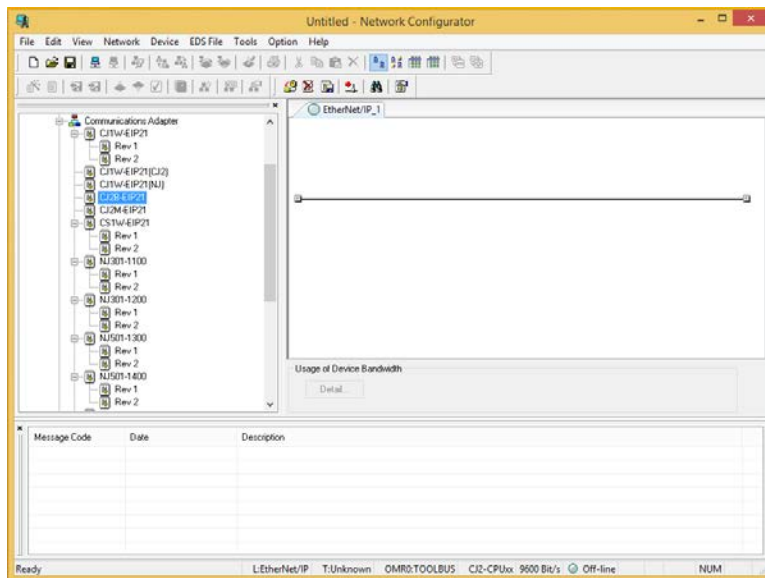
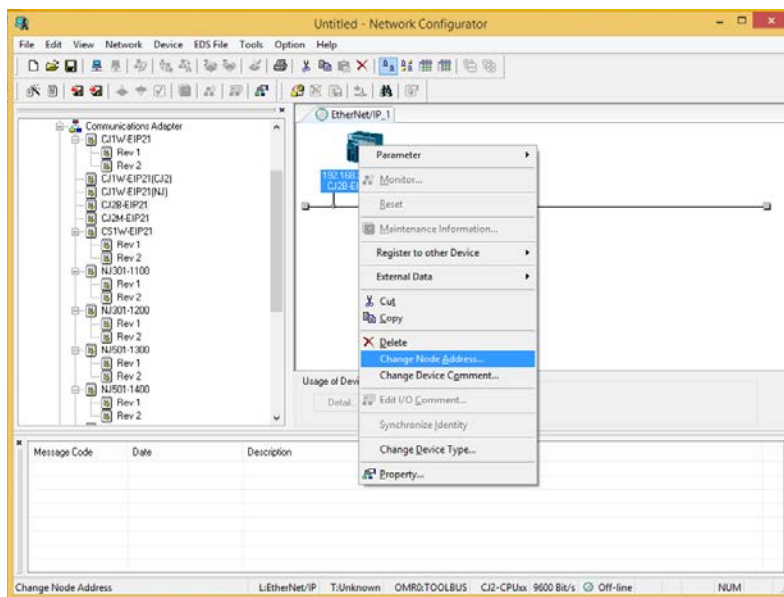


Establishing an EtherNet/IP Connection between a VE smart camera and Omron CJ2H PLC

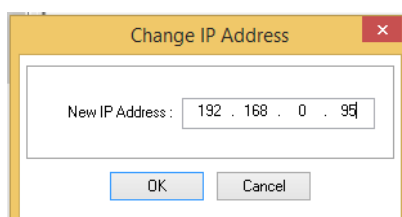
1. Open the Omron Network Configurator software.



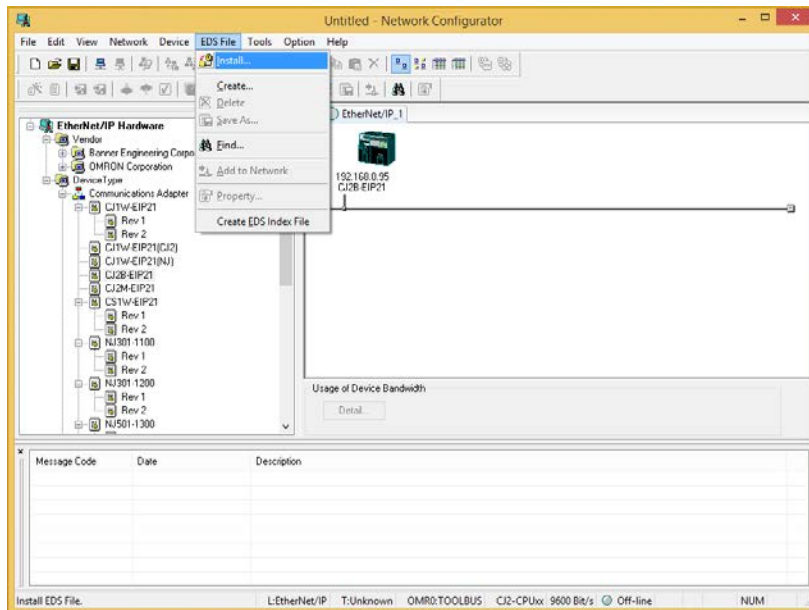
2. Add the correct PLC to the network. Then right click on the PLC to change it's IP address.



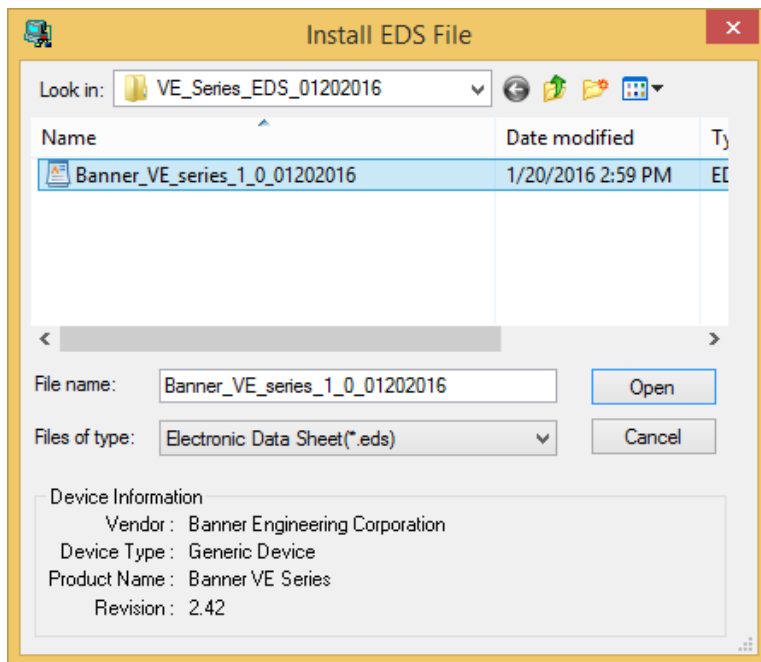
3. Here is the PLC's IP address



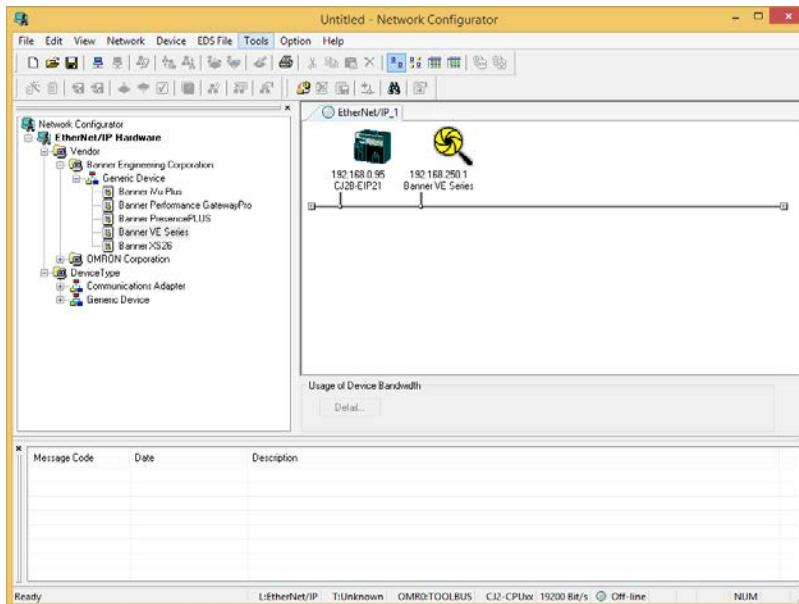
4. Install the VE EDS file. Choose EDS_File, then Install.



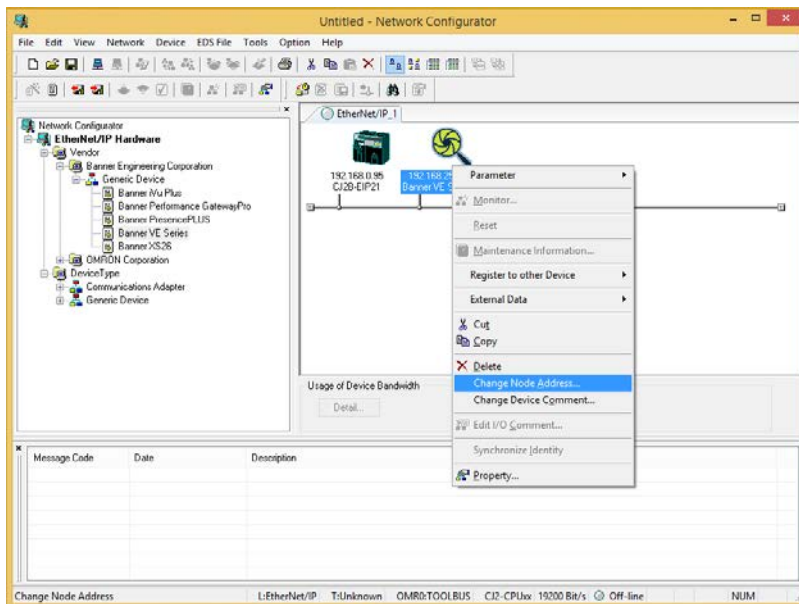
5. Choose the EDS file.



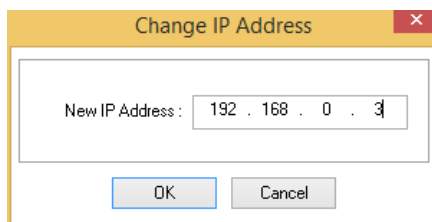
6. Double click the new item from the list at left to add it to the network.



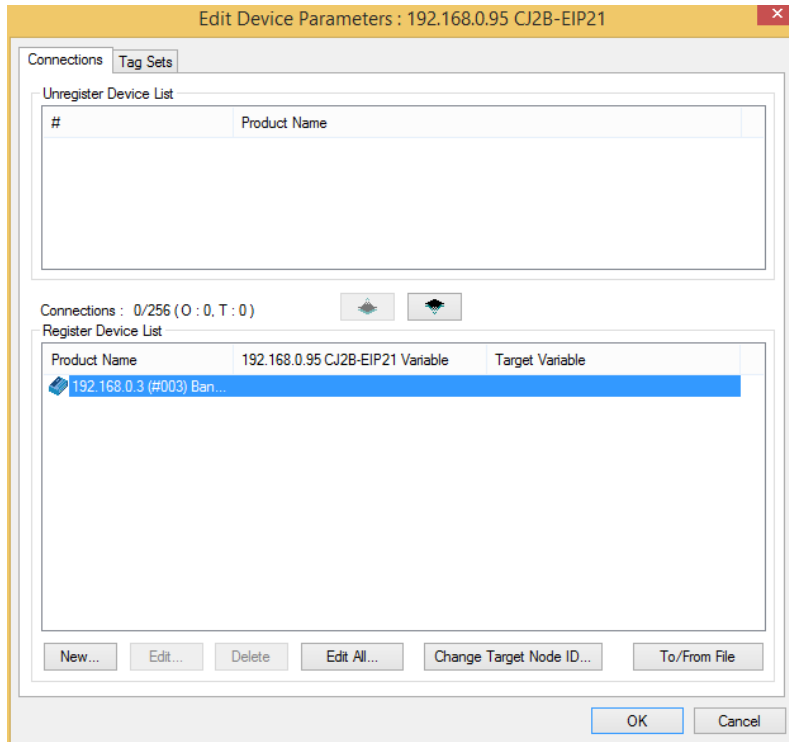
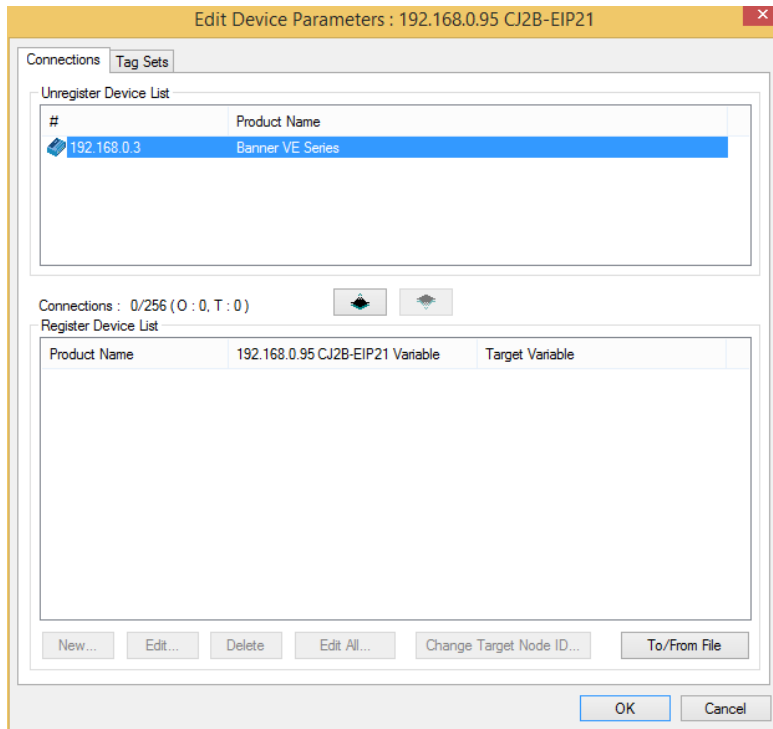
7. Right click on the smart camera to change the IP address.



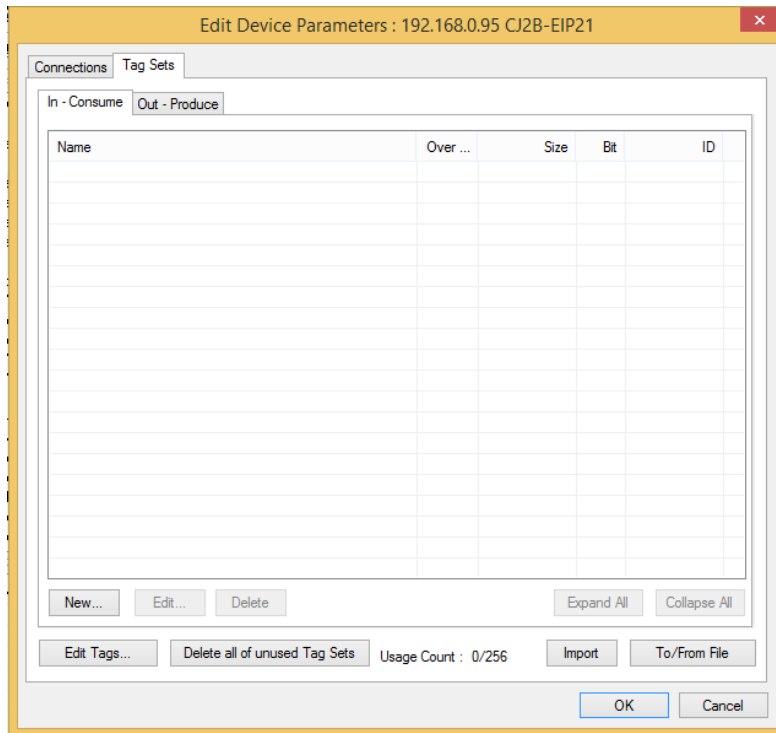
8. Enter the smart camera's IP address.



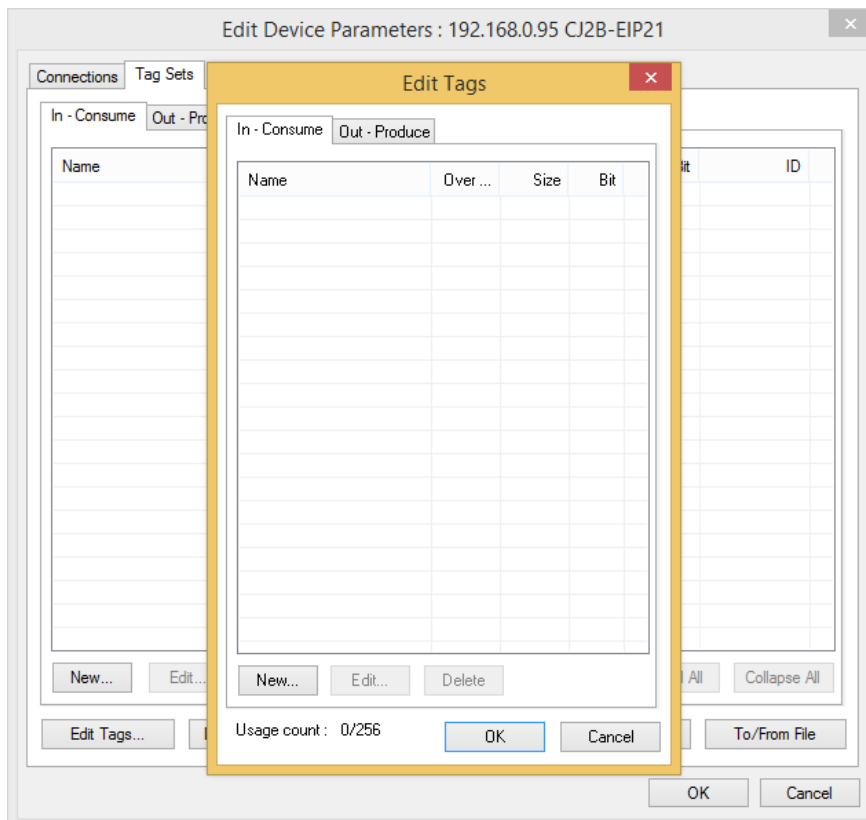
9. Double click on the PLC icon to edit the device parameters. Choose the smart camera from the “Unregister Device List”, then click the down arrow to send it to the “Register Device List”.



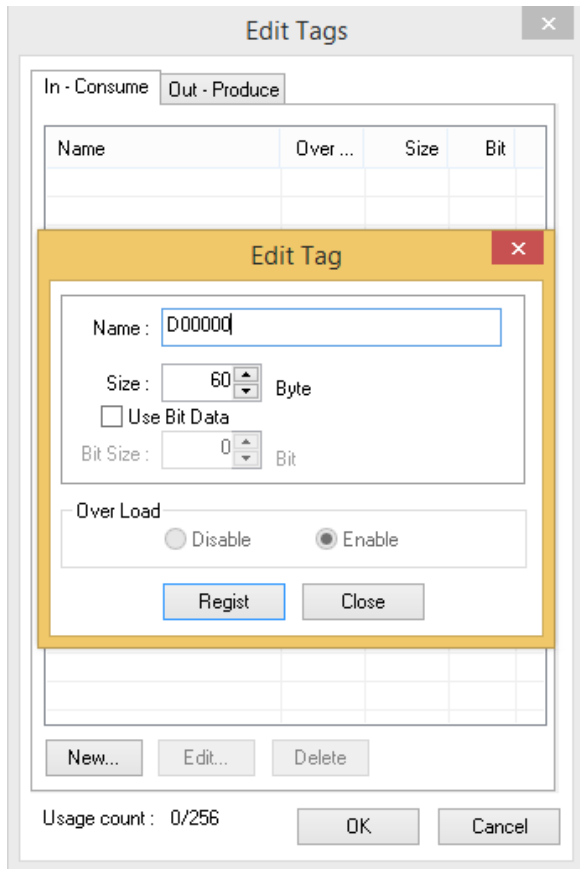
10. Click on the “Tag Sets” tab (to see the window below), then click the “Edit Tags...” button.



11. Choose the “In- Consume” tab, then click “New”.

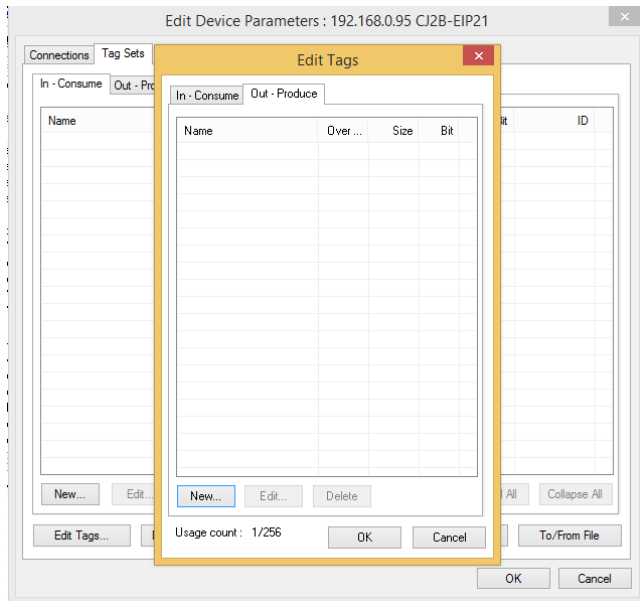


12. Choose an appropriate type and size CPU Data Area. In our case, the smart camera will be sending out 16-bit words, so the DM area works. Choose a number of bytes equal to the desired smart camera assembly. Here we are looking at “In- Consume” (from the PLC’s point of view), which is the T→O assemblies. See the **VE Instruction Manual** for more information on the assembly objects. Your choices are:
- 100 (0x64), size 60 bytes
 - 101 (0x65), size 480 bytes
 - 102 (0x66), size 120 bytes



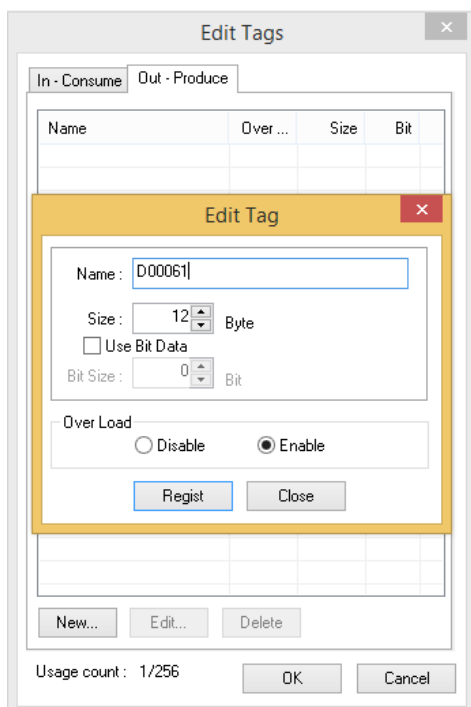
13. After filling in the Name (remember that this refers to a CPU Data Area on the PLC) and size in bytes, click the “Regist” button, then click “Close”.

14. Click on the Out- Produce tab, then click “New”.

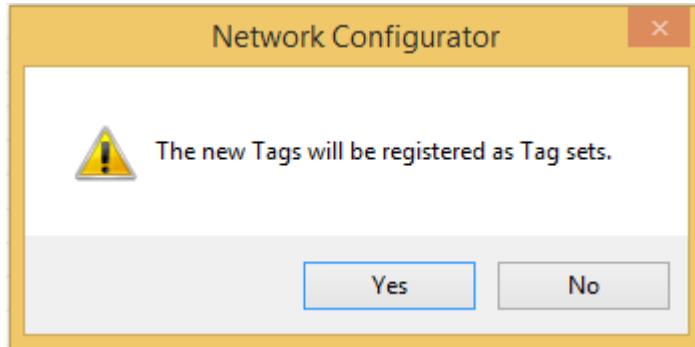


15. Choose an appropriate type and size CPU Data Area. In our case, the vision sensor expects 16-bit words as inputs, so the DM area works. Choose a number of bytes equal to the desired smart camera assembly. Here we are looking at “Out- Produce” (from the PLC’s point of view), which is the O→T assemblies. We have one choice here. See the **VE Instruction Manual** for more information on the assembly object.

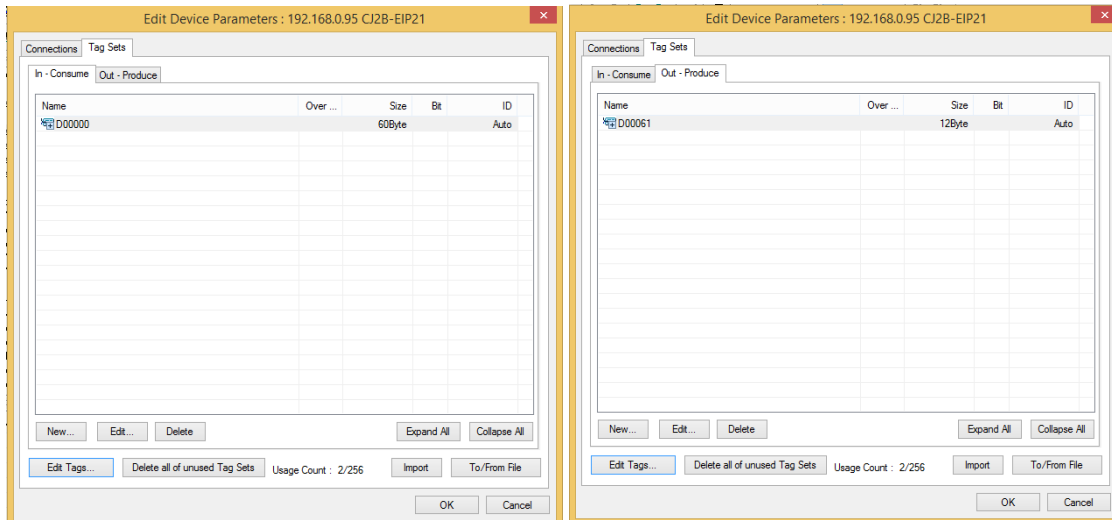
a. 112 (0x70), size 12 bytes



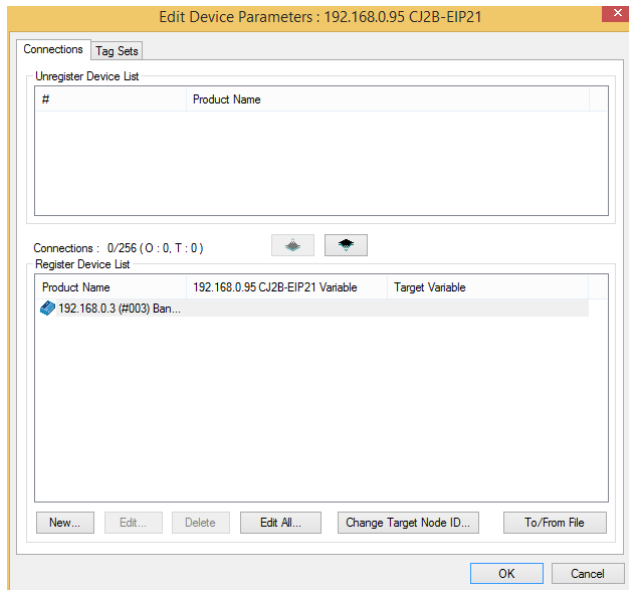
16. After filling in the Name (remember that this refers to a CPU Data Area on the PLC) and size in bytes, click the "Regist" button, then click "Close".
17. Click OK on the Edit Tags window, then click Yes when the software tells you "The new Tags will be registered as Tag sets."



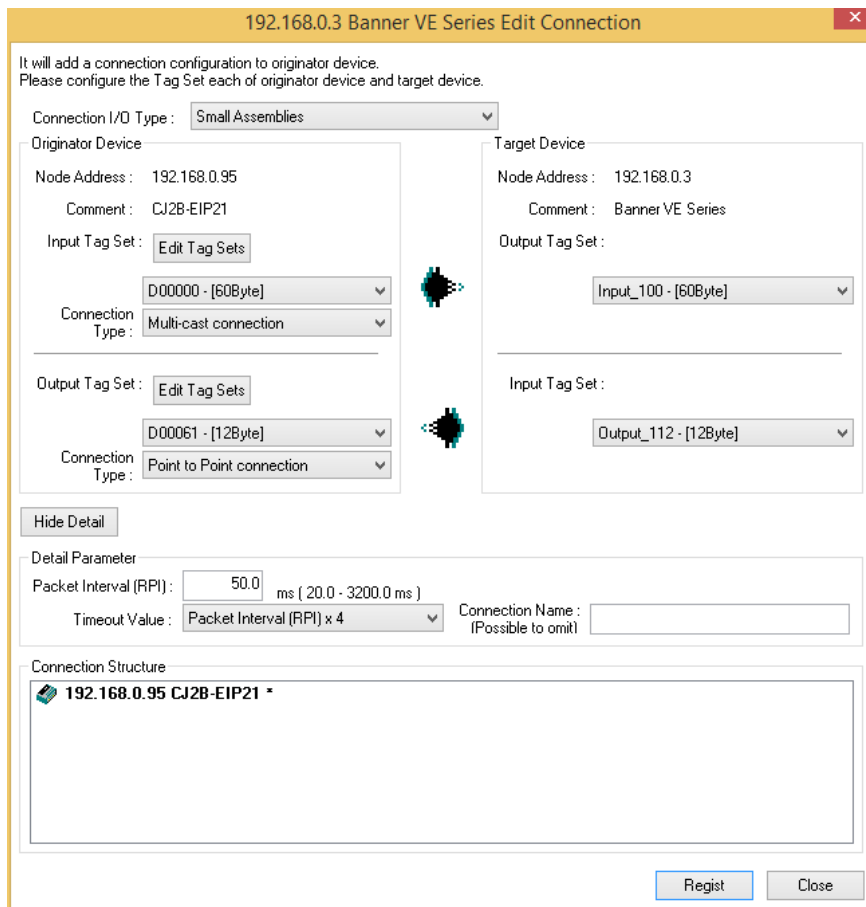
18. Double check the tags by clicking on both the In- Consume and Out- Produce tabs.



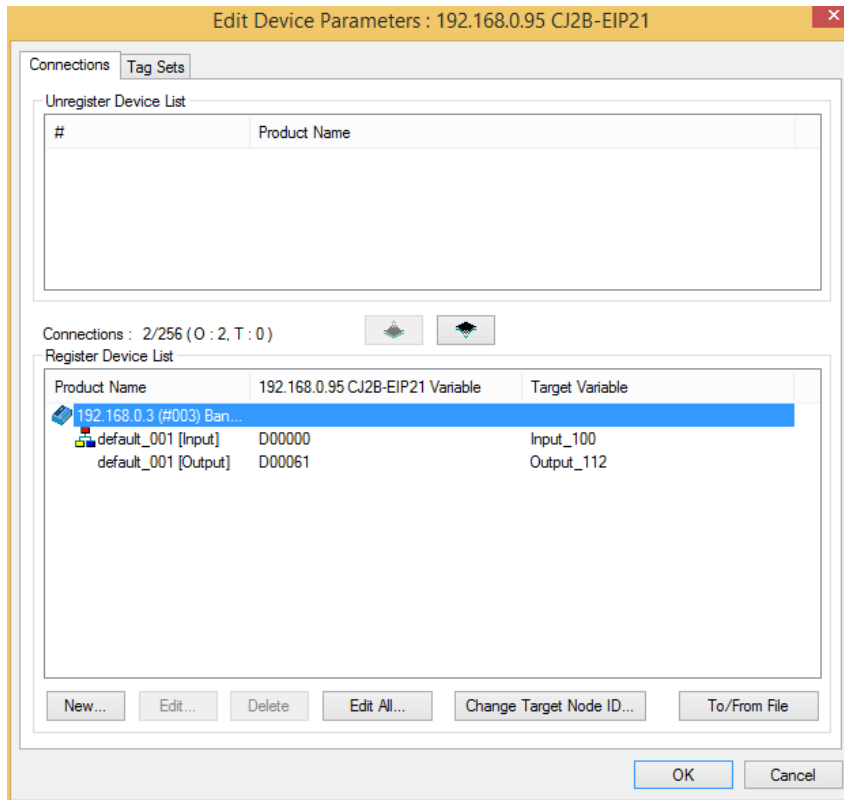
19. Go back to the “Connections” tab (to see the window below) then double click on the smart camera seen in the “Register Device List” to bring up the Edit Connection window.



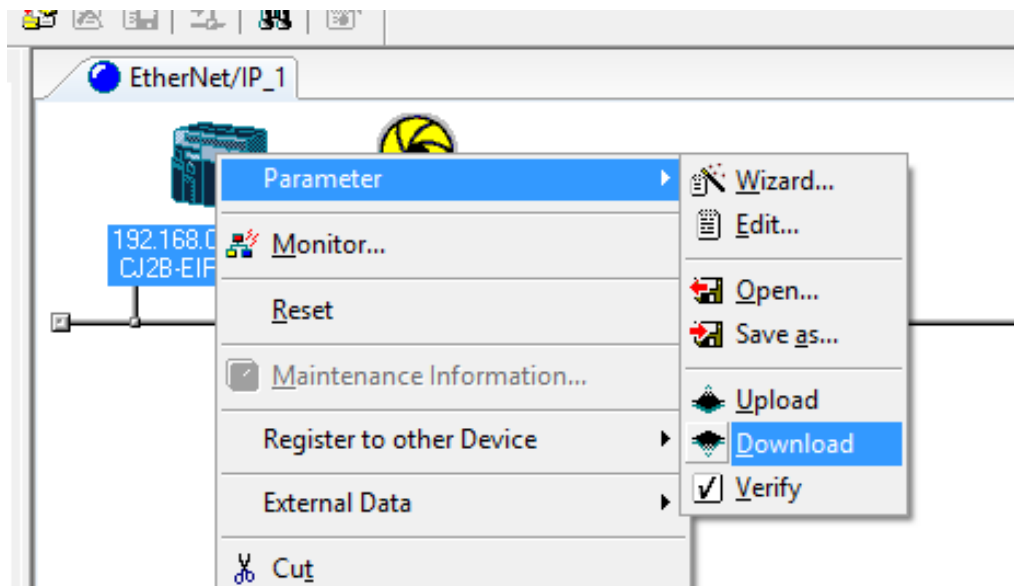
20. Fill in the connections and RPI, then click “Regist”, then “Close”.



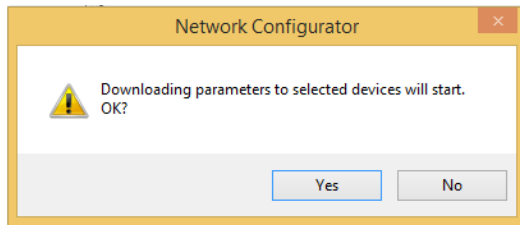
21. Now click "OK".



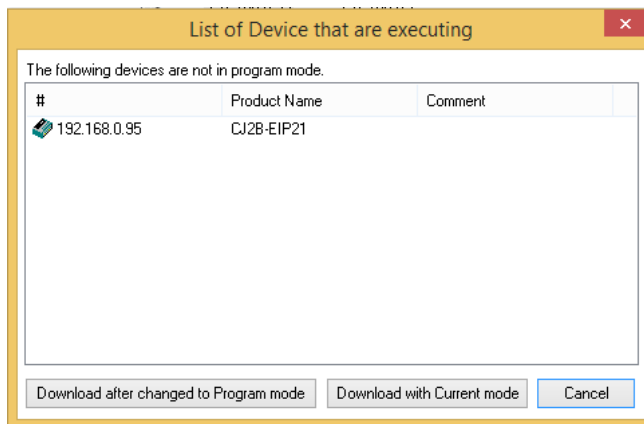
22. Go online and download the configuration to the PLC.



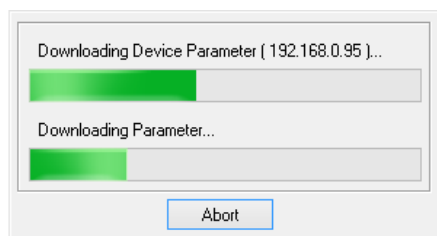
23. Click Yes.



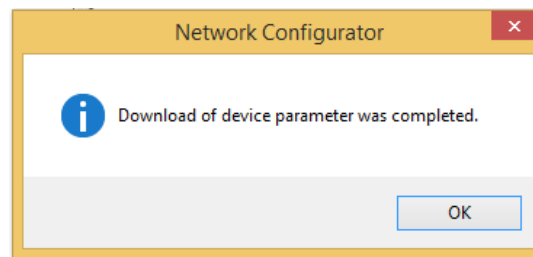
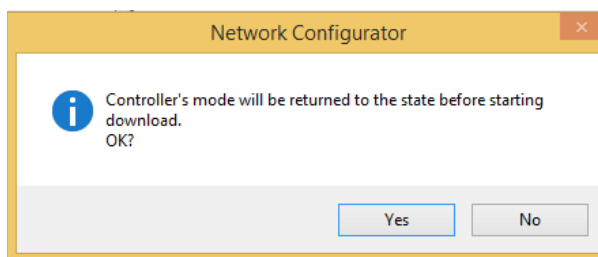
24. Choose a Download option.



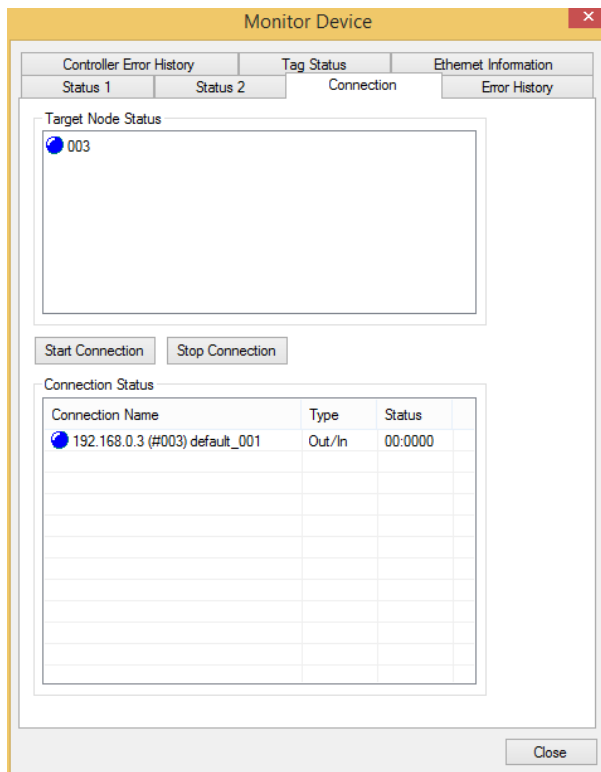
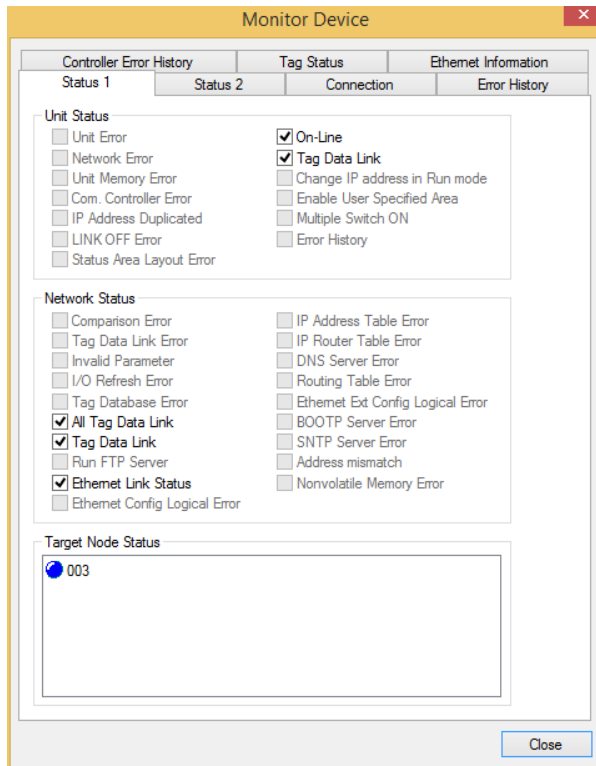
25. Downloading...



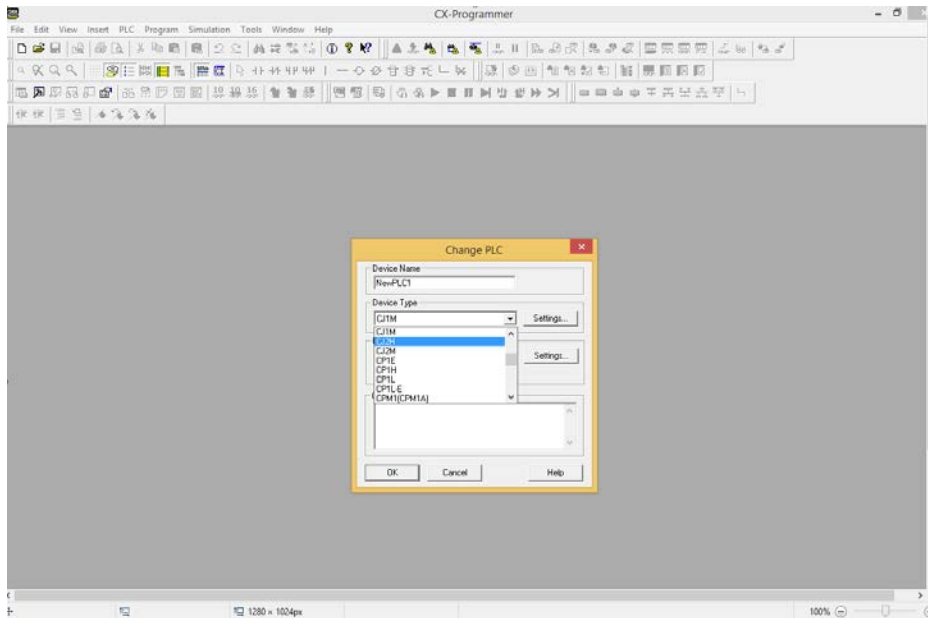
26. Click Yes, then click OK.



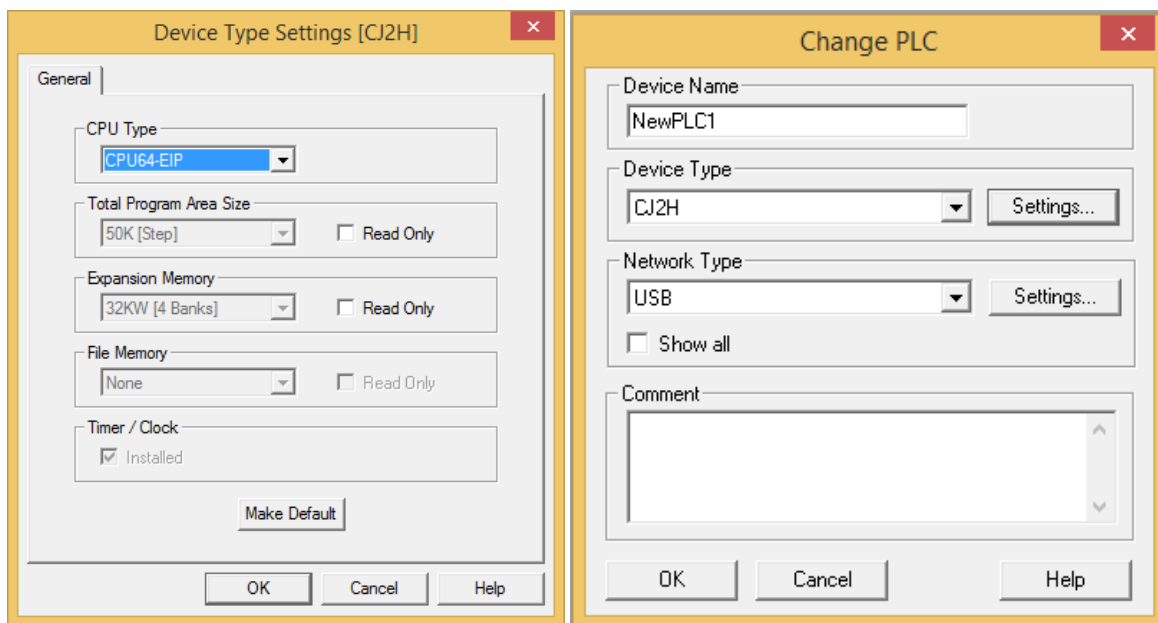
27. Now we can right click on the PLC icon and choose "Monitor". This window can tell us if the connection looks good. Blue icons indicate a connection running fine, without errors.



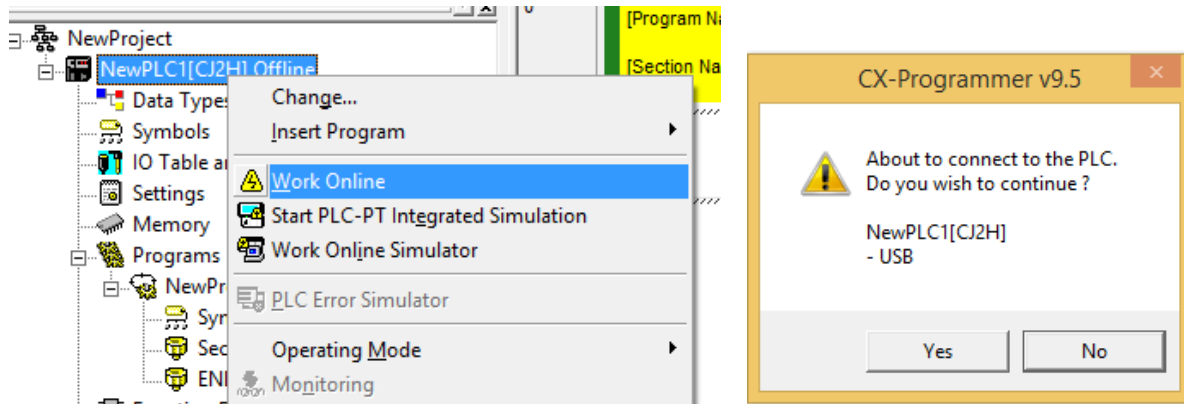
28. Now we can open the CX Programmer software. Click on File → New, then choose a PLC model and click “Settings”.



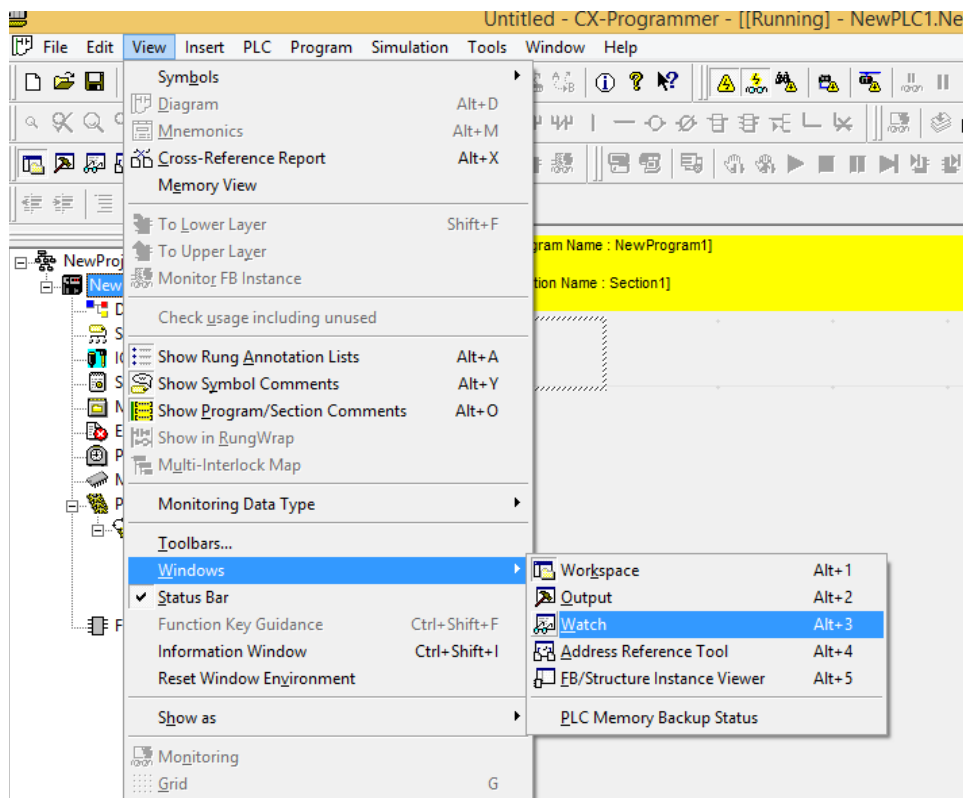
29. Choose a Type and click OK, then choose a Network Type and click OK.



30. Go Online with the PLC. Click Yes.



31. Go to View→Windows→Watch



32. Click on the top line in the Watch window.

PLC Na...	Name	Address	Data Type / Format	FB Usage	Value	Value(...	Comment

33. Add some registers to the watch window.

PLC: NewPLC1

Name or address: D0000Q Browse...

Data Type / Format: INT (Signed Decimal,Channel)

OK Cancel

PLC Na...	Name	Address	Data Type / Format	FB Usage	Value	Value(Binary)
NewPLC1		D0	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D1	INT (Signed Decimal,Channel)		+35	0000 0000 0010 0011
NewPLC1		D2	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D3	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D4	INT (Signed Decimal,Channel)		+1	0000 0000 0000 0001
NewPLC1		D5	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D6	INT (Signed Decimal,Channel)		+410	0000 0001 1001 1010
NewPLC1		D7	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000

In the watch window above, we see the first 8 registers of VE Output (PLC Input) data. Notice how the current inspection number (registers D4 and D5) is listed as “1”.

34. You can add some more registers (PLC Outputs/VE Inputs) to control the sensor.

The screenshot shows the 'Edit dialog' window. The title bar is yellow with the text 'Edit dialog' and a red close button. The dialog contains the following elements:

- PLC:** A dropdown menu with 'NewPLC1' selected.
- Name or address:** A text box containing 'd61' and a 'Browse...' button.
- Data Type / Format:** A dropdown menu with 'INT (Signed Decimal,Channel)' selected.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

PLC Na...	Name	Address	Data Type / Format	FB Usage	Value	Value(Binary)
NewPLC1		D0	INT (Signed Decimal,Channel)		+4	0000 0000 0000 0100
NewPLC1		D1	INT (Signed Decimal,Channel)		+35	0000 0000 0010 0011
NewPLC1		D2	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D3	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D4	INT (Signed Decimal,Channel)		+1	0000 0000 0000 0001
NewPLC1		D5	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D6	INT (Signed Decimal,Channel)		+747	0000 0010 1110 1011
NewPLC1		D7	INT (Signed Decimal,Channel)		0	0000 0000 0000 0000
NewPLC1		D61	INT (Signed Decimal,Channel)		+4	0000 0000 0000 0100

Note how when register D61 is equal to "4" (meaning the Trigger is being asserted) that we also see register D0 reported back as a "4" (meaning the Trigger ACK flag, bit 2, is also asserted).