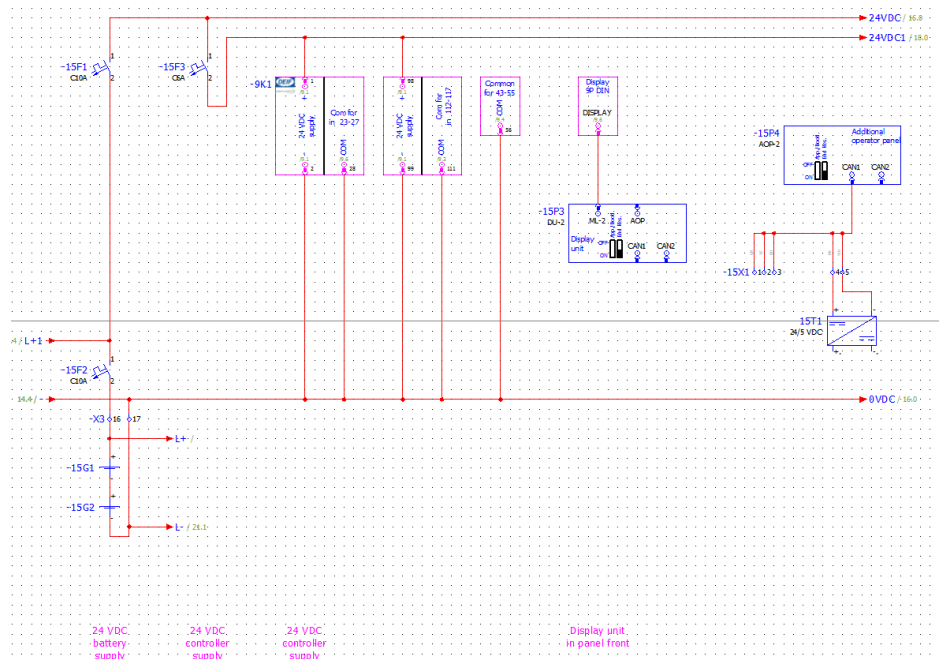


## DEIF Multiline 2 Eplan macro user guide





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## Introduction

This document introduces the Eplan macros for the DEIF Multiline ML-2 controllers. The ML-2 controller is a configurable controller. The macros cover the basic hardware as well as hardware options. Examples of DEIF ML-2 controllers are:

For Marine applications:

- GPU-3
- PPU-3
- PPM-3
- MDR-2

For land applications:

- GPU-3
- GPC-3
- ASC-PM
- AGC-3/4/PM

As of now the macros consists of:

1. **Diagram macros.** To be used on Eplan standard multiline diagram pages. As DEIF controllers can be perceived as a PLC, the macros are built as PLC-boxes with PLC terminators. The macros are divided into single units, e.g. measurement units or digital inputs for most flexible layout of diagrams
2. **Overview macros.** To be added and combined at (PLC) overview pages. These will contain the article no and the function definition for the basic unit as well as for options. The function definition links to the diagrams macro. The overview pages provide cross-references to the pages where the diagram macros are used. Usually a unit consists of a basic unit as well as a number of options.
3. **Graphical macros.** To be used when presenting a graphical view of the controller. The graphical macro is also used for 2D panel layout. The graphics always shows a complete unit with all option slots filled.

At a later point 3D ProPanel macros will be added.

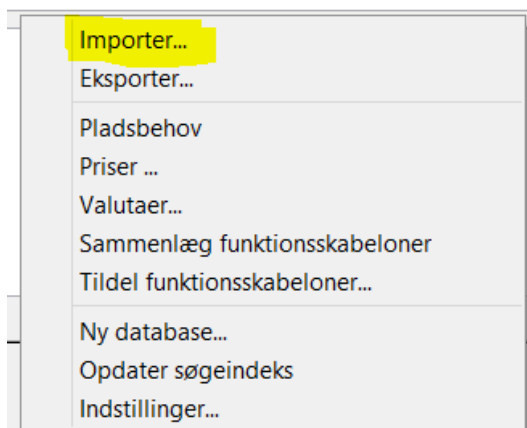
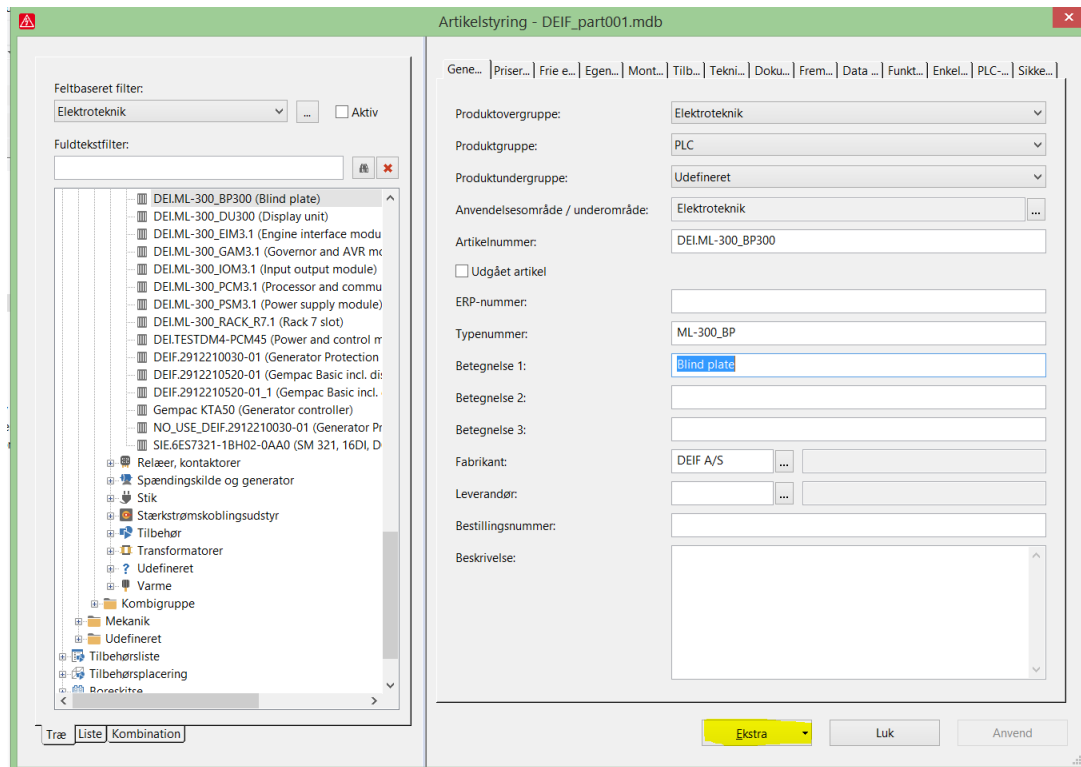
Window captures in this guide is taken from the Danish version of Eplan on an English Windows installation. Please be free to extrapolate to your own languages

## Importing

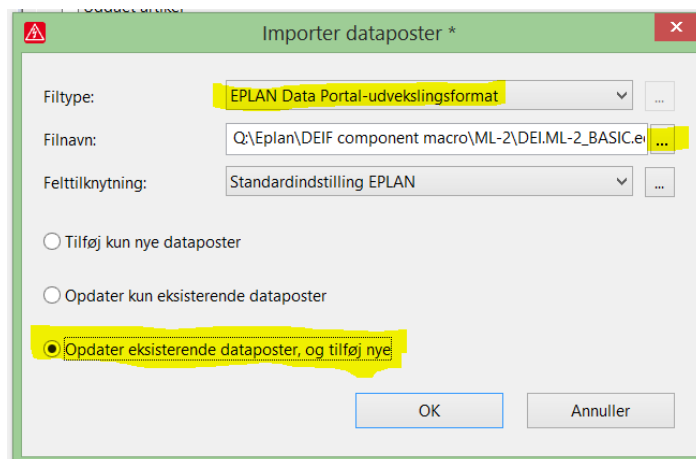
The macros are downloaded from DEIF's homepage as edz-files which is an Eplan article database exchange format. One edz-file contains the article database entry as well as all macros defined in the article data. The macros will be placed in the right folder structure under the macro folder as specified in the setup -> User -> Administration -> Folders setup in Eplan. Please be aware if the folders are set to local computer or a network drive.

After downloading the procedure for importing is as follows:

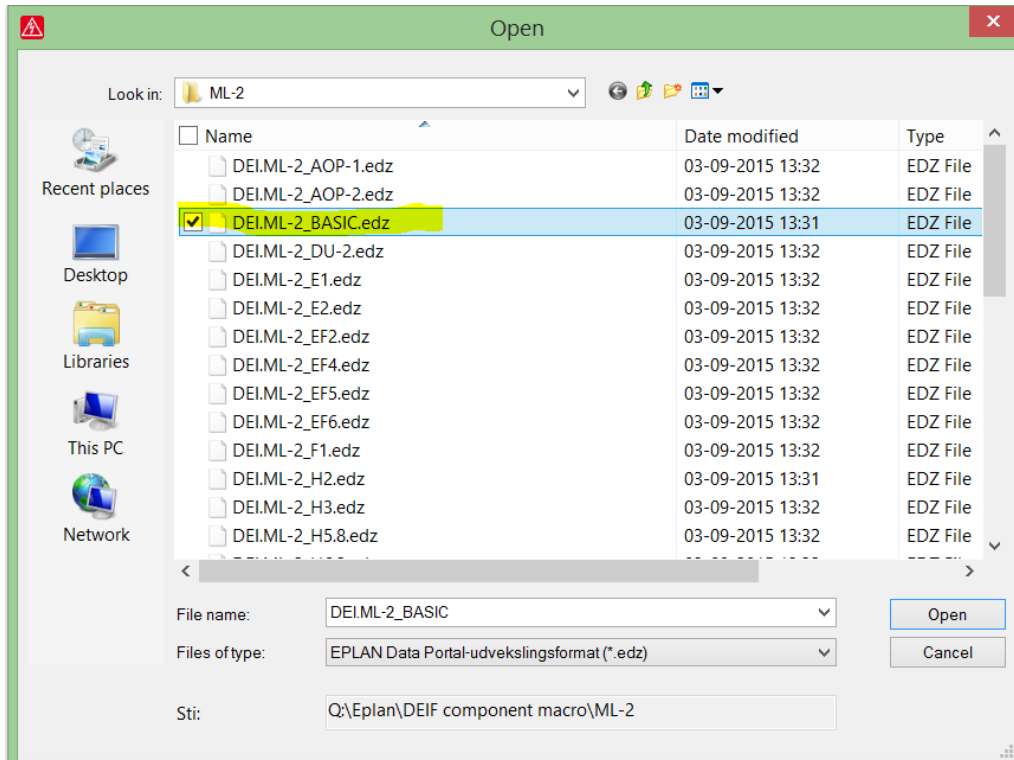
1. Open the article administration
2. Press the extra button and choose import



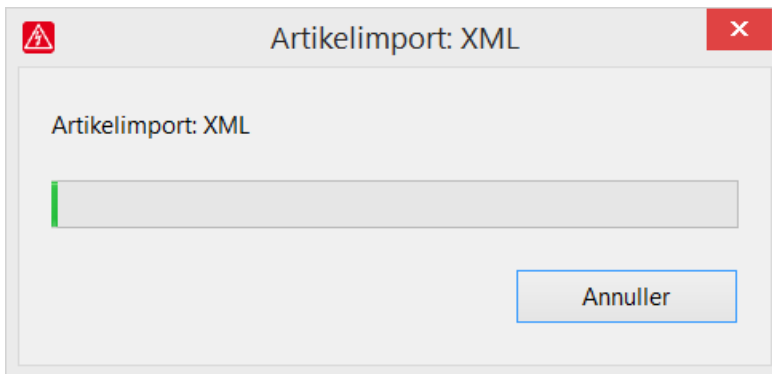
- Set the file type to 'Eplan data portal exchange format' and choose 'update existing data and add new'



4. Choose the file you want to import and Open
- 5.



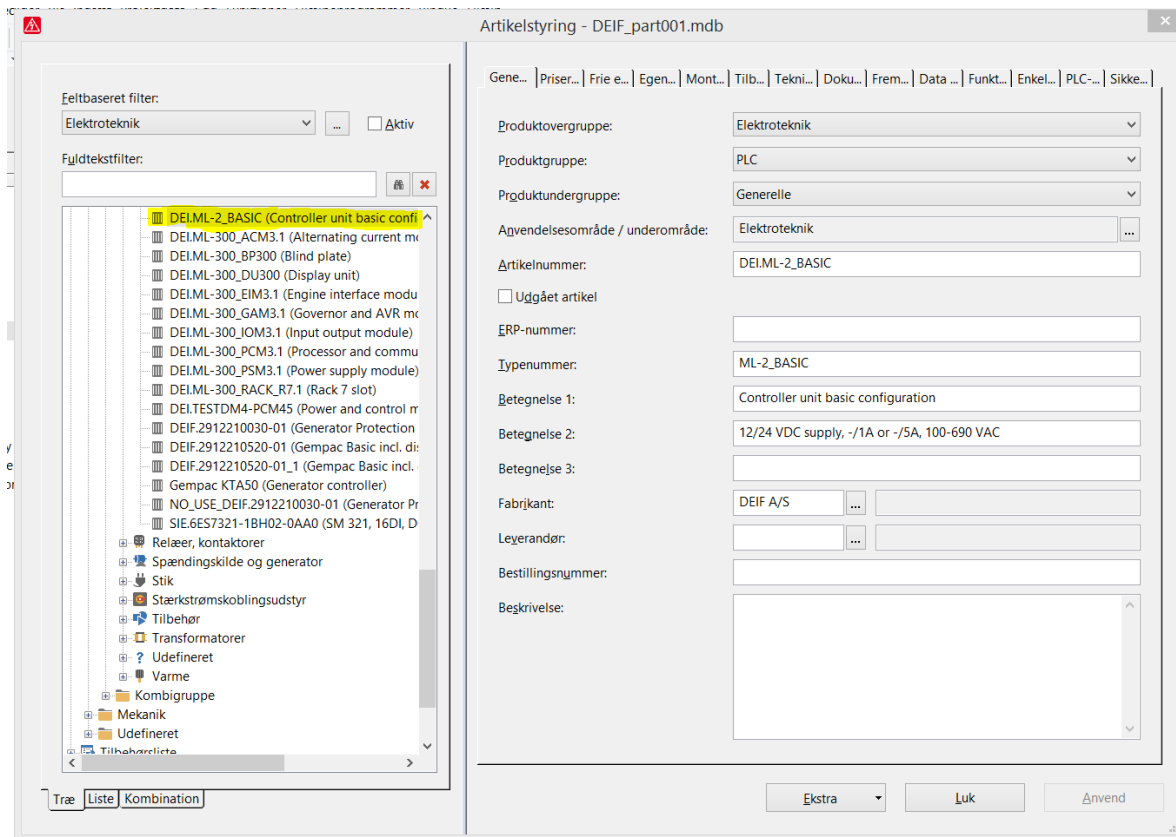
6. Press ok. And the article is imported.
- 7.



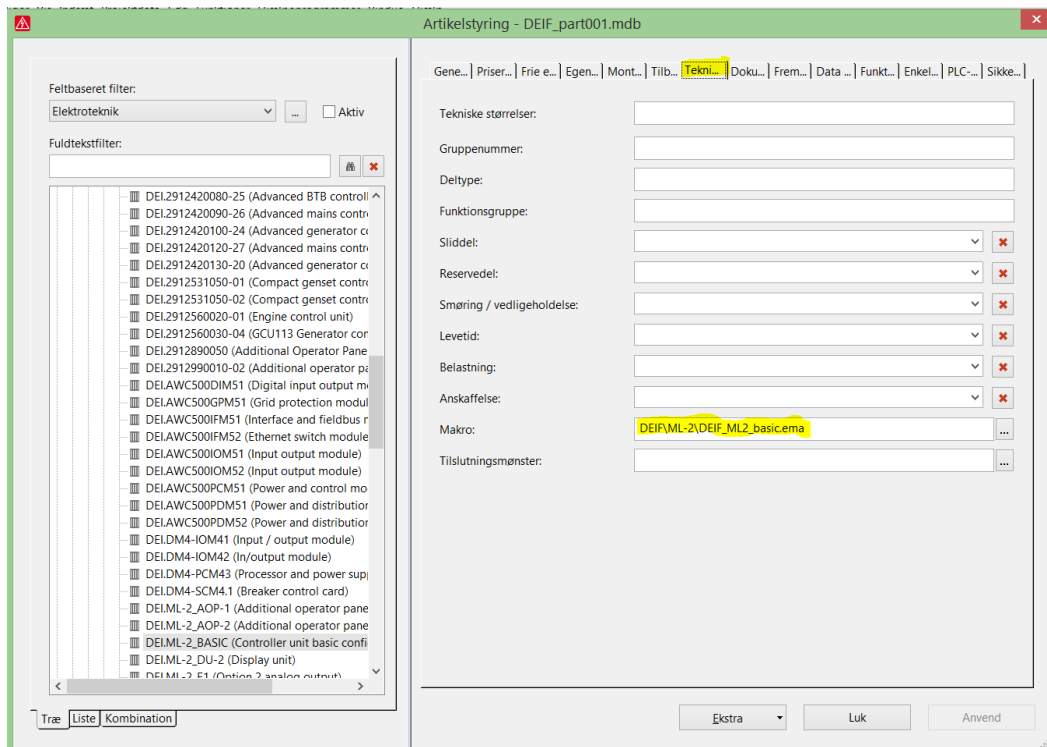
Now the part is imported together with the macros.

\*Tip: it is possible to select several edz-files, all the articles are then imported one after another

The part can now be found in the article database.



In the technical data tab the link to the macro that contains the graphical macro as well as the overview macro can be found:



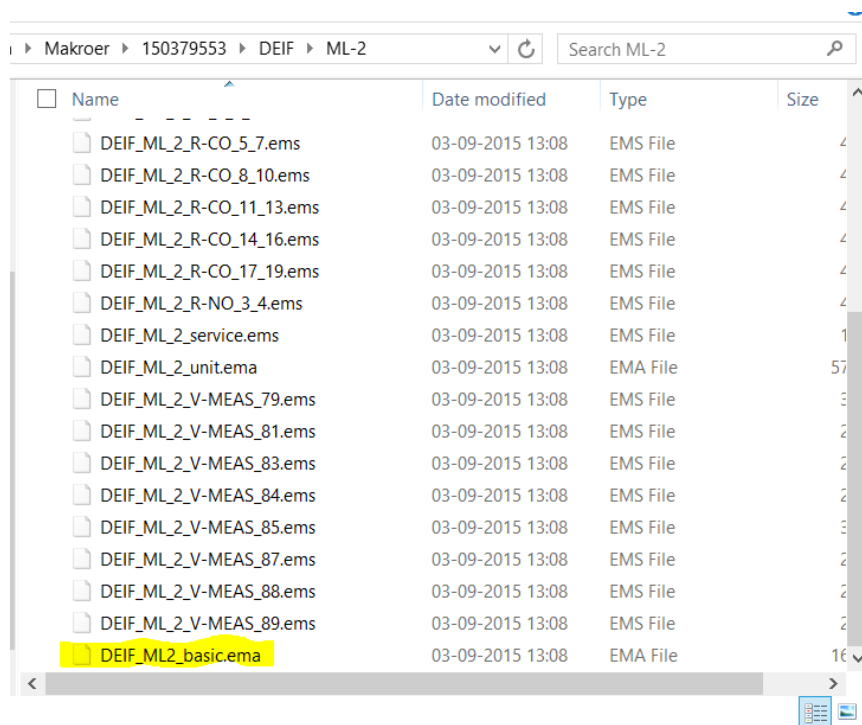


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## DEIF ML-2 Eplan macro user guide

Ref: SEH / A

Which is now placed in the right folder:



In the function definition tab each connection on the card is linking to a symbol-macro. This is the macro used in the diagram.

Gene...   Priser...   Frie e...   Egen...   Mont...   Tilb...   Tekni...   Doku...   Frem...   Data ...   Funkt...   Enkel...   PLC-...   Sikke...									
Komponentudvalg (funktionsskabeloner):									
Række	Funktionsdefinition	Ka...	Si...	E...	S...	Symbolmakro	B...	Til...	^
1	PLC-boks	<input type="checkbox"/>	<input type="checkbox"/>				A...		
2	PLC-tilslutning, PLC-KV (+)	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_PS_1_2_28.ems	1	+	
3	PLC-tilslutning, PLC-KV (-)	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_PS_1_2_28.ems	2	-	
4	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-NO_3_4.ems	3	C	
5	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-NO_3_4.ems	4	NC	
6	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_5_7.ems	5	NC	
7	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_5_7.ems	6	C	
8	PLC-tilslutning, generel	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_5_7.ems	7	NC	
9	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_8_10.ems	8	NC	
10	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_8_10.ems	9	C	
11	PLC-tilslutning, generel	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_8_10.ems	10	NC	
12	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_11_13.ems	11	NC	
13	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_11_13.ems	12	C	
14	PLC-tilslutning, generel	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_11_13.ems	13	NC	
15	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_14_16.ems	14	NC	
16	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_14_16.ems	15	C	
17	PLC-tilslutning, generel	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_14_16.ems	16	NC	
18	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_17_19.ems	17	NC	
19	PLC-tilslutning, PLC-kortfo...	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_17_19.ems	18	C	
20	PLC-tilslutning, generel	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_R-CO_17_19.ems	19	NC	
21	PLC-tilslutning, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DO_20_21.ems	20	NC	
22	PLC-tilslutning, variabel, DA	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DO_20_21.ems	21	NC	
23	PLC-tilslutning, PLC-KV (-)	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DO_20_21.ems	22	C	
24	PLC-tilslutning, DE	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DI_23.ems	23	DI	
25	PLC-tilslutning, DE	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DI_24.ems	24	DI	
26	PLC-tilslutning, DE	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DI_25.ems	25	DI	
27	PLC-tilslutning, DE	<input type="checkbox"/>	<input type="checkbox"/>			DEIF\ML-2\DEIF_ML_2_DI_26.ems	26	DI	



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## DEIF ML-2 Eplan macro user guide

Ref: SEH / A

This symbol-macro belongs to terminal 3 and is the common on the status output relay. Some macros represent more terminals and all the terminals will then be imported together in the diagram when placing the macro.

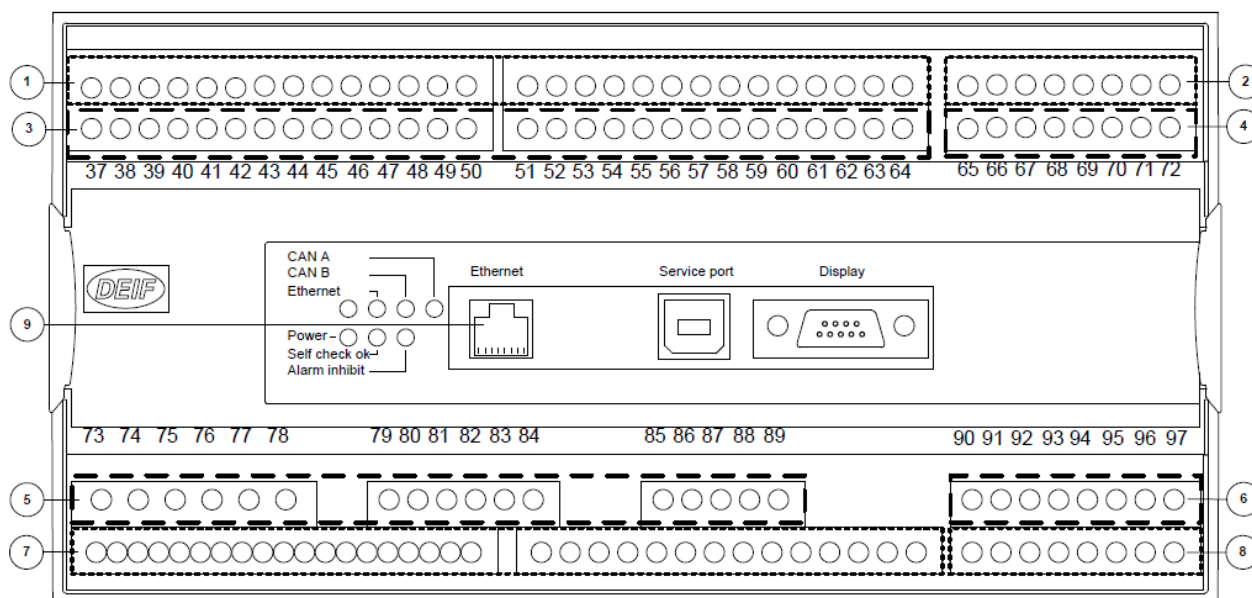
The symbol-macros are also placed in the right folder:

Makroer ▶ 150379553 ▶ DEIF ▶ ML-2					Search ML-2	
<input type="checkbox"/> Name	Date modified	Type	Size			
DEIF_ML_2_DI_25.ems	03-09-2015 13:08	EMS File	3			
DEIF_ML_2_DI_26.ems	03-09-2015 13:08	EMS File	3			
DEIF_ML_2_DI_27.ems	03-09-2015 13:08	EMS File	3			
DEIF_ML_2_display.ems	03-09-2015 13:08	EMS File	1			
DEIF_ML_2_DO_20_21.ems	03-09-2015 13:08	EMS File	2			
DEIF_ML_2_I-MEAS_73_74.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_I-MEAS_75_76.ems	03-09-2015 13:08	EMS File	3			
DEIF_ML_2_I-MEAS_77_78.ems	03-09-2015 13:08	EMS File	3			
DEIF_ML_2_PS_1_2_28.ems	03-09-2015 13:08	EMS File	20			
DEIF_ML_2_R-CO_5_7.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_R-CO_8_10.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_R-CO_11_13.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_R-CO_14_16.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_R-CO_17_19.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_R-NO_3_4.ems	03-09-2015 13:08	EMS File	4			
DEIF_ML_2_service.ems	03-09-2015 13:08	EMS File	1			
DEIF_ML_2_unit.ema	03-09-2015 13:08	EMA File	57			



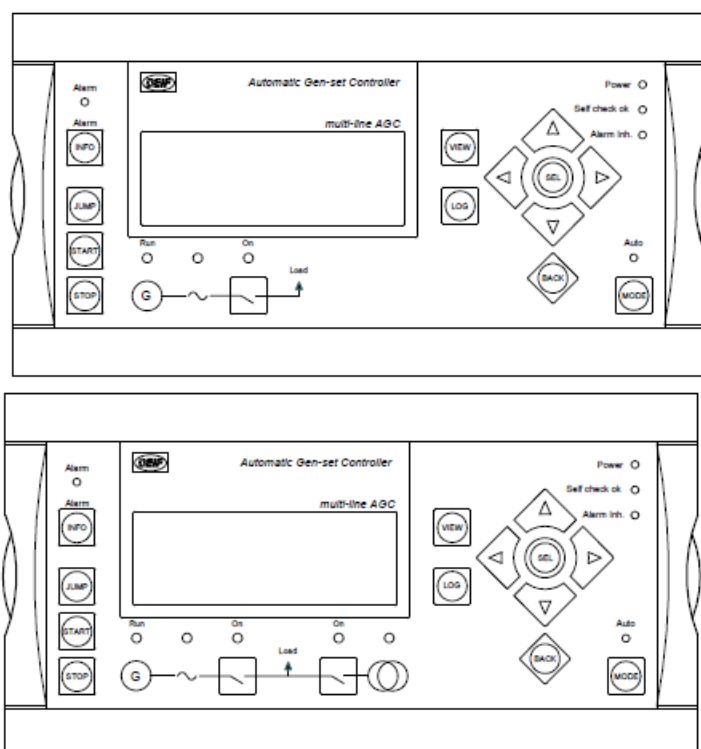
## Short introduction to the ML-2 hardware

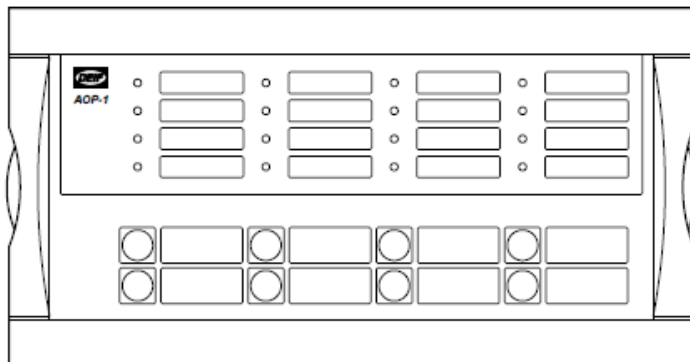
The DEIF Multiline 2 unit is multiconfigurable and contains 9 slots. Slot 1 and 5 is always occupied. Slot 3, slot 7 and slot 9 only has one option card that are either present or not. Slot 2, slot 4, slot 6 and slot 8 has multiple options cards.



It is possible to add a display to the unit. The display can either be placed on the unit itself, or mounted in the front of the panel and connected to the ML-2 unit with a cable.

Another option is the AOP-1 and AOP-2 operator panels that can be connected to the display unit and programmed to perform certain functions.





When designing diagrams a ML-2 basic unit including cards in slot 1 and slot 5 is added, and subsequently options are added to the unit.

When drawing the diagram, display units and AOP's can be added.

## Using DEIF Eplan macros

Before composing the unit it is useful to know the different hardware options and their functions. before using the Eplan macros it is highly recommended to read the DEIF installation manual for the product, and have it available when drawing. The installation manual are downloaded at [www.deif.com](http://www.deif.com)

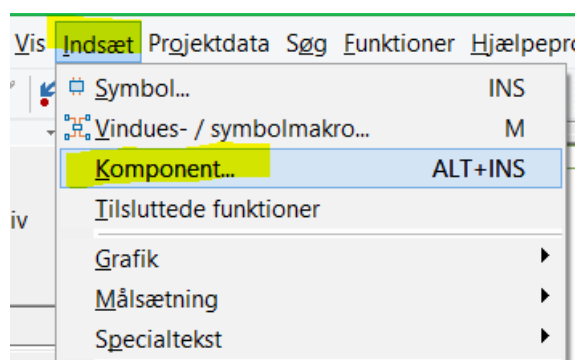
The first step is to create an overview page.

**For ML-2, overview pages should have the grid set to 4 mm.**

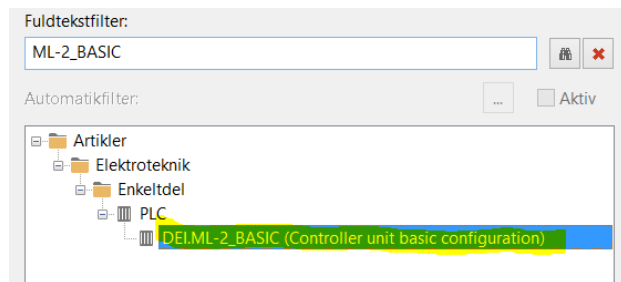
On the overview page the various components of the controller are placed. Each controller consists of a basic unit and a number of hardware options.

At first the controller basic unit is placed, that is the overview macro of the ML-2 unit with basic (minimum) configuration which contains the basic units article.

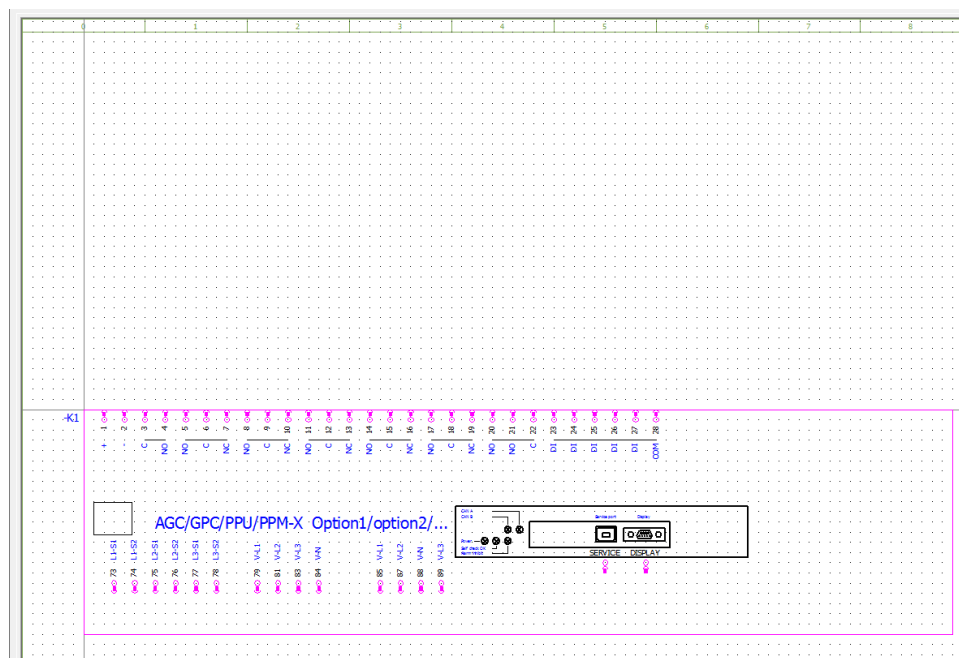
1. Choose Insert->Component and find the rack



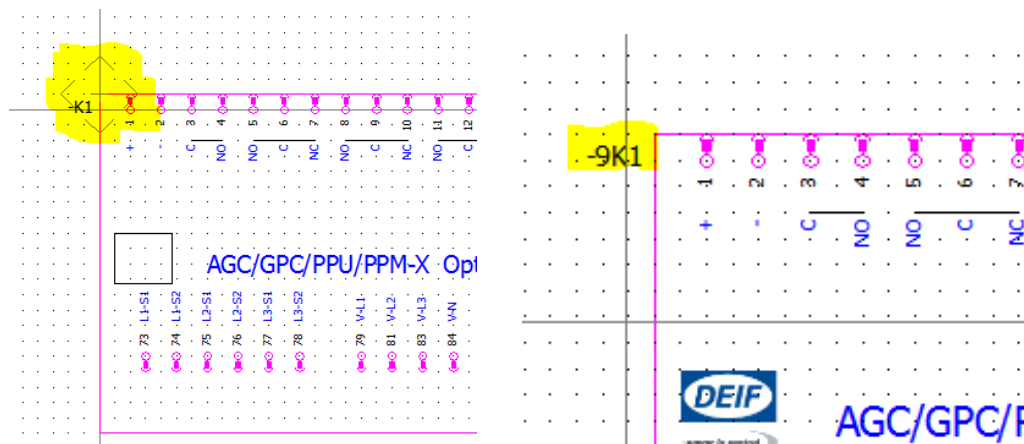
(here the filter is used to find it)



- Because this is an overview page, the overview variant of the rack macro will be inserted. The macro can be freely placed

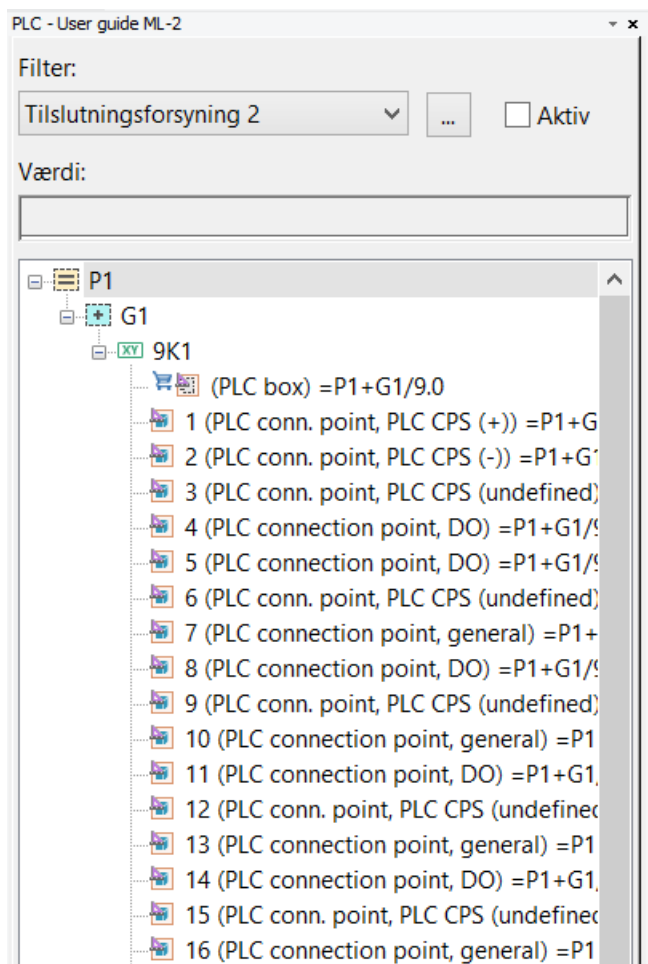


While pressing first X and then Y the macro will be placed in a fixed location on the page. This is important to do when adding additional options to the ML-2 unit.



DEIF uses 'prefix-page-designation letter-continuous' designation of components as in this example. Any kind of designation can be used, just the different parts (racks, cards and displays) has different designations. This rack is placed on page 9, and it is the second controller in this project, thus the designation is -9K1.

- Now the basic unit with slot 1 and slot 5 placed on the page. In the PLC-navigator the ML-2 unit is now existing with all it's connections from slot 1 and slot 5.



If no options are needed, the unit is now configured and it is time to go on to place diagram macros (next chapter). However, mostly the ML-2 units needs a number of options added. In this example we will add the following hardware options to the AGC:

M14.2: 4 relay outputs in slot 2

M12: 13 x digital inputs; 4 x relay outputs, analogue load sharing and external setpoint input in slot 3

E1: 2 analogue outputs +/- 25mA in slot 4

F1: 2 analogue outputs 0(4)-20 mA in slot 6

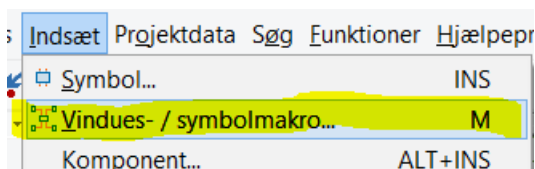
M4: Engine interface card in slot 7

H5.8: CAN-bus interface for engine communication in slot 8

N: Ethernet port in slot 9

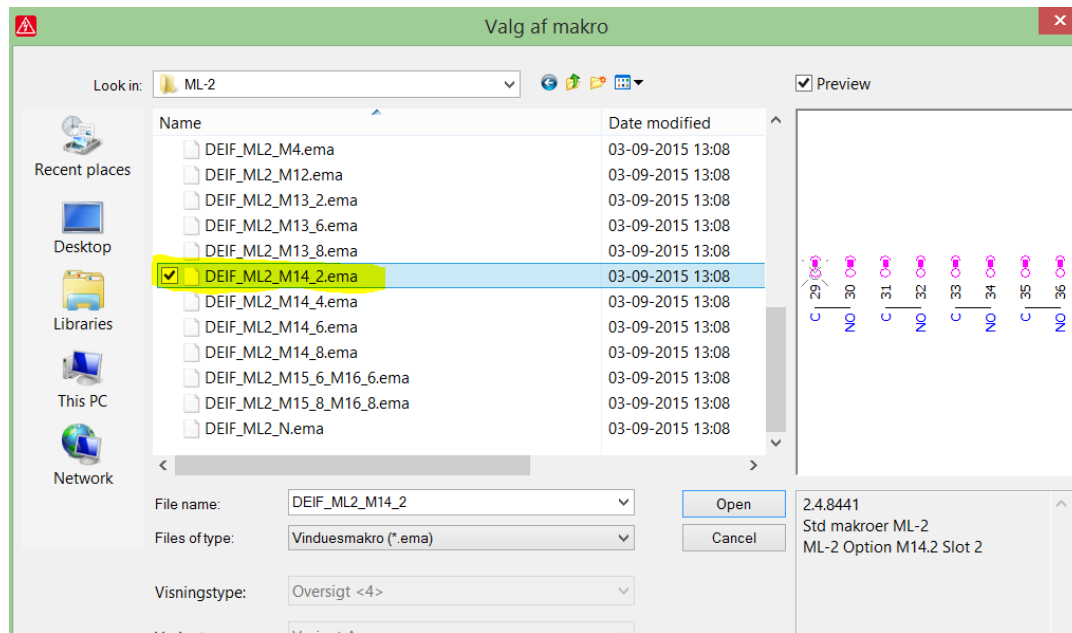
Adding options are done in two steps. First the overview section is placed on the overview of the basic unit, by placing a normal window macro. Then the article of the option is added to the article list on the basic unit.

- Placing the M14.2 option. First choose Insert -> Window / Symbol macro or press M

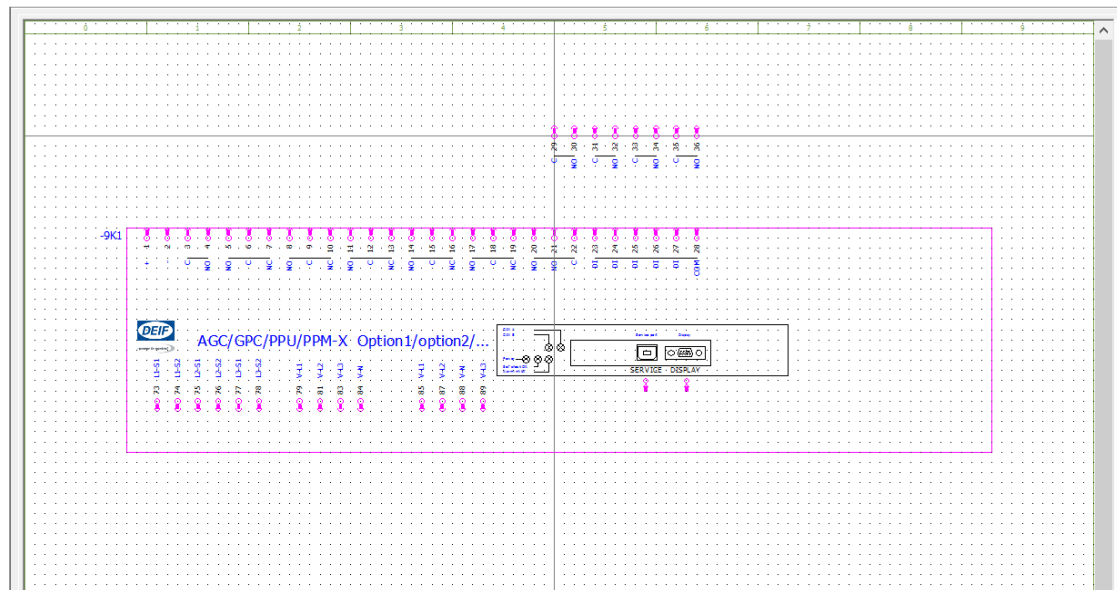


Choose the ML\_2\_M14\_2.ema macro and press open

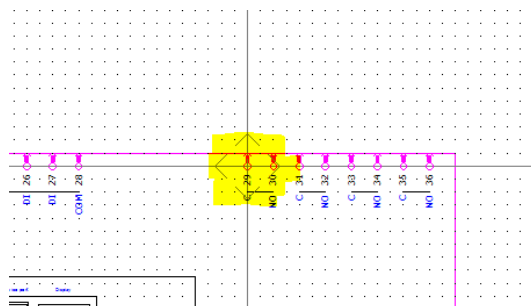
\*TIP: Some macros share the overview macro e.g. as M15.6 and M16.6 below



Now the overview part of the macro can be placed

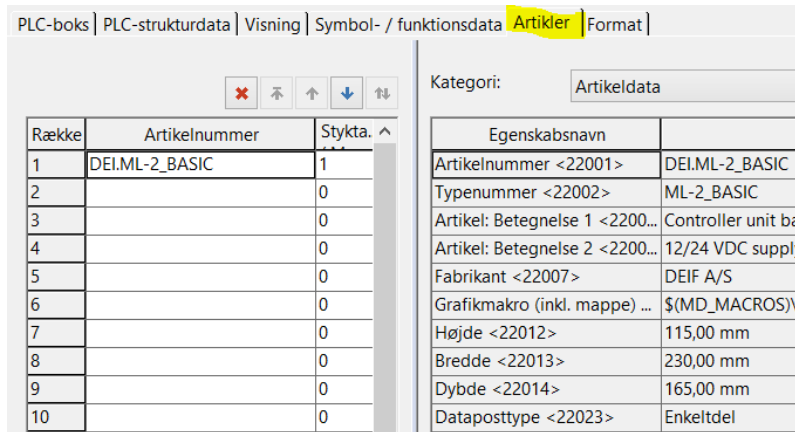


When pressing X and Y the macro will now be placed in the right position.

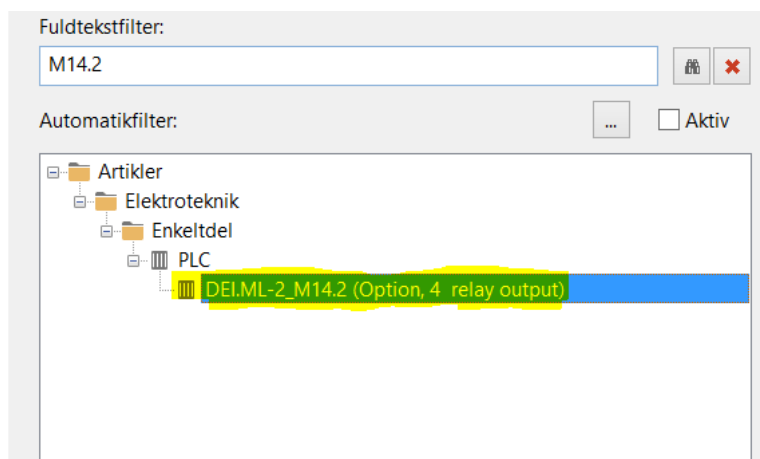


In the PLC navigator the connections of the options are now created, but without the small triangles indicating that they are linked to an article.

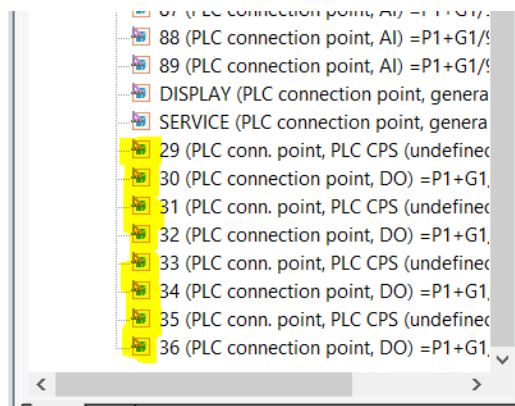
- Adding the article for option M14.2. Open the properties of the basic unit (here: -9K1) and open the Article tab.



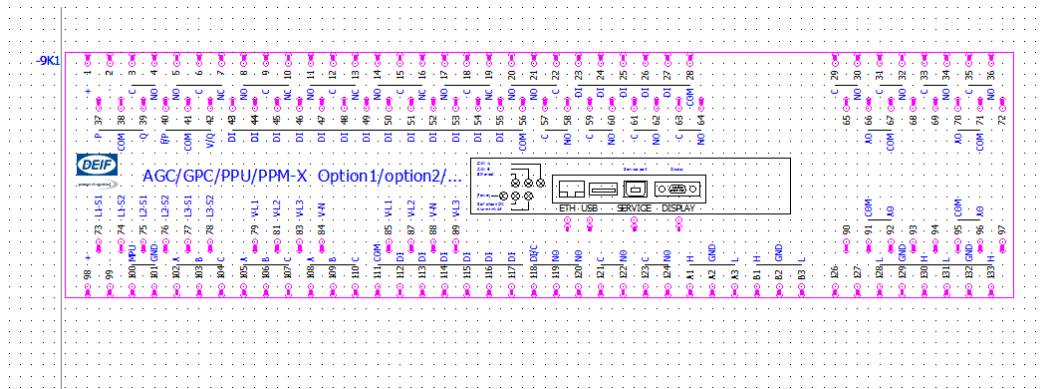
Find the M14.2 option with the filter and add it to the basic unit.



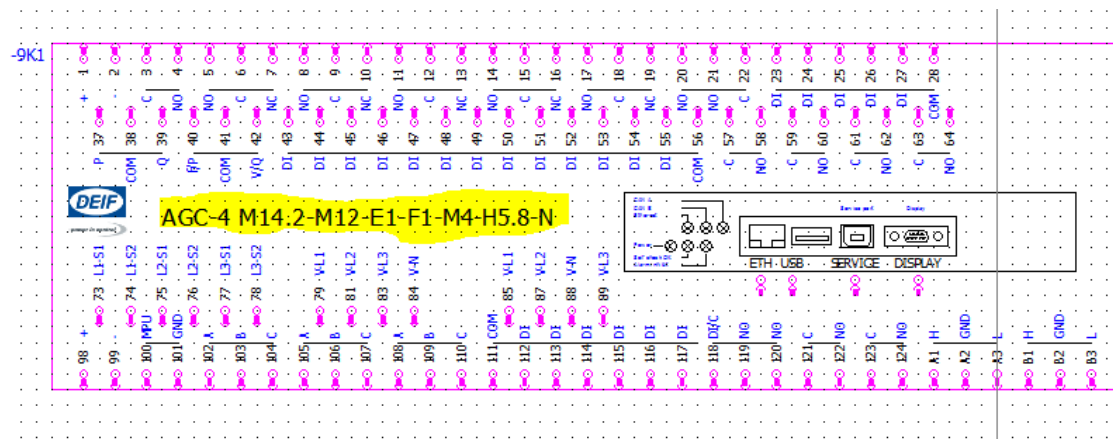
When looking in the PLC navigator, the terminals now have changed and are linked to an article.



## 6. Adding additional options are just as easy.



By changing the text manually the unit can be described in full:



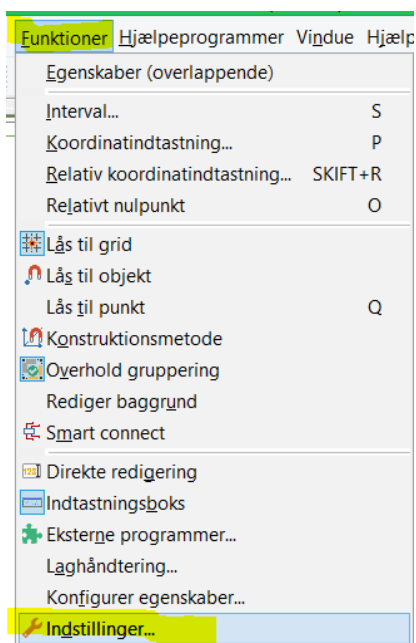
And we are now ready to place the diagram macros

## Placing diagram macros

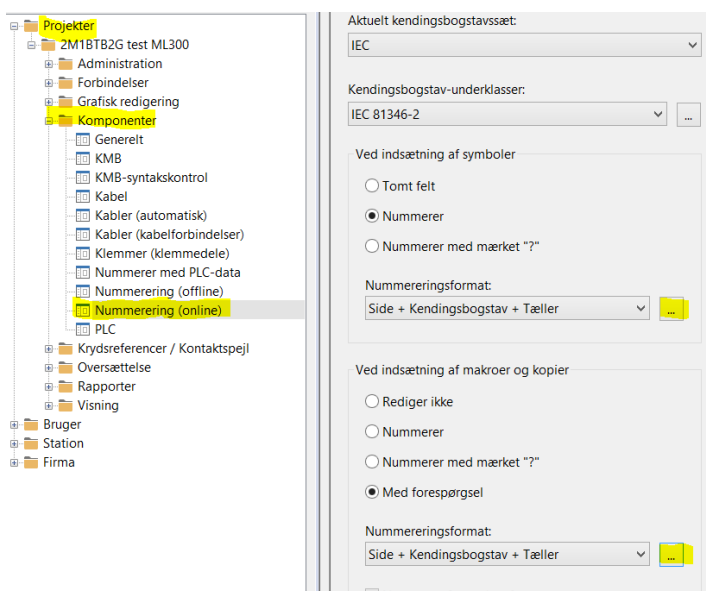
Important note:

Before placing DEIF controller diagram macros there are some setup to be made to ensure it works smoothly.

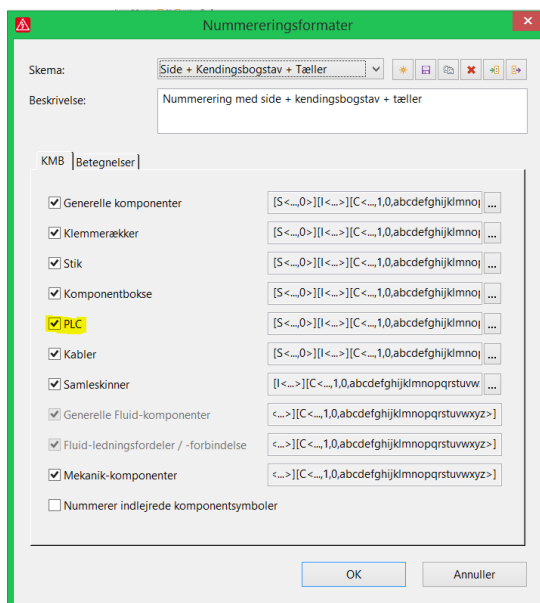
Go to Functions->Setup



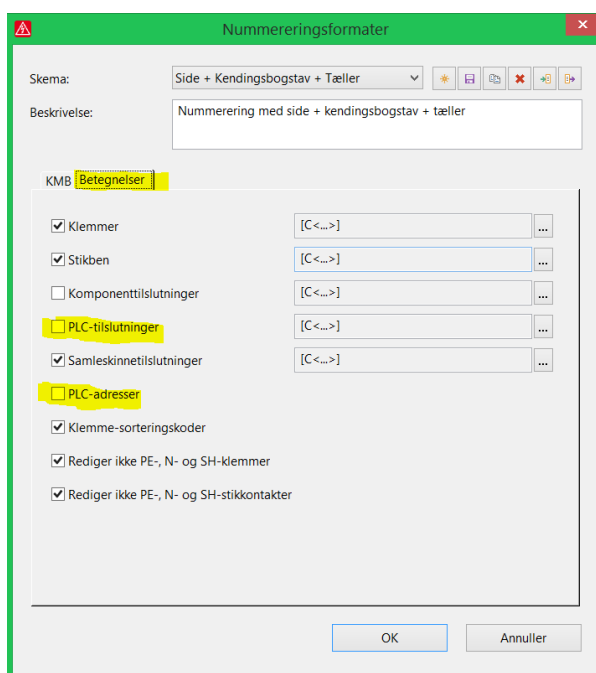
Go to –Projects->'your project'->Components->Numbering (online)





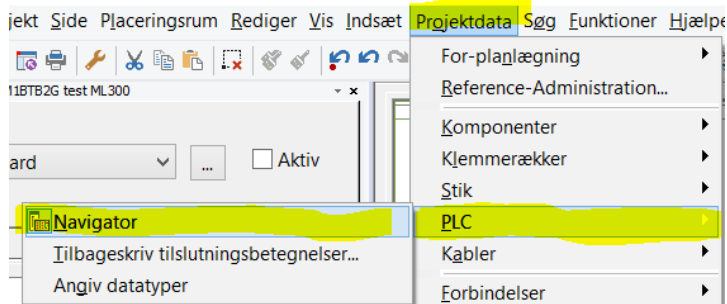


When adding symbols or macros, the numbering of PLC on the KMB tab should be ON

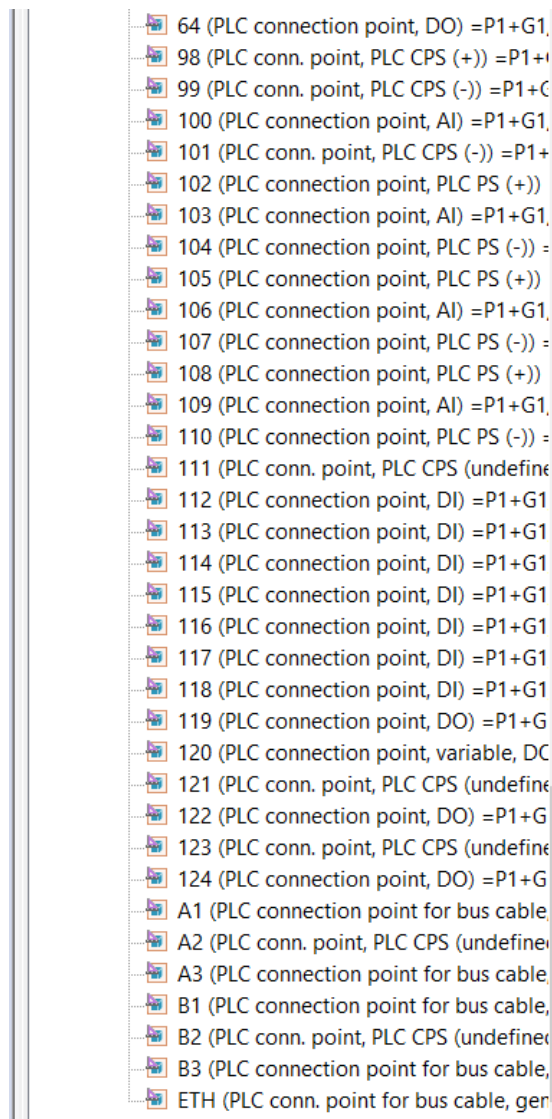


On the designations tab, the PLC-connections and PLC address should be OFF.

As the controller is now defined, the diagram macros are now ready to be placed in the diagram. The ML-2 unit now exists with applicable function definitions and related links to diagram macros. To get to them the PLC navigator is opened.

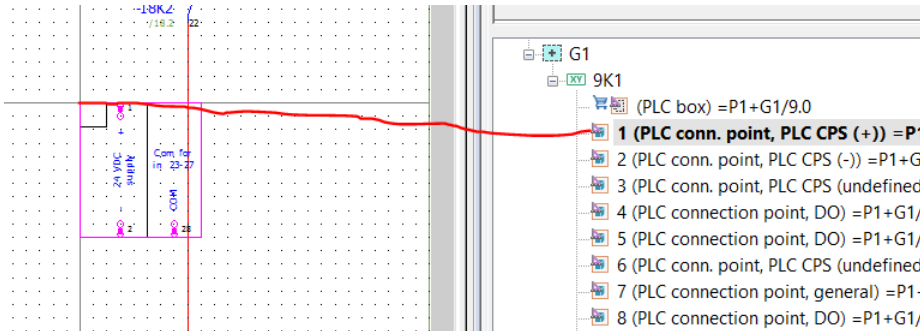


In the PLC navigator the ML-2 unit as well as all terminals are now existing. The cross-references here are to the overview pages where they exists now.

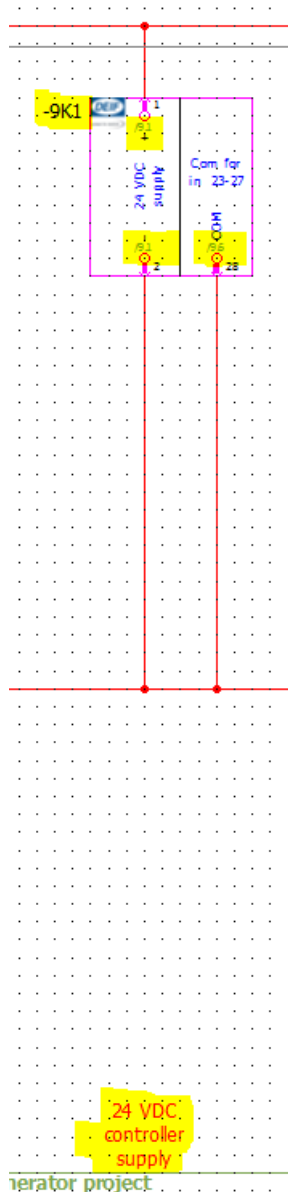


All of them should now have a triangle to show they is attached to an article on the ML-2 unit.

1. When placing the diagram macro, click and hold the left mousebutton over the terminal in the PLC-navigator and drag into the diagram. After releasing the mouse button the macro can now be placed freely in the diagram.

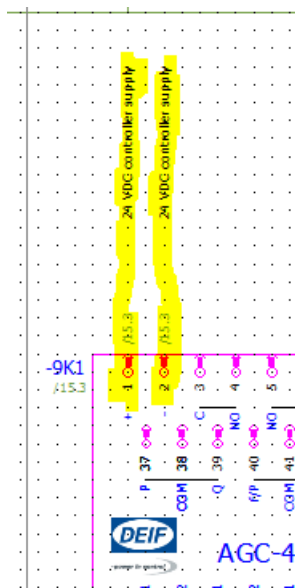


The macro is here placed in the right path

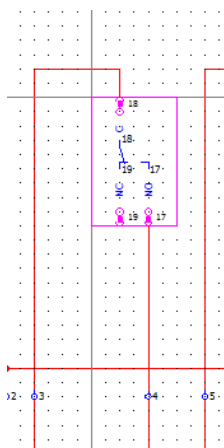


Note the designation, the cross-references are now ready.  
 Below the terminals 1 and 2 a function text can be placed.

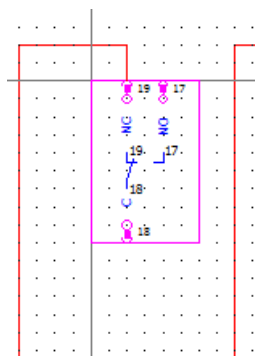
On the overview page the cross-references is now already in place, and the function text in the same path as the terminals are linked to them.



2. The next macro to place is the generator sync relay function on terminal 17, 18 and 19. Drag one of those terminals into the diagram



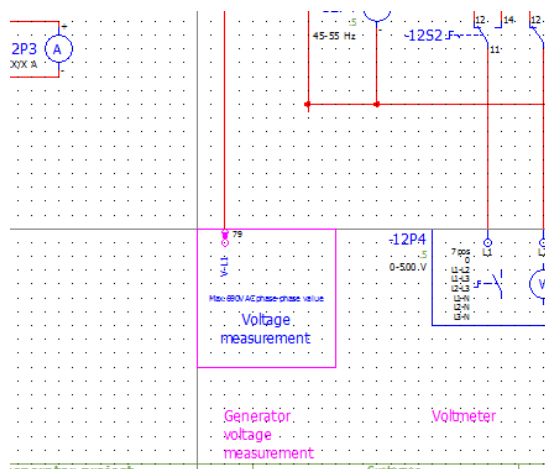
By using the `tab`, another variant of the macro can be called. This one with terminal 17 and 19 above and terminal 18 below.



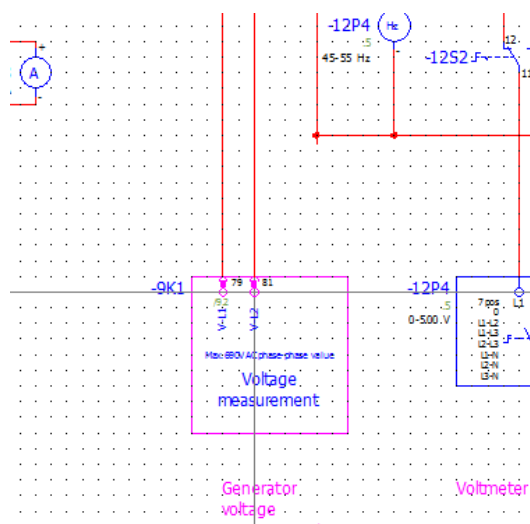
This method is applicable for a number of diagram macros, namely relays and other inputs and outputs.

3. When placing the measurement inputs on the ACM card, each measurement value is placed seperately. The first terminal holds the PLC-box though.

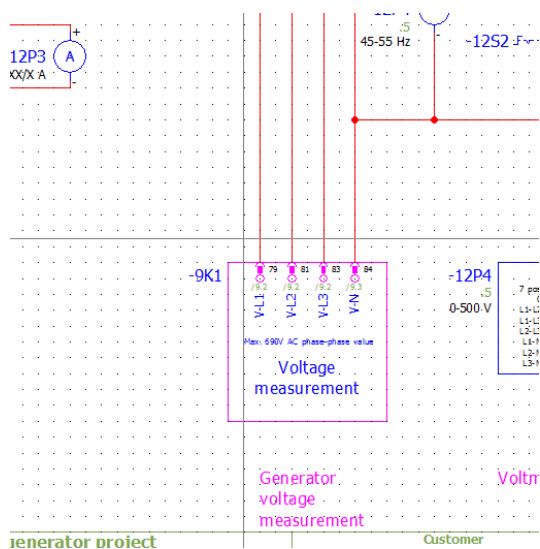
First terminal is placed with the box



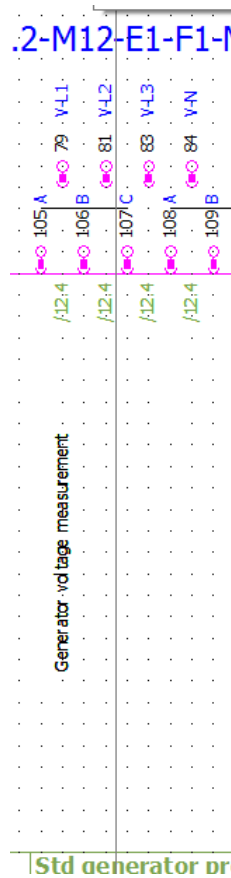
Second terminal is placed



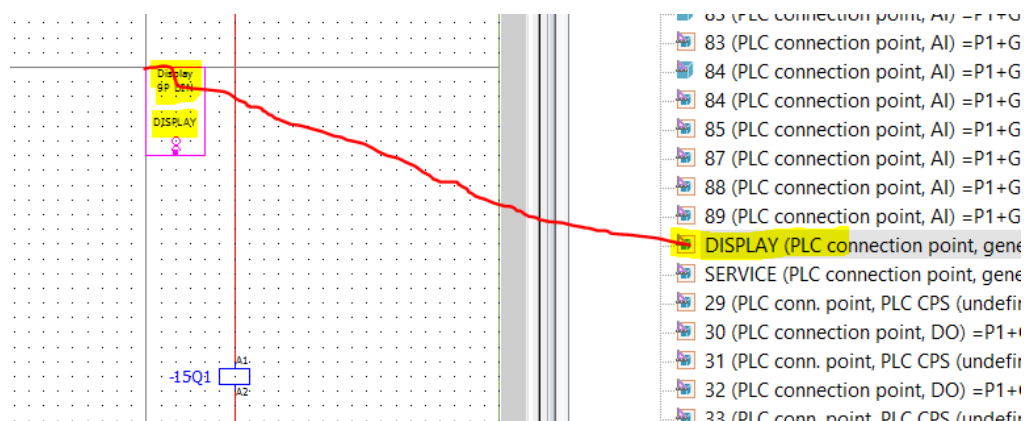
All terminals are now placed



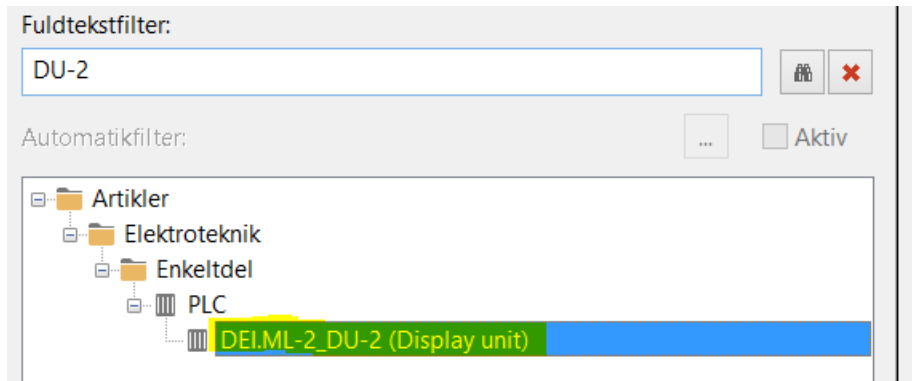
And the crossreferences and function text on the overview page is in place



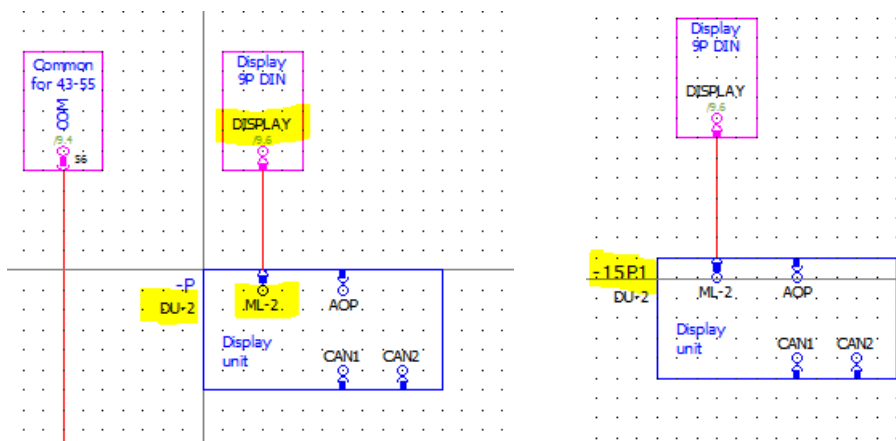
4. Placing display and AOP. The displays and AOP's are independent components in the diagram and are thus placed independently. First the dieplay port is placed. Find it in the PLC navigator and drag it into the page where the display is placed.



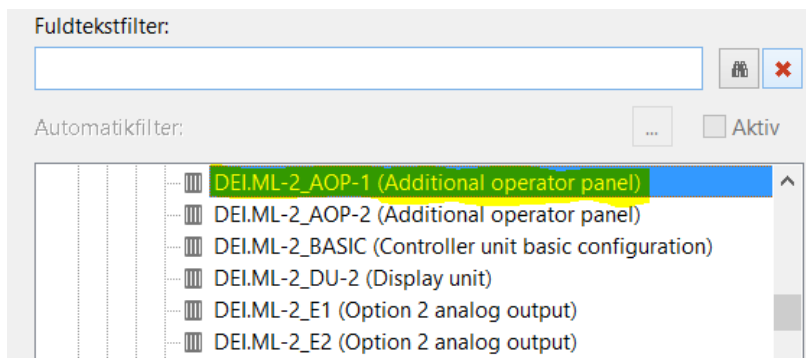
- Placing DU-2 in diagram. Insert -> Component and find the DU-2 diplay



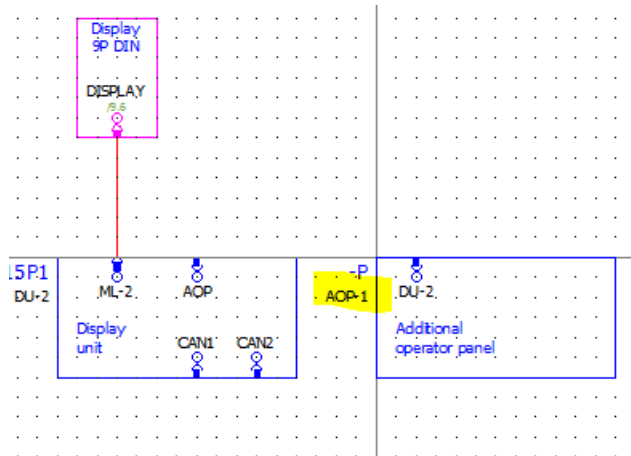
Place it below the display output



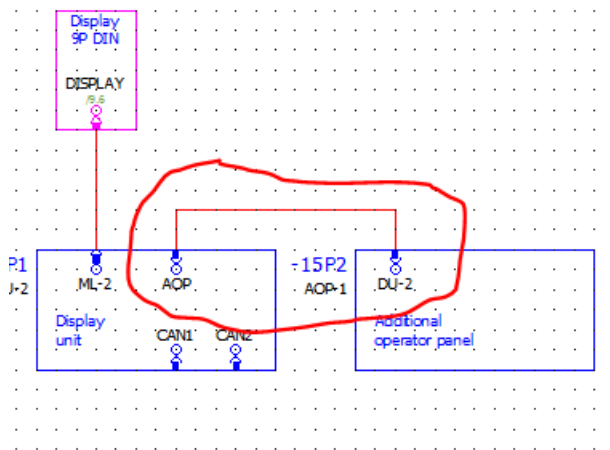
- Placing AOP-1 in the diagram. Insert -> Components and find the AOP-1



Place the AOP-1:



Connect the two units illustrating the cable delivered with the AOP-1



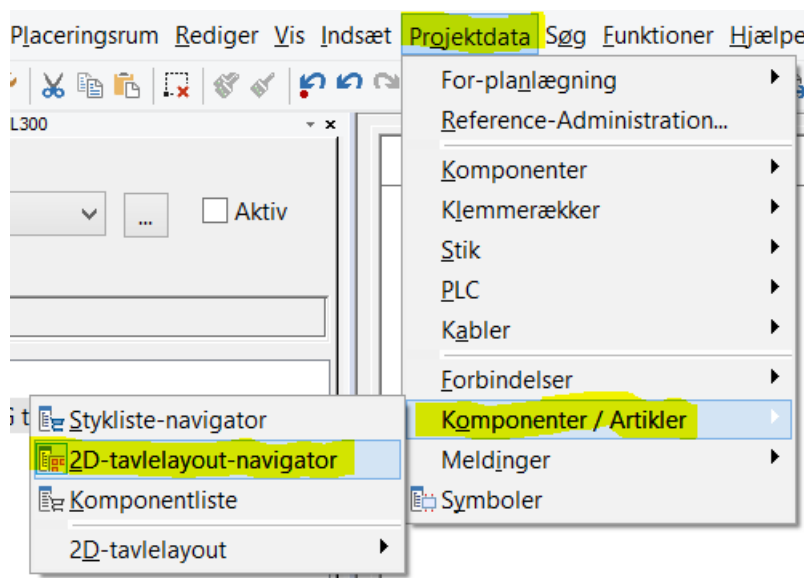


## Inserting panel layout 2D macros

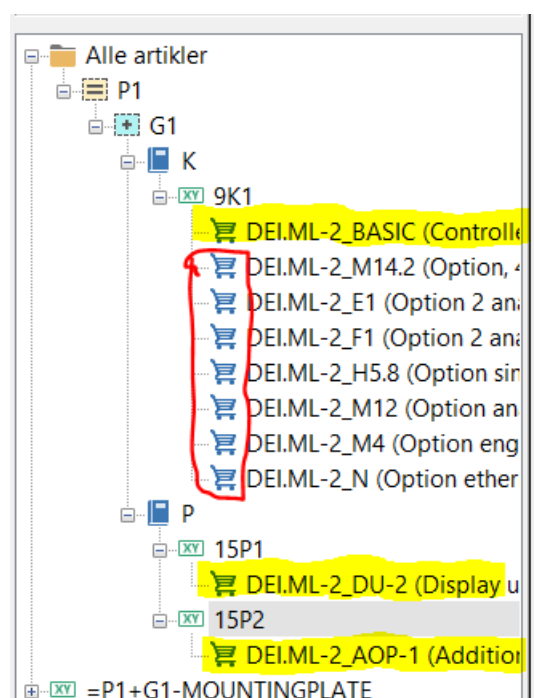
When inserting panel layout macros, it needs to be done on a page type 'Panel Layout' with a defined 'mounting plate' box representing the mounting plate.  
In this example I have a page set to scale 1:5, typical for a big panel. I also defined a mounting plate box.

Note\* Variant B of the panel layout macros for rack and display unit holds the cut-out/drilling template.

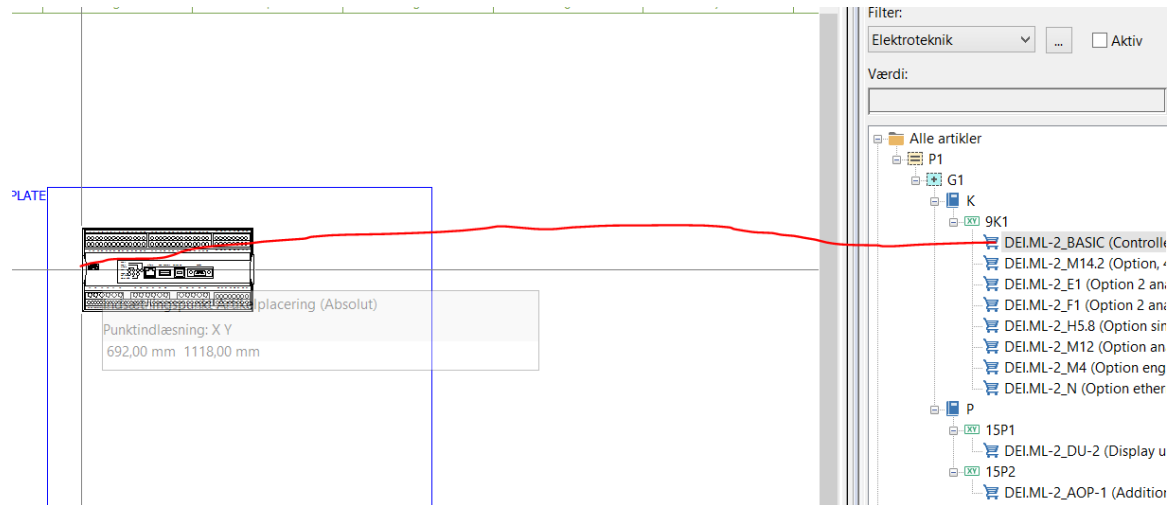
1. Open the 2D panel layout navigator by Project data -> Components/articles -> 2D-panel layout-navigator



2. Here the ML-2 articles, basic controller, options as well as displays from before can be found. Only the basic unit and the display can be placed in the diagram. The options does not have panel layout macros linked to them.



- Find the rack (here it is -9K1), click and hold the left mouse button on it and drag it onto the mounting plate.



- Do the same with the display unit to place it on the panel door.

