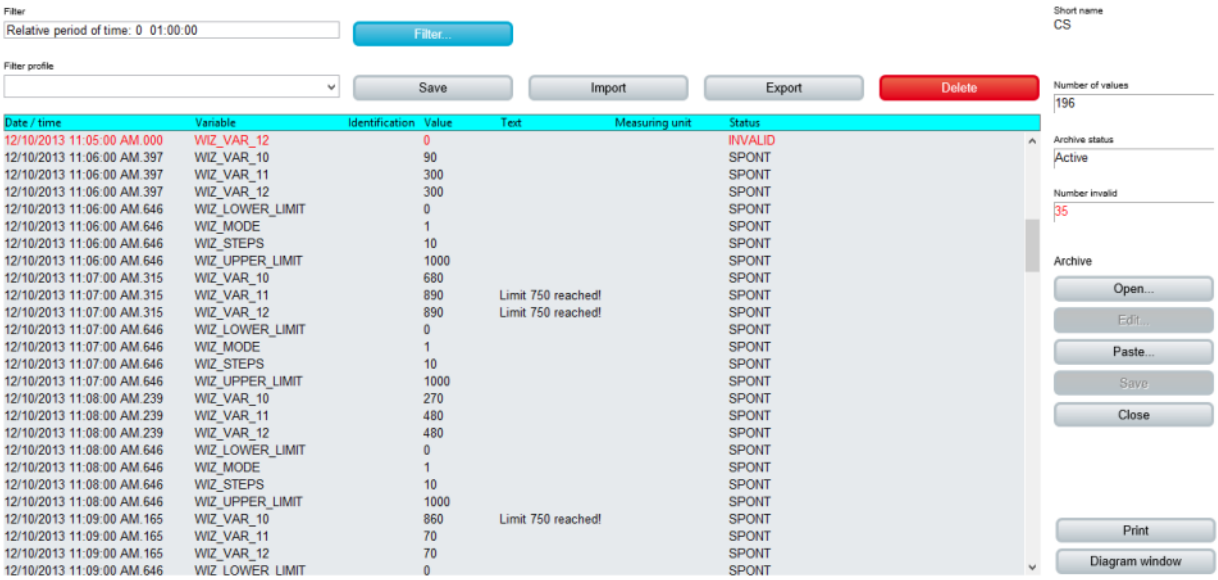
The time filter is configured along the lines of time filtering when screen switching (on page 66).

12.6.4 Lots

The lot filter is configured along the lines of filtering when screen switching (on page 80).

13. Operation in Runtime

In Runtime, the archive revision (on page 97) screen is called up via a function call.



Parameters	Description
Filter	Display of the set filter.
Filter...	Clicking on the button opens the dialog to configure the filter.
Filter profile	Display of the selected filter profile.
Save	Saves current filter as a profile with the name given in the **filter profile** text field.
Import	Opens dialog to import a filter profile.
Export	Opens dialog to export a filter profile.
Delete	Deletes the currently-selected filter profile.
Short name	Display of the short description of the displayed archive.
Number of values	Display of the number of the displayed values.
Archive status	Display of the archive status.
Number invalid	Display of the number of variables with the status INVALID.
Archive	Buttons for actions that concern the archive.
Open	Opens the dialog to select an archive.
Edit	Opens the dialog (on page 104) to edit the selected archive entry.
Insert	Opens the dialog (on page 106) to insert archive entries into the archive files. If there are no archive files for this time range, no entries can be inserted. A corresponding error message is shown if an attempt to insert an entry is made.
Save	Saves changes in the archive and updates the aggregated archives on request
Close	Closes the archive that is currently open.
Delete	Deletes selected archive entries after confirmation query.
Print	Prints list to configured printer.
Diagram window	Opens the dialog (on page 108) to configure column width and font.

PRINT ARCHIVE

When printing the archives, the file `ARV_G.FRM` with the corresponding key words is used. The cyclic part is enclosed with "%%" . The file must be saved in the installation path.

Key words	Meaning
@HEADZEIT	Date/time stamp of the archive
@ARCHIVNAME	Name of the archive
@DATZEIT	Date/time stamp of the archive entry
@KANALNAME	Variable name of the archive entry
@WERT	Value of the archive entry
@EINHEIT	Unit of the archive entry
@AMELDUNG	Condition text of the archive entry
@STATUS	Status text of the archive entry

Example

ARV_G.FRM

@HEADZEIT @ARCHIVNAME

Page: @SEITE -----------------

Date/time TTA Value Unit Condition text

Status

%%

@DATZEIT @KANALNAME @WERT @EINHEIT @AMELDUNG @STATUS

%%

13.1 Screen type Archive revision

The screen type **Archive revision** is used for online display and editing of archive values in table form. (You will find more information on the pre-defined screen types in the chapter 'Screens / Pre-defined screen types'.)

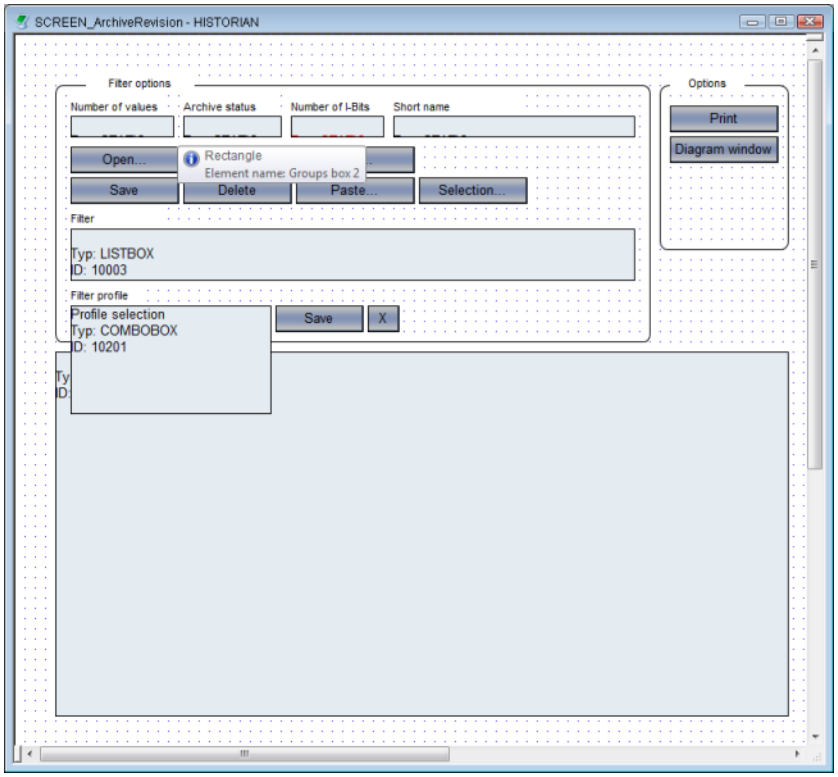
Attention

The archive module must have been licensed to use the function.

The creation of the archive window is done in the editor by creating a new screen of the screen type **`Archive revision`**.

On opening the screen an empty screen is opened and the Drop-down list **`Control elements`** in the menu line is filled.

With the help of the control elements you can arrange the individual online operating elements in the screen (overall display; in the editor there is only a two-dimensional display). The function elements differ from one another by buttons (for on-line operation), lists (representation of the archive(s) and filter conditions) and display elements (representation of information for the output of archive values).



Parameters	Description
Insert template	Opens the dialog for selecting a template for the screen type. Templates are shipped together with zenon and can also be created by the user. Templates add pre-defined control elements to pre-defined locations in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and palced in the screen. Elements can be moved in the screen and placed individually.
Windows	Elements to configure the window to be displayed.
▸ **Archive data window**	Display of the archives.
▸ **Set filter (list)**	Display of the filter criteria.
▸ **Set filter (display)**	Displays the status of the current time filter in Runtime.
▸ **Archive status**	Current processing state of the archive (active, inactive)
▸ **Short name**	Display short description of archive.
▸ **Total number**	Number of read values.
▸ **Number of INVALID**	Read values that are marked with the status bit INVALID
List functions	Buttons to operate the list.
▸ **Open archive**	Display new archive
▸ **Close archive**	Close current archive.
▸ **Save archive**	Save changes to archive.
▸ **Edit entry**	Edit selected value.
▸ **Insert entry**	Insert new values into archive.
▸ **Delete entry**	Delete values from the archive.
▸ **Selection**	Set filter criterion for marking.
▸ **Column configuration**	Configure column setting.
▸ **Print**	Print display.
Filter profiles	Buttons for filter settings in Runtime.
▸ **Profile selection**	Select profile from list.

Parameters	Description
Save	Saves current setting as a profile.
Delete	Deletes selected profile.
Import	Imports filter profiles from export file.
Export	Exports filter profiles in the file.

Information

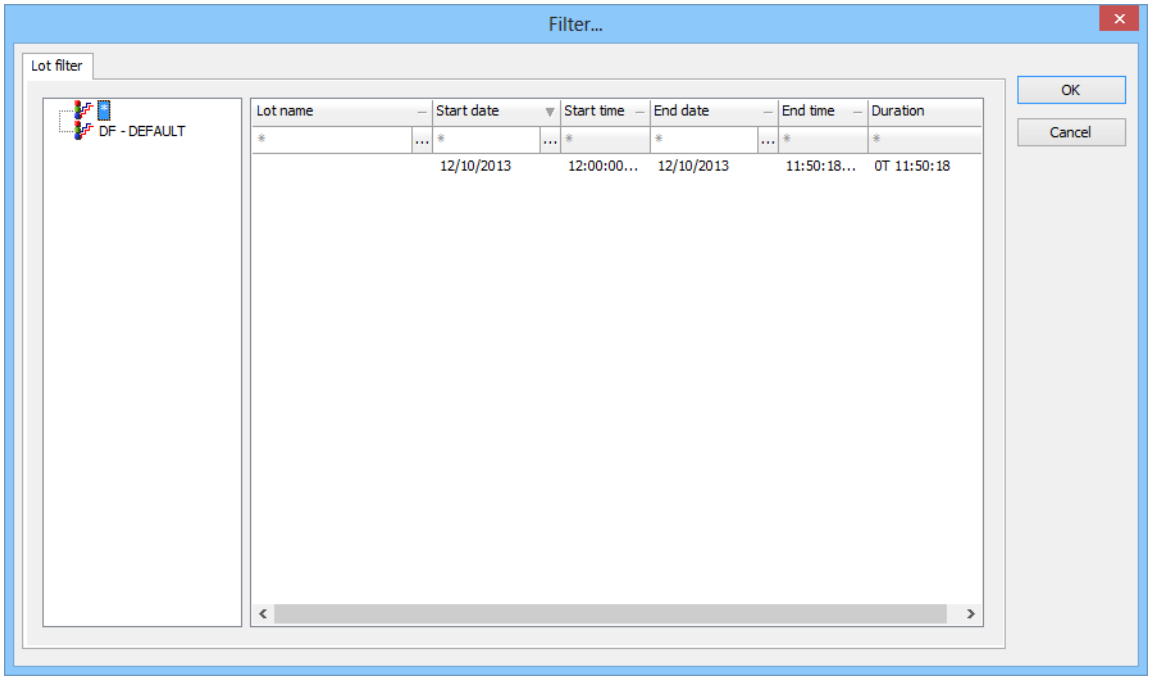
A decimal value can be entered with both a comma (,) as well as with a period (.) as a separator. The decimal separator is automatically changed to a ***period****.*

13.1.1 Filter for screen switch

If you call up an archive revision screen, the display depends on the configuration of the time filter or lot filter.

LOT FILTER

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



Parameters	Description
Lot filter	Selection of the recipe group that is to be imported. The filter consists of the two lists: ▸ **List of archives:** a list of the archives ▸ **List of lots:** List of lots allocated to the selected archive.
List of archives	Selection of the desired archive node *****: ▸ Collects all lots of the displayed archive. ▸ The key is the lot name. ▸ The start time is the start time of the earliest lot. ▸ The end time is the latest end time of all lots.
List of lots	Display of the lots allocated to the selected archive. Filtering through entry of text, date, time or rime range - depending on type. Sort by clicking on the header.
Lot name	Displays the name of all available lots. Filter: Entry of a character sequence. Only lots matching the respective character string will be displayed.
Start date	Shows the start date of all available lots. Filter: Entry of a start date or selection from a calendar.
Start time	Only available if you entered a start date. Display of the start time of all available lots. Filter: Entry of a start time. ***** means `12:00:00 AM` o' clock.
End date	Shows the start date of all available lots. Filter: Entry of an end date or selection from a calendar.
End time	Only available if you entered an end date. Display of the start time of all available lots. Filter: Entry of a start time. ***** means `11:59:59 PM` o' clock.
Duration	This column displays the duration for each available lot.

	Display only.

Information

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

Information

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

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

13.2 Working with the Archiving function

In online operation the following functions for archive control and monitoring are available.

Parameters	Description
Archive: Start (on page 87)	Start the archive stored in the editor.
Archive: Stop (on page 86)	Stop the archive stored in the editor.
Archive: List of active archives (on page 88)	Monitoring window for the representation of the currently-running archives.
Index Archive (on page 87)	Subsequent indexing of lot archives (on page 58).

PROCESS

If an archive is started in Runtime, a file called **xx.ARX** (xx = short description of the archive) is stored on the storage medium. As soon as the archive is stopped, it is closed and named according to the rules.

> **Attention**
>
> *Never close Runtime whilst archives are running. This also applies to ongoing processes (such as Batch Control) that use archives.*
>
> *Because: Ending with an archive running prevents correct closing.*

BEHAVIOR AFTER ENDING RUNTIME WITH ARCHIVE ACTIVE

If Runtime is ended whilst the archive is running, it is not closed and not renamed. The ARX file is still present. This leads to the following behavior:

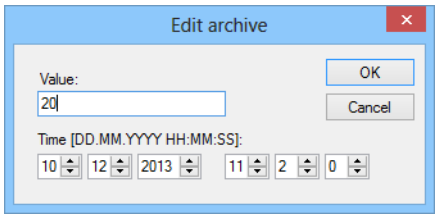
- The archive no longer continues to run when Runtime is restarted. If the archive is configured as a cyclic archive, then it is filled in with default values for the missing area in the current interval when Runtime is restarted. If no value was transferred, the defined alternate value is used otherwise the last valid value is used. Existing entries are not overwritten.
- Execution of the **End archive** function does not stop the archive, in order to correctly copy the ARX file.
- No archive export can be carried out as long as there is an ARX file. .

Solution: Restart the archive and then stop it. The archive is then correctly closed and renamed. There may be invalid values in the archive.
Tip for project configuration: In the scripts **AUTOEND** and/or **AUTOEND_SERVPROJ**, close all manually-started archives. These are thus automatically stopped and closed when Runtime is ended.

13.2.1 Editing values

To edit archive values, double-click on the archive or click on the **Edit** button. Multiple selection of archives is possible (`Ctrl key + mouse click` or `Shift key + mouse click`).

the dialog to edit values is opened



Parameters	Description
`Value`	Entry of the new value
`Time`	Entry of the new time stamp
`OK`	Applies settings and closes the dialog.
`Cancel`	Discards all changes and closes the dialog.

If one or several values have been changed, then:

- If the status of the entry is set to manual value (MAN_VAL)
- The column title is colored red
- The Save button is activated

Once the amended list has been saved, the color of the column title is reset again.

If several archives are changed at the saved at the same time, all receive the value and time stamp entered in the dialog.

EDITING OF ARCHIVES SAVED IN SQL

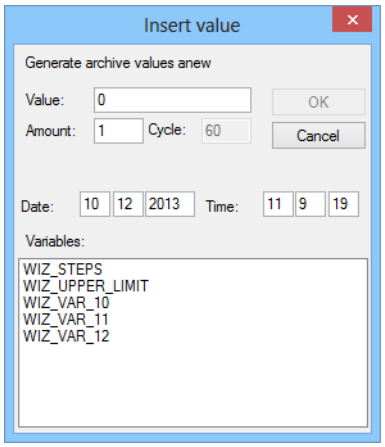
Values can be changed with archives saved in SQL.
However it is not possible to:

- Change the time stamp
- Delete values
- Insert values

13.2.2 Inserting values

To insert new values:

1. Click on the Insert button.
2. The dialog to create new values is opened



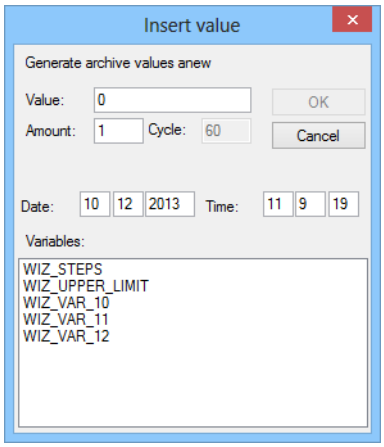
3. Select a variable.
4. Enter value, number and time stamp.
5. Confirm the selection by clicking on OK.

Note:

- No new values can be inserted into archives saved in SQL.
- If an entry is highlighted before the dialog has been opened, then:
  - The time stamp and cycle cannot be changed
  - If the new value is entered below the highlighted variable
- If one or several values are inserted, then:
  - If the status of the entry is set to manual value (MAN_VAL)
  - The column title is colored red
  - The Save button is activated

Once the amended list has been saved, the color of the column title is reset again.

INSERT NEW DIALOG VALUE



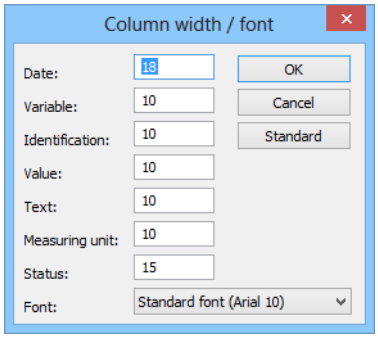
Parameters	Description
Value	Entry of the new value
Number	Entry of the number of the desired values.
Cycle time	Entry of cycle time in seconds.
Date	Entry of the date.
Time	Entry of the time point.
Variables	Selection of the variables from a list.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

13.2.3 Store values in archive

Current and unsaved changes in the archive are symbolized by a red heading. The values are stored in the archive after selecting the **Save** button. If aggregated archives are assigned to the archive currently being edited, the aggregated archives (on page 47) are automatically updated.

13.2.4 Stipulating list display

Clicking on the Diagram window button opens the dialog to configure the column width and the list font.



- To stipulate the column width:
  - Enter the desired width in characters next to the respective column title.
- To select the font:
  - Select the desired font from the drop-down list.