How To Communicate Between NB HMI And Sysmac NJ Controller With CJ1W-SCUx2-unit

Introduction

This is a quick start tutorial on how to get the communication between the NB HMI and the Sysmac NJ controller with Serial communication. This turorial applies to all NB HMI models.

Models

NJ-Controllers	NB HMI	SCU Units
NJ301-1xxx	NB3Q-TW00B	CJ1W-SCU22 - 2 RS-232C ports
NJ501-1xxx	NB3Q-TW01B	CJ1W-SCU32 - 2 RS-422A/485 ports
NJ501-4xxx	NB5Q-TW00B	CJ1W-SCU42 - 1 RS-232C port and 1 RS-422A/485 port
	NB5Q-TW01B	
	NB7W-TW00B	
	NB7W-TW01B	
	NB10W-TW00B	
	NB10W-TW01B	

Software

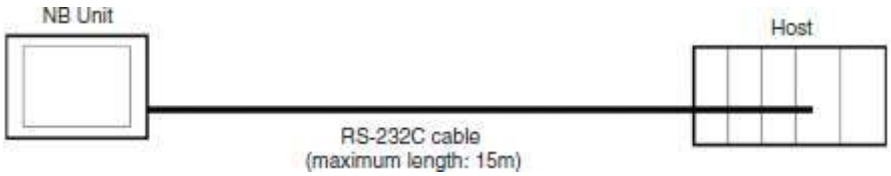
NB-Designer v1.232

Sysmac Studio v1.06

Wiring between NB and SCUx2

The RS-232C connection method using serial ports COM1/COM2

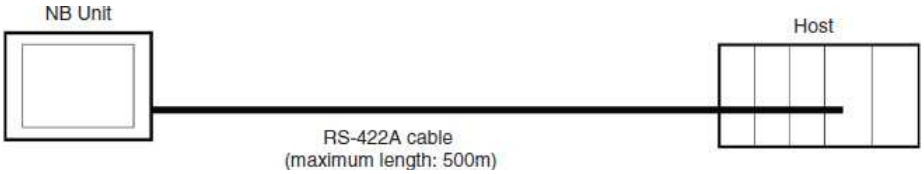
This is the simplest and most feasible method.



The following cables are recommended.
XW2Z-200T (Cable length: 2m) by OMRON
XW2Z-500T (Cable length: 5m) by OMRON

The RS-422A and RS-485 connection method using the serial port COM2

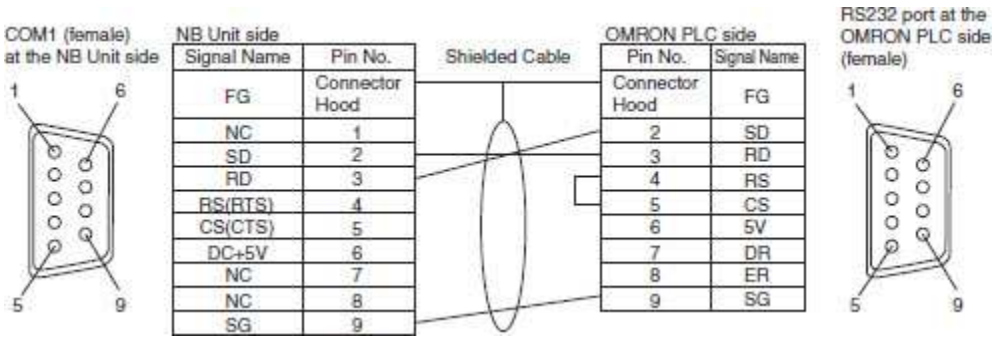
With this method, the communication distance can be extended to a maximum of 500m.



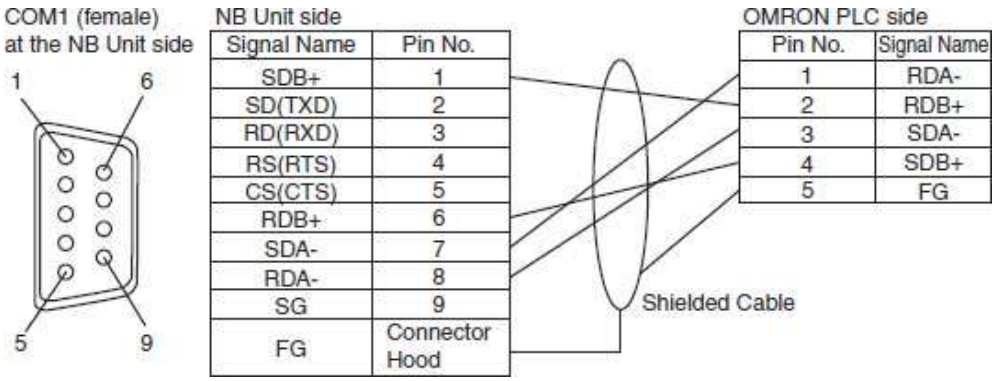
The following cables are recommended.
NB-RSEXT-2M (Cable length: 2m) by OMRON
Note please adopt 4-wire RS-422A connection, and Host Link does not support 2-wire RS-485 connection.

If you want to create your own cable this is how the pin configuration looks like.

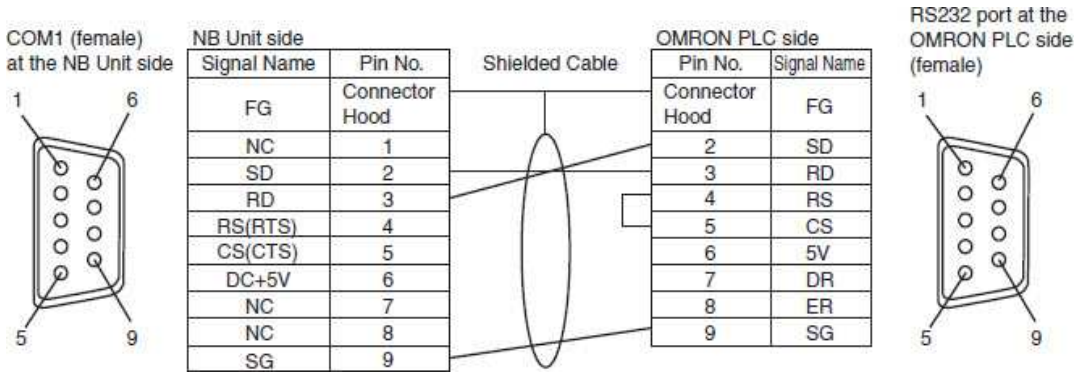
The cable for connecting the NB3Q Unit serial port COM1 to OMRON PLC



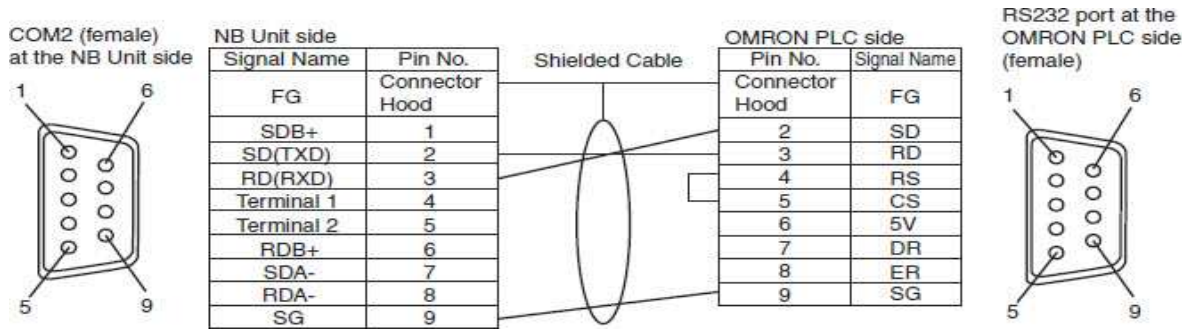
The cable for connecting the NB3Q Unit serial port COM1 to OMRON PLC



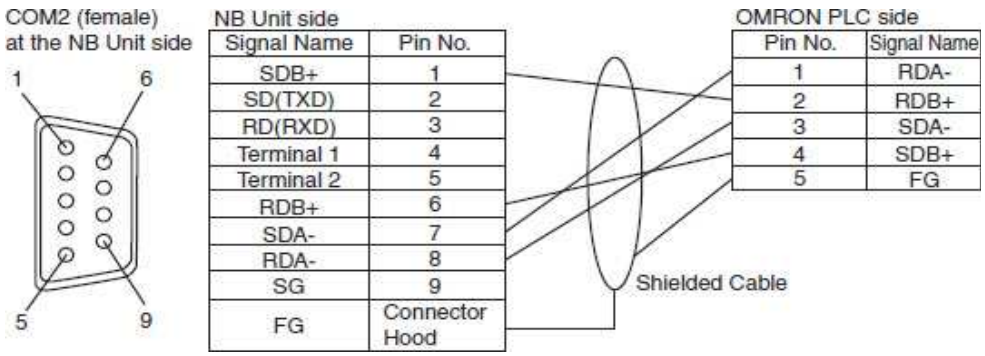
The cable for connecting the NB5Q/NB7W/NB10W Unit serial port COM1 to OMRON PLC (RS-232C)



The cable for connecting the NB5Q/NB7W/NB10W Unit serial port COM2 to OMRON PLC (RS-232C)

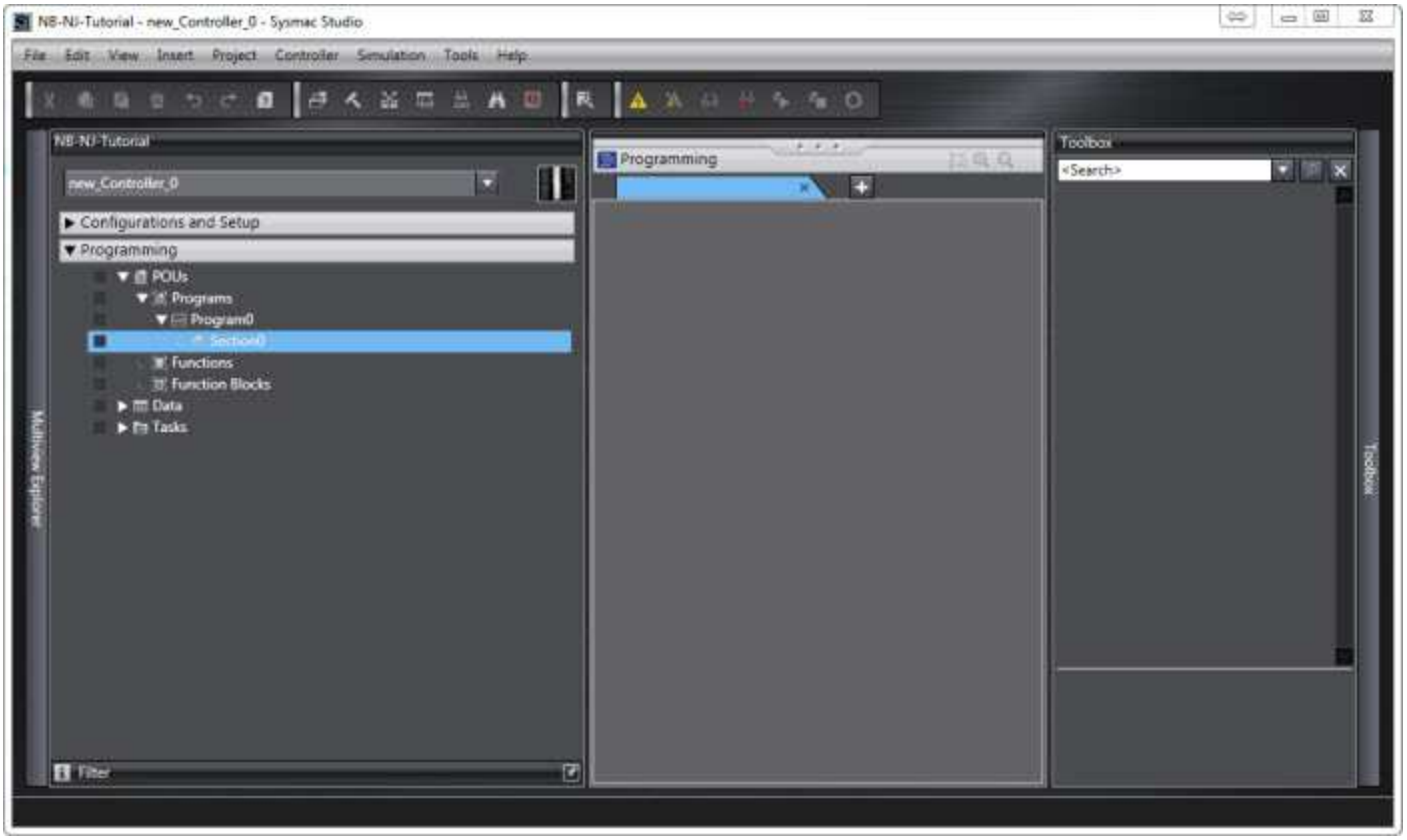


The cable for connecting the NB5Q/NB7W/NB10W Unit serial port COM2 to OMRON PLC (RS-422A)

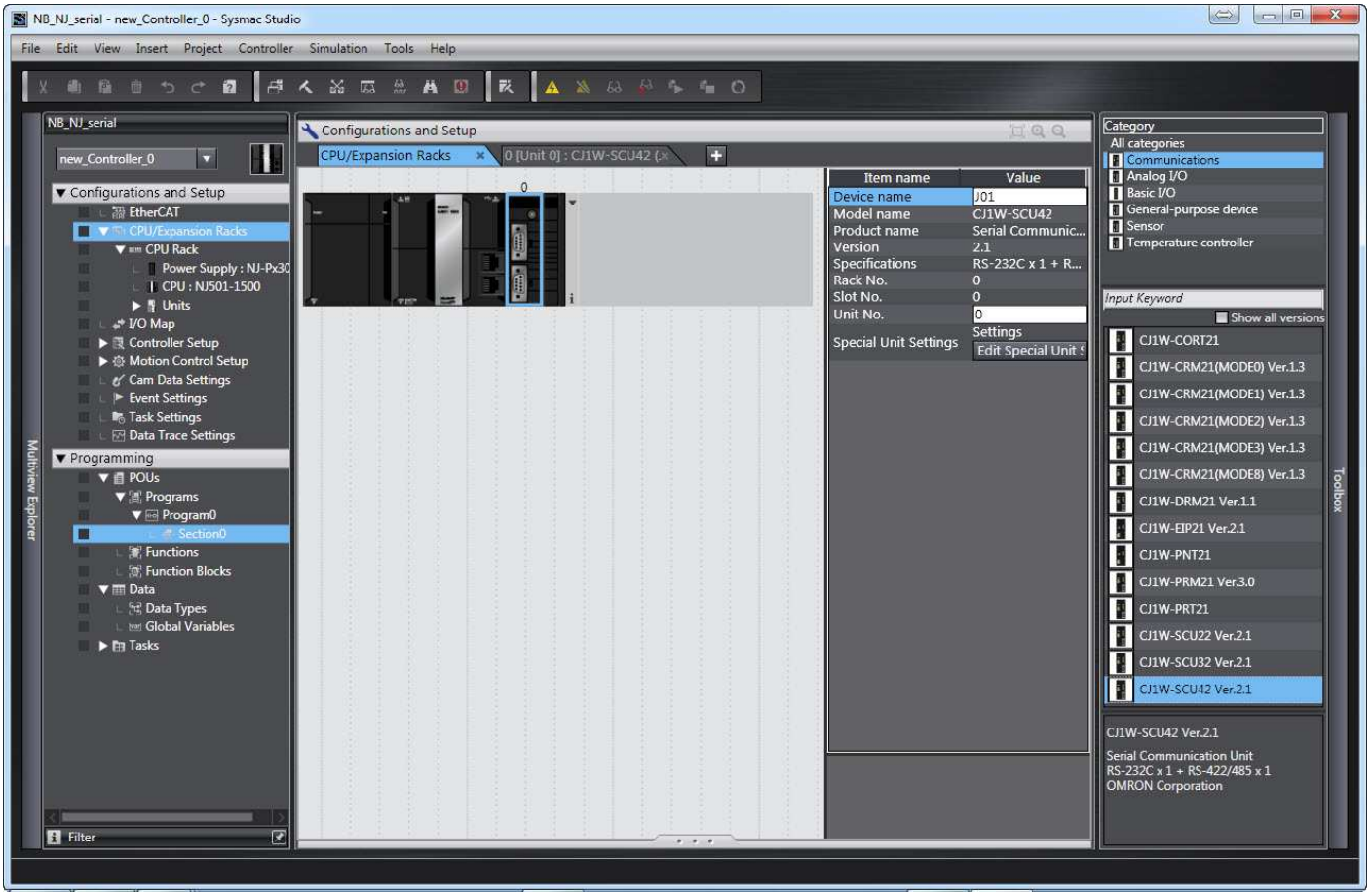


NJ controller setup

Step 1: Open a new project in Sysmac Studio



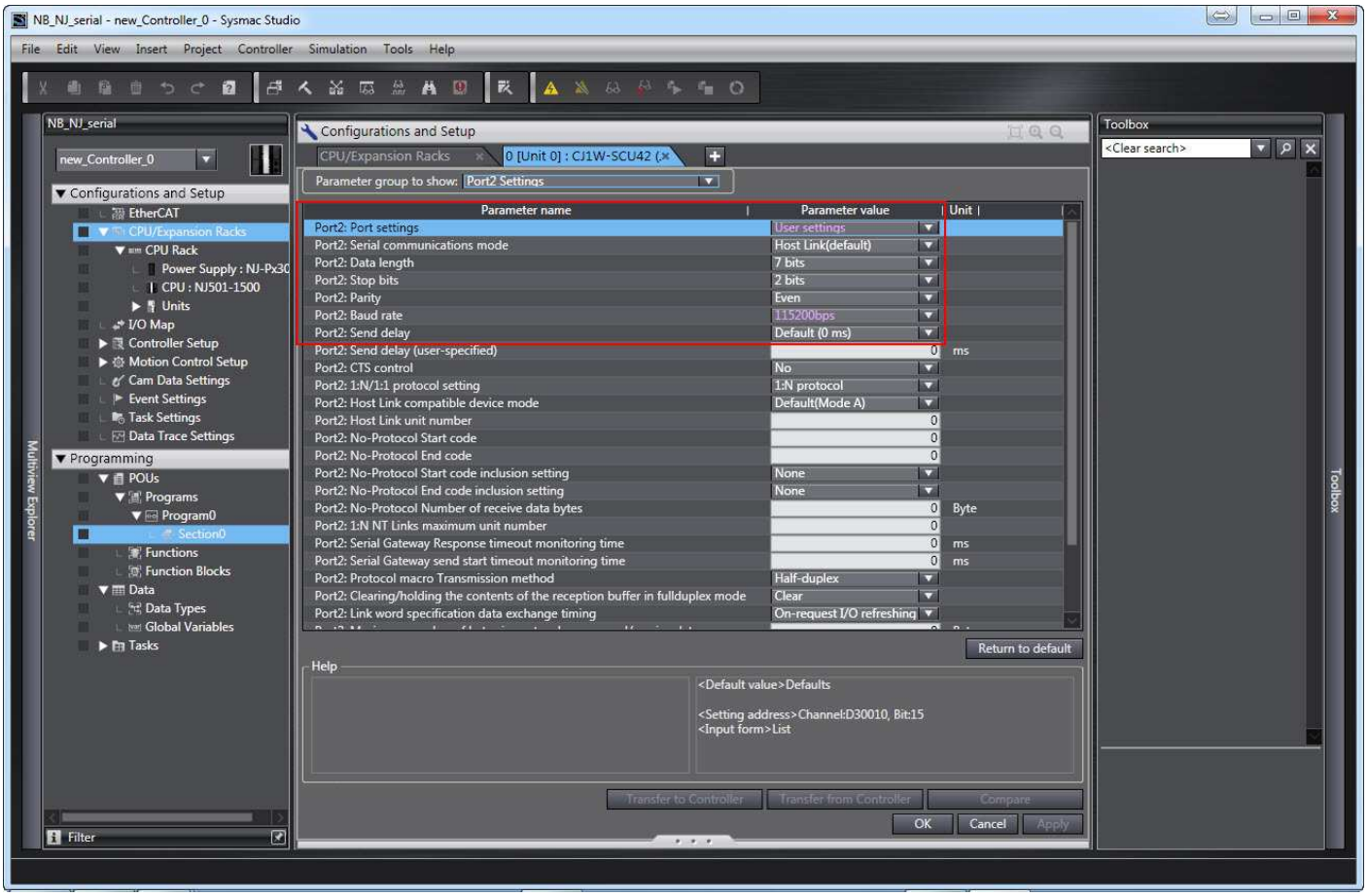
Step 2: Setup the CPU/Expansion Racks. Configuration and Setup -> CPU/Expansion Racks. In this example we are using a CJ1W-SCU42 unit.



Step 3: Edit Special Unit Settings. Double click on the SCU unit and change the following settings as shown in the illustration below.

Port2: Port settings - User setting

Port2: Baud rate - 115200bps



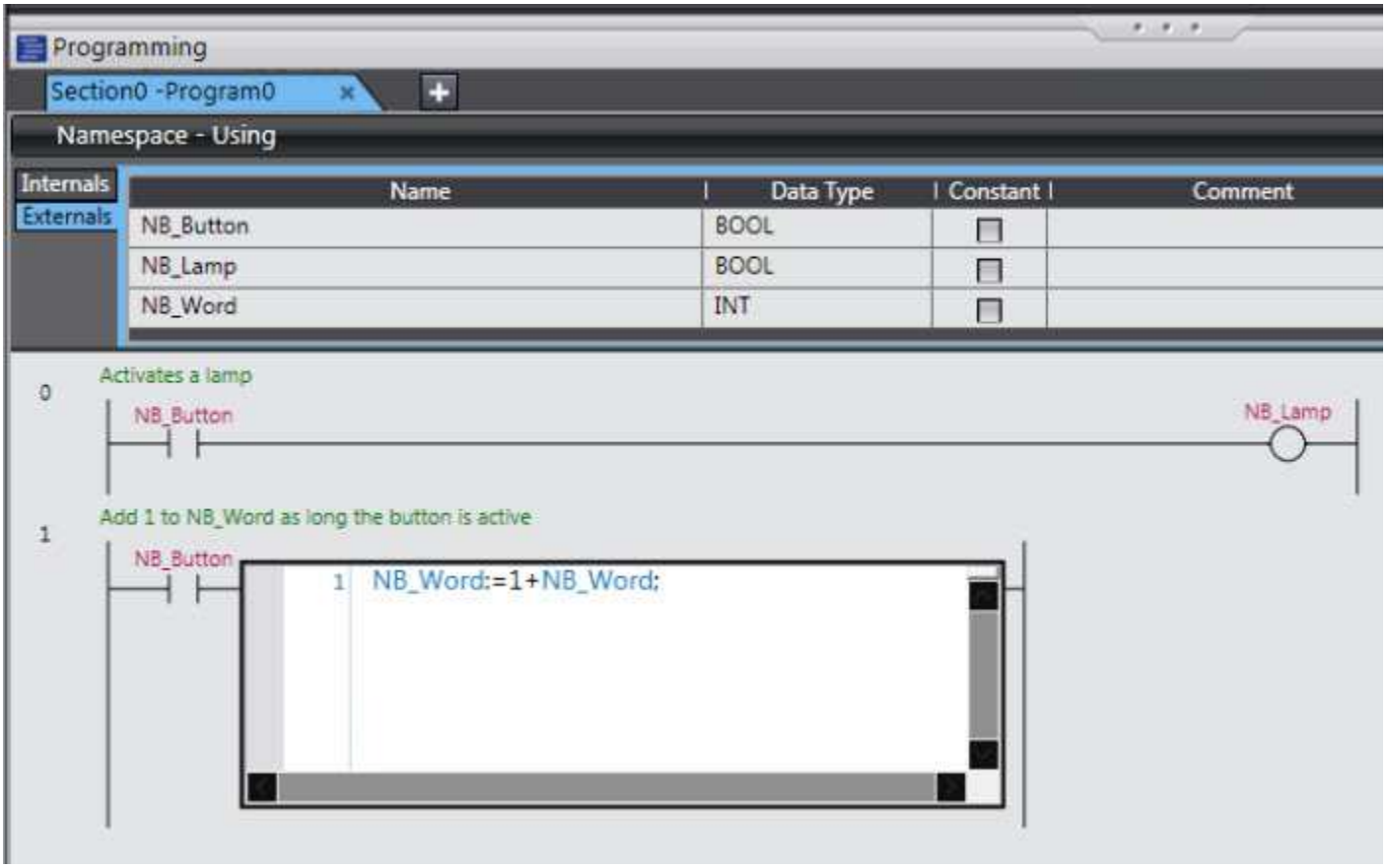
Note. These settings will not be similar to the NB serial settings. The communication will be RS232 in NB-Designer settings and Hostlink here in Sysmac Studio.

Step 4: Add variables that are made as addresses as for the CJ-series in CX-Programmer. Programming -> Data -> Global Variables

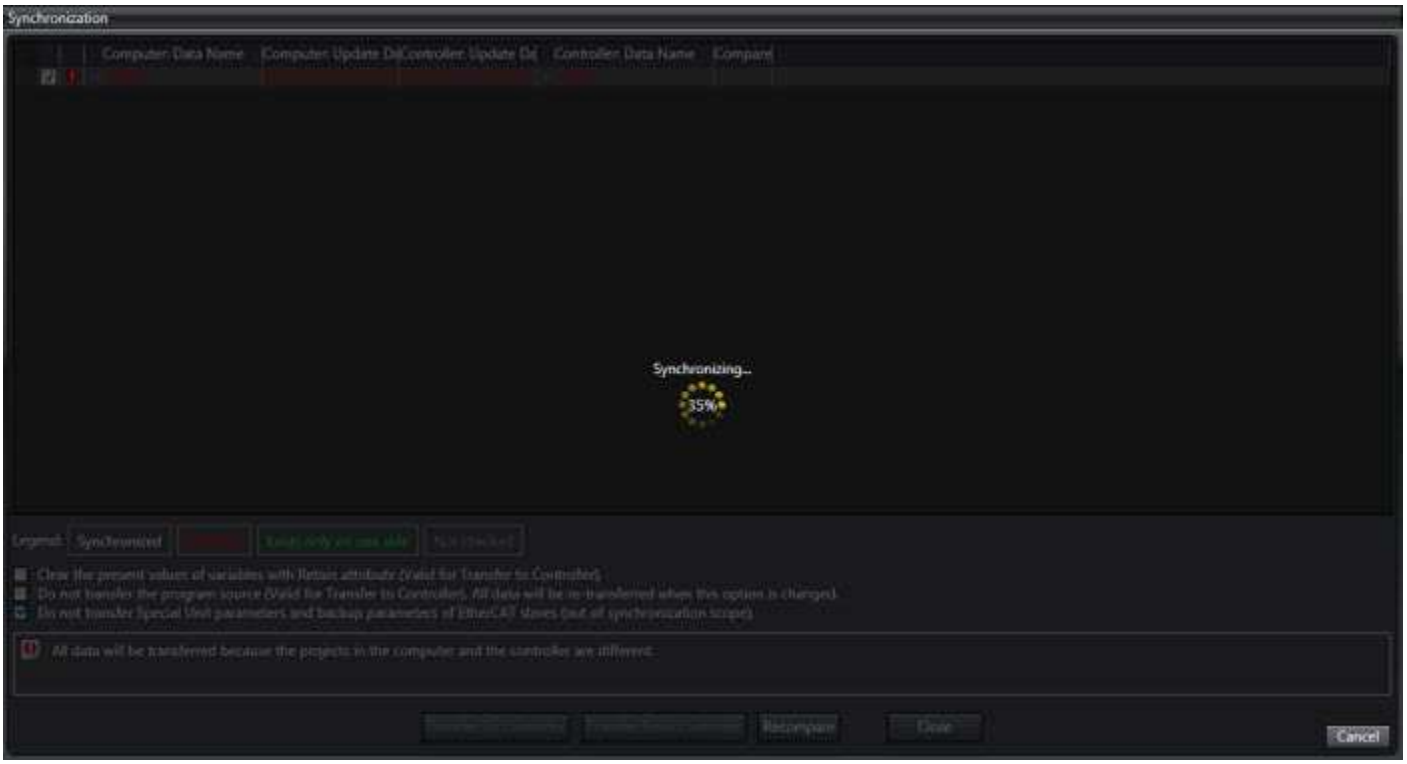
When specifying an address in memory used for CJ-series Units:
Add a % character to the beginning of the addresses in AT when specifying memory used for CJ-series Units. This is shown in the following table:

Area	Setting range	Format to enter
CIO Area	CIO 0 to CIO 6143	%0 to %6143
Work Area	W000 to W511	%W0 to %W511
Holding Area	H0 to H1535	%H0 to %H1535
DM Area	D0 to D32767	%D0 to %D32767
EM Area	E0_0 to E18_32767	%E0_0 to %E18_32767

Step 5: Create your application as desired
In this example we have one button that activates one lamp and also will add 1 to a word address as long it is active.

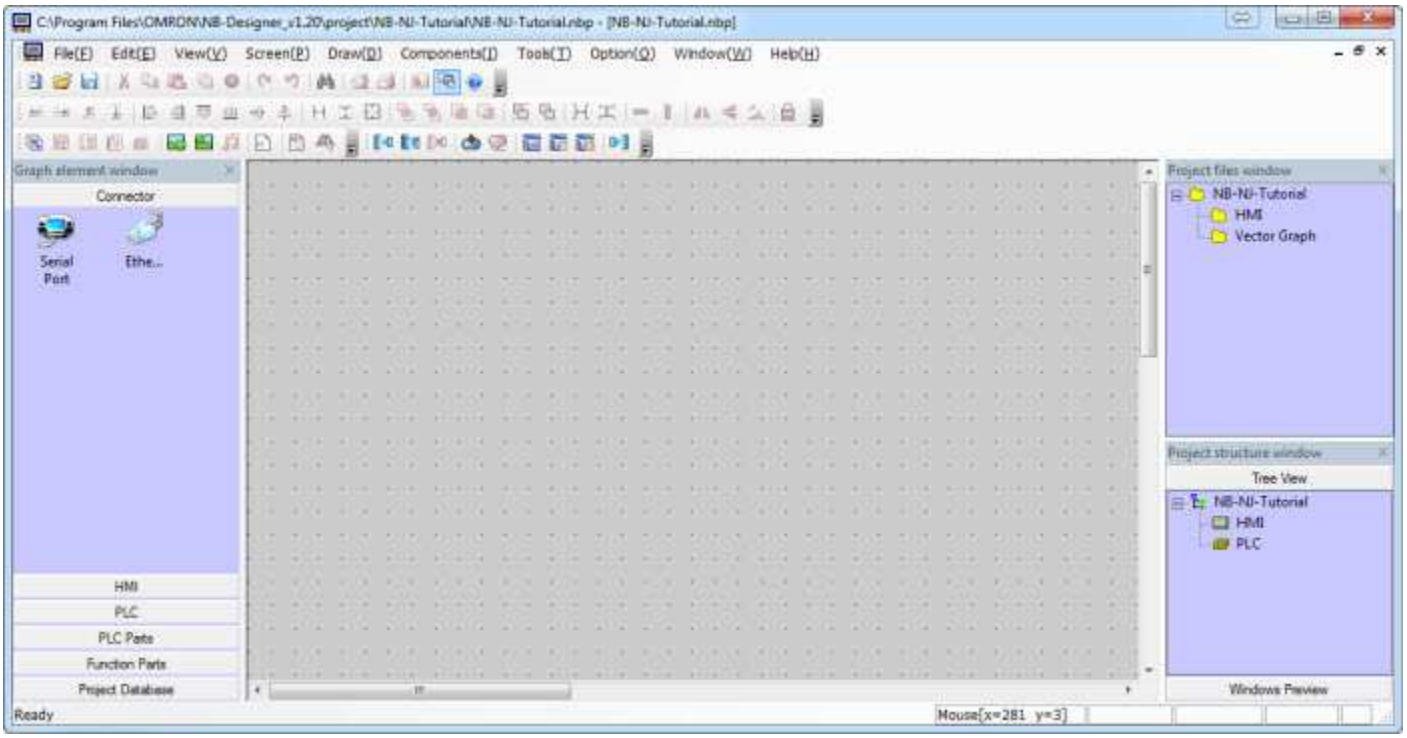


Step 6: Go online and synchronize your application with your NJ controller.

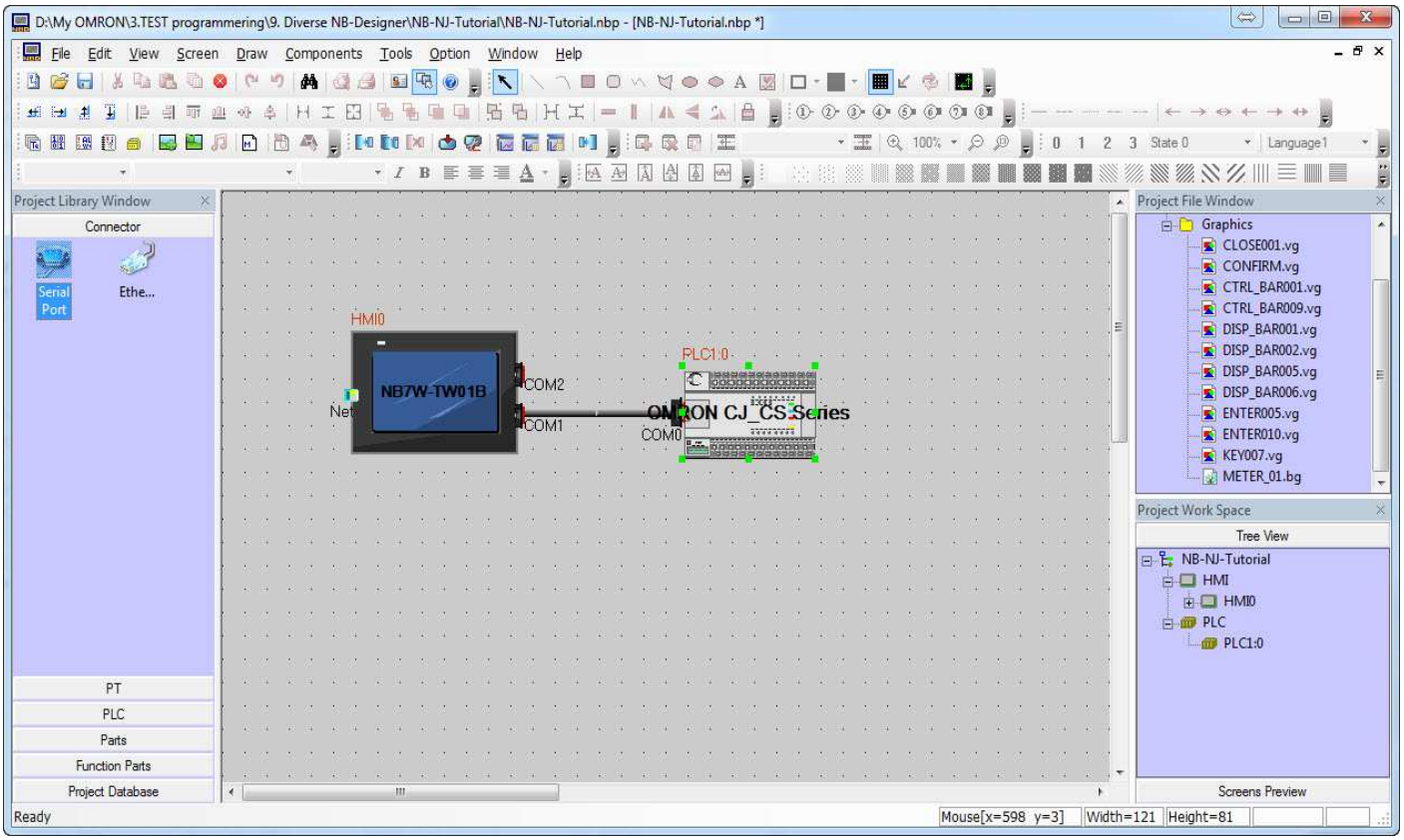


NB terminal setup

Step 1: Open a new project in NB-Designer.

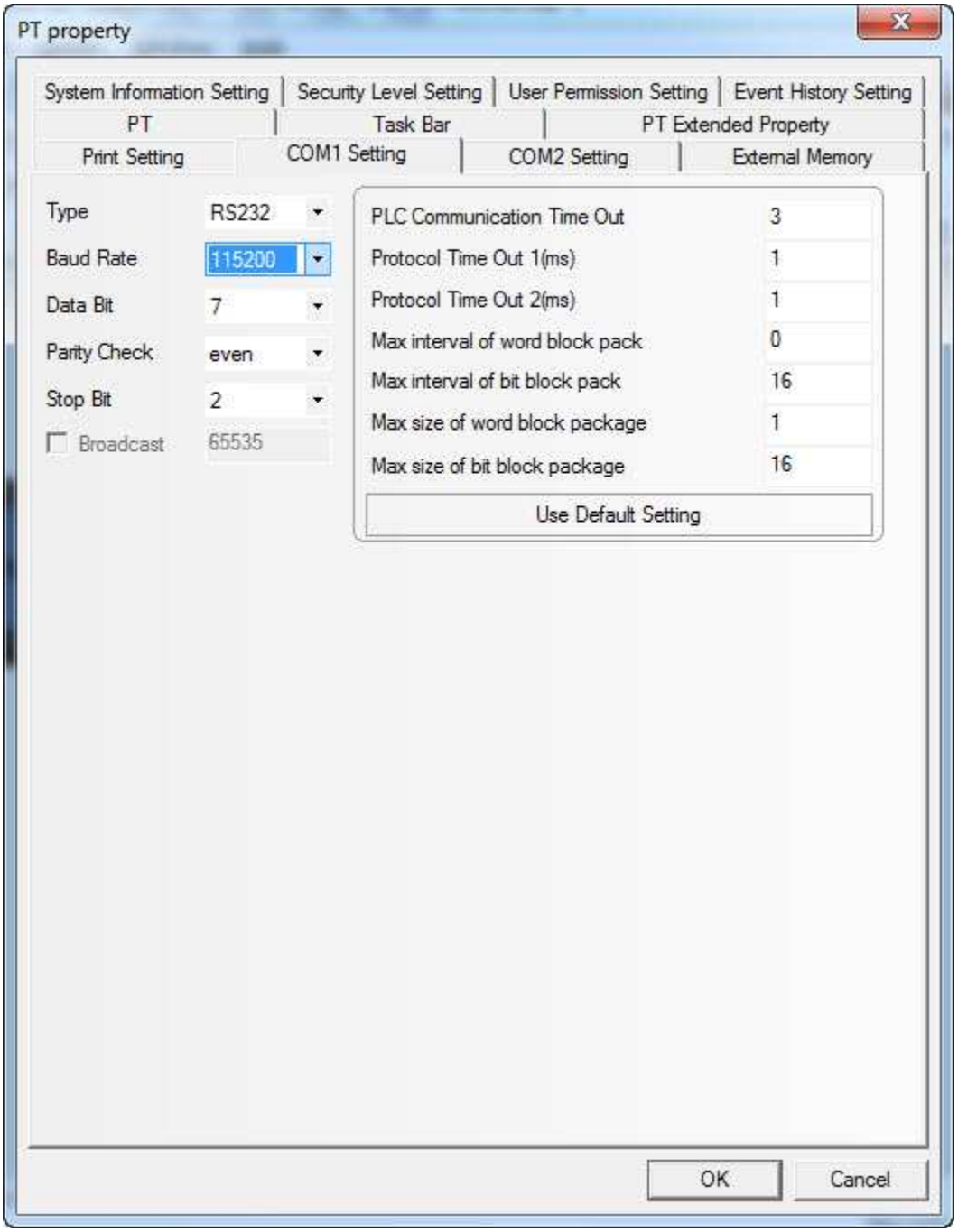


Step 2: Add a NB HMI. Add an OMRON CJ_CS Series and under Connector select Serial Port. Connect the NB HMI and the PLC with the Serial Port line.



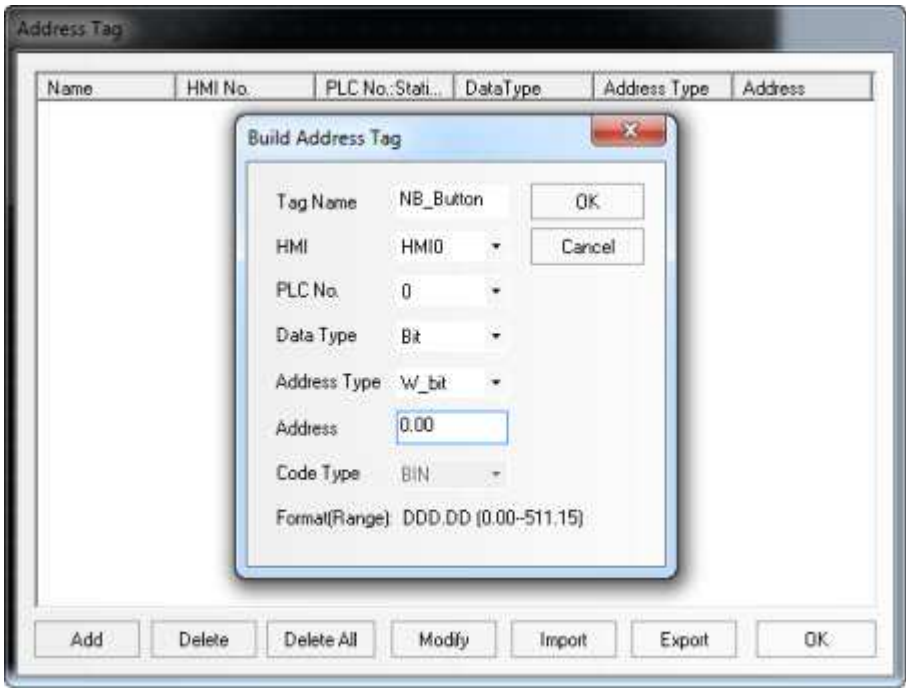
Now you have created the communication device list.

Step 3: Right click on the NB and select Property. Select the 'COM1 Setting' and change the Baud Rate to 115200 as shown in the illustration below.

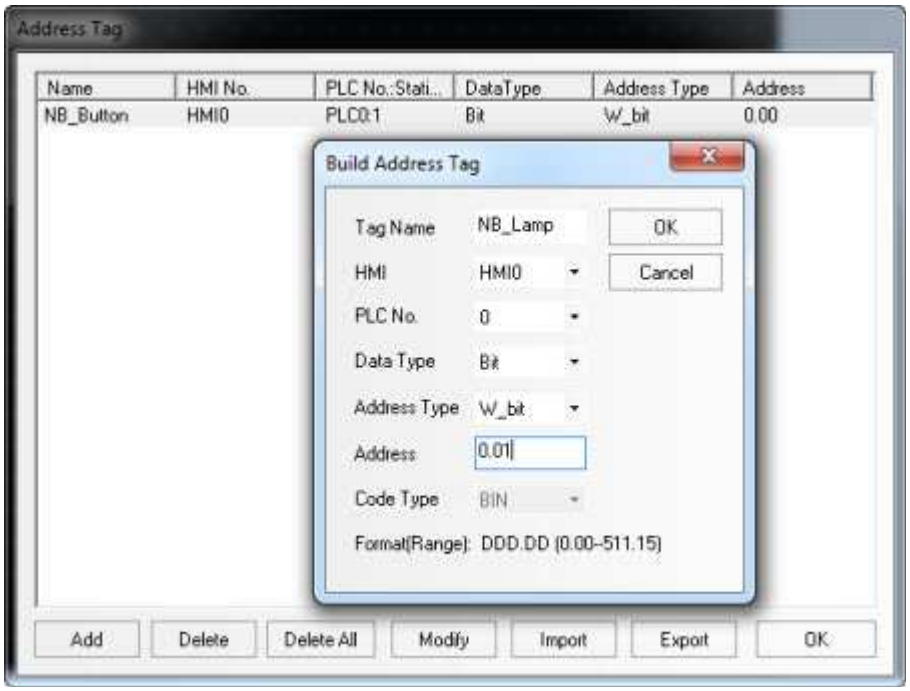


Step 4: Enter the variables that you want to use.

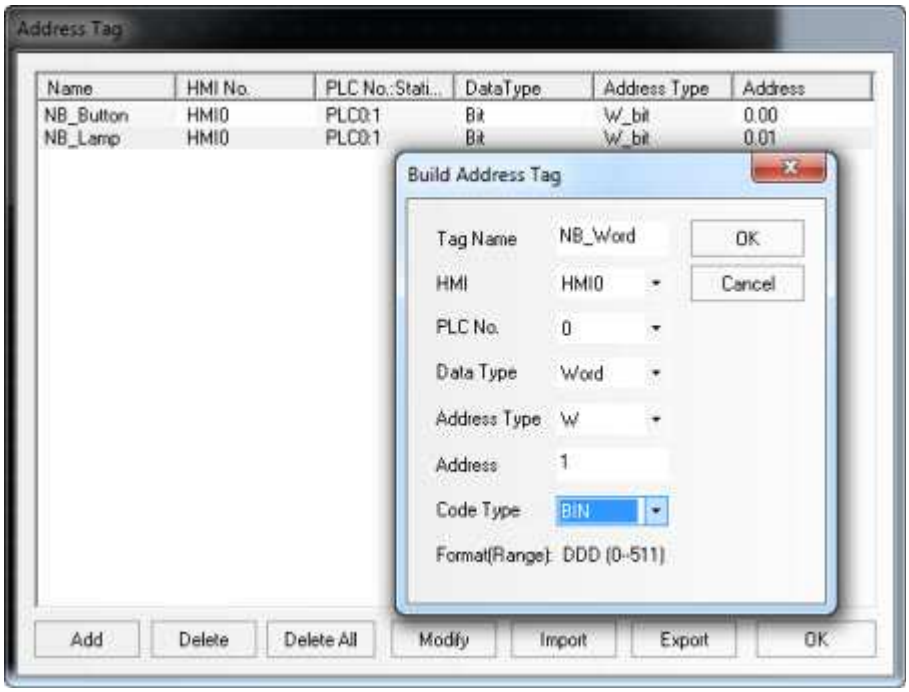
Button:


Address Tag
Name
HMI No.
PLC No.:Stati...
DataType
Address Type
Address
Build Address Tag
Tag Name
NB_Button
OK
HMI
HMI0
Cancel
PLC No.
0
Data Type
Bit
Address Type
W_bit
Address
0.00
Code Type
BIN
Format(Range)
DDD.DD (0.00--511.15)
Add
Delete
Delete All
Modify
Import
Export
OK

Lamp:

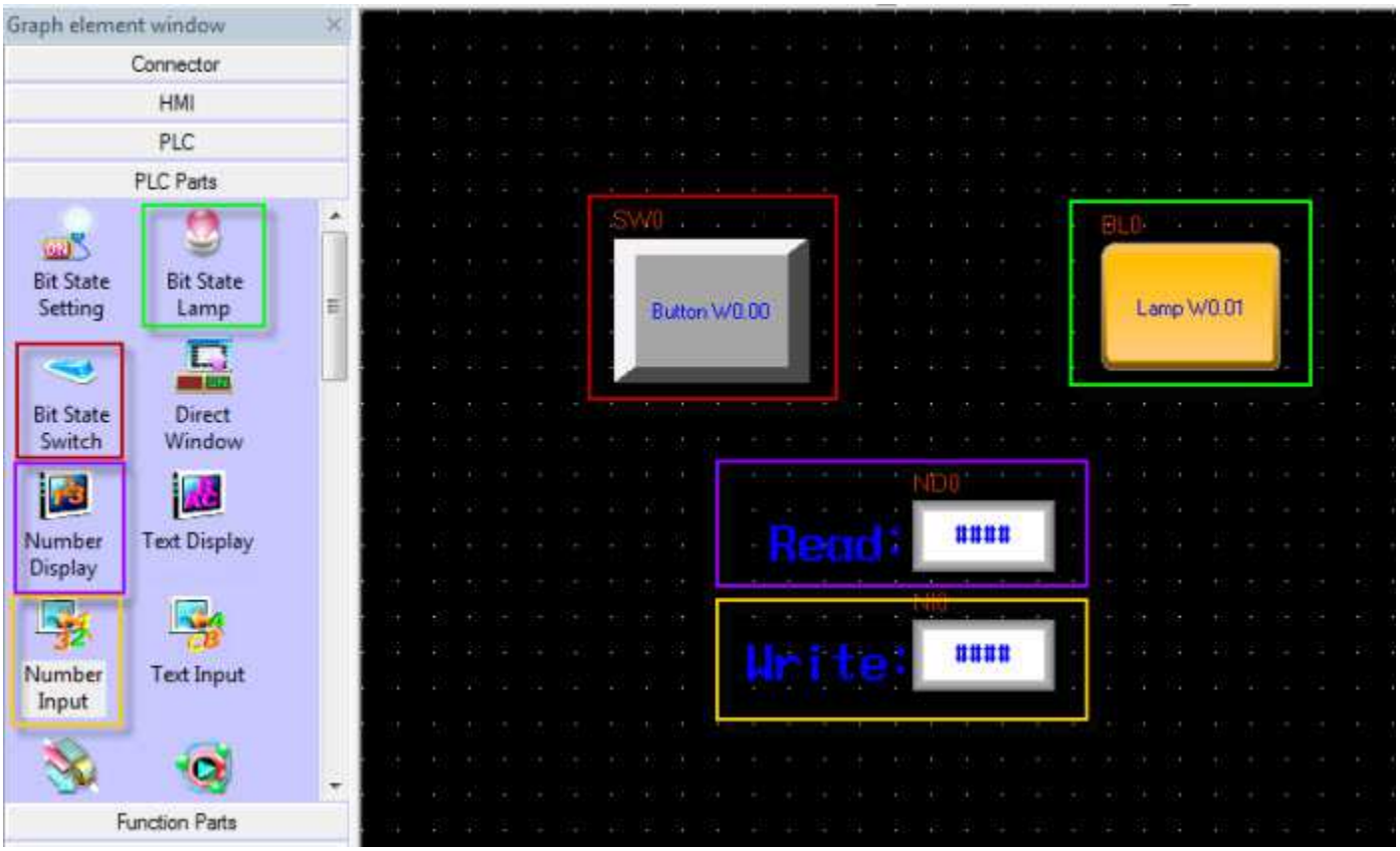

Address Tag
Name
HMI No.
PLC No.:Stati...
DataType
Address Type
Address
NB_Button
HMI0
PLC0:1
Bit
W_bit
0.00
Build Address Tag
Tag Name
NB_Lamp
OK
HMI
HMI0
Cancel
PLC No.
0
Data Type
Bit
Address Type
W_bit
Address
0.01
Code Type
BIN
Format(Range)
DDD.DD (0.00--511.15)
Add
Delete
Delete All
Modify
Import
Export
OK

Word:

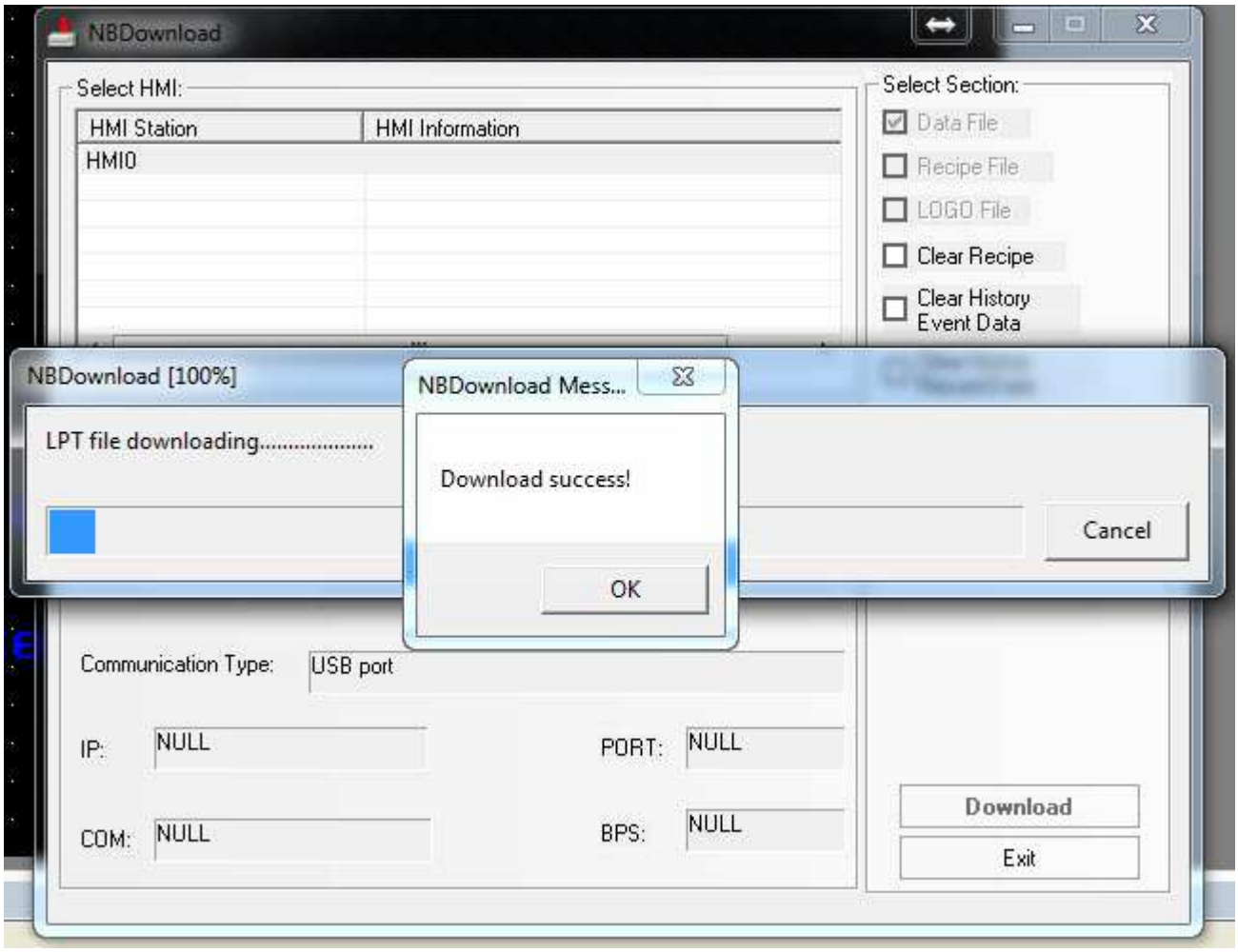


Step 5: Create your application in the NB HMI screens that you can find under the Project Structure window on the right.

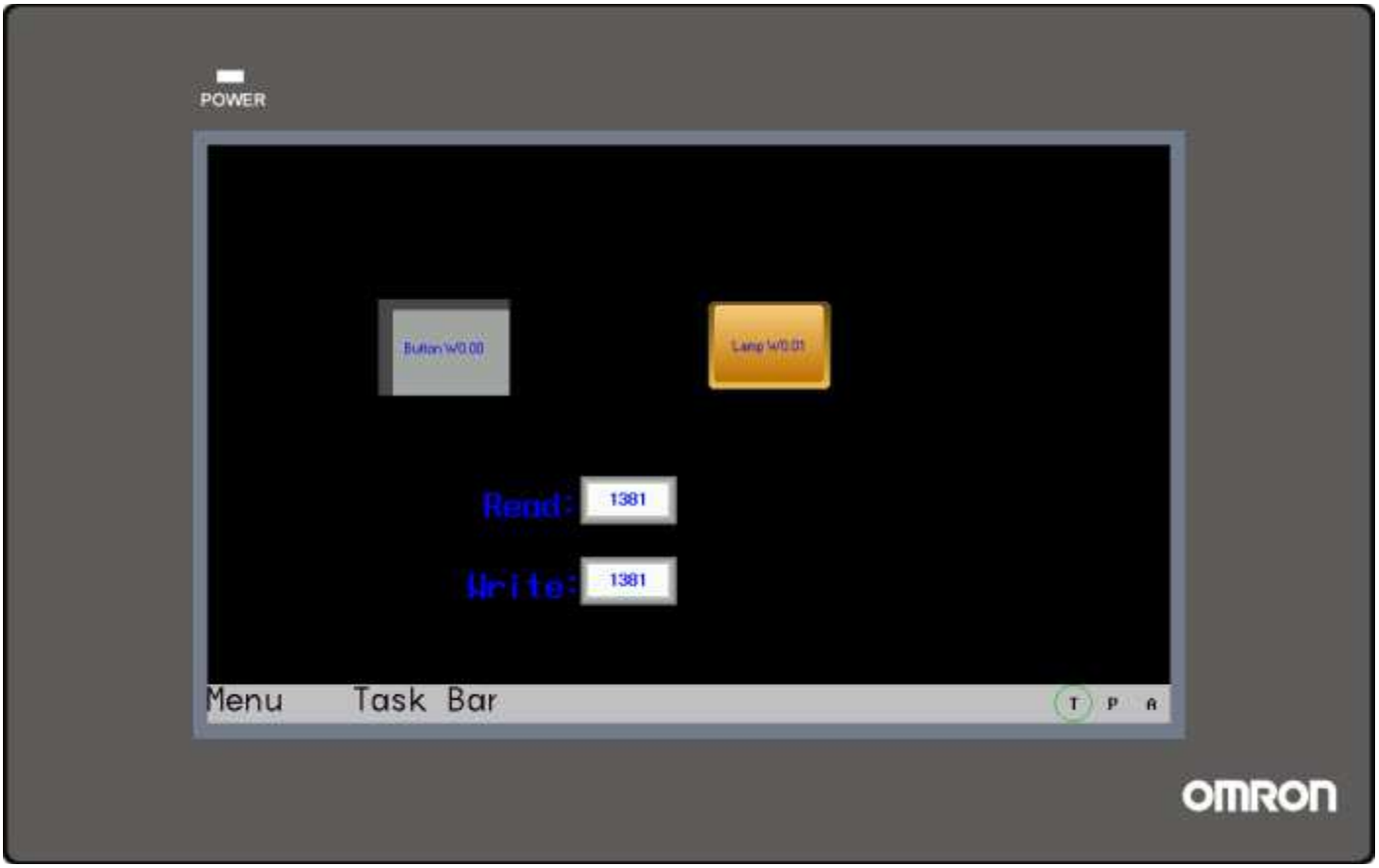
In this example we have one button that activates one lamp and also will add 1 to a word address as long it is active.

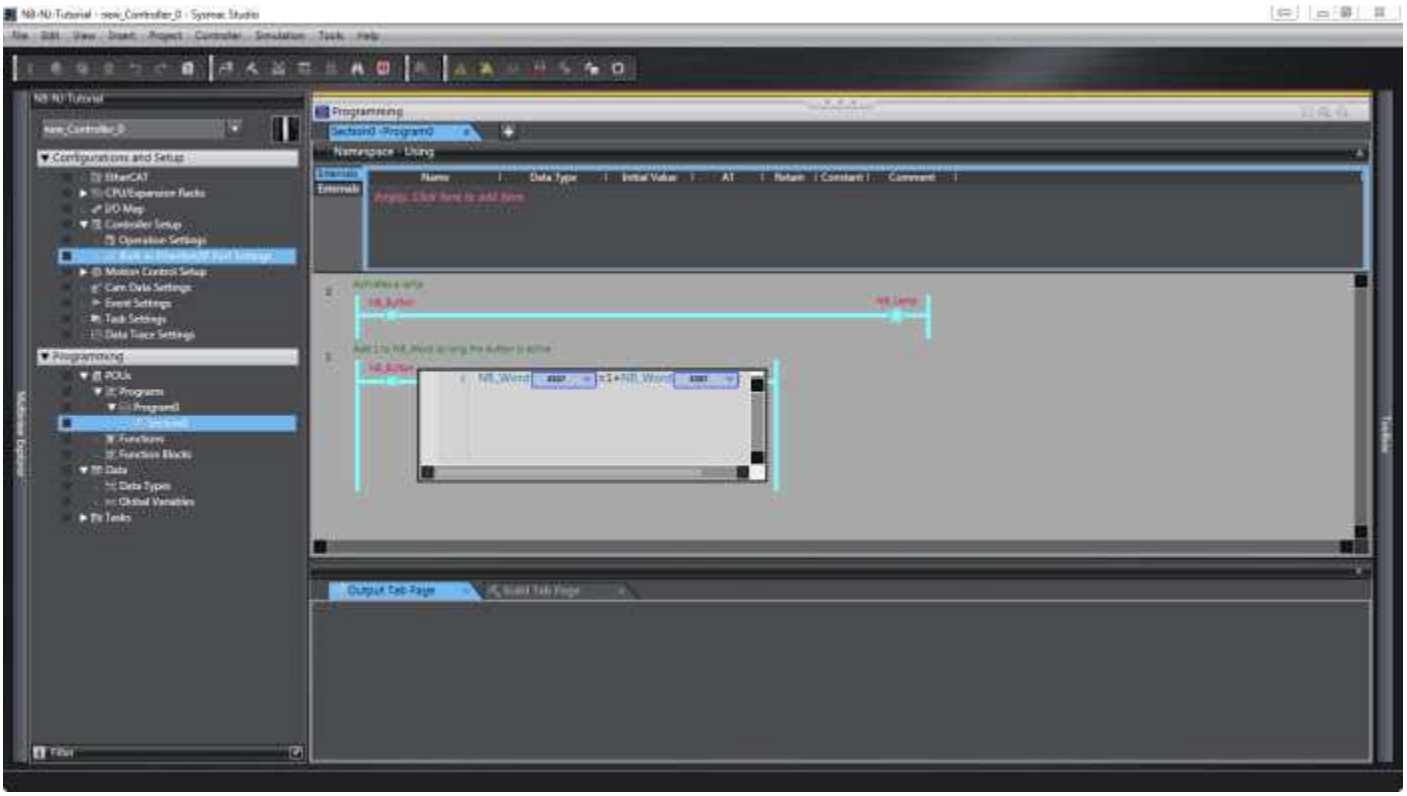


Step 6: Download your application to your NB HMI.



Now the setup and programming are done. When the NB HMI is connected to the NJ controller via the CJ1W-SCU42 it will read and display the values of the required variables


POWER
Button W0.00
Lamp W0.01
Read:
1381
Write:
1381
Menu
Task Bar
T
P
A
OMRON



Link:
http://www.myomron.com/index.php?action=kb&print=1562

Comments

Translate: English