zenon
by COPA-DATA

zenon manual

Import - Export

v.8.20

Contents

1 Welcome to COPA-DATA help

ZENON VIDEO TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel (https://www.copadata.com/tutorial_menu). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

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.

PROJECT SUPPORT

You can receive support for any real project you may have from our customer service team, which you can contact via email at 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.

2 Import - Export

Parts of a project (e.g. functions,variables, screens, etc.) can be imported to zenon or exported from zenon. Thus you can use, save or edit externally elements in other projects.

3 General

The exported data can then be edited externally and be imported into the same or another project.

Attention

Limitations:

- Formulas:
  Import and export via CSV or dBase does not support driver-specific variable settings, for example no formulas. Export and import these via XML.
- XML and backward compatibility:
  there is no backward compatibility with XML import/export. Data from older zenon versions can be taken over. The handover of data from newer to older versions is not supported.

The following functionalities of a project are available for import/export:

- Variable definition
  - Data Types
  - Reaction Matrices
  - Allocations
- Screens
  - Frames
  - Fonts
- Functions
  - Script - Functions
- Historian
- Standard recipes
- Recipegroup Manager
- Time Control
- Interlockings
- Menu administration
- User Administration
- Categorization (on page 14)

Here either all objects of one type or only selected objects can be exported.

- *All objects:*In the Project Manager, click on the desired node -> context menu **Export all as XML**
- *Individual objects:*Select one or more objects in the detail view ->**Export selected as XML**

On exporting/importing the objects are identified by their names not by their internal IDs, i.e.if objects are imported into another project, they do not have the same internal IDs there!

A progress bar shows the respective status for import/export.

Attention

If an element in the project and in the import file have the same name, then the element in the project is overwritten by the element from the import file. (The only exception are the data types.)

The properties of the objects are listed in the export file with their internal name, that is also used for the access from VBA.

The properties are described in detail in the properties help of the Editor.

Properties that do not exist in the import file (e.g. because they were deleted), are filled with default settings for elements that do not exist in the project and are newly created. If the elements already exist in the project, the missing properties stay unchanged.

Example

A variable first is imported without the offset. So the offset is initialised with the default value 0. With the S7 import the offset is changed to 100. Later the variable is imported again, the offset in the import file still missing. So the offset 100 stays unchanged.

Attention

The XML file to be imported has to be consistent. There is no plausibility check on importing the file. If there are errors in the import file, this can lead to undesired effects, even crashes.

Particular attention should be paid to properties that are not available in the XML file: Missing properties are replaced with default values during import! E.g.: A binary variable has a limit value of 300.

4 Archives

The export file for the archives has the following sections:

Archive list

On exporting/importing archives the linked variables or functions are not automatically exported/imported. You have to care, that the needed variables or functions are exported/imported before. Either all archives at the same time or selected archives can be exported/ imported.

5 Screens

EXPORTING SCREENS

The included variables (on page 16) and functions (on page 13) are exported with the screens. The export file for the screens has the following sections:

- Screens
- Frames
- Symbols
- Variables
- Functions

To export screens:

1. highlight the desired screens
2. In the context menu of the detail view, select the **Export selected as XML...** command
   Alternatively: in the context menu of the **Screens** node, select the **Export all as XML** command
3. the selection dialog for the saving location is opened
4. select the desired saving location
5. assign a name
6. pay attention to file type XML
7. confirm by clicking on the **Save** button

The selected screens are exported to an XML file and can be imported in this or in other projects at any time.

IMPORTING SCREENS

To import screens:

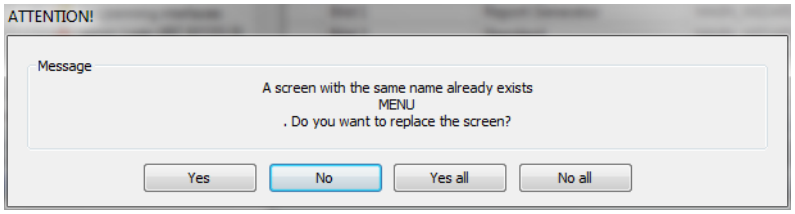
1. in the context menu of node **Screens** or in the detail view **Screens** select the **Import XML** command

2. the selection dialog for the saving location is opened
3. navigate to the saving location of the desired XML file
4. Select the desired file
5. confirm the import by clicking on the **Open** button

The screens are imported.

NAME CONFLICTS DURING THE IMPORT

At the import of a screen the name (attribute **ShortName**) which is stored in the XML file is used for the name of the screen which is created. If a screen with the same name already exist, the import is halted and an error message is displayed:



Parameter	Description
Yes	The screen described in the error message is replaced by the screen from the XML file at the import. If a new conflict occurs, the error message is displayed again.
No	The screen described in the error message is not imported. The existing screen is maintained. If a new conflict occurs, the error message is displayed again.
Yes, all	The screen described in the error message is replaced by the screen from the XML file at the import. This setting is used automatically when errors due to using the same name occur. All affected screen are replaced.
No, all	The screen described in the error message is not imported. The existing screen is maintained. This setting is used automatically when errors due to using the same name occur. All affected screen are maintained.

Note: Only the **ShortName** is used. The file name does not matter for the name of the screens which should be imported. Thus it cannot be used to solve the conflict.

VARIABLES AND FUNCTIONS IN SCREENS

Dynamic elements and Frames are automatically imported together with the screens. Variables and functions have to be imported manually before from the same file.

Only variables and functions of the first level are treated, i.e. variables and functions that are directly linked to the screen. As on the one hand variables can be linked to functions (e.g. setting values) but

on the other hand functions can be linked to variables (e.g. limit value functions), it can be necessary to first import the variables, then the functions, and then the variables again. Then all links should work correctly.

Example: A screen contains a button with a function **Send value to hardware** to a variable. The function is imported with the screen but not the variable.

Information

Here we recommend using the XML Import Wizards.

5.1 Frames

Frames can be imported/exported independently from the screens.

The frames are exported with the original coordinates (depending on the resolution of the source computer) When importing the frames, you have to be aware, that they are not automatically adapted to the resolution of the target computer.

5.2 Fonts

When exporting fonts, the following is exported:

- Font list
- Fonts

All these data are automatically imported with the fonts.

5.3 Symbols

Import/export of symbols is possible from the project and the global symbol library. Single or selected symbols or the entire library can be imported or exported. The path for the export can be defined freely.

EXPORT SYMBOLS

To export symbols:

1. highlight the desired symbols
2. Select the **Export selected as XML...** command in the context menu of the detail view**.** Alternate: select in the context menu of the **project symbol library** node, the **Export all as XML** command
3. the selection dialog for the saving location is opened

4. select the desired saving location
5. assign a name
6. pay attention to file type XML
7. confirm by clicking on the **Save** button

The selected symbols are exported to an XML file and can be imported in this or in other projects at any time.

IMPORT SYMBOLS

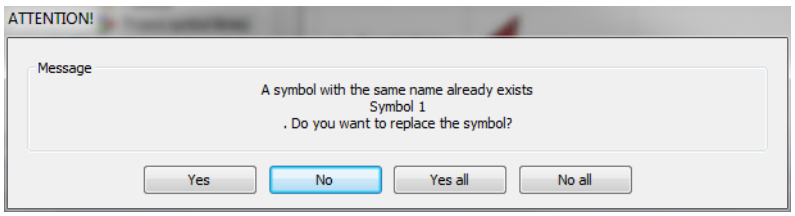
To import symbols:

1. in the context menu of the node or the detail view of the **Project symbol library** or in the detail view of the **Global symbol library** select **Import XML...** command
2. the selection dialog for the saving location is opened
3. navigate to the saving location of the desired XML file
4. Select the desired file
5. confirm the import by clicking on the **Open** button

The symbols are imported.

NAME CONFLICTS DURING THE IMPORT

At the import of a symbols the name (attribute **ShortName**) which is stored in the XML file is used for the name of the symbol which is created. If a symbol with the same name already exist, the import is halted and an error message is displayed:



Parameter	Description
Yes	The symbol described in the error message is replaced by the symbol from the XML file at the import. If a new conflict occurs, the error message is displayed again.
No	The symbol described in the error message is not imported. The existing symbol is maintained. If a new conflict occurs, the error message is displayed again.
Yes, all	The symbol described in the error message is replaced by the symbol from the

Parameter	Description
	XML file at the import. This setting is used automatically when errors due to using the same name occur. All affected symbols are replaced.
No, all	The symbol described in the error message is not imported. The existing symbol is maintained. This setting is used automatically when errors due to using the same name occur. All affected symbols are maintained.

Note: Only the **ShortName** is used. The file name does not matter for the name of the symbol which should be imported. Thus it cannot be used to solve the conflict.

6 Users

The export file for the users has the following sections:

User List

Locally users, that have been created in the project, can be exported/ imported.

> **Attention**
>
> User passwords are exported encrypted! Therefore, they cannot be changed directly in the export file.

7 Data Types

See also chapter: Import of variables and datatypes (on page 18).

7.1 Creating data types manually

> **Attention**
>
> Only for experts

If a data type should be entered in the XML file manually, the following definition should be used:

Information

<Apartment ShortName=' *zenon(R) type list*' Version=' *0x00000000*' >
<Type TypeID=' *3*' IsComplex=' *FALSE*' >
<Name>UINT</Name>
</Type>
</Apartment>

The other properties of the data type definition should be left out.

8 Functions

On exporting/importing functions the linked variables, etc. are not automatically exported/imported. You have to care, that the needed objects are exported/imported before.

Information

From zenon version 6.50 and above, time information is saved in an XML based function in UTC (seconds from 01.01.1970, 00:00 am). This affects, for example, functions such as screen switching on the following screen types:

- Alarm Message List
- Alarm Message List Filter
- Archive revision
- Chronological Event List
- Chronological Event List Filter
- Extended Trend
- Production & Facility Scheduler
- Report
- Time filter

For versions of zenon older than 6.50, this information is saved on a string based format (for example 02.01.1970 01:00:00).

8.1 Scripts

The export file for the scripts has the following sections:

Script list

On exporting/importing scripts the linked functions are not automatically exported/imported. You have to care, that the needed functions are exported/imported before.

Each script has its own section in the export file containing the script's name and the names of the linked functions.

9 Categorization

Categories and CEL entries can be exported and imported by means of XML.

XML EXPORT

To export objects:

1. Select the desired entries.
2. Select **Export selection as XML** in the context menu or toolbar.
   There is a choice whether to also use the **Export all as XML** entry present in the **Categories** main node and in the module list of the **CEL entries**.

   The dialog to select the save location is opened.
3. Select the save location and enter a file name.
4. Click on **Save**.

The selected entries are saved in the XML file.

XML IMPORT

To import objects:

1. Select **Import XML...** in the context menu or in the toolbar.

   The dialog for selecting a file is opened.
2. Select the file to be imported.
3. Click on **Open**.

The entries are imported according to the import rules.

Note: When importing CEL entries, only the linked categories are transferred. **ID** and **Description** of the CEL entries are not changed.
Exception: Custom CEL entries are imported in full.

IMPORT RULES

The following is applicable for import:

- Entry not present: Entry will be added.
- Entry already present, **ID** and **name**/**description** correspond: Existing entry is overwritten.
- Entry already present, **ID** matches, **name**/**description** are different: Entry is imported.

Entry already present, **ID** is different, **name**/**description** correspond: Entry is not imported.
Exception: With custom CEL entries, entries can have different **IDs** and the same **description**. These entries are therefore imported in this case.

10 Menus

The export file for the menus has the following sections:

Menu list

On exporting/importing menus the linked variables, functions, help pages and macros are not automatically exported/imported. You have to take care that the needed variables or functions are exported/imported before.

11 Reaction Matrices

The export file for the reaction matrices has the following sections:

Reaction matrix list

12 Standard recipes

The export file for the standard recipes has the following sections:

Recipe list
Variable list
Driver list
Data type

Recipe list
list

The included variables are exported with the standard recipes. The recipes are imported automatically. The variables have to be imported manually before from the same file.

In addition to the XML import/export, standard recipes can also be imported in ASCII format.
Attention: With the ASCII import recipes can only be imported singly.

The raw value of the variable is also saved with the recipe. This is used for access via VBA and when exporting recipes via XML

13 Recipe groups

The export file for the recipes of the Recipegroup Manager has the following sections:

- Recipe group list

On exporting/importing the recipe groups and their recipes, the linked variables are not automatically exported/imported. Take care that the needed variables are exported/imported before.

The XML file is based on the recipe groups, i.e. single recipe groups are are imported (with their variables and recipes and recipe values). After an import, existing recipe values, which are not in the import file, will still exist. The same is true for recipes and linked variables.

When importing a single recipe from the recipe group, the following applies: The associated recipe group must be selected. An according message will be shown in the output window.

Information

In addition to XML, the RGM also supports ASCII import of recipes.
Attention: With the ASCII import recipes can only be imported singly.

14 Variables

Variables can be exported and imported with zenon :

- XML (on page 19): Export and Import; during import the files are analyzed and in case of conflicts, solutions are offered
- CSV: Export (on page 38) and Import (on page 30); during import the present data is overwritten

- DBF (on page 54): Export and Import; during import the present data is overwritten
- S7 (on page 40): Import (on page 40)
- TwinCAT Projekt (on page 54): Import

> **Information**
>
> When importing/exporting via CSV, no complex variables (structure variables, arrays) can be imported or exported.

EXPORT

The export file for the variables has the following sections:

- Variable list
- Driver list
- Data type list

Along with the variables the drivers and the datatypes are also exported. See also manual Variables, chapter Export data.

> Attention
>
> A driver is absolutely necessary in the XML file, too; otherwise no variables are imported! Also be aware that the XML file driver settings are project-dependent.

IMPORT

During Import of the variables (on page 18), zenon opens a dialogbox in which the source drivers of the XML file can be allocated to target drivers in the project. All variables of the source driver are then imported as variables of the selected target driver. The data types are automatically imported with the variables. The drivers have to be created in the project before the import. See chapter Import of variables and datatypes (on page 18).

> **Attention**
>
> Changes for variables are collected in a unsorted list. Therefore only one change per variable can be taken over per import. If several changes should be taken over, it must be done via several import processes.
>
> Example: If the same variable is both renamed and deleted in the same import process, the import could lead to a not-deleted but renamed variable in the project.

IMPORT STRUCTURE VARIABLES:

STRUCTURES

Structures which differ from existing ones can be imported in already existing structures. Variables based on this are automatically adapted.

- The structure elements are identified by their name.
- At already existing structure elements the type is adapted if necessary.
- Non-existing elements are added.
- Elements which do not exist in the structure data type are removed.

INACTIVE VARIABLES

At the import of structure variables, active and inactive variables are imported. Existing imports are not overwritten at the import. If an inactive variable is imported to a project and then activated, it stays active even after a new XML import.

14.1 Import and export of variables and datatypes

For the import/export of variables the following is true:

- The import/export must not be started from the global project.
- The start takes place via:
  - Context menu of variables or data typ in the project tree
  - or context menu of a variable or a data type
  - or symbol in the symbol bar variables

> **Attention**
>
> When importing/overwriting an existing data type, all variables based on the existing data type are changed.
>
> **Example:**
>
> There is a data type XYZ derived from the type *INT*with variables based on this data type. The XML file to be imported also contains a data type with the name XYZ but derived from type *STRING*. If this data type is imported, the existing data type is overwritten and the type of all variables based on it is adjusted. I.e. the variables are now no longer *INT* variables, but *STRING* variables.

14.2 XML import

During XML import of variables or data types, these are first assigned to a driver and then analyzed. Before import, the user decides whether and how the respective element (variable or data type) is to be imported:

- *Import*:
  The element is imported as a new element.
- *Overwrite*:
  The element is imported and overwrites a pre-existing element.
- *Do not import*:
  The element is not imported.

Note: The actions and their durations are shown in a progress bar during import. The import of variables is described in the following documentation. Data types are imported along the same lines.

REQUIREMENTS

The following conditions are applicable during import:

- **Backward compatibility**

  At the XML import/export there is no backward compatibility. Data from older zenon versions can be taken over. The handover of data from newer to older versions is not supported.

- **Consistency**

  The XML file to be imported has to be consistent. There is no plausibility check on importing the file. If there are errors in the import file, this can lead to undesirable effects in the project.

  Particular attention must be paid to this, primarily if not all properties exist in the XML file and these are then filled with default values. E.g.: A binary variable has a limit value of *300*.

- **Structure data types**

  Structure data types must have the same number of structure elements.
  Example: A structure data type in the project has 3 structure elements. A data type with the same name in the XML file has 4 structure elements. Then none of the variables based on this data type in the file are imported into the project.

14.2.1 Allocate driver

The command **Import** opens the dialog for driver assignment.

To assign a driver:

1. Highlight the driver in the allocation table.
2. Highlight the desired driver in the list of the current project.
3. Click on **Allocate driver**.

To reassign a driver object type:

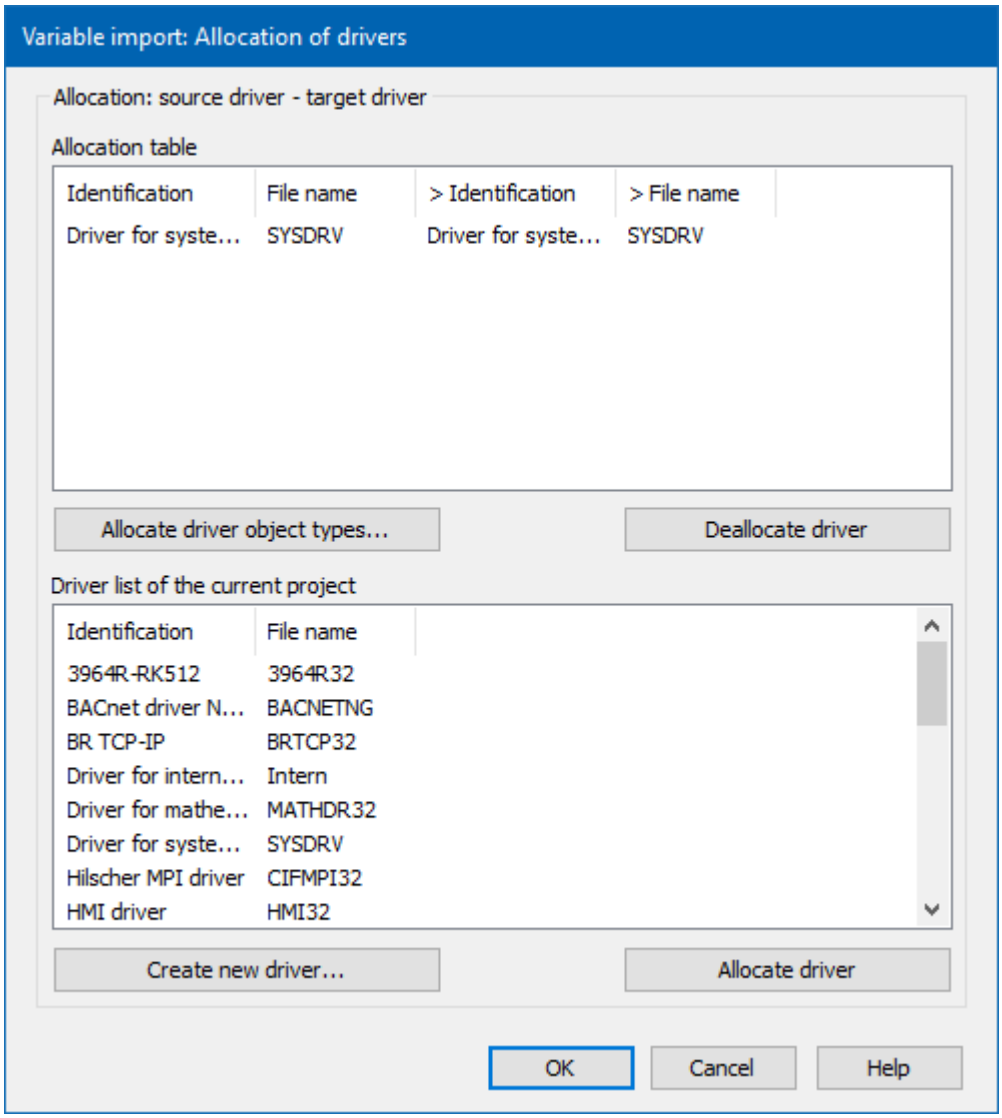
1. Highlight the driver in the allocation table.
2. Click on **Allocate driver object types**.

   The dialog to assign driver object types is opened.

To remove a driver assignment:

1. Highlight the driver in the allocation table.
2. Click on **Remove driver allocation**.

DRIVER ALLOCATION DIALOG



Parameter	Description
Allocation table	Displays the current allocation.
Allocate driver object type	Opens the dialog for allocating the driver object types (on page 22).
Deallocate driver	Resolves existing allocations.
Driver list	Lists all existing dirvers of the project.
Create new driver	Open dialog in order to create a new driver.
Allocate driver	Allocates the selected driver from the driver list to the driver selected from the allocation table.

Parameter	Description
OK	Applies settings, closes the dialog and starts the import.
Cancel	Discards settings and closes the dialog without import.
Help	Opens online help.

CREATE NEW DRIVER

During import, you can create and allocate new drivers by using the button **New driver** In the process, the dialog for Creating and Configuring new drivers is opened.

14.2.2 Allocate driver object type

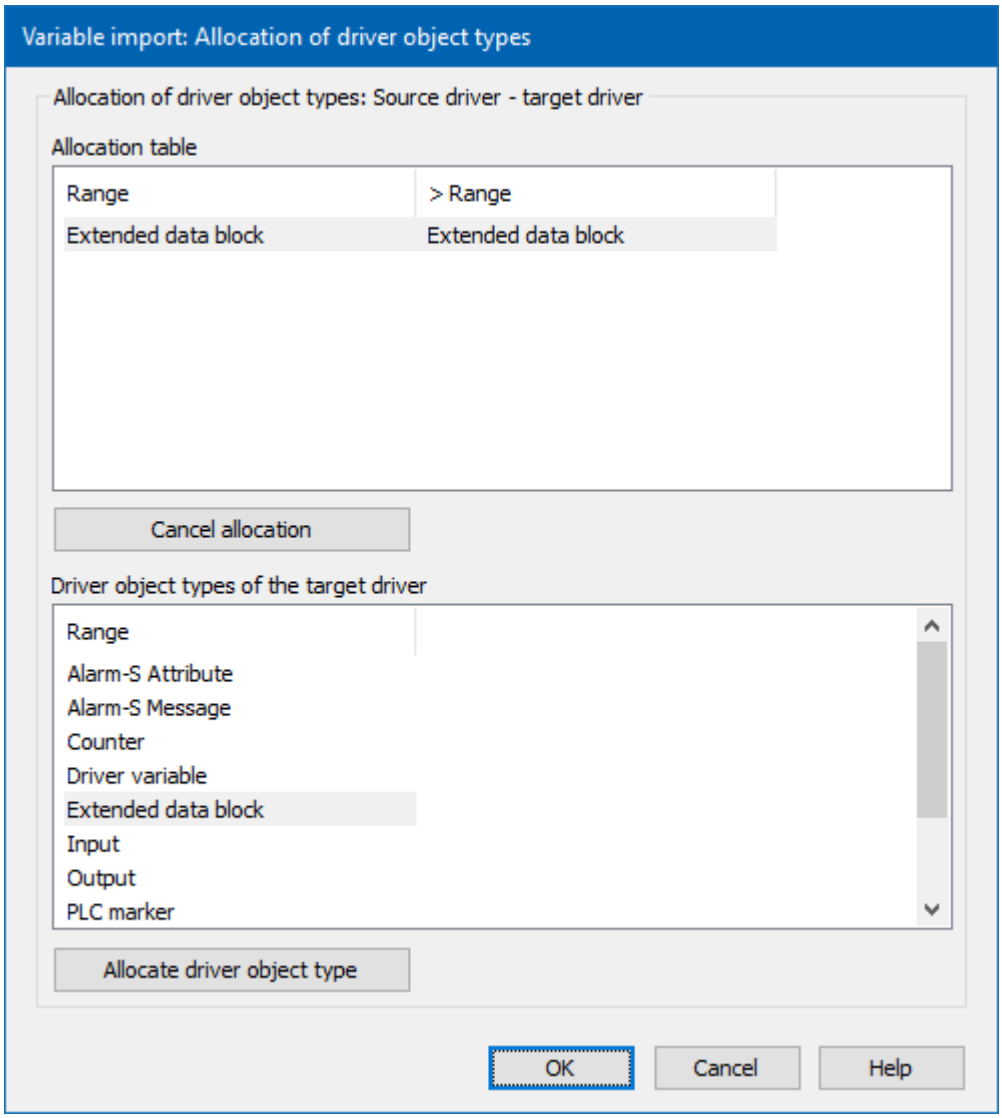
To reassign a driver object type:

1. Highlight the source driver.
2. Select the driver object type of the target driver.
3. Click on **Allocate driver object type**.

To revoke the assignment of a driver object type:

1. Highlight the source driver.
2. Click on **Remove allocation**.

DRIVER OBJECT TYPE ALLOCATION DIALOG



Option	Description
Allocation table	Displays the current allocation.
Cancel allocation	Resolves existing allocations.
Driver object types of the target driver	List of available driver object types.
Assign driver object type	Allocates the selected driver object type of the target driver to the selected driver object type in the allocation table.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

Option	Description
Help	Opens online help.

14.2.3 Import

The status and conflicts are shown before import of the variables.

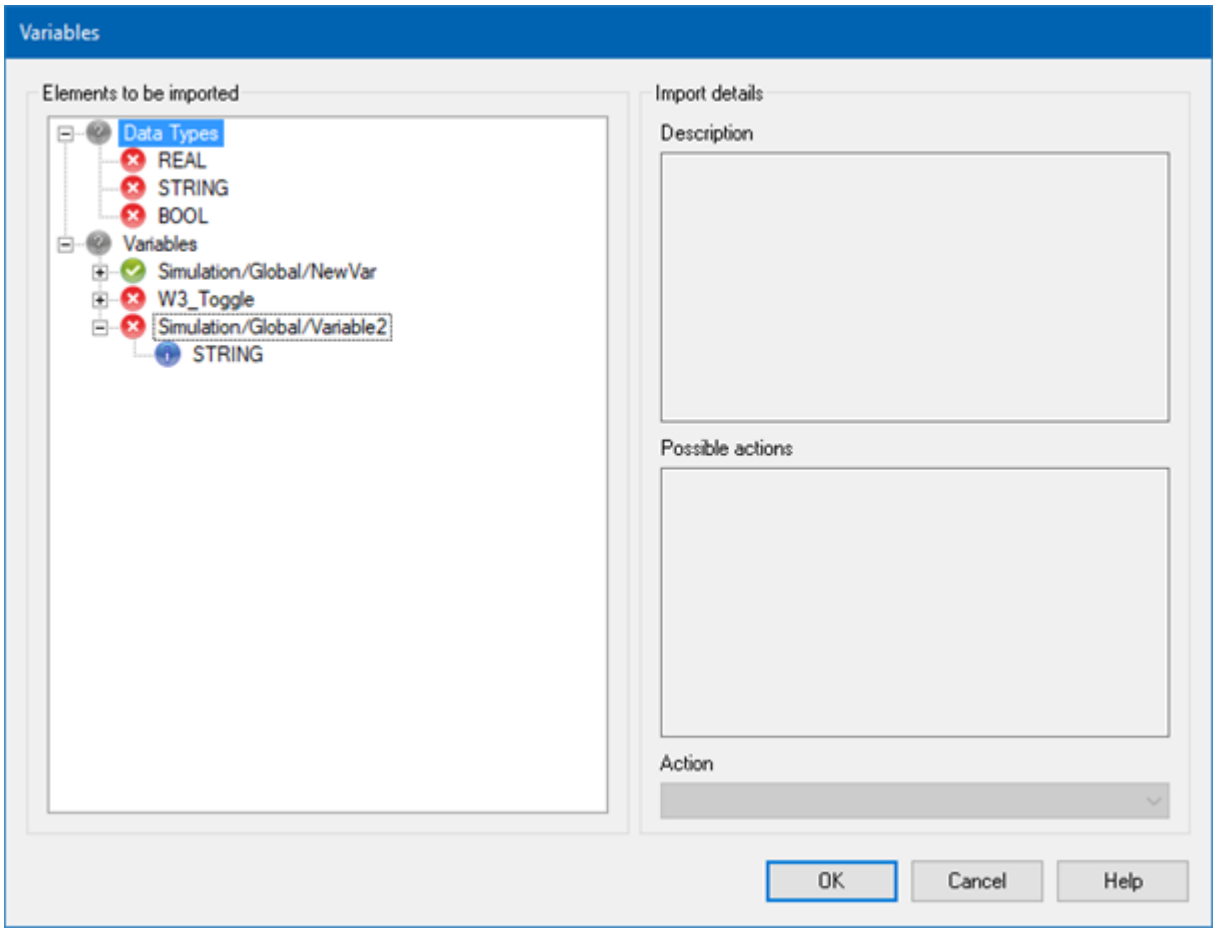
CONFLICTS

The following conflicts can be displayed.

- The data type already exists and the linked variable cannot be converted to the data type you want to import.
- The data type is complex and the elements of the existing one differ from the elements of the one to be imported in number or name.
- The data type is complex and contains the same elements, but the elements differ in their data types, so that a conversion of the linked variables is not possible.
- The variable type cannot imported (see above).
- The variable type differs from the existing one (simple/complex).
- The driver assignment for the variable is incorrect (the assigned driver does not support the corresponding datatype and/or the respective area).

14.2.3.1 Variable import dialog

When importing variables, a dialog is called up in which you can select actions for the behavior when importing.

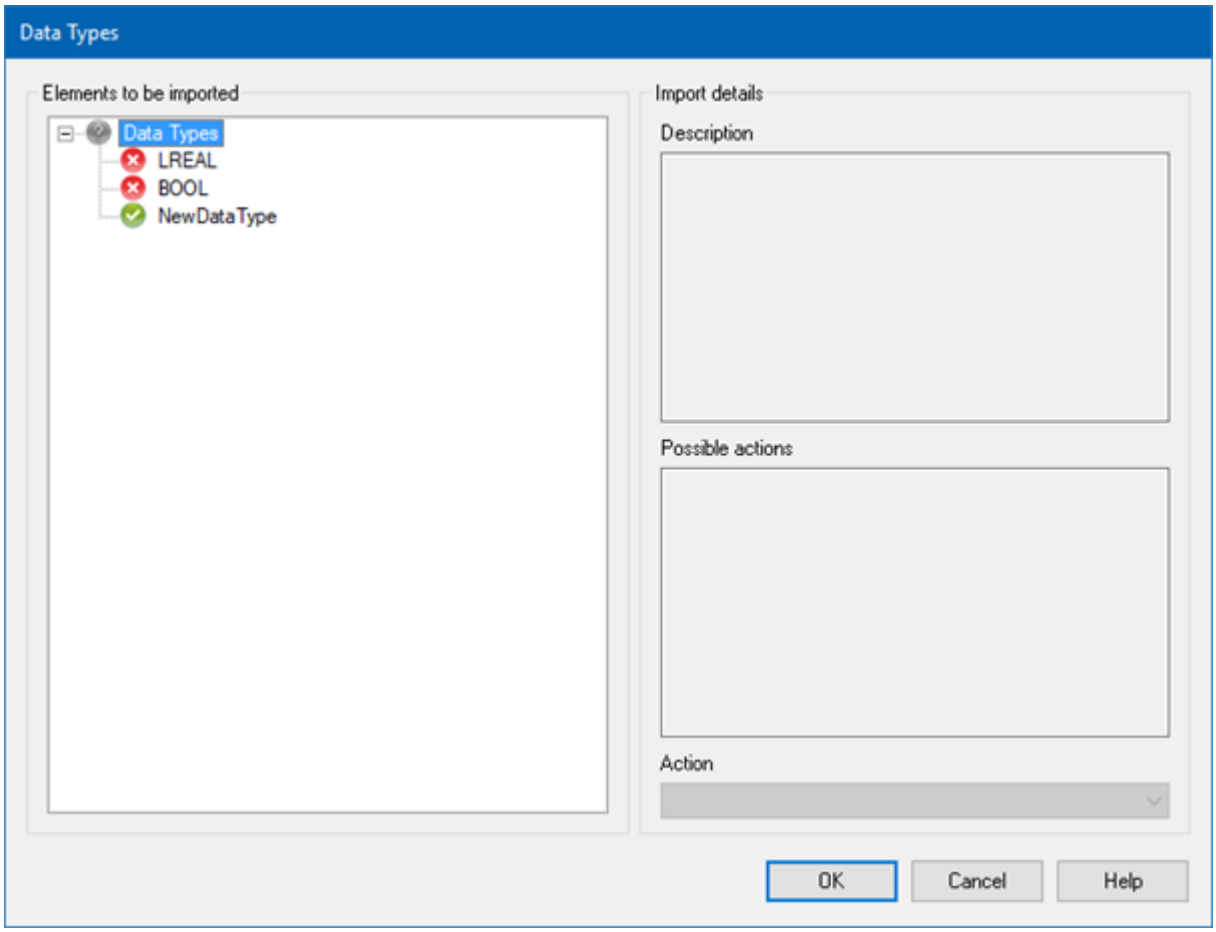


Option	Description
Elements to be imported	List of elements which should be imported. For complex variables, the according simple variables are shown. Structured types can be expanded, the elements of structure datatypes are displayed for information purposes. Symbols show the import status. ▸ **Green**: The element can be imported. ▸ **Blue**: A conflict must be solved. For example: The data type of the variable cannot be imported. ▸ **Yellow**: There is a conflict. The element is imported and overwrites a pre-existing element.

Option	Description
	For example: There is an element with the same name but different settings. Or there is an identical element. ▸ **Red**: There is a conflict. The element is not imported.
Import details:	Describes the import status and offers solutions in the event of conflicts.
Description	Describes the element status.
Available actions	Describes the available actions.
Action	Selection of desired action from drop-down list. If only one action is possible, it is preselected and cannot be changed. Available actions: ▸ *Import*:The element is imported. Is available if the variable or the data type does not yet exist in the project. The element is created in the project. ▸ *Do not import*: The element is not imported. Is available if the variable or the data type already exists. ▸ *Overwrite*: The element is imported and overwrites a pre-existing version. Is available if the variable or the data type already exists and can be overwritten.
OK	Accepts selected actions, closes the dialog and imports the respective selected variables.
Cancel	Discards the entry and cancels the import of the variables.

14.2.3.2 Data type import dialog

When importing data types, a dialog is opened in which you can select actions for the behavior when importing.



Option	Description
Elements to be imported	List of elements which should be imported. Symbols show the import status. ▸ **Green**: The element can be imported. ▸ **Yellow**: There is a conflict. The element is imported and overwrites a pre-existing element. For example: There is an element with the same name but different settings. Or there is an identical element. ▸ **Red**: There is a conflict. The element is not imported.
Import details:	Describes the import status and offers solutions in the event of conflicts.

Option	Description
Description	Describes the element status.
Available actions	Describes the available actions.
Action	Selection of desired action from drop-down list. If only one action is possible, it is preselected and cannot be changed. Available actions: ▸ *Import:*The element is imported. Is available if the variable or the data type does not yet exist in the project. The element is created in the project. ▸ *Do not import*: The element is not imported. Is available if the variable or the data type already exists. ▸ *Overwrite*: The element is imported and overwrites a pre-existing version. Is available if the variable or the data type already exists and can be overwritten.
OK	Accepts selected actions, closes the dialog and imports the respective selected data types.
Cancel	Discards the entry and cancels the import of the data types.

14.2.4Edit the XML file of the exported variables externally

XML-files can be edited after export or before the import with an external program.

Attention

External editing of XML files is recommended *only for experts*.
Incorrect imports can damage or destroy your project. Therefore always save your project before you edit it.

The header definitions must contain the following attributes:

Parameter	Description
ShortName	Name of the variable

Parameter	Description
DriverID	ID of the driver The identification is project-dependent for each driver. You can identify the driver exactly by creating a driver and an associated variable in your project and exporting it via XML.
TypeID	ID for the data type Attention: the **TYPEID** also depends on the project. Details can be found in Import for data types.
HWObjectType	Identification of the driver object type The area on the PLC is defined here, e.g. data block area, marker area, input, output, etc. Not every driver supports all object types. Please look at the documentation of the according driver to find out which driver supports which object types. The correct identifications are listed in the category tpKanaltypes in the VBA object catalogue.
HWObjectName	Name for the driver object type Redundant information for the **HWObjectType**. This property only serves for information purposes.
IsComplex	TRUE = Structure variable FALSE = simple variable
Matrix	Name of the linked reaction matrix This property is empty if no reaction matrix is linked.

SYNTAX EXAMPLES FOR EDITING THE XML FILE:

No.	Example	Expression	Comment
1.	*Creating a new variable during import*	*<Variable ShortName='WIZ_VAR_10' DriverID='4' TypeID='2' HWObjectType='8' HWObjectName='SPS-Merker' IsComplex='FALSE' Matrix=''>*	
2.	*Deleting an existing variable during import*	*<Variable ShortName='WIZ_VAR_10' Delete='TRUE' DriverID='4' TypeID='2' HWObjectType='8'*	If the variable existed in the zenon project, you can delete it by using the attribute *Delete*. Please make sure that the attribute is not empty. This means it must contain

No.	Example	Expression	Comment
		HWObjectName='SPS-Merker' IsComplex='FALSE' Matrix=''>	e.g. *TRUE* or *FALSE*. The content of the entry is not evaluated in this case.
3.	*Renaming an existing variable during import*	*<Variable ShortName='WIZ_VAR_10' Delete='TRUE' DriverID='4' TypeID='2' HWObjectType='8' HWObjectName='SPS-Merker' IsComplex='FALSE' Matrix='' NewName='Standard_1'>*	When renaming, the variable is first imported and then renamed. This means you can change the variable´s properties and rename it at the same time. If there is already a variable with the new name, renaming fails. The output window provides you with further information.

14.3 CSV import

Variables can be exported (on page 38)with zenon to CSV files and imported from CSV files, for example for further editing in Microsoft Excel. Variables exported to CSV are always saved as TXT files in unicode format.

If the compatibility limit of Microsoft Excel was surpassed during the export and the export was executed in spite of a warning, the TXT file to be imported doesn´t contain all exported data.

FORMAT SPECIFICATION

- Separator: *Tab*
- File ending: *.txt*
- Encoding: The exported file is encoded in unicode. The file to be imported has to be encoded in unicode, too.

> **Information**
>
> Import and Export via CSV or dBase supported; no driver specific variable settings, such as formulas. Use export/import via XML for this.

COMPATIBILITY WITH MICROSOFT EXCEL

EXPORT TO EXCEL

For proper import of exported variables in CSV files in Microsoft Excel, please mind:

- **Format:**
  In order for Microsoft Excel to use the proper decimal seperator, you have to set the format in your operating system´s **Regional and language options** to *English*. **Attention:** This setting is mandatory for the usage of decimal seperators, otherwise the values are interpreted or saved incorrectly.
- **Unicode:**
  The files must be saved in Microsoft Excel as *Unicode text (.txt)*. They are saved as TXT files. In older versions of Microsoft Excel, the description can differ slightly.
  Attention: When using a different format, the data cannot be imported properly!
- **@ sign:**
  Microsoft Excel interprets @ signs in a cell not as text and therefore might not allow editing. You have to change the cell type (category) from *Standard* to *Text* for editing cells with @ signs. For that
  - mark the cell or the column
  - right-click on the cell and choose the command **Format cells** in the context menu.
  - Switch the category in the dialog to *Text*
- **Maximum values:**
  - Microsoft Excel 97-2003: 65536 lines, 256 columns
  - Microsoft Excel 2007: 1048576 lines, 16384 columns

> **Attention**
>
> If the number of 16384 or 256 columns and 1048576 or 65536 lines is exceeded, a dialog pops up and you can select to export correspondingly less dynamic properties (if possible). If you choose the limitation, as many dynamical properties as possible are exported.
>
> Statistical properties are not limited.
>
> If removing the dynamical properties is not sufficient, an additional message pops up.
>
> For the maximum number of variables you have to take into account that the header needs its own line, too.

IMPORT FROM EXCEL

At the import from Excel you must not delete the last (empty) line. Otherwise the CSV file cannot be imported to zenon.

14.3.1 Minimum requirements

DEFINITION OF FORMATS

Format	Contents
VariableName	Name the variable shall bear
DriverName	Description of available driver
DriverType	Type of available driver
HWObjectType	Number of the driver object type. This is - in contrast to language-dependent names - always unique. The number can be found out either by exporting a corresponding variable or with the help of the driver documentation.
TypeName	Name of the available **Data type**

Attention

Linking to reaction matrix

Note that, if variables that are linked to a reaction matrix are imported:

- The **IsRemaActiv** column must be present and must not be removed.
  If this column is removed, the linked reaction matrix is shown in the editor but is not available in Runtime.

CONTENTS

The following is applicable for content:

- The driver of imported DRIVERTYPE and imported DRIVERNAME must exist:
  If no driver with the DRIVERTYPE and the DRIVERNAME can be found, the next step is to try to link the variable with a similar driver. First, only the DRIVERTYPE, then only the DRIVERNAME is looked for. If no driver for an allocation can be found, the next step is to try to link the variable with the *Internal driver*, then with an existing driver. If no driver is available or the variable can´t be allocated to a driver, the variable is not imported. The dialog driver

allocation (see chapter Import of variables and data types (on page 18)) allows to create or change the relevant link before the variable is imported. This dialog can be opened after the file you want to import has been selected.

- Simple data type with the imported TYPENAME and the imported HWOBJECTTYPE:
  If the data type with the relevant TYPENAME is not available, the variable is not imported. After all further variables have been executed or imported, the output window displays how many variables could not be imported because of missing data types.

HEADER

A header must exist to describe the property values:
The Header describes the properties based on columns. The first entry in the header is always valid for the first values entry, the second entry in the header is always valid for the second values entry and so on. The number of fields in the header must correspond with the maximum number of fields of the whole file.

- The header
  need not be located in the first line of the file, but it must be the first or the top line of all lines.
- The case
  - is not important for the header.
  - is considered for the property values.
- The header must be concise and complete.
  If an empty field (area between separators) is located in the header, the import is cancelled. Definition *empty field*: Two successive separators without content in between.
- Leading and terminating spaces
  in a field (no matter if with or without quotation marks) are interpreted as such. No spaces are removed. Therefore, the value or the field must be precise.
- The separator
  should not be used at the end of a line, with one exception: An existing field with an empty value.
- All fields (area between separators) where the separator appears must be in quotation marks. That affects only the according field. The remaining fields that do not meet these criteria do not have to be in quotation marks. Tabulator-separators are automatically removed in a field in quotation marks.
- If quotation marks are to be used,
  the whole field (area between separators) must be within quotation marks and each intentional quotation must also be directly doubled. Thus, the number of quotation marks must always be even.
  Examples:

- T"e"st becomes "T""e""st",
- "AB"C" becomes """AB""C""",
- AB"C becomes "AB""C"

- Only two quotation marks in a field without text in between them are not valid for empty values.
- Empty fields (2 successive separators)
  are interpreted as a non-existing entry for this column. If the field of a property that exists for the variable is empty and therefore not set the default value of this property is used.
- If less fields exist for values than determined in the header,
  the remaining non-existing fields are interpreted for values as empty fields.
- If the number of values or fields
  in a line is greater than the number of fields determined in the header, the last or the affected values or fields are ignored.
- Semicolon and comma
  can be freely used in fields (without quotation marks).
- Points
  are always considered decimal separators for numeric values.
- Empty lines are allowed.
  They are ignored.

NAMES, LINKS AND REPLACEMENTS

- Every variable must have its own name in the file.
  If multiple variables with the same name exist, then the first one is imported and the others are ignored.
- Links must exist.
  Reaction matrix, functions, variables, alarm areas, alarm/event groups, alarm/event classes, interlocking and so on are only linked during import if they exist in the project. If the element does not exist under the name, the element is not linked. If a property cannot be linked, the remaining properties are nevertheless imported, regardless of that fact.
- Dynamic properties (like for example limit values) have a common identification and a sequence number.
  The sequence number begins with *0*. The description is similar to the XML export format. (for example: Limits_8_Active, Limits_8_Text, Limits_8_LimitValue, ...)
- array variables and variables of complex data types are neither exported nor imported.
- Available complex variables are not overwritten during the import.
- The import of a variable is allowed if the same name exists in a child element of an existing complex variable. If e.g. the name of the variable you want to import is ABC.DEF and the

variable DEF in the zenon Editor is a child of variable ABC in the Editor, the variable is inserted nevertheless.

- All properties that are imported or exported have similar column/header names as in the XML import or export. The column/header names are found out the easiest way by exporting an according variable.
- Some drivers have driver-specific properties. To find the according column/header names, exporting a variable with the corresponding driver is the most suitable solution.

LIMITATIONS

Properties that are not exported or imported:

- ID_ComplexVariable
- ID_Complex
- HWObjectName
- ID_DriverTyp
- DriverID
- TypeID
- IsComplex
- All IsLocal or Flag properties
- IsSWProtokol, IsSW_Akt and IsSW_VBA

14.3.2 Delete or import variables during import

You can delete or renamed variables during the import. The deleting is carried out via an entry in field *KANAL_D*. The renaming is carried out via an entry in field *KANAL_R*. The variable which should be deleted or renamed is defined in the *VariableName* field.

DELETE VARIABLES

Variables are deleted if valid entries are detected in filed *KANAL_D* and in field *VariableName* of the CSV file.

Field	Function	valif if
KANAL_D	Sets delete command.	*1*
VariableName	Name of the variable which should be deleted	Entry which does not consists solely of unprintable characters

For deleting you can use CSV files which only consist of these two fields (Short-Format).

RENAME VARIABLE

Variables are renamed if valid entries are detected in filed *KANAL_R* and in field *VariableName* of the CSV file.

Field	Function	valif if
KANAL_R	Original name of the variable which should be replaced.	Entry which does not consists solely of unprintable characters
VariableName	New variable name.	Entry which does not consists solely of unprintable characters

For renaming you can use CSV files which only consist of these two fields (Short-Format).

Attention

If the renaming and the deleting is commanded in the same line, the variable is deleted.

MESSAGES IN THE OUTPUT WINDOW

If variables are deleted or renamed during the CSV import, messages are displayed in the output window of the Editor stating the success or the failure of the actions:

Message	Level	Description
Rename variable '%s' does not exist.	Warning	The variable which should be renamed and is referred to by the variable name stated in field *KANAL_R* does not exist.
Variable '%s' which should be deleted does not exist.	Warning	The variable which should be deleted and is referred to by the variable name stated in field *VariableName* does not exist.
Variable '%s' was renamed in '%s'.	Normal	The renaming of the variable was successful.
Variable '%s' was deleted.	Normal	The deleting of the variable was successful.
%i of %i variable(s) renamed.	Normal or warning	This message is only displayed when renaming is carried out with valid fields, i.e. fields which are not empty *KANAL_R*. The first placeholder (**%i**) equals the number of the successful renamings. The second placeholder equals the number of the commanded renamings. If not all renamings could be carried out successfully, the output is formatted as Warning.

Message	Level	Description
%i of %i variable(s) deleted.	Normal or Warning	This message is only displayed when deleting is carried out via valid *KANAL_D* fields (numeric value *1*). The first placeholder (**%i**) equals the number of the successful deletions. The second placeholder equals the number of the commanded deletions. If not all deletions could be carried out successfully, the output is formatted as Warning.

14.3.3 Compatibility with Microsoft Excel

EXPORT TO EXCEL

For proper import of exported variables in CSV files in Microsoft Excel, please mind:

- **Format:**
  In order for Microsoft Excel to use the proper decimal seperator, you have to set the format in your operating system´s **Regional and language options** to *English*. **Attention:** This setting is mandatory for the usage of decimal seperators, otherwise the values are interpreted or saved incorrectly.
- **Unicode:**
  The files must be saved in Microsoft Excel as *Unicode text (.txt)*. They are saved as TXT files. In older versions of Microsoft Excel, the description can differ slightly.
  Attention: When using a different format, the data cannot be imported properly!
- **@ sign:**
  Microsoft Excel interprets @ signs in a cell not as text and therefore might not allow editing. You have to change the cell type (category) from *Standard* to *Text* for editing cells with @ signs. For that
  - mark the cell or the column
  - right-click on the cell and choose the command **Format cells** in the context menu.
  - Switch the category in the dialog to *Text*
- **Maximum values:**
  - Microsoft Excel 97-2003: 65536 lines, 256 columns
  - Microsoft Excel 2007: 1048576 lines, 16384 columns

> **Attention**
>
> If the number of 16384 or 256 columns and 1048576 or 65536 lines is exceeded, a dialog pops up and you can select to export correspondingly less dynamic properties (if possible). If you choose the limitation, as many dynamical properties as possible are exported.
>
> Statistical properties are not limited.
>
> If removing the dynamical properties is not sufficient, an additional message pops up.
>
> For the maximum number of variables you have to take into account that the header needs its own line, too.

IMPORT FROM EXCEL

At the import from Excel you must not delete the last (empty) line. Otherwise the CSV file cannot be imported to zenon.

14.3.4Example for import

For the import of a variable, the following information must be provided in the file:

VariableName	DriverName	DriverType	HWObjectType	TypeName
Test	MyDriver	Intern	33	Mydata type

Before you can import the file, you have to ensure that a driver called "*MyDriver*" type *Internal* has been created in the project. This driver must support the channel type or the HWObjectType. In addition, the data type "*MyData type*" must exist. After you selected the file for import, a dialog for driver assignment pops up. In this dialog, all variables to be imported of a driver created in the project can be linked with another driver. If you want to use the same driver, you can confirm the dialog directly with **OK**. Then the variables are imported.

14.4 CSV export

Variables can be exported with zenon to CSV files and imported (on page 30) from CSV files, for example for further editing in Microsoft Excel.

Exception: Complex data types and array variables must not be exported.

Attention

The data is exported to a tabulator-separated unicode text file with the ending *.txt* instead of *.csv*.

Background: Microsoft Excel saves CSV-files as ANSI text files with ; as seperator. If saved as CSV in Excel, the unicode is removed. That would irrepabably damage the export data for the project.

EXPORT OPTIONS

1. Export of all exportable variables in the project
2. Export of selected exportable variables
   - only available if at least one exportable variable has been selected

During export of the variables, a dialog pops up where you can choose the save location and the file name. The file ending is predefined *.txt*.

If there are too many properties in the file that you want to export to and edit in Microsoft Excel, you are offered several possibilities:

- Cut off properties or lines:
  Only part of, for example, the limit values or variables is being exported (that depends on the limitation). Primarily information that cannot be handled by older Microsoft Excel versions is not exported. The exported file can be edited with an external program.
- Export all properties
- Cancel export

COMPATIBILITY WITH MICROSOFT EXCEL

EXPORT TO EXCEL

For proper import of exported variables in CSV files in Microsoft Excel, please mind:

- **Format:**
  In order for Microsoft Excel to use the proper decimal seperator, you have to set the format in your operating system´s **Regional and language options** to *English*. **Attention:** This setting is mandatory for the usage of decimal seperators, otherwise the values are interpreted or saved incorrectly.
- **Unicode:**
  The files must be saved in Microsoft Excel as *Unicode text (.txt)*. They are saved as TXT files. In older versions of Microsoft Excel, the description can differ slightly.
  Attention: When using a different format, the data cannot be imported properly!

- **@ sign:**
  Microsoft Excel interprets @ signs in a cell not as text and therefore might not allow editing. You have to change the cell type (category) from *Standard* to *Text* for editing cells with @ signs. For that
  - mark the cell or the column
  - right-click on the cell and choose the command **Format cells** in the context menu.
  - Switch the category in the dialog to *Text*
- **Maximum values:**
  - Microsoft Excel 97-2003: 65536 lines, 256 columns
  - Microsoft Excel 2007: 1048576 lines, 16384 columns

> **Attention**
>
> If the number of 16384 or 256 columns and 1048576 or 65536 lines is exceeded, a dialog pops up and you can select to export correspondingly less dynamic properties (if possible). If you choose the limitation, as many dynamical properties as possible are exported.
>
> Statistical properties are not limited.
>
> If removing the dynamical properties is not sufficient, an additional message pops up.
>
> For the maximum number of variables you have to take into account that the header needs its own line, too.

IMPORT FROM EXCEL

At the import from Excel you must not delete the last (empty) line. Otherwise the CSV file cannot be imported to zenon.

14.5 S7-project

With zenon, Step 7 projects can be imported. When importing an Step 7 project, the corresponding variables are created in zenon.

Different prescribed rules can be used for conversion of existing variable names from Step 7 projects for import in zenon.

REDUNDANCY

Only the first CPU found per station (rack) is offered for import.

14.5.1 Requirements for the import of Step 7 project variables

To be able to import variables from an Step 7 project in zenon:

- The Step 7 project must be available locally on the hard drive or on in the network.
- The Step 7 project must not be opened by an Step 7 program folder in the S7 Simatic Manager.
  If it is open there, the import may be unsuccessful, depending on the exclusive access that the S7 Simatic Manager secures. Stations, for example, are then shown.
- Everything must be translated in Step 7 or PC S7, so that all objects in zenon can be transferred.
- Step 7 projects from version 11 must be, before import into zenon, exported with the Variable Export Manager.

> **Information**
>
> For the import of PCS7-projects, the subdirectory CSV_export is needed. In this subdirectory you need a CSV-file for each station of the project with the same name as the station. For the import, the hierarchical names from this file are used.

PARTICULAR FACTORS WHEN IMPORTING FROM STEP 7, VERSION 11

From version 11, Step 7 is part of the TIA framework from Siemens. For variable import in zenon, the variables of a TIA Step 7 project must, before export into zenon, be exported with the **Variable Export Manager** (on page 41).

14.5.1.1 Variable Export Manager

With the Variable Export Manager, you export variables from Step 7 from version 11 and prepare these for import into zenon.

In doing so, please note that different variable export managers are used for TIA versions 11, 12 and 13.

OVERVIEW

- Step 7 up to version 11:
  Automatic import - no additional steps necessary.
- Step 7 version 11 and 12:
  Export of an S7 project via *CD_TIAProject_Exporter.exe*
  (**save location:** *C:\Programme (x86)\COPA-DATA\zenon 8.20 SP0*)

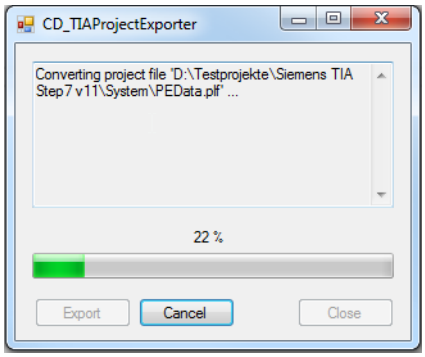
  Import into zenon using **Enhanced import**.
- Step 7 version 13:
  Export of an S7 project via *CD_TIA13Project_Exporter.exe*
  (**save location:** *C:\Program Files (x86)\COPA-DATA\zenon 8.20 SP0*)
  Import into zenon using **enhanced import**.

REQUIREMENTS

To prepare variables from Step 7 projects for import into zenon, the following must be the case on the export computer:

- The corresponding TIA software from Siemens must be installed
- The Variable Export Manager must be present.
  To use the **Variable Export Manager**, copy the corresponding program from the zenon installation folder or from the zenon installation medium onto the computer on which the **Variable Export Manager** is to be used.

14.5.1.2 Variable Export Manager user interface



Parameters	Description
Progress bar	Shows the progress of the export process
Export	Starts a new export. Available as soon as the previous export has been completed.
Cancel	Cancels the export.

Parameters	Description
Close	Closes the **Variable Export Manager** **Note:** Inactive when an import is ongoing.

Information

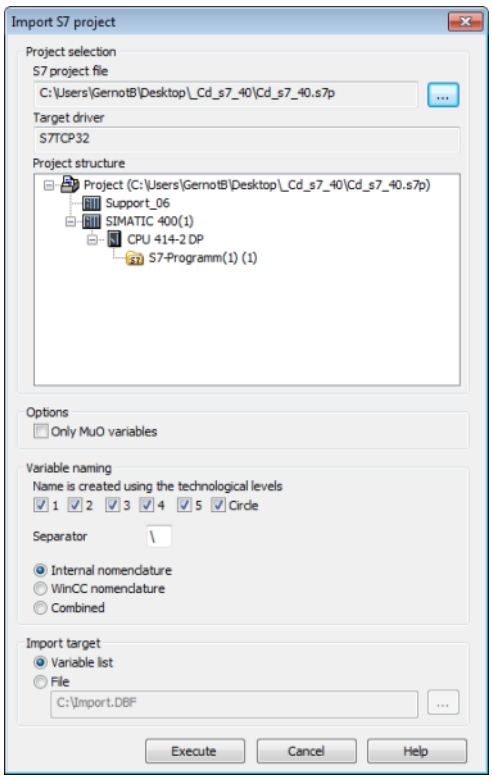
The Variable Export Manager is only available in English in both versions.

14.5.1.3 Variable export - Variable Export Manager

To export variables from Step 7 from version 11:

1. Start the **Variable Export Manager.**
   Note: Ensure that you start the correct version of the Variable Export Manager.
2. The dialog to select a Step 7 project is opened.
3. Select the desired project.
   Note: TIA projects have the file extension *.ap11*, *.ap12* or *.ap13*
4. Click on the **Open** button to continue.
5. The dialog to select the save location and name is opened.
6. Select a save location and name for the export file
7. Confirm the entry with **Save**.
8. the export is started
9. Copy the export file to the computer on which the import is to take place in zenon
10. Continue with the usual S7 import (on page 44)

14.5.2 Import S7 project import dialog



PROJECT SELECTION

Parameter	Description
S7 project file	Save location and name of the selected import file. **Note:** possible file suffixes are *.zst* and *.s7p*.
...	Click on the **...** button to open the dialog to select the import file.
Target driver	Display of the selected driver. **Note:** This display is for information purposes only. Changes are no longer possible in this dialog.
Project structure	Shows the structure of the selected import or project file. The tree view can be made larger by clicking on **[+]** or smaller by clicking on **[-]**.

OPTIONS

Parameter	Description
Only OaM variables	If active, only "Operate and Monitor" variables are imported.

Parameter	Description
	Default: *inactive*

VARIABLE NAMING

Parameter	Description
Name is created using technological levels	Select the technological levels (*1-5 and circle*) from CFC programming that are to be used for naming the variables. Default: *All levels* including *circle* are activated.
Separator	Selection of the character that separates the selected technological levels from one another. Default: \
Internal nomenclature	The internal nomenclature is used for the names of the created objects. **Example:** *S0* (for net address = 0)
WinCC nomenclature	The WinCC nomenclature is used for the names of the created objects. **Example: S7 program**
Combined	Both the internal nomenclature and the WinCC nomenclature is used for the names of the created objects. A dot (**.**) is used as a separator.

IMPORT TARGET

Parameter	Description
Variable list	The variables are imported in the zenon variable list. During import, a check is made to see whether a variable with the corresponding name already exists. If this is the case, zenon-specific attributes are retained. This means that a comparative merging of the imported variables and the existing variables takes place. **Note:** If the same project is imported with different naming rules (nomenclatures), the variables are also recreated. Merging of the existing variables does not then take place.

Parameter	Description
	Therefore you must ensure that, when you import a project that has already been imported again, you select the same nomenclature as for the initial export.
File	The variables are imported into the specified file (***.dbf**). You can edit this file and import it into zenon.
File path and name	Only active if *file* was selected as an **import destination** . The file name and path is entered using the "**...**" button.
...	Opens the dialog to select a destination path and to enter the destination file name. **Note:** Note the limited field sizes of the DBF file. If the field sizes are exceeded, information can get lost during the import. Only active if file was selected as an import destination.

NAVIGATION

Parameter	Description
Execute	Starts the import. The dialog for selection of the stations (on page 47) opens.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

Information

Import dialog settings are remanent and are saved. The last settings use are displayed again the next time the dialog is called up.

14.5.2.1 Import Step 7 projects into COPA-DATA

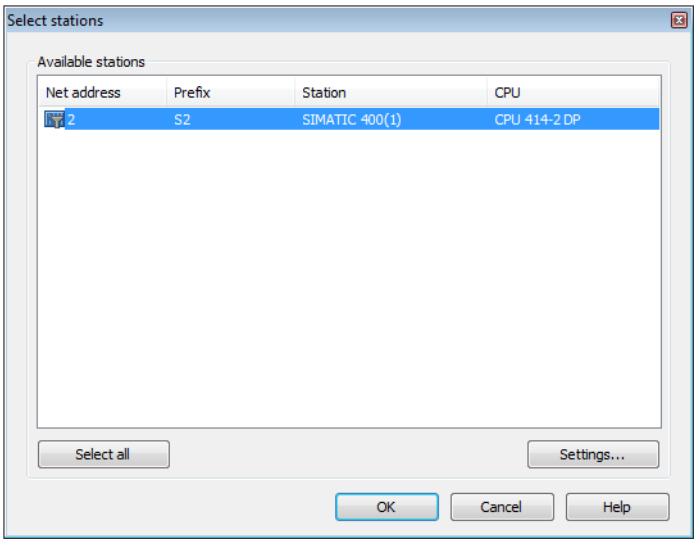
To import Step 7 projects:

1. In the zenon Editor, navigate to the **Variables** node
2. Right click on the **Variables** node

3. Select, in the context menu, the **Extended import/export** ->**Import S7 project** entry.
4. The **driver selection** dialog to select a driver is opened.
5. Select the desired driver from the list in this selection dialog.
6. Click on the 'OK' button.
7. The import assistant is opened.
8. Follow the steps in the import assistant
   a) Select the desired project
   b) Select the desired stations (on page 47)
   c) Configure (on page 48) the stations
   d) Select the variables (on page 52)

14.5.2.1.1 Select stations

Select the desired stations



AVAILABLE STATIONS

Parameters	Description
List of stations	Lists all available stations of the selected project file. ▸ Net address ▸ Prefix ▸ Station

Parameters	Description
	▸ CPU **Note:** ▸ List can be sorted; multiple selection is possible. ▸ CPU: Only the first CPU found per station (rack) is offered for import.
Select all	Selects all listed stations.
Settings...	Opens the dialog for station settings (on page 48). This dialog offers additional filtering possibilities for the list of variables to be imported.

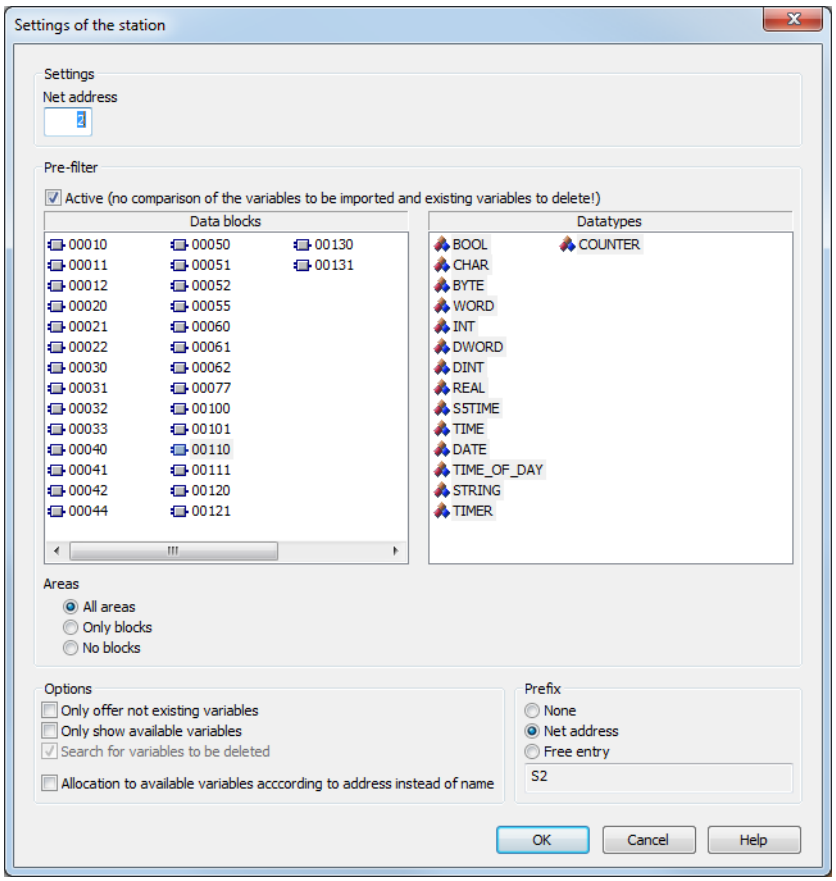
NAVIGATION

Parameters	Description
OK	Accepts the selection and opens the dialog to select variables (on page 52). **Note:** Depending on the size of the Step 7 project, this procedure can take some time.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

14.5.2.1.2 Settings of the stations

In this dialog you can set filters and change other settings. For example, it is possible to filter for variables of a certain data type only, or for variables of one or several data blocks. In addition, further requirements for the issuing of variable names can be given in this dialog.

These settings influence the list of variables that are offered in the Dialog to select the variables (on page 52).



SETTINGS

Parameter	Description
Net address	States the **Net address** and affects the station name. Default: *1* **Note**: Always starts with *0*.

PRE-FILTER

Filtering for the variables to be imported according to data blocks and data types.

Parameter	Description
Active	Activates pre-filtering for: ▸ Data blocks

Parameter	Description
	▸ Data Types ▸ Areas *Active*: uses the variables and data types displayed in the list as a prefilter. Differences between Step 7 and zenon are not displayed. *Inactive*: **All** variables and data types of Step 7 and zenon are compared during import. Differences are displayed. You are asked if you want to delete or merge elements that are not present. Default: *inactive*
Data blocks	List of the data blocks present in the Step 7 project. Select the data blocks from which you want to import variables. **Note:** Grayed out if prefiltering is not activated. also grayed out if *No blocks* in **areas** is activated. Multiple selection is possible.
Data Types	List of data types. Only variables that are based on the selected data types are taken into account for variable import. Select the data types that are based on the variables that you want to import. **Note:** Grayed out if prefiltering is not activated. Multiple selection is possible.
Areas	Select the desired area in which variables are searched for. ▸ All areas ▸ Only blocks ▸ No blocks Deactivates the possibility of pre-filtering variables according to data blocks.

OPTIONS

Filter criteria that already compare variables present in zenon with the variables to be imported.

Parameter	Description
Offer only not available variables	Only the variables that do not yet exist in zenon are offered for import.
Only show available variables	Variables that already exist are searched for. These can be merged during import.
Search for variables to be deleted	After the variable selection, all variables that are not available in the Step 7 project are displayed. They can be deleted from the zenon Project. **Note:** Cannot be selected if pre-filtering has not been activated.
Assignment to existing variables according to address instead of name	*Active*: Pre-existing driver variables are merged using the variable address instead of the name. It is thus possible to accept amended names from a Step7 project. Default: *inactive*

PREFIX

Additional configuration for the naming of the variables to be imported.

Parameter	Description
None	The imported variables are not assigned prefixes in front of the name.
Net address	The imported names are assigned the net address followed by a point as prefix in front of the name.
Free entry	The imported variables are not assigned a freely-selectable prefix in front of the variable name. When importing a variable, the prefix entered is put in front of the variable name, with a dot as a separator. **Note**: Ensure that you use the same prefix again if you import again. Otherwise the variables are created twice.
Input field	Text field for the entry of the prefix. **Note:** Input field is only active if **free entry** has

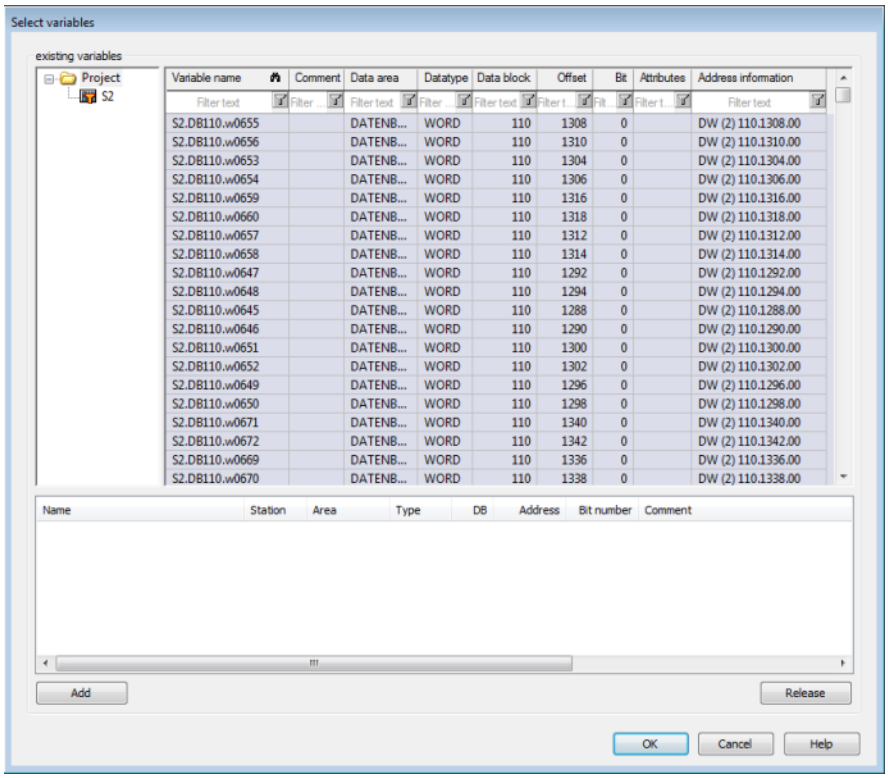
Parameter	Description
	been selected.

NAVIGATION

Parameter	Description
OK	Accepts selection and returns to the select stations (on page 47) dialog. **Note:** Depending on the size of the Step 7 project, this procedure can take some time.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

14.5.3 Variable selection

All variables present for import are shown in this dialog. This list is the result of your configuration in the previous dialogs.



EXISTING VARIABLES

Parameter	Description
Project	Project tree of the original Step 7 project. This overview is enlarged with **[+]** and reduced with **[-]**. After selecting the project, the Step 7 variables contained therein are created in the variable list.
Variable List	List of all the variables available for variable import. ▸ Variable name ▸ Comment ▸ Data area ▸ Data type ▸ Data block ▸ Offset ▸ Bit ▸ Attributes ▸ Address information. From this list, select the variables that you want to import into zenon. **Note:** This list can be sorted and filtered. The list can be amended by clicking on the right mouse button and selecting the **Format columns...** menu entry.

VARIABLES TO BE IMPORTED

Parameter	Description
List of selected variables	Select the variables that you want to import from the variable list. Accept these with the **Add** button.
Add	Adds selected variables from the variable preview window to the list of variables to be imported.
Release	Removes selected variable(s) from the list of the variables to be imported.

CLOSE DIALOG

Parameter	Description
OK	Applies settings and closes the dialog. The variables from the Step 7 project are imported in zenon according to the settings.
Cancel	Discards all changes and closes the dialog. You return to the **Import S7 project** dialog as a result.
Help	Opens online help.

You can select either the whole project or individual stations in the tree view. The corresponding variables are shown in the variable preview window, depending on the selection. Select the desired variables and click the button **Add** to add the variable to the import. The selected variables are shown in the lower part of the dialog. To remove variables from there, select the desired variables and click the button **Remove**.

Info

You can select several entries at the same time with the keyboard shortcut **Ctrl+mouse click or Shift+mouse click**.

- You can select a number of entries by pressing and holding the **Ctrl key**.
- By pressing and holding **Shift** and select two entriey, you select all entries which lie between the two selected entries.
- By pressing and holding both **Ctrl** and **Shift** and selecting two entries, all entries which lie between the selected entries are selected. The entries which were selected beforehand remain selected.

After finishing, click the button **OK** to close the dialog and confirm the modifications you made. The variables are created in zenon.

14.6 dBase import and export

Data can be exported to and imported from dBase.

Information

Import and Export via CSV or dBase supported; no driver specific variable settings, such as formulas. Use export/import via XML for this.

IMPORT DBF FILE

To start the import:

1. right-click on the variable list.
2. In the drop-down list of **Extended export/import...** select the **Import dBase** command.
3. Follow the instructions of the import assistant.

The format of the file is described in the chapter File structure (on page 56).

Information

Note:

- Driver object type and data type must be amended to the target driver in the DBF file in order for variables to be imported.
- dBase does not support structures or arrays (complex variables) at import.

EXPORT DBF FILE

To start the export:

1. right-click on the variable list.
2. In the drop-down list of **Extended export/import...** select the **Export dBase...** command .
3. Follow the instructions of the import assistant.

Attention

DBF files:

- must correspond to the 8.3 DOS format for filenames (8 alphanumeric characters for name, 3 character suffix, no spaces)
- must not have dots (.) in the path name.
  e.g. the path *C:\users\John.Smith\test.dbf* is invalid.
  Valid: *C:\users\JohnSmith\test.dbf*
- must be stored close to the root directory in order to fulfill the limit for file name length including path: maximum 255 characters

The format of the file is described in the chapter File structure (on page 56).

Information

dBase does not support structures or arrays (complex variables) at export.

14.6.1 dBaseIV variable file

The dBaseIV file must have the following structure and contents for variable import and export:

Attention

dBase does not support structures or arrays (complex variables) at export.

DBF files must:

- conform with their name to the 8.3 DOS format (8 alphanumeric characters for name, 3 characters for extension, no space)
- Be stored close to the root directory (Root)

STRUCTURE

Identification	Type	Field size	Comment
KANALNAME	Char	128	Variable name. The length can be limited using the **MAX_LAENGE** entry in the **project.ini** file.
KANAL_R	C	128	The original name of a variable that is to be replaced by the new name entered under "VARIABLENNAME" (variable name) (field/column must be entered manually). The length can be limited using the **MAX_LAENGE** entry in the **project.ini** file.
KANAL_D	Log	1	The variable is deleted with the *1* entry (field/column has to be created by hand).
TAGNR	C	128	Identification. The length can be limited using the **MAX_LAENGE** entry in the **project.ini** file.
EINHEIT	C	11	Technical unit
DATENART	C	3	Data type (e.g. bit, byte, word, ...) corresponds to the data type.
KANALTYP	C	3	Memory area in the PLC (e.g. marker area, data area, ...) corresponds to the driver object type.
HWKANAL	Nu	3	Net address

Identification	Type	Field size	Comment
	m		
BAUSTEIN	N	3	Datablock address (only for variables from the data area of the PLC)
ADRESSE	N	5	Offset
BITADR	N	2	For bit variables: bit address For byte variables: 0=lower, 8=higher byte For string variables: Length of string (max. 63 characters)
ARRAYSIZE	N	16	Number of variables in the array for index variables ATTENTION: Only the first variable is fully available. All others are only available for VBA or the Recipegroup Manager
LES_SCHR	L	1	Write-Read-Authorization 0: Not allowed to set value. 1: Allowed to set value.
MIT_ZEIT	R	1	time stamp in zenon (only if supported by the driver)
OBJEKT	N	2	Driver-specific ID number of the primitive object comprises TREIBER-OBJEKTTYP and DATENTYP
SIGMIN	Float	16	Non-linearized signal - minimum (signal resolution)
SIGMAX	F	16	Non-linearized signal - maximum (signal resolution)
ANZMIN	F	16	Technical value - minimum (measuring range)
ANZMAX	F	16	Technical value - maximum (measuring range)
ANZKOMMA	N	1	Number of decimal places for the display of the values (measuring range)
UPDATERATE	F	19	Update rate for mathematics variables (in sec, one decimal possible) not used for all other variables
MEMTIEFE	N	7	Only for compatibility reasons
HDRATE	F	19	HD update rate for historical values (in sec, one decimal possible)
HDTIEFE	N	7	HD entry depth for historical values (number)

Identification	Type	Field size	Comment
NACHSORT	R	1	HD data as postsorted values
DRRATE	F	19	Updating to the output (for zenon DDE server, in [s], one decimal possible)
HYST_PLUS	F	16	Positive hysteresis, from measuring range
HYST_MINUS	F	16	Negative hysteresis, from measuring range
PRIOR	N	16	Priority of the variable
REAMATRIZE	C	32	Allocated reaction matrix
ERSATZWERT	F	16	Substitute value, from measuring range
SOLLMIN	F	16	Minimum for set value actions, from measuring range
SOLLMAX	F	16	Maximum for set value actions, from measuring range
VOMSTANDBY	R	1	Get value from standby server; the value of the variable is not requested from the server but from the Standby Server in redundant networks
RESOURCE	C	128	Resources label. Free string for export and display in lists. The length can be limited using the MAX_LAENGE entry in **project.ini**.
ADJWVBA	R	1	Non-linear value adaption: *0*: Non-linear value adaption is used *1*: Non-linear value adaption is not used
ADJZENON	C	128	Linked VBA macro for reading the variable value for non-linear value adjustment.
ADJWVBA	C	128	ed VBA macro for writing the variable value for non-linear value adjustment.
ZWREMA	N	16	Linked counter REMA.
MAXGRAD	N	16	Gradient overflow for counter REMA.

> **Attention**
>
> When importing, the driver object type and data type must be amended to the target driver in the DBF file in order for variables to be imported.

LIMIT VALUE DEFINITION

Limit definition for limit values *1* to *4*, or status *1* to *4*:

Identification	Type	Field size	Comment
AKTIV1	R	1	Limit value active (per limit value available)
GRENZWERT1	F	20	technical value or ID number of a linked variable for a dynamic limit value (see VARIABLEx) (if VARIABLEx is *1* and here it is *-1*, the existing variable linkage is not overwritten)
SCHWWERT1	F	16	Threshold value for limit value
HYSTERESE1	F	14	Is not used
BLINKEN1	R	1	Set blink attribute
BTB1	R	1	Logging in CEL
ALARM1	R	1	Alarm
DRUCKEN1	R	1	Printer output (for CEL or Alarm)
QUITTIER1	R	1	Must be acknowledged
LOESCHE1	R	1	Must be deleted
VARIABLE1	R	1	Dyn. limit value linking the limit is defined by an absolute value (see field GRENZWERTx).
FUNC1	R	1	Functions linking
ASK_FUNC1	R	1	Execution via Alarm Message List
FUNC_NR1	N	10	ID number of the linked function (if "-1" is entered here, the existing function is not overwritten during import)
A_GRUPPE1	N	10	Alarm/Event Group
A_KLASSE1	N	10	Alarm/Event Class

Identification	Type	Field size	Comment
MIN_MAX1	C	3	Minimum, Maximum
FARBE1	N	10	Color as Windows coding
GRENZTXT1	C	66	Limit value text
A_DELAY1	N	10	Time delay
INVISIBLE1	R	1	Invisible

Expressions in the column "Comment" refer to the expressions used in the dialog boxes for the definition of variables. For more information, see chapter Variable definition.

15 Interlockings

The export file for the interlockings has the following sections:

- Interlocking list

During export/import of the interlockings the linked variables are not automatically exported/imported. You have to watch out that the needed variables are exported/imported beforehand.

15.1 Command group

EXPORT

Command groups can be exported one by one or all together.

> **Information**
>
> The command groups and the interlocking cannot be exported together!

IMPORT

For the import of command groups the following is true:

- The relation between existing command groups and command groups to be imported is created using the name. If a command group with this name exists, it is updated.
- If a general interlocking with this name exists, a new command group is created with new names.
- Not existing command groups are created.

- General interlockings from the import file are not imported.
- Absolute variable references are created by the name.
- New created command groups are getting an unique ID, which is not in use.

16 Time Control

The export file for the time control has the following sections:

Time functions list
Functions list

The included functions are exported with the time functions. Time functions are imported automatically. The functions have to be imported manually before from the same file.

17 Allocations

The export file for the allocations has the following sections:

Allocation list

On exporting/importing allocations the linked variables are not automatically exported/imported. Pay attention that the needed variables are exported/imported before.

18 Error message

Error during import or export are displayed in the output window.

Error message	Possible cause and solution
Error: "The file cannot be opened as it has already been opened by another user."	File is locked for editing. User must release file before the import/export can be carried out again.
Error: "Database cannot be created or opened"	The rights for creating the field may be missing or the file is corrupt.
Error: "Variable is invalid and cannot be saved"	Variable is invalid. Check all parameters of the variable.
Error: "Variable could not be added to the	Error during the recording in the database.

Error message	Possible cause and solution
database."	
Error: "Variable contains an invalid hardware address."	A hardware address of the variable is not correct. Correct the address before starting the import again.
Error: "Driver does not provide an object for import/export. Import/export is not carried out."	The selected driver does not have any objects which can be imported/exported.
Error: "Variable cannot be deleted as it is does not exist"	A variable which is selected for deleting does no longer exist.
Warning: "Variable with the new name already exists. Import is carried out with the old name.	A variable which should be renamed during the import is not renamed as a variable with the same name already exist. It is imported with its original name.
Warning: "Variable cannot be renamed and is newly created."	A variable which should be renamed cannot be renamed. A new one is created.

Errors during the XML import are treated and solved in an own dialog (on page 24).