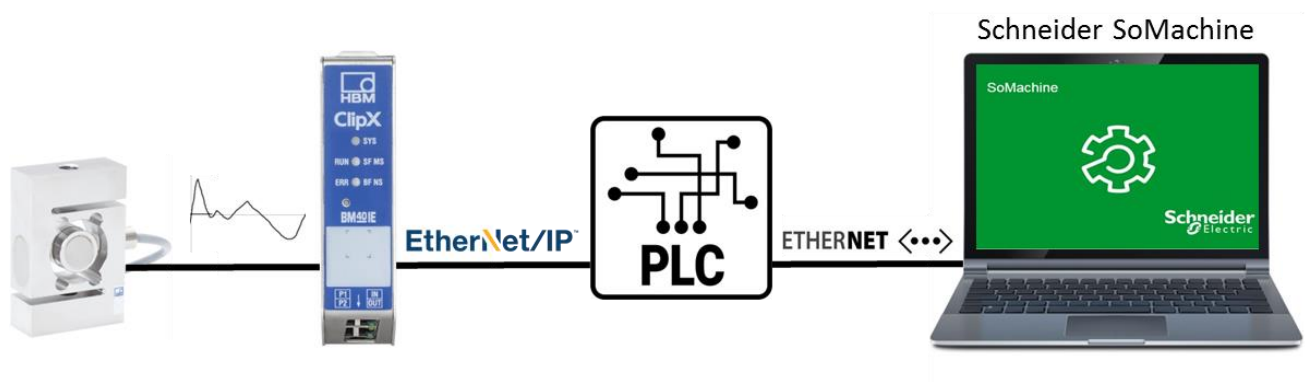


## TECH NOTE – EtherNet/IP with SoMachine

Version: 2018-06-04  
Author: Michael Guckes  
Status: HBM: Public

### Brief description

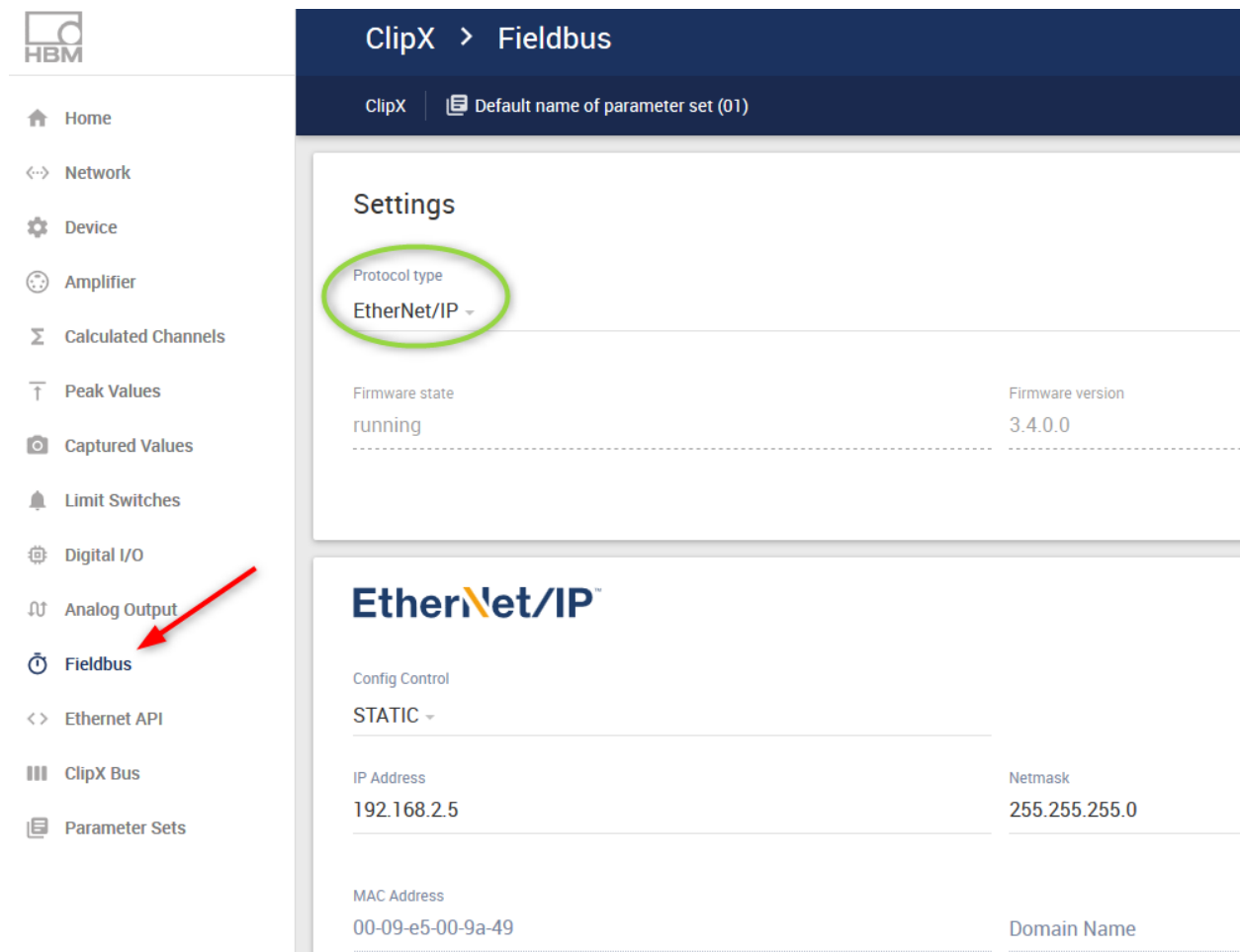
This document is meant to be a guideline to demonstrate the use of a ClipX measurement amplifier within a Ethernet/IP network. For this example a Schneider SoMachine Station is used as PLC. There is also an explanation of how ClipX measurement values can be monitored in the SoMachine software. Basic knowledge of Ethernet/IP network and HBM amplifiers are recommended. The basic setup is shown in the figure below.



### EtherNET/IP commissioning

Make sure, the right Fieldbus is selected. ClipX BM40IE is able to handle EtherCAT, Ethernet/IP and Profinet. Assign a static IP address, Netmask for example 192.168.2.5 - 255.255.255.0.

Type in, the ClipX IP address into the web browser or double click on ClipX in Network. The present ClipX has the fix IP address 192.168.1.25.



**ClipX > Fieldbus**

ClipX | Default name of parameter set (01)

### Settings

Protocol type  
EtherNet/IP

Firmware state: running | Firmware version: 3.4.0.0

### EtherNet/IP™

Config Control  
STATIC

IP Address: 192.168.2.5 | Netmask: 255.255.255.0

MAC Address: 00-09-e5-00-9a-49 | Domain Name:

Now we beginning with the ClipX integration. Start SoMachine4.3 from the Desktop. Connect Controller-> select.

#### Get started

Start > Connect Controller > Select Controller > Remaining time until trial period expires :17day(s) Registration

Recent Projects

Connect Controller >

New Project

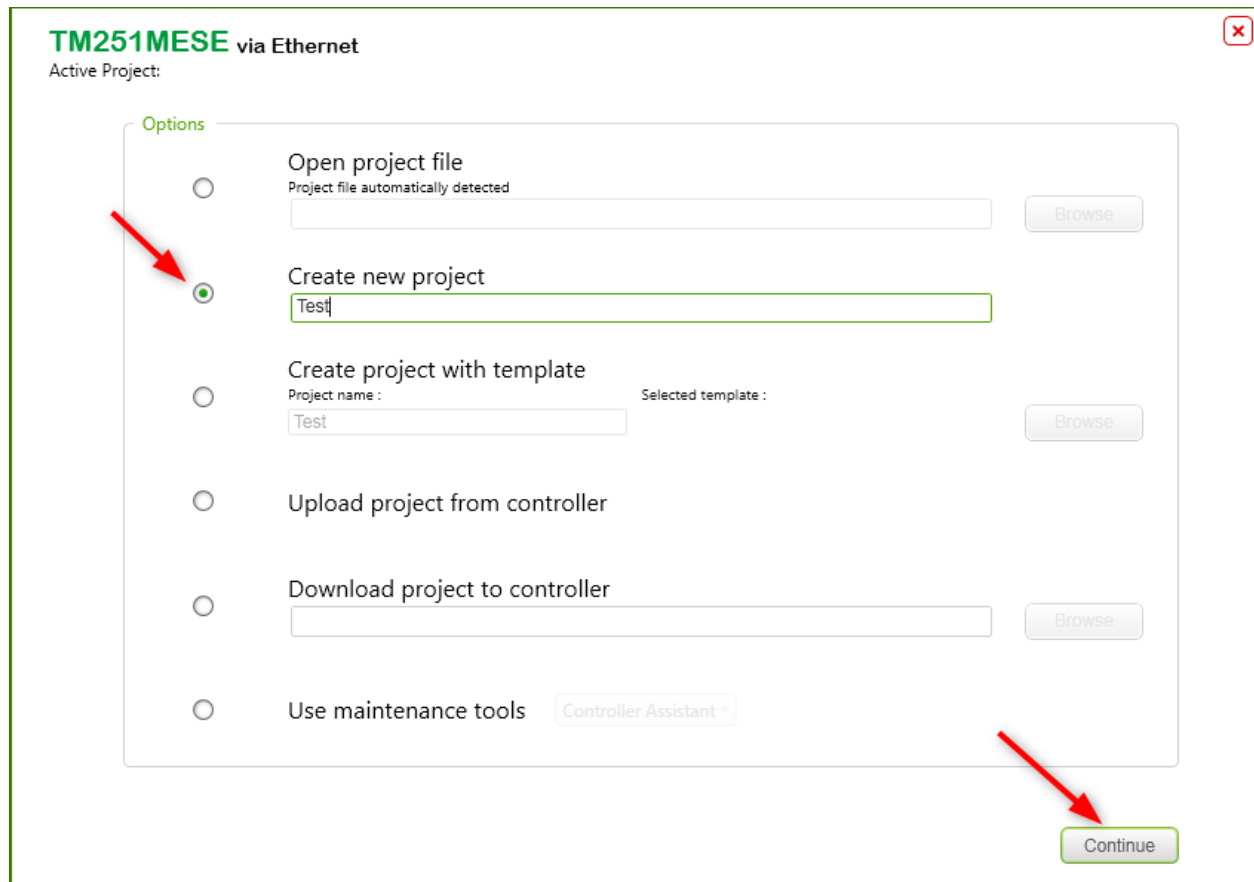
Open Project

Controller	Project Name	Address	Cartridge	Time since boot	Author	Firmware	Node name
Ethernet	TM251MESE	ClipX	192.168.1.39	none	01d 01h 34m 27s	admin	V4.0.6.26
							TM251MESE @0080

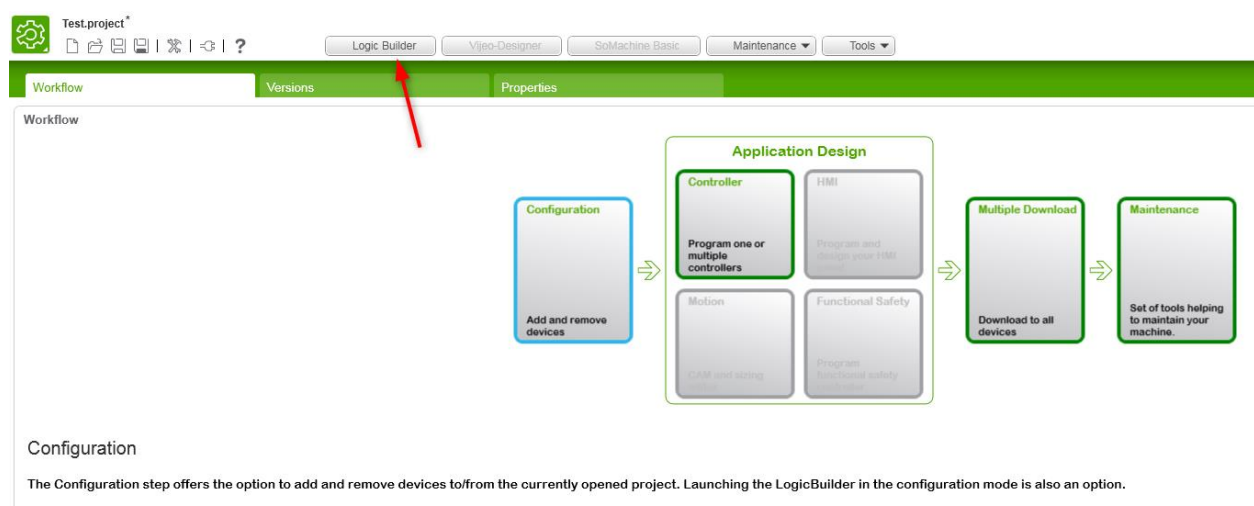
Filter:  Add connection Refresh Select

In this example the PLC has already the IP address 192.168.1.39. If you work the first time with the PLC you can address the PLC via USB cable for example.

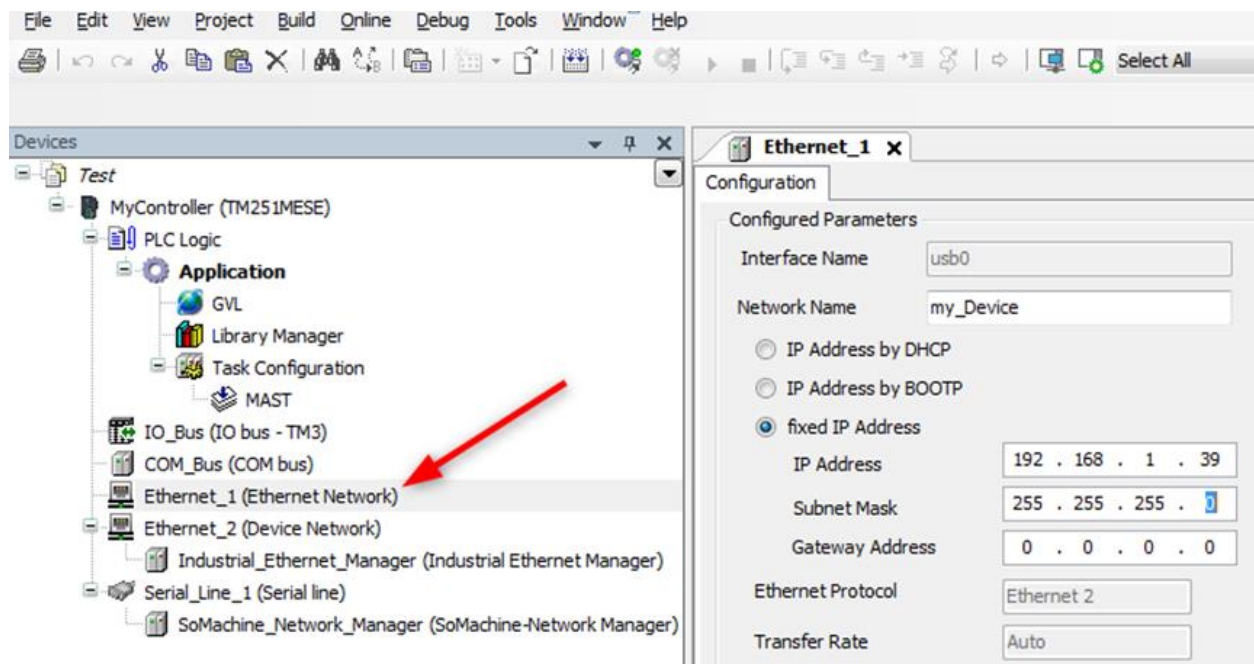
Create new project.



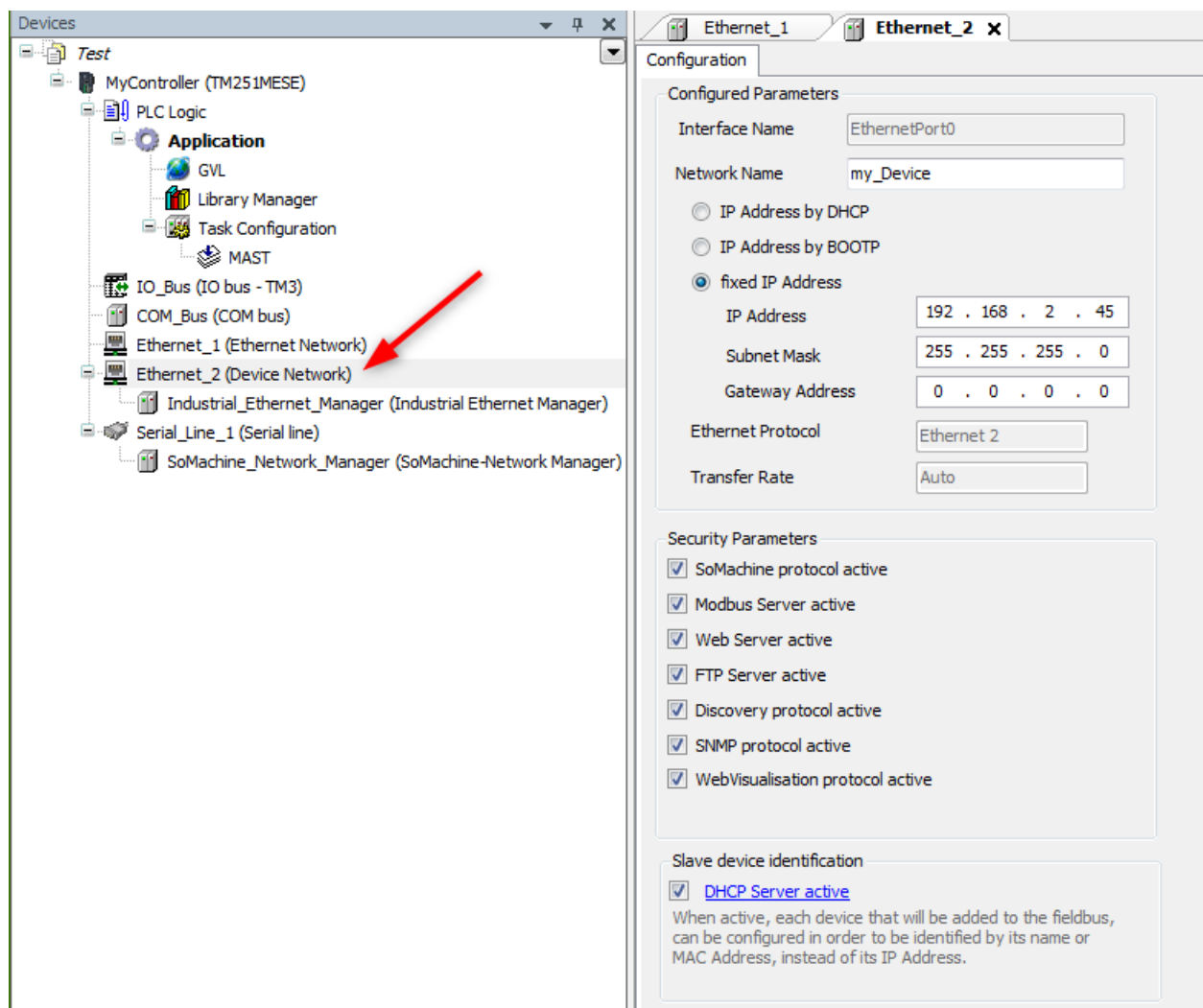
Switch to Logic Builder. If you have already PMX Codesys experiences, you will see a familiar programming environment.



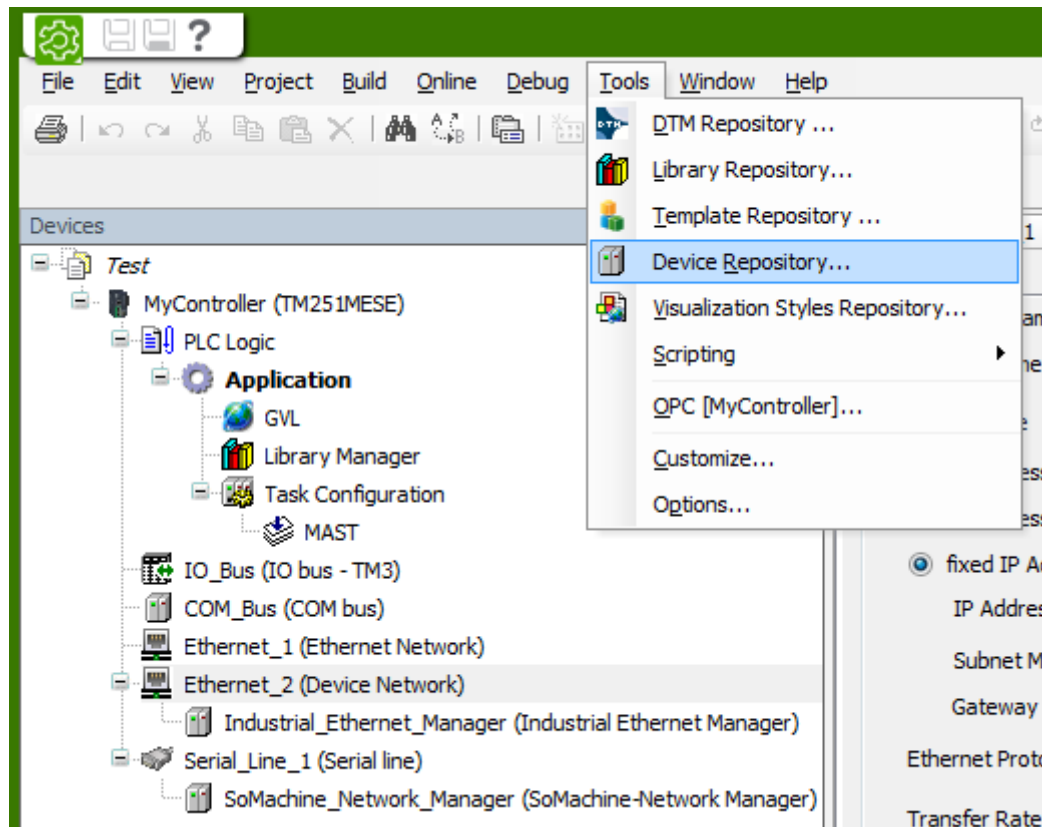
IP address configuration Ethernet1: (Ethernet communication between Laptop, SoMachine, ClipX web server and PLC)



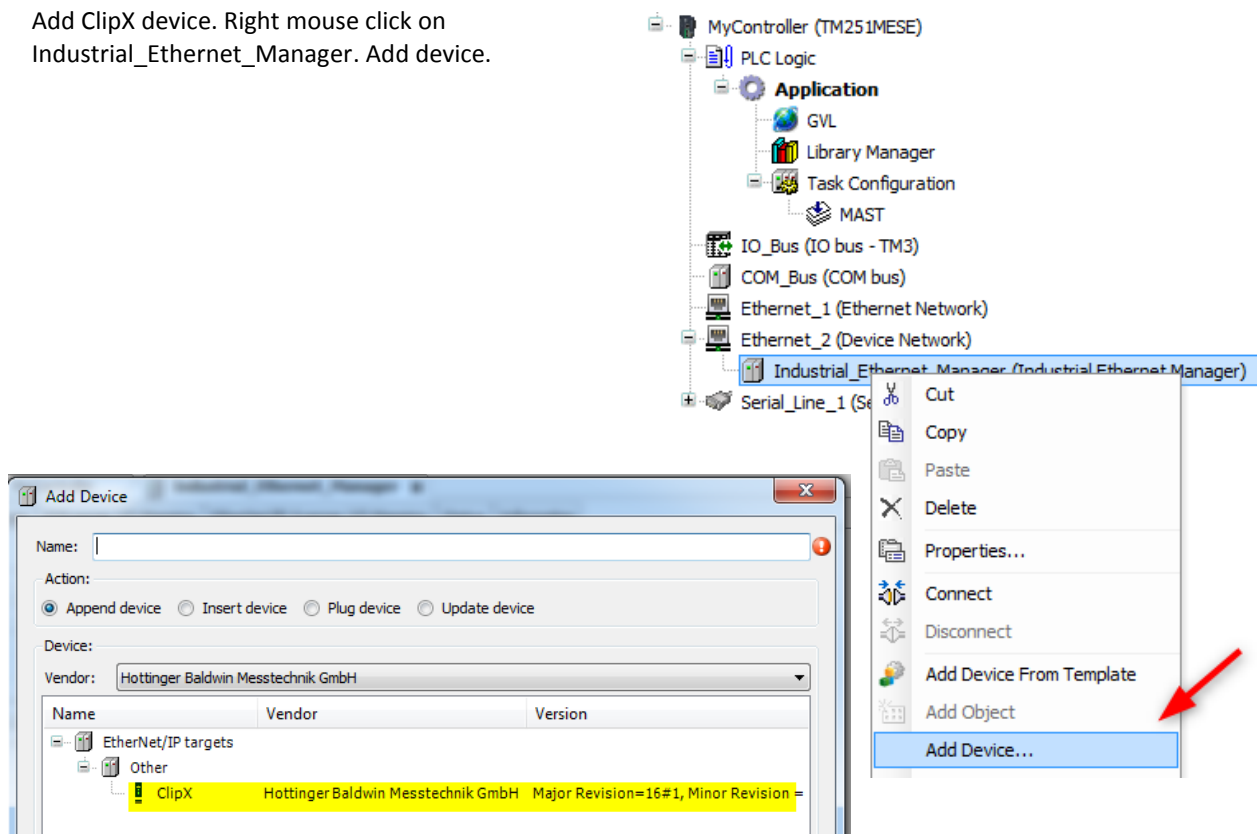
IP address configuration Ethernet2: (EtherNET/IP communication between PLC and ClipX)



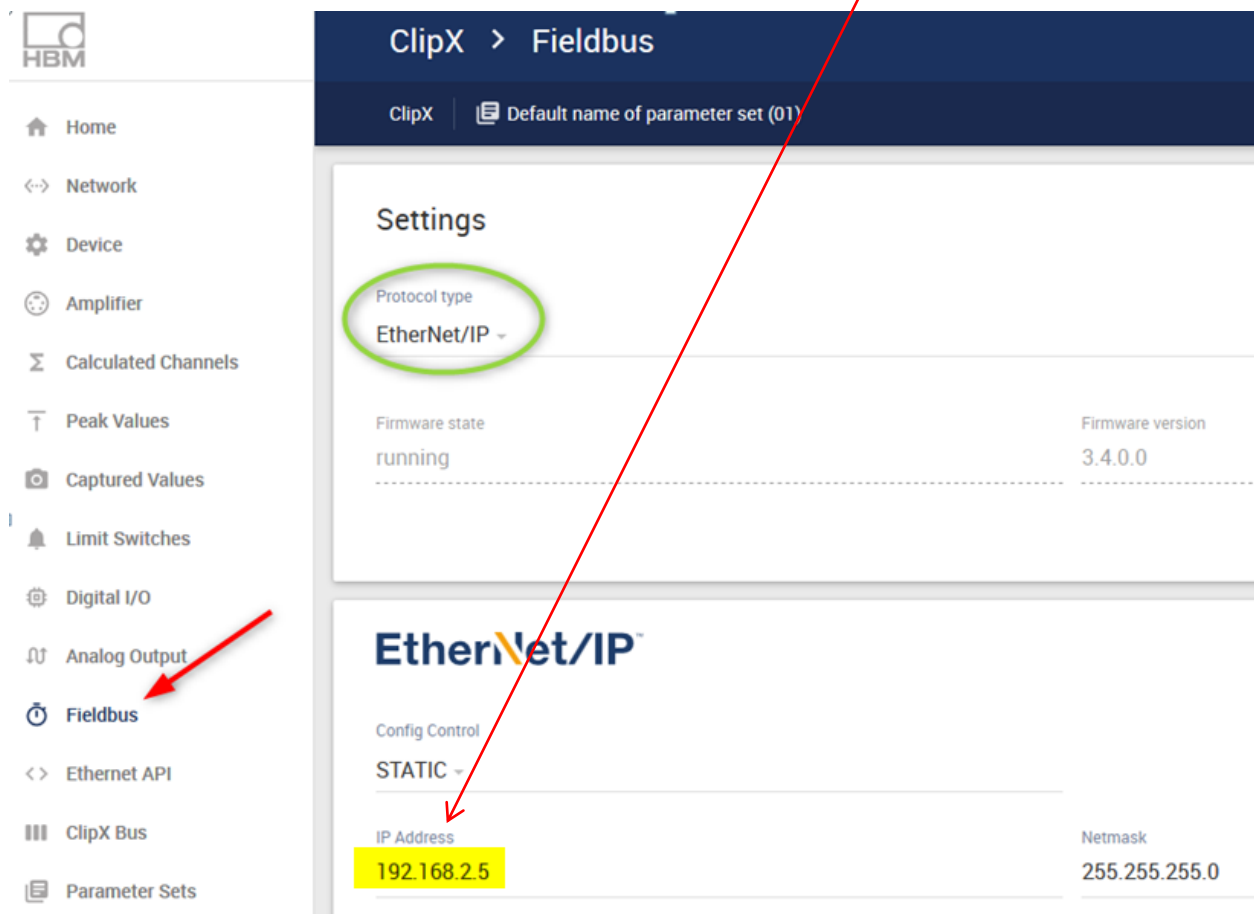
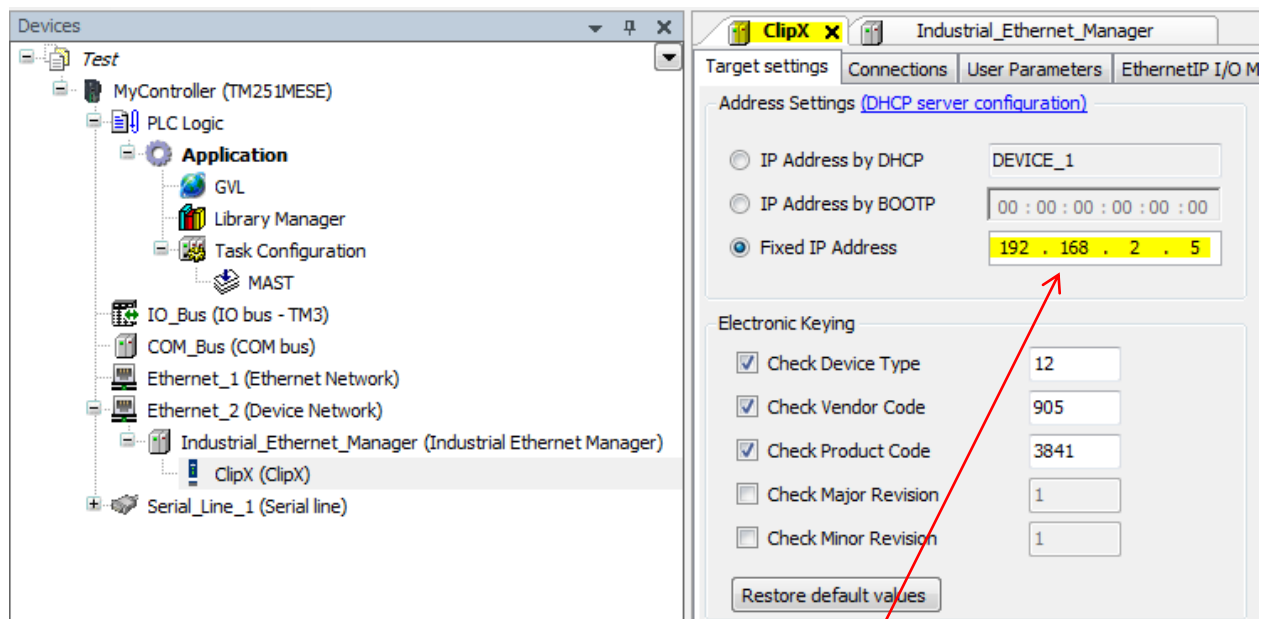
ClipX EtherNET/IP .eds file integration. In general we need to integrate the ClipX .eds file first. It is already done, just keep in mind, if you work the next time with SoMachine.



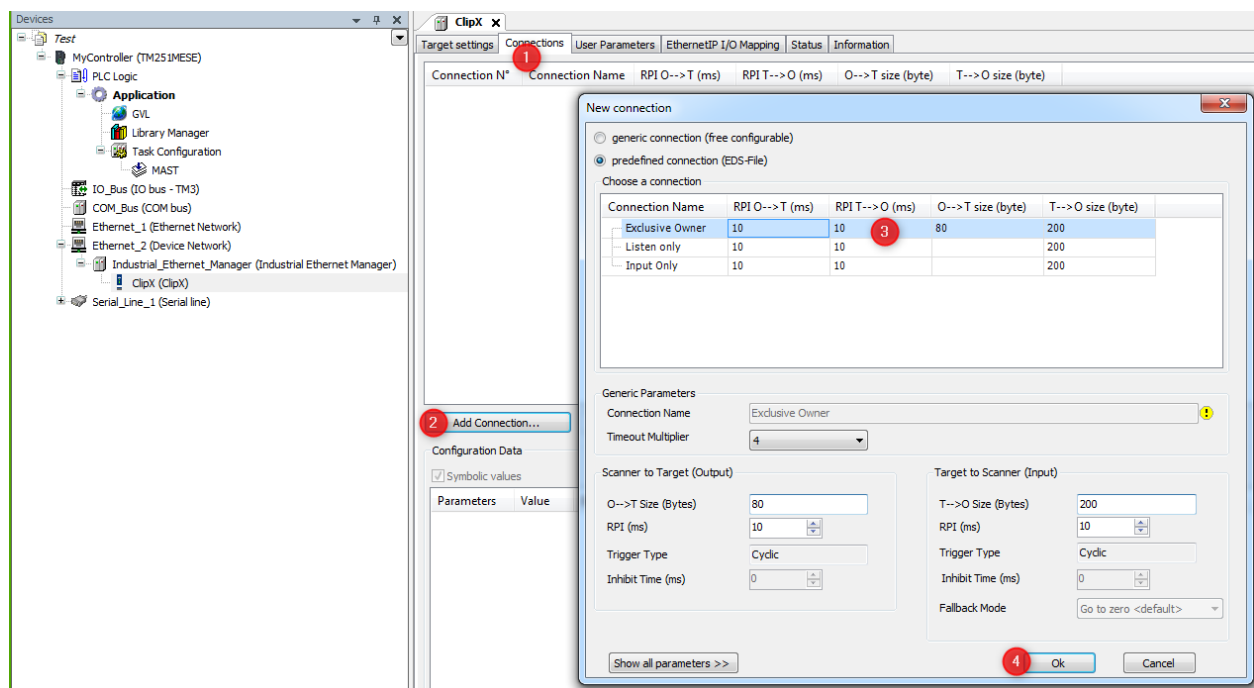
Add ClipX device. Right mouse click on Industrial\_Ethernet\_Manager. Add device.



Make sure identical EtherNET/IP addresses from ClipX SoMachine Project and ClipX address assigned in Web browser.



## Add Connection.



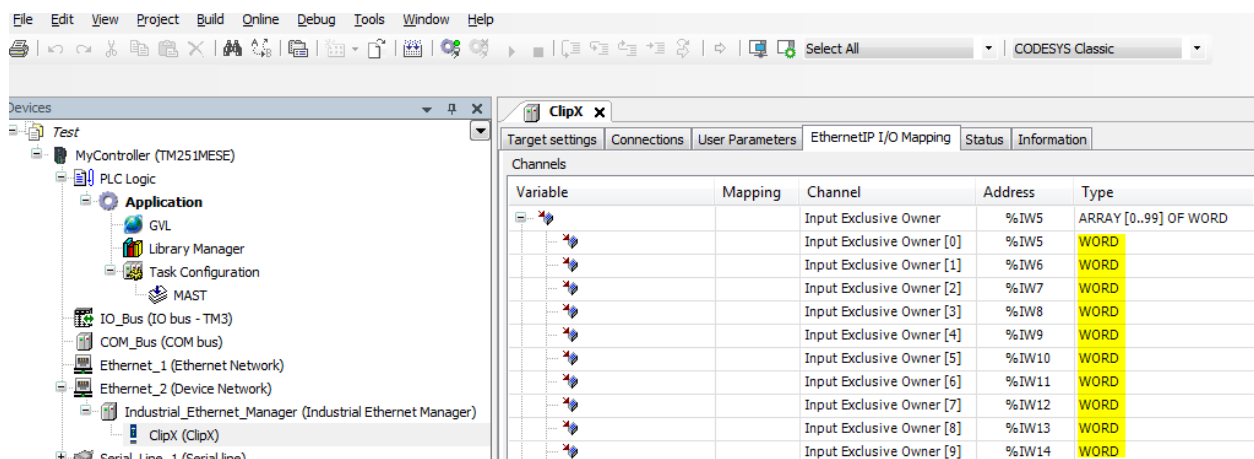
With ClipX it will be not necessary to handle the Assembly Instance Object 199. This Object defines the number of transferred channels. At the moment ClipX work with the max. possible number of channels.

Target(ClipX) -> Scanner(PLC) = 166 bytes (assembly 100).

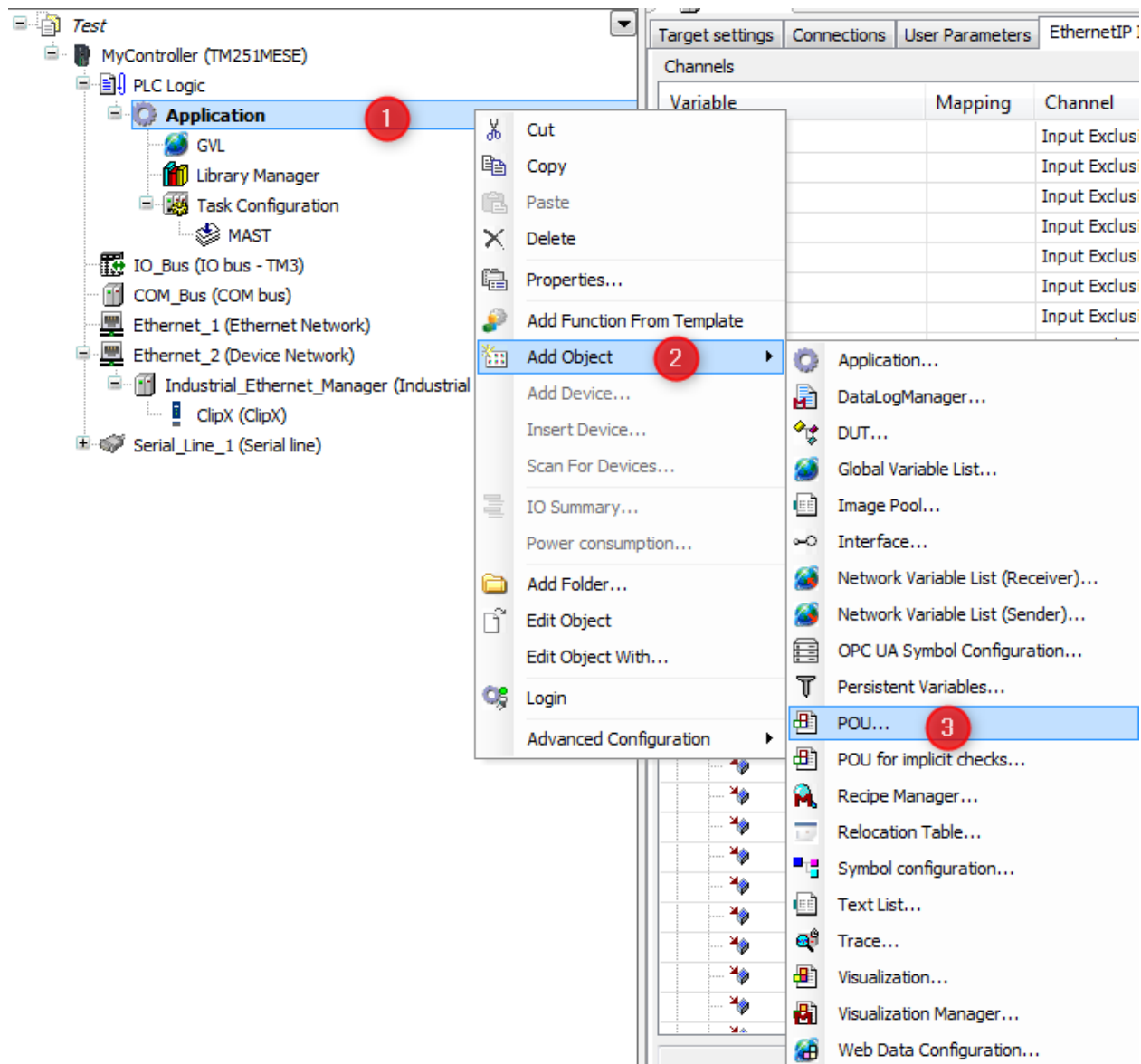
Scanner(PLC) -> Target(ClipX) = 44 bytes (assembly 101).

In general it will be possible to decide from ClipX web server the number of transferred channels.

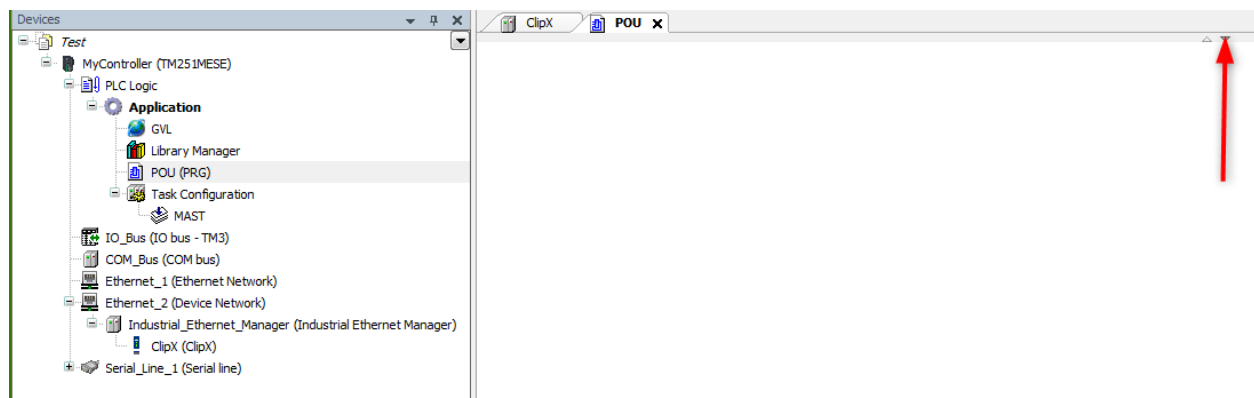
EthernetIP I/O Mapping. SoMachine mapped all inputs and outputs as Word (2 Bytes). ClipX format for measured values is Real(4 Byte). We need a small program for it.



Add POU(Programm Organization Unit) with right mouse click on Application.

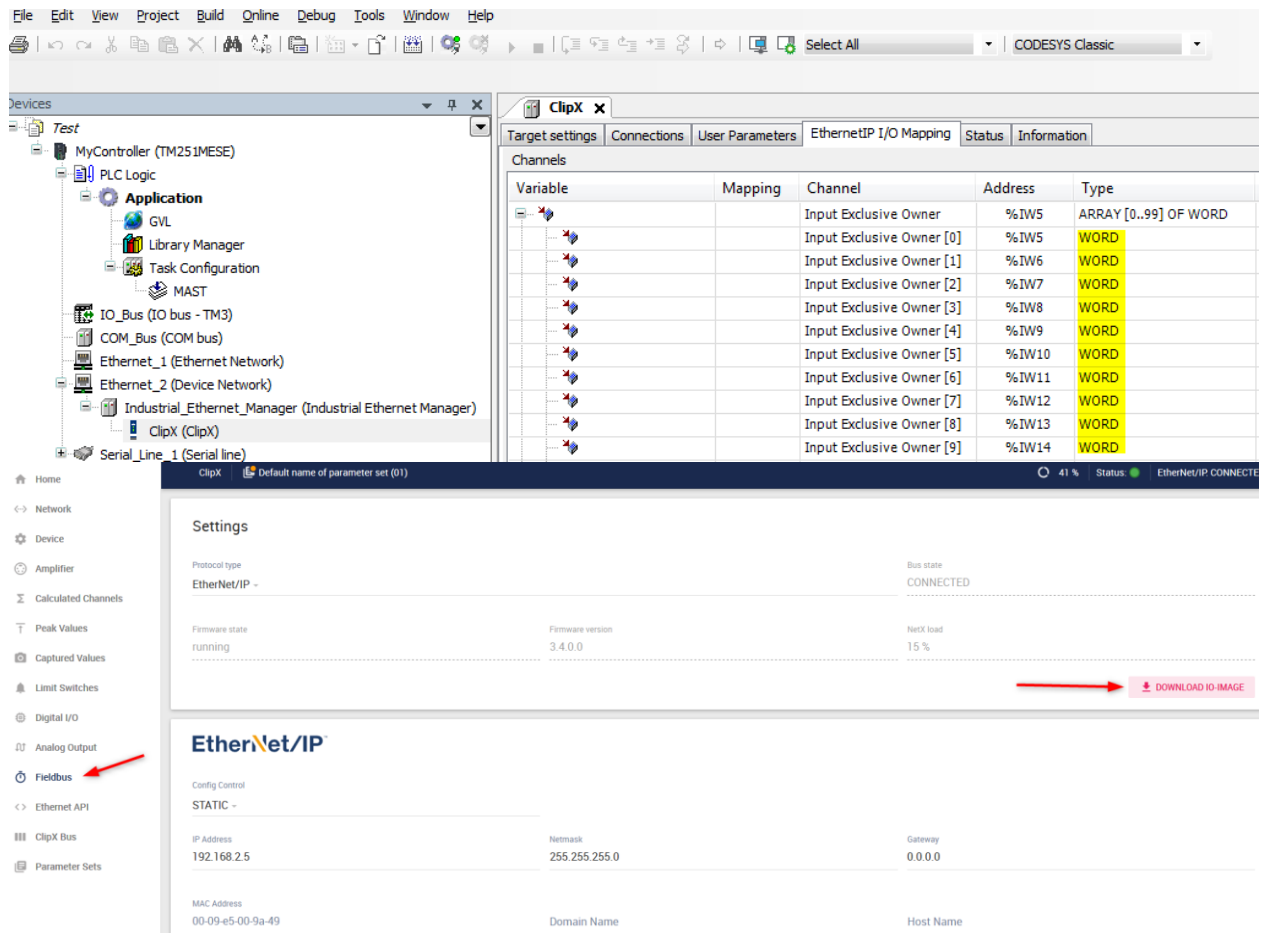


Open the field for variable declaration.





The assignment from %IW5...%IWxx to ClipX data you can find in ClipX Fieldbus I/O Image. See therefore the screenshot below.



Variable	Mapping	Channel	Address	Type
		Input Exclusive Owner	%IW5	ARRAY [0..99] OF WORD
		Input Exclusive Owner [0]	%IW5	WORD
		Input Exclusive Owner [1]	%IW6	WORD
		Input Exclusive Owner [2]	%IW7	WORD
		Input Exclusive Owner [3]	%IW8	WORD
		Input Exclusive Owner [4]	%IW9	WORD
		Input Exclusive Owner [5]	%IW10	WORD
		Input Exclusive Owner [6]	%IW11	WORD
		Input Exclusive Owner [7]	%IW12	WORD
		Input Exclusive Owner [8]	%IW13	WORD
		Input Exclusive Owner [9]	%IW14	WORD

**Settings**

Protocol type: EtherNet/IP - Bus state: CONNECTED

Firmware state: running Firmware version: 3.4.0.0 NetX load: 15 %

[DOWNLOAD IO IMAGE](#)

**EtherNet/IP**

Config Control: STATIC -

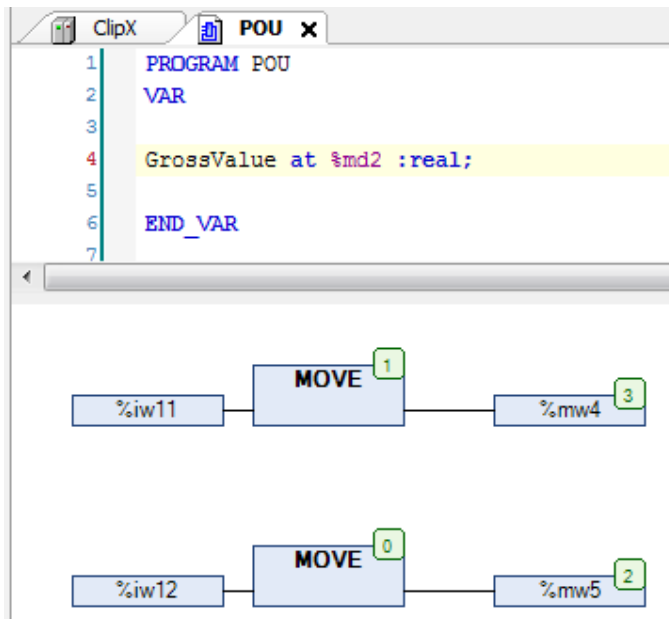
IP Address: 192.168.2.5 Netmask: 255.255.255.0 Gateway: 0.0.0.0

MAC Address: 00-09-e5-00-9a-49 Domain Name: Host Name:

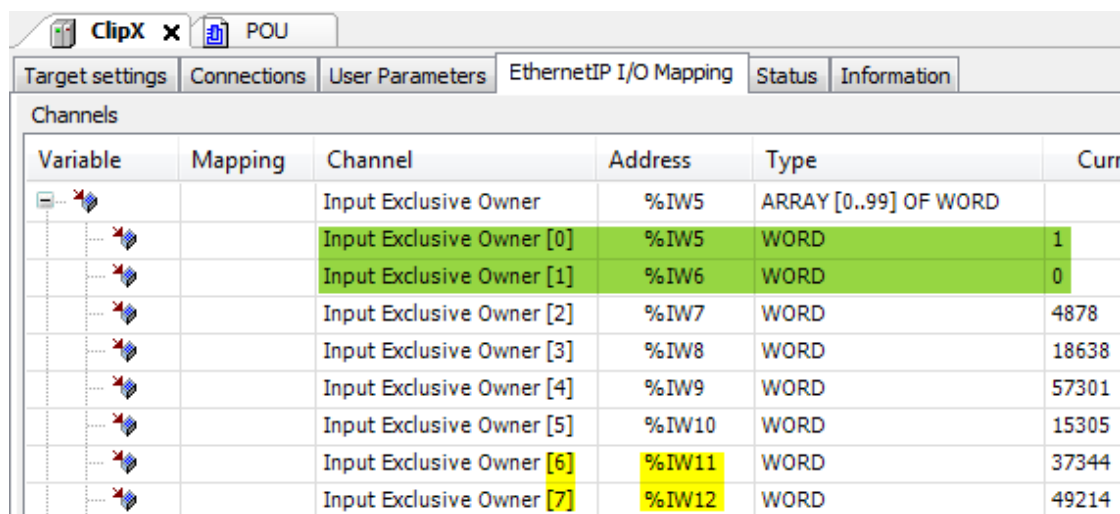
ClipX I/O Image:

Input (ClipX to scanner)			
start address	end address	item	
0	3	ADC value	
4	7	Field value	
8	11	Gross value	
12	15	Net value	
16	19	Min value	
20	23	Max value	
24	27	Peak-to-peak value	
28	31	Captured value 1	

Write the following little program.

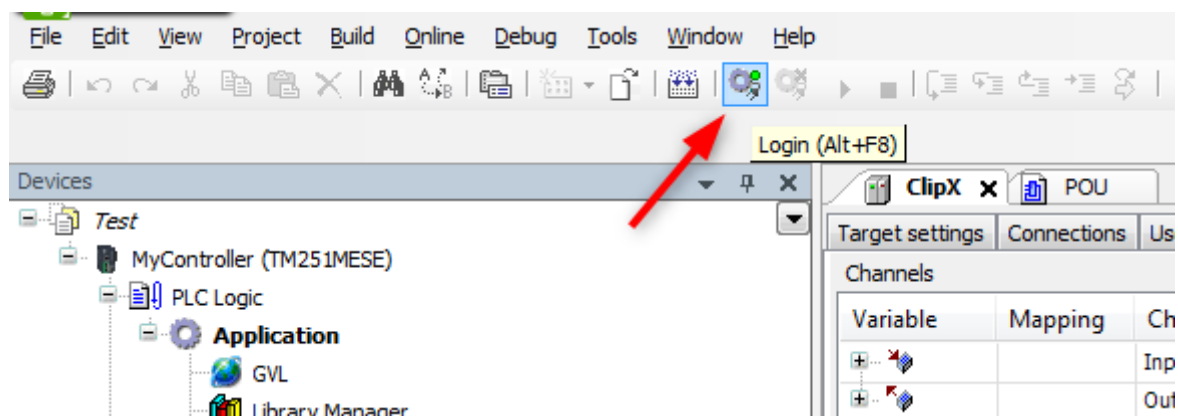


Normally it would be %IW9 and %IW10 for Grossvalue. Schneider PLC adds 4Byte (run/idle header) offset (green marked).

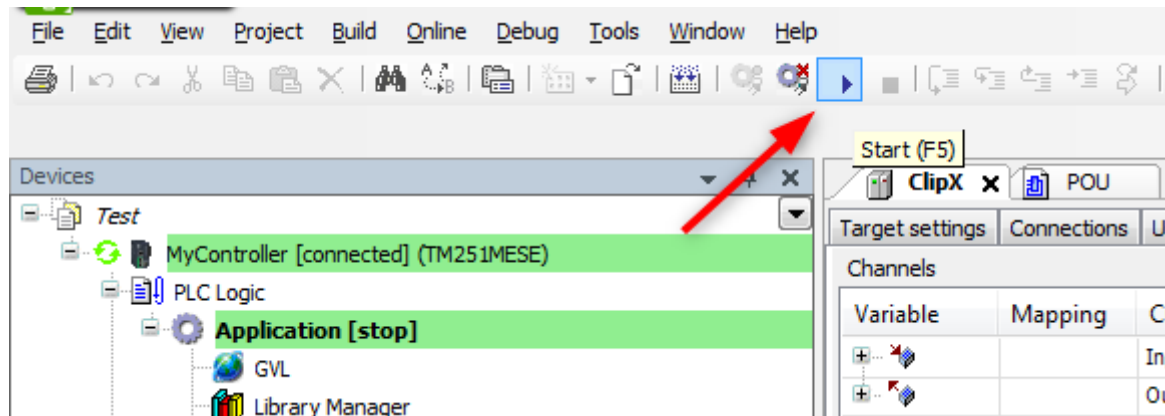


Variable	Mapping	Channel	Address	Type	Curr
		Input Exclusive Owner	%IW5	ARRAY [0..99] OF WORD	
		Input Exclusive Owner [0]	%IW5	WORD	1
		Input Exclusive Owner [1]	%IW6	WORD	0
		Input Exclusive Owner [2]	%IW7	WORD	4878
		Input Exclusive Owner [3]	%IW8	WORD	18638
		Input Exclusive Owner [4]	%IW9	WORD	57301
		Input Exclusive Owner [5]	%IW10	WORD	15305
		Input Exclusive Owner [6]	%IW11	WORD	37344
		Input Exclusive Owner [7]	%IW12	WORD	49214

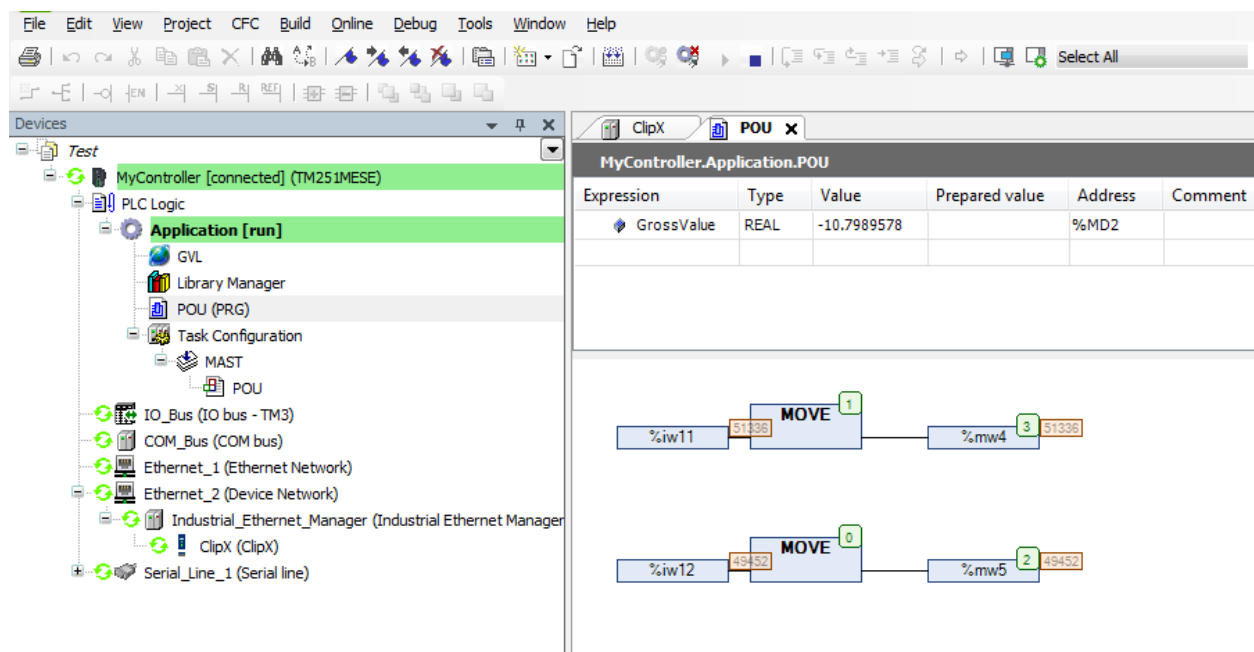
Login into the PLC



Start the PLC



Now you should see a changing Gross Value. Compare it with the value in ClipX web browser.



## Disclaimer

These examples are for illustrative purposes only. They cannot be used as the basis for any warranty or liability claims.