BECKHOFF New Automation Technology

Manual | EN

TE1000

TwinCAT 3 | Variant Management

2021-07-21 | Version: 1.4

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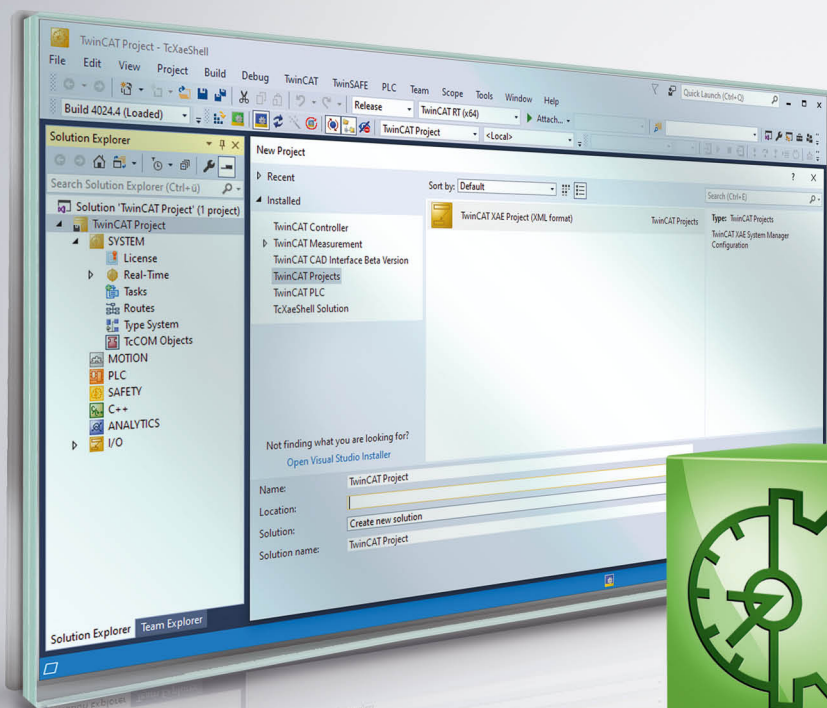
1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.
It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.
It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.
We reserve the right to revise and change the documentation at any time and without prior announcement.
No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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Patent Pending

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EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702
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1.2   Safety instructions

Safety regulations

Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

Description of symbols

In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

⚠ **DANGER**
Serious risk of injury!
Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.

⚠ **WARNING**
Risk of injury!
Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.

⚠ **CAUTION**
Personal injuries!
Failure to follow the safety instructions associated with this symbol can lead to injuries to persons.

NOTE
Damage to the environment or devices
Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment.

● **Tip or pointer**

i This symbol indicates information that contributes to better understanding.

2   Concept

The TwinCAT variant management supports you from build 4024 in the implementation and maintenance of machines for which you offer different variants. For example, four variants are used in the following:

1. Version: Basic machine
2. Version: Basic machine with the option A
3. Version: Basic machine with the option B
4. Version: Basic machine with the options B and C

All four variants are largely based on the same configuration and code basis and differ only slightly due to the options. Examples of these options are a varying axis layout due to different product properties and the dynamics derived from them as well as an additional processing step with further hardware and software.

Division into four individual TwinCAT projects would lead to considerable added expenditure on account of the large overlaps, since changes to the common basis would have to be entered in the different projects in parallel. At this point the TwinCAT variant management enables the different machine variants to be configured, implemented and entered in just one TwinCAT project and in this way to minimize the necessary expenditure.

Project variants and groups of variants

The settings whose values differ for the different variants can be managed in so-called project variants within a TwinCAT project. A total of four project variants would be created for the example named above and the configurations necessary for option A would be carried out exclusively for the second project variant.

If you wish to make settings for several variants at once, you can define a group of variants. It provides a view of several project variants at once. The specific settings for the option B, which are contained in both the third and fourth variant, can be adopted simultaneously for both project variants with the help of such a group. In this way the necessary configuration expenditure is minimized.

A special group that is automatically added when creating the first variant is the group **[All]**. It provides a view of all existing project variants and can be used accordingly to adopt a specific value of a setting for all available variants.

> ● **Activation of the configurations**
>
> **i** If a group is selected it is not possible to activate the configurations, as different variant-specific values for a setting can lead to an undefined state. Select an individual project variant before activation.

User interface

The new TwinCAT XAE Project Variants toolbar [▶ 19] for the variant management is delivered with build 4024. Via this toolbar you can open the Manage Project Variants dialog [▶ 19] for the creation and management of project variants and also select the desired active variants. On selecting a variant, the TwinCAT project will be automatically reloaded with the corresponding variant-specific values.

An object in which at least one setting is enabled for the variant management is displayed with a blue triangle in the top right-hand corner of the icon in the project tree. In the case of an output terminal the

standard icon 🔲 would be extended accordingly: 🔲 . If a group is selected that contains variants in which different variant-specific values have been saved for a setting, the icon in the project tree is supplemented

with a yellow/blue triangle. In this case the icon of the output terminal would look like this: 🔲 .

Integration in the PLC project

The TwinCAT variant management features continuous integration into the PLC project. For this you can define variant-specific compiler definitions at System Manager level for a PLC project. The definitions are forwarded automatically to the PLC project and can be evaluated within the PLC project. The PLC [▶ 27] for the variant management must first be enabled for this.

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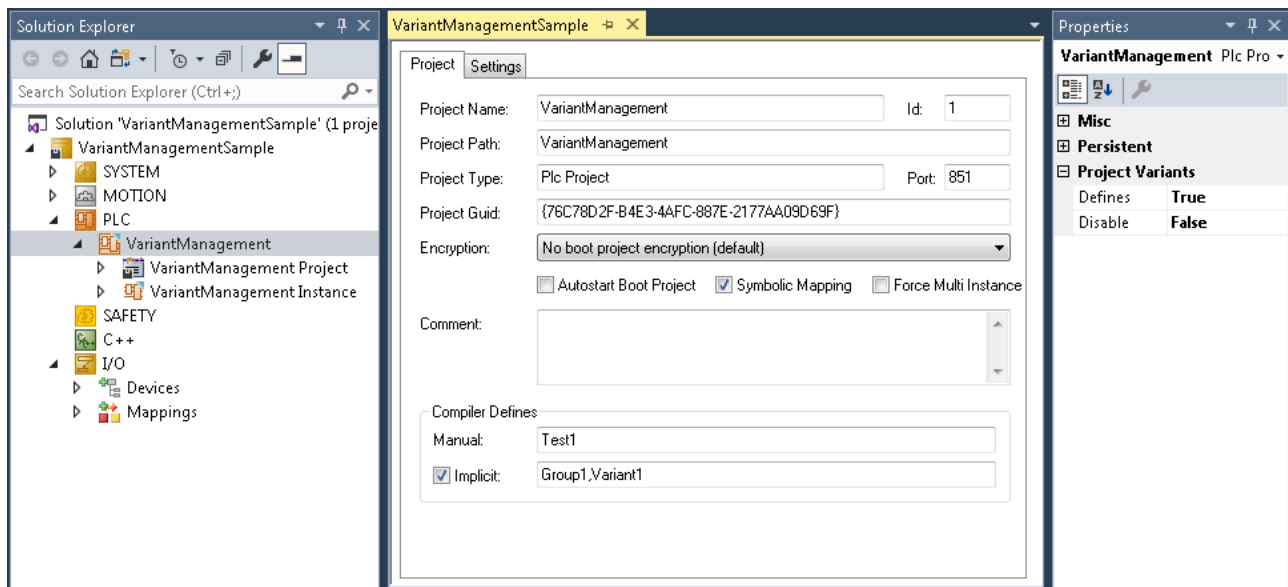
The compiler definitions at System Manager level can be changed in the editor as shown above. There are two Project tab for compiler definitions:

- **Manual:** You can define your own compiler definitions that are saved only for the selected variant and forwarded to the PLC project.
- **Implicit:** If the "Implicit" function is activated, the names of the selected variants as well as all groups to which the variants belong are automatically set as compiler definitions and forwarded to the PLC project.

For the evaluation of the compiler definitions within the PLC project you can use conditional compilation and conditional referencing of libraries.

Conditional compilation in the PLC project

Conditional compilation is possible both in the declaration editor and in the programming editor within the PLC project with the help of Conditional pragmas. In this way sections of the program code defined by you can be automatically included or excluded depending on the selected variant.

Sample of conditional compilation in the declaration editor:

```
PROGRAM MAIN
VAR
{IF defined (Variant1)}
(* The following variables are only declared, if the compiler define 'Variant1' is set *)
sVariantUsed : STRING := 'Variant1';
bOutput AT %Q* : BOOL;
{ELSE}
(* The following variables are only declared, if the compiler define 'Variant1' is not set *)
sVariantUsed : STRING := 'NotVariant1';
bInput AT %I* : BOOL;
{END_IF}
END_VAR
```

Sample of conditional compilation in the programming editor:

```
{IF defined (Group1)}
(* The following code is only executed, if the compiler define 'Group1' is set *)
nCounter := nCounter + 1;
{ELSIF defined (Group2)}
(* The following code is only executed, if the compiler define 'Group2' is set *)
nCounter := nCounter - 1;
{END_IF}
```

Conditional referencing of PLC libraries

Via the Command Properties setting in the **Conditional Referencing** category, you can add entries to the desired library in the Properties window. These entries are compared with the compiler definitions set for the PLC project. The library is actively referenced on condition that at least one of the entries corresponds to one of the definitions. If none of the entries correspond, the library is deactivated and grayed out in the project tree. In this case, any license necessary for the use of the library in the PLC project will be ignored.

In the sample of the following screenshot of a Properties window, the Tc3_CM library is only active if the Variant1 or Variant3 entry is set as a compiler definition. Otherwise it is deactivated and the corresponding license is not needed.
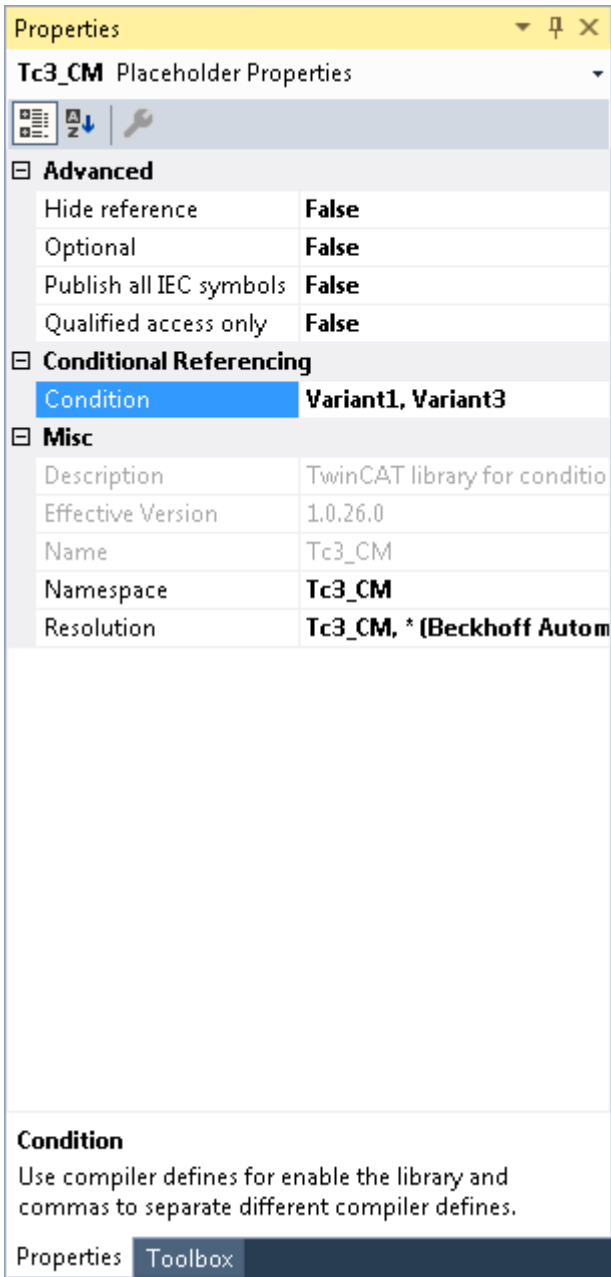
Integration into the stand-alone PLC project

The variant management supports the workflow of the stand-alone PLC. Basically, the stand-alone PLC project is a self-contained project outside of the System Manager project and can be managed both in the same Solution and in a separate Solution. In the System Manager, only the TMC file is added as an existing element instead of the complete PLC project. As a result, the PLC and System Manager projects can be clearly separated from each other.

Since they are both self-contained projects, they both have their own variant configuration. If you are planning an identical configuration in both projects, you can import [▶ 15] an already existing configuration into the second project.

The challenge in using a stand-alone PLC project created for a specific variant is that it must be created in the right variant beforehand in the System Manager project when updating the TMC file. Otherwise the boot data and the process image will not match. For that reason it is possible to create both the boot data and the TMC file for a specific variant [▶ 19] and to save them. Instead of the TMC file, the project file .tcpproj of the

stand-alone PLC project can then be added in the System Manager project. In this way you have the option to select the desired variant of the PLC project manually or automatically in the System Manager project via the variants configured there. Further information can be found here [▶ 16].

See also:

- Workflow [▶ 11]
- Manage Project Variants dialog [▶ 19]
- TwinCAT XAE Project Variants toolbar [▶ 19]
- Reference supported settings [▶ 24]

3 Workflow

The workflow illustrated below is fundamental for the TwinCAT variant management:

1. Definition of variants and, if applicable, groups of variants
2. Selection of a variant or group for which the specific settings are to be made
3. Enabling of this setting for variant-specific saving
4. Changing the setting

---

i **Changing a setting**

Before making a change to the TwinCAT project, make sure that the desired project variant or group is selected and that the corresponding setting for the variant management is enabled.

---

i **Changing a setting for a group of variants**

If you have selected a group of variants, a change will be saved automatically for all variants assigned to the group. Even if different values had previously been saved for the setting in the respective variants, they will be overwritten with the new value.

---

i **Exporting and importing existing topologies including variant-specific configurations**

You can export and import existing topologies including their variant-specific configurations. To do this you can use the export and import option in .xti format. If the variants contained in the .xti file do not yet exist in the TwinCAT project at the time of importing, they will be generated automatically.

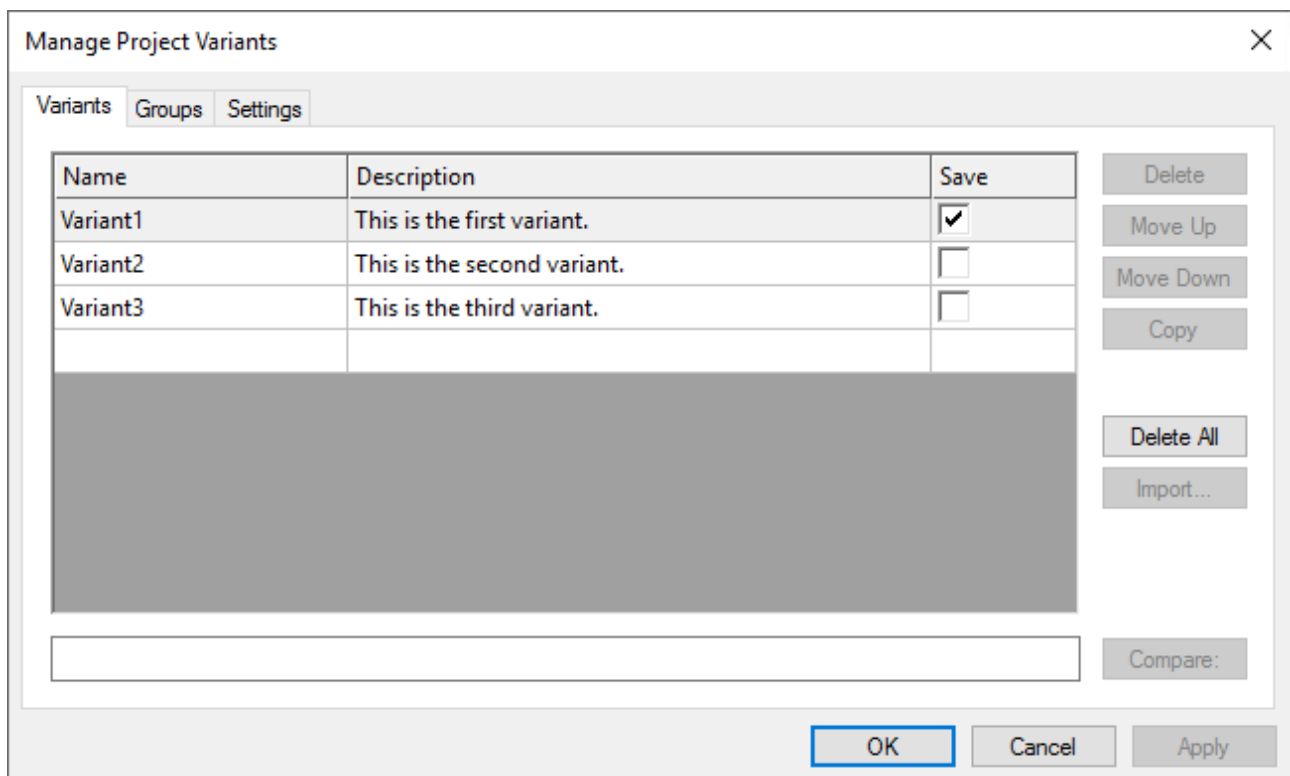**i** **Making deactivated objects invisible**

You can make deactivated objects invisible in the entire project tree in order to display only the activated objects and in this way to increase the clarity in the project tree.

See also:

- Reference supported settings [▶ 24]

3.1 Creating a variant

1. Open the Manage Project Variants dialog via the TwinCAT XAE Project Variants toolbar.
2. Select the **Variants** tab.
3. Define a name for the new variant.
4. Enter a description for this variant if necessary.
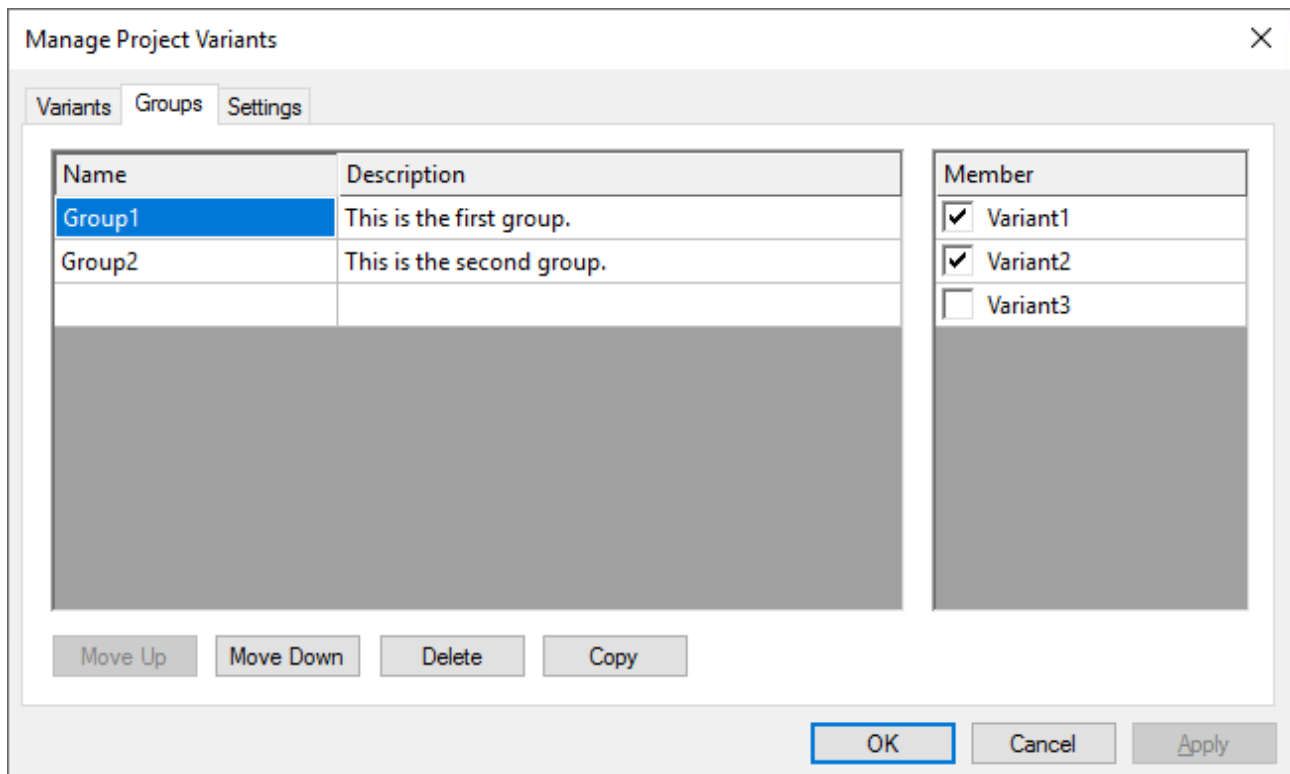5. Save the changes with the **Apply** button or save and close the dialog with the **OK** button.

> ● **Definition of a name**
>
> It is not possible to use a name that contains spaces and the following special characters: \./<>"*:?| []{}()+-, or that begins with a number, as it must conform to the specifications for compiler definitions.

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]
- Manage Project Variants dialog [▶ 19]

3.2 Creating a group

1. Open the Manage Project Variants dialog via the TwinCAT XAE Project Variants toolbar.
2. Select the **Groups** tab.
3. Define a name for the new group.
4. Enter a description for this group if necessary.
5. Select the variant(s) that is/are to be assigned to the group via the corresponding checkbox(es).
6. Save the changes with the **Apply** button or save and close the dialog with the **OK** button.

> ● **Definition of a name**
>
> It is not possible to use a name that contains spaces and the following special characters: \./<>"*:?| []{}()+-, or that begins with a number, as it must conform to the specifications for compiler definitions.

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]

- Manage Project Variants dialog [▶ 19]

3.3   Selecting a variant

1. Open the drop-down menu in the TwinCAT XAE Project Variants toolbar.
2. Select the desired variant from the list.

ⓘ Selection of a variant

On selecting a variant, the TwinCAT project will be automatically reloaded with the corresponding variant-specific values.
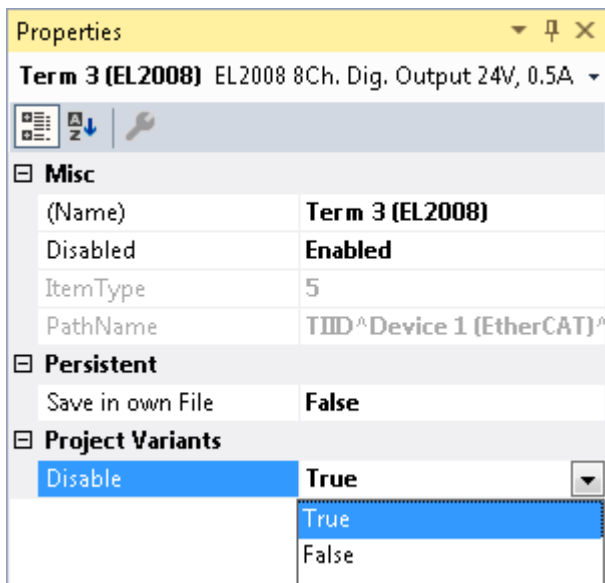

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]

3.4   Enabling a setting

1. In the project tree, select the object to which the setting to be changed belongs.
2. Open the Properties window.
3. Enable the desired setting for the variant management.

Example – enabling the disable setting for an EL2008:

ⓘ Availability of the settings

The settings in the category **Project Variants** are only displayed if at least one variant has been added. For the classification into categories, as can be seen in the previous screenshot, you have to activate the sorting setting **Categorized** at the top left in the properties window.

ⓘ Enabling several settings at the same time

You can also activate a setting for several objects at the same time. To do this, select all desired objects in the project tree with the help of the CTRL key and then change the setting as described above.
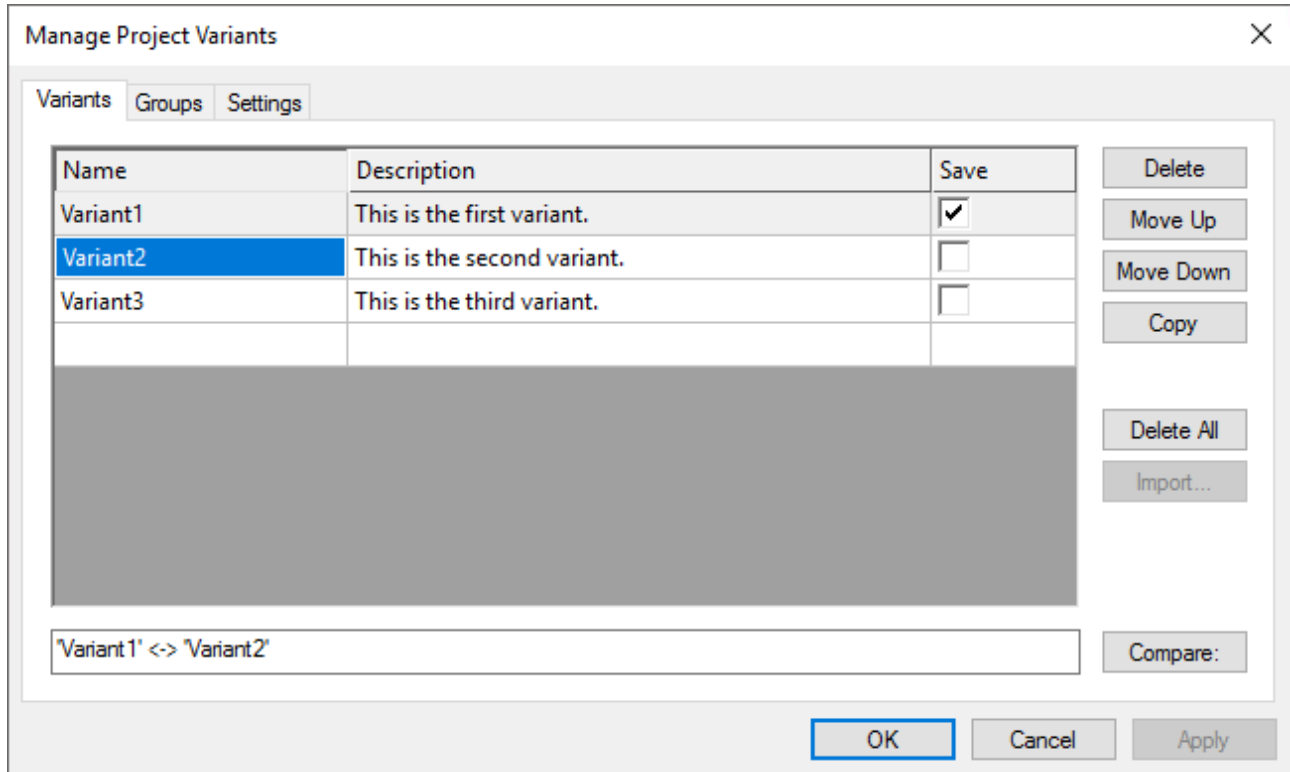

See also:

- Concept [▶ 7]
- Creating a variant [▶ 11]

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- <u>Reference supported settings [▶ 24]</u>

3.5   Comparing variants

You can compare the active variant with the other variants using the Manage Project Variants dialog. The variants to be compared are displayed here in the lower text box.

1. Select the active variant via the TwinCAT XAE Project Variants toolbar.
2. Open the Manage Project Variants dialog via the TwinCAT XAE Project Variants toolbar.
3. Select the second variant with which the active variant is to be compared.
4. Actuate the **Compare** button to compare the two variants.

The TwinCAT Project Compare is opened automatically. It is not possible to merge the variants.
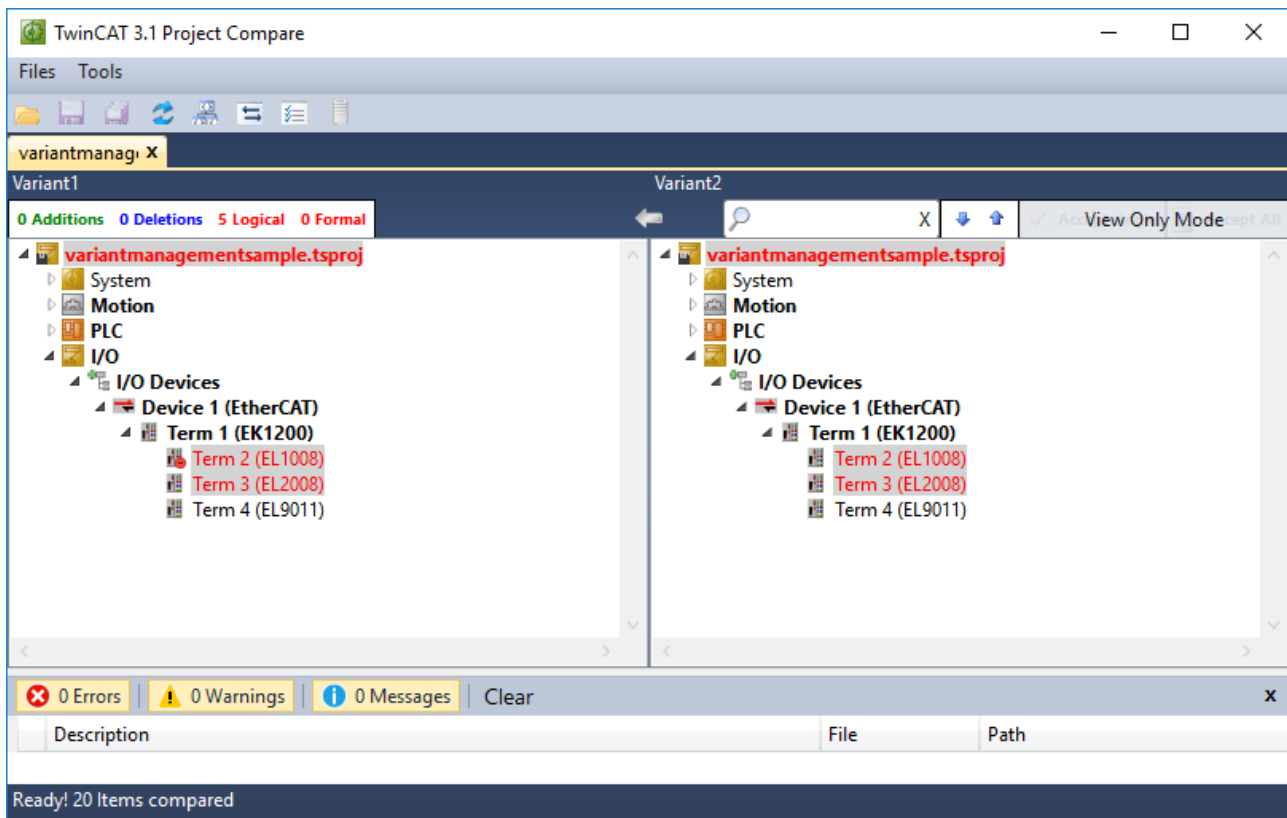
See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]
- Manage Project Variants dialog [▶ 19]

3.6 Importing configurations

You can import an already existing variant management configuration consisting of the definition of the variants and groups or variants, including their description, into a TwinCAT project in which no configurations have been made yet.
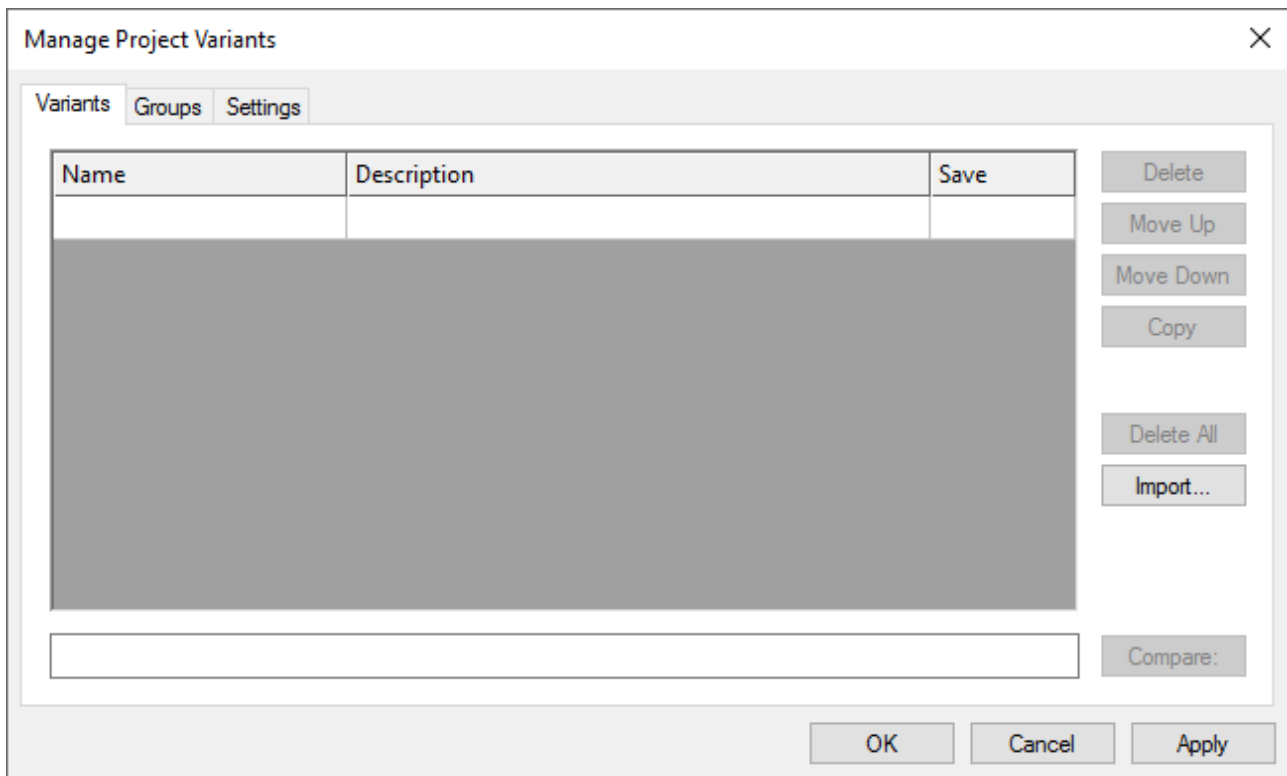
1. Open the Manage Project Variants dialog via the TwinCAT XAE Project Variants toolbar.
2. Actuate the **Import** button.
3. Search for the TwinCAT project with the desired configurations.
4. Select the xxx.tsproj file of this project.
5. Actuate the **Open** button.
6. Save the configurations with the **Apply** button or confirm and close the dialog with the **OK** button.

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]
- Manage Project Variants dialog [▶ 19]

3.7 Using a stand-alone PLC

When you use a stand-alone PLC project, you can also combine this project with the variant management. To do this, you have to perform the steps described below on the stand-alone PLC and System Manager project page.

In the stand-alone PLC project…

1. Open the Manage Project Variants dialog in the stand-alone PLC project via the TwinCAT XAE Project Variants toolbar.
2. Open the third tab, **Settings**.

3. Make sure that the checkbox <u>Variant specific local boot folder</u> [▶ 19] is activated.
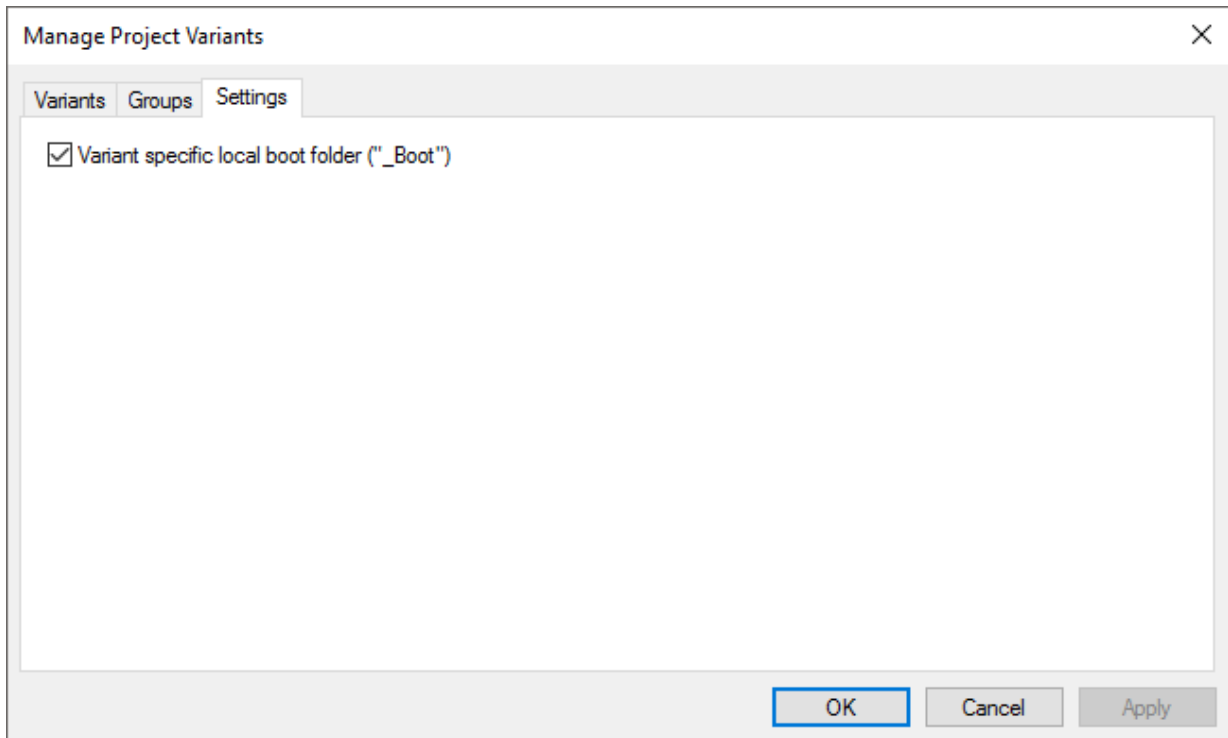
⇨ If the checkbox **Variant specific local boot folder** is activated, the boot data are stored for the specific variant in a separate folder bearing the name of the variant in the _Boot folder of the stand-alone PLC project.

The variant-specific TMC file is also stored there. If you add the *.tspproj* file of the stand-alone PLC project instead of the TMC file, you will automatically obtain <u>access</u> [▶ 27] in the System Manager project to the different PLC project variants.

In the System Manager project…

1. Right-click the PLC node in the project tree of the System Manager project.
2. Select **Add Existing Item**… in the context menu.
3. Search for the desired stand-alone PLC project.
4. Select the *xxx.tspproj* file of this project.
5. Actuate the **Open** button.

6. Select **<matching variant>** or the desired variant.
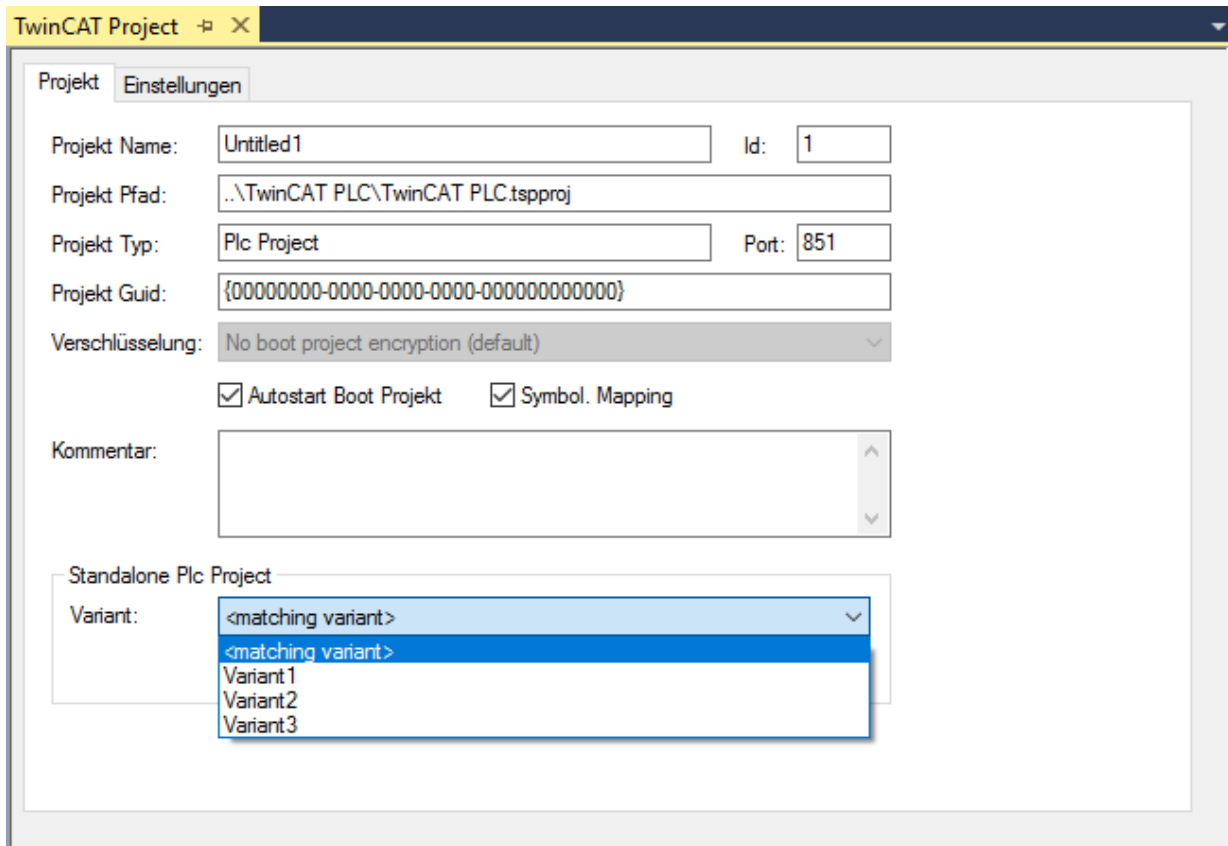
ℹ **Selection <matching variant>**

If you select <matching variant> in the drop-down menu, the variant of the stand-alone PLC project with the same name as the active variant in the System Manager project will be selected.

ℹ **Stand-alone PLC project variant doesn't exist**

If the variant of the stand-alone PLC explicitly or implicitly selected in the System Manager project has not yet been created and therefore cannot be found, a corresponding warning is displayed when changing the variant. You can then select the variant in the PLC project and create the project so that both the boot data and the TMC file are generated and are thus also available in the System Manager project.

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]
- Manage Project Variants dialog [▶ 19]
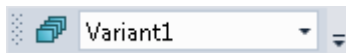- PLC [▶ 27]
- Stand-alone PLC documentation

4 Reference user interface

The TwinCAT XAE Project Variants toolbar and the Manage Project Variants dialog are made available with build 4024. With their help all functions relating to the creation, management and selection of project variants are reachable.

4.1 TwinCAT XAE Project Variants toolbar

Function: The TwinCAT XAE Project Variants toolbar is the central toolbar for the variant management via which the Project Variant Manager dialog can be called and the active variant can be selected.

Call: You can activate the toolbar in the Visual Studio menu via *View\Symbol bars\TwinCAT XAE Project Variants.*

Project Variant Manager	If you click on this button the Manage Project Variants dialog opens, via which you can configure and manage project variants and groups of variants.
Drop-down menu	The entry selected in the drop-down menu defines the variant-specific values of the settings loaded in the TwinCAT project. The following selection options exist in the drop-down menu: • [ALL]: After selecting the group [ALL], the changes to the settings that are enabled for the variant management will be saved for all existing variants. • [<GroupName>]: After selecting a group, the changes to the settings that are enabled for the variant management will be saved for all variants that are assigned to this group. • <VariantName>: After selecting a variant, the changes to the settings that are enabled for the variant management will be saved exclusively for this variant.

See also:

- Manage Project Variants dialog [▶ 19]
- Concept [▶ 7]

4.2 Manage Project Variants dialog

Function: The Manage Project Variants dialog is the central dialog for the configuration and management of project variants and groups of variants. It is subdivided via a tab menu into two pages. The project variants can be created and managed on the first page and the group of variants on the second page.

Call: The dialog is opened via the TwinCAT XAE Project Variants toolbar.

Name	Here you can define the name of a new variant or change the name of an existing variant.
Description	Here you can add or change the description of a variant.
Save	When changing a variant, the TwinCAT project configuration with the variant-specific values is reloaded. This would also result in a change at file level. In order to prevent differences at file level in relation to the selected variant, TwinCAT saves the project by default with the variant-specific values of the uppermost variant in the list. You can define deviations from this default variant here. • ☑ : The TwinCAT project is saved with the values of this variant. • ☐ : The variant is not assigned to the selected group. **Info:** If no variant has been defined, the uppermost variant in the list is used as the default.
Delete	Using this button, you can delete the variant selected in the table, including its description and specific settings in the project.
Move Up	Using this button, you can exchange the table position of the selected variant with that of the variant above it.
Move Down	Using this button, you can exchange the table position of the selected variant with that of the variant below it.
Copy	You can generate a copy of the variant selected in the table using this button. The name of this copy corresponds to the name of the original with the suffix "_copy". **Info:** This button is disabled if no variant is selected or if several variants are selected at the same time.
Delete All	Using this button, you can delete all existing variants, including their description and their specific setting values.
Import	Using this button, you can open the selection window in order to import an already existing configuration of another TwinCAT project via its *.tsproj* file.
Compare	Using this button, you can compare the variant selected in the TwinCAT XAE Project Variants toolbar with the variant selected in the table. The TwinCAT Project Compare opens. **Info:** This button is only available in the case that no open changes made in the dialog exist. Otherwise you can initially confirm these changes with the **Apply** button.

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Name	Here you can define the name of a new group or change the name of an existing group.
Description	Here you can add or change the description of a group.
Move Up	Using this button, you can exchange the table position of the selected group with that of the group above it.
Move Down	Using this button, you can exchange the table position of the selected group with that of the group below it.
Delete	Using this button, you can delete the group selected in the table, including its description.
Member	The variants selected in this table are assigned to the group selected in the main table. • ☑ : The variant is assigned to the selected group. • ☐ : The variant is not assigned to the selected group.

Variant specific local boot folder ("_Boot")	When you create a TwinCAT project, the boot data are stored within the project folder in the "_Boot" folder for the selected platform. You can activate this setting in order to save the boot data specifically for the different variants. An additional folder is then created under the "_Boot" folder with the variant name. There you will find the specific boot data for the platform. • ☑ : The "_Boot" content is saved specifically for the selected variant. • ☐ : The "_Boot" content is not saved specifically for a variant.

See also:

- TwinCAT XAE Project Variants toolbar [▶ 19]
- Creating a variant [▶ 11]
- Creating a group [▶ 12]
- Comparing variants [▶ 14]
- Importing configurations [▶ 15]

5 Reference supported settings

From build 4024 you can enable various settings for the variant management for one or more objects such as terminals via the Properties window in the TwinCAT project. The values of these settings can then be saved specifically for the available variants.

See also:

- Enabling a setting [▶ 13]

5.1 System

Address of the target system

Call: Select the **SYSTEM** entry in the project tree and open the Properties window.

Name	Description	Supported since
Target Address	The selected target system is only saved for the active project variant or group.	Build 4024.0

License dongle

Call: Select the desired license dongle under the License entry in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The license dongle is only disabled for the active project variant or group.	Build 4024.11
Parameter	The status of the licenses on the **Manage Licenses** tab, which can be manually changed, is only changed for the active project variant or group.	Build 4024.17

Real time settings

Call: Select the **Real time** entry in the project tree and open the Properties window.

Name	Description	Supported since
Parameter	The settings listed on the **Settings** tab are only saved for the active project variant or group.	Build 4024.0

Tasks

Call: Select the desired task in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The task is only disabled for the active project variant or group.	Build 4024.0
Parameter	The Priority and Cycle Ticks settings listed on the **Task** tab are only saved for the active project variant or group.	Build 4024.0

TcCom objects

Call: Select the desired TcCom object in the project tree and open the properties window.

Name	Description	Supported since
Disable	The TcCom object is only disabled for the active project variant or group.	Build 4024.10
Parameter	The initial values of the parameters listed on the **Parameter (Init)** tab can be enabled for the variant management. You can choose between three options: • None: No initial value is saved variant-specifically. • All: All initial values are saved variant-specifically. • Selected – see 'PV' column: An extra column **PV** is added to the table in which the initial values can be enabled individually for the variant management via a checkbox for each initial value row. **Info:** If you switch from **None** to **Selected**, all parameters are initially disabled for the variant management. You can now enable the desired parameters. If you switch from **All** to **Selected** on the other hand, all parameters are already enabled. You can only disable the undesired parameters for the variant management.	Build 4024.10
	In addition to the initial values of the parameters (see above), the contexts can be assigned to tasks for the specific variant on the **Context** tab.	Build 4024.17

See also:

• Workflow: Enabling a setting [▶ 13]

5.2   Motion

NC axis

Call: Select the desired NC axis in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The NC axis is only disabled for the active project variant or group.	Build 4024.0
I/O Mapping	The link selected using the **Link with I/O** button on the **Settings** tab is only saved for the active project variant or group. **Info:** This setting is replaced by "Mapping" from Build 4024.4 onwards.	Build 4024.0
Mapping	The links selected via the **Link to I/O** button and **Link To PLC** on the **Settings** tab are only saved for the active project variant or group.	Build 4024.4
	The settings for **Divider** and **Modulo** on the **Settings** tab are only saved for the active project variant or group.	Build 4024.7
	The settings for the axis type and unit on the **Settings** tab are only saved for the active project variant or group.	Build 4024.17
	The link and its type selected using the **Link to…** button on the **NC-Encoder** tab of the encoder are only saved for the active project variant or group.	
	The link and its type selected using the **Link to…** button on the **NC-Drive** tab of the drive are only saved for the active project variant or group.	
	The type of controller on the **NC-Controller** tab is only saved for the active project variant or group.	
Parameter	The axis parameters listed on the **Parameters** tab can be enabled for the variant management. You can choose between three options: • None: No parameter is saved variant-specifically. • All: All parameters are saved variant-specifically. • Selected – see 'PV' column: An extra column **PV** is added to the table in which the parameters can be enabled individually for the variant management via a checkbox for each parameter row. **Info:** If you switch from **None** to **Selected**, all parameters are initially disabled for the variant management. You can now enable the desired parameters. If you switch from **All** to **Selected** on the other hand, all parameters are already enabled. You can only disable the undesired parameters for the variant management.	Build 4024.0
	The Modulo scaling of a SERCOS encoders on the **Sercos** tab is only saved for the selected project variant or group.	Build 4024.17

NC channel

Call: Select the desired NC channel in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The NC channel is only disabled for the active project variant or group.	Build 4024.0

CNC axis

Call: Select the desired CNC axis in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The CNC axis is only disabled for the active project variant or group.	Build 4024.0
I/O Mapping	The link selected via the **Link to I/O** button on the **Configuration** tab is only saved for the active project variant or group.	Build 4024.0
	The axis type set on the **Configuration** tab is only saved for the active project variant or group.	Build 4024.17

CNC channel

Call: Select the desired CNC channel in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The CNC channel is only disabled for the active project variant or group.	Build 4024.0

See also:

- Workflow: Enabling a setting [▶ 13]

- Reference, supported settings: System: System [▶ 24]

5.3   PLC

PLC project

Call: Select the PLC project at System Manager level, i.e. at the upper node in the project tree, and open the Properties window.

Name	Description	Supported since
Defines	The compiler definitions listed on the **Project** tab are only saved for the active project variant or group. **Note:** Compiler definitions are not generally transferred by the System Manager to stand-alone PLC projects, as in this case only the TMC file of an already compiled PLC project is added in the System Manager.	Build 4024.0
Disable	The PLC project is only disabled for the active project variant or group.	Build 4024.0

PLC instance

Call: Select the PLC instance in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The PLC instance is only disabled for the active project variant or group.	Build 4024.0
Parameter	The initial values of the variables listed on the **Symbol Initialization** tab can be enabled for the variant management. You can choose between three options: • None: No initial value is saved variant-specifically. • All: All initial values are saved variant-specifically. • Selected – see 'PV' column: An extra column **PV** is added to the table in which the initial values can be enabled individually for the variant management via a checkbox for each initial value row. **Note:** If you switch from **None** to **Selected**, all parameters are initially disabled for the variant management. You can now enable the desired parameters. If you switch from **All** to **Selected** on the other hand, all parameters are already enabled. You can only disable the undesired parameters for the variant management.	Build 4024.0

Stand-alone PLC project

Call: Select the stand-alone PLC project at System Manager level, i.e. at the upper node in the project tree, and open it.

Name	Description	Supported since
Disable	The stand-alone PLC project is only disabled for the active project variant or group.	Build 4024.0
Variant	The variant of the stand-alone PLC project selected on the **Project** tab is only saved for the active project variant or group. **Info:** If the entry **<matching variant>** is selected in the drop-down menu, the variant of the stand-alone PLC project with the same name as the active variant is automatically selected.	Build 4024.17

See also:

- Attribute 'TcInitSymbol'
- Workflow: Enabling a setting [▶ 13]
- Concept: Concept [▶ 7]

5.4 C++

C++ project

Call: Select the C++ project at System Manager level, i.e. at the upper node in the project tree, and open the Properties window.

Name	Description	Supported since
Disable	The C++ project is only disabled for the active project variant or group.	Build 4024.10

C++ instance

Call: Select the C++ instance in the project tree and open the Properties window.

Name	Description	Supported since
Disable	The C++ instance is only disabled for the active project variant or group.	Build 4024.10
Parameter	The initial values of the parameters listed on the **Parameter (Init)** tab can be enabled for the variant management. You can choose between three options: • None: No initial value is saved variant-specifically. • All: All initial values are saved variant-specifically. • Selected – see 'PV' column: An extra column **PV** is added to the table in which the initial values can be enabled individually for the variant management via a checkbox for each initial value row. **Note:** If you switch from **None** to **Selected**, all parameters are initially disabled for the variant management. You can now enable the desired parameters. If you switch from **All** to **Selected** on the other hand, all parameters are already enabled. You can only disable the undesired parameters for the variant management.	Build 4024.10
	The interface pointers listed on the **Interface Pointer** tab can be enabled for the variant management. You can choose between three options: • None: No interface pointer is saved for a specific variant. • All: All interface pointers are saved for a specific variant. • Selected – see 'PV' column: An extra column **PV** is added to the table in which the initial values can be enabled individually for the variant management via a checkbox for each initial value row. **Note:** If you switch from **None** to **Selected**, all interface pointers are initially disabled for the variant management. You can now enable the desired interface pointers. If you switch from **All** to **Selected**, conversely, all interface pointers are already enabled. You can exclusively disable the unwanted interface pointers for the variant management.	Build 4024.10

5.5   I/O

EtherCAT Master

Call: Select the desired EtherCAT Master in the project tree under the I/O node and open the properties window.

Name	Description	Supported since
Address Info	The network adapter selected on the **Adapter** tab is only saved for the active project variant or group.	Build 4024.0
Disable	The EtherCAT Master is only disabled for the active project variant or group.	Build 4024.0
Parameter	The Distributed Clocks und EoE Support settings listed in the **Advanced Settings** on the **EtherCAT** tab are only disabled for the active project variant or group.	Build 4024.0

EtherCAT devices

Call: Select the desired EtherCAT device in the project tree under the I/O node and open the properties window.

Name	Description	Supported since
Disable	The EtherCAT device is only disabled for the active project variant or group.	Build 4024.0
Mapping	The links to the process data objects (PDOs) of the EtherCAT device are only saved for the active project variant or group.	Build 4024.4

If the device is an EtherCAT device with startup parameters, it can additionally be enabled for the variant management as follows.

Name	Description	Supported since
Parameter	The startup parameters are only set for the active project variant or group.	Build 4024.0

NOV-DP-RAM device

Call: Select the desired NOV-DP-RAM device in the project tree under the I/O node and open the properties window.

Name	Description	Supported since
Address Info	The device set on the **General NOV-DP-RAM device** tab is only set for the active project variant or group.	Build 4024.17
Disable	The NOV-DP-RAM device is only disabled for the active project variant or group.	Build 4024.17

See also:

- Workflow: Enabling a setting [▶ 13]

More Information:
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