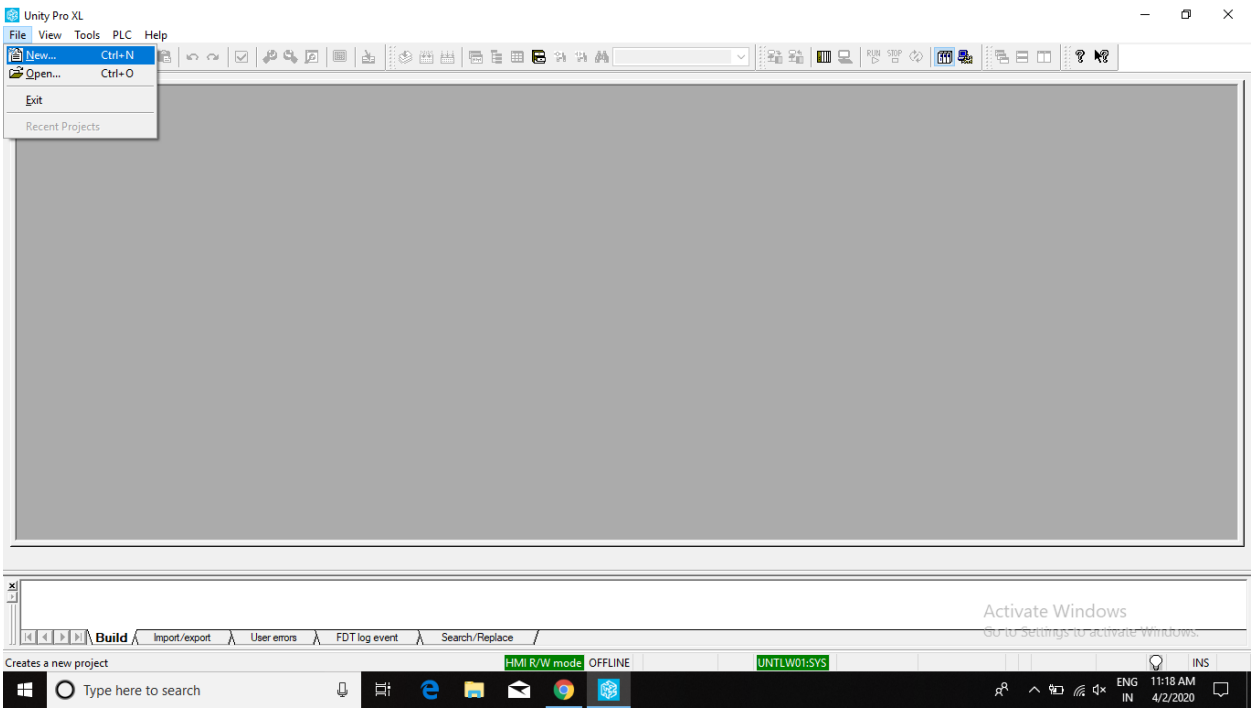
Unity Pro New Project Creation

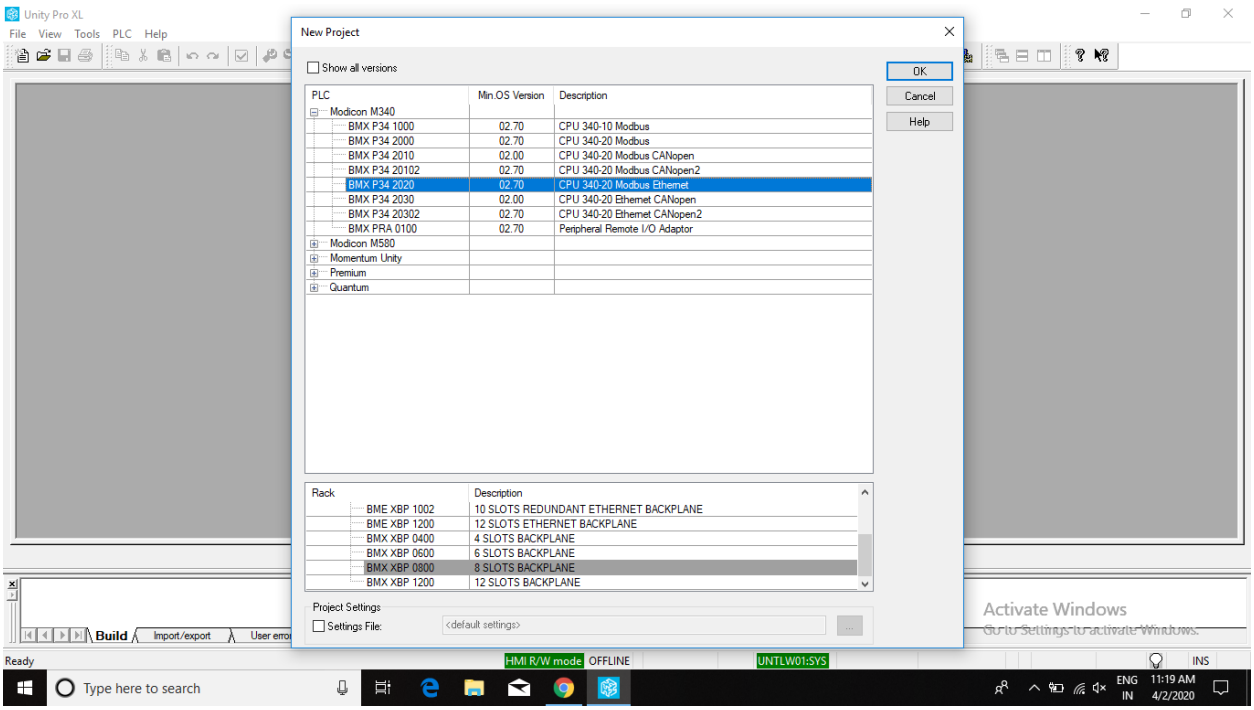
- Unity Pro Xl have supported Modicon M340, Modicon M580, Momentum Unity, Premium and Quantum PLC.
- Double click on Unity Pro Xl and create New Project.
- Select PLC as you have require and also select the Backplane of the PLC.



New Project with Unity Pro XL

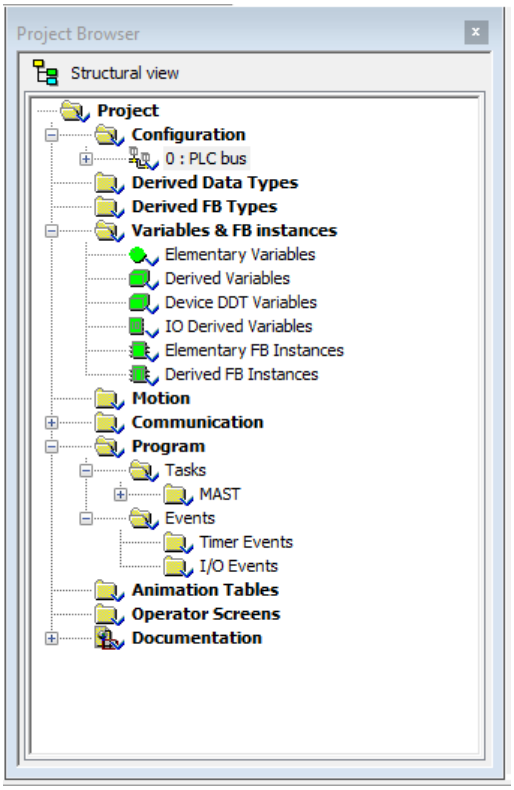
- Unity Pro XL use for the development of the PLC Logic.
- It’s easy to use and easy for the configuration.

- Here, I have selected **BMXP342020 Modbus Ethernet PLC with 8 Slots Backplane**.
- You can see your selected controller in the PLC Bus.



PLC Controller Selection with Backplane

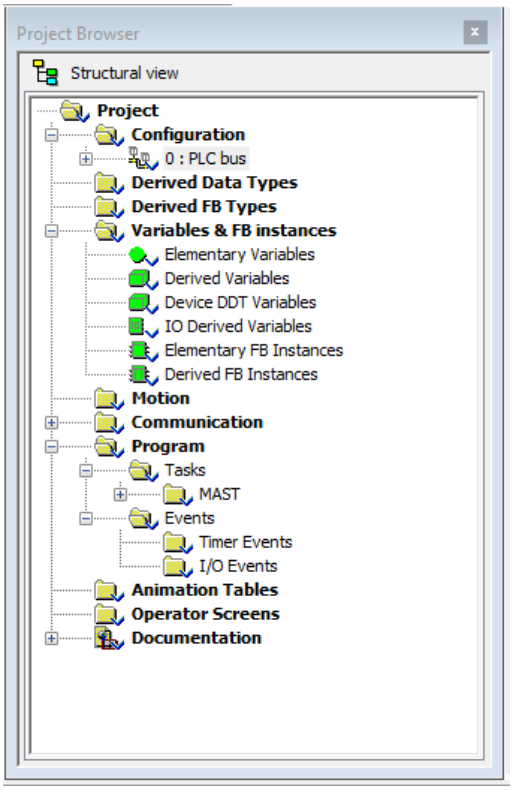
- Double click on PLC Bus and add modules beside the PLC Controller.
- See below attached image for the Project Browser and open PLC Bus configuration for the PLC Modules and PLC controller configuration.



PLC Bus Configuration :

- Double Click beside the PLC Controller and Add Device,
- PLC Modules add as per requirements.

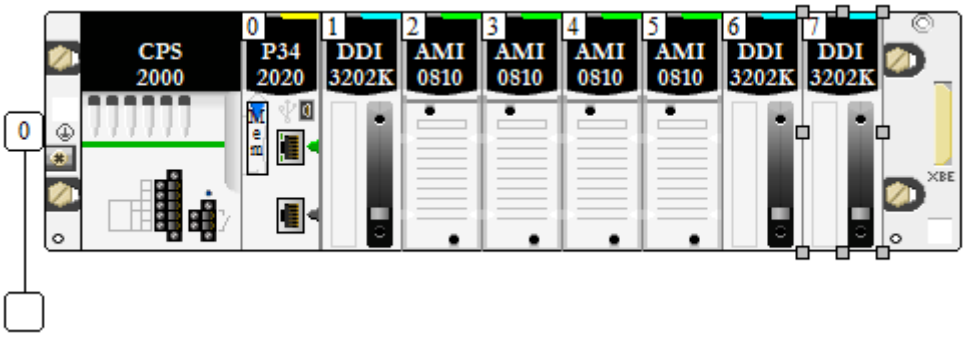
PLC Bus Configuration



- In this Project browser, you have various functions.
- PLC Bus
- Derived Data Types
- Derived FB Types
- Variables & FB Instances
- Communication
- Program
- Animation Tables
- Documentation

PLC Bus Configuration :

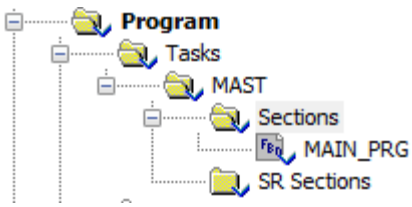
- PLC Bus Configuration used for the PLC Controller configuration and also have option to change the Backplane.
- Add PLC Modules and PLC Modules configurations.
- See below attached image, Analogs and Digitals Modules configured in the PLC Bus section.



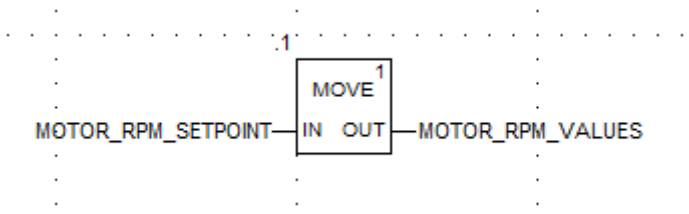
- Go to Program Section and create one Section in Mast or Fast.
- Example :

  I have created one MAIN_PRG Section in the Mast Section.

  In this section I have created Sample PLC program for the better understanding to you.



- Develop Logic in this created section.
- See below attached image,
- Here, I have developed sample program for the better Understanding to you.
- MOTOR_RPM_SETPOINT values moved in MOTOR_RPM_VALUES.

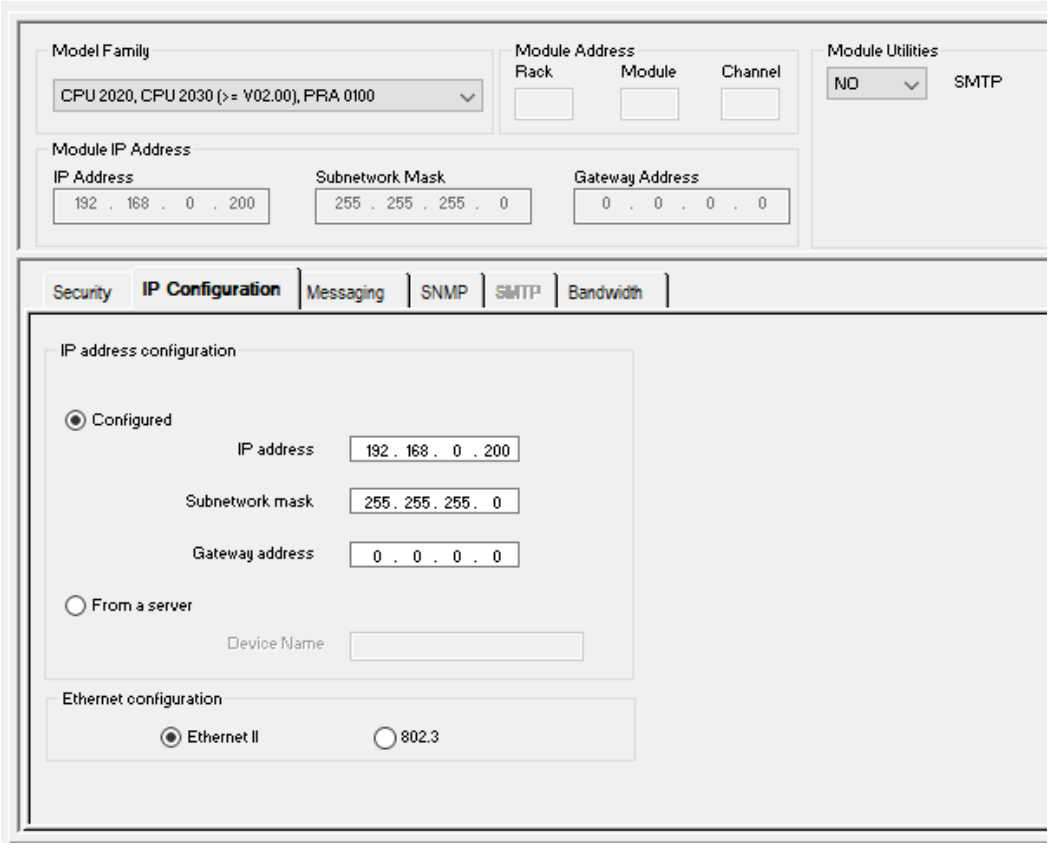


- While I have passed values in **MOTOR_RPM_SETPOINT** variable then Values passed in **MOTOR_VALUES.**

Communication Configuration :

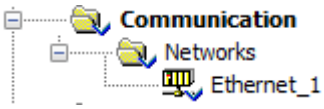
- While you have to communicate data of the PLC with the SCADA then require to configure communication section.
- Here different communication protocols available in different controller.
- Choose controller as per require protocols and other characteristics.
- I have selected Modicon M340 2020 controller and it's able to communicate Modbus Serial and Modbus TCP communication.
- Here, I have configure the Modbus TCP Connection.
- See below attached image and do as per that.

- Create network in communication section.
- Double click on **Ethernet_1** and give IP Address of the Controller.

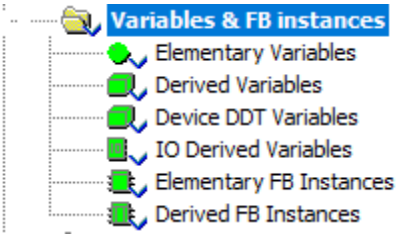


- Write IP Address as per attached image and save configuration.
- Now require to assign Network to PLC Controller because without assigning you can't able to do complete your network configuration.

- Go to the PLC Bus section.
- Double click on the Controller Ethernet port and assign Ethernet Network.
- After the Network assignment, you have shown **Ethernet_1** symbol has been changed.
- This changes symbol indicate Network assigned to selected device.



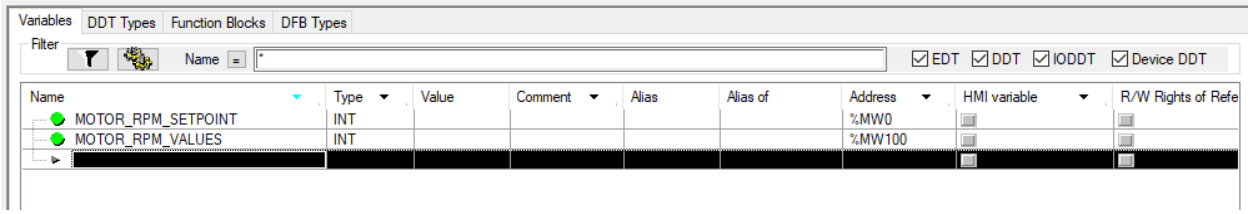
- **Variables & FB Instances**



- In this section you have to write all the variables with particular Modbus addresses.
- Schneider have used the standard format of the Addresses, **Like :**
  %M, %MW used for the Modbus communication.
- I already showed the data communication section in the SoMachine Basic software document.
- Prefer that documents for the better understanding.

Example :

- As per example I have already two variables created in the **MAIN_PRG** Section. **MOTOR_RPM_SETPOINT** and **MOTOR_RPM_VALUES.**
- Give addresses to this variables.
- See below attached image.



Variables & FB Instances

- See image, I have assign address %MW0 to **MOTOR_RPM_SETPOINT** and %MW100 to **MOTOR_RPM_VALUES.**

Unity Pro XL Communication with SCADA

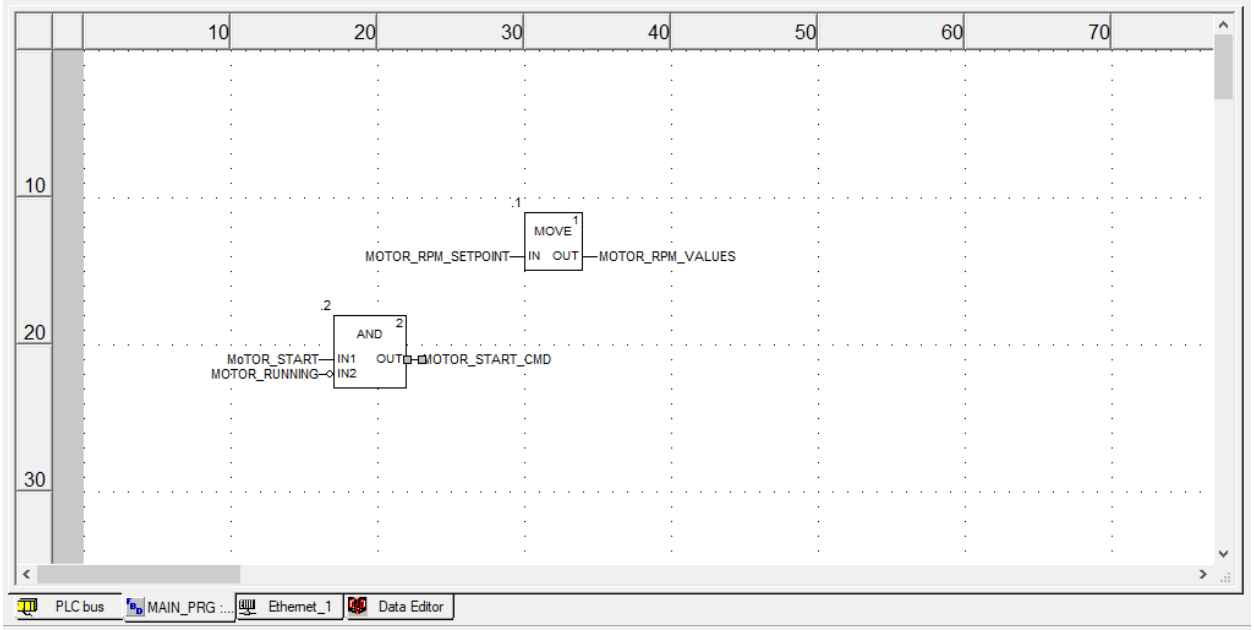
- If you want to communicate your PLC logic with SCADA, Follow further procedure and do as well.
- Follow below procedure,

Introduction :

- Write PLC Logic first in Unity Pro XL.
- Here I have created a simple program to help you better understand this.
- Also I have given information of the require configuration in SCADA as well as PLC.
- Follow further procedure for the communication.

Step 1 :

- **Create PLC Program as you have require in the Unity Pro XL.**

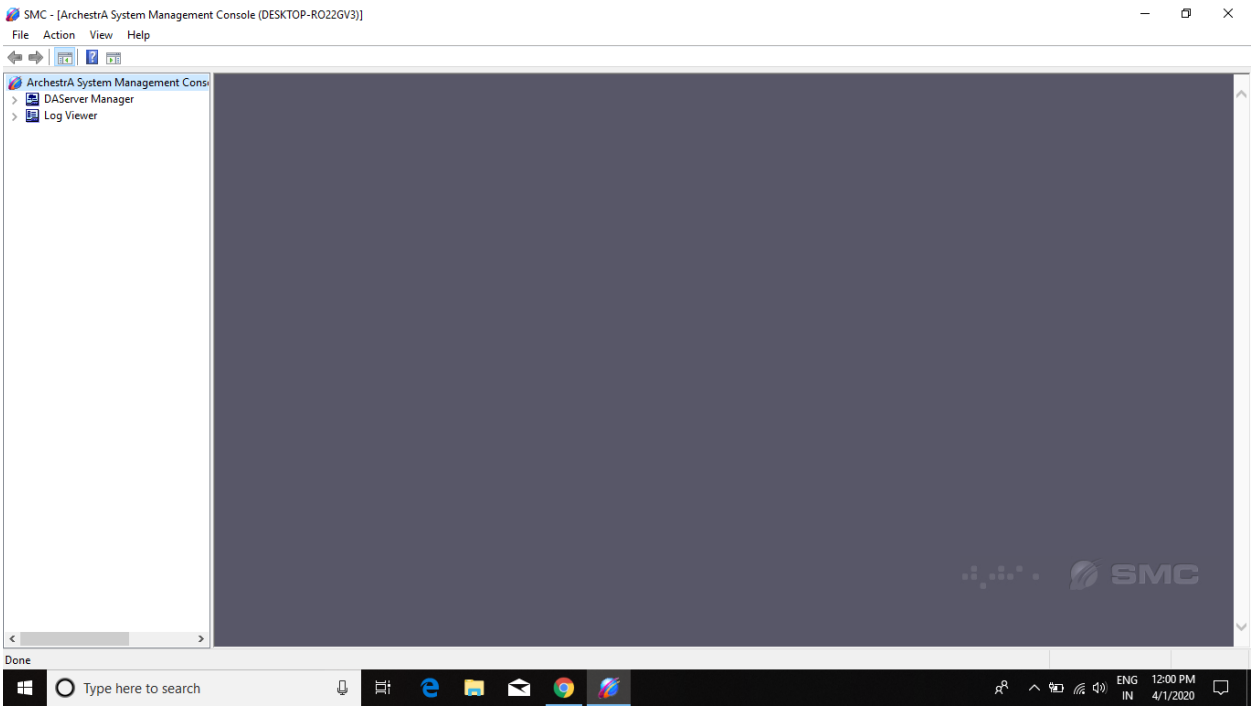


Unity Pro XL Sample PLC Program

- Here, I have assigned addresses to below variables.
- **MOTOR_RPM_SETPOINT** and **MOTOR_RPM_VALUES**.

- **%MW0 assigned to MOTOR_RPM_SETPOINT variable and %MW100 assigned to MOTOR_RPM_VALUES.**
- I will show you, how it will be communicate on which particular Modbus address.
- Follow **Step 2** procedure.

Step 2 :



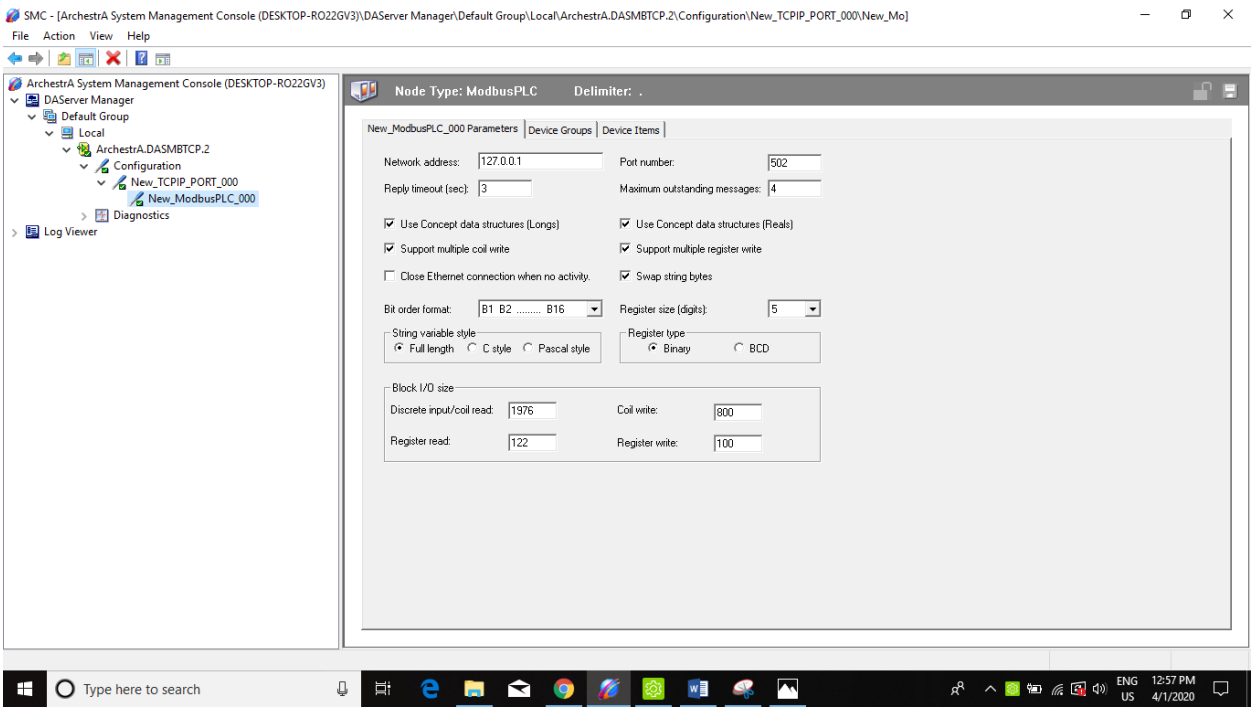
DASMBTCP Configuration in SCADA PC

- **Configure DASMBTCP in user PC or which you have used for visualize SCADA.**
- Before configuration of the DASMBTCP you need to install DASMBTCP Driver on that PC.
- After Completion of the DASMBTCP driver, follow below procedure.
- Open System Management Console.

Step 3 :

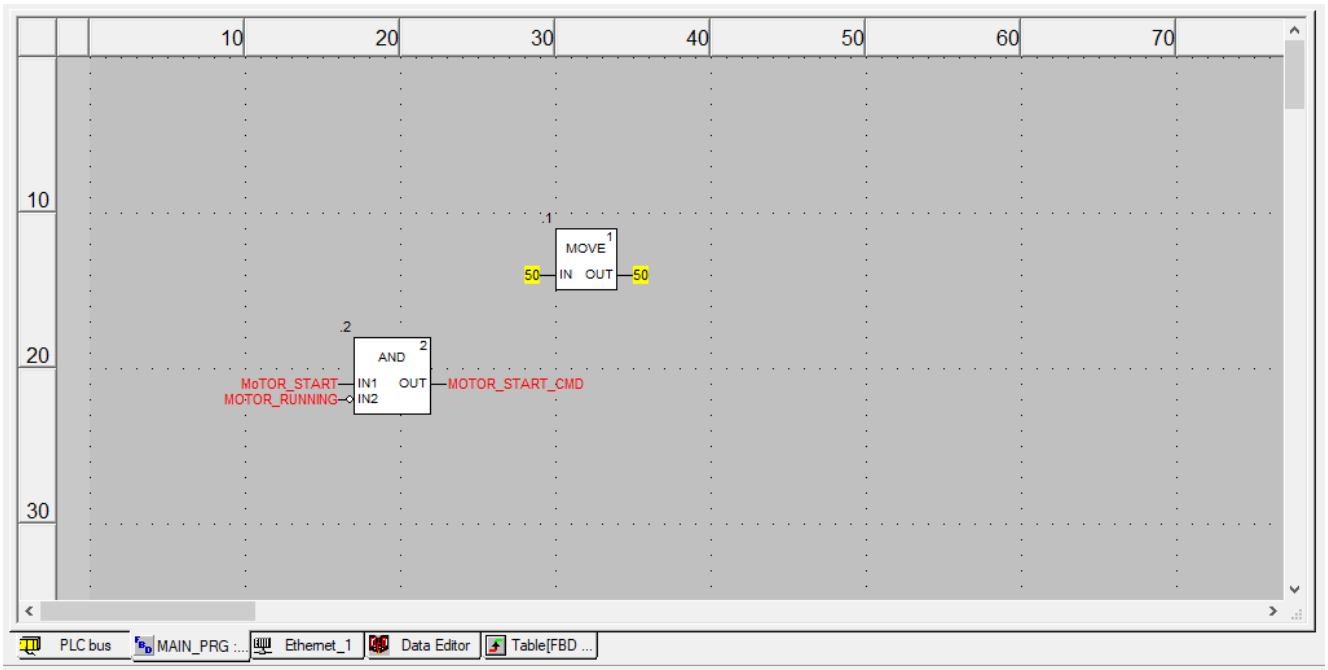
- Type your controller IP Address and save settings.
- Example: 127.0.0.1
- Create Topic and save configuration.

- **Configuration in System Management console.**



ModbusTCP Configuration in System Management Console

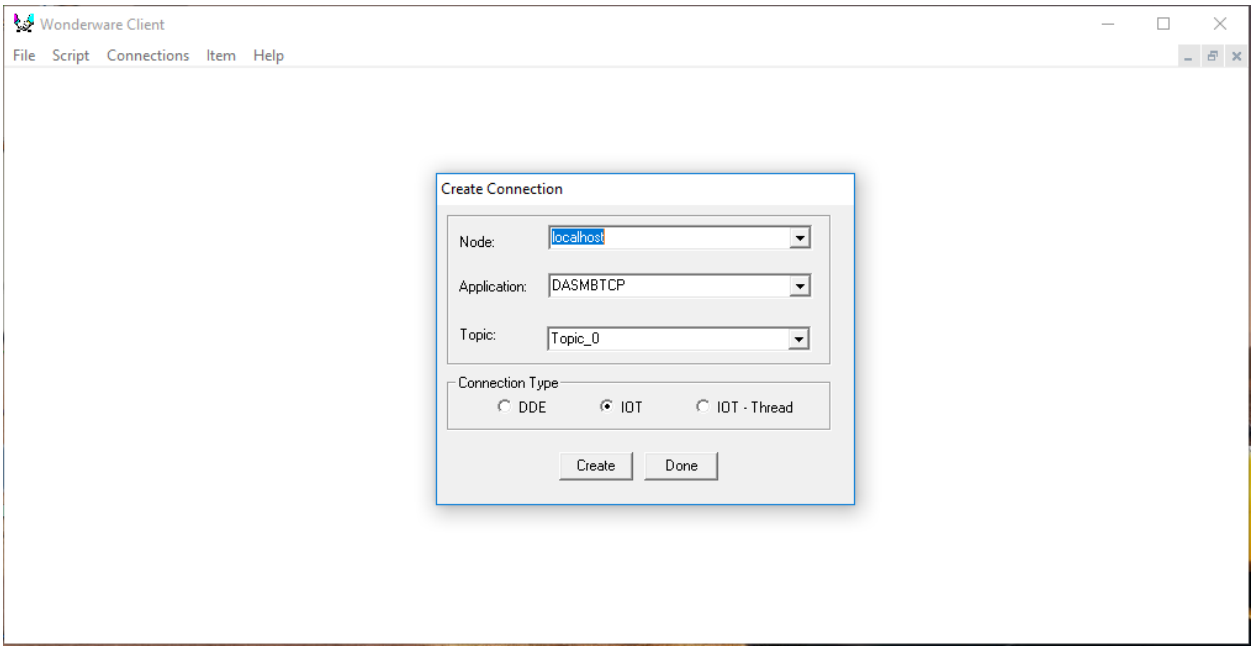
- Start Simulator in Unity Pro XL.
- Here, I have moved different values in **%MW0 Address**.
- Now, I have to check data in Wwclient.
- **Connect Wwclient and checked data.**



Unity Pro XL Simulation Mode

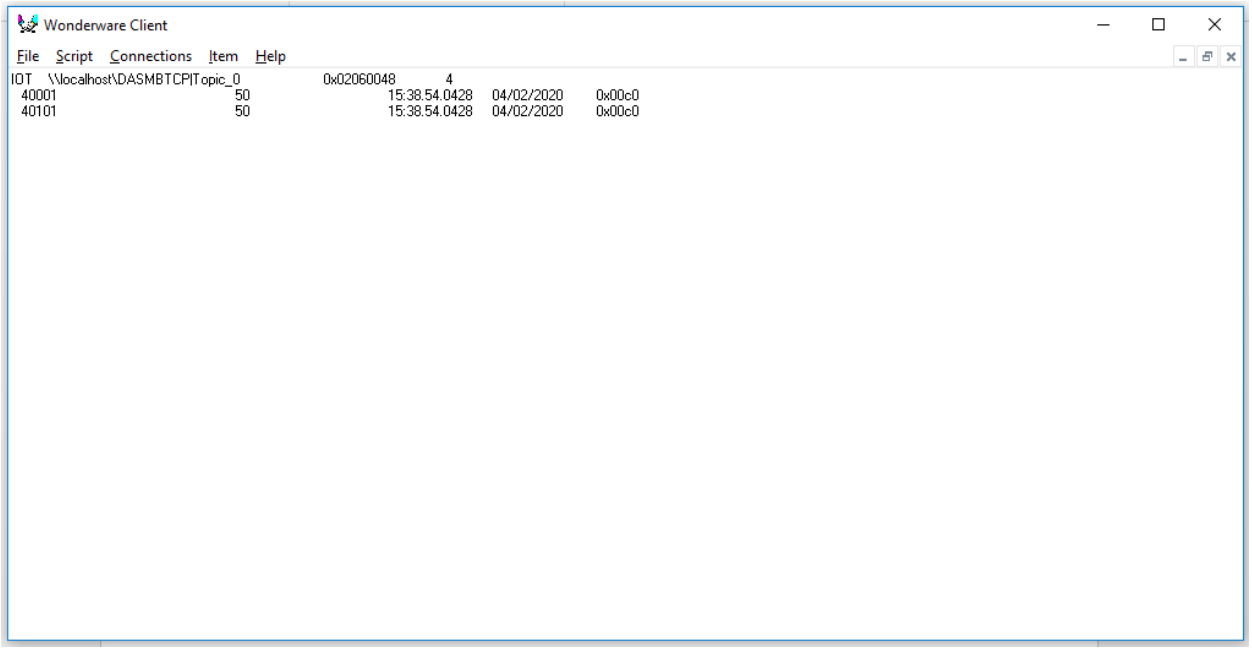
Step 4 :

- **Wwclient Configuration.**



Wwclient Configuration

- Create Connection in Wwclient.
- Node address, Application and Topic and done the changes.
- Check data.
- See below attached image, while I have passed 50 values in %MW0 address, then Wwclient have capture data on 40051 address.
- Change values in particular address and check on Wwclient.
- Check your data as per configuration of the System Management console.



Wwclient Data Capturing

- Here, you can show 50 values in 40001 address.
- As per PLC program, while I have passed 50 values in %MW0 then Wwclient capturing data on 40001 address.
- As per this you can easily check PLC data in the wwclient.
- SCADA communicate on based of Modbus addresses.