

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

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Table of contents

- 1 Components/Software used 5**
 - 1.1 Recommended manuals as reference 5
 - 1.2 Topology 5
 - 1.3 DIL Settings of the CPX-FR36 6
 - 1.4 Use FMT software for setting the IP address 7
- 2 Commissioning in Unity Pro S V13.0 8**
 - 2.1 Key requirements 8
 - 2.2 NOC 0401 configuration 8
 - 2.2.1 Input and Output size 8
 - 2.2.2 DTM 8
 - 2.3 CPX-FB36 Node Configuration 12
- 3 Connection to the PLC and test..... 15**

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	--

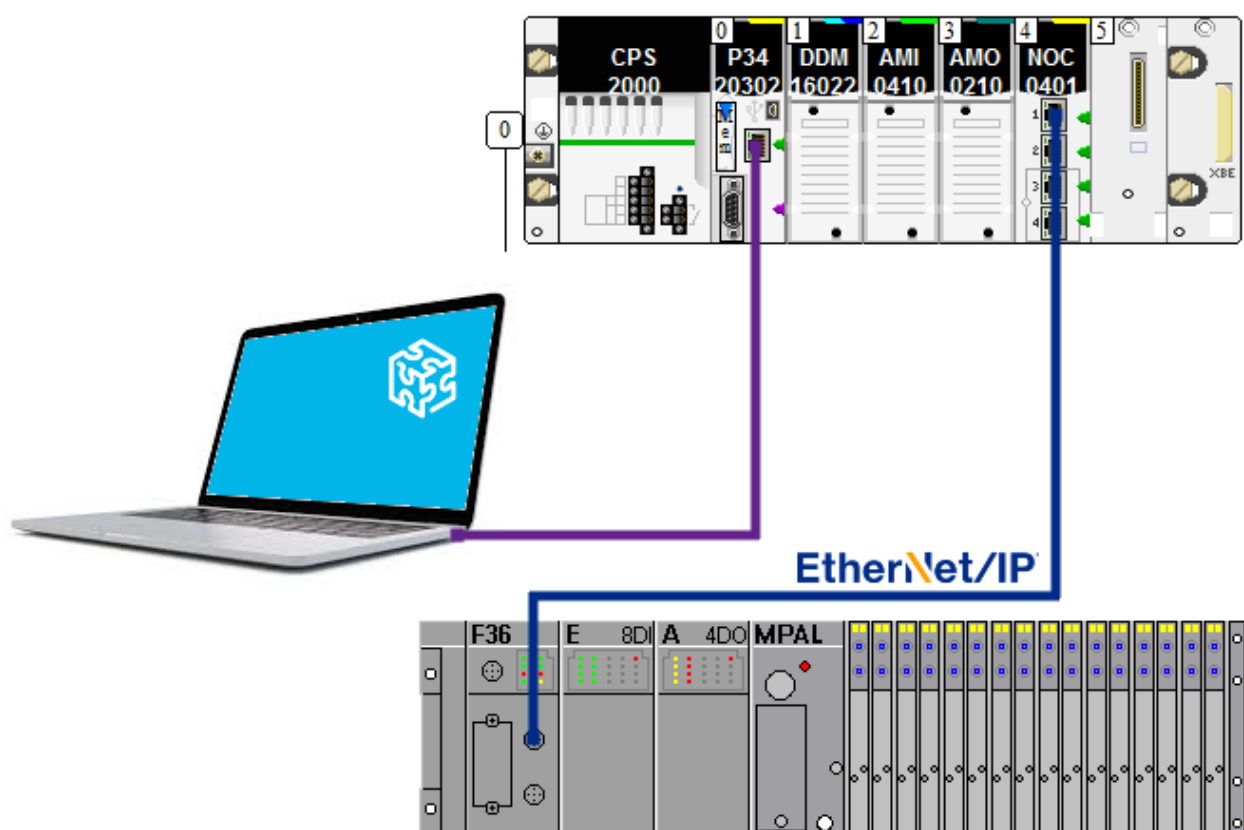
Table 1.1: 1 Components/Software used

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**

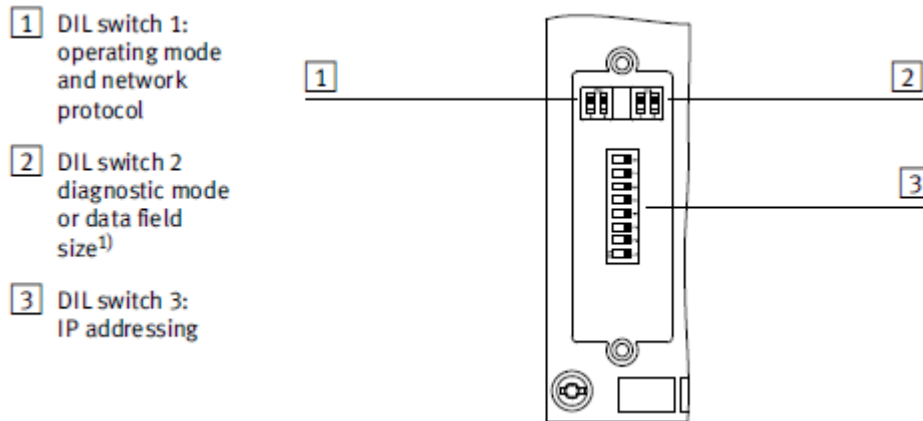
Festo offers M12-RJ45 and RJ45-RJ45 cable.

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 :



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**

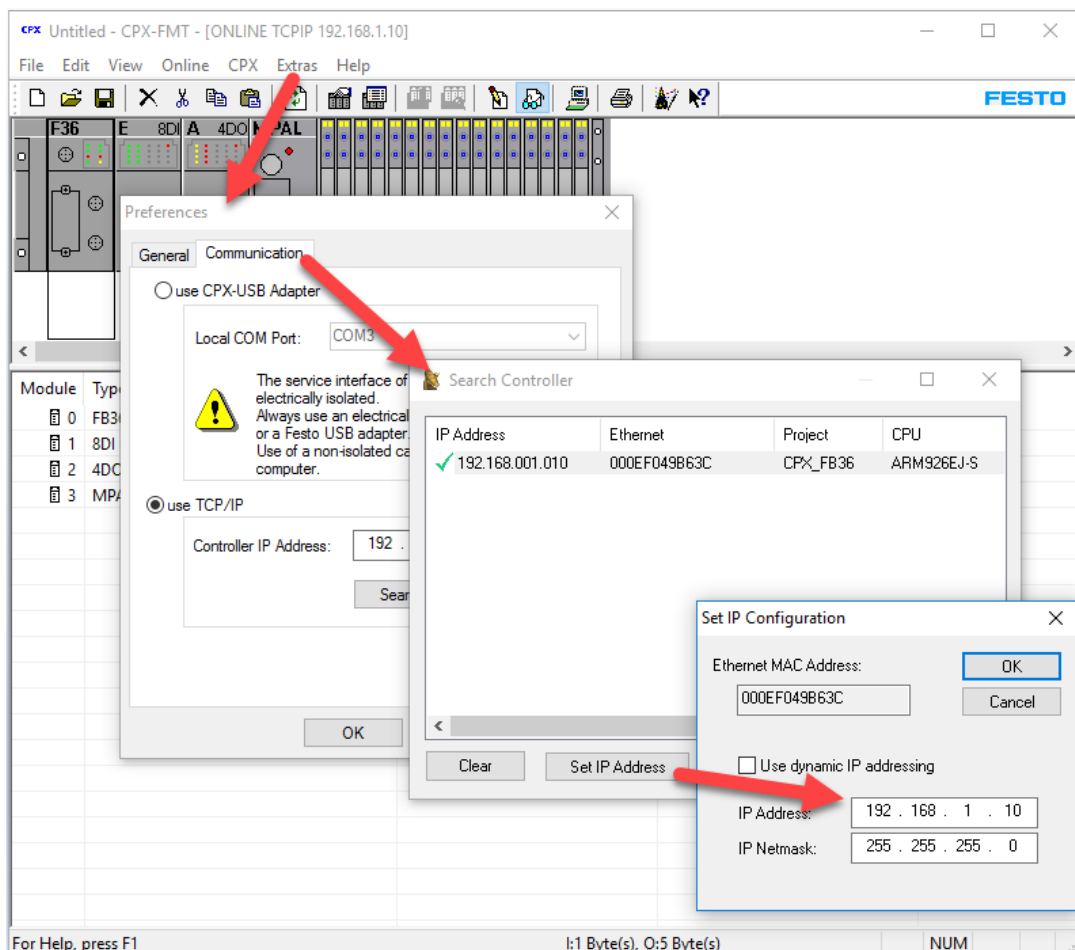
IP address : 192.168.1.10
Network ID : 192.168.1.0
Host ID : 0.0.0.10

**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

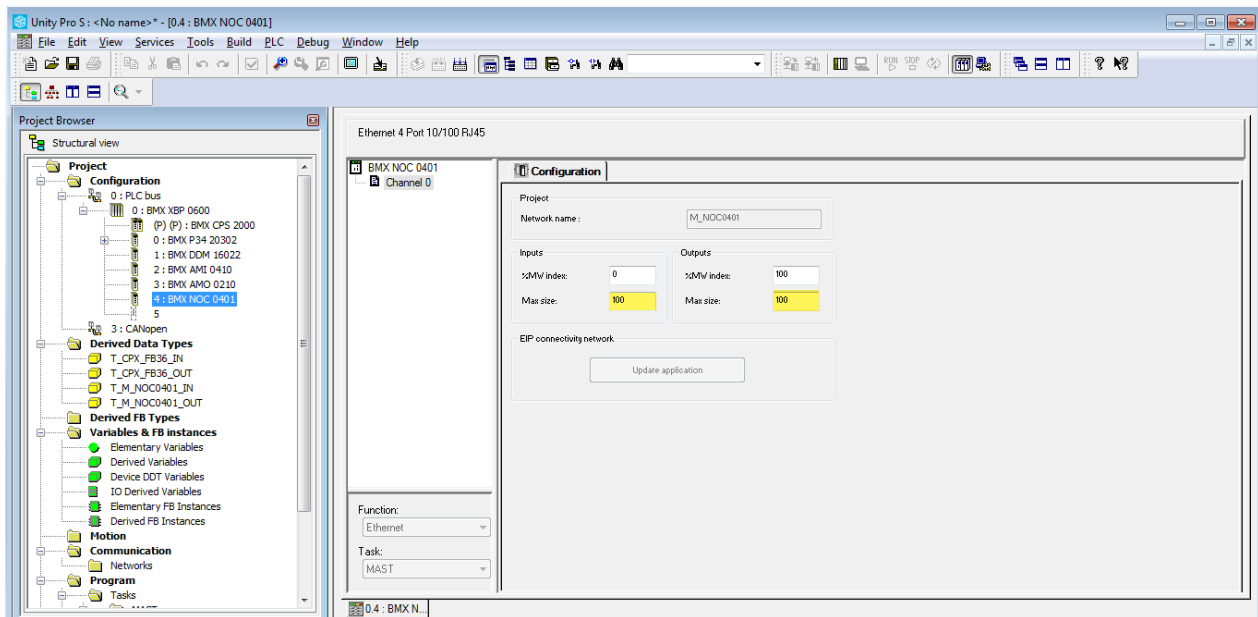
2.1 Key requirements

- Connection to the PLC is ok (USB or TCP/IP)
- 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.

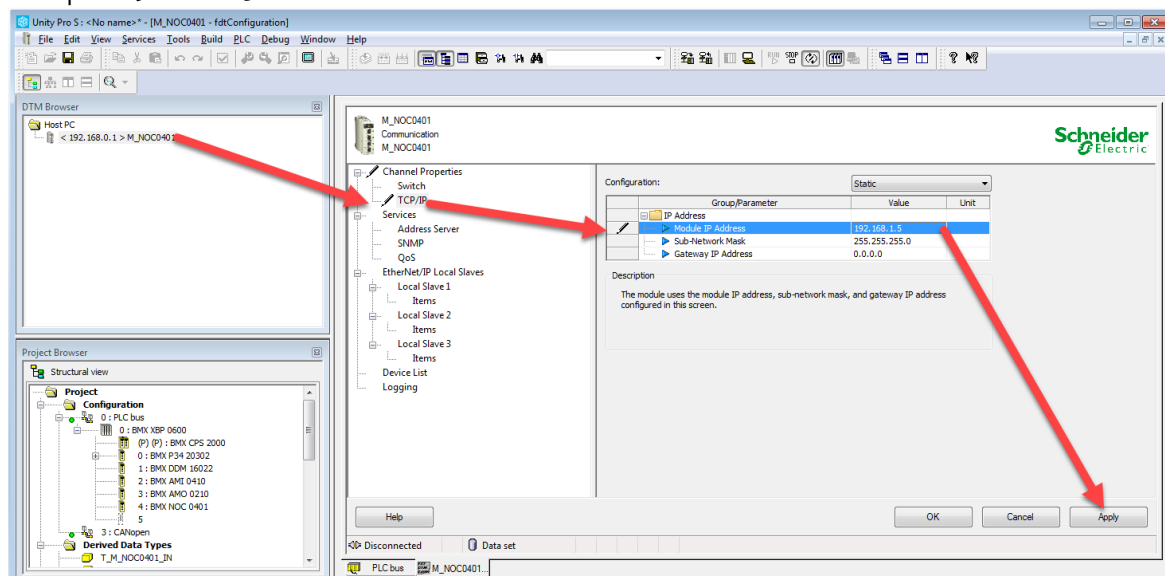


2.2.2 DTM

Open the DTM browser : [Tools] >> [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

Support Portal

Please select a category on the left or use the search.

Search

1912451

Bus node CPX-FB36

1912451



DNC-126-100-PPV-A

183601 R408

pmac 12 bar

Part number Series

Order code

→ Contact

→ Product conformity

→ Terms and conditions of use for electronic documentation



Bus node CPX-FB36

1912451

→ System manual, CPX terminal

→ System Navigator

→ Display in the catalogue

→ CAD / EPLAN

→ Spare parts catalogue

→ Technical data

→ Create download package

Top 3

Product information [23]

Technical documentation [2]

Certificates [1]

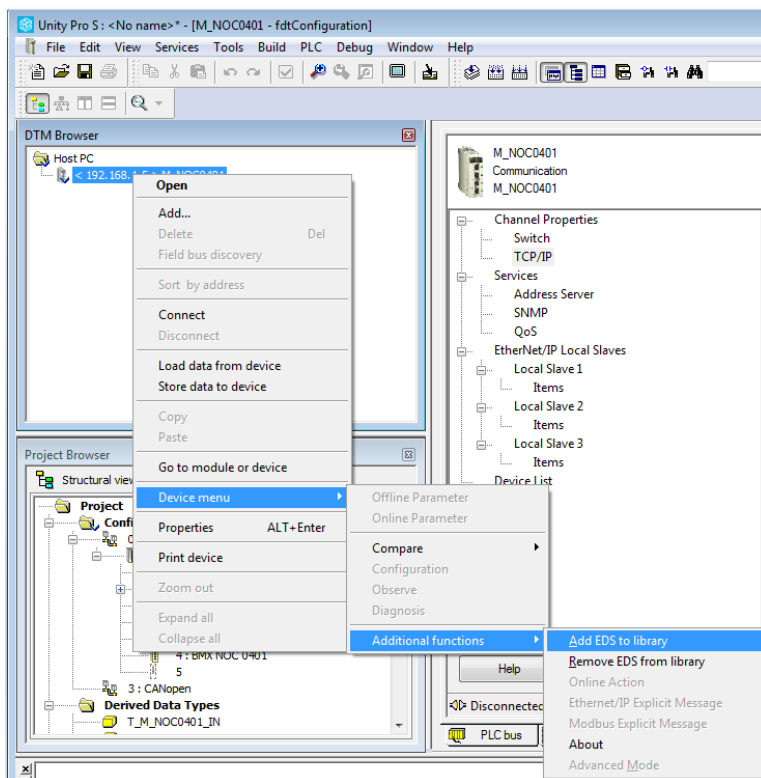
Software [5]

Expert knowledge [7]

Training [0]

Description	Version	Filter result
FMT - Festo Maintenance Tool Version: 4.21.209 The CPX-FMT is a helpful tool for commissioning, configuration and extended diagnosis of a CPX valve terminal. If Industrial Ethernet fieldbus nodes like	4.21.209 19/04/2018	→ Commissioning → File and language versions ★★★★★ (112)
Ethernet/IP EDS EDS-File for CPX-FB36 EtherNet/IP EDS-File for CPX Valve terminals with EtherNet/IP connection	1.5 10/04/2018	→ Device Description Files → File and language versions ★★★★★ (53)

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



Unity Pro S: <No name> * - [M_NOC0401 - fdtConfiguration]

File Edit View Services Tools Build PLC Debug Window Help

DTM Browser

Host PC

192.168.1.5 M_NOC0401

Open

- Add...
- Delete Del
- Field bus discovery
- Sort by address
- Connect
- Disconnect
- Load data from device
- Store data to device
- Copy
- Paste
- Go to module or device

Project Browser

Structural view

Project

Config

5

3: CANopen

Derived Data Types

T_M_NOC0401_IN

Device List

M_NOC0401

Communication

M_NOC0401

Channel Properties

- Switch
- TCP/IP

Services

- Address Server
- SNMP
- QoS

EtherNet/IP Local Slaves

- Local Slave 1
- Items
- Local Slave 2
- Items
- Local Slave 3
- Items

Device List

Offline Parameter

Online Parameter

Compare

Configuration

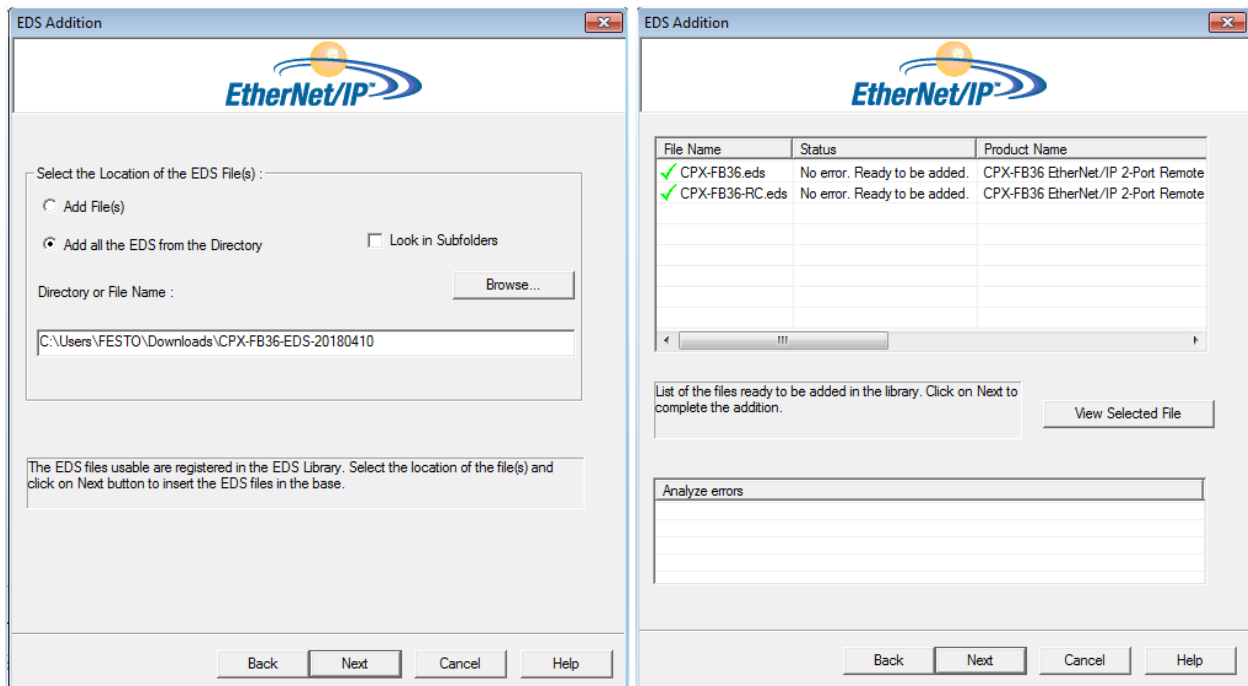
Observe

Diagnosis

Additional functions

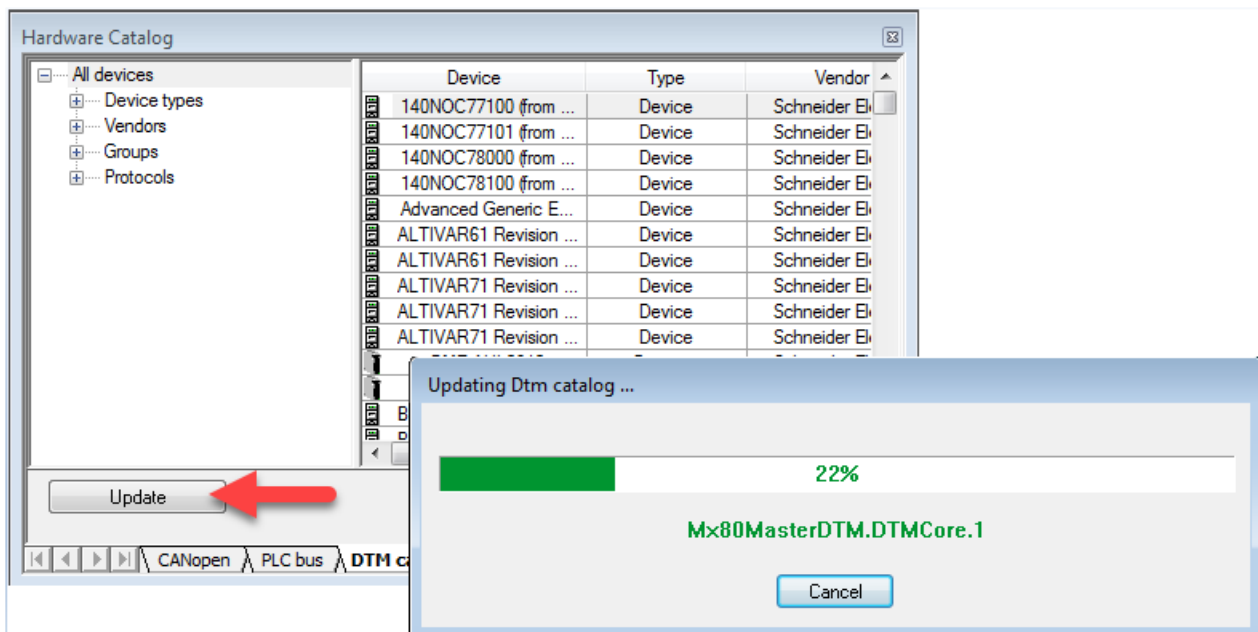
- Add EDS to library
- Remove EDS from library
- Online Action
- Ethernet/IP Explicit Message
- Modbus Explicit Message
- About
- Advanced Mode

Specify the directory and finish the installation.

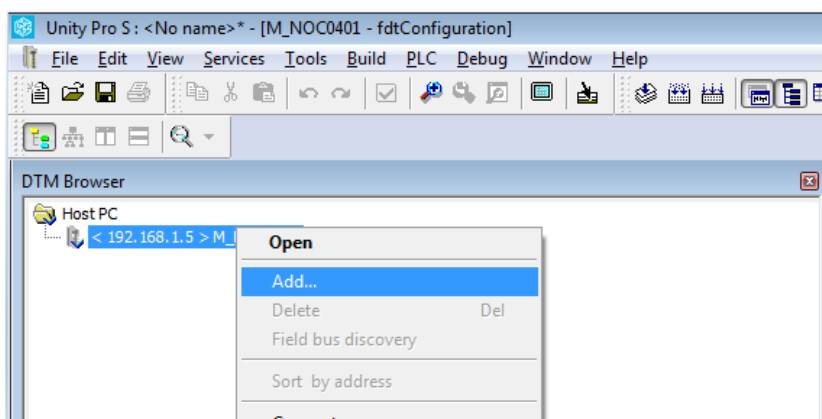


3- Update the hardware catalogue

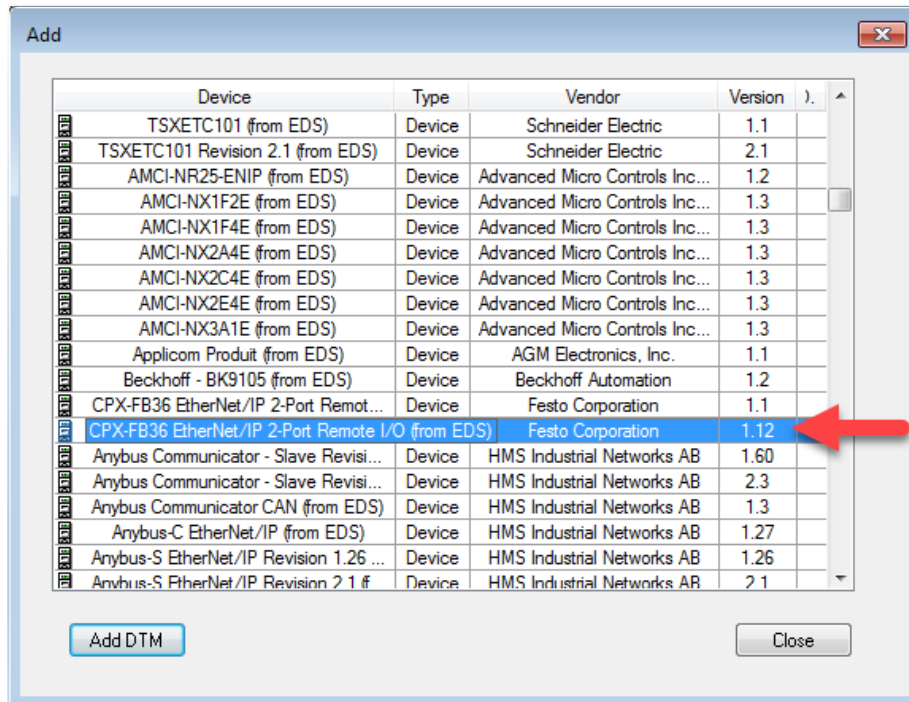
Open it : [tool] >> [Hardware catalogue] or Alt + 2 then [Update] the hardware catalog.



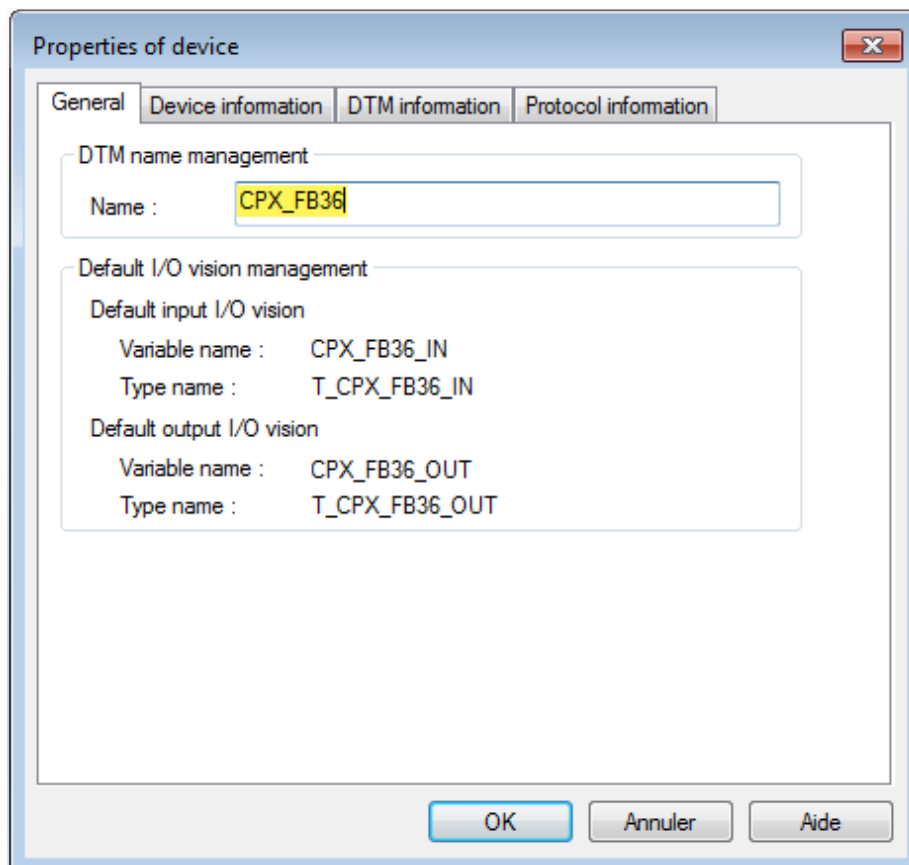
4- [Add...] the CPX node to the NOC



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

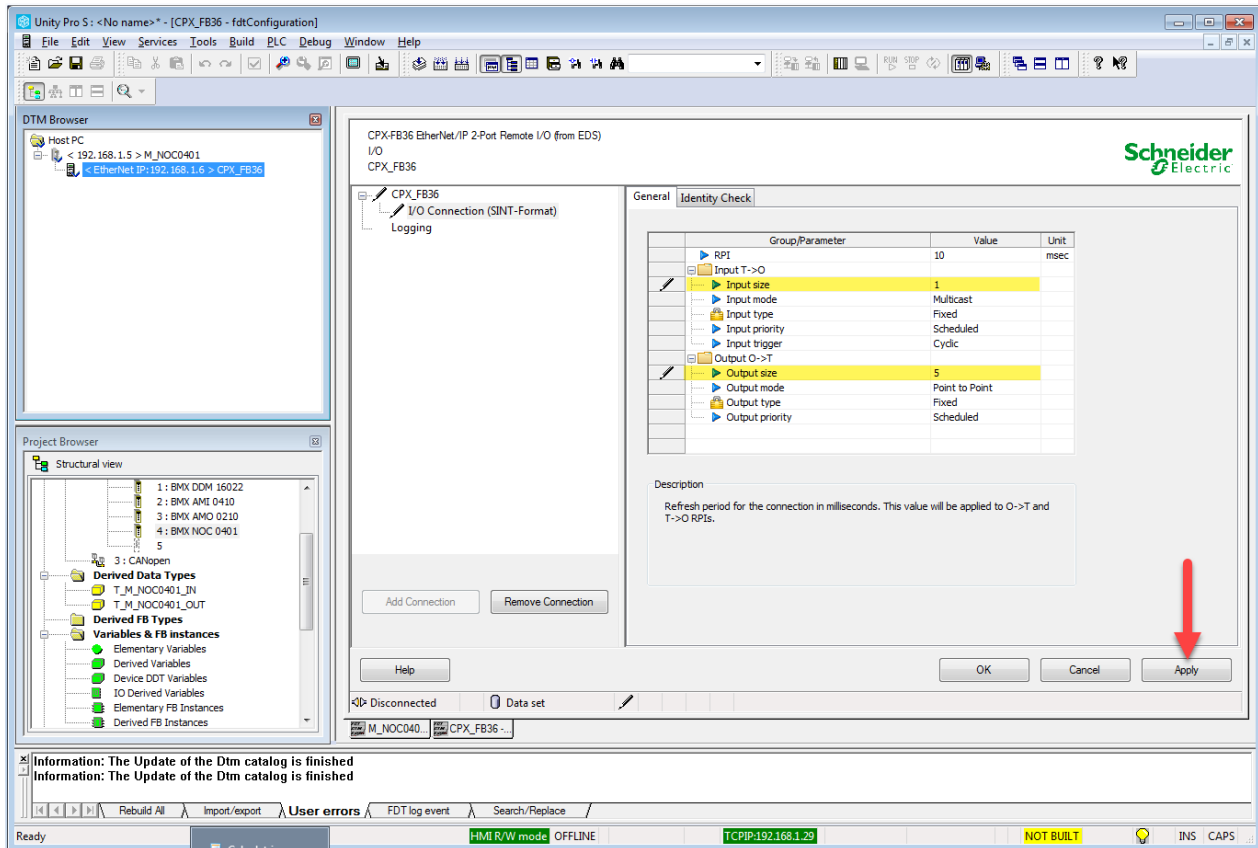


If needed you can rename the device, click [Ok]

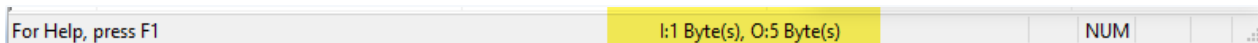


2.3 CPX-FB36 Node Configuration

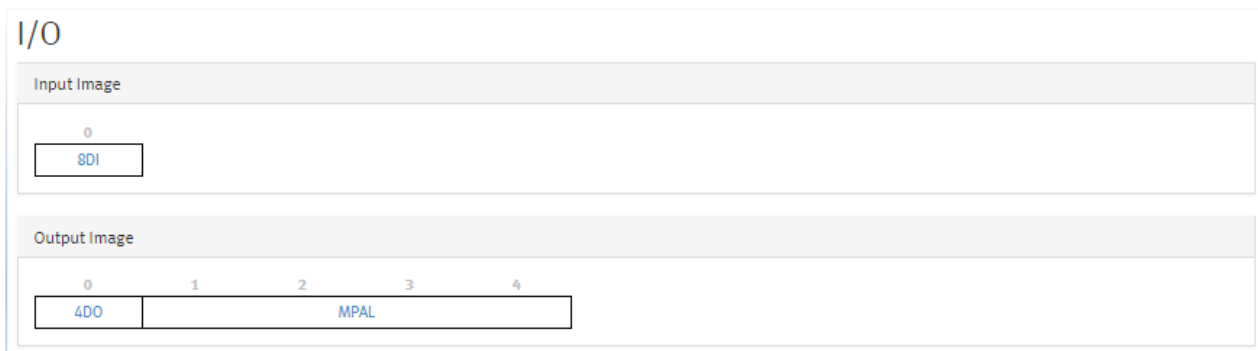
- 1- Enter the correct Input and Output size
Double click on the CPX-FB36 and open the [I/O Connection (SINT-Format)] page, don't forget to [Apply] the new configuration and **Close the page.**



You can find the value in FMT



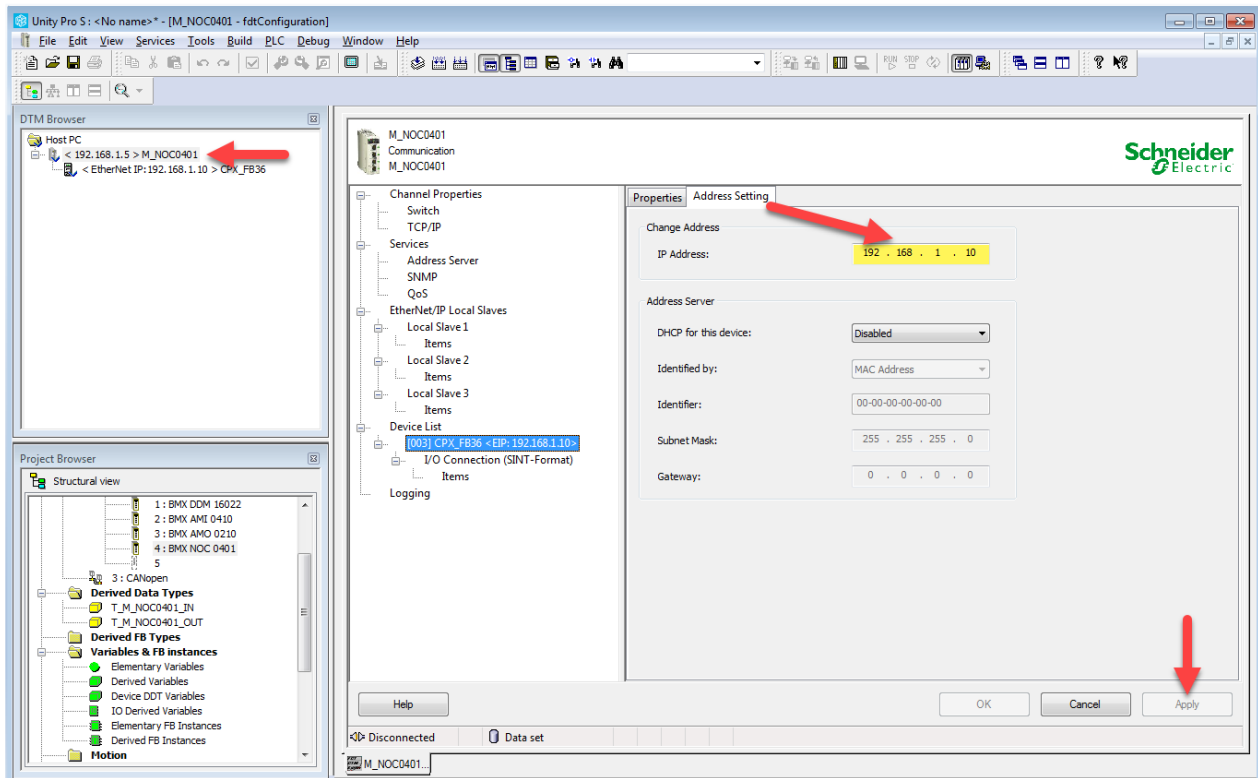
Or on the Webpage



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

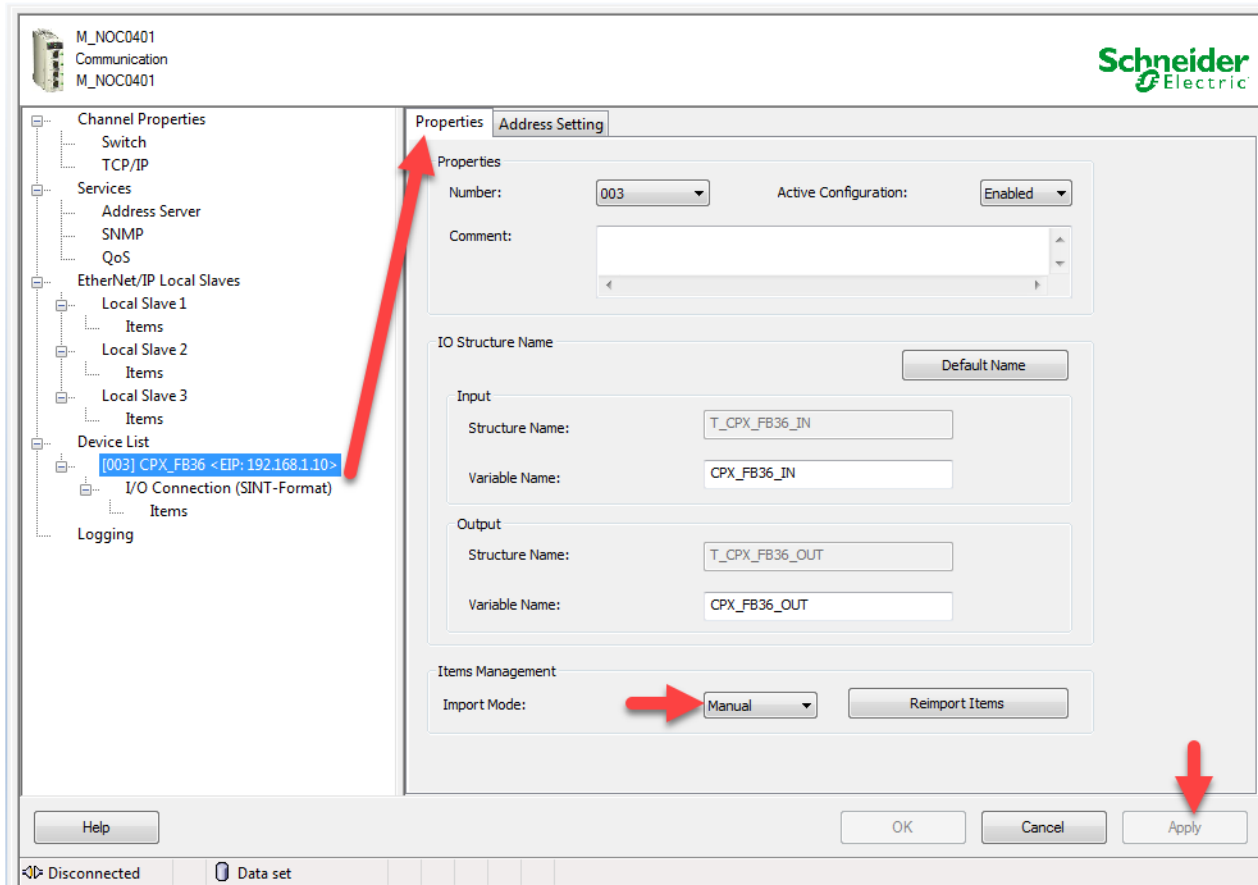
2- Change the IP address

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.

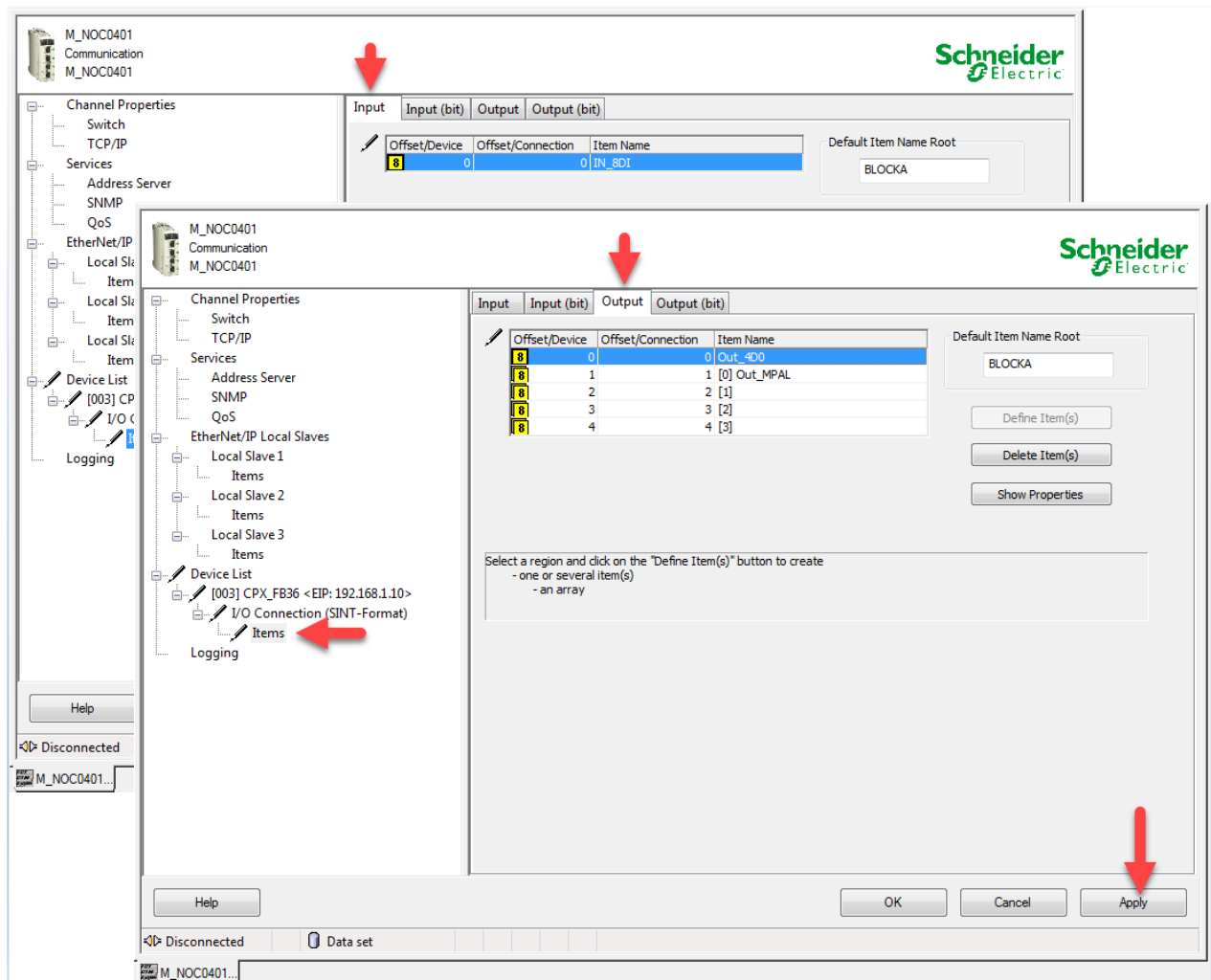


Configure the item with a personalized name and Data Type.

To modify click on [Show Properties].

Or delete actual items with [Delete Item(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.

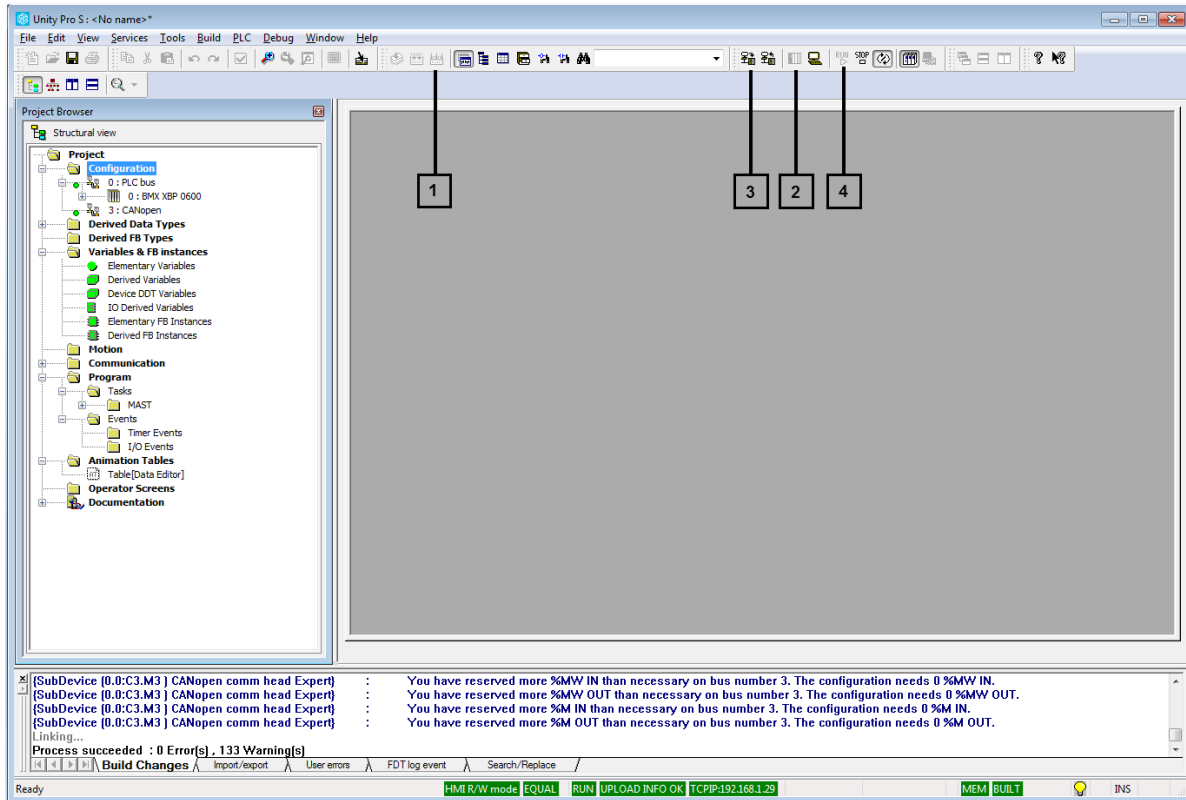


3 Connection to the PLC and test.

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

Variables							
DDT Types							
Function Blocks							
DFB Types							
Filter							
Name							
Name	Type	Value	Comment	Alias	Alias of	Address	HMI variable
CPX_FB36_IN	T_CPX_F...					%MW16	
CPX_FB36_OUT	T_CPX_F...					%MW116	
M_NOC0401_IN	T_M_NO...					%MW0	
M_NOC0401_OUT	T_M_NO...					%MW100	

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

Modification			
Force			
Name	Value	Type	Comment
CPX_FB36_IN		T_CPX_FB36_IN	
IN_8D1	1	BYTE	
Free0		ARRAY[0..2] OF...	
CPX_FB36_OUT		T_CPX_FB36...	
Out_4D0	0	BYTE	
Out_MPAL		ARRAY[0..3] OF...	
Out_MPAL[0]	1	BYTE	
Out_MPAL[1]	0	BYTE	
Out_MPAL[2]	0	BYTE	
Out_MPAL[3]	0	BYTE	
Free0		ARRAY[0..2] OF...	
M_NOC0401_IN		T_M_NOC0401...	
M_NOC0401_OUT		T_M_NOC0401...	

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.

CPX Untitled - CPX-FMT - [ONLINE TCP/IP 192.168.1.10]

File Edit View Online CPX Extras Help

Module	Type	Inputs	Outputs	Diagnosis
0	FB36 - EtherNet/IP Remote-IO V2			
1	8DI - Input module	I0-3=1.0.0.0 I4-7=0.0.0.0		
2	4DO - Output module		O0-3=0.0.0.0	
3	MPAL - Pneumatic interface (32 Outputs)		O0-3=1.0.0.0 O4-7=0.0.0.0 O8-...	

For Help, press F1

I:1 Byte(s), O:5 Byte(s)

NUM

Result on the Valve Terminal

