Application Note

FESTO

CPX-FB36 in Ethernet/IP Mode

The application node contains a step by step explanation how to configure and handle a CPX-FB36 in Ethernet/IP mode with a Schneider M340 PLC and Unit Pro S 13.0

CPX-FB36

100196

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1 Components/Software used

Type/Name	Version Software/Firmware	IP address
CPX-FB36	REV13	192.168.1.10
Schneider M340 BMX P34 20302	02.70	192.168.1.38
Schneider BMX NOC 0401	02.70	192.168.1.5
CPX-FB36 EDS file	1.5 (10/04/2018)	--
FMT Software	4.21.203	--
Unity Pro S	V13.0	--

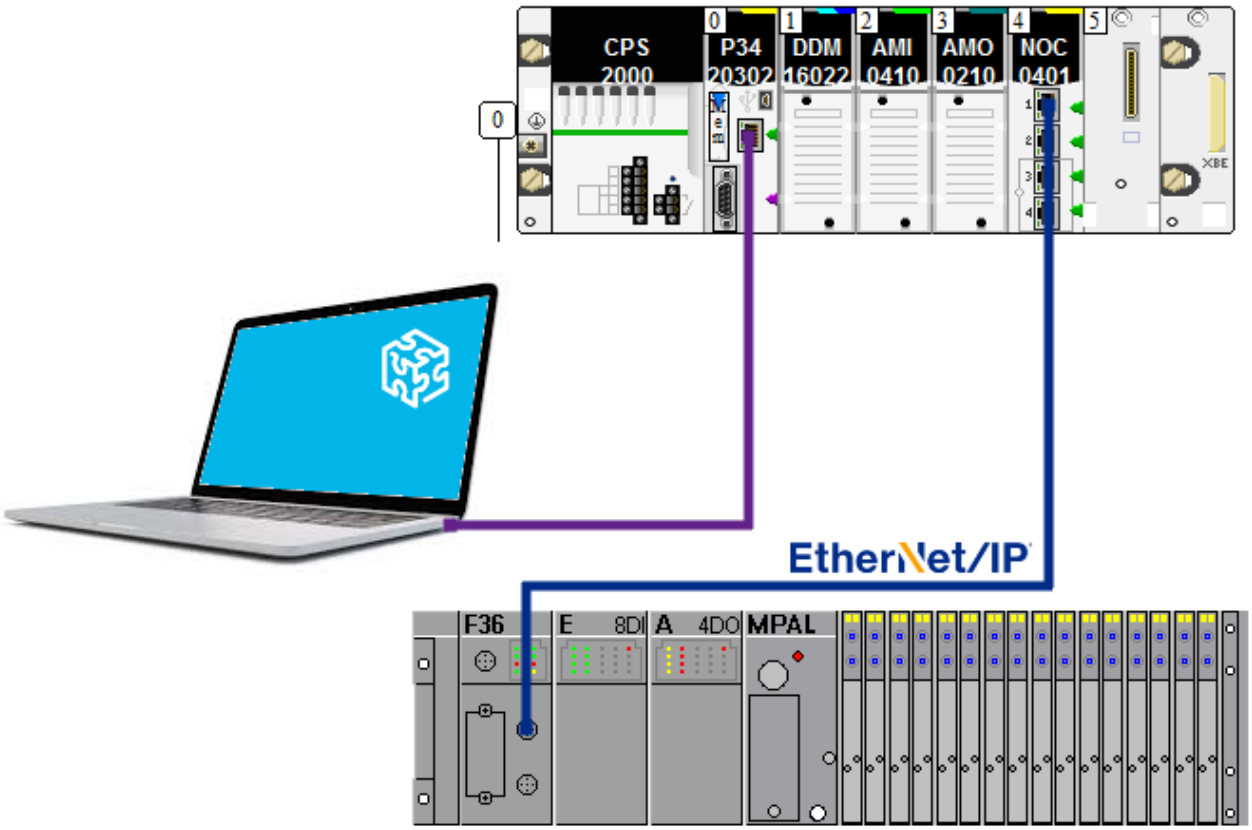
Table 1.1: 1 Components/Software used

1.1 Recommended manuals as reference

- CPX system Manual
  https://www.festo.com/net/SupportPortal/Files/407638/CPX-SYS_2009-02e_526446g1.pdf
- CPX-FB36 Manual
  https://www.festo.com/net/SupportPortal/Files/451228/CPX-FB36_2016-11a_8024075g1.pdf

1.2 Topology

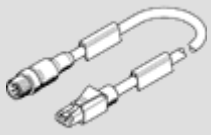
The CPX-FB36 is connected via M12-RJ45 Ethernet cable to the first port of the NOC 0401.



Note

Festo offers M12-RJ45 and RJ45-RJ45 cable.

8040451	NEBC-D12G4-ES-1-S-R3G4-ET	1m length
8040452	NEBC-D12G4-ES-3-S-R3G4-ET	3m length
8040453	NEBC-D12G4-ES-5-S-R3G4-ET	5m length
8040455	NEBC-R3G4-ES-1-S-R3G4-ET	Only 1m length available



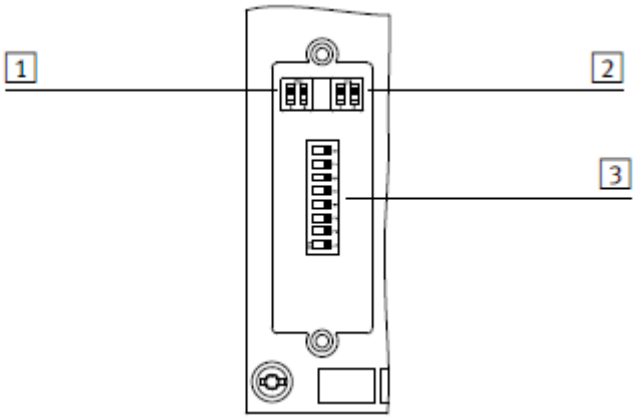
1.3 DIL Settings of the CPX-FR36

1- Arrangement of the DIL switches :

1 DIL switch 1: operating mode and network protocol

2 DIL switch 2 diagnostic mode or data field size[1)]

3 DIL switch 3: IP addressing



2- Setting the operating mode

DIL switch1.1		Operating mode
	DIL 1.1: OFF (Factory setting)	**Remote I/O** All functions of the CPX terminal are controlled directly by the higher-order controller (PLC). A control block integrated into the CPX terminal (e.g. CPX-CEC or CPX-FEC) works as a passive function module without controller.
	DIL 1.1: ON	**Remote controller** A control block integrated into the CPX terminal (e.g. CPX-CEC or CPX-FEC) takes over I/O control. This operating mode is only useful if a control block is integrated into the CPX terminal.

3- Setting the network protocol

DIL switch1.2		Network protocol
	DIL 1.2: OFF (Factory setting)	EtherNet/IP The CPX terminal uses the EtherNet/IP network protocol.
	DIL 1.2: ON	Modbus®TCP The CPX terminal uses the Modbus® TCP network protocol.

4- Setting the IP address

DIL switch3		IP addressing
	DIL 3.8: 2^7 = 128 DIL 3.7: 2^6 = 64 DIL 3.6: 2^5 = 32 DIL 3.5: 2^4 = 16 DIL 3.4: 2^3 = 8 DIL 3.3: 2^2 = 4 DIL 3.2: 2^1 = 2 DIL 3.1: 2^0 = 1	The type of addressing or the host ID of the IP address of the bus node is set via DIL switch elements 3.1 ... 3.8. Possible settings: 0 = Dynamic addressing via DHCP/BOOTP 1 ... 254 = Permissible address range 255 = Reset all IP parameters to factory setting Factory setting: 0

To set the IP address to 192.168.1.10, set the DIL switches 3.2 and 3.4 to ON.

Note

IP address : 192.168.1.10

Network ID : 192.168.1.0

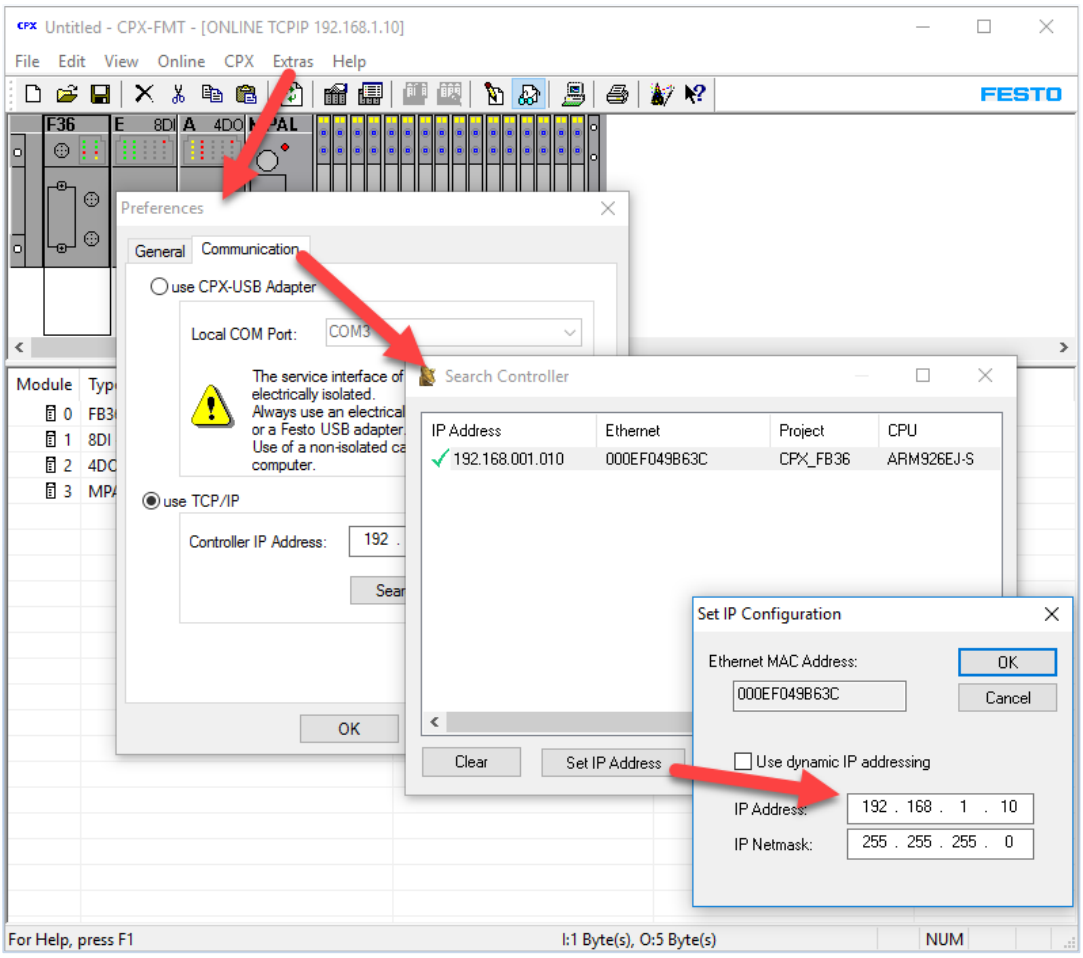
Host ID : 0.0.0.10

Note

Dynamic addressing is set via DHCP/BOOTP by default. If all of the switch elements of DIL switch3 are set to ON when the bus node is switched on, all IP parameters will be reset to the factory setting.

1.4 Use FMT software for setting the IP address

If all the DIL switches 3 are set to OFF (factory settings) then it is possible to use FMT software for setting the IP Address. For this application the address IP is set with FMT.



2 Commissioning in Unity Pro S V13.0

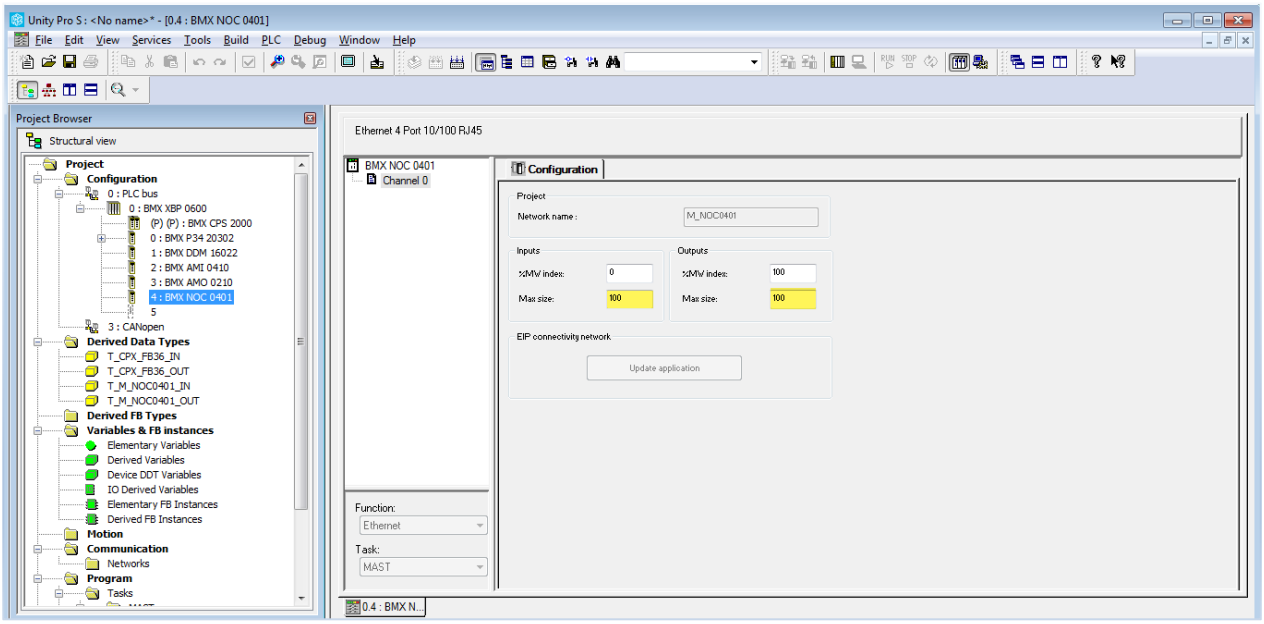
2.1 Key requirements

- Connection to the PLC is ok (USB or TCPIP)
- PLC configuration is done.
- You have in Online mode a running system without any errors

2.2 NOC 0401 configuration

2.2.1 Input and Output size

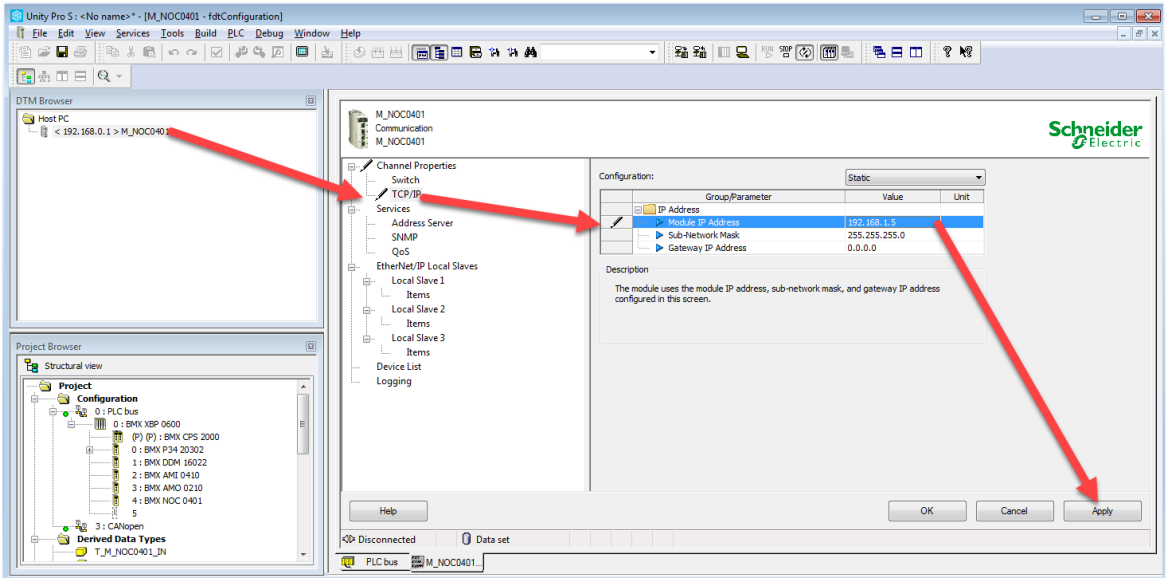
In the Project Configuration you need to reserve the input and output size. You can put the exact size or a bigger one.



2.2.2 DTM

Open the DTM browser : [Tolls] ›› [DTM browser] or Alt + Shift + 1

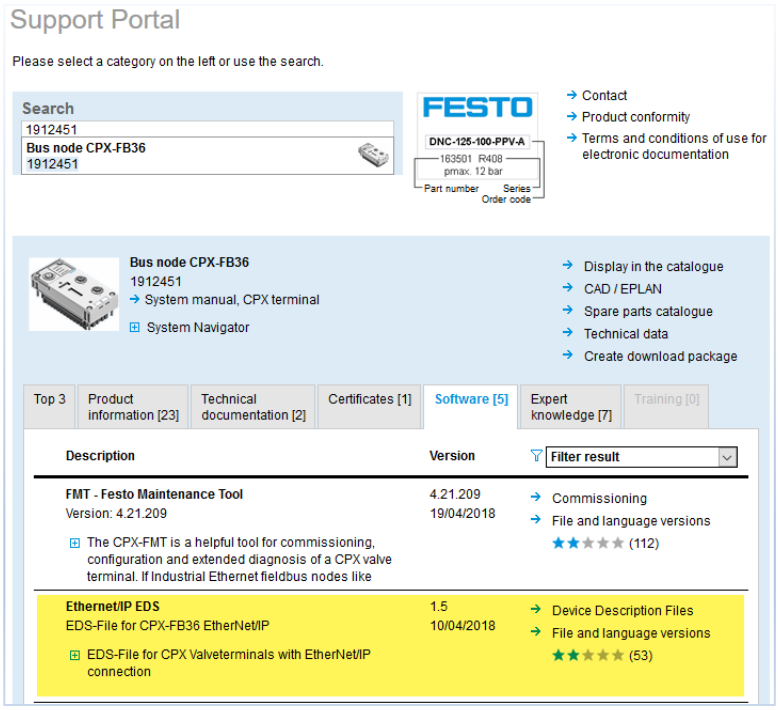
1- Configure the IP address of the module NOC 0401.
Example : 192.168.1.5



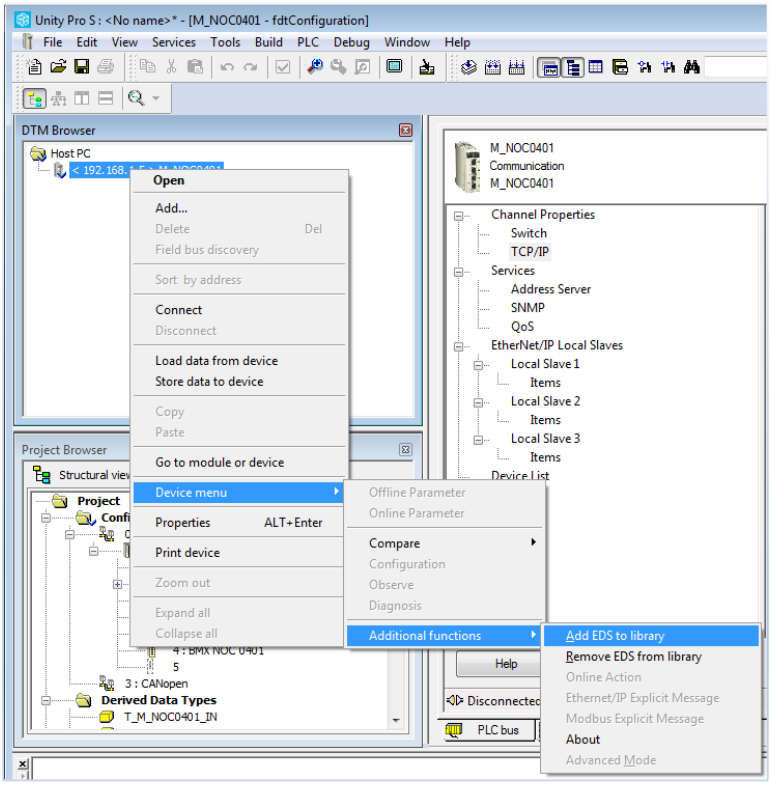
2- Add the EDS files to the Hardware Catalog

You can find the CPX-FB36 EDS files on Festo Support Portal :

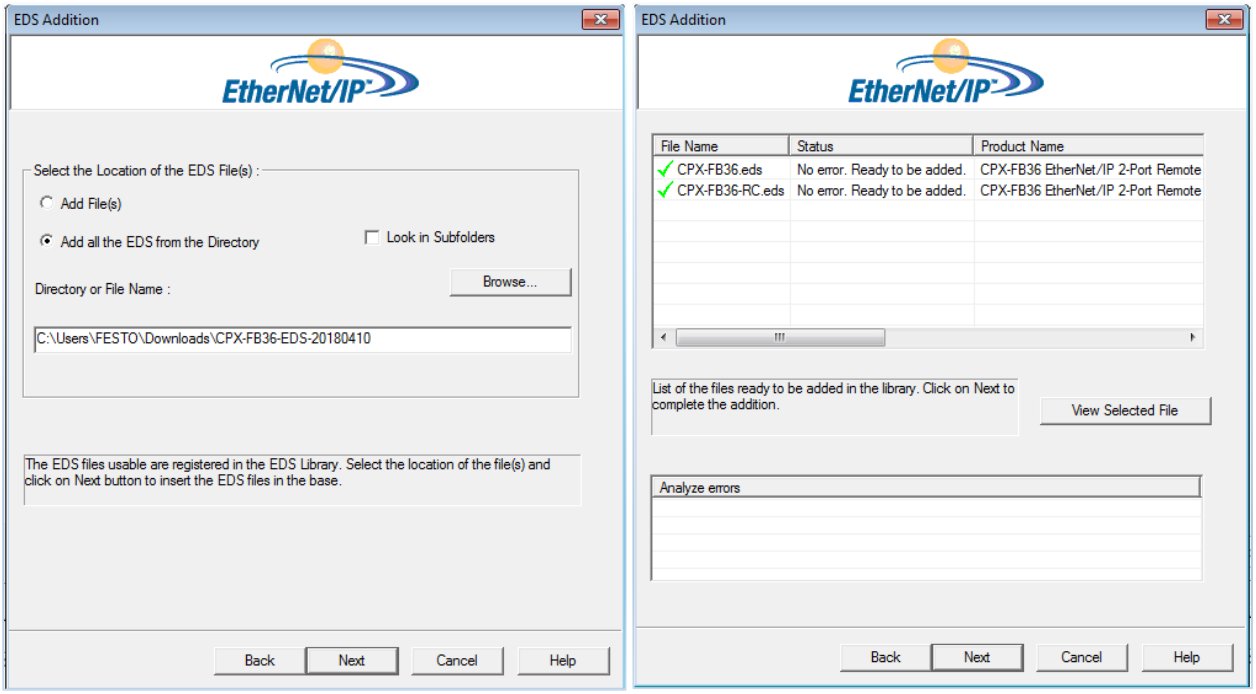
https://www.festo.com/net/en-gb_gb/SupportPortal/Downloads/325796/299675/CPX-FB36-EDS-20180410.zip



Right click on the [NOC card] ›› [Device menu] ›› [Additional Function] ›› [Add EDS to library]

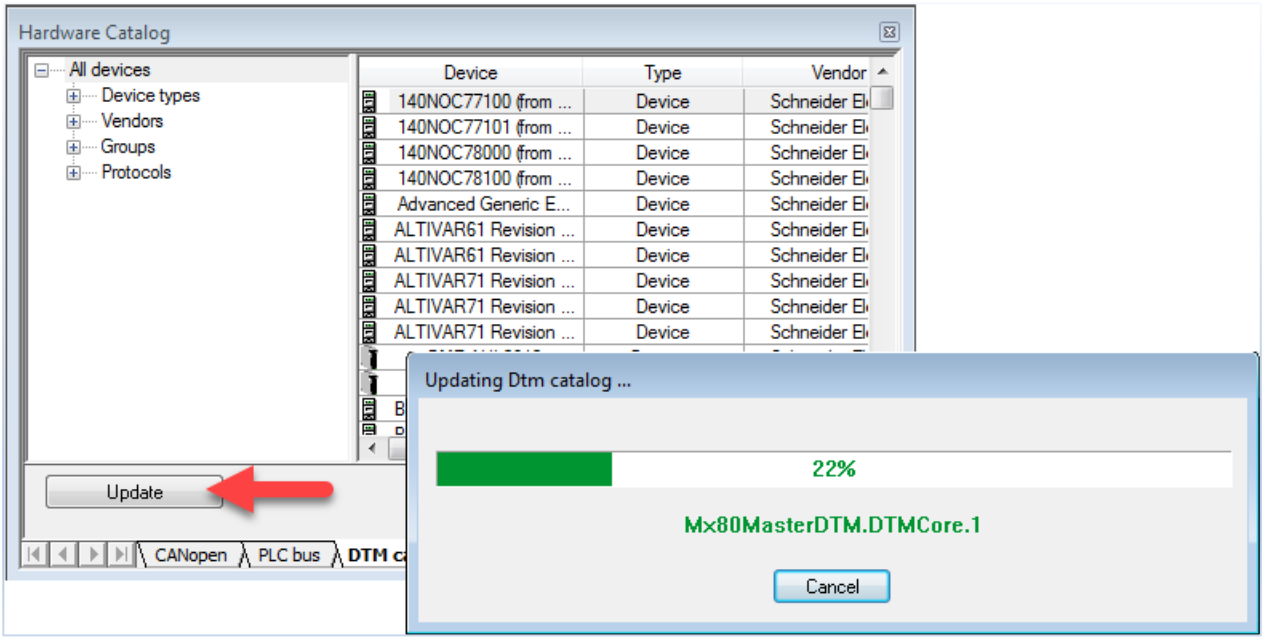


Specify the directory and finish the installation.

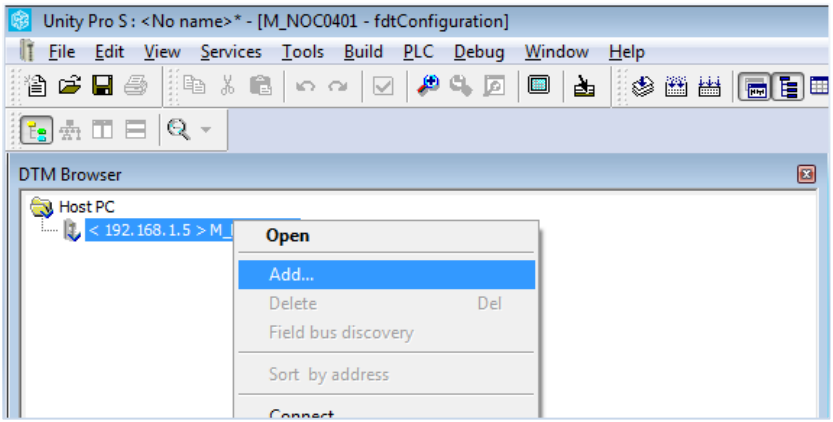


3- Update the hardware catalogue

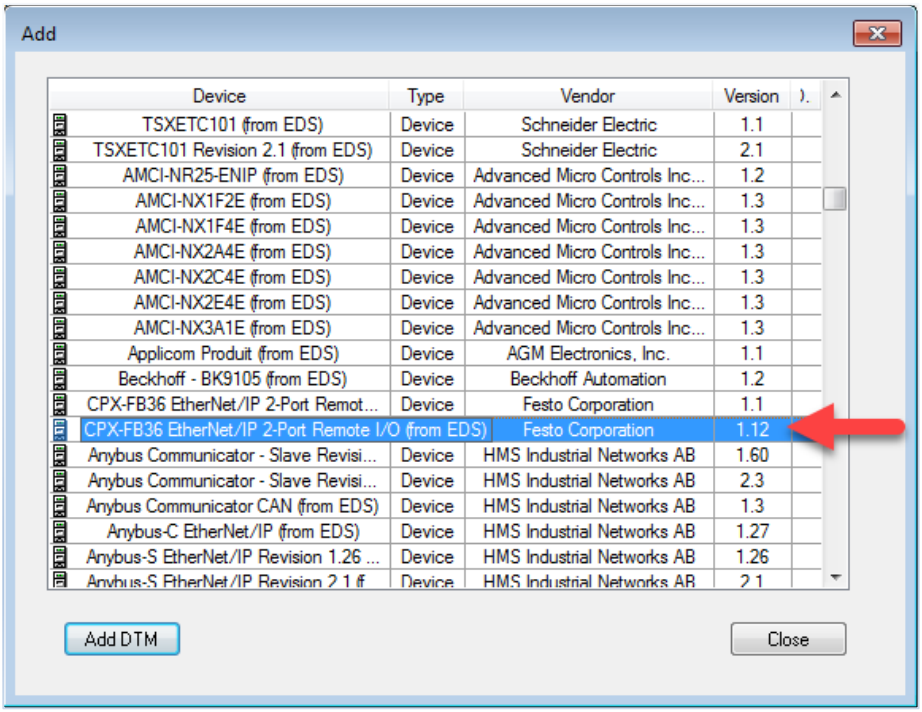
Open it : [tool] ›› [Hardware catalogue] or Alt + 2 then [Update] the hardware catalog.



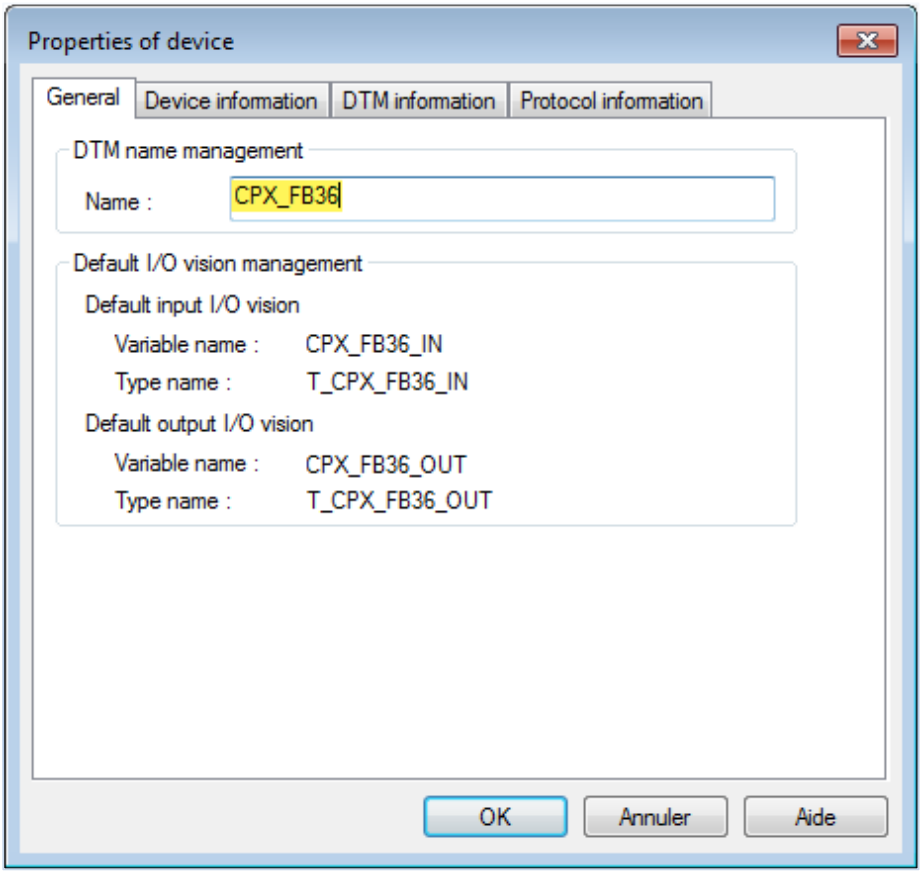
4- [Add..] the CPX node to the NOC



Find and choose the **CPX-FB36 Ethernet/IP 2-Port Remote I/O** device, double click on it.

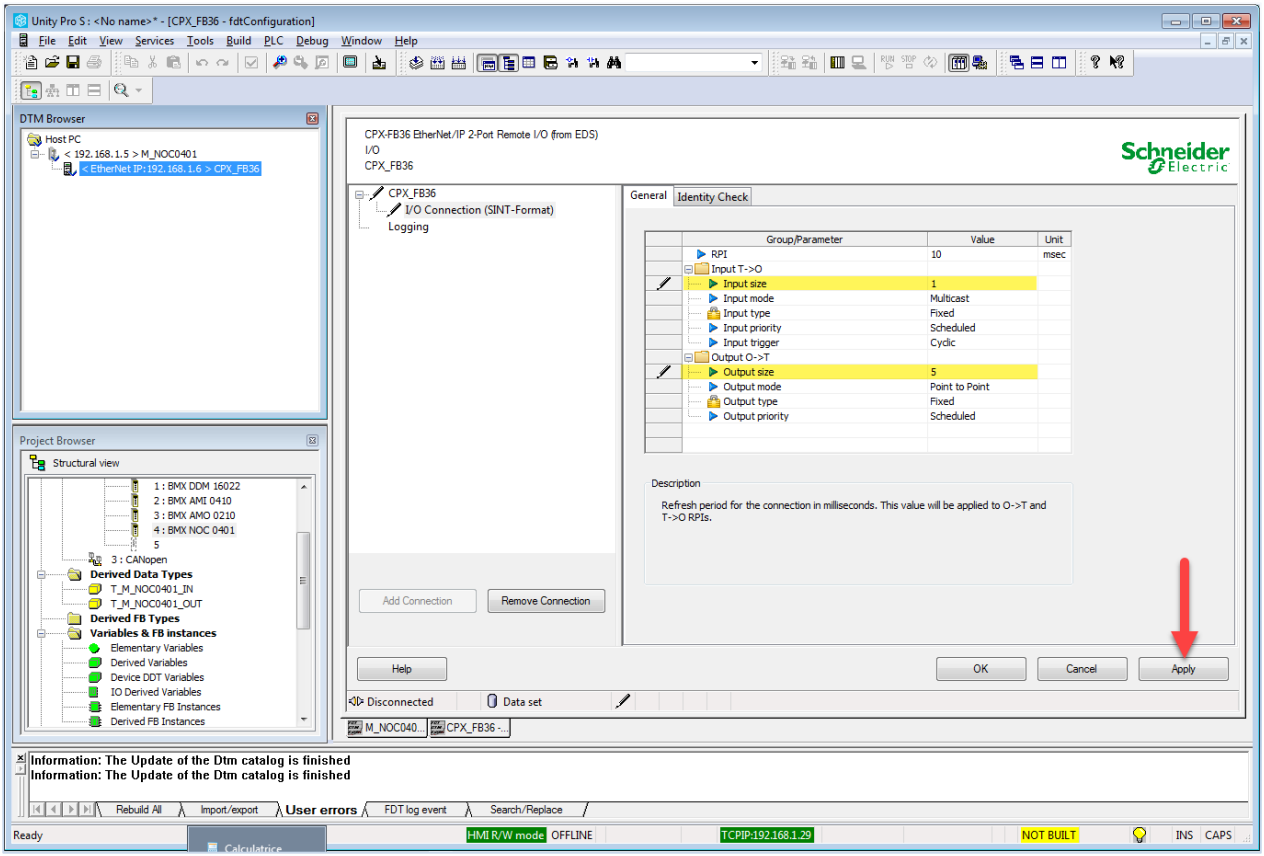


If needed you can rename the device, click [Ok]

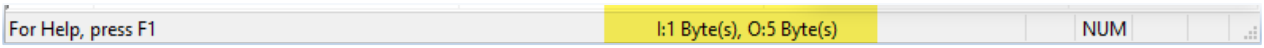


2.3 CPX-FB36 Node Configuration

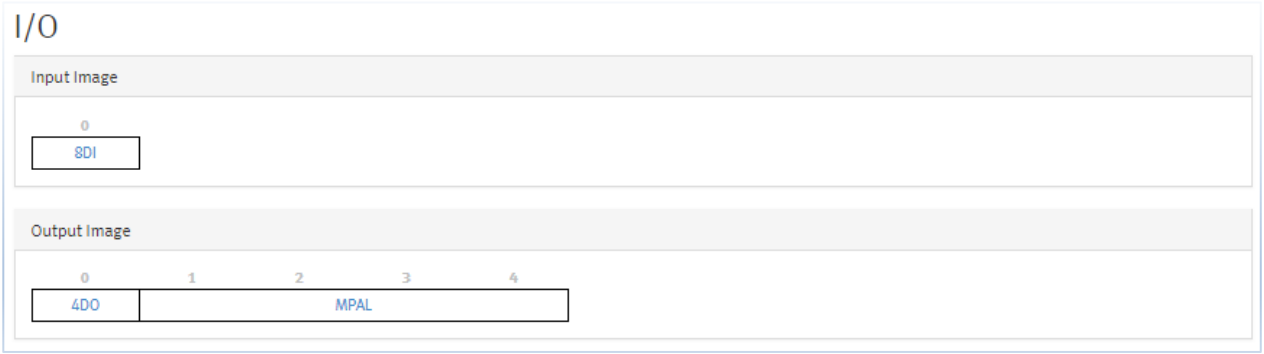
1- Enter the correct Input and Output size
Double click on the CPX-FB36 and open the [I/O Connection (SINT-Format)] page, don't forget to [Apply] the new configuration and **Close the page.**



You can find the value in FMT



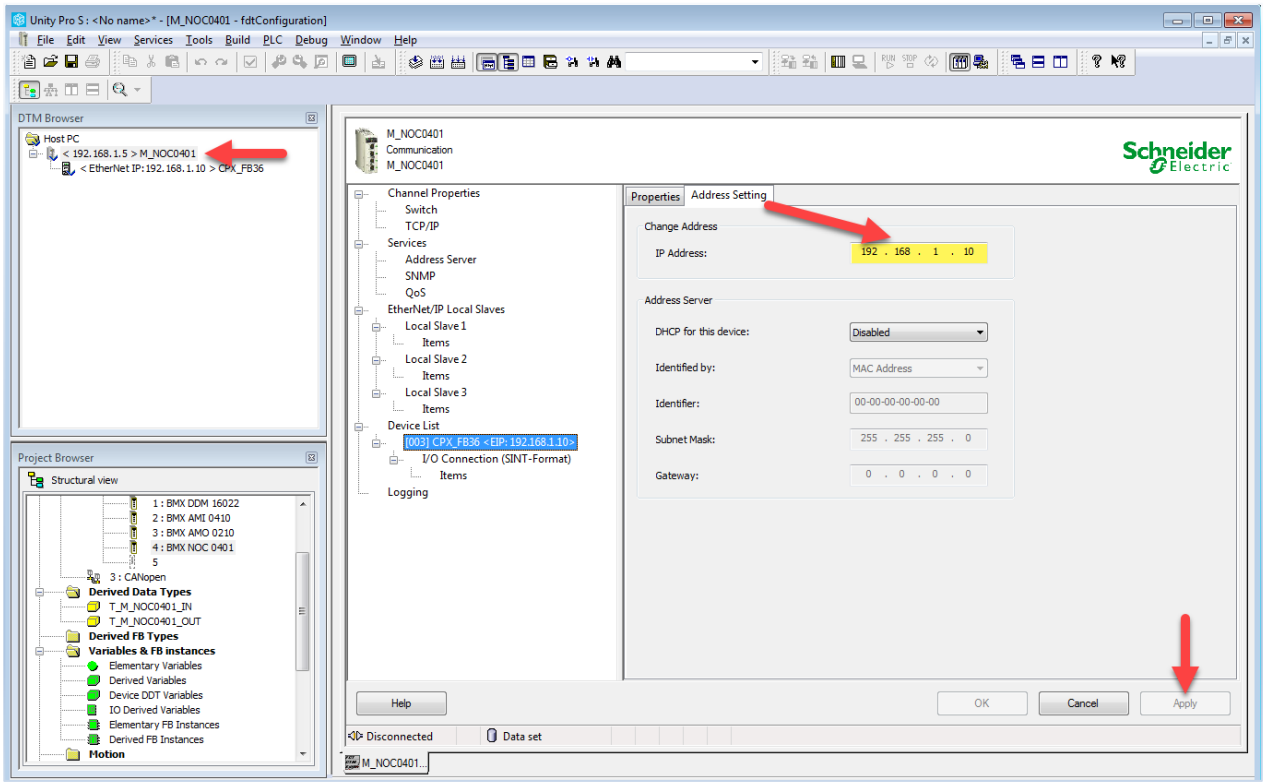
Or on the Webpage



In this example we have 1 Inputs Byte ant 5 Outputs Bytes.

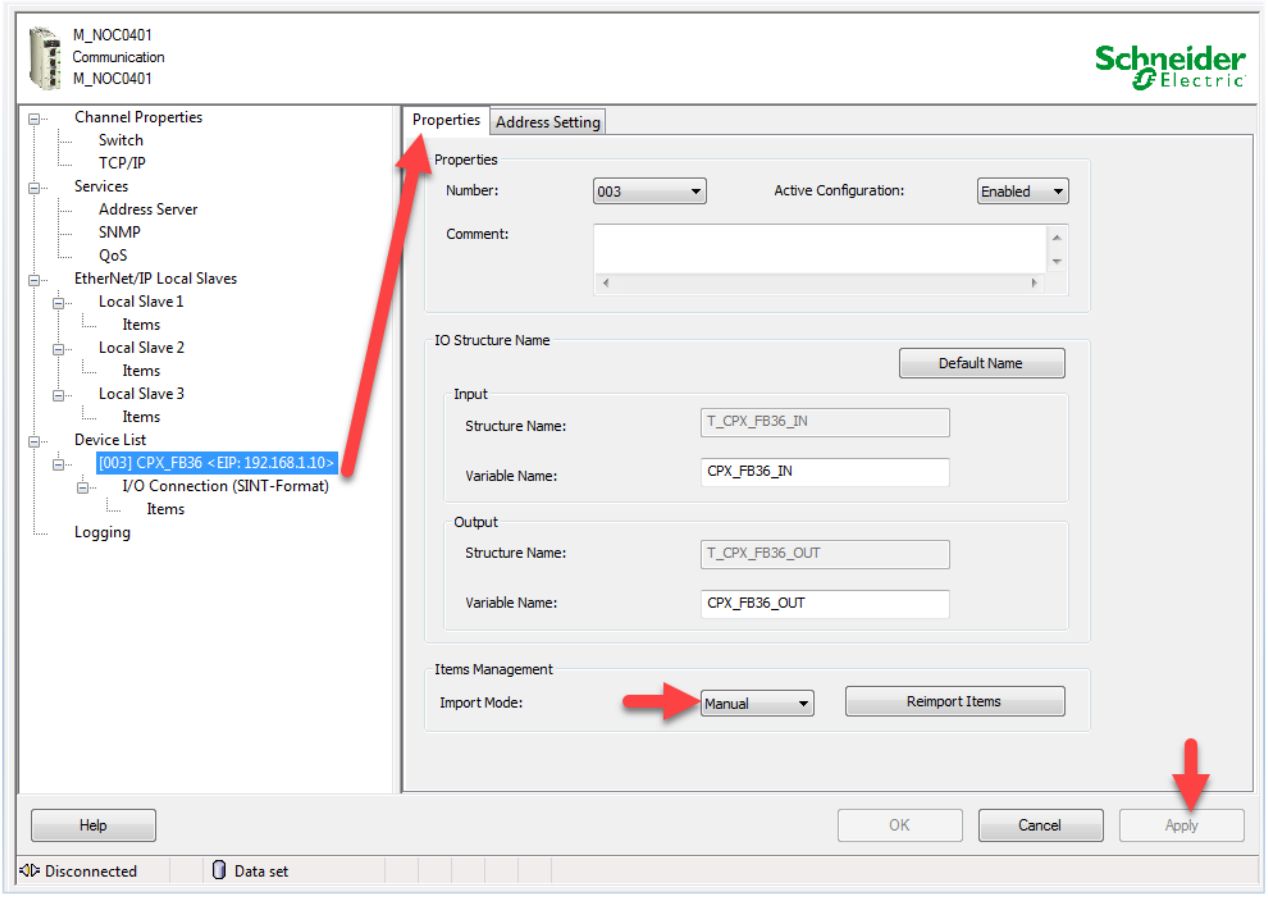
2- Change the IP address

In the NOC configuration page we see the FB36 device and we need to set the correct IP address.



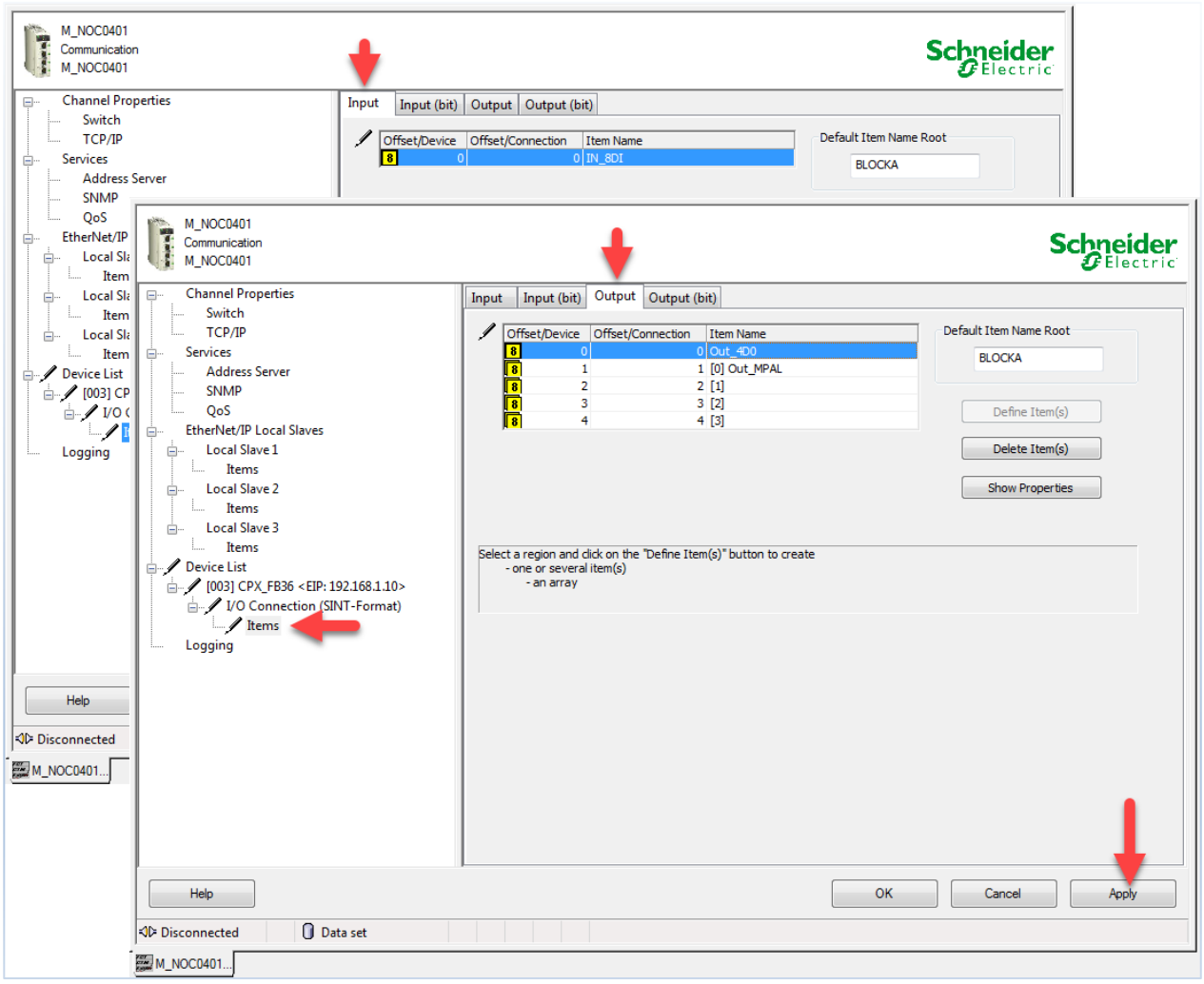
3- Configure the Items

Then in the [Properties] tab choose the [Manual] import mode for the Items Management.



Configure the item with a personalized name and Data Type.
To modify click on [Show Properties].
Or delete actual items with [Delete Items(s)] and then defines one or several items with [Define Item(s)]

In this example one Item is set for the inputs, (1 byte). Another one is set for the 4 digitals outputs card and for the 32 outputs of the MPAL interface an array of 4 bytes is set.

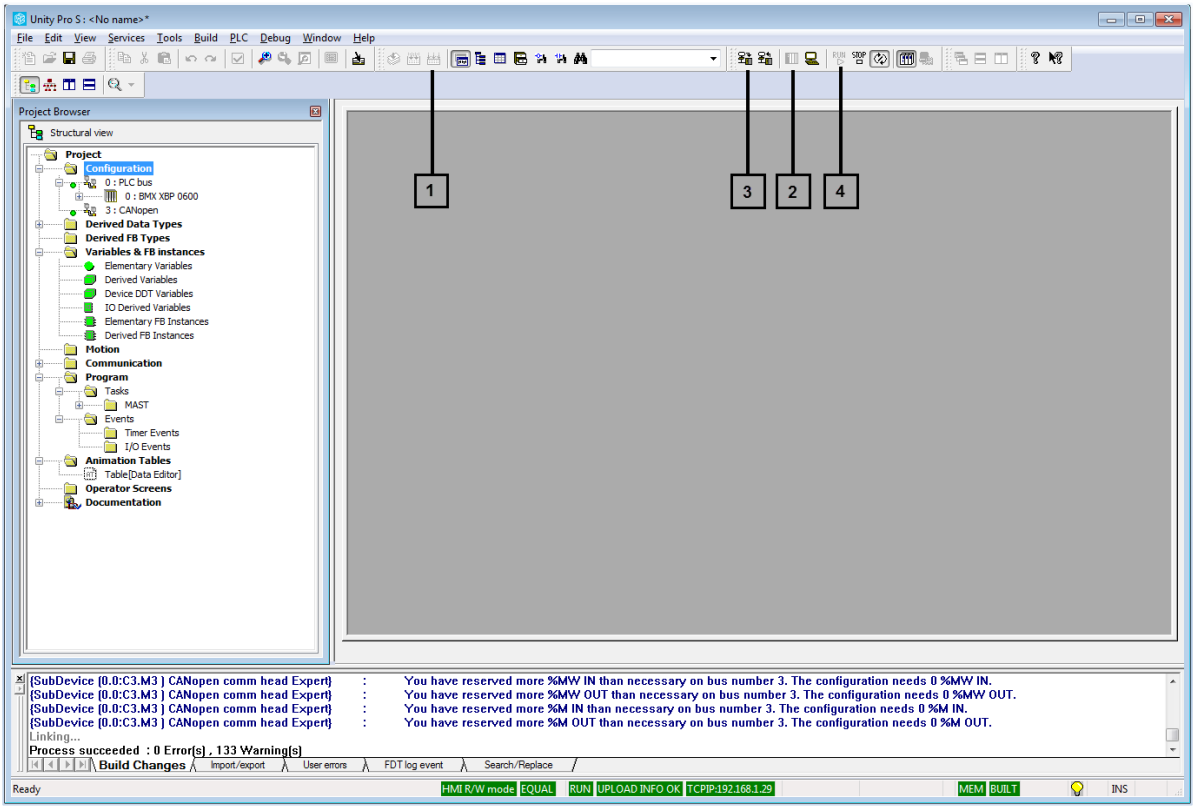


3 Connection to the PLC and test.

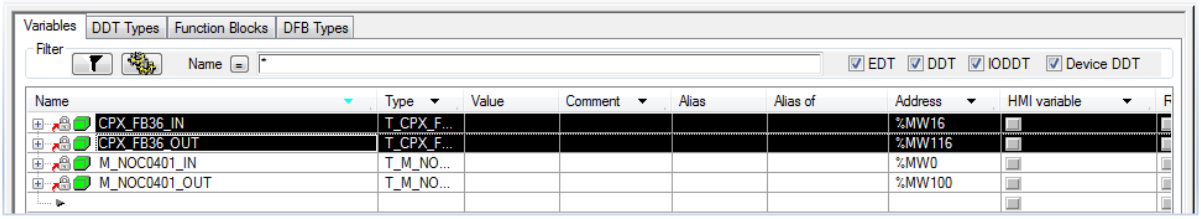
The configuration is finished, the DTM Browser can be closed and next :

1- Rebuilt all the project, there is no error.
2- Connect to the PLC
3- Download the project.
4- Run the system.

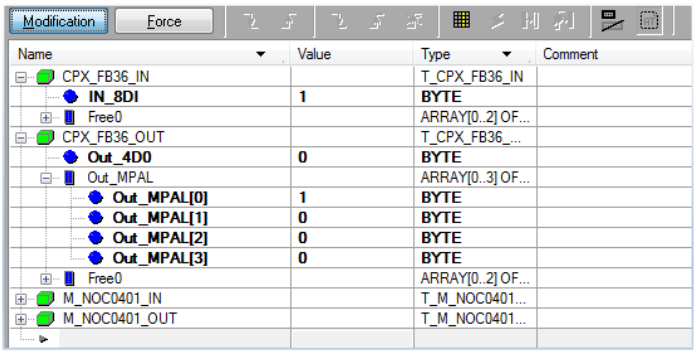
Everything is ok and your application looks like this



Open the Data Editor : [Tool] ›› [Data Editor] or Alt + 9



In the Variables tab select CPX_FB36_IN and CPX_FB36_OUT and initialize an animation table (CTRL + T)

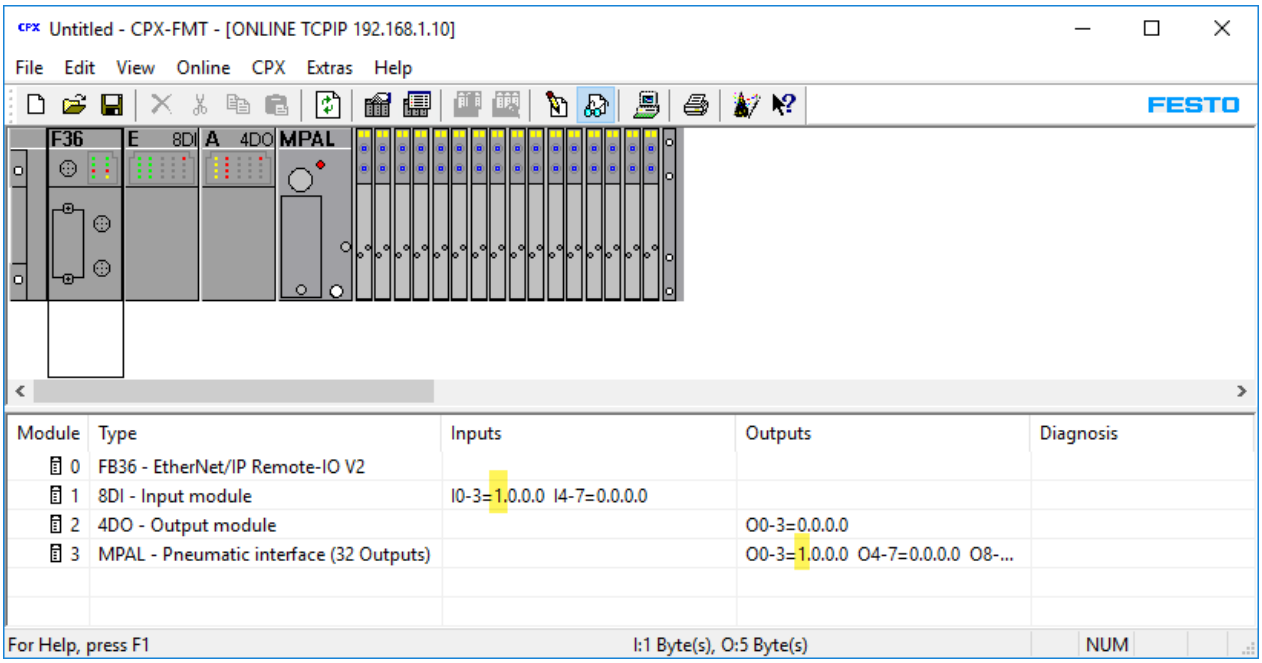


On the CPX terminal an Input is set to ON, you can read the value.

You can modify the outputs value and see the reaction on the CPX terminal.

Result on FMT Software

Connection to the PLC and test.



Result on the Valve Terminal