

TechTip: Prefabricated cables

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1. Use

This TechTip describes the new, extended and improved functionalities in connection with prefabricated cables of the Eplan Platform 2025.

2. Prefabricated Cables

Prefabricated cables are ready-to-connect cables that are already equipped with plugs, female pins or conductor termination processing. They have a specific length and are already equipped with suitable plugs. This means that these cables are immediately ready for use without further modifications being necessary (see Figure 0 and Figure 1).



Figure 0: Prefabricated cables with plugs and female pins

The possibilities of configuring these cables for Version 2025 have been extended and optimized so that the prefabricated cables can be exchanged successfully with Eplan Cable ProD.

3. Creating prefabricated cables as modules in the parts management

An assignment between the conductors of the cable and the plugs has to be carried out so that the prefabricated cables can be exchanged successfully with Eplan Cable ProD.

3.1. Creating plugs as non-orderable component

Plugs in prefabricated cables can be screwed or welded. These non-orderable plugs are required, for example, to store the assignment of the conductors.

For these plugs it is necessary to activate the part property **Suppress in bill of materials**. A part identified in this way is neither displayed in the bill of materials navigator nor output in the corresponding part assemblies and it is also not output via the interfaces for manufacturing data.

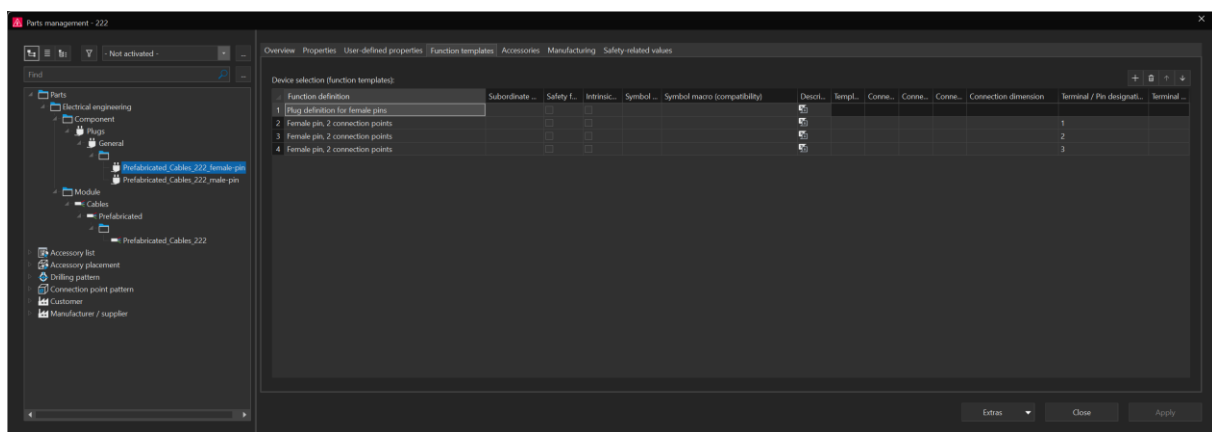


Figure 1: Plugs in the parts management, **Function templates** tab.

Tip:

Use existing plugs: Use the plugs and female pins already existing in the parts management as a copy. Subsequently activate the **Suppress in bill of materials** part property for the copied part.

3.2. Creating prefabricated cables as a module

Create a module and select the value "Electrical engineering > Cables > Prefabricated" for the property **Product grouping** of this module.

Add function templates for the cable definition and for the cable connections (for example one function template with "Cable definition" and three function templates with "Conductor / wire") to this module on the **Function templates** tab. Enter the characteristic data for the cable in these function templates (for example **Connection color / number**, **Connection: cross-section / diameter**, etc.).

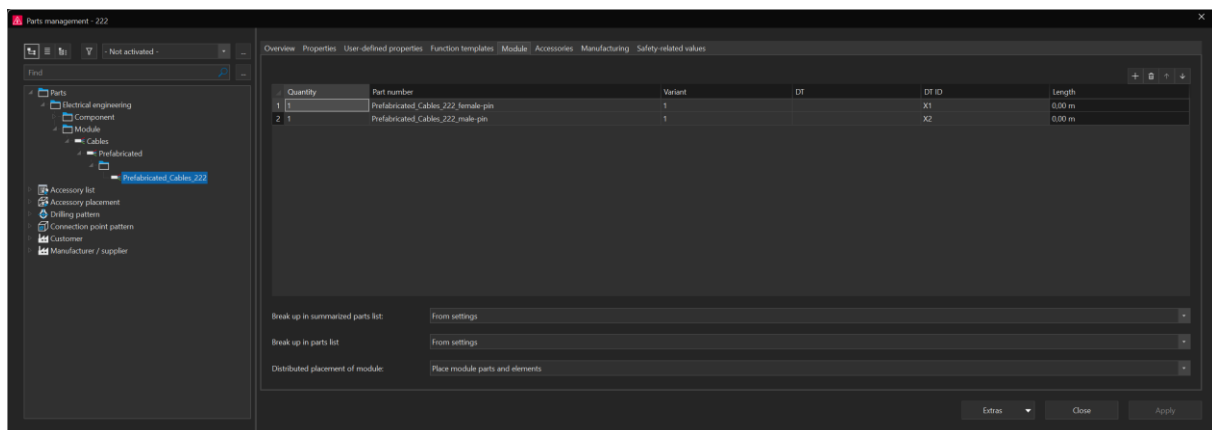



Figure 2: Prefabricated cable in parts management, **Module** tab.

Tip:

Creating module through copying: To easily create a prefabricated cable as a module, you can copy an existing cable part and save the cable part as a module via the property **Record type**. Then check whether the product grouping is set to the "Prefabricated" product subgroup. Subsequently add the plug parts to the prefabricated cable.

3.3. Adding plugs as parts

Add one or two plugs as parts to the prefabricated cable in the **Module** tab. You require one plug part for a single-layer cable, two plug parts for a double-layer cable. To do this, click the  (New) button and then click [...] in the **Part number** column to select a part.

For the parts on the **Module** tab you have to enter a DT or a DT ID as usual for identification.

Tip:

Enter a subordinate DT of the cable at the plug parts. When the prefabricated cable is used in the project, the associated pins are then displayed in the device navigator below the cable DT.

3.4. Summarize function templates

Summarize the function templates of the prefabricated cable created as a module. To do this, mark the module in the tree view of the parts management and select the popup menu item **Summarize function templates**. This way the function templates of the plugs are summarized as subparts of the module, transferred into the tab **Function templates** of the module and sorted under the function templates of the cable.

If a function template for the cable definition does not yet exist, it is automatically added as a grouping element for the module at the first position of the function templates.

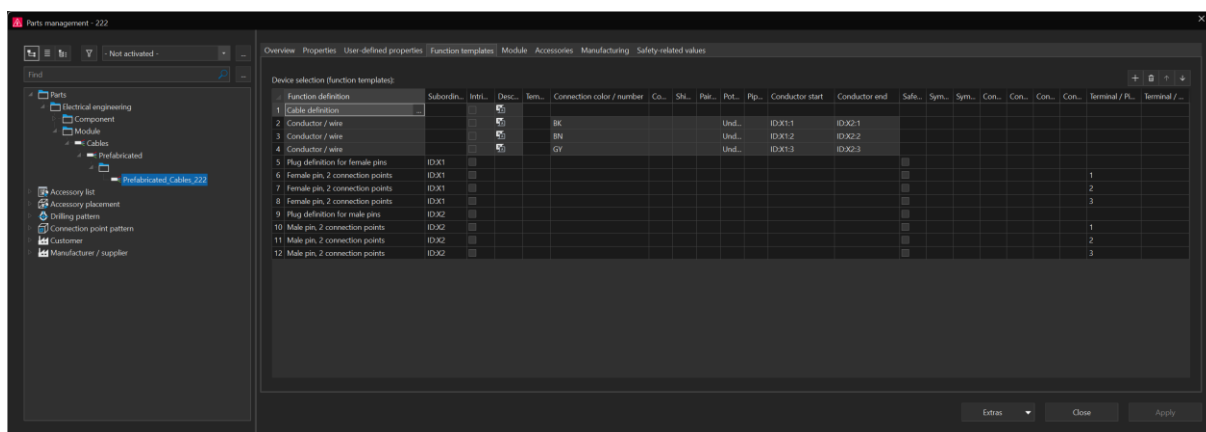


Figure 3: Prefabricated cable in the parts management, **Function templates** tab.

3.5. Assigning plugs to cable connections

Then assign the pins to the cable connections. To this purpose the two columns **Conductor start** and **Conductor end** are available in the **Function templates** tab only for parts of the cable product subgroup "Prefabricated". Here you can carry out the assignment to the plugs for the "Conductor / wire" function templates of the cable. For a single-layer cable, an assignment is only required in the column **Conductor start**; for a double-layer cable, the assignment must be effected in both columns.

You have the following options for specifying the assignment of the pins to the conductors:

- Position of the function template of the pins (for example "6")
- Subordinate DT and pin designation (for example "X1:2")
- DT ID and pin designation (for example "ID:X1:2")

Note:

You can use the check run 501039 from the message class 501 "Part master data" to check whether the assignment is correct. This check run determines prefabricated cables for which an invalid pin assignment for the cable connections is stored in the parts management.

Caution:

No schematic macros may be stored at the schematic path macros since otherwise the distributed placement of the module is not possible.

Since the schematic macros *do not* have connection data, the connection data would be lost during the execution of the command **Summarize function templates** in the module parts for prefabricated cables.

4. Generating Module Parts for Prefabricated Cables from Schematic Data

A module part for prefabricated cables can be generated in Eplan from the data stored at a component. Among other things, the module part and the cable-specific data (function definition, connection color / number, etc.) are transferred to the parts database. A module part generated in this way contains function templates for all device functions and is saved as a part stored in the project. If plugs are assigned to the prefabricated cable, parts for the plugs are also generated in the parts management and stored in the project.

4.1. Requirements at the prefabricated cable (cable definition)

- There must be an association via the DT between cables and plugs. The plugs are therefore subordinate to the cable in the DT; the association can also be easily checked in the device navigator.

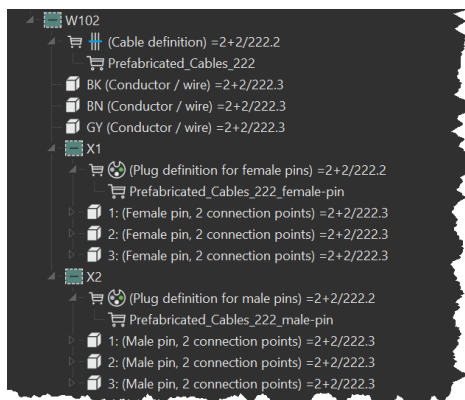


Figure 4: Placed elements

- Exactly one part reference is entered.
- The part reference **Record type** has the value "Module".
- The part reference property **Function group** has the value "NEW".

4.2. Requirements at the assigned plugs

- Exactly one part reference is entered.
- The part reference property **Record type** has the value "Component".
- The part reference property **Function group** has the value "NEW".
- The part reference property **Part is included in a module** is activated.
- The **DT ID** property has a unique value.

4.3. Generating prefabricated cables

Preconditions:

- You have updated the connections.
 - You have selected a prefabricated cable (cable definition) that represents a main function.
1. Select the **Generate part** popup menu item.
 - The **Parts management** dialog opens. The new module part is sorted into the product group structure of the parts management module with reference to the function definition for the component, and is preset.
 - If a module part already exists in the project, a query is displayed that you have to confirm to overwrite. If the module part does not exist yet in the parts database, the parts management is subsequently opened, and the new part is pre-selected.
 - If a module part already exists in the parts database, a further security prompt is displayed. If you confirm this prompt with **[Yes]**, the cable-specific data (such as the function templates) are updated at the module parts already existing in the parts database. In this case the parts management is opened and the module part is pre-selected. If you click **[No]**, the module parts existing in the project are overwritten. However, the module part in the parts database is not updated.
 2. If necessary, you can edit the data of the new module part on the tabs on the right.
 3. Click **[Close]**.
 - Exits the Parts management dialog.
 - If data that may have been changed is not saved via **[Apply]**, an additional confirmation prompt is displayed. A message is also displayed allowing you to decide whether an automatic "Parts database -> Project" parts data synchronization should be performed.

Note:

Parts generated in this way have the value "NEW" assigned for the **Function group** property on the **Properties** tab. This allows you to specifically filter for such parts.

Benefit:

Efficiency increase for parts management: The parts management process is structured more efficiently through the automatization of the generation process of module parts from schematic data. Instead of manually creating and maintaining module parts, these can be generated directly from the schematic data.

Consistency and accuracy of the data: The creation of module parts based on the schematic data ensures the accuracy of the part information. Since the data is applied directly from the schematic data, it is ensured that the part descriptions and properties are correct and correspond to the current project requirements.

5. Placing prefabricated cables

5.1. Placing prefabricated cables via the Insert center

A prefabricated cable created as a module in the parts management is placed as a device via the Insert center. The individual components of the module are placed consecutively. In this context, you can "browse" the functions using the **[N]** key and select the required one.

5.2. Placing prefabricated cables by means of the device navigator

A new device can be generated in the device navigator via the popup menu item **New device**. The prefabricated cable module selected here is then displayed in the device navigator as a device with unplaced functions.

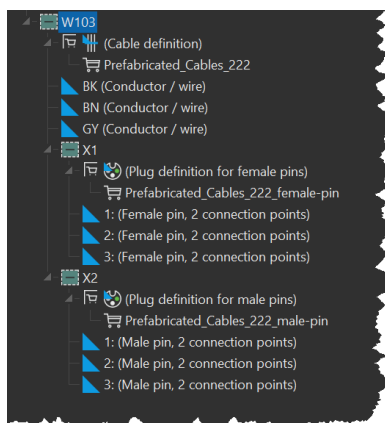


Figure 5: Unplaced prefabricated cable with parts in the device navigator.

These functions can then be placed via drag & drop or via the popup menu item **Place** in the graphical editor.

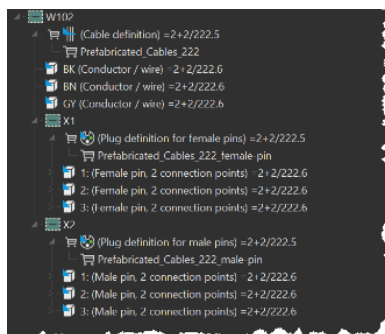


Figure 6: Placed prefabricated cable with parts in the device navigator.

6. Determining the source and target of a cable

During the determination and output of the source and target of a cable the connected pins can now be skipped and instead the devices connected to the cable are displayed as the source and target.

In addition you can now use a project setting to specify that connections at direct connection points of pins always become direct connections.

6.1. New cable property "Use connected devices as source and target"

The new property **Use connected devices as source and target** is available at cables and shields. The property can be activated at both main functions and auxiliary functions.

If the check box **Use connected devices as source and target** is selected, pins are skipped when determining the source and target of the cable or shield, and instead the devices connected to the cable / shield are displayed as the source and target.

The unit of cable and plug is only visible in reports (cable diagram, cable overview, terminal diagram, plug diagram, connection diagrams) and in the dialogs **Edit cable**, **Edit terminal strip**, and **Edit plug**. The connection navigator does not show the skipping of the pins. The pins are still displayed as the source and target of the connections here.

If the check box is deactivated, the pins are output as the source and target of the cable or shield.

Benefit:

Standardized report: When using the new cable property **Use connected devices as source and target**, the devices connected to the cable are now displayed uniformly in cable-specific reports, irrespective of whether there are pins in between or not.

Simplified management: When using the new project setting **Always generate direct connections at direct connection points of pins**, direct connections are now generated uniformly at pins.

7. Generating direct connections at pins

Within a plug connection, the electrical connections are created directly via a mechanical connection. These are not wired and are displayed in Eplan as direct connections.

Through the new project setting for connections **Always generate direct connections at direct connection points of pins** you can now specify that connections at direct connection points of pins always become direct connections. If the check box is selected, a connection between a device connection point and the direct connection point of the pin on the cable becomes a direct connection. Direct connections are colored, not numbered, and not routed in the schematic in accordance with the layer setting for the layer Eplan510, Internal connections / direct connections. If this setting is deactivated, the behavior up to now applies.

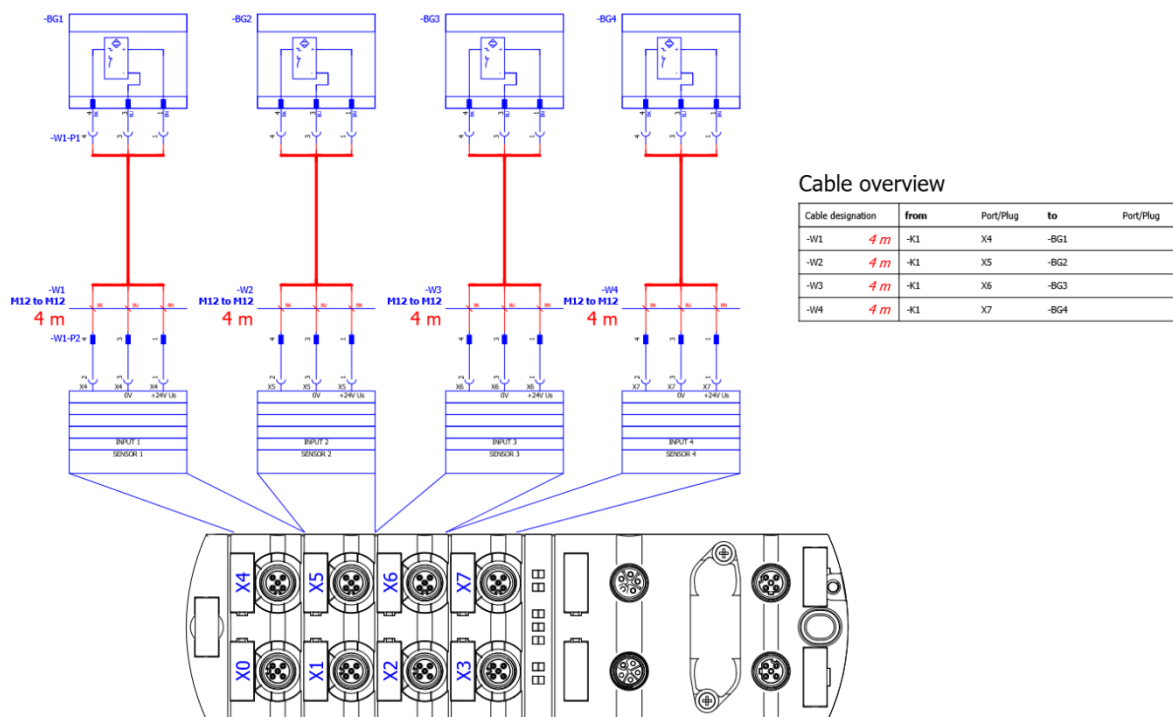


Figure 7: Directly connected, prefabricated cables with report in the schematic.

Benefit:

Clearer representation in the schematic: By coloring the direct connections in blue it becomes easier to identify them in the schematic. This can improve the readability and comprehensibility of the schematic, in particular in complex systems.

Faster recognition of direct connections: Since direct connections are not numbered and not routed, they can be identified at a glance. This can save time since engineers and technicians do not have to search for unnecessary connections.

Reduction of potential errors: The risk of human errors is reduced through the automatic generation of direct connections at the direct connection points of pins. There is no longer any need for manual actions to mark these connections as direct connections.