AUCOTEC
Create Synergy – Connect Processes

Engineering Base

Advanced CAD Import

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Content

1 About the Advanced CAD Import Assistant

With its two assistants, the **Advanced CAD Import** assistant enables you to import drawings into Engineering Base and to assign the objects of the imported drawings to Engineering Base objects and attributes.

The assistants of the CAD Import

1. **Advanced CAD-Import**: Import of DXF or DWG files
   - The imported drawing consists of individually editable objects (blocks) and not merely of a single object.
   - It is possible to import not only single files, but entire folders in one step.
   - Layers may be mapped individually.
   - Colors can be redefined.
   - The objects (blocks) of the imported drawing may be mapped to Engineering Base objects.
   - Block attributes on the imported drawing may be mapped to Engineering Base attributes.
   - Line styles and fill patterns can be mapped to line styles and fill patterns in Visio.
   - The distance between characters (width factor) in DXF or DWG is assigned to the attribute **Scale** of the Visio texts.
   - For user-defined SHX fonts, a horizontal correction factor can be specified for the positioning of texts.
   - Free texts in the DWG drawing which are not assigned to a block can be assigned to EB attributes.
2. **Block Mapping Assistant**: Assistant for mapping blocks and attributes of imported drawings on importing mass data.
   - Breakdown of blocks and attributes not yet mapped.
   - Mapping of objects (blocks) of the imported drawing to Engineering Base objects.
   - Mapping of block attributes on the imported drawing to Engineering Base attributes.
   - Previously created mappings may be used as a "mapping template".

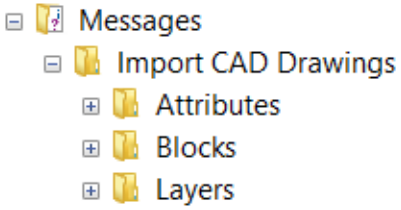
1.1 Advanced CAD Import

Prerequisites

The sheet template **CAD Import** has to be available within the project under **Templates/Sheets/Favorites**. If this is not the case, it may be copied from a newly created Standard project.

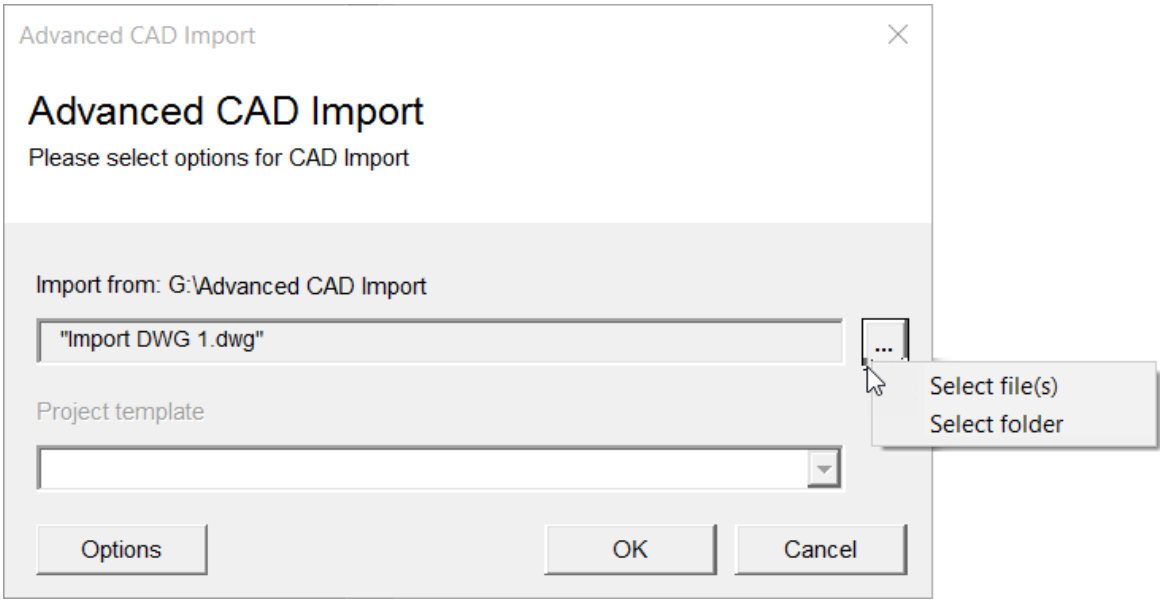
Indications and Messages

Messages created during the import process are stored in the Messages folder of the project.



To run the assistant

1. In the Engineering Base Explorer, select the **Documents** folder, any of its subfolders or the **Projects** folder as import destination.
2. On the shortcut menu, click **Advanced CAD** Import.



3. Click the button ... below the **Import from:** box to select the file to be imported or the directory from where you want to import all DXF or DWG files.

   If you have started the assistant on the **Projects** folder, you can only select a directory.
4. Select a **Project template**. The project templates of the database are offered for selection. The selection of project templates is only active if you have started the assistant on the **Projects** folder.

5. Click **Options** to change the standard import settings.

Options	Standard Settings
General	The settings for the CAD import are stored in the database templates.
Graphics	Scale 1 = 1, default line width = 0.35 (mm) The font used in the CAD drawing is converted to "Arial" in Visio. In the imported drawing, the Visio layers correspond with the layers in the CAD drawing and the colors correspond with the colors of the CAD drawing.
Drawings	For each CAD drawing, a sheet based on the default sheet template **CAD Import** is created. In doing so, the drawing size set in the CAD system is used.
Blocks and Attributes	The blocks of the CAD drawing are converted to Visio shapes. No items are created in the Engineering Base database.

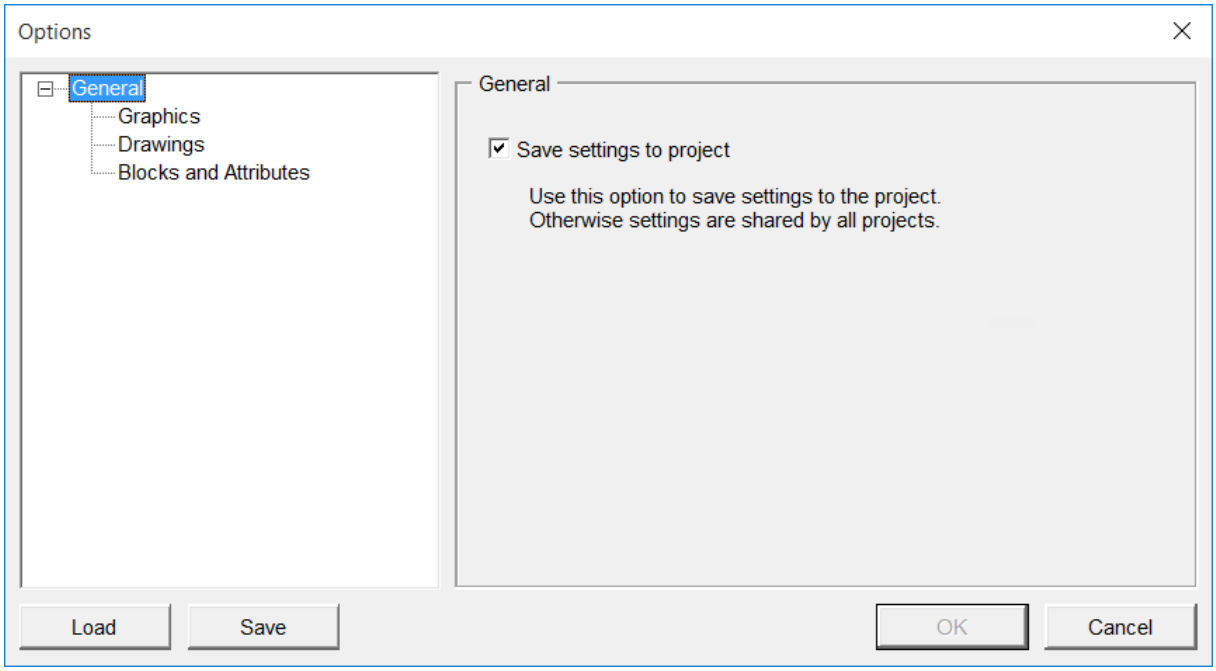
6. Click **OK** to start the import.

The drawing or the drawings of the selected directory are imported into the selected Engineering Base folder.

1.1.1 Advanced CAD Import Options

The following options may be edited in the dialog.

To fill the mapping tables with all relevant data, the **Advanced CAD Import** should be started once without creating CAD drawings. To get the block names displayed in the attribute mapping, the option **Include block name** must be checked in the **Attributes mapping** dialog.



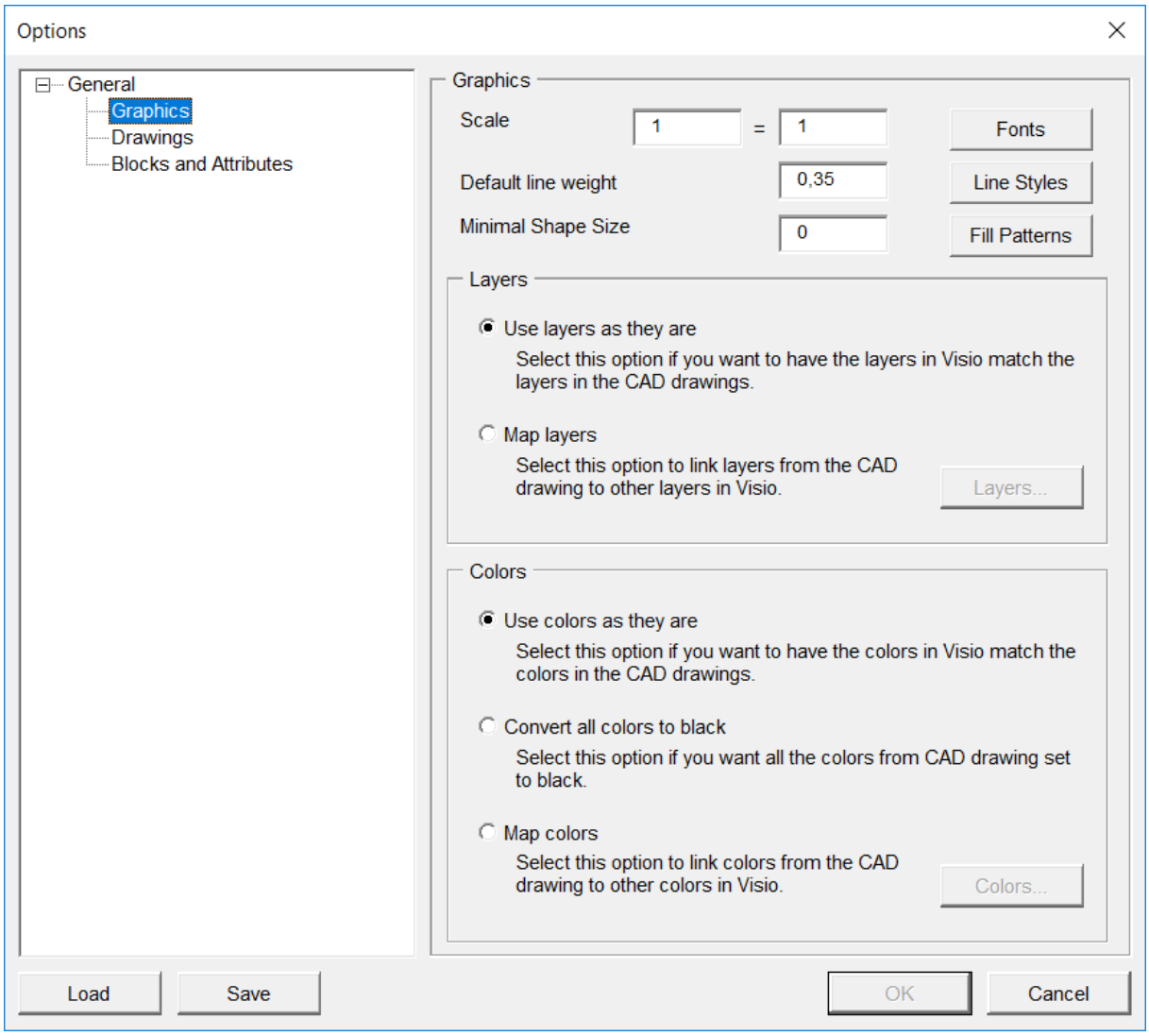
Options	Settings
General	Mark **Save settings to project** if you want the configuration file **Advanced CAD Import** to be saved in the project in **Templates/Configurations**. By default, the configuration file is saved in the **Database Templates/Configurations**.
Graphics	Adaptation of scale and default line width, assignment of CAD font, line style or fill pattern to Visio font, line style or fill pattern, assignment of CAD layers and colors to Visio layers and colors.
Drawings	Settings for drawings
Blocks and Attributes	Assignment of CAD blocks and block elements to Engineering Base objects and attributes. By means of assignment, folder structures may be created or assigned.

Meaning of the buttons

Button	Meaning
Load	Opens a file selection dialog to choose an already existing import configuration (XML file).
Save	Opens a file selection dialog to store the defined settings in an XML file.
OK	The dialog **Options** is closed, and the modified settings are saved either to the project or database settings. Return to the start dialog **Advanced CAD Import**.
Cancel	The dialog **Options** is closed without saving the modified settings. Return to the start dialog **Advanced CAD Import**.

1.1.1.1 Dialog Graphics

In this dialog, you can specify which scale is to be used. Moreover, you can define the mapping of the fonts, the line styles, the fill patterns, the layers and the colors of the CAD drawing.



Options	Settings
Scale	Enter the scale values of your choice. Use the scale of the CAD drawing first (1=1). Examples: CAD in inches is to be saved as EB drawing in mm. For inch to mm, enter 25,4 = 1. CAD in mm is to be saved as EB drawing in inches. For mm to inch, enter 1 = 25.4. If the distance between the lowest and the highest X co-ordinates in the DWG file is less than 100, the scaling for inches is used implicitly.

Default line width	Enter the default line width of your choice in mm. All lines of the CAD drawing not assigned via the mapping get the default line width. The lines mapping can be done in the **Layers mapping** dialog or defined in the XML file of the configuration.
Fonts	The fonts of the imported drawings can be assigned to other fonts in Visio. Via the button **Fonts**, the dialog **Fonts mapping** is opened.
Line Styles	The line styles of the imported drawings can be assigned to line styles in Visio. The **Line Styles mapping** dialog is opened via the **Line Styles** button.
Fill Patterns	The fill patterns of the imported drawing can be assigned to fill patterns in Visio. The **Fill Patterns mapping** dialog is opened via the **Fill Patterns** button.
Minimal Shape Size	Default = 0, all shapes are imported. If a value > 0 is defined, shapes which are smaller than the defined value are not considered for the import. Thereby, the import process can be accelerated for very complex CAD drawings.

Options in the dialog segment Layers

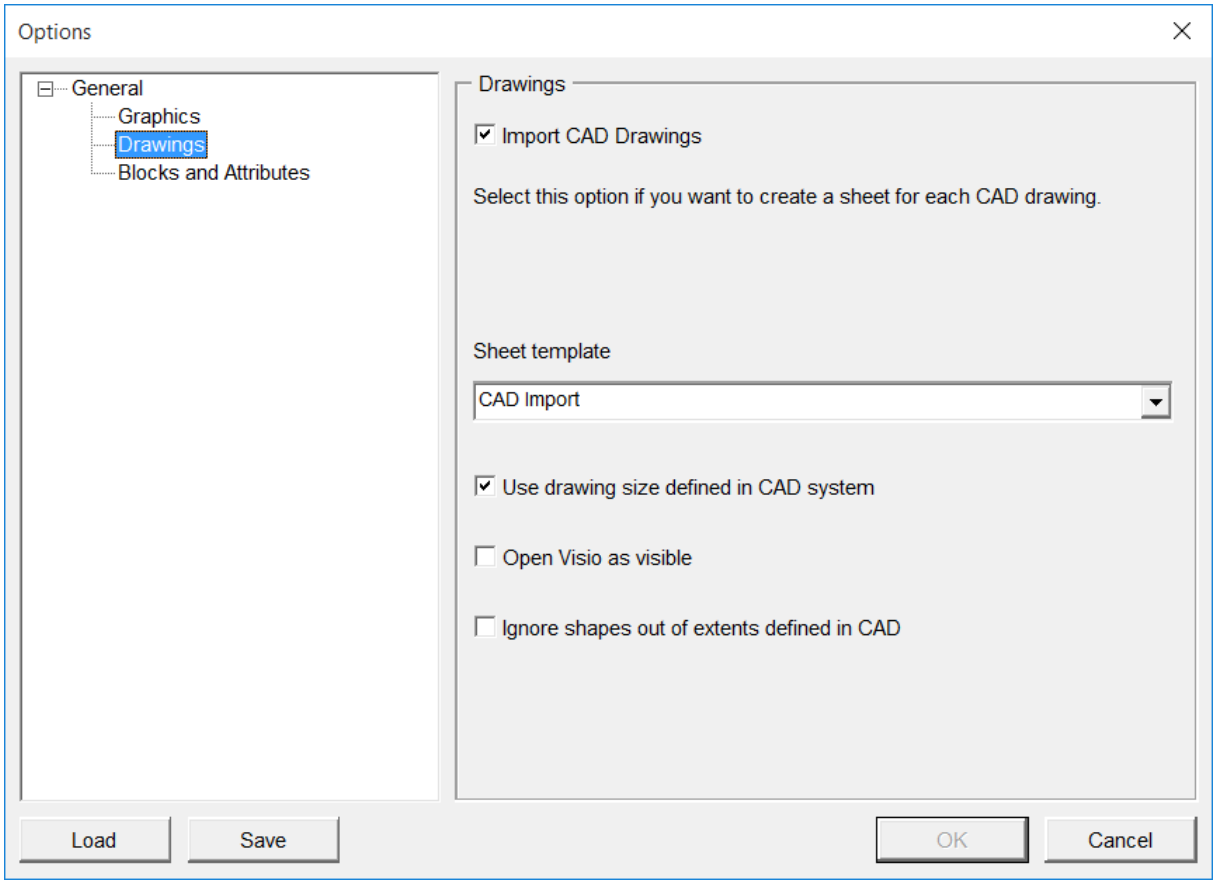
Use layers as they are	The layers of the imported drawing are inherited un-changed.
Map Layers	The layers of the imported drawing may be assigned to other layers in Visio. Via the **Layers** button, the **Layers mapping** dialog is opened.

Options in the dialog segment Colors

Use colors as they are	The definition of the colors of the drawings to be imported is kept unchanged.
Convert all colors to black	All colors of the drawings to be imported are converted to black during import.
Map colors	The colors of the drawings to be imported may be as-signed to other colors in Visio. Via the button **Colors**, the dialog **Colors mapping** is opened.

1.1.1.2 Dialog Drawings

Use this dialog to specify the drawing import options.

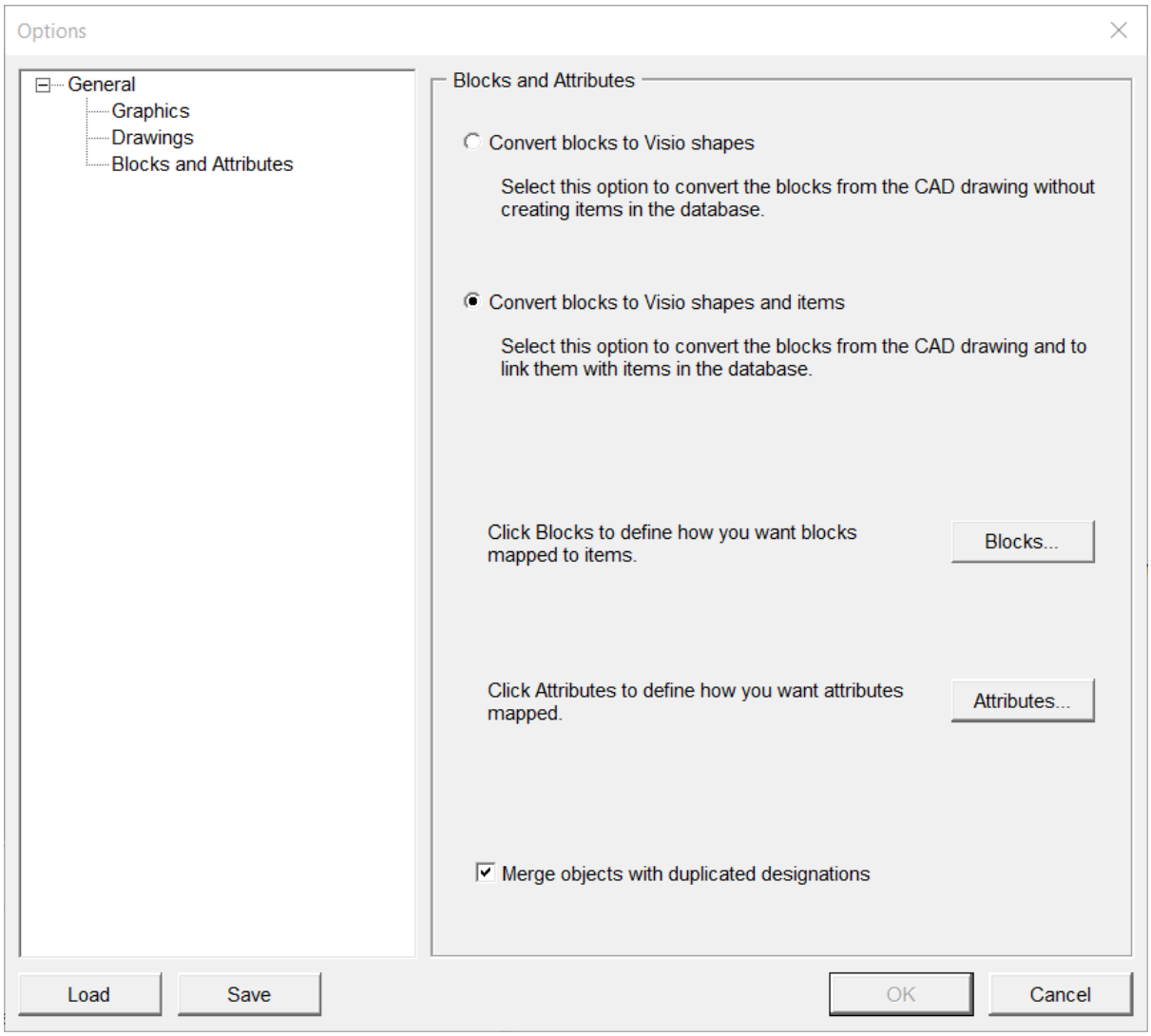


Options	Settings
Import CAD Drawings	Check this option if you want to create a sheet for each CAD drawing. If the checkbox is not marked, then no sheets but objects will be created.
Sheet Template	Select the sheet template **CAD Import** from the sheet templates of the project. Individually created templates can also be used.
Use drawing size defined in CAD system	The drawing size of the CAD drawing is inherited.
Open Visio as visible	Visio will be opened during the import process.
Ignore shapes out of the extents defined in CAD	Shapes outside of the extents defined for the CAD drawing will be ignored.

1.1.1.3 Dialog Blocks and Attributes

In this dialog, you can assign blocks of the CAD drawings to Engineering Base objects (global type) and object types.

The assignment of block attributes to Engineering Base attributes enables you to build up new structures in Engineering Base and Visio.



Select one of the following options

Option	Settings	
Convert blocks to Visio shapes	All blocks are converted to graphics. A further processing as Engineering Base objects is thus not possible!	
Convert blocks to Visio shapes and items	All blocks are converted, and block attributes may be assigned to Engineering Base attributes. Via this mapping, folder structures may be created in Engineering Base.	
	Blocks	This opens the **Blocks mapping** dialog which enables you to assign CAD blocks to Engineering Base objects.

	Attributes	This opens the **Attributes mapping** dialog which enables you to assign CAD block attributes to Engineering Base attributes.
Merge objects with duplicated designations	If the mark is removed, objects with duplicated designations are not merged.	

1.1.2 Sorting and Filtering of the Column Contents

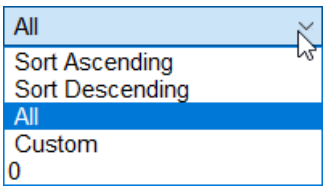
In the following dialogs, you can sort and filter the displayed data:

- Mapping of Fonts
- Mapping of Line Styles
- Mapping of Fill Patterns
- Mapping of Blocks
- Mapping of Attributes

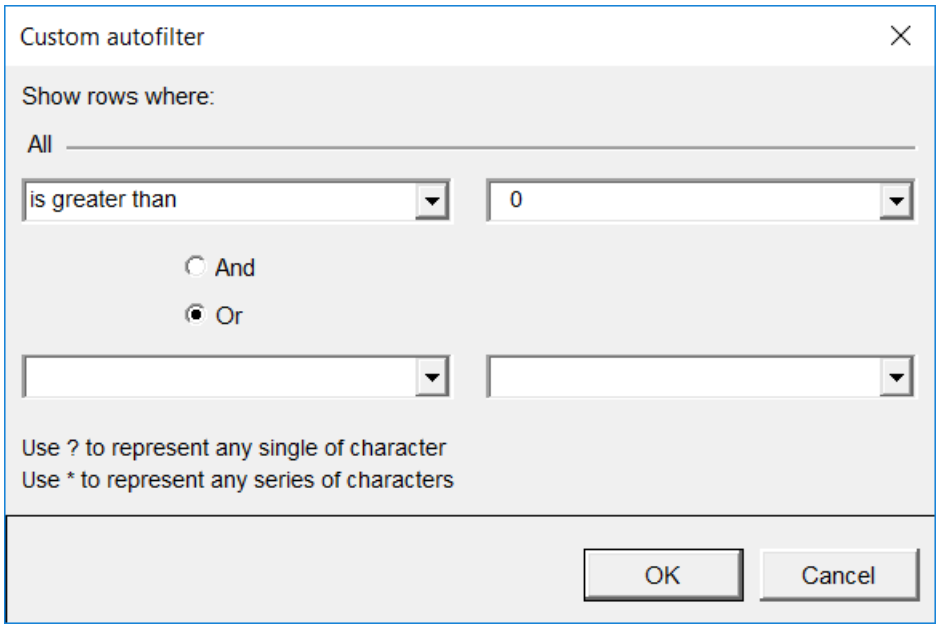
To sort or filter the data

1. Click the first row of the column of which you want to filter the data.

   The shortcut menu displays the options listed below and a list of the values contained in the column.



2. Select a sorting option or filter the data by a column value or a user-defined filter.
   - **All** (default setting): removes the sorting resp. the filter from the column.
   - **Sort Ascending** and **Sort Descending**: the column is sorted accordingly.
   - **Custom**: opens a dialog to define the required filter.
     You can link two filters using "And" or "Or".

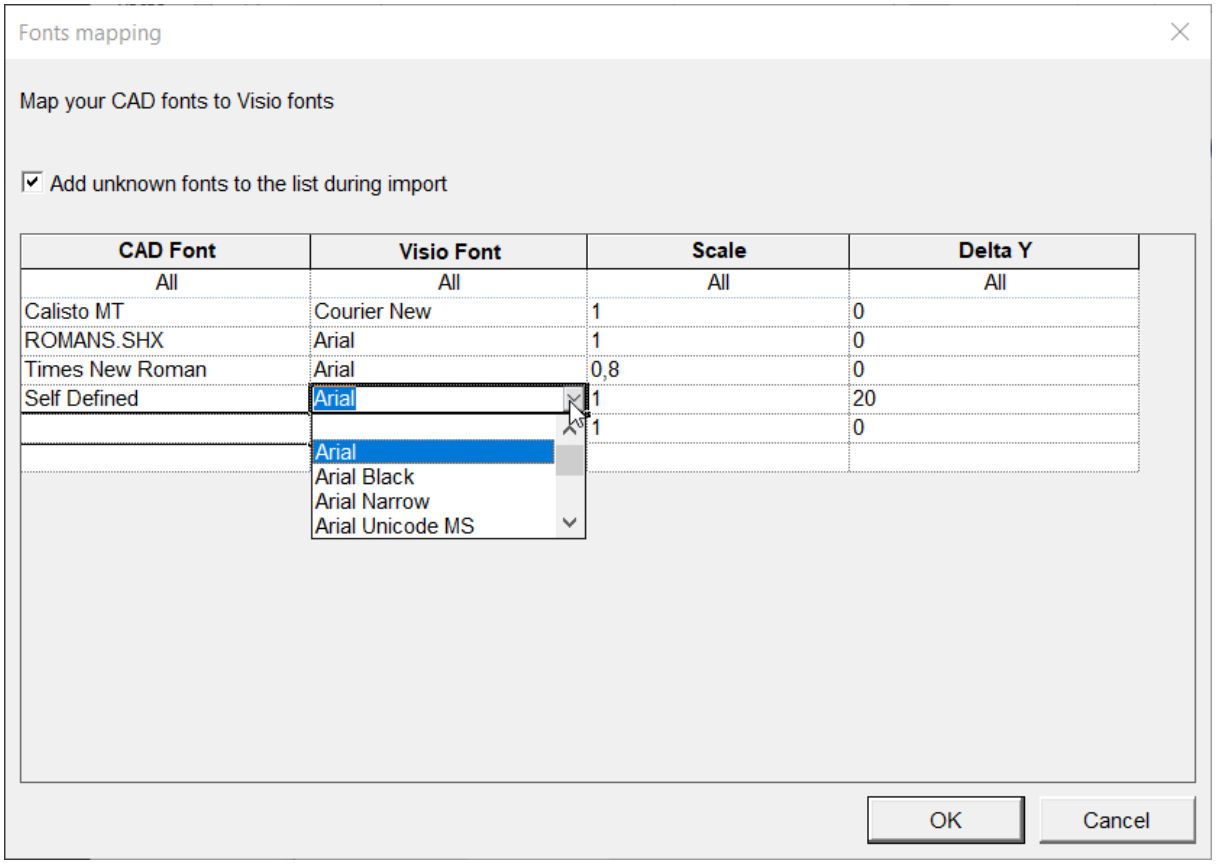


Via the selection menu, select the relational operator for each filter in the field to the left and the required column value in the field to the right.

Click **OK** to activate the filter.

1.1.3 Mapping of Fonts

In this dialog, you can assign Visio standard fonts to the fonts of the CAD drawings to be imported.



- **Add unknown fonts to the list during import**
  Check the check box to display all fonts identified during the import in the dialog.

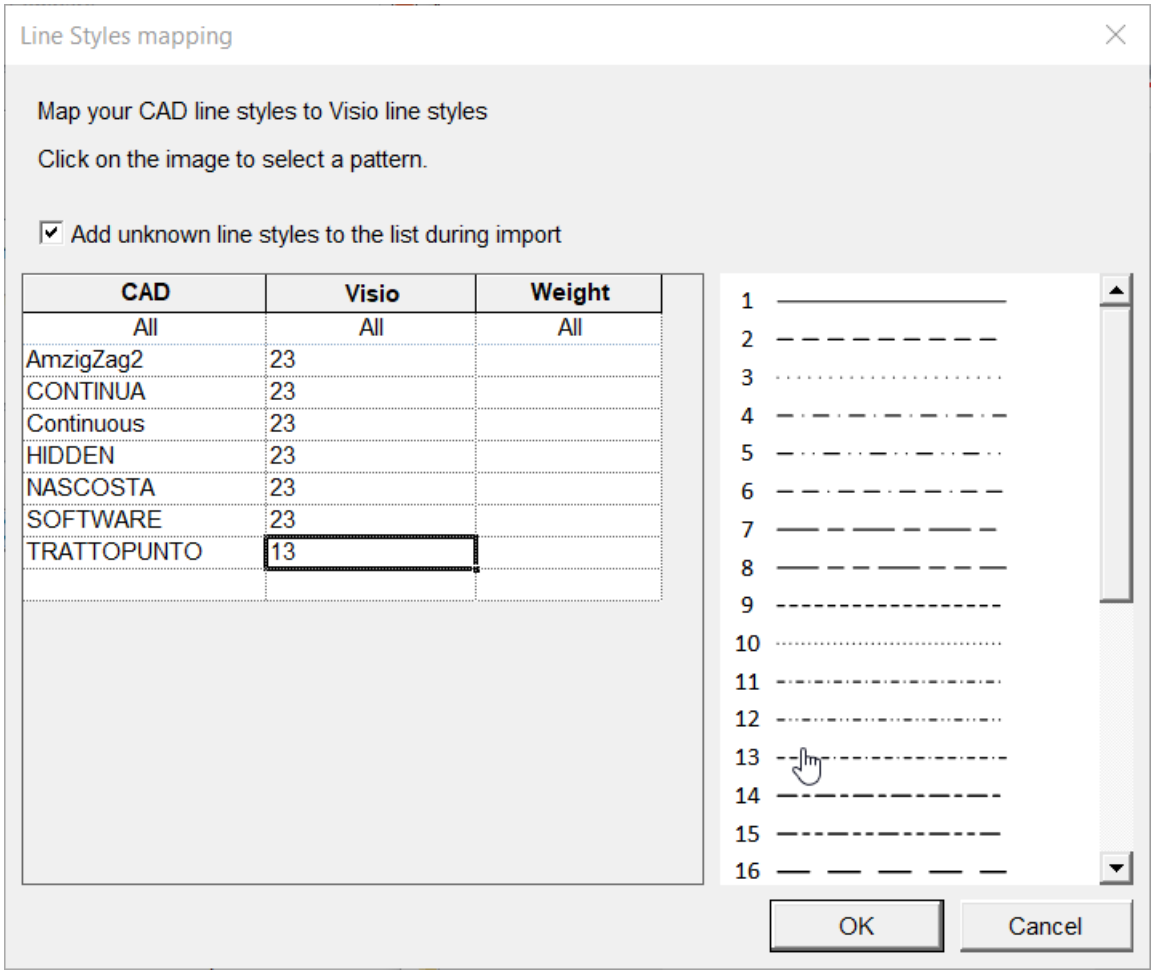
The columns and their meaning

CAD Font	Fonts imported from the CAD drawings.
Visio Font	The Windows font to be assigned in Visio. Click the arrow key and select a Visio font from the selection list.
Scale	If the scale is 1, the settings are adopted 1:1. If the scale is 2, the ratio is 2:1, i.e. the font in Visio is displayed twice as large; if the scale is 0.5, the font in Visio is reduced by half.
Delta Y	Horizontal correction factor (in mm) for the positioning of texts.

1.1.4 Mapping of Line Styles

In this dialog, you can assign Visio line styles to the line styles of the CAD drawings to be imported.

The available Visio line styles are displayed in a selection list.



- **Add unknown line styles to the list during import**
  Check the check box to display all line styles identified during the import in the dialog.

The columns and their meaning

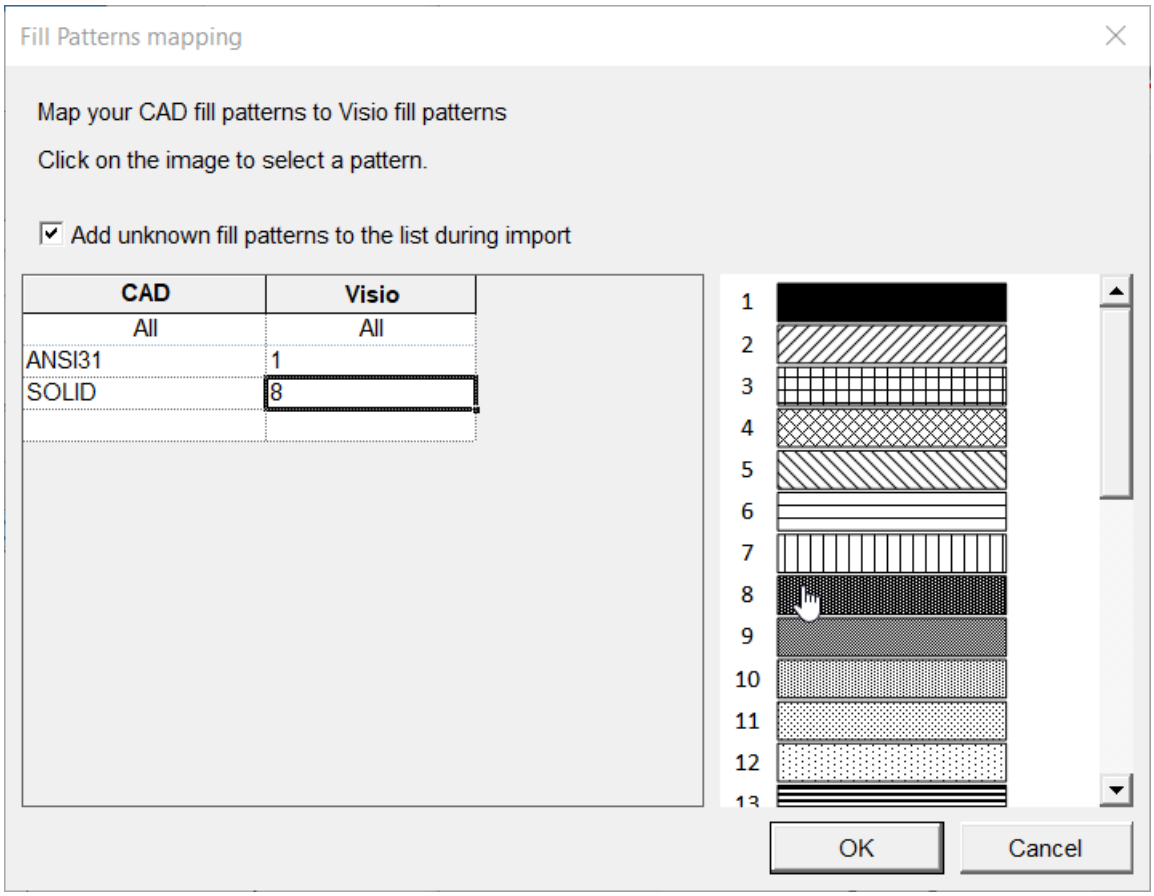
CAD	Line styles imported from the CAD drawings.
Visio	The line style to be assigned in Visio. 1. To assign the line style, click the respective cell in column **Visio**. The cell is selected. 2. Click a line style in the line styles list. The number of the line style is copied to the cell.

<table>
<tr><td>Weight</td><td>The line width of the Visio line style to be used in the EB drawing in mm.
If no line width is defined, the standard line width (Options/General/Graphics) is used.
<table>
<tr><th>Weight</th><th>Line width in Visio</th></tr>
<tr><td>0.6</td><td>1 ½ Pt.</td></tr>
<tr><td>0.4</td><td>1 Pt.</td></tr>
<tr><td>0.3</td><td>¾ Pt.</td></tr>
<tr><td>0.2</td><td>½ Pt.</td></tr>
<tr><td>0.1</td><td>¼ Pt.</td></tr>
</table></td></tr>
</table>

1.1.5 Mapping of Fill Patterns

In this dialog, you can assign Visio fill patterns to the fill patterns of the CAD drawings to be imported.

The available Visio fill patterns are displayed in a selection list.



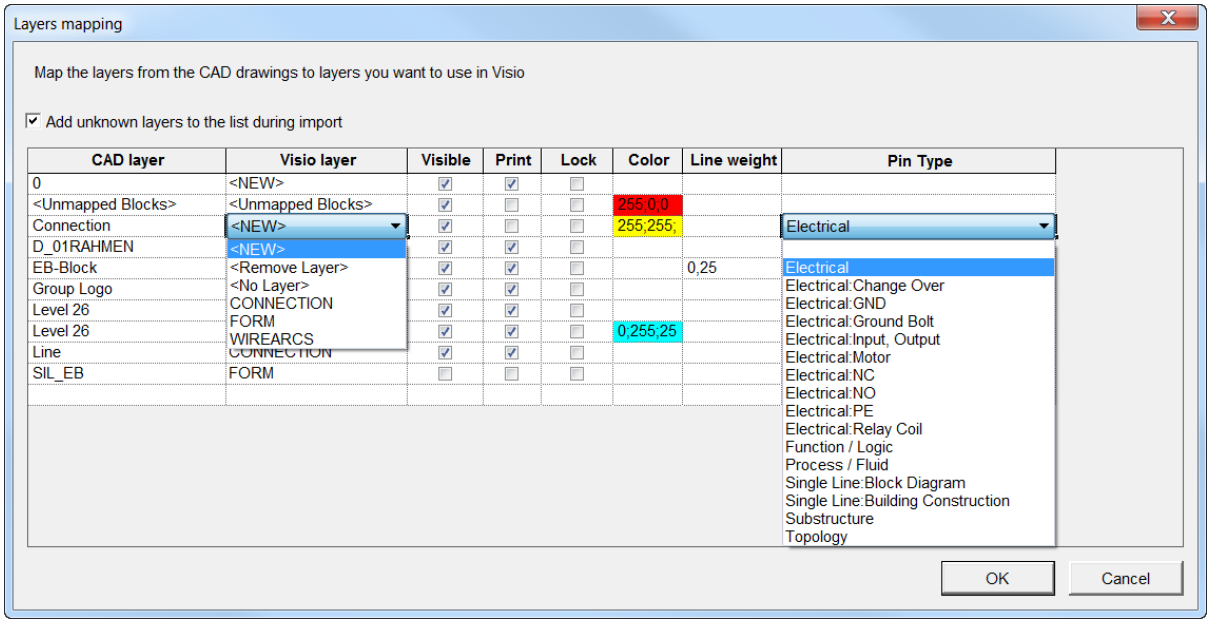
- **Add unknown fill patterns to the list during import**
  Check the check box to display all fill patterns identified during the import in the dialog.

The columns and their meaning

CAD	Fill pattern imported from the CAD drawings.
Visio	The fill pattern that is to be assigned in Visio. 1. To assign the fill pattern, click the respective cell in column **Visio**. The cell is selected. 2. Click a fill pattern in the fill patterns list. The number of the fill pattern is copied to the cell.

1.1.6 Mapping of Layers

In this dialog, you can assign other Visio layers to the layers of the CAD drawings to be imported.



- **Add unknown layers to the list during import**

Check the check box to display all layers identified during the import in the dialog.

The columns and their meaning

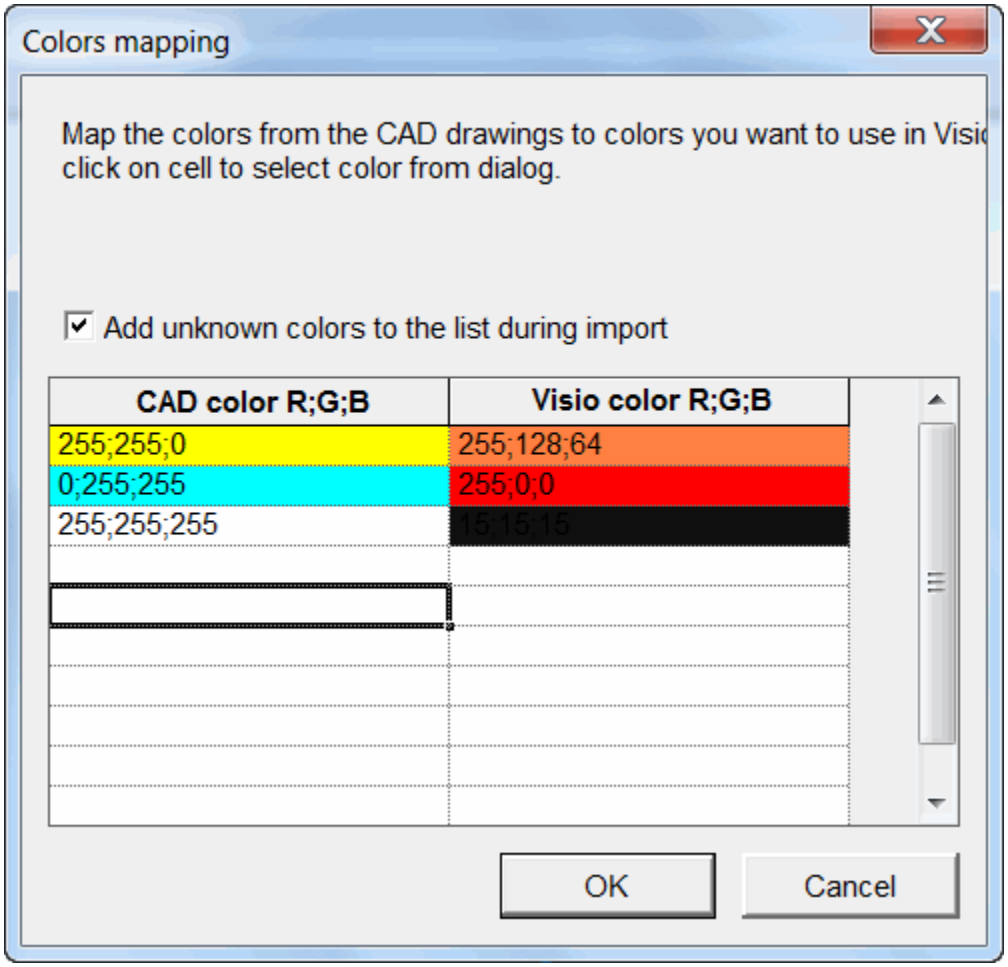
CAD Layer	The layers imported from CAD drawings. <Unmapped Blocks> is an internally assigned CAD layer.
Visio layer	A layer to be mapped to in Visio. This should be an "object layer" such as Connection or Form. Available Visio layers: **New** — There is no mapping to a Visio layer yet. **No Layer** — The CAD layer will not be mapped to a Visio layer. **Remove Layer** — The CAD layer will not be transferred to Visio. **CONNEC-TION** — The CAD layer is mapped to the Visio layer "Connec-tion". To enable the import of lines as connections, this mapping is mandatory. Thus, device pins are created in Engineering base and connected with wires. **FORM** — The CAD layer is mapped to the Visio layer "FORM" containing the frame of the drawing and the title block. **WIREARCS** — Applicable to special obligation wiring symbols to be displayed but not to be printed. The Visio layer <**Unmapped Blocks**> is internally assigned.
Visible	The settings of the drawings to be imported are adopted and may be changed. If the box is checked, the layer will be visible in Visio.
Print	The settings of the drawings to be imported are adopted and may be changed. If the box is checked, the Visio layer will be printed.
Lock	The settings of the drawings to be imported are adopted and may be changed. If the box is checked, the layer will be locked in Visio.
Color	The settings of the drawings to be imported are adopted and may be changed. A double-click into a table cell of your choice opens a color selection dialog. It is also possible to enter the RGB value of your choice in the format R;G,B. In Visio, the color defined via a layer has a higher priority than the one related to an object.
Line weight	The settings of the drawings to be imported will be displayed. Changes are possible. If no value is entered, the default line width will be adopted.
Pin Type	For the Visio level CONNECTION, you can specify which pin type is to be created at the connection.

The mapping **Unmapped Blocks** is a prerequisite for the **Block Mapping Assistant** and should not be changed. The default color red (255, 0, 0) is defined as standard, but can be changed.

In the mapping table, further rows may be created by double-clicking into one of the columns of the last row.

1.1.7 Mapping of Colors

In this dialog, you can assign other Visio colors to the colors of the CAD drawings to be imported.



- **Add unknown colors to the list during import**
  Check the check box to display all colors identified during the import in the dialog.

The columns and their meaning

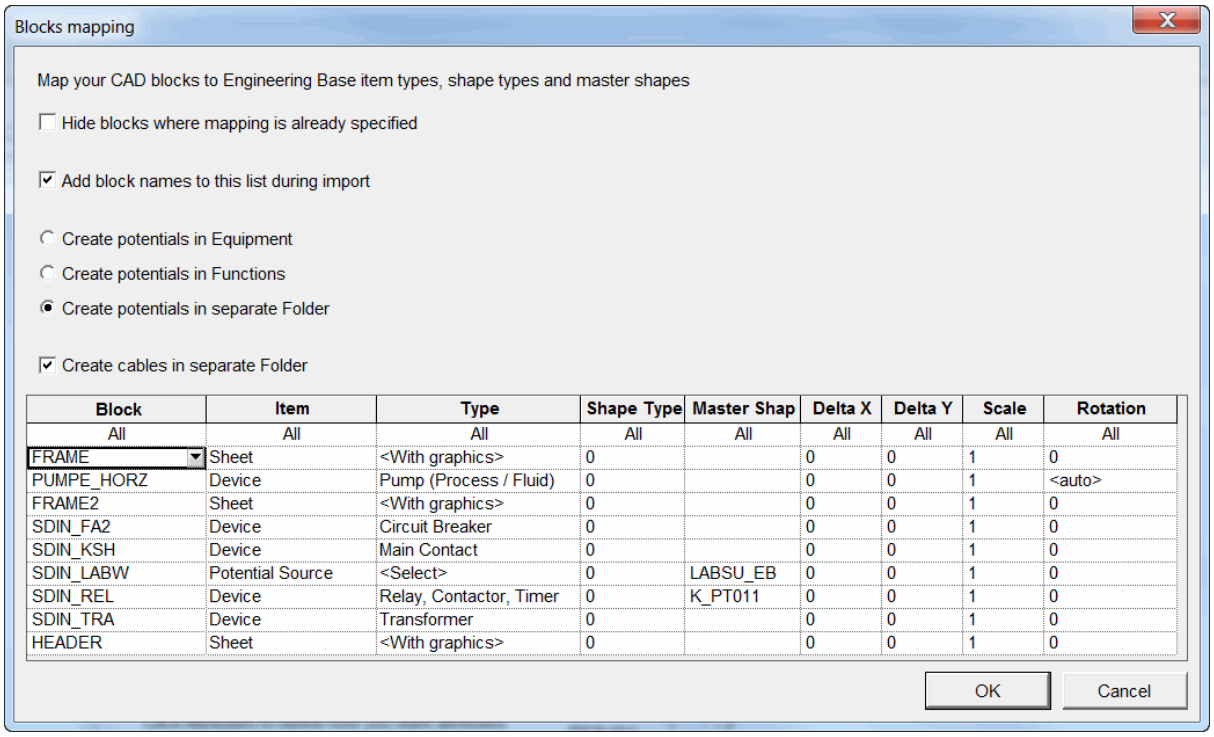
CAD color R;G;B	Colors defined in the drawings to be imported.
Visio color R;G;B	Color that is to be assigned in Visio. Double-clicking into a cell of the mapping table opens a color selection dialog.

In the mapping table, further rows may be created by double-clicking into one of the columns of the last row.

1.1.8 Mapping of Blocks

In this dialog, you can assign the CAD blocks to Engineering Base objects (types) and object types and thereby create structures in Engineering Base.

To ensure that the assignment can be made properly, it is mandatory to map the frame. If you intend to import a graphic, you must carry out an assignment to the element **Sheet** with the type **With graphics**. If the frame is not mapped, all mapped devices are not inserted into the structure but displayed as unspecified devices in the tree.

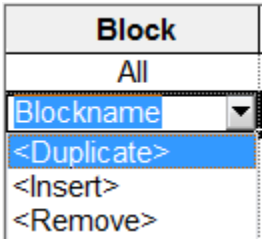


Click one or more options

Hide blocks where mapping is already specified	All mappings already known are no longer displayed.
Add block names to this list during import	Block names not yet known are added to the list during import (default).
Create potentials	Manages behavior creating potentials.
• in Equipment	Potentials are created below Equipment.
• in Functions	Potentials are created below Functions (default).
• in separate Folder	Potentials are created in a separate folder below Equipment.
Create cables in separate Folder	Cables are created in a separate folder below Equipment (default).

Columns and their meaning

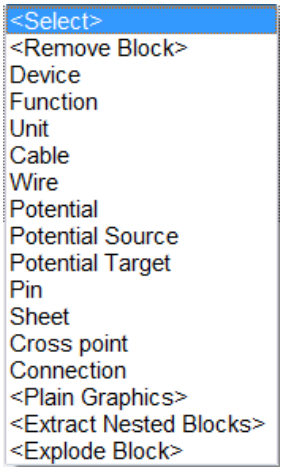
- **Block**: Listing of all existing blocks recognized during previous or current imports. The list can be adapted. Clicking into a row of the column Block, you may open a popup menu enabling you to duplicate, remove, or insert a new line in the block.



Block attributes with nearly identical names to be assigned to Engineering Base items may be combined using the sign "?" (wildcard for one character) or "*" (wildcard for several characters).

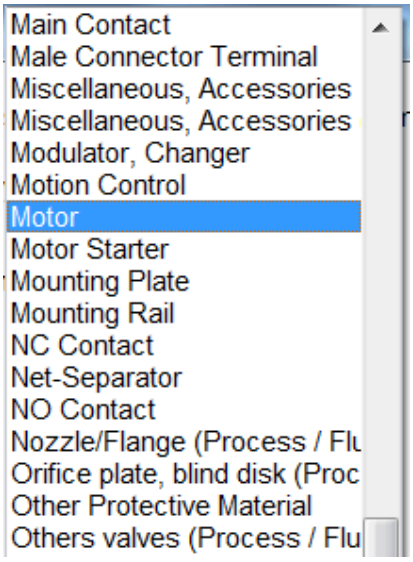
X_S_002()~2	Terminal
X_S_002()~3	Terminal
X_S_002()~4	Terminal
produces the same result as:	
X_S_002()~?	Terminal
or	
X_S*	Terminal

- **Item**: Engineering Base items (= Engineering Base type definitions) that may be assigned to the block. Clicking this column, a selection dialog will be displayed offering all available type definitions for selection.



If no Engineering Base object is assigned to the block, the block is converted to a Visio shape, only.

- **Type**: Object types displayed depending on the selected Engineering Base item. Clicking this column, all object types available for the selected item will be displayed.



- **Shape Type**: Names the type of plan used. 0 stands for circuit diagram. Other plan types have to be selected using internal codes.

Internal code	Shape Type
0 (Default)	circuit diagram
1001	layout diagram
1002	single pole diagram
1003	hydraulic/pneumatic diagram
1004	instrumentation
1005	P&I diagram
1006	logic and function plan
1007	loop diagram
1008	specification sheet
1009	hook-up / assembly plan
1010	wiring diagram
1011	loop diagram
1013	item arrangement
1014	bill of material

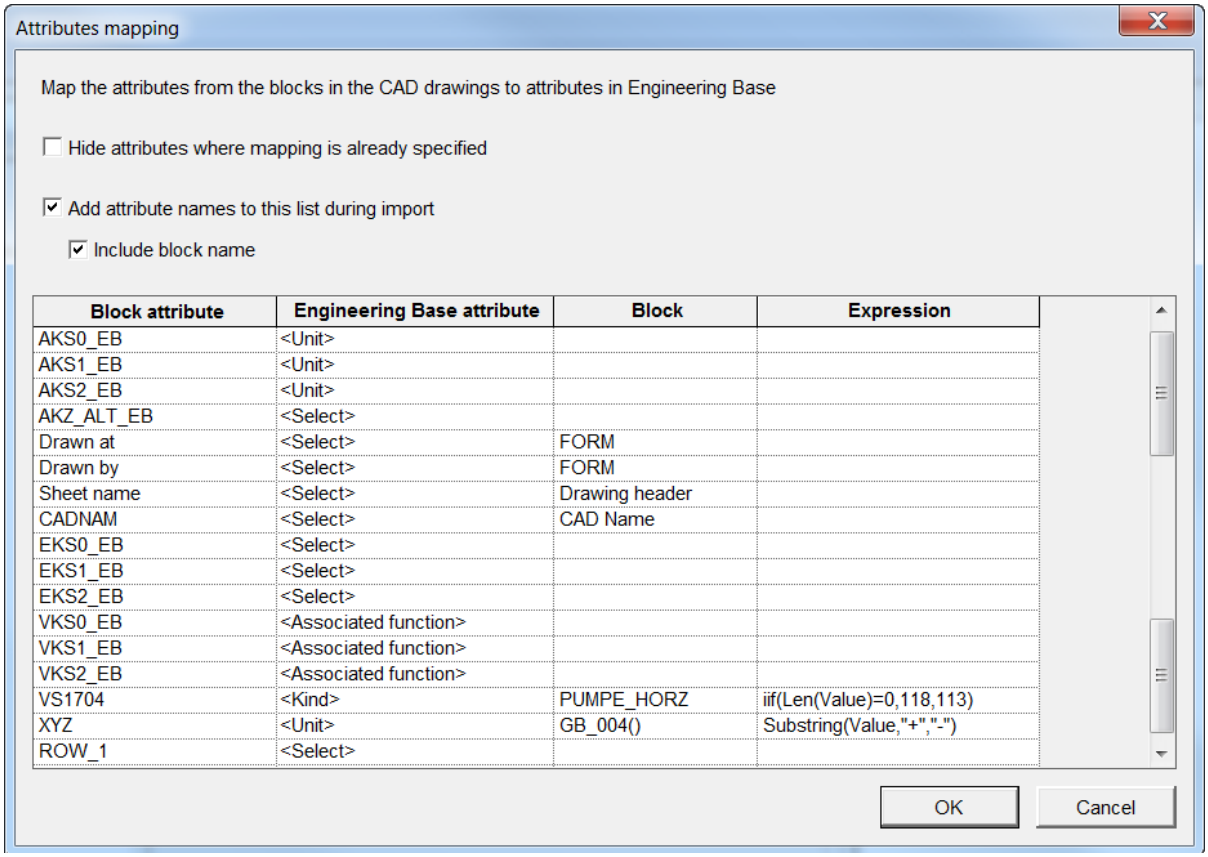
- **Master Shape**: The Master Shape selected replaces the CAD block in the drawing by an Engineering Base shape.
- **Delta X**: If the origin of the CAD shape does not correspond with the one of the master shape, then it may be shifted in X direction.
- **Delta Y**: If the origin of the CAD shape does not correspond with the one of the master shape, then it may be shifted in Y direction.
- **Scale:** The scaled Engineering Base shape does not fit into the imported drawing. Here, the scale may be adapted.
- **Rotation:** The Engineering Base Shape can be shown rotated in the imported drawing.

In the mapping table listed above, the block SDIN_FA2 is mapped to a device of type main contact. This means, if this block appears in the CAD drawing, then in Engineering Base a device of type main contact will be created and associated with this symbol.

The block SDIN_REL is mapped to the Engineering Base device of type relay, contactor, and timer with the master shape K_PT_011. The stencil K_PT_011 is used instead of the CAD block. The engineering Base symbol for this relay is defined with dynamic areas, thus all contacts of this relay are displayed on the sheet dynamically.

1.1.9 Mapping of Attributes

In this dialog, you can assign the block attributes of the CAD drawing to Engineering Base attributes and thereby create structures in Engineering Base.



Block attribute	Engineering Base attribute	Block	Expression
AKS0_EB	<Unit>		
AKS1_EB	<Unit>		
AKS2_EB	<Unit>		
AKZ_ALT_EB	<Select>		
Drawn at	<Select>	FORM	
Drawn by	<Select>	FORM	
Sheet name	<Select>	Drawing header	
CADNAM	<Select>	CAD Name	
EKS0_EB	<Select>		
EKS1_EB	<Select>		
EKS2_EB	<Select>		
VKS0_EB	<Associated function>		
VKS1_EB	<Associated function>		
VKS2_EB	<Associated function>		
VS1704	<Kind>	PUMPE_HORZ	iif(Len(Value)=0,118,113)
XYZ	<Unit>	GB_004()	Substring(Value,"+","-")
ROW_1	<Select>		

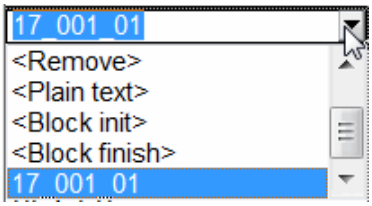
All block attributes of the CAD drawings to be imported are displayed in the table.

Click one or more options

Hide attributes the mapping is already defined.	All mappings already known are no longer displayed.
Add attribute names to this list during import	Attribute names not yet known are added to the list during import.
Include block name	Block names are displayed in the column **Block**. If block attributes were already mapped to Engineering Base attributes, and if in the process of mapping no block names were displayed in the table, then, if imported again, the block names do not appear in the column Block.

Columns and their meaning

- **Block attribute**: Name of the block attribute in the CAD drawing. By clicking in a row of the column **Block attribute**, a popup menu may be opened.

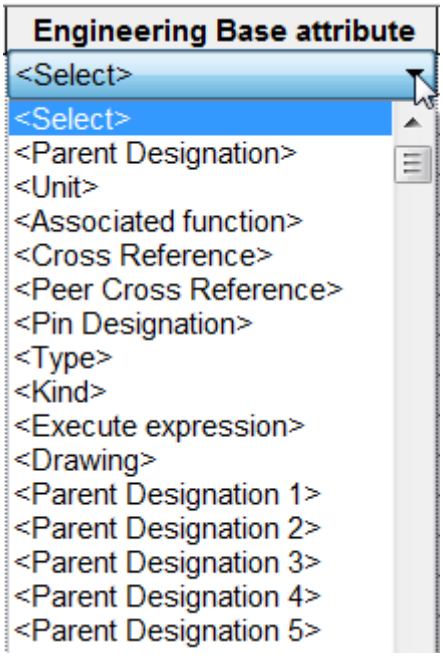


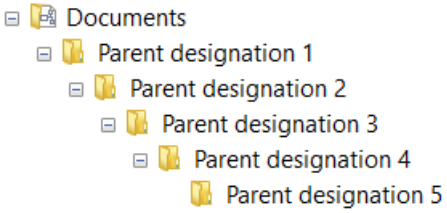
  - **Duplicate**: Duplicates the block attribute.
  - **Insert**: Inserts a blank row in the mapping table.
  - **Remove**: The block attribute is removed from the mapping table.
  - **Plain text**: Some CAD blocks only contain information and no attributes (mostly object designations). With this assignment, the assistant can extract this information and assign it to an Engineering Base attribute.
  - **Block init** and **Block finish**: The mapping is processed at the beginning or at the end of the block.

  Block attributes with nearly identical names to be assigned to Engineering Base attributes may be combined using the sign "?" (wildcard for one character) or "*" (wildcard for several characters).

VKS0_EB	<associated function>
VKS1_EB	<associated function>
VKS2_EB	<associated function>
produces the same result as:	
VKS?_EB	<associated function>
or	
VKS*	<associated function>

- **Engineering Base Attributes**: Click a row or column: A list of all Engineering Base attributes (except formula attributes) will be displayed for selection.



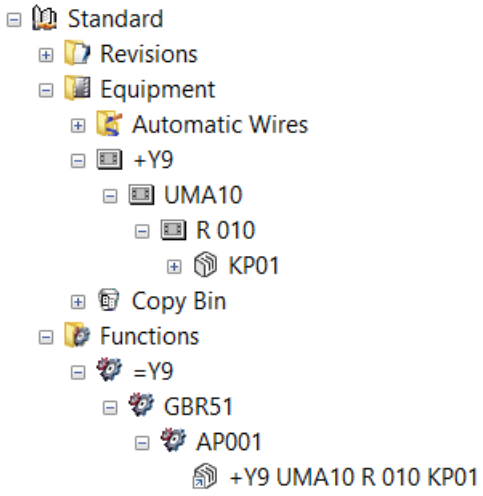
Engineering Base Attribute	Meaning
Parent Designation	If you want to create Engineering Base structures, then this Engineering Base attribute should be selected to get also parent objects of the object filled from the block.
Unit	The block attribute is assigned to the Engineering Base attribute Unit and the related unit object will be created in the folder structure, if not created, yet. If the attribute is multiply assigned, a respective hierarchical structure will be created below the unit.
Parent Designation 1-5	By assigning a block attribute to this Engineering Base attribute, the sheets created will be stored into a folder structure named by means of the block attributes. 
Associated function	Engineering Base is searched for a function corresponding to the content of the block attribute. The Visio drawing is then associated with this function. If there is no Engineering Base function with this name, yet, then in the tree below the folder **Functions** this new function will be created. If the attribute Associated function is assigned multiply, then the respective hierarchical structure will be created below the function.
Peer Cross Reference	Enables the creation of cross references by assigning sources and drains.
Pin Designation	Enable the assignment of a block attribute to the Engineering base attribute Pin designation.
Type	This Engineering Base attribute enables the assignment of a block attribute to a Cover ID.
Kind	If, depending on its value, a CAD block attribute has to be assigned to different Engineering Base object types (with different Type ID), then **Kind** has to be used. In the column **Expression**, a respective condition may be defined.
Drawing	The assistant creates sheets by default below the folder it was started on. **Drawing** determines, a folder for drawings has to be created. All subsequent sheets will be stored below this folder.

If no Engineering Base attribute is assigned, the block attribute will be ignored.

Example:

Block attribute	Engineering Base attribute
AKS0_EB	<Unit>
AKS1_EB	<Unit>
AKS2_EB	<Unit>
VKS0_EB	<Associated function>
VKS1_EB	<Associated function>
VKS2_EB	<Associated function>
VKS3_EB	<Select>

Results in the following structure in Engineering Base:



- **Block:** A block attribute, if used in several blocks, may have different meanings. Enter a block name, here, and the assignment defined will be restricted to this block. If the column is void, then the assignment is valid for all blocks using this attribute.
- Expression:
  - Sometimes, not the complete content of a block attribute is to be transferred. To restrict the block attribute content, all VBA functions plus subsequently listed functions may be used:
    - **SubString (sString, sFrom, sTo)**: Copies a sequence of characters from "sString" starting at position sFrom and ending at position sTo. SubString ("=P1+L1-D1", "+", "-") copies the string in between "+" and "-". This way, the unit may be extracted from the name.
    - **X**: X coordinate of a block
    - **Y**: Y coordinate of a block
    - **ObjectItem:** Returns the reference to create an Engineering Base object.
    - **AcadAttribute:** Returns the reference to an AutoCAD attribute. With the AcadAttribute.Alignment you can check, if the attribute is aligned right or left.
  - Import of free texts not assigned to a block.

    Using the variables **AbsoluteX** and **AbsoluteY**, free texts can be read out and assigned to EB attributes in the source drawing. In this context, the values of **AbsoluteX** and **AbsoluteY** refer to the 0 coordinate of the DWG drawing.

Examples:

Left (Value, 5): Only the first 5 characters of the block attribute will be used.

Devices with sub-structure:

If e.g. a terminal -X1 1 has to be imported, then the terminal strip -X1 should be created, too, to enable for storage of the terminal below the terminal strip. To achieve this aim, the block attribute containing the terminal strip name has to comprise the Engineering Base attribute **Parent Designation**. If the block attribute is not void, then Engineering Base creates a respective parent object terminal strip. If the attribute is void, then using internal procedures the next terminal with defined terminal strip is searched for and the terminal is inserted below this terminal strip.

This approach holds for all structured objects like relay and so on.

Assigning a CAD block to different Engineering Base objects:

A CAD block may be used in two or more Engineering Base object types. Thus, e.g. an attribute X may be used for terminals and pins of black boxes. If the attribute X is used for pins, the attribute value is void. This block attribute has to be mapped to the Engineering Base attribute **Kind**, then. With the expression **iif(Len(Value)=0,118,113)** the assignment is done. This means, if the attribute value is void, that is = 0, then an object with type ID 118 (Pin) has to be created, an object with type ID 113 (device), otherwise.

Importing Pins:

Importing pins, it is essential to map layers containing connections in a correct way (see Mapping of Layers). Once this is done, the assistant automatically identifies the intersections of blocks and connections, and creates automatically pins at these positions. The pin type has to be specified in the mapping of layers. If there is a text close to one of these intersections, the text is used as pin designation. If the closest text is not the pin designation, but is contained in a block attribute, then this attribute content may be assigned using **Pin Designation** to the respective Engineering Base attribute.

Importing Free Texts

Free texts are to be adopted from the DWG which are not assigned to a block. The * has to be entered in the column block attribute. Using the expression

iif(((AbslouteX>364 and AbsoluteX<499) and (AbsoluteY>16 and AbsoluteY<20)),Value, "")

the text is adopted from the DWG for which the reference point of the text fields is located within the area of the coordinates 364<X<499 and 16<Y<20. If this text field has no text, no value is entered into the corresponding EB attribute.

1.2 The Block Mapping Assistant

When importing bulk data, the **Block Mapping Assistant** of the assistant **Advanced CAD import** enables easy mapping of objects and attributes in the imported drawings with Engineering Base objects and attributes.

Prerequisites

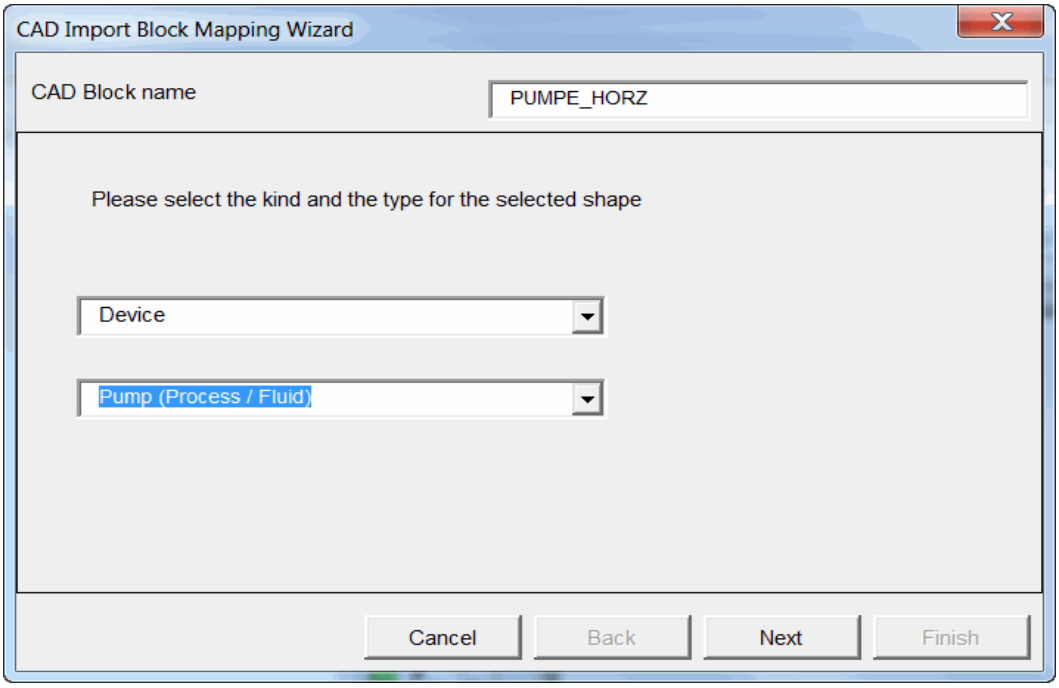
- Import of drawing(s) with the Advanced CAD import assistant into the Engineering Base project.
- The following options of the Advanced CAD import must be activated:
  - Activation of the layer mapping under **General**/**Graphic** so that unmapped blocks are shown in red in the drawing.
  - Activation of **Convert blocks to Visio shapes and items** under **General**/**Blocks and Attributes**.
  - To map the blocks under **General**/**Blocks and Attributes**, **Add block names to this list during import** must be marked.
  - To map the attributes under **General**/**Blocks and Attributes**, **Add attribute names to this list during import** must be marked.

How to execute the Block Mapping Assistant:

1. Use the Engineering Base-Explorer, folder **Documents**, to select a sheet that was imported with the **Advanced CAD Import** assistant under the options specified in Prerequisites.
2. Open the sheet with a double click, or click on **Open Sheet with Visio** in the context menu.

   The sheet is opened, and all unmapped blocks are marked in red.
3. Mark a block and click on **Select assistant** in the context menu.
4. In the **Assistant selection** dialog, select **Advanced CAD Import/Block Mapping Assistant** and click on **Start**.

   The dialog **CAD Import Block Mapping Assistant** is opened.

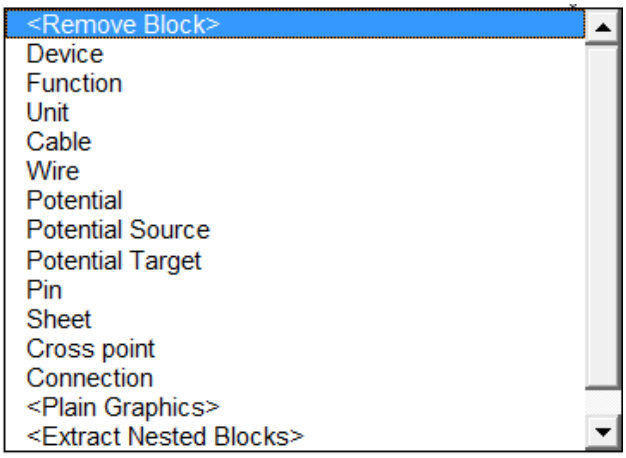


The name of the selected block is shown in the field **CAD block name**.

The assistant is terminated with **Cancel**.

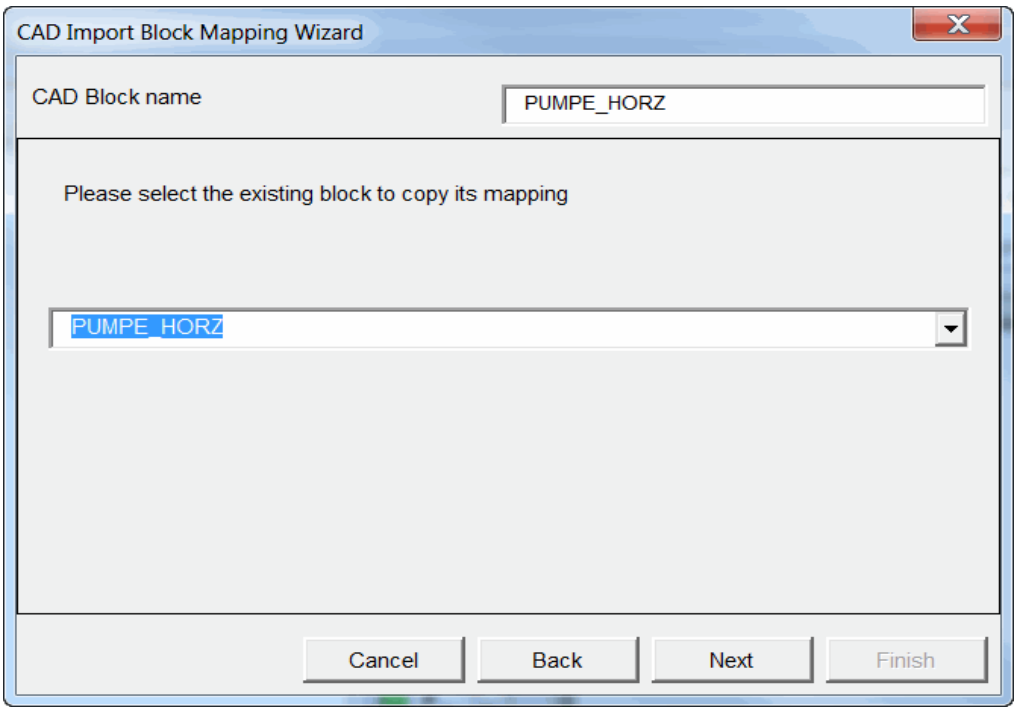
Next opens the second dialog of the assistant.

5. In the first input field, assign the block an Engineering Base type (according to the global type definition =CID). With a click into the input field you open a selection window with the possible types.



6. In the second input field, assign an object type to the block. With a click into the input field, the object types corresponding to the Engineering Base type are shown for selection.
7. Click on **Next**.

The second dialog of the assistant is displayed.



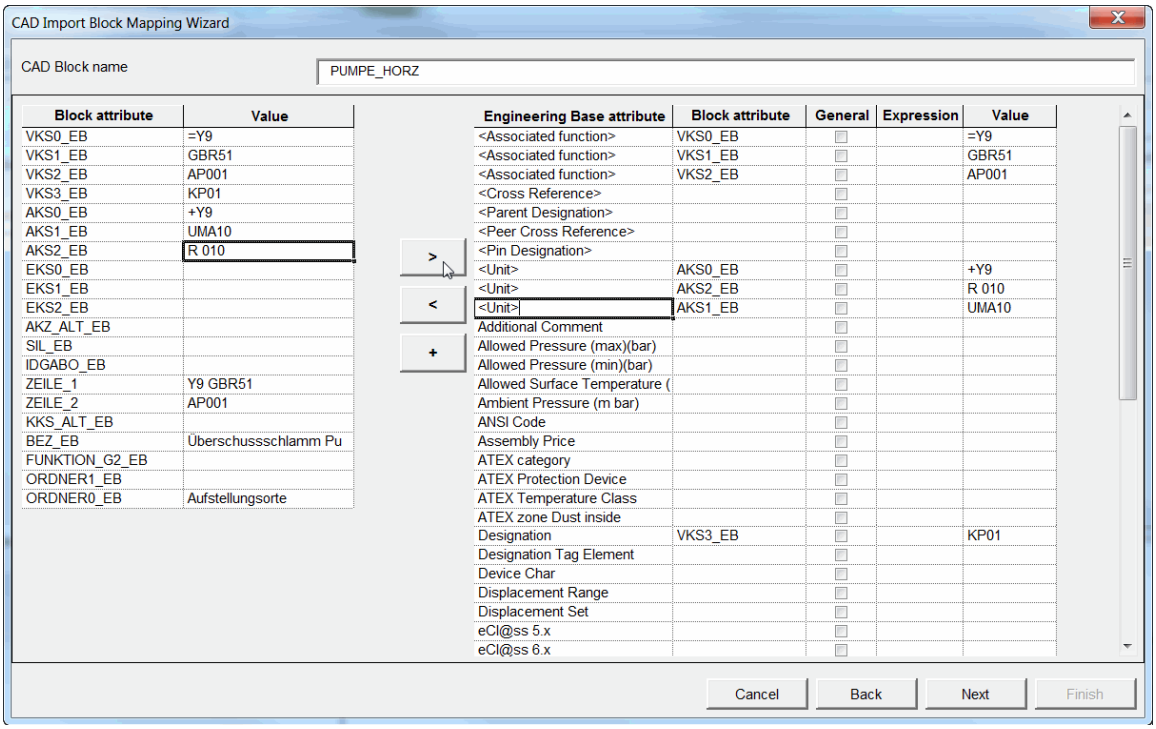
Cancel terminates the assistant.

Back returns to the last dialog of the assistant.

Next opens the third dialog of the assistant, which enables the assignment of block attributes to Engineering Base attributes.

8. Select an already defined mapping if required. Click on the input field to display a list of the already created mappings.
9. Click on **Next** to open the third dialog of the assistant.

   The third dialog of the assistant is displayed.



The name of the marked block is shown in the field **CAD Block Name**.

Cancel terminates the assistant.

Back returns to the last dialog of the assistant.

Next opens the fourth dialog of the assistant, where you can start the reimport.

Columns and their meaning

Block attribute	Name of the block attribute in the CAD drawing.
Value	Name of the block attribute.
Engineering Base attribute	Attributes specified for the selected object type.
General	You can mark the checkbox if the assignment is to be valid for all corresponding symbols (global assignment).
Expression	To restrict the content of the block attribute, you can here use all VBA functions as well as some other functions. See Mapping of Attributes.

Possible actions:

>	Assign the marked block attribute to a marked Engineering Base attribute.
<	Undo the assignment to the marked Engineering Base attribute.
+	Duplicate the line of the marked Engineering Base attribute

Assignment of the block attributes to Engineering Base attributes

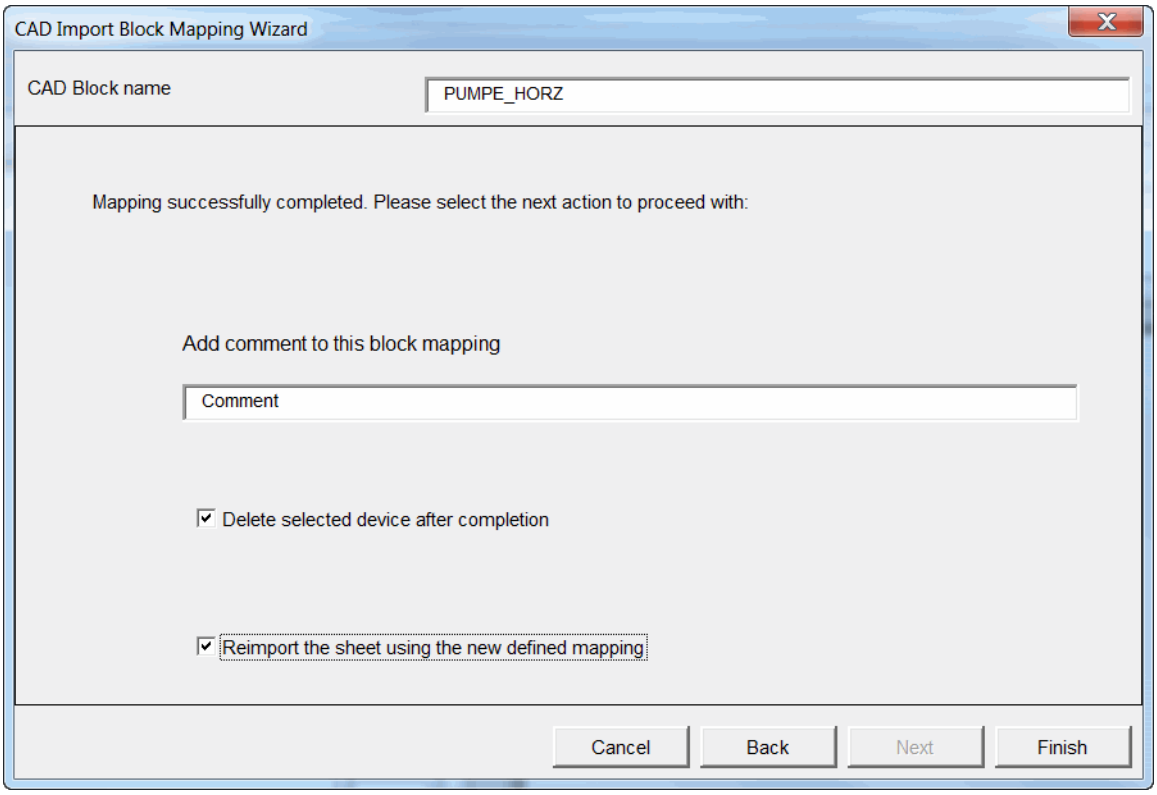
Mark a block attribute or a value on the left-hand side of the dialog

Mark the desired Engineering Base attribute

Click on **>** to carry out the assignment. The name and the value of the block attribute are adopted into the corresponding columns on the right-hand side. If the column Expression contains a function, then the column **Value** on the right shows the result of the function.

10. Assign the block attributes to the desired Engineering Base attributes.
11. Click on **Next** to terminate the mapping.

    The fourth dialog of the assistant is opened.



The name of the marked block is shown in the field **CAD Block Name**.

Cancel terminates the assistant.

Back returns to the last dialog of the assistant.

Finish terminates the Block Mapping assistant.

12. Enter a comment for the mapping just executed. This makes sense if you want to use the mapping as template.
13. Select the desired options:

    - **Delete device after completion:** The object imported with the CAD import is deleted in the Engineering Base project. This option should always be marked if the sheet with the newly defined mapping is to be reimported.

      If no subsequent reimport is carried out, then the edited CAD block is shown in the imported drawing only as shape.

- **Reimport sheet with the newly defined mapping:** The CAD drawing is reimported with the mapping, and the objects are created in the Engineering Base project.

14. Click on **Finish** to terminate the assistant.

Depending on the selected setting, the mapping is stored in the options of the assistant **Advanced CAD Import**, in the project or in the database.

2 Workflow in Special Cases

2.1 Frame with Unit and Function in the CAD Drawing

Frequently, drawings to be imported contain frames with inserted unit and function.

In Engineering Base two frames, a functional and a unit frame, have to be created for this end, to enable the objects within the frames to be created in the Engineering Base Tree below the unit and to be associated with the function.

There are two ways, to create the two kinds of frame when importing a drawing that will be described subsequently:

Example for a CAD frame with function and unit

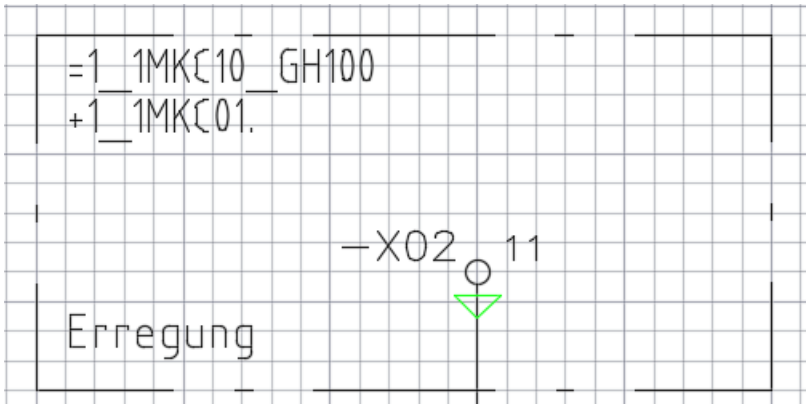
In the CAD drawing the following definitions may be found:

Function: =1_1MKC10_GH100

Unit: +1_1MKC01. (Doesn't conform to EN81346)

CAD block for the frame: _FIELD_

Block attributes: ECS_T_Field_1 = Unit name, ECS_T_Field_2 = Function name.

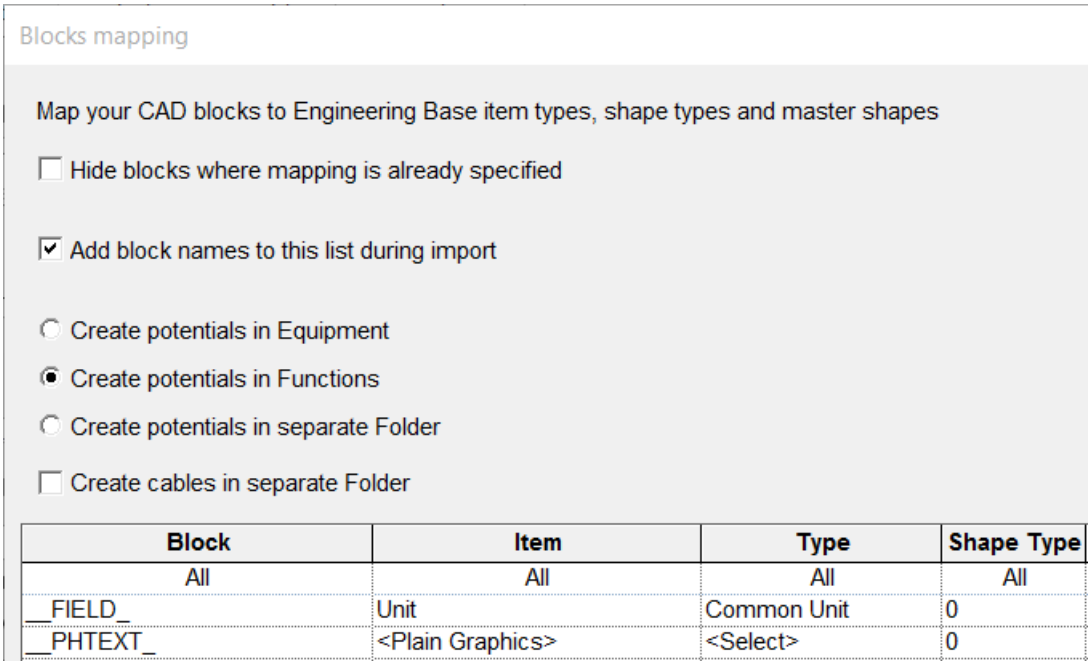


Creation of function and unit frames using the dialog Options, if the CAD block name is known

If the name of the block and the block attributes are known, the assignment may be achieved simply by using the dialog **Options**.

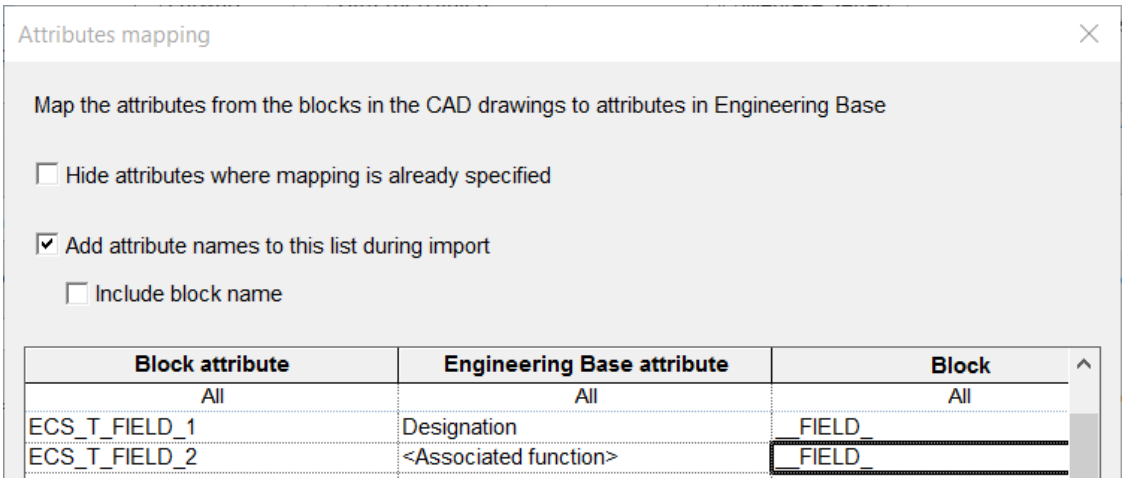
1. Start the assistant **Advanced CAD-Import** on the folder **Documents**.
2. Click **Options**.
3. Below **General**/**Blocks and Attributes**/**Blocks**, assign to the CAD block for the frame the item **Unit** and the type **Common Unit**.

Example:



4. Open the attribute **Mapping** below **General**/**Blocks and Attributes**/**Attributes**.
5. Assign to the block attribute containing the name of the unit the Engineering Base attribute **Designation**. Enter into the column **Block** the corresponding CAD block.
6. Assign to the block attribute containing the name of the function, the Engineering Base attribute **<Associated function>**. Enter into the column **Block** the corresponding CAD block.

Example:



After the CAD import, in Engineering Base on the imported sheet two frames will be displayed on top of each other. The objects within the frame will be listed in the Engineering Base tree below the unit and associated with the function.

Creation of function and unit frames using the Block Mapping Assistant

1. Import your favored drawing with the assistant **Advanced CAD-Import** as described in chapter 1.2, The Block Mapping Assistant.

   The preconditions described there have to be fulfilled.

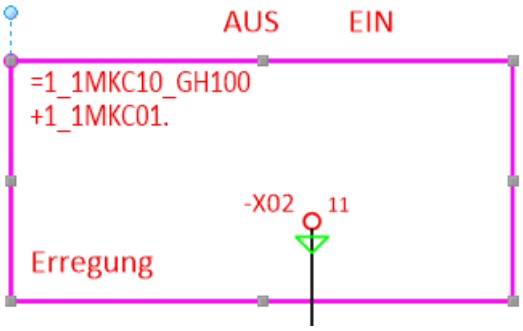
2. Open the sheet with a double click, or click on **Open Sheet with Visio** in the context menu.

   The sheet is opened, and all unmapped blocks are marked in red.

3. In the drawing, mark the frame with unit and function.

   Example:

   The designation of the displayed unit +1_1MKC01. doesn't correspond to EN81346.

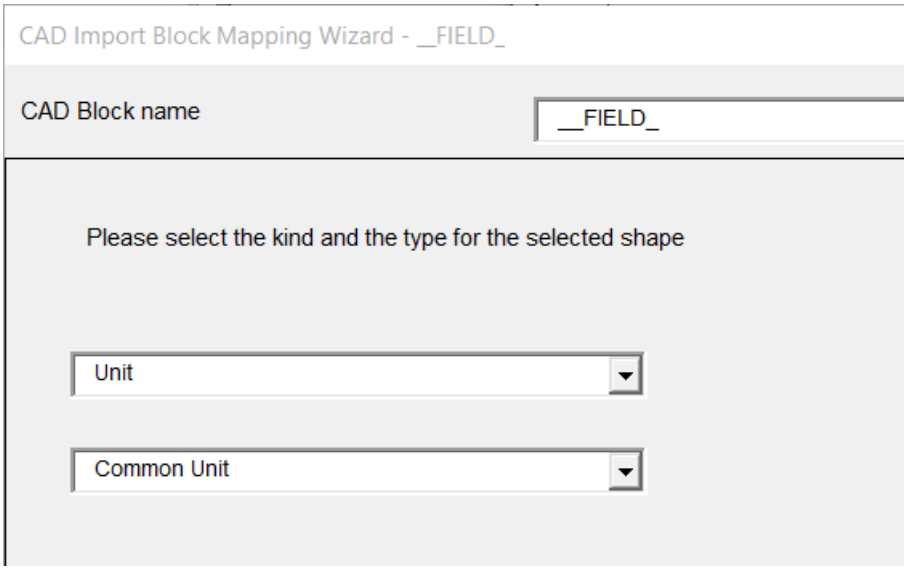


4. Click **Select Assistant** in the context menu, select **Advanced CAD-Import/Block Mapping Assistant** and click on **Start**.

   The dialog **CAD Import Block Mapping Assistant** is opened. The name of the selected block is shown in the field **CAD block name**.

5. Select the EB type **Unit** in the first input field and the object type **Common Unit** in the second input field.

   Example:



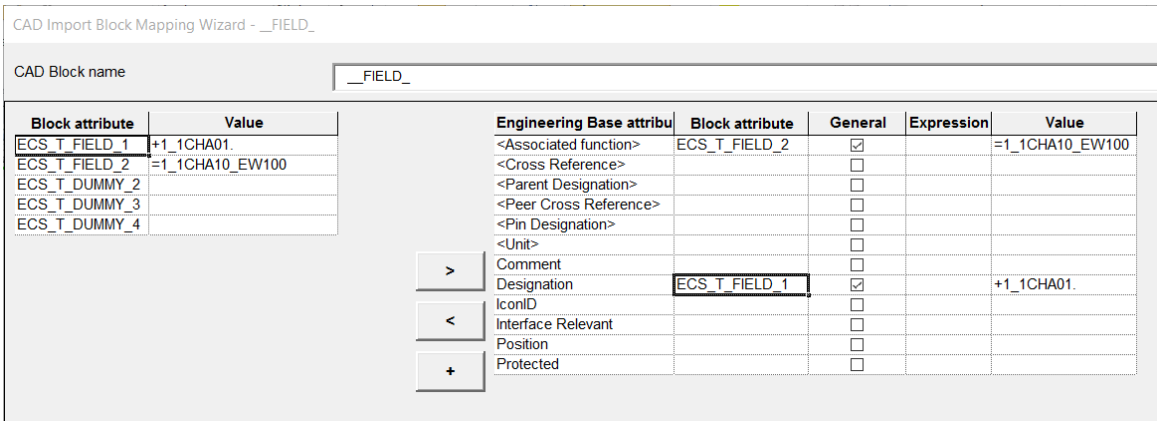
6. Click on **Next** to open the second dialog of the assistant.

   If a comparable mapping doesn't exist, yet, no input has to be made here.

7. Click on **Next** to open the third dialog of the assistant.

8. Assign the block attributes containing the names of the function and the unit to the Engineering Base attributes **<Associated function>** and **Designation**. Mark the corresponding checkboxes in the column **General**, if you want effect global assignment.

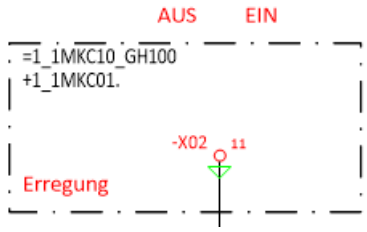
   Example:



9. Click **Next** to open the fourth dialog of the assistant.
10. Mark the options **Delete selected device after completion** and **Reimport the sheet using the new defined mapping**.
11. Click **Finish**, to terminate the assistant and to reimport the sheet.

Example for result:

Now, in the sheet only two frames are displayed on top of each other.



Using the popup menu, you may navigate to the unit or function.

The two frames positioned on top of each other become visible, if you mark the frame and shift it.