COPA-DATA
do it your way

zenon manual

Historian

v.7.10

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

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com (mailto:sales@copadata.com).

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 CD_PRODUCTNAME - are available.

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

License information

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

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

2.1 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)

2.1.1 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 follow-up archives
- 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.

2.1.2 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.

2.1.3 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.

Info

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.

2.1.4 Start/ stop archiving

You can control the archiving manually in the zenon Runtime via functions Start archive (on page 57) and End archive (on page 55).

As long as an archive is active, value 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.

2.1.5 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.

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.*

Description header

Parameter	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)

Type description

TYPE 1

Parameter	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 PLC	**Index PLC**	**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

Parameter	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

Parameter	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

Parameter	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 [...]	

2.2 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 47) 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	min
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: 14:00

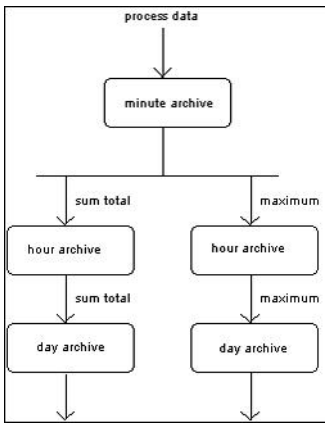
UTC: 14:00 minus 1 hour daylight saving time minus 1 hour time zone = 12:00.

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).

2.3 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 a following archive (on page 44) 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. Sumation
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:

Parameter	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.

Parameter	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.

2.4 Engineering in the Editor

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

2.4.1 Archive detail view of context menu

TOOLBAR HISTORIAN AND ARCHIVES

Parameters	Description
New archive	Opens the wizard for creating an archive.
New following archive	Opens the wizard for creating a following 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.
Export selected XML	Exports selected 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 following archive	Opens the wizard for creating a following 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.

2.4.2 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 21)). If you want to configure the archive without the help of the assistant, click on **Cancel**.

In dialog **New Archive** you do the settings for the new archive. The dialog is also shown when you want to edit the properties of an existing archive.

Assistant

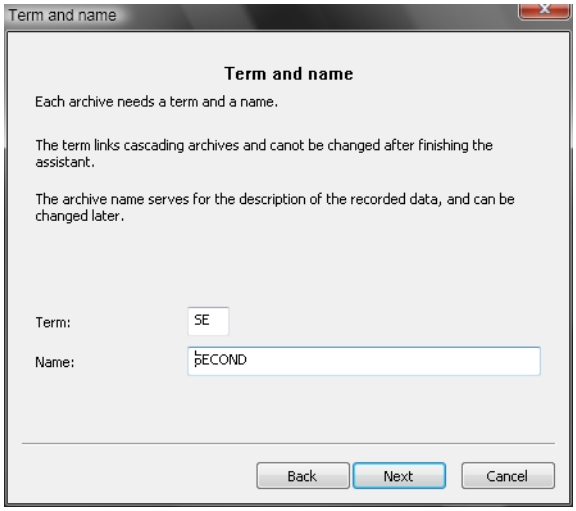
The assistant supports you in the basic configuration of an archive. It is opened by default. If you want to configure the archive without the help of the assistant, click on **Cancel**.

If you Create a new archive (on page 20) or define a following 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.

1. TERM AND NAME

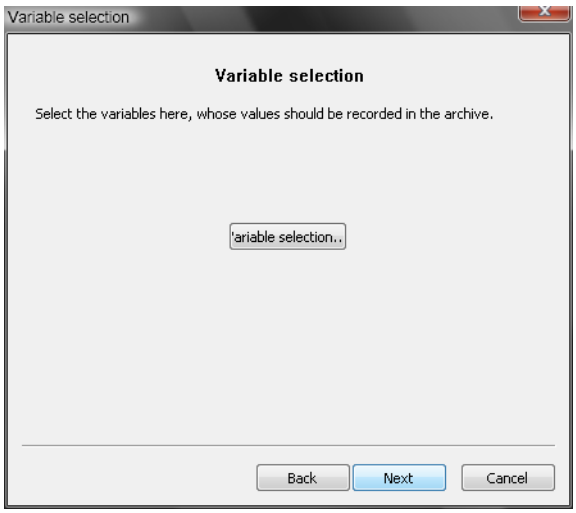
First, you can give the archive a name and a short name. The short name cannot be changed later on. The name can be changed later on. Both entries must be made to continue.

Note: The short name may only consists of alphanumeric characters, i.e. letters from A to Z but no umlauts or special characters and all numbers from 0 to 9.



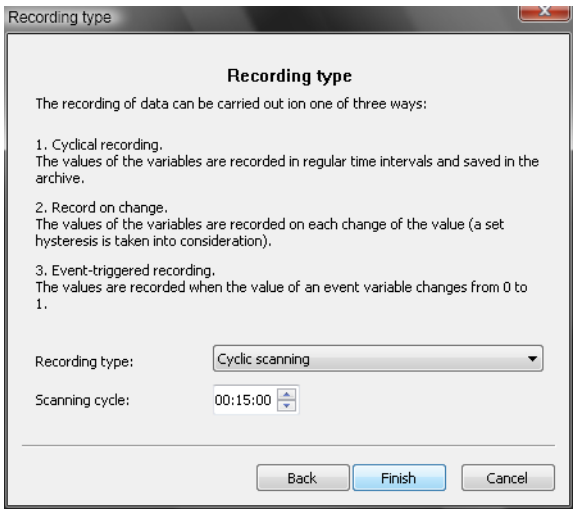
2. VARIABLE SELECTION

Click on the button **`Variable selection`** to get to the dialog for the selection of the variables that shall be archived.



3. RECORDING TYPE

You can decide, which kind of recording you prefer. See chapter Type of recording (on page 30).



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

Info

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

Parameters	Description
Next	Leads you to the next page of the assistant.
Back	Leads you to the previous page of the assistant.
Finish	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.

STORAGE CYCLE - WHAT HAPPENS IN THE BACKGROUND

The cycle, in which archive data is saved and evacuated (See chapter Saving (on page 32)), is determined automatically from the entered data. The system tries to find as many 'reasonable' 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 the compression in following 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 following archives (who do have spontaneous recording types, but nevertheless contain cyclical values from the respective source archive), the saving cycle is selected in a way that leads to no more than 65000 variables per archive file (for archives with very many variables), but to at least 6 values per variable. This ensures that enough values are available for the following archive.

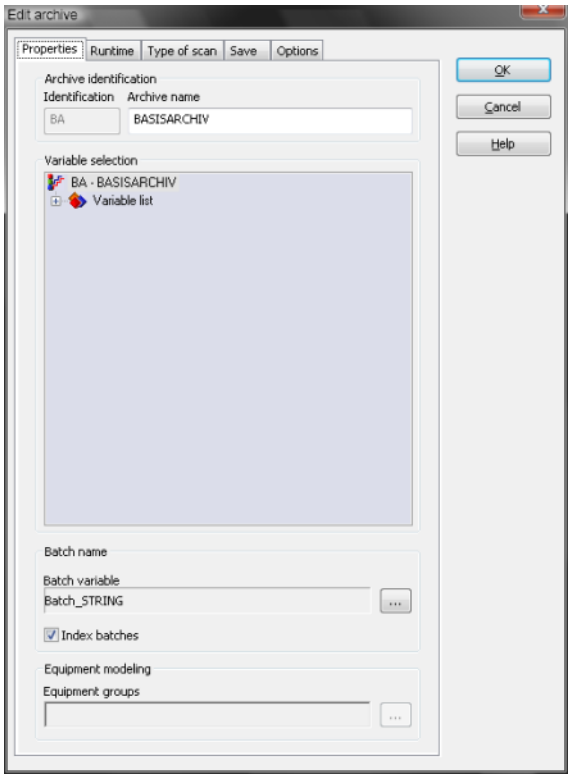
If less variables are put into the archive, the cycle is chosen in a way that ensures that the size of the files does not exceed 65000 values and that the value of the cycle is as 'round' as possible (whole-numbered multiples of 1,5,10,30 or 60 Minutes).

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.

Properties

On tab Properties the following settings are available.



Parameters	Description
Archive label	
Identification	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.
Batches	
Batch variable	Variable of type string. The value of the variable is used as batch 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 batch name. While the archive is active, the value of the variable and therefore the batch name can change. Kindly note this at filtering. The value of the variable when ending the archive is used as final batch name.
Index batches (on page 47)	If you activate this check box, an automatic indexing of the batch values of the archive is carried out. With this a quick access to the batch 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.

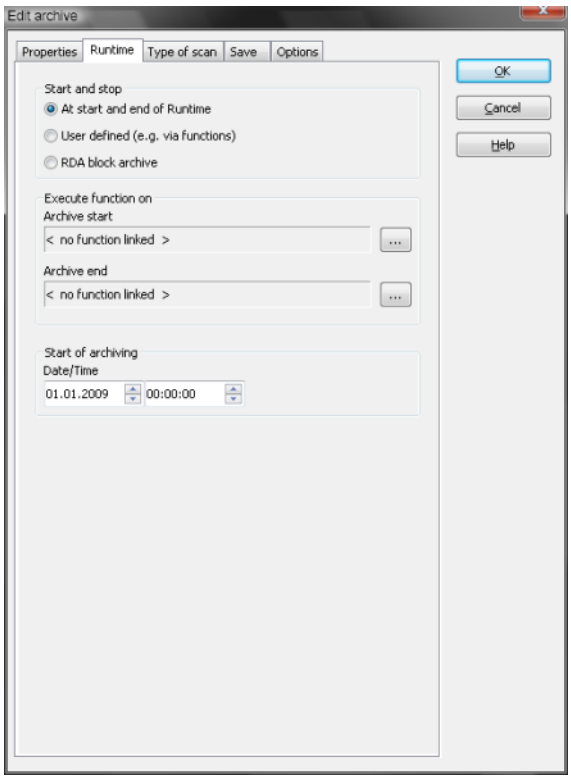
Info

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 batch variable (Batch archiving (on page 47)) and the event variable, you can use variables from sub-projects.

Runtime

On tab Runtime the following settings are available.



Parameter	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 53). 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 57) and End archive (on page 55).
RDA block archive	You manage the archive via RDA (on page 8).
Execute function at	
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 both cycles.

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

Rounding the SSC to the first SC is done hours to hours, minutes to minutes and seconds to seconds. This means: If the time (H:M:S) of the SSC is smaller than that of the SC, the latter is always 0!

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

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

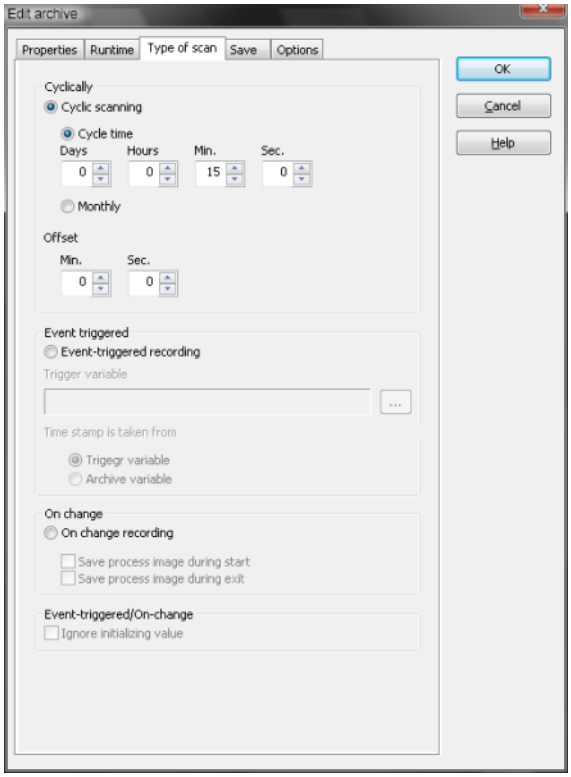
SSC: 12:29:00 AM SC: 0D 12:05:00 AM -> DTV 12:30:00 AM; SSCr 12:25:00 AM + SC 12:05:00 AM = DTV 12:30:00 AM

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 scan and save cycle, there will be a hole in the recording when archives are changed.

Recording type

On tab Recording type the following settings are available.



Parameters	Description
Cyclical	
Cyclical recording	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	
On-change recording	If you activate this radio button, variables are only written in the archive on-change value change. For the measuring range a hysteresis can be defined (see chapter Hysteresis in chapter Variables).
Save process image at start	On creating a new archive file the current values of the variables are written into the archive.
Save process image at end	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 the Runtime or when the standby server upgrades to the server) an initialization value can be entered.
Event-triggered/on-change recording	
Ignoring	Activate this check box if you do not want to consider the initial

initialization value	value at the archive.

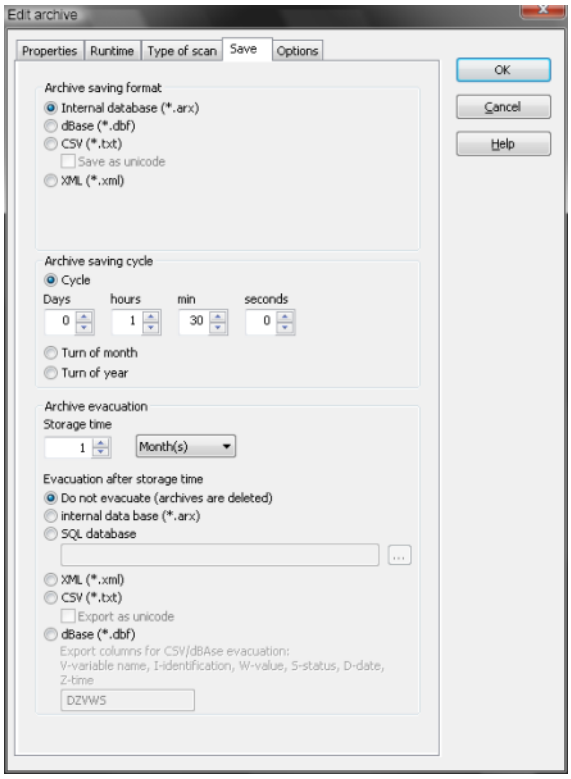
Save

With the help of the Extended trend, the Report Generator or the screen of type Archive revision (on page 68) 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.



Parameter	Description
Saving format	
internal database (*.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 (*.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	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 following archives.
Days	Define the save cycle for the archive.
hours	Define the save cycle for the archive.
min	Define the save cycle for the archive.
seconds	Define the save cycle for the archive.
Turn of month	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 database (*.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 table	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 (*.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.

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

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

Parameter	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:

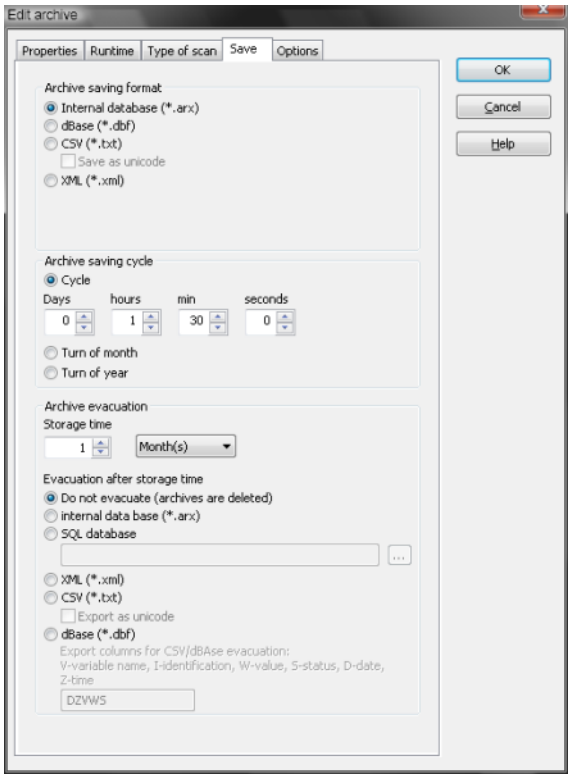
Settings in the section **Cycle** are not necessary, as starting and stopping of the archive files is done by hand (i.e. with functions). Therefore the value is ignored as far as the length of the files is concerned.

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 database (*.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 DATABASE (*.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.

> **Info**
>
> *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 following archives. Up to 4 values are possible: Sum, average value, minimum, maximum. When exporting the following 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]_LOT**
- consists of 3 columns

Column	Type	Meaning
LOT	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

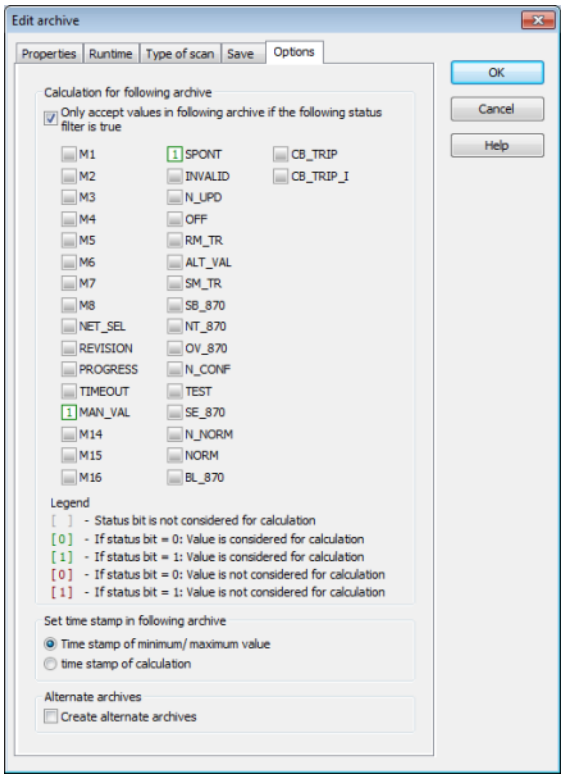
If these changes are not performed, no archive data will be evacuated to the SQL database.

- 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.

Options

On tab Options the following settings are available.



Parameters	Description
Calculation in the following archive	
Only accept values in following archive if the following status filter is true	Activate this checkbox if you want to consider status bits for the calculation of following archive. 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.
Set time stamp in the following archive	
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 considered for the following archive.

Example

In the following archive only values for which bit NORM is set and bit INVALID is not set.

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

2.4.3 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
estimated size

These columns are static and cannot be deleted.

Incremental search

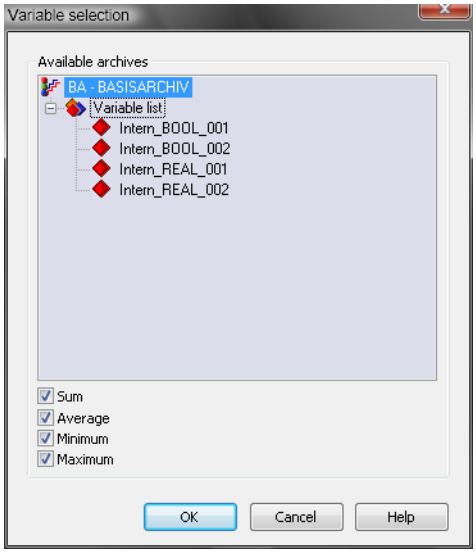
To start the incremental search, click on a column header in the detail view. The selected column is marked with the 'Spyglass' icon. You can enter a search term and the editor jumps to the appropriate entry.

2.5 Define following archives

Select the archive form which you want to creat a following archive and then click the icon for new following archive in the tool bar. You can also select the entry New following archive from the context menu and so start with the definition for the following archive.
As with creating an archive, there is an Assistant (on page 21) available which guides you through the process.

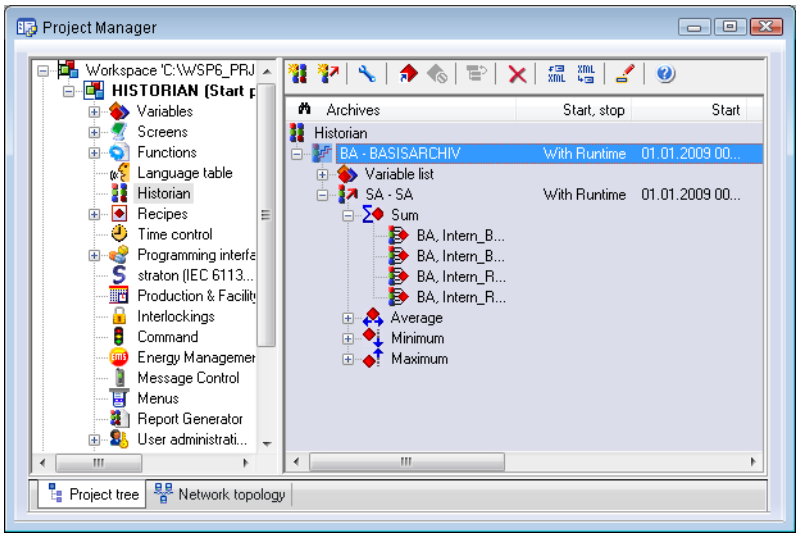
2.5.1 Archive and variable selection for following archive

The following properties are available.



Parameter	Description
Available archives	Select from the available archives the variables which should be considered in the following 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 add to the following archive via drag&drop. Either single variables are selected in the basis archive and then moved to the chosen data reduction type of the following archive with the left mouse button held down, or the whole basis archive is moved to the following archive in the same way, with all its variables being assigned when doing so.

In zenon following archives are set to on change scanning automatically. The scanning mode cannot be changed. The scan rate derives from the length of the basis archive. The values of variables are written into the following archive whenever the basis archive is determined. 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.

2.6 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 batches in the batch filter now one index of these data per archive is created. In order to use the automatic indexing the checkbox Index batches has to be activated in the archive definition. The index is stored in the file <short term>.ARI. If a batch 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.

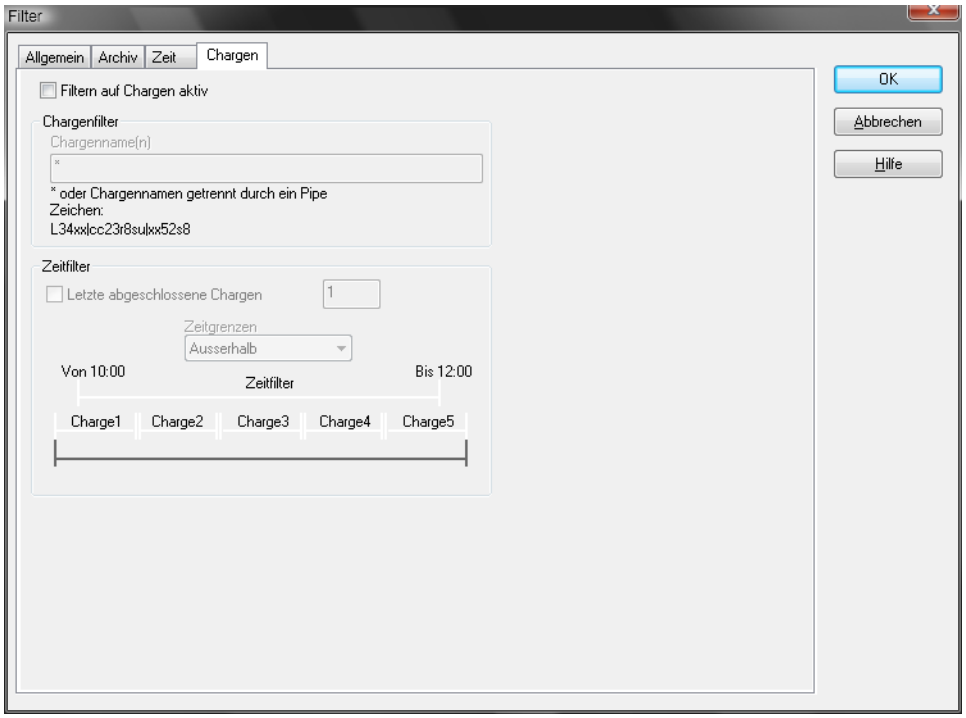
If archives are deleted with the function File operations or from the operating system, a new indexing has to be executed with the new function Index archive.

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 56) the batch 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 batch 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.

2.6.1 Definition of the lot filter

A lot filter is used in a number of different functions (Screen swich,Exporting exporting, printing, etc.) and should be explained in this central location.



Configurable options are:

Parameter	Description
`Filter on lots active`	Activation the lot filter This entry has to be activated, so that the archive and protocol functions **`lot`** and **`lot no.`** can be used.
`Charge`	Lot name to be filtered *: all lots within the time limit Lot1|Lot2 list of lots
`Last closed lots`	The last X closed archives are displayed. This setting only works for archives but not for AML and CEL. Prerequisite for this setting: `Filter on lot active` was activated.
`Time limits:`	Defines time limits for adopting lots.
▸ `Outside`	lots that only partially lie within the time limit are fully

	enclosed.
Inside	lots that only partially lie within the time limit are not enclosed.
From outside	lots that started before the time limit are fully enclosed; lots that end after the time limit are not enclosed.
To outside	lots that end after the time limit are fully enclosed; lots that started before the time limit are not enclosed.
Cut	variables of lots that only partially lie within the time

See also chapters Extended Trend, Report Generator and chapter screen Archive revision (on page 68).

2.7 String archiving

String variables can be archived. They are stored in a file consisting of name <short name><Time>.AVS.

This file contains only data of strings and have a logical link with the ARX file. In the ARX file the information whether a sting archive has to exist or not, is stored.

Info

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, data from the ARX file are not loaded.

The string data are stored in Unicode with dynamic data length. This happens 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. Expections where strings are 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.

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.

The readjustment can either be done manually with the data base administrator tool (e.g. Manager Studio for MS-SQL Server) or in the archive settings. For all affected archives: in the Editor, open the Save tab and amend the table using "Create table".

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

> *In general, the size of the data field is as large as the longest string variable in the archive. When archiving system driver variables, note that the string length here 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.*

2.8 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: lot name, start and stop times.

Attention

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

2.9 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!

Info

General (on page 8)

PLC data format (on page 9)

Header description (on page 10)

Type description (on page 11)

2.10 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:

Parameter	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**.

2.11 Functions

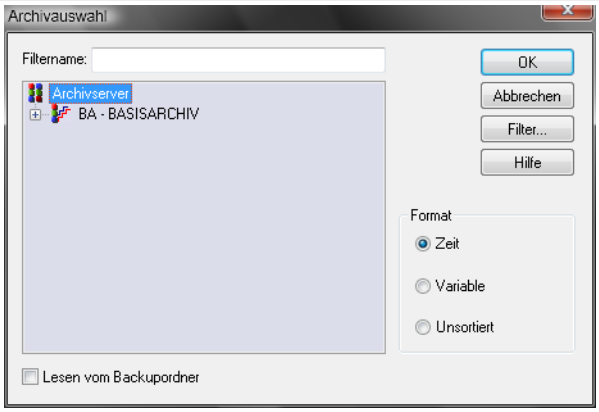
In zenon there are several functions to control the archiving.

2.11.1 Screen switch - archive revision

The filters can be preconfigured in the Editor for activating a screen of the screen type Archive revision (on page 68) (defined archive; archive with preselected status bits).

Info

The filter settings can be changed in the Runtime.



Configurable options are:

Parameter	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.

Info

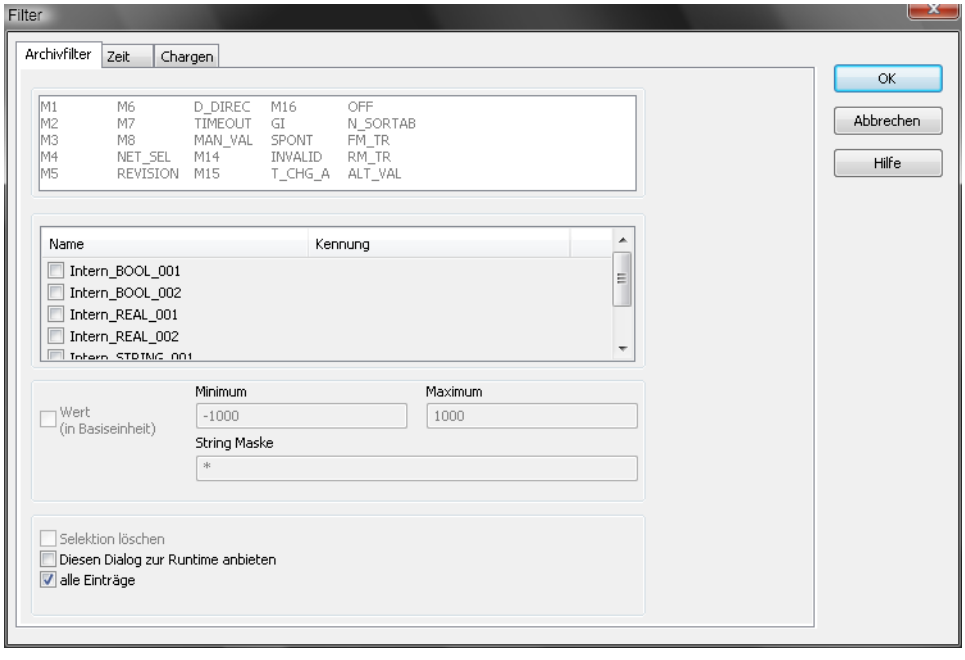
Take care that the desired evacuated archives are first copied to the readback folder before you can access them via `Read from Readback folder`.
At the evacuation archives are saved in folder ***`Evacuated archives`****. This folder does not comply with the readback folder.*
You can define the folders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

Filter

The option filter opens a dialog with three tabs:

- Archive filter
- Time
- Lots (on page 48)

ARCHIVE FILTER



Configurable filters and combinations:

Parameter	Description
`State`	filtered according to certain status bits
`Variable`	variables from selected archive which should be activated; mark variables with mouse click
`Value (Minimum, Maximum)`	filtering of all archive values and their technical values between a minimum and maximum

Please note the memory limits (maximum size of representation) defined in the screen type Archive revision (on page 68) for editing archives.

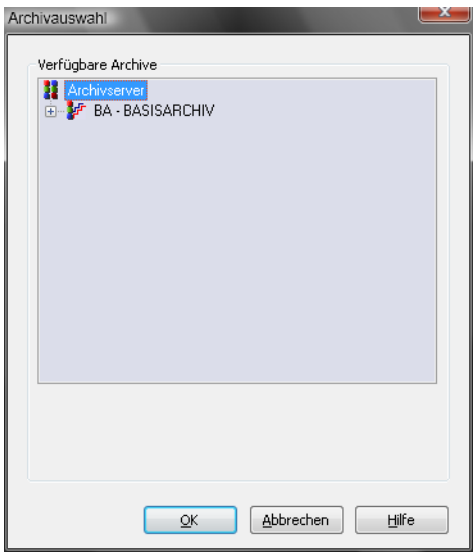
'**`Status`**', '**`Variables`**' and '**`min/max`**' can only be selected if the '**`All properties`**' option is not activated in the **`Filter`** dialog.

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

2.11.2 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]).

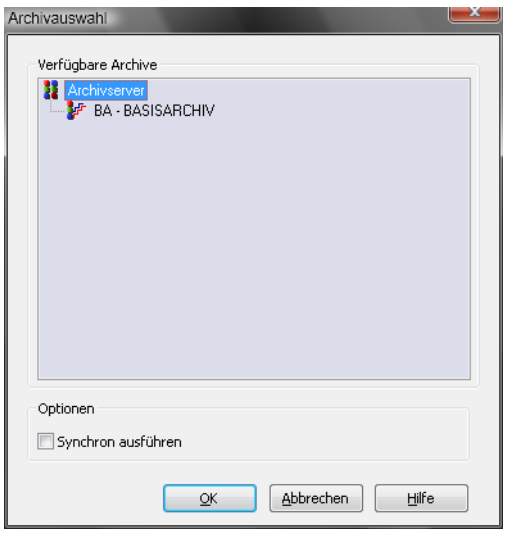
Attention

Attention: *If starting and stopping of the archive is defined via Start/End of the Runtime (on page 26), the manual starting or stopping of archives via functions can lead to undesired behavior of the Runtime.*

2.11.3 Index archive

This function executes a later indexing of lot archives. (on page 47). 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.



Parameter	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.

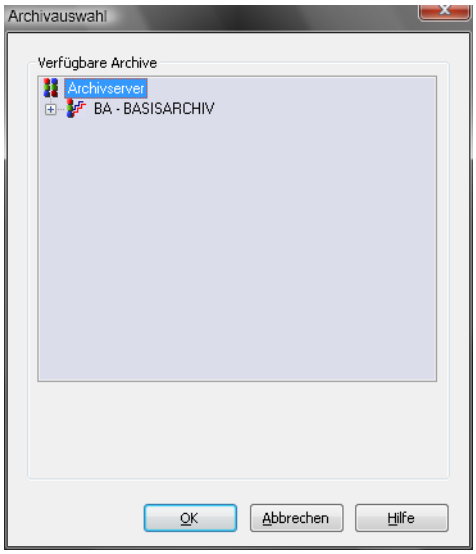
Info

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

2.11.4 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.

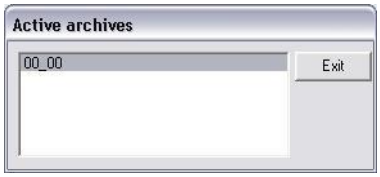
Give the archive's short identifier in the function administration after the system function as the transfer parameter (e.g.: Start an archive [01]).

Attention

Attention: *If starting and stopping of the archive is defined via Start/End of the Runtime (on page 26), the manual starting or stopping of archives via functions can lead to undesired behavior of the Runtime.*

2.11.5 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.



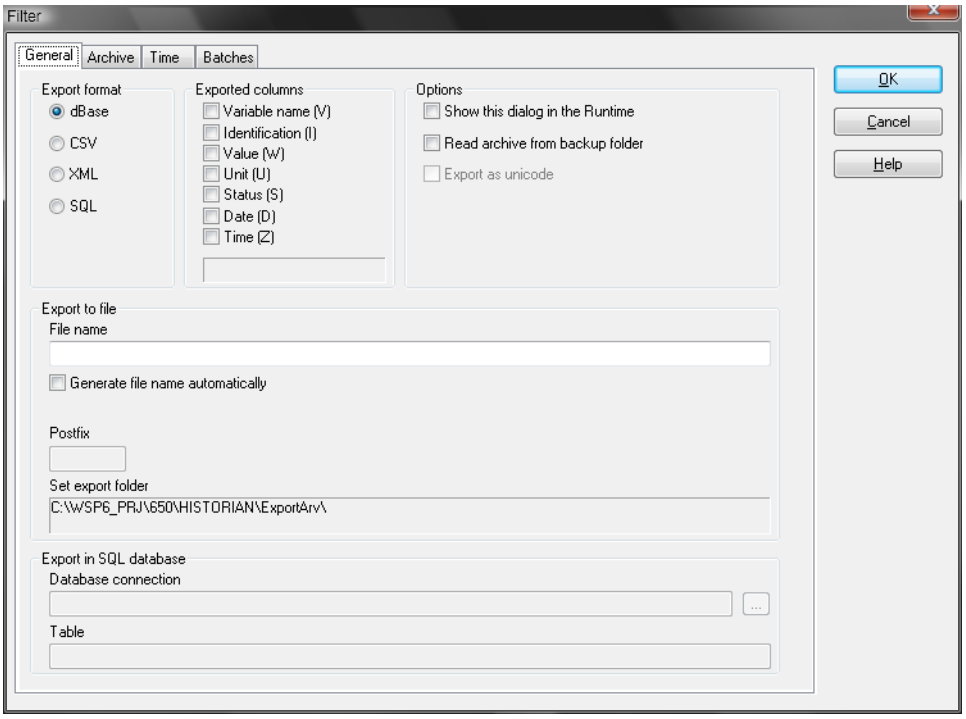
2.11.6 Export archives

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:

Parameter	Description
General (on page 61)	In this tab you can define: ▸ Export format ▸ Columns to be exported ▸ Options ▸ Export file
Archive (on page 64)	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

> **Info**
>
> *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.

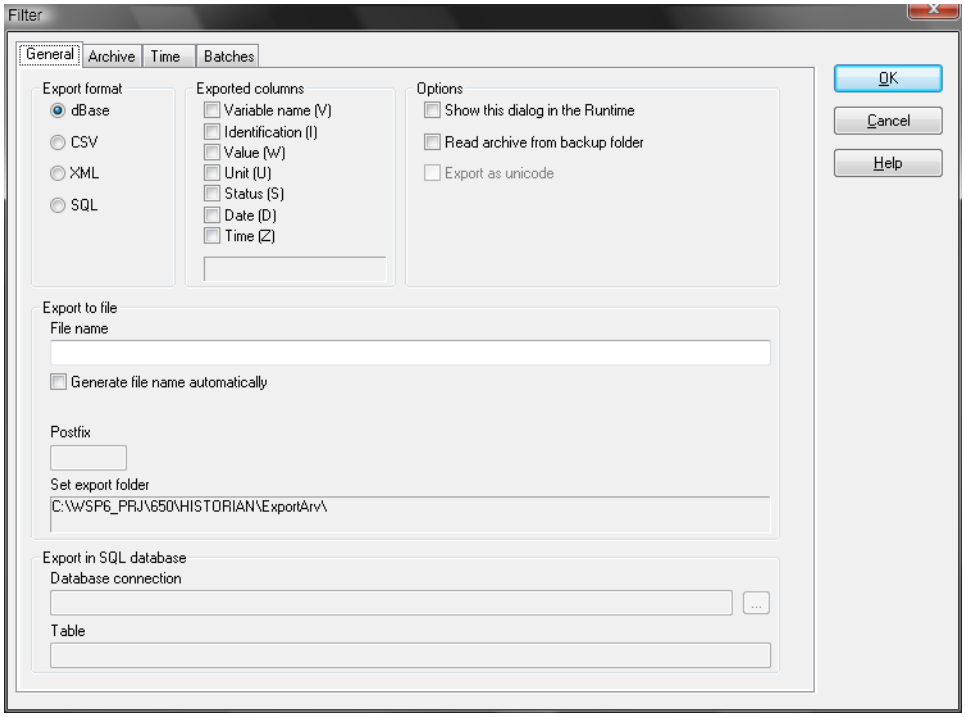
> **Attention**
>
> *If files are created in the Historian which exceed either the reserved memory in the project.ini or the 10% rule, these files cannot be read in.*

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 condense type for following archives were saved in column variable name. Take care that incompatibilities can occur at the XML export of older versions compared to the current version.

General

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



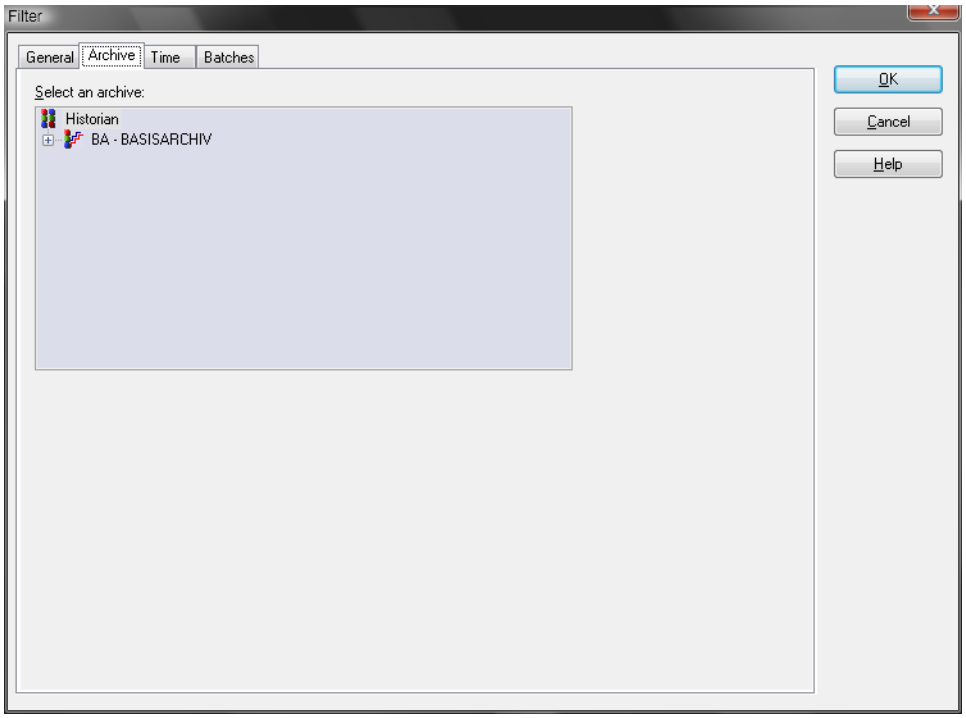
Parameter	Description
Export format	
dBase	dBase IV - file (*.dbf) **Attention:** DBF files must: ▸ conform with there name to the 8.3 DOS format (8 alphanumeric characters for name, 3 characters for extension, no space) ▸ be stored near the root directory
CSV	CSV text file (*.txt) Structure (–> stands 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
J	Year (one-digit: 1..9, A, B, C, ...)
M	Month (one-digit: 1..9, A, B, C, ...)
T	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
Set export folder	Display of the defined export path. You can change it via menu item *File -> Standard configuration -> tab Standard Path exported archives*.
Export in 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.

Archive

Indicate the archive which will be exported after file configuration.



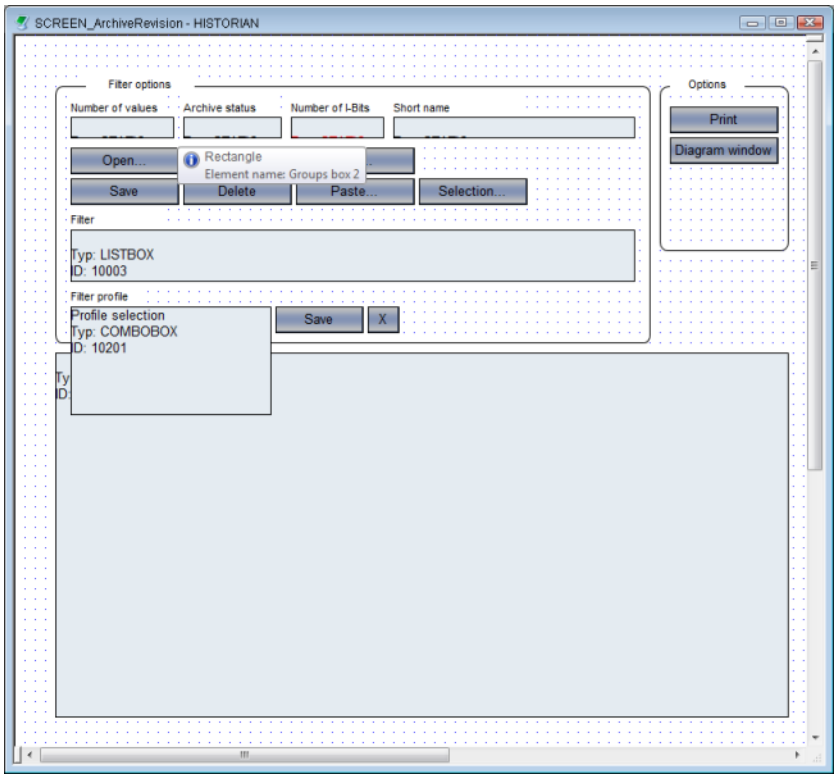
Info

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').

2.12 Operation in the Runtime

In the Runtime the Screen type Archive revision (on page 68) is opened with a function call (e.g. button). The online mask of the screen predefined in the editor is opened.



The possible online operations are:

Parameter	Description
Open	Open another archive and set the filter conditions
Close	Close currently open archive
Save	Save changed archive and update sequential archive on request
Edit	Edit selected archive entry. Change value, status change according to "Manual value"
Insert	Insert archive entries into the corresponding archive files. If no archive files exist for this time range then no
Delete	Delete archive entry.
Select	Selection of several archive entries and marking of these entries for editing mode.
Window	A dialog for the display of the archive revision list is opened. Here the column widths for the display and the
Print	Print out of the opened archive information

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 stored in the installation path.

Key words	
– @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

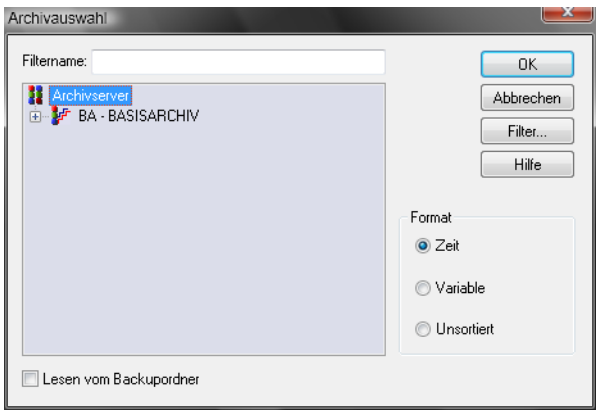
```
ARV_G.FRM

    @HEADZEIT @ARCHIVNAME
    Page: @SEITE      ----------

    Date/time   TTA            Value      Unit     Condition text    Status
      ------------------------------------------------------------------------------------------
    %%
      @DATZEIT  @KANALNAME  @WERT  @EINHEIT  @AMELDUNG  @STATUS
      %%
```

The buttons are released and locked according to their function. Above the buttons are fields with the displays for:

Parameter	Description
Archive name	Short identifier of the currently open archive
Number of entries	Total number of entries shown of the process variables (after filter condition!)
Number I bit	Number of archive entries with INVALID status

The filter list box can be used as a total overview for the set filter and of the editing condition.

Should an archive be opened other than the one placed in the function then, by pressing the 'Open' button, the archive selection mask with the settings for sorting and filter conditions can be opened.



If an archive is open and displayed then the archive values can be changed.

2.12.1 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).

Control elements are:

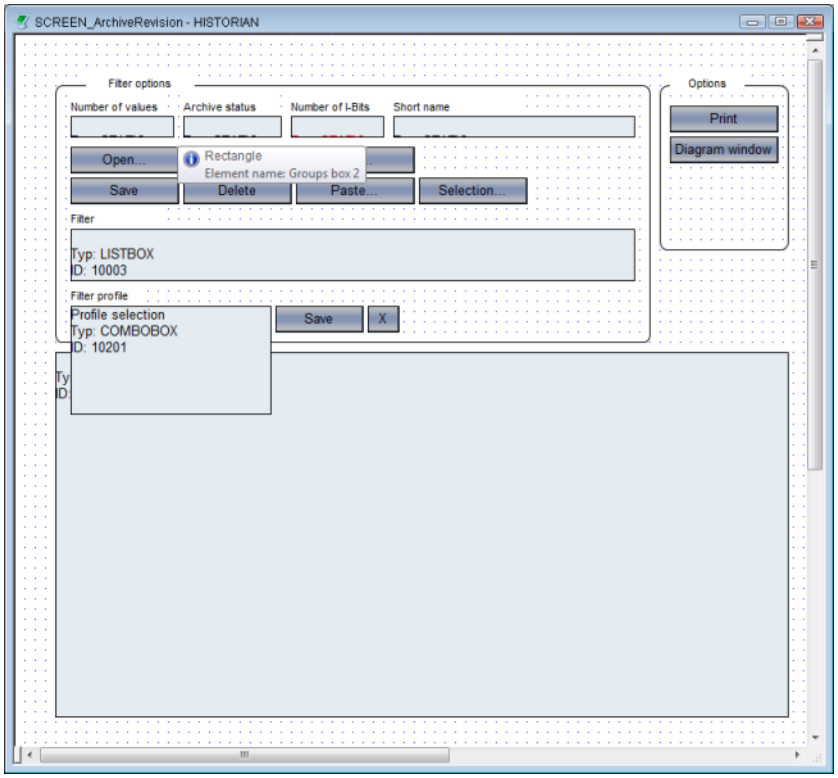
Parameter	Description
Add template	Opens the dialog for selecting a template for the screen type. Templates are shipped together with zenon and can also be created by the user. Templates add pre-defined control elements to pre-defined locations in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and dragged onto the screen. Elements can be moved on the screen and arranged individually.
Buttons	pre-defined control elements
Open	Display new archive
Close	Close current archive
Save	Save changes to archive
Edit	Edit selected value(s)
Insert	Insert new values in archive
Delete	Delete values from archive
Select	Set filter criterion for marking
Columns	Column setting
Print	Print display
Lists	
Archive list box	Display of the archives
Filter list box	Display of the filter criterion
Display	
Set filter	Displays the status of the current time filter in Runtime.
Number of values	Read values
Number INVALID	Read values which are marked with INVALID bit (status bit)
Display short des.	Display short description of archive
Active archives	Current processing state of archive (active, inactive)
Profiles	Profile administration

Profile selection	Select saved profile
Save	Save settings as profile
Delete	Delete profile

Info

A decimal value can be entered with either a comma , or a point . as a decimal separator; it will automatically be changed to a ***point****.*

By selecting the **Add template** in the **control elements** drop-down list, all control elements are loaded with standard values at pre-defined positions.

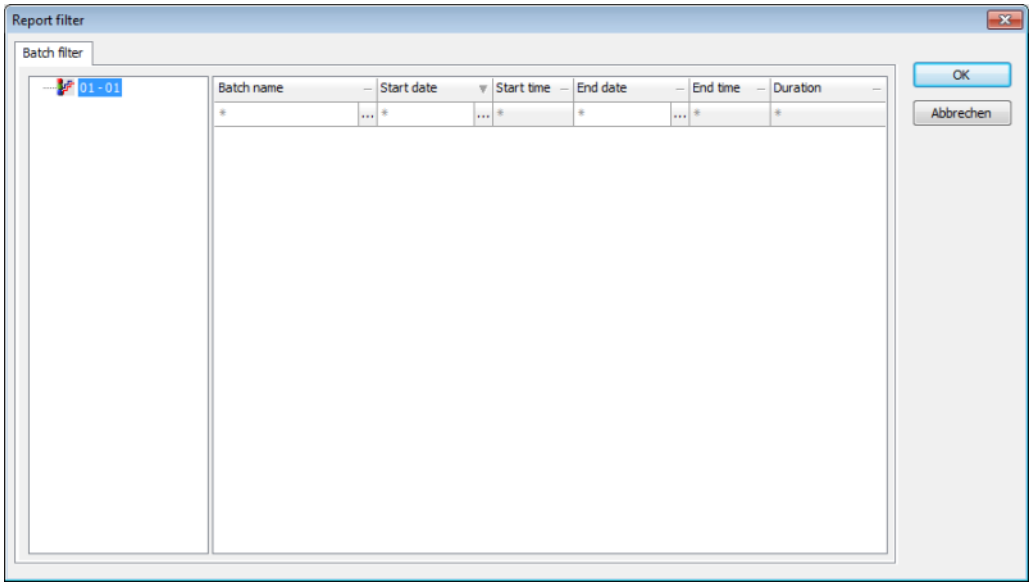


Changes to the control elements in respect of size, orientation and arrangement as well as the user font which is used are possible. The set font is shown only during on-line operation. Elements which are not needed in the on-line display or must not be present can be deleted from the screen (e.g. play, stop, refresh, etc.). The addition of other dynamic screen elements and vvector screen elements is also possible.

The activation of the screen with the archive editing function in on-line operation is made by using the function Screen switch - Archive revision (on page 53)

Filter for screen switch

If you switch to a screen of type Historian the following filter is displayed. If you set option `no time filter` as time filter type, all Runtime entries since 1. 1. 2000 are displayed.



Parameter	Description
Lot filter	On the left side you can choose the desired archive from the available archives. On the right side the available lots are displayed. You can filter the lots there.
Lot name	In this column the names of the available lots are displayed. By left clicking the top part of the header, the lots are sorted alphabetically in an ascending or descending order. In the bottom part of the header you can enter a character string. Only lots matching the respective character string will be displayed.
Start date	In this column the start date of the available lots is displayed. By left clicking the top part of the header, the lots are sorted in an ascending or descending order. Lots with the same start date are sorted according to their start time. In the bottom part of the header you can enter a start date manually or use the displayed calendar.
Start time	Only available if you entered a start date. In this column the start time of the available lots is displayed. By left clicking the top part of the header, the lots are sorted in an ascending or descending order. In the bottom part of the header you can enter the start time manually. Note: '*' means 12:00:00 AM o' clock.
End date	In this column the end date of the available lots is displayed. By left clicking the top part of the header, the lots are sorted in an ascending or descending order. Lots with the same end date are sorted according to their end time. In the bottom part of the header you can enter an end date manually or use the displayed calendar.
End time	Only available if you entered an end date. In this column the end time of the available lots is displayed. By left clicking the top part of the header, the lots are sorted in an ascending or descending order. In the bottom part of the header you can enter the end time manually. Note: '*' means 11:59:59 PM o' clock.
Duration	This column displays the duration for each available lot. It is only for display.

Info

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

Info

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.

2.12.2 Working with the Archiving function

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

Parameter	Description
Archive: Start (on page 57)	Start the archive created in the editor
Archive: Stop (on page 55)	End the archive created in the editor
Archive: List of active archives (on page 58)	Inspection window for the representation of the currently running archives
Index archive (on page 56)	Subsequent indexing of Lot archives (on page 47).

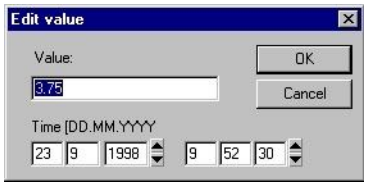
Info

The running archive writes the recorded data into an alpha archive (kk.ARX; kk - short identifier of the archive). If the archive is ended via the system (function Stop archive (on page 55)), the file is copied to another name. If the online operation is terminated

without definition (power failure) then the alpha archive remains. If the archive is configured as a cyclic archive, then on restarting the Runtime it is filled in with default values for the missing area in the current interval. If no value was transferred, the defined alternate value is used otherwise the last valid value is used. Existing entries are not overwritten.

Edit values

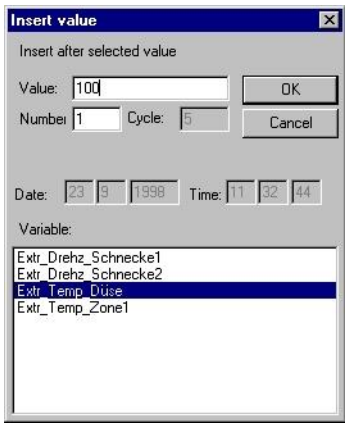
The entries of the archive values can be changed by double clicking on a value field or by pressing the button **Edit** for selected values. The input of the new value is requested.



If one or more values were changed then the status of the entry is extended to Manual value. At the same time the color in the column heading turns from blue to red and the button **Save** is released. The marking is withdrawn.

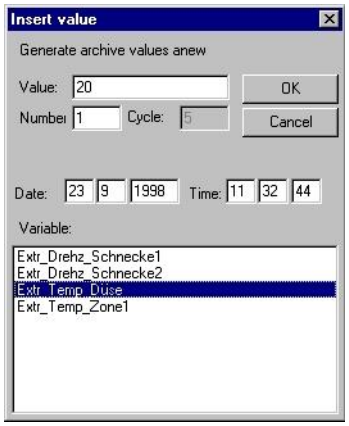
Filling in values

For the filling of closed, inactive archives with missing values the button **Insert** has to be pressed. The input mask is opened.



- If an archive entry is marked then the number of values and the value for process variable to be selected from the archive can be given. On insertion all entries get the same time stamp.

- If no entry is marked then, beside the value and number, the starting time for the filling in and the cycle (in seconds) can be defined.



If one or more values were changed then the status of the entry is extended to Manual value. At the same time the color in the column heading turns from blue to red and the button **Save** is released. The marking is withdrawn.

Delete values

If one or more archive entries are to be deleted from the archive then the lines are to be marked with the mouse or the button **Selection**, and the button **Delete** is to be pressed. A query mask is opened.

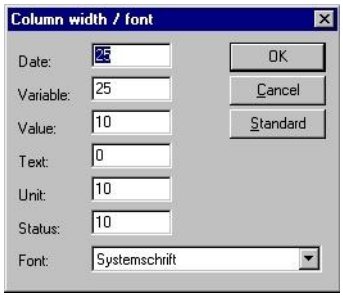
If the value should finally be deleted then the button **Yes** is to be pressed, otherwise the button **No**.

Store values in archive

Current and unsaved changes in the archive are symbolised by a red heading. The values are stored in the archive after selecting the **Save** button. If following archives are assigned to the currently edited archive, the following archives (on page 44) are automatically updated.

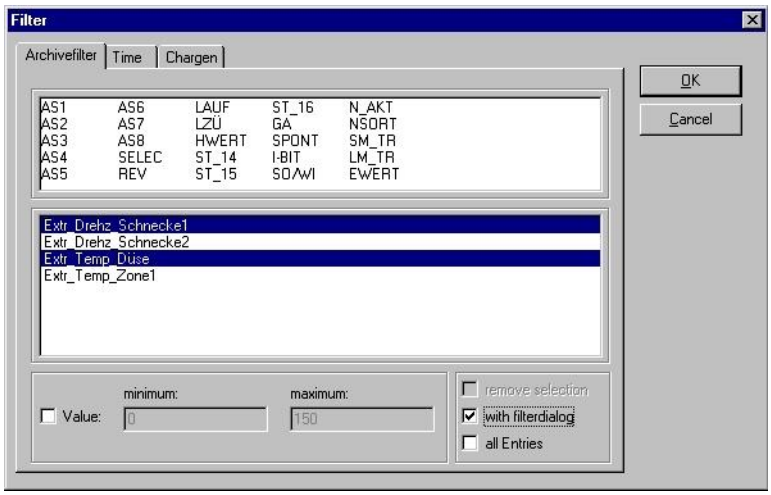
Define list representation

For the formatting of the list output in online operation the button **Window** can be pressed.



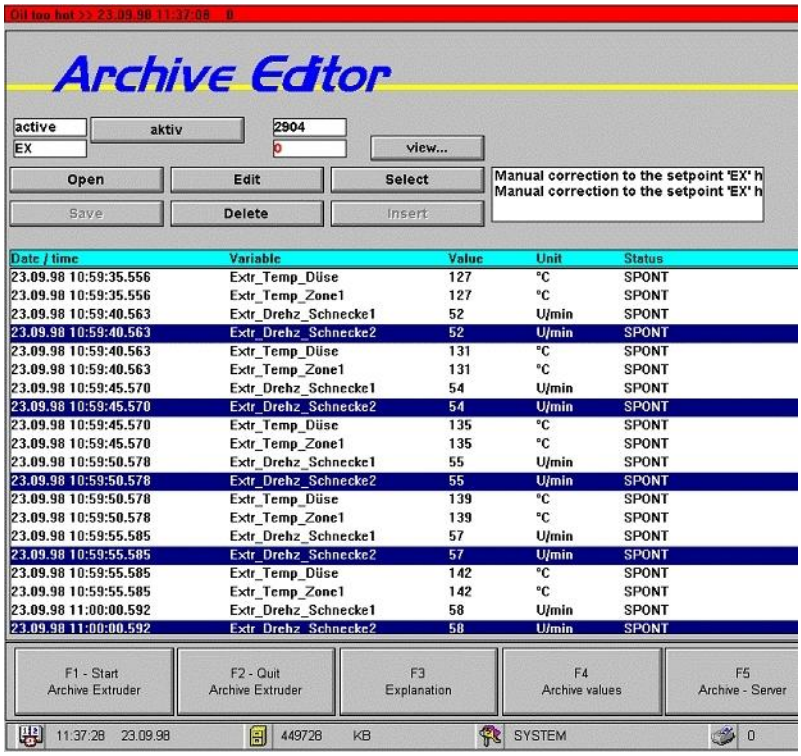
Multiple selection of values

For the multiple selection of value entries the **Selection** button is pressed.



The check box all entries suggests all variables. Activating the check box deactivates the variable selection and impacts the time filter.

During Runtime after definition of the filter conditions, the archive entries have a dark background.



If the markings should be reset then the option No entry is to be set in the Selection mask.