

Technical Note



Connecting to a CLX PLC via 1756-DHRIO Card

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Document Brief

This document describes how to connect from a Rockwell PanelView Plus to a ControlLogix processor through a 1756-DHRIO card and an AN-X2-DHRIO EtherNet/IP to DH+ gateway.

While the step up process is simple, it can get quite cumbersome. This tech-note will include how to setup your PLC in Studio5000 (or RSLogix5000 in this case), how to configure link and slot routing in the 1756-DHRIO card, how to configure the AN-X2-DHRIO module and finally how to setup your PV+ in FactoryTalk View Studio. Certain assumptions will be made from this point forward:

- The 1756 Module Channel Dials have been correctly set based on your network requirements
- Proper cabling for the DH+ network has been done, connections have been properly terminated and resistance and continuity measured and verified based on protocol specifications.
- AN-X2-DHRIO has been assigned an IP Address on the Ethernet Network Subnet. Same has been done for the PV+.

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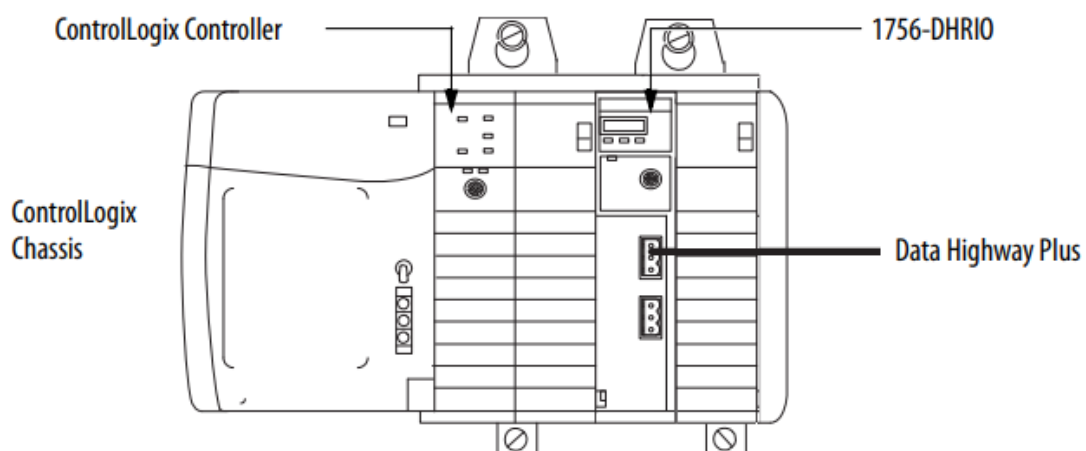
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What you will need...

1. A Computer with the following applications installed:
 - a. ProSoft Discovery Service 4.63 or Higher
 - b. RSLogix5000 or Studio 5000, licensed and accompanied by RSLinx
 - c. FactoryTalk View Studio, licensed and activated.
 - d. FactoryTalk View ME Station or a PanelView Plus HMI.
2. An AN-X2-DHRIO module from ProSoft Technology
3. A 1756-DHRIO card installed in a ControlLogix rack.

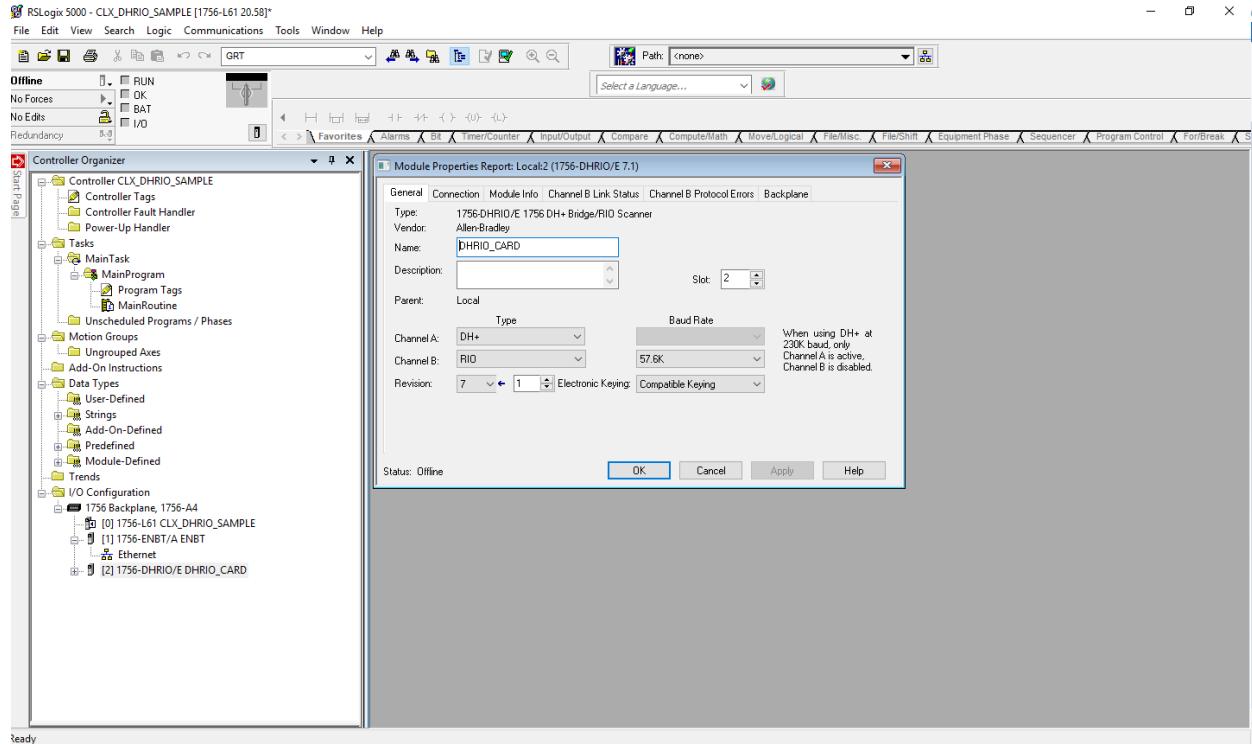
Step 1: Configuring the ControlLogix PLC

First step is to design the rack layout for your ControlLogix rack. Deciding which slot to install the Rockwell 1756 PLC, the 1756-DHRIO card and (in our case) the slot for the ENBT card. For this example, the rack is designed as below.

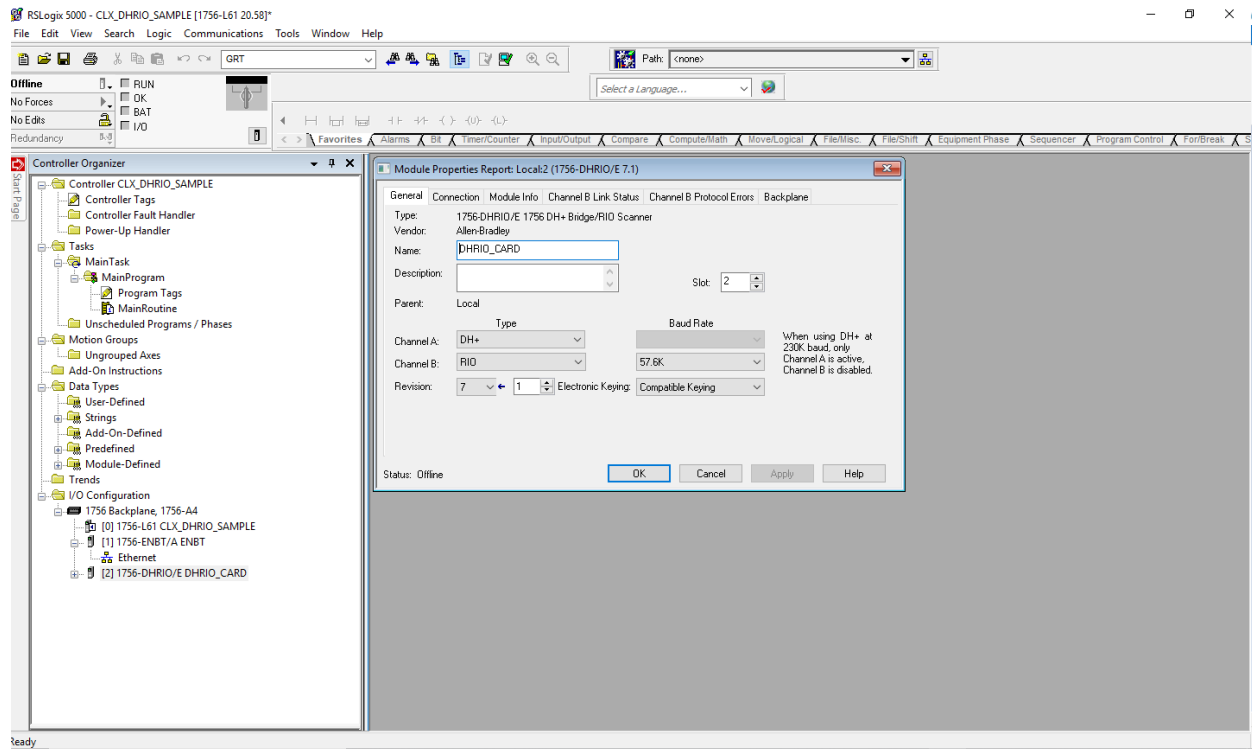


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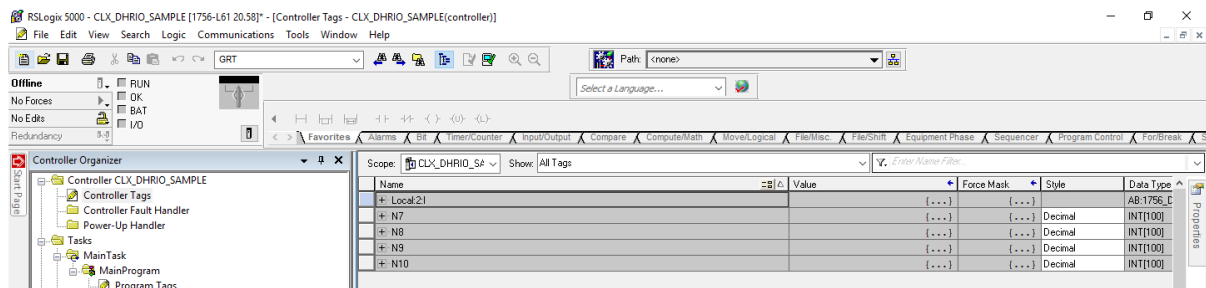
After this, create a new project in RSLogix5000 (or Studio 5000). Note that the 1756-DHRIO does not need to be declared in the I/O tree, however we do so in this case for the sake to I/O monitoring and use of the RIO channel. Populate the I/O tree based on your rack design.

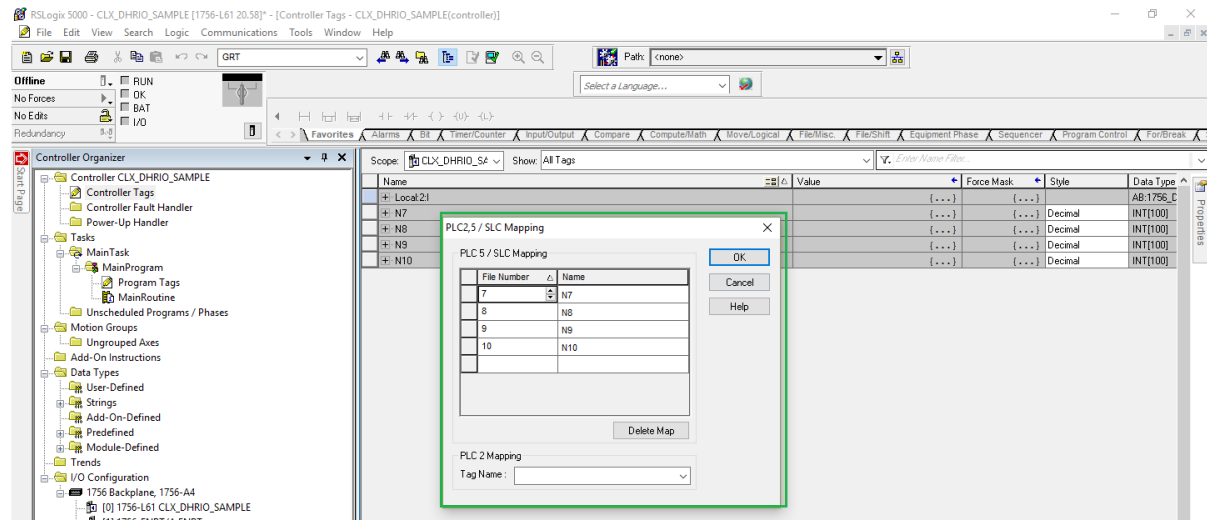
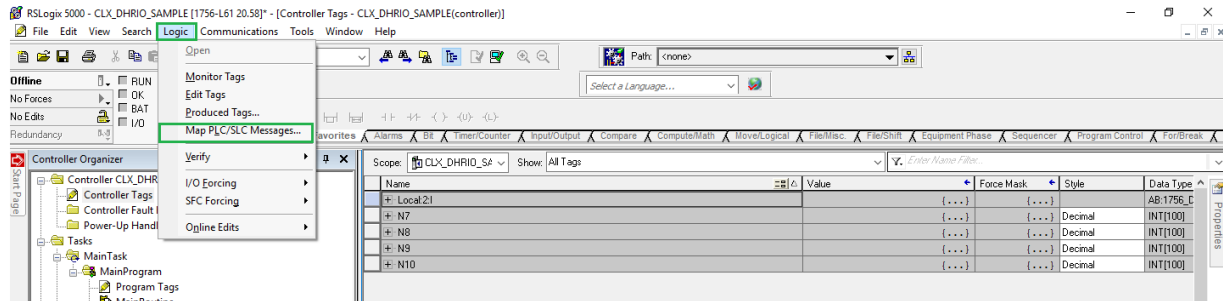


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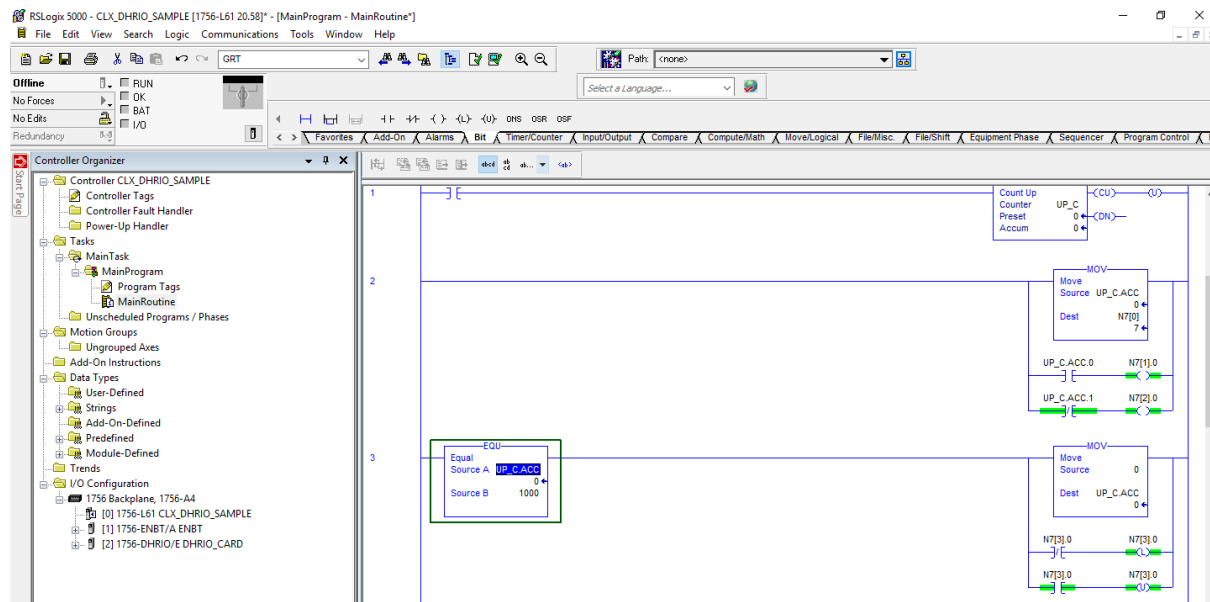


Once the I/O declarations are complete, create tags that will be used for communication with the controller. These tags are CIP tags, they will need to be Logic Mapped to PCCC tags in the Project File.





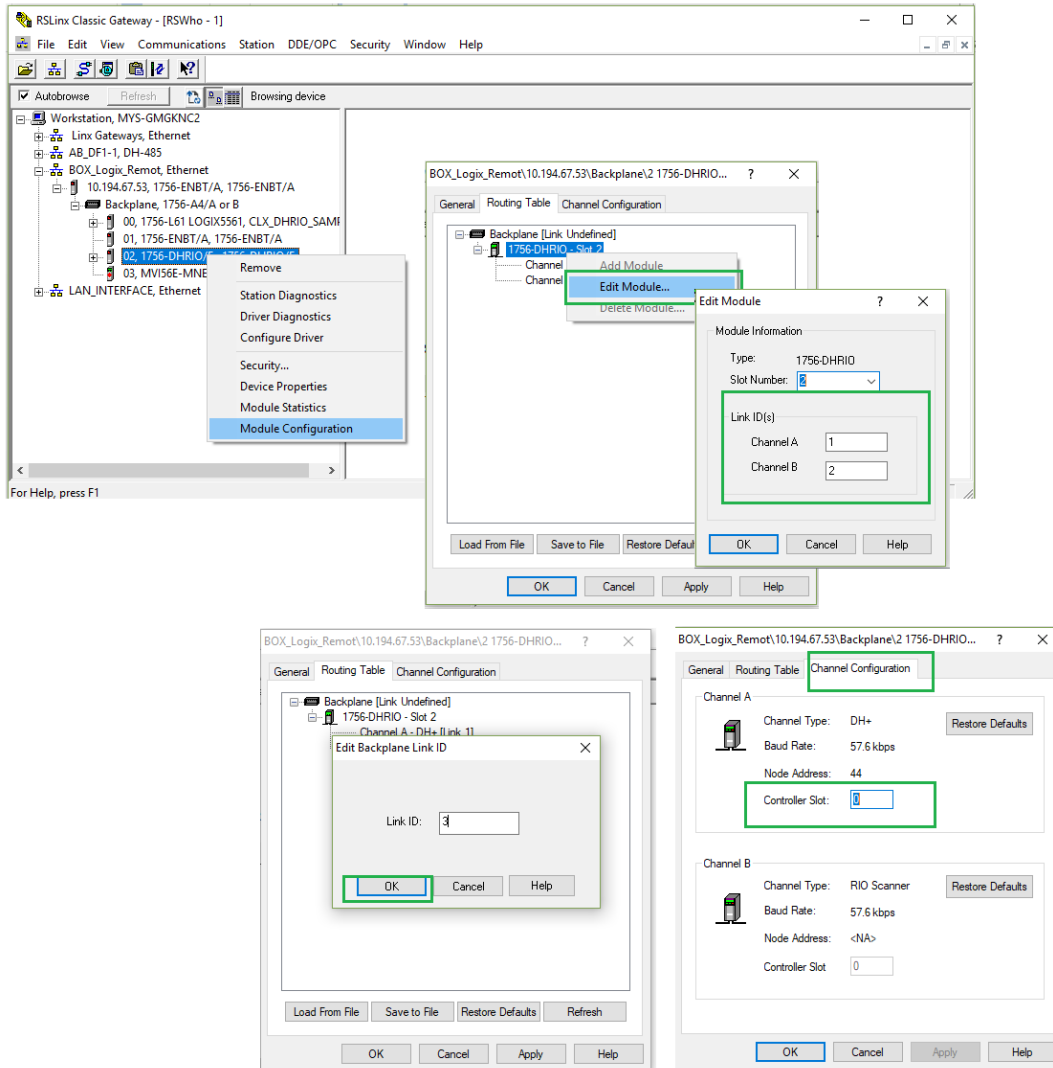
At this point, the configuration of the CLX PLC is complete. For the sake of our text, however, it is a good idea to add in logic that will manipulate tags for communication verification at the PV+. Add a couple of heart-beat or trend able BOOL points to verify that the communication is working as expected. Then download the PLC logic to the controller.



Step 2: Configuring the 1756-DHRIO Card.

The 1756-DHRIO card will also need to be configured independently in RSLogix. This involves creating a Routing Table for DH+ - Identifying or assigning DH+ Links and the routing the traffic received on the Links to the Slot of the CLX PLC. The following need to be configured:

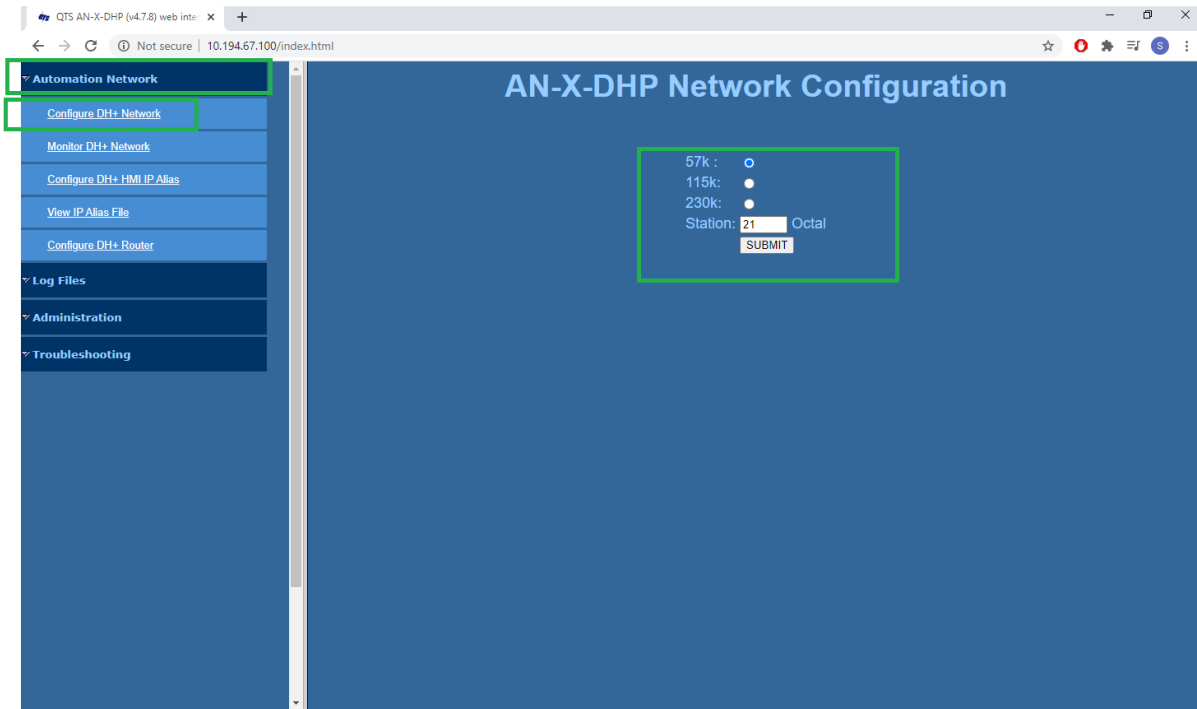
- Link IDs have to be assigned to the DH+ Network and to the Backplane connection in the Routing table.
- The Controller slot has to be verified on the Channel Configuration.
- The routing table must be saved and applied.



Step 3: Configuring the AN-X2-DHRIO module

Since the AN-X2 Module has gone through the initial configuration, only 3 things need to be configured:

- The Baud rate for the DH+ Network
- The Node address for the AN-X2 module on the DH+ Network
- The Alias IP for the DH+ Node of the CLX rack

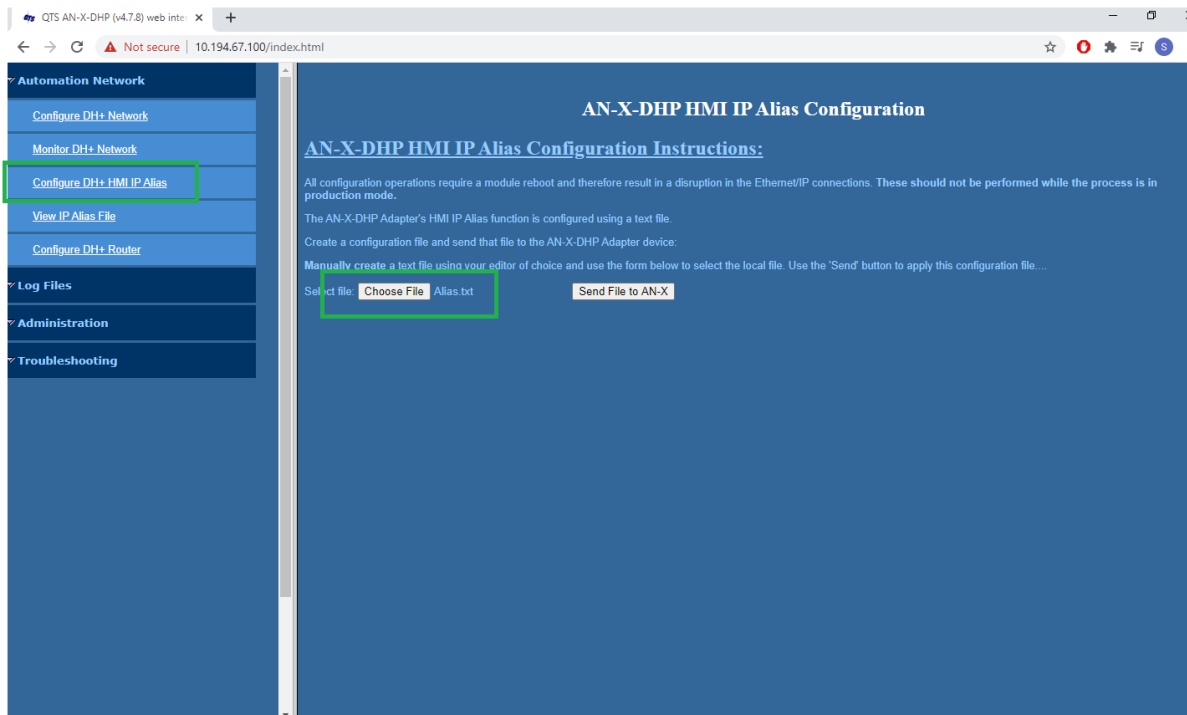


Alias in a representative name for the DH+ node that will associate the Node Address on DH+ to a specific IP Address. This allows the PV+ to direct its messages to a specific IP address and the AN-X2 module will route that traffic to the respective DH+ node. Alias format for this example is:

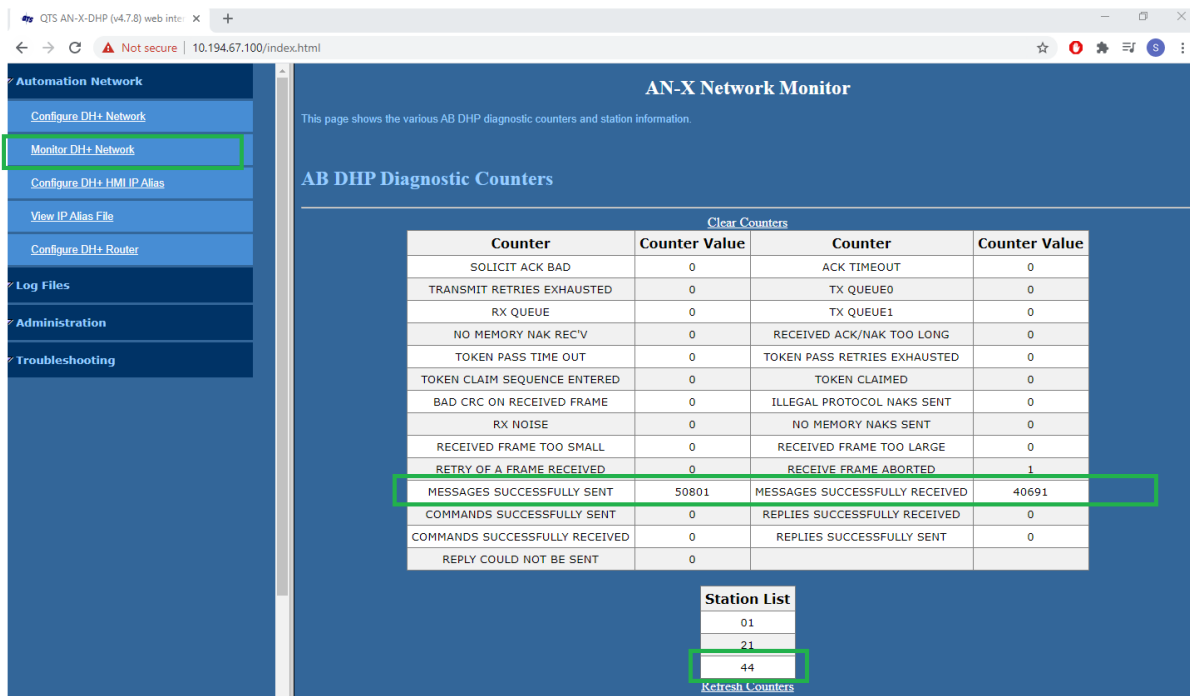
```
AliasIP x.x.x.200 -> Dhp 0o44
```

This is uploaded as a text file to the AN-X2-DHRIO module.

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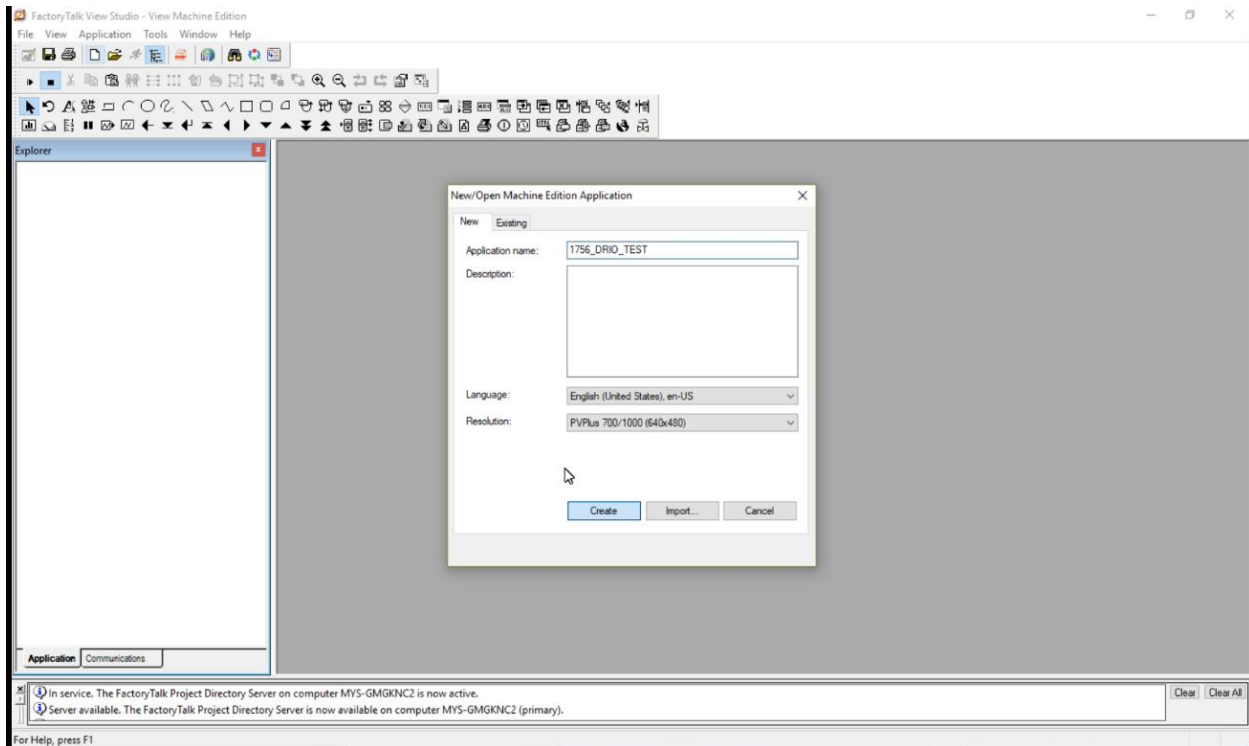


The AN-X2-DHRIO module allows you to monitor the DH+ network to identify any nodes on the network. This is an excellent diagnostic tool, at this stage the module be able to see the configured 1756 – DHRIO card. If not, a mistake has been made on the 1756-DHRIO configuration step.



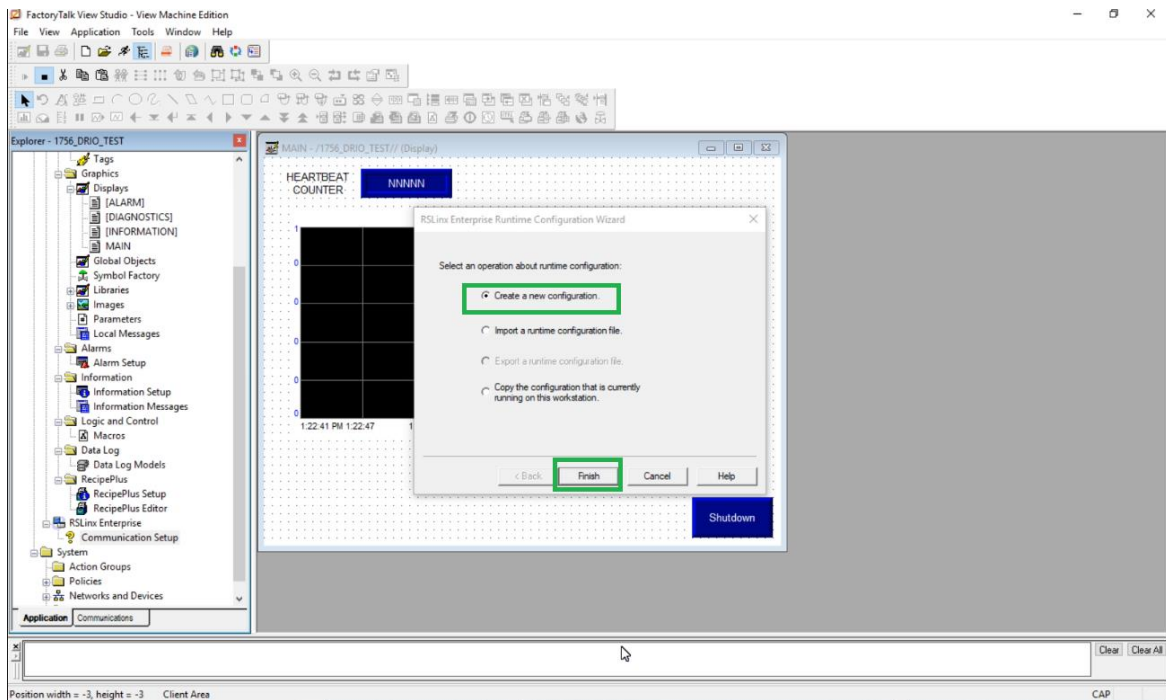
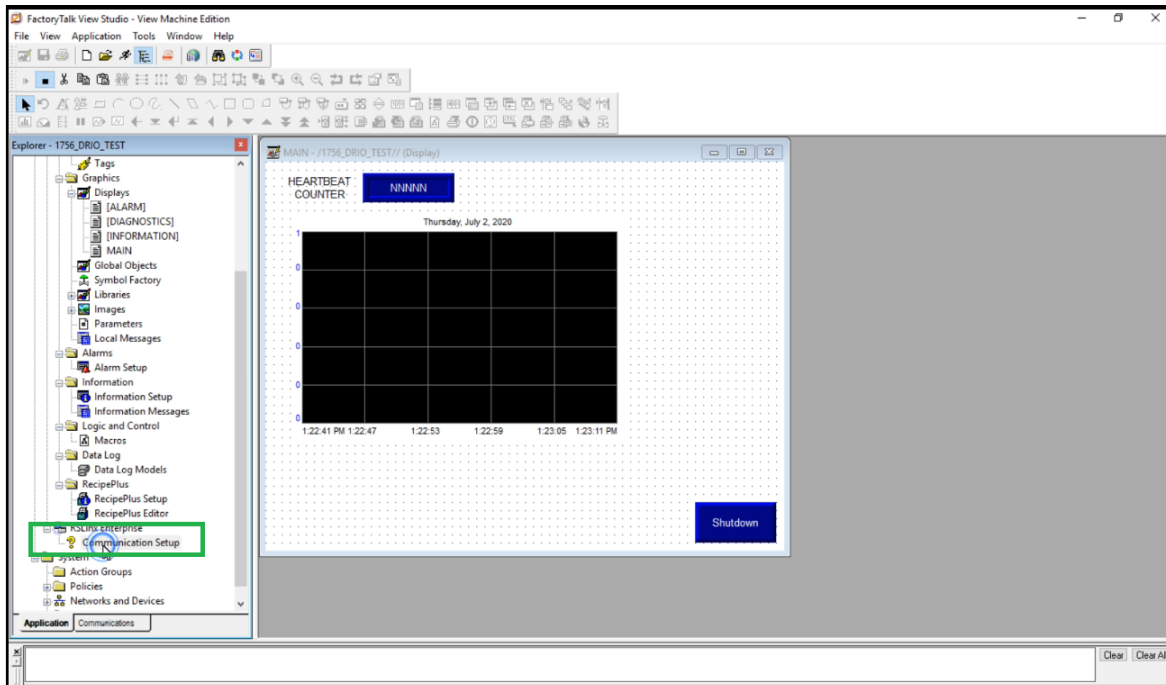
Last step: Configuring the PanelView (or creating a PV+ Project)

The first mini-step is to create a project in FactoryTalk Studio. Add HMI elements to display tags that are being manipulated in the controller tags.

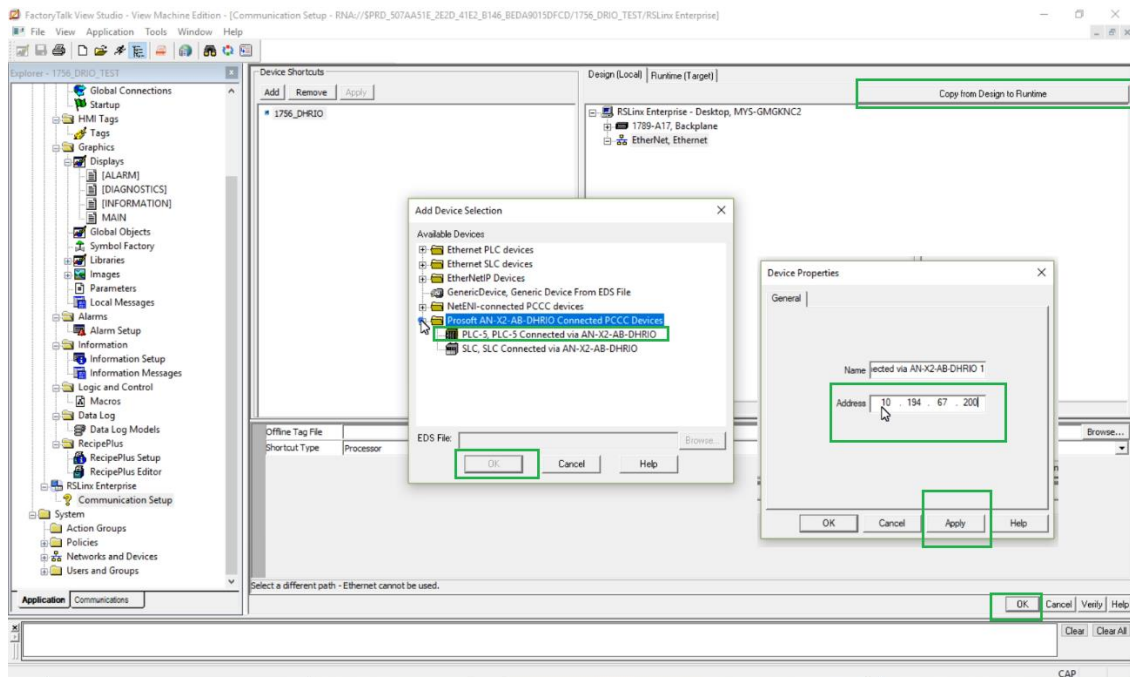
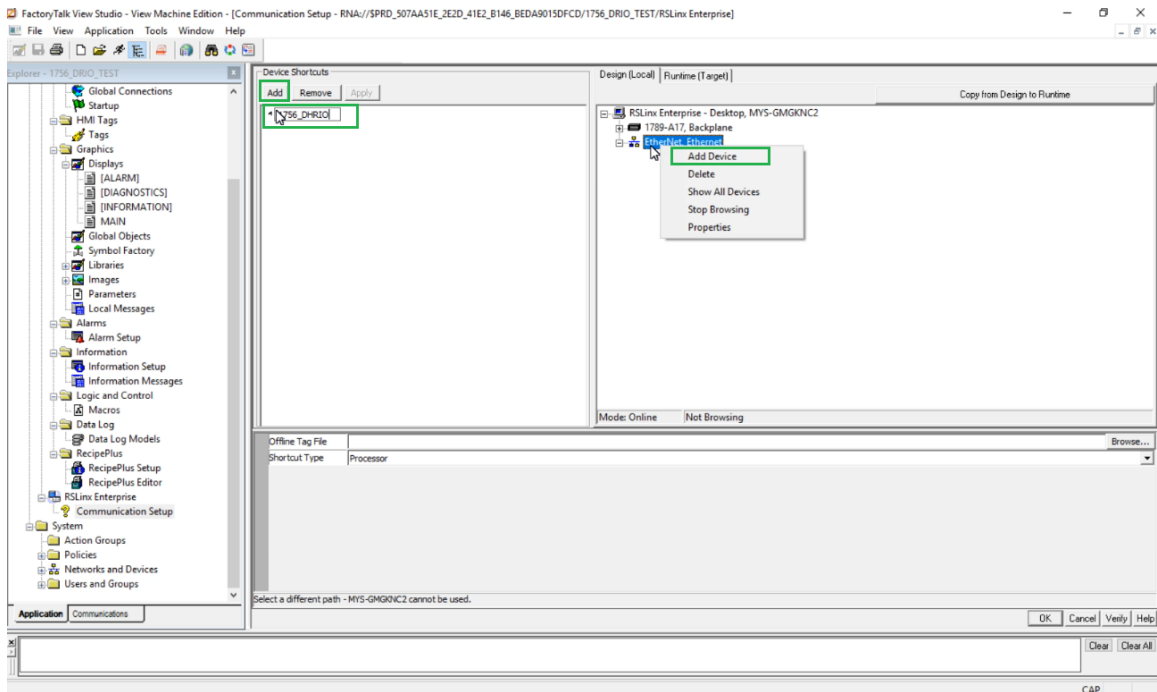


After the display has been designed, next is to create a communication topic that will allow the PV+ to communicate with the 1756-DHRIO card. This will involve the following:

- Creating a Device Shortcut
- Creating an Ethernet device in the Communication Tree
- Applying device to Device Shortcut
- Copying the Device to Runtime
- Verifying the Design and clicking "OK".

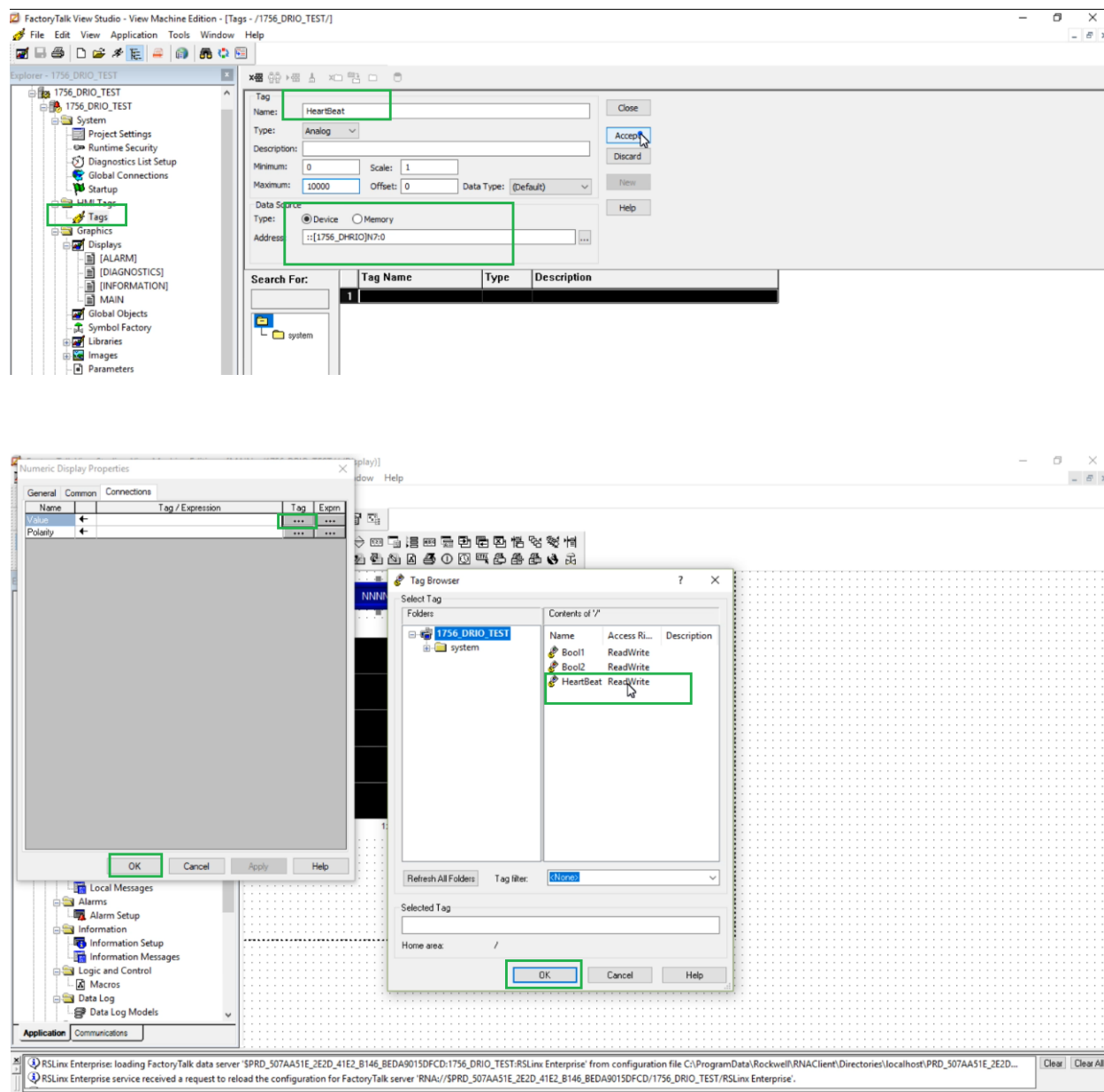


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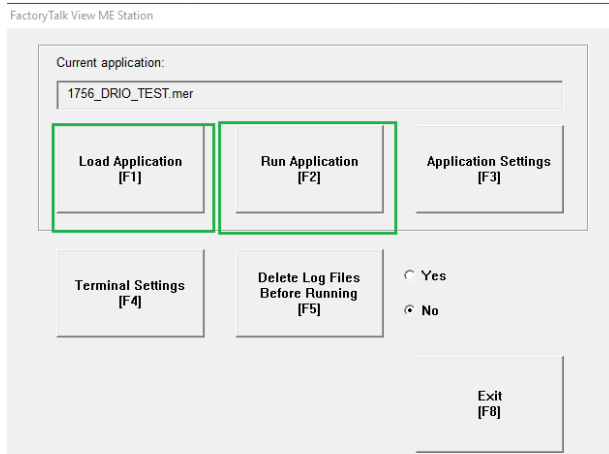
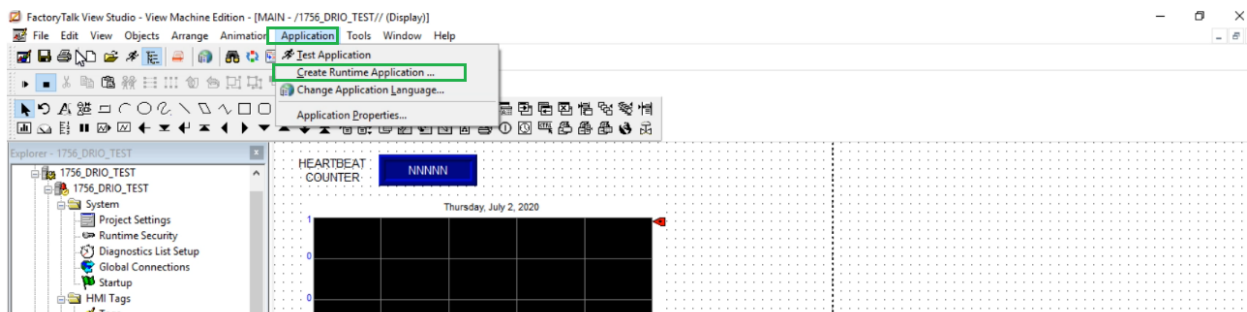
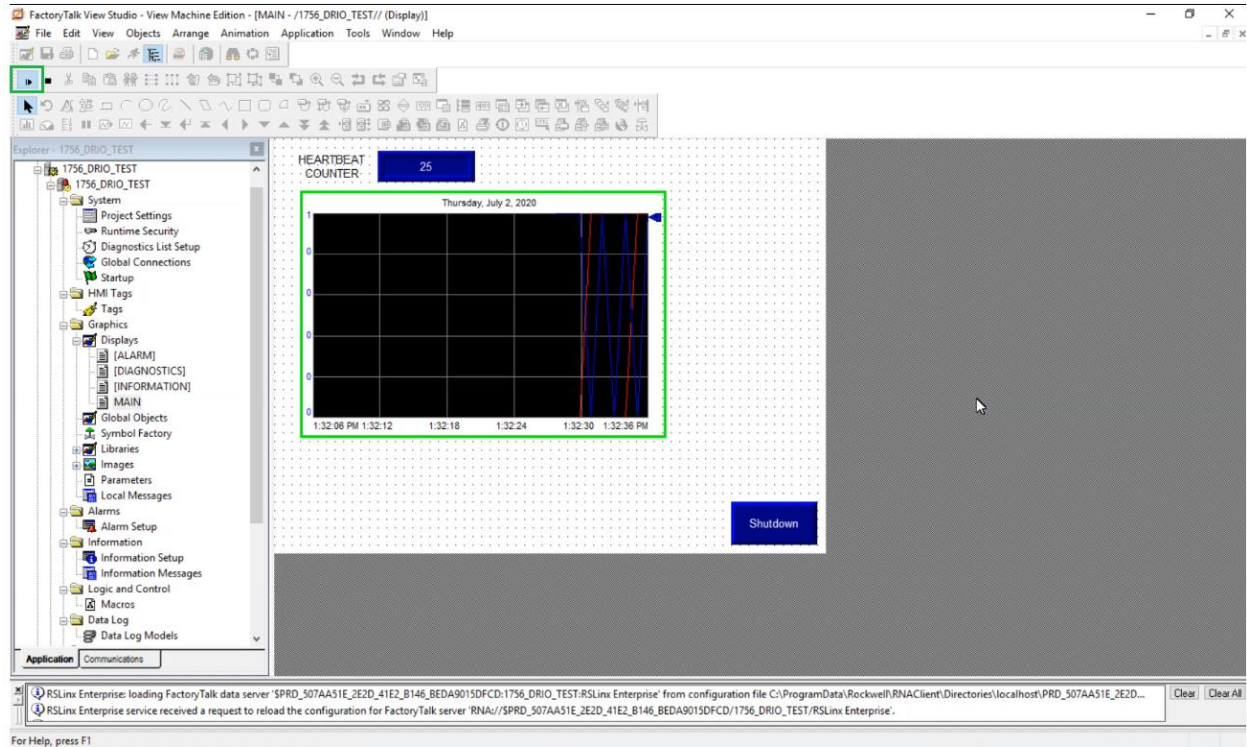
Next is to create tags for on the device shortcut and to link those tags to the HMI elements.

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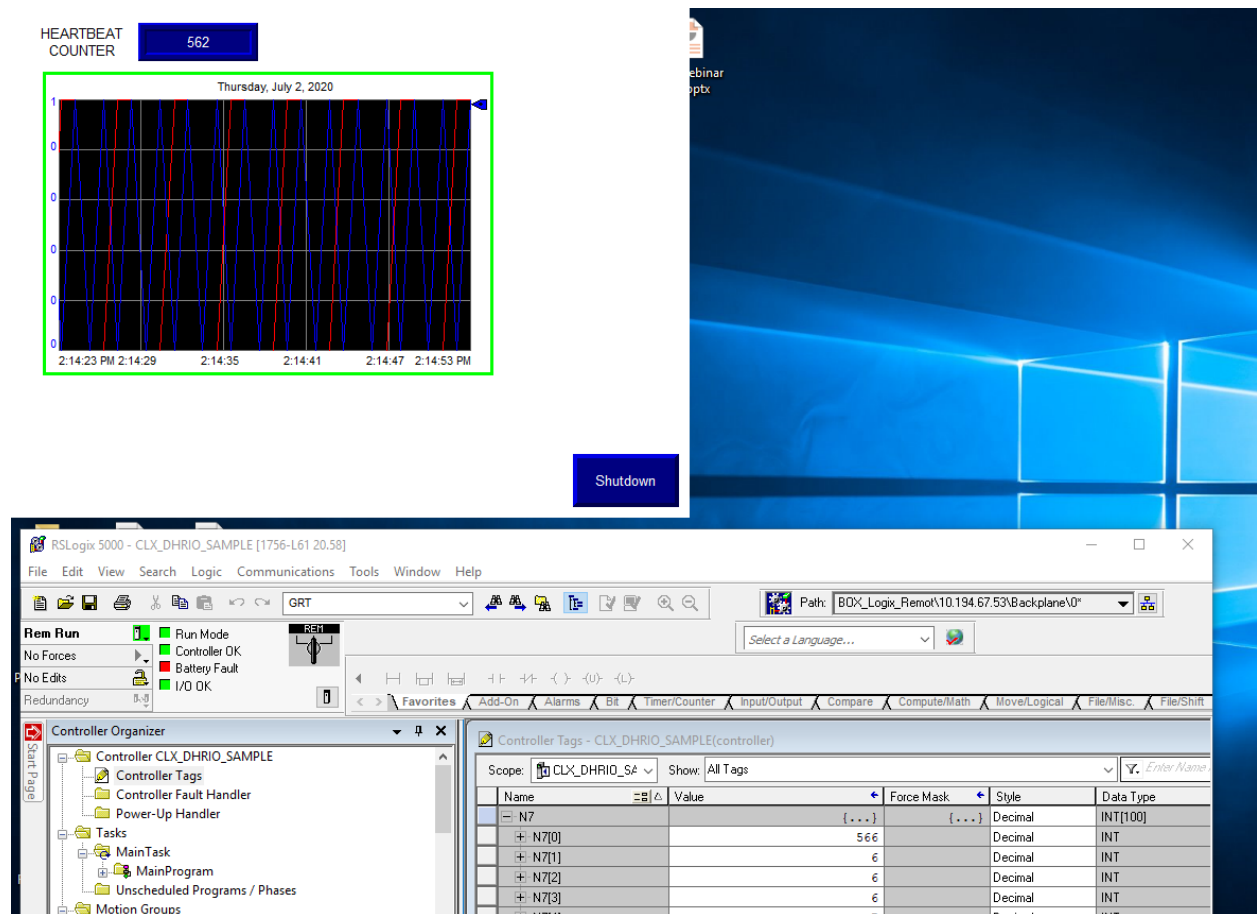
Finally, the configuration will need to be run-time tested before creating an application file to download to the PV+ (or to FactoryView ME Station in our case). After the file is verified and tested, the application file can now be created.

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Then run and commission:



Note:

- Data values are consistent with those seen via the Ethernet Connection with the expected DH+ communication latency at the PV+ configured refresh rate.

Additional Resource

The [AN-X2-DHRIO DH+ Manuals](#) will have additional information of network topologies and module configuration. The [module's landing page](#) will also have links to video tutorials on how to setup this product.

You can [download the test files used in this tech-note](#).