Technical Note

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Controlling Allen Bradley Remote I/O with a Schneider Electric M340 PAC

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Document Information

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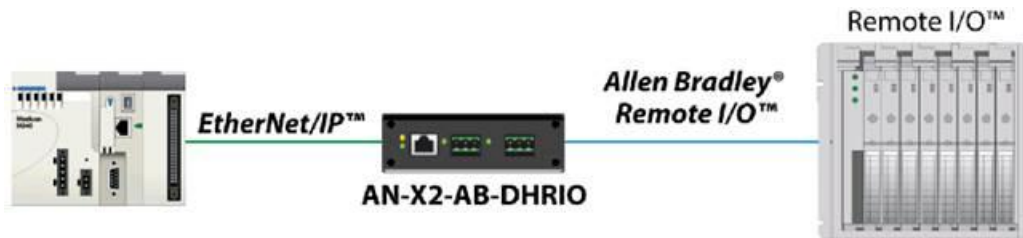Bakersfield, CA 93311
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This Technical Note will illustrate how to use an AN-X2-AB-DHRIO to scan classic PLC5 Remote I/O using a Modicon M340 with a NOC0401 EtherNet/IP communication card.
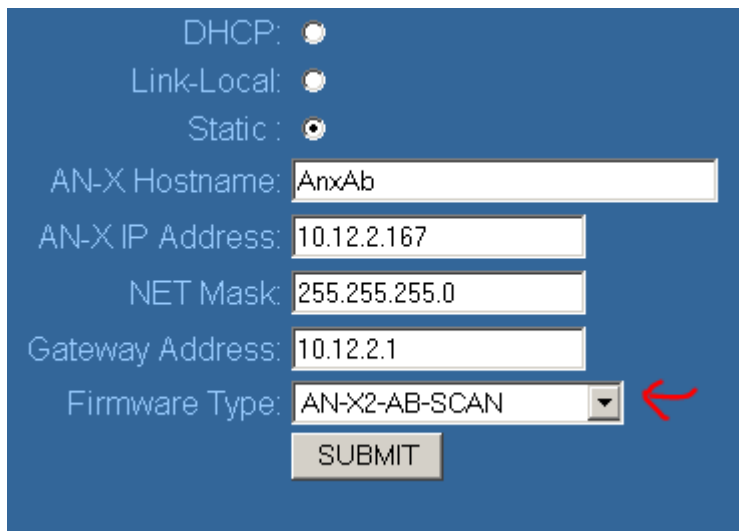
This tech note assumes that you have already assigned your AN-X2-AB-DHRIO an available IP address in the same IP Subnet as both your NOC0401 and your PC (or that they can be reached via a router if not), and that both the AN-X2-AB-DHRIO and your PC are on the same physical Ethernet network as your NOC0401 via a hub, switch, or router. If you have not already changed your AN-X2-AB-DHRIO's IP address, the default IP is the link local address 169.254.42.84, please either put your PCs IP address into that IP range (for example, giving your IPv4 the manual address 169.254.42.83 with a subnet mask of 255.255.255.0 and no gateway) or set up a path to it as can be seen demonstrated at the beginning of the majority of our AN-X2-AB-DHRIO tutorial videos (regardless of what is being demonstrated they nearly all begin by demonstrating how to access a new AN-X2-AB-DHRIO using its default link local address which is the same for all AN-X2-AB-DHRIO firmwares and applications).

Step 1: Enter the IP address of your gateway into your preferred web browser to bring up the web GUI, expand out Administration on the left, and click on AN-X2 Configuration.
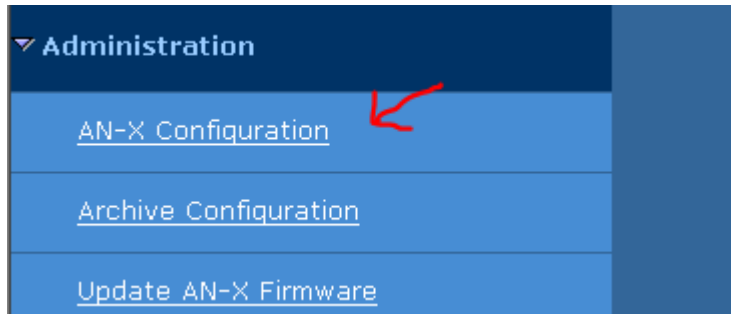
Step 2: If the IP address, Net mask and or Gateway Address are not what you would like them to be, please change them now. For most applications we recommend setting a Static IP address. Then, click the drop down arrow on the right of Firmware Type and select AN-X2-AB-SCAN. Finally, click Submit. Note, this step is only necessary if you have not already performed this option previously to switch the AN-X2-AB-DHRIO into AB SCAN mode.

Step 3: Click Continue to reboot, on the next screen wait 60 seconds, then Click Continue again.

Note: You may need to hold Ctrl and hit F5 at the same time (or Shift + F5 on some browsers) in order to refresh the cache after this process is complete in order to bring up the new AB SCAN mode screen.

Step 4: Physically connect the Gateway to the Remote I/O networks, and then launch AnxAbRioCfgScan.exe (located in the Remote IO Scanner Files zip file located under the Downloads tab for the AN-X2-AB-DHRIO on our website).

Note: The link and or website appearance may have changed, but the software should still be available on our website. If you cannot locate this software, please contact Prosoft Technical Support for assistance.

Step 5: Click Communication, then click Select AN-X IP Address, and enter IP Address of the Gateway.
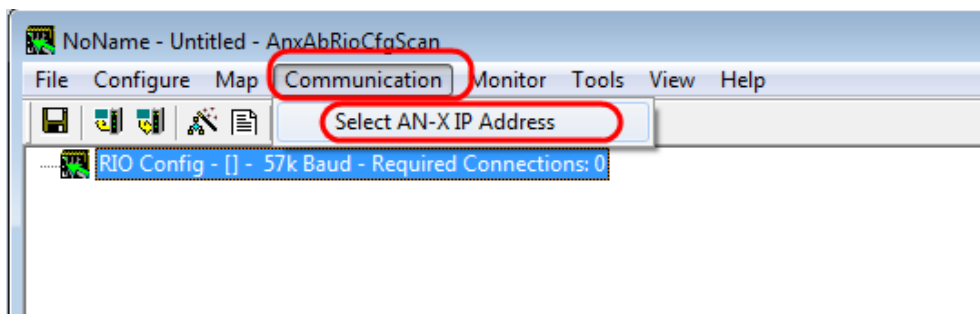
**Step 6: Click Configure, then Click Auto-Configure.**
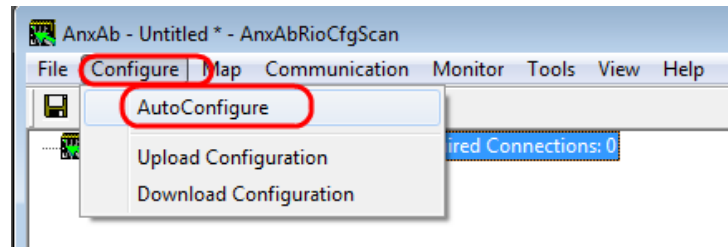
NOTE: The gateway will automatically detect the baud rate of the Remote I/O network in addition to detecting any remote racks of I/O that are present on the network. If no rack are detected, please recheck your wiring (try swapping the polarity of the wires and trying again, or make certain that you have proper terminating resistors for the baud rate of your network even if the network had been working previously without them).

Step 7: Review the Racks and modules discovered to ensure that all are present
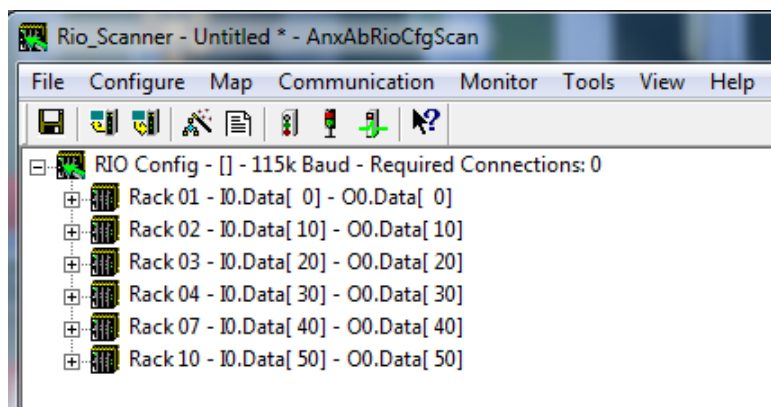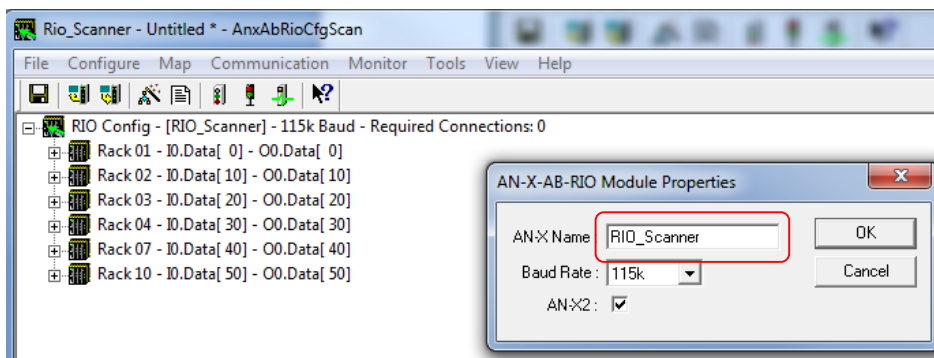
Step 7a(Optional): Specify the Name of the gateway

Right click on the top line and select properties
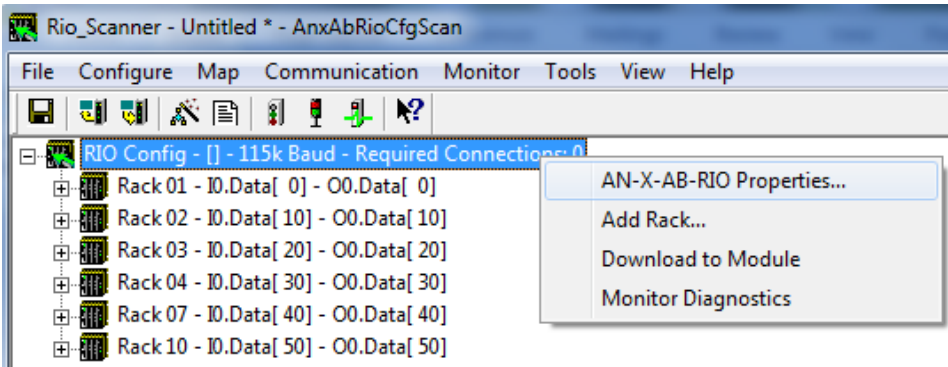

Enter the name

Step 7b: Configuring Block Transfers (Not all devices or applications require these)

It is important to note that Block Transfers must be manually configured. If this application is replacing an existing PLC5 application, the Block Transfers can be most easily configured by referencing the existing BTR and BTW instructions that existed in the legacy PLC5.

Part 1: Examine old ladder and then navigate to the Rack / Group / Slot where a BTR or BTW is needed Right Click and select properties
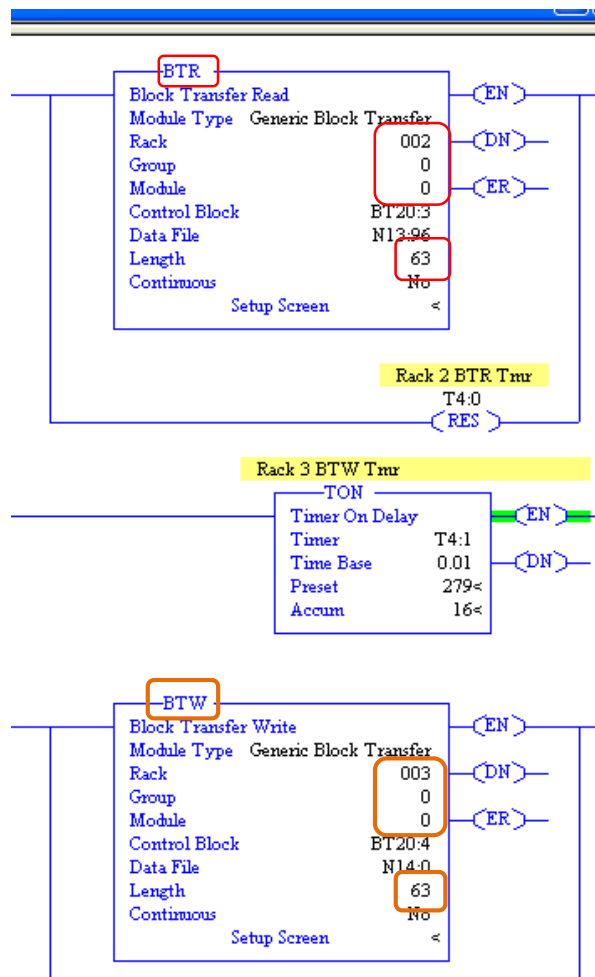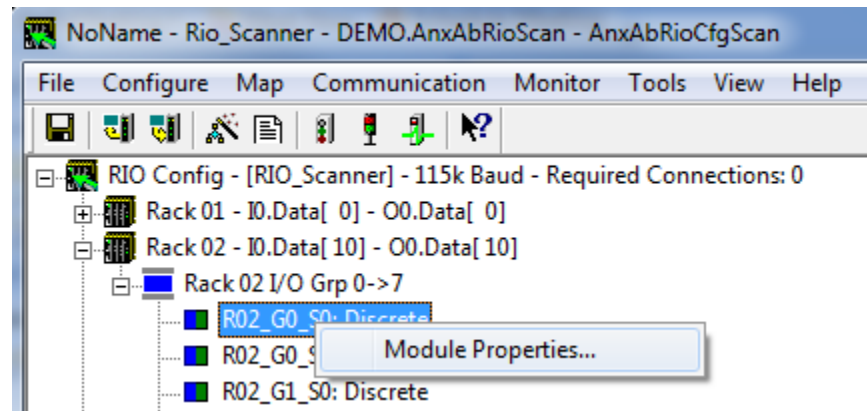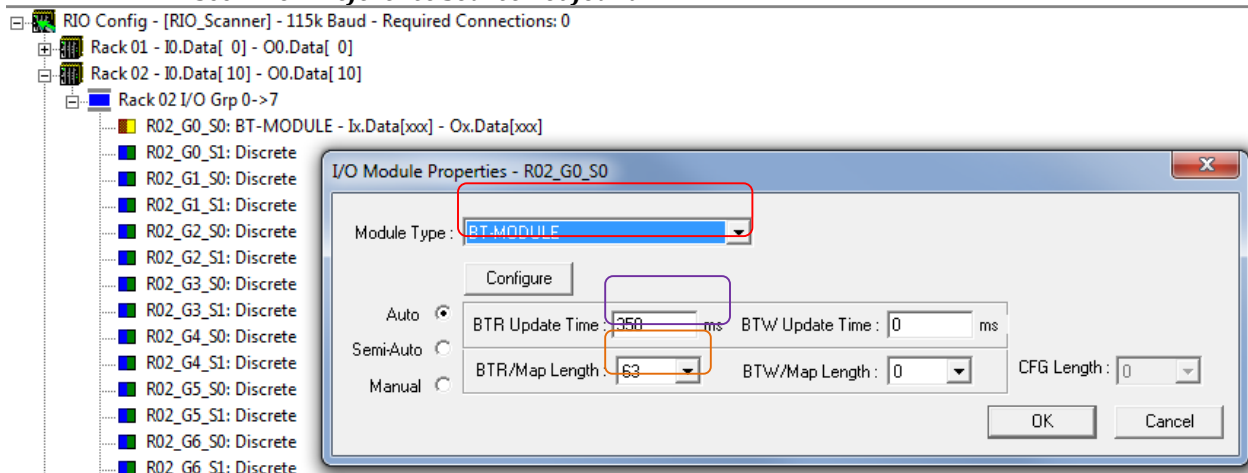
Part 2: Configure a BTR

Select BT-Module in the Module Type drop down list

Enter correct Length in the BTR Length drop down list

Specify BTR Update Time

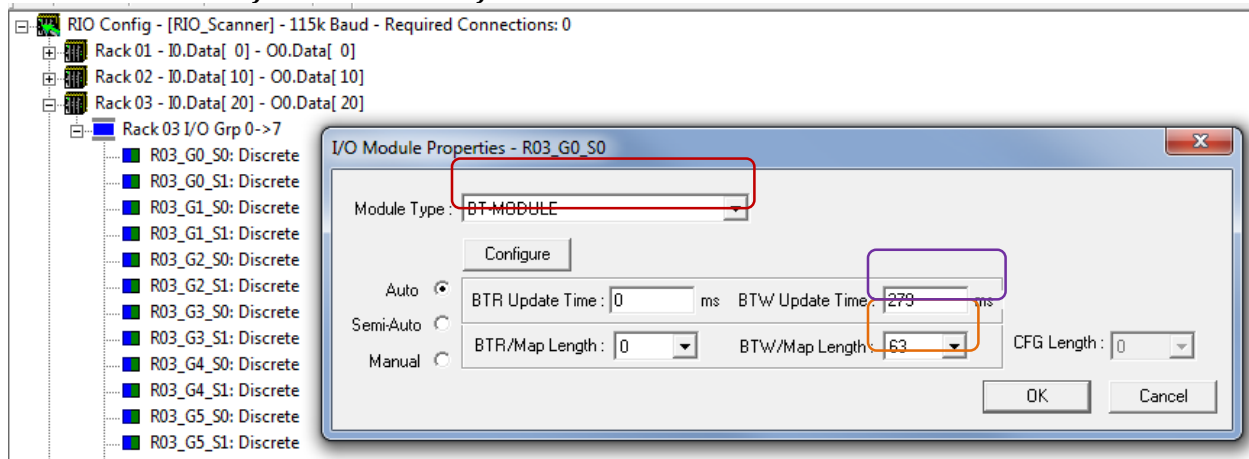See **Error! Reference source not found.**

Part 3: Configure a BTW

Select BT-Module in the Module Type drop down list

Enter correct Length in the BTW Length drop down list
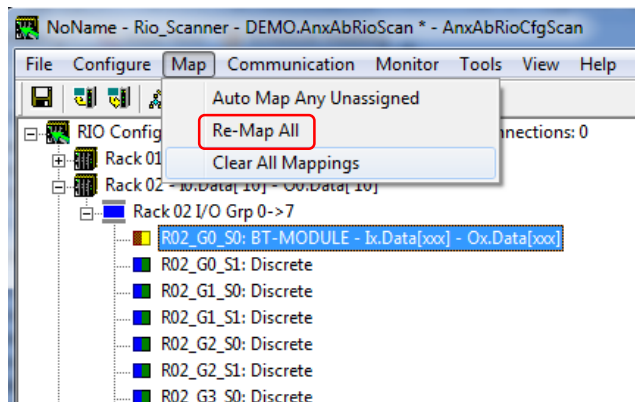
Specify BTW Update Time

See *Error! Reference source not found.*

NOTE: If a specific Rack, Group, and Slot has both a BTR and a BTW you can enter them at the same time since this is done in the same I/O Module Properties window.
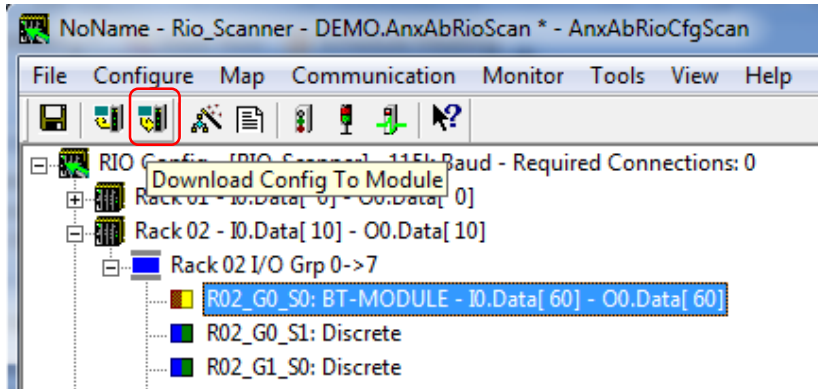
Step 7c: Reconfigure Mappings to include All BTRs and BTWs (Only required if BTR or BTWs were created)
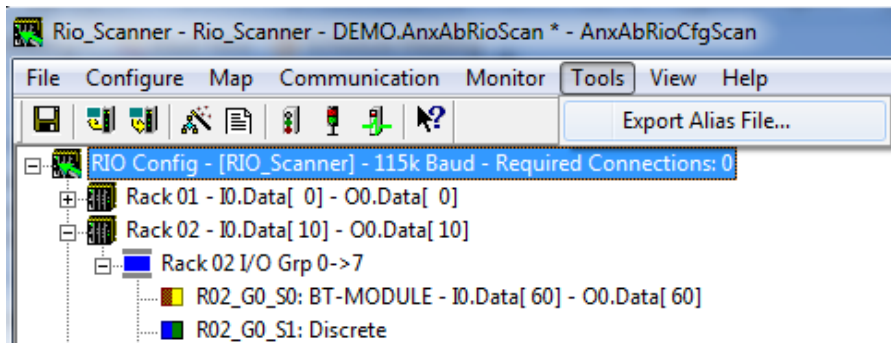
Select Re-Map All

Step 8: Download Configuration to the Gateway

Click the download icon

Step 9: Export Alias tags

Note: We will not be able to use these Alias tags in a Modicon M340 system, but they are still useful for referencing how the data is laid out in the Derived Variables we will be creating.

Step 10: Open your Unity Project (or upload it from your M340 if you are not certain you have the most recent version of it). For the sake of this demonstration we will be creating one from scratch for our BMX P34 2020 and its 8 slot rack, but if you already have a project, you can skip this and the other substep for step 10.
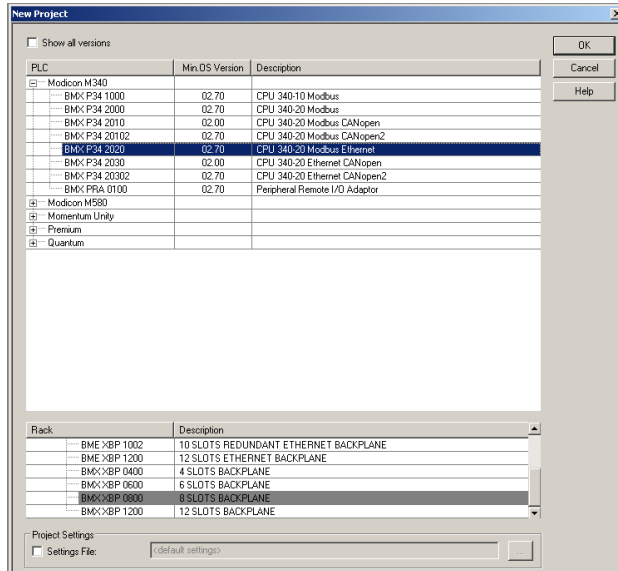
Step 10A: For the sake of our example, we have a NOC0401 in slot 01 for our EtherNet/IP communication, so we will add a NOC0401 into slot 01 in Unity by double clicking on Configuration to open the PLC bus window, then double clicking on slot 1 to open a New Device window, and selecting the NOC0401 from the communications section and hitting okay twice.
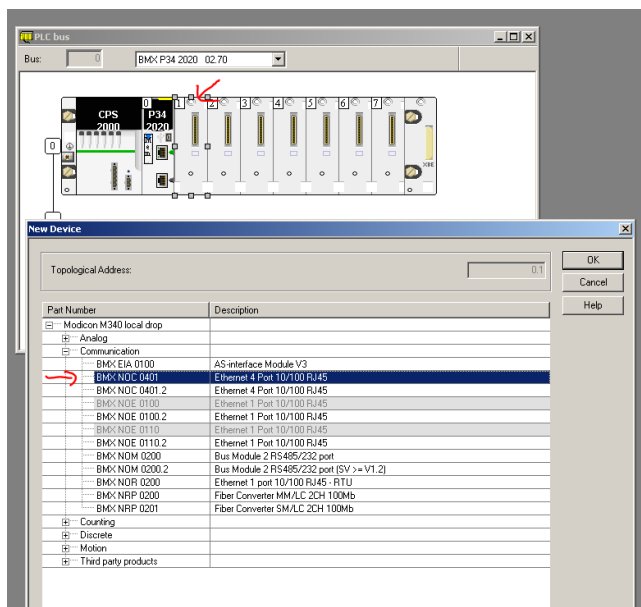
Step 11: Double click on the EtherNet/IP card (a NOC0401 in our example) and allocate enough inputs and outputs for all the data we will need (whatever data you already have + 250 inputs and +248 outputs). Our NOC0401 in this example has a few words of its own diagnostic data we need space for but that's all we need, so we've set the sizes accommodate that with a little extra to spare.
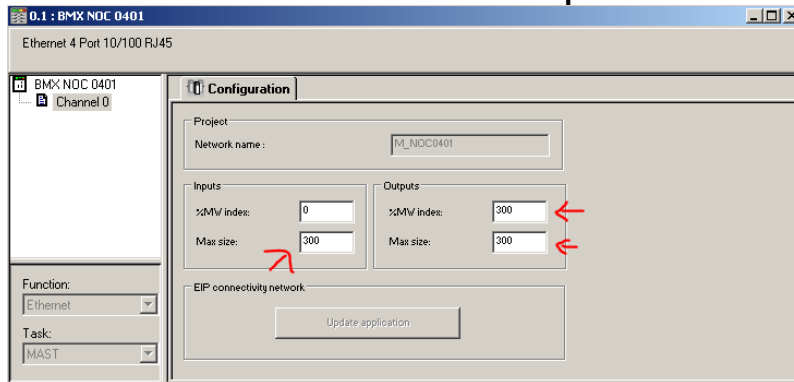

Then, validate your modifications.

Step 12: Open the DTM Browser window and right click on your EtherNet/IP card (a NOC0401 in our example) choose Device Menu -> Additional Functions -> Add EDS to Library. (This step is not required if you have installed this EDS previously).
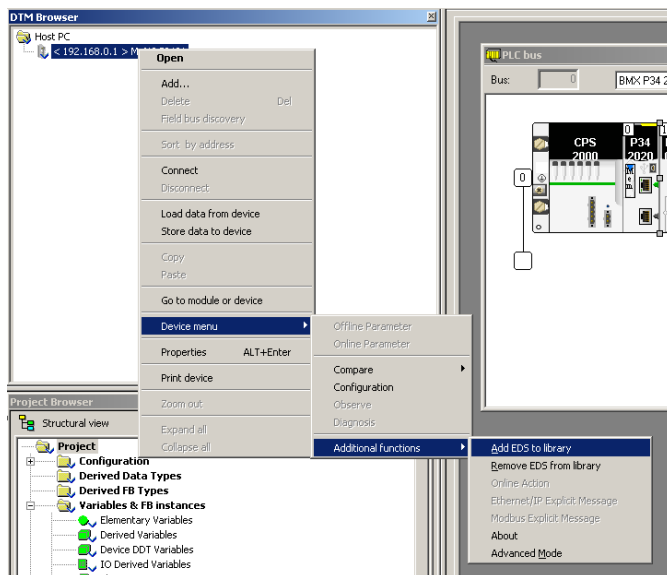

Walk through the EDS addition wizard, selecting the AB Scan EDS file (located in the Remote IO Scanner Files zip file located under the Downloads tab for the AN-X2-AB-DHRIO on our website).

Step 13: In the DTM Browser window and right click on your EtherNet/IP card (a NOC0401 in our example) again and choose Add:
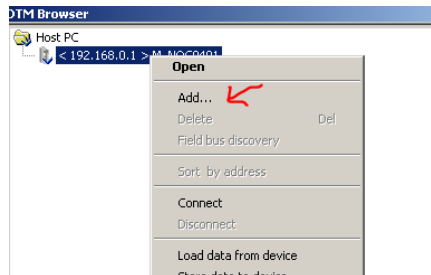

Select the AN-X-AB-SCAN (note, vendor may be our partner company Quest Technical Solutions) and click Add DTM, then Click OK (Note, if you will be talking through multiple AN-X2-AB-DHRIO you might also want to give each one a unique name on the Properties of device screen for clarity later before hitting OK).
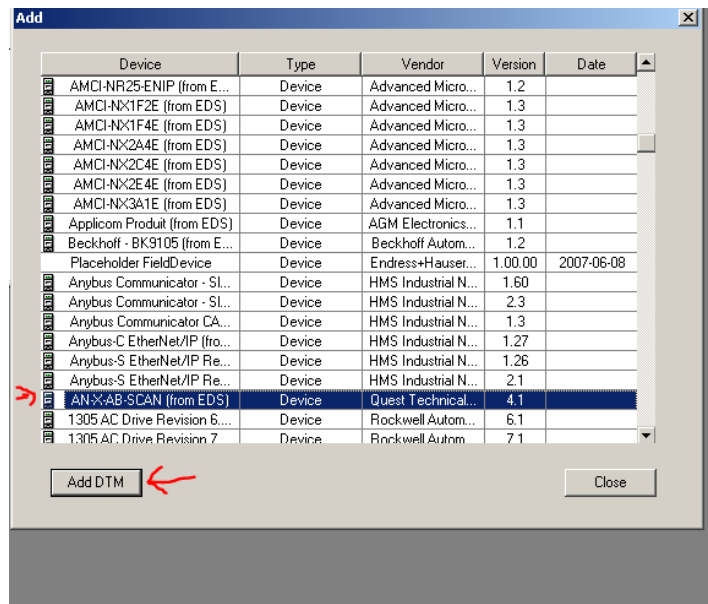

Step 14: In the DTM Browser double click on the EtherNet/IP bridge card (NOC0401 in this example). If you have not already, click on TCP/IP under Channel Properties and set the bridge cards IP, sub-network mask, and gateway IP address (if applicable) then click Apply.
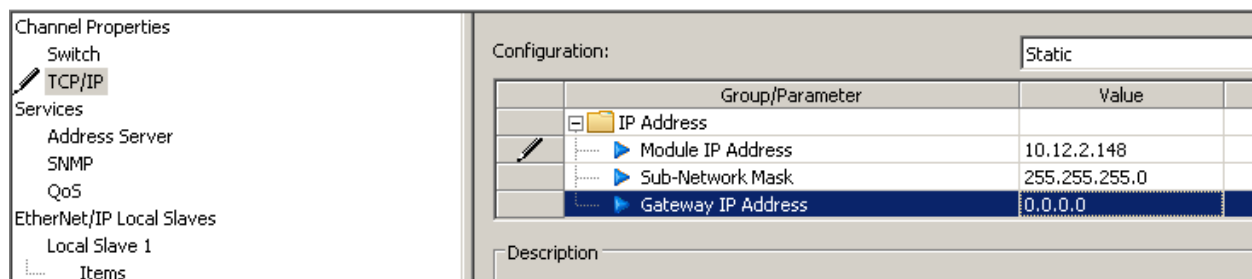
Step 15: Next, still in the fdt Configuration for the Ethernet/IP Bridge card, click on the AN-X2-AB-DHRIO in the Device List and click the Address Settings tab. Enter the IP address you set for your AN-X2-AB-DHRIO. In our example, we set it to 10.12.2.167, so that is what we'll enter, and hit apply.
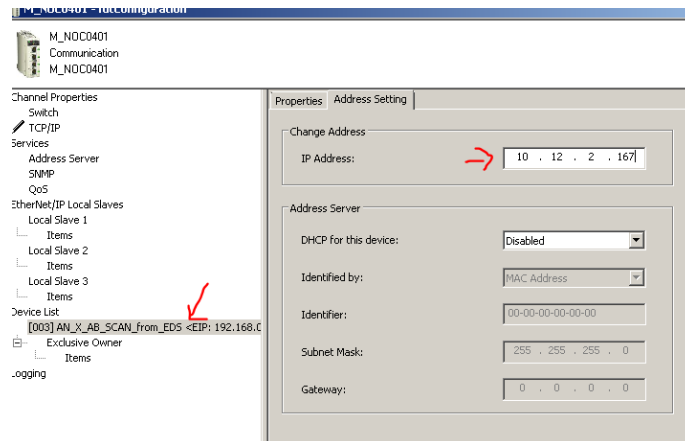

Step 16: Close the fdt Configuration window and return to the DTM Browser. Double click on the AN-X2-AB-DHRIO (you may need to hit the + next to the EtherNet/IP bridge card to reveal it). On the tree on the left click on I/O connection 0 (Exclusive Owner in some older versions of the EDS). Make sure the RPI is set to no lower than 5 mSec (we recommend 20) and change the Input Size and Output Sizes to 500 and 496 respectively (these are in terms of bytes) then hit Apply.
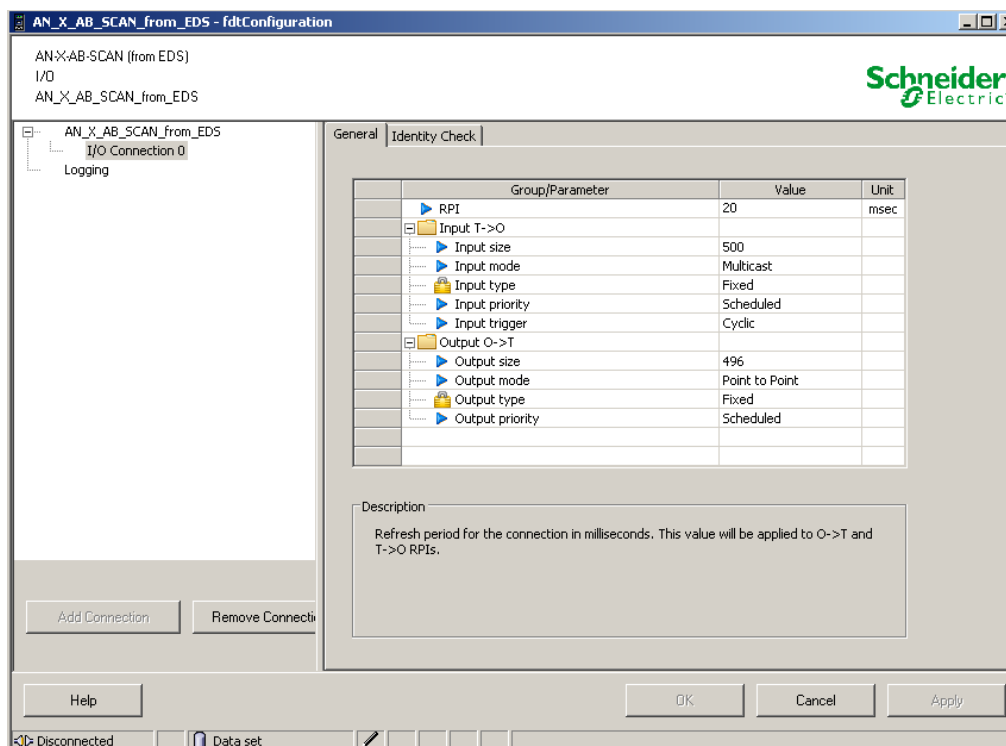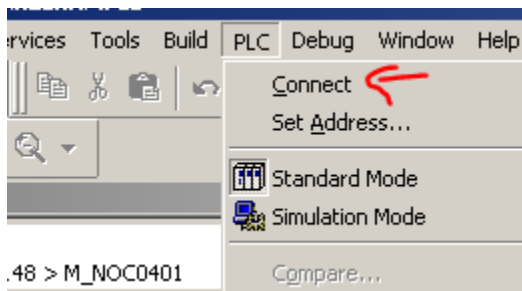
Step 17: Close the fdt configuration window and on the configuration window (PLC Bus) double click the EtherNet/IP bridge card, then click Update Application.
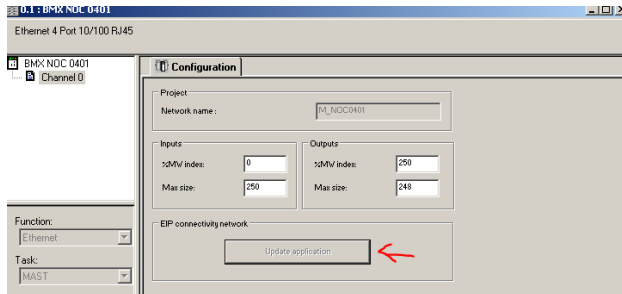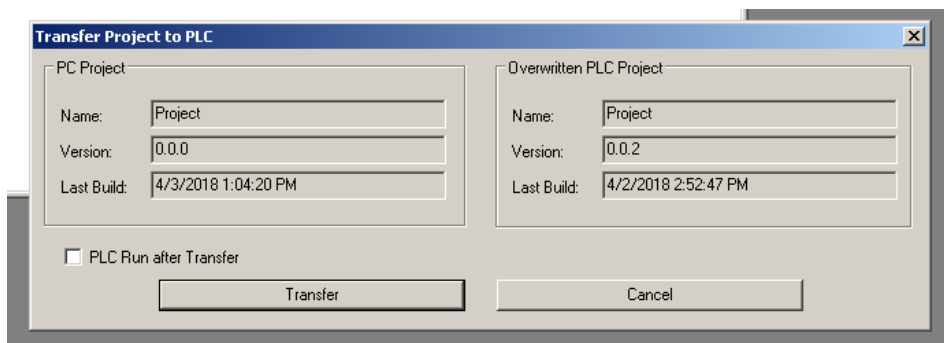

Step 18: Go to Build and Select Rebuild All Project. Then connect to the PLC via PLC and transfer the project to the PLC.
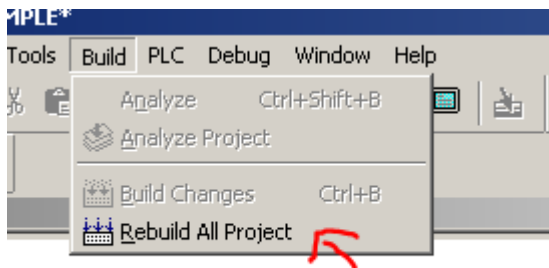
Step 19: Everything should be set up now, but to validate communication is successful you can put the PLC into run and create an animation table (Right Click Animation Tables in the Project Browser and choose New Animation Table, then add the in and out Derived Variables the EDS generated).

To validate where data should be open the Alias Tags file we generated earlier.

We can use ANxAbRioCfgScan from earlier to make sure the data is reaching the AN-X properly first. To do so, relaunch the software, make sure the correct IP is still entered, and then Select Monitor -> Discreet Inputs.
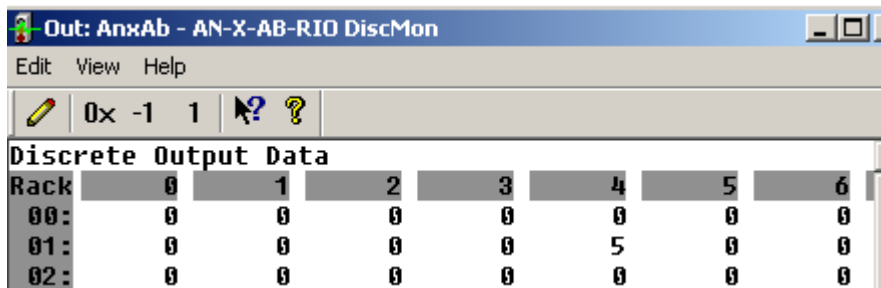

We hit the 1 next to 0x and -1 to change to unsigned view mode, and we see we've got data we expect (68) coming into rack 1, group 6 successfully. Per the Alias Tags file, that should be showing up in element 8. Looking in the animation table at 8 we see it come in at 8 as well.

We can test outputs as well if we want. In this case we want to push a 5 into rack 1 group 4. Per the alias file that is element 6. So we go back to the table, this time into the output variables, click modification, and type 5 into data_6 and hit enter.

Name	Value	Type
⊟ ● AN_X_AB_SCAN_from_EDS_OUT		T_AN_X_AB_S...
● Data_0	0	INT
● Data_1	0	INT
● Data_2	0	INT
● Data_3	0	INT
● Data_4	0	INT
● Data_5	0	INT
● Data_6	5	INT
● Data_7	0	INT
● Data_8	0	INT

We see the light show up on our put module, but we can also see it in AnxAbRioCfgScan by going to Monitor -> Discrete outputs and again hitting the 1 to view as unsigned integers:

Out: AnxAb - AN-X-AB-RIO DiscMon

Edit   View   Help

0x -1   1

Discrete Output Data

Rack	0	1	2	3	4	5	6
00:	0	0	0	0	0	0	0
01:	0	0	0	0	5	0	0
02:	0	0	0	0	0	0	0

Sure enough the 5 is now in rack 1 group 4.

Conclusion

This demonstrated a basic set up of an M340 to talk to AB Remote I/O using an EtherNet/IP card and the AN-X2-AB-DHRIO gateway. If you have any additional questions please contact us.

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