

How to connect the HMS AnyBus Communicator to a ControlNet network on the Controllogix 5000 PLC

Application summary

This document explains the procedure for connecting the HMS AnyBus Communicator ControlNet to Serial Gateway with an existing serial application to a ControlNet Network on the Allen Bradley Controllogix 5000 PLC platform.

Application Equipment and Materials

Materials used in the development of this application are as follows:

- Hardware used in test: Allen Bradley Controllogix 5000 PLC with 1756-CNBR ControlNet Scanner card, HMS AB7006 AnyBus Communicator ControlNet to Serial Gateway.
- Software used in the test: HMS ABC Configurator Software Version 1.81, Rockwell Software RSNetWorx for ControlNet, Rockwell Software RSLogix 5000.
- Documentation consulted: AnyBus Communicator Manual ver. 1.60 (Doc ID SDN-7061-059), AnyBus-S ControlNet Appendix.
- Allen Bradley ControlNet Coax Cable, Taps and Terminators.
- Appropriate Programming Cables.

AnyBus Communicator Serial Interface Note

The AnyBus Communicator should already have a configured serial application loaded. This will help determine how much I/O the Communicator takes up on the ControlNet network. Different applications will take up different amounts of I/O based on the number of serial transactions that are configured.

Configuring the ControlNet Network Interface to the Communicator

The last step is to set up the Controllogix's ControlNet network to send and receive data from the AnyBus Communicator which involves three distinct steps, setting the node address of the Communicator, adding the Communicator to the ControlNet Scanner's module list and to add the Communicator to the network via RSNetworx.

Setting Up the Communicator's Node Address

1. The node address is set using the rotary switches on the front of the Communicator. Consult the AnyBus Communicator Manual for more information on the switches.

Configuring the Communicator as a Sub-Device of the ControlNet Scanner

1. Start RSLogix 5000 Software and verify 1756-CNBR has been added to the I/O Configuration.
2. Right-Click on 1756-CNBR icon and select New Module.
3. From the list of devices select Generic ControlNet Module as shown in Figure 1.

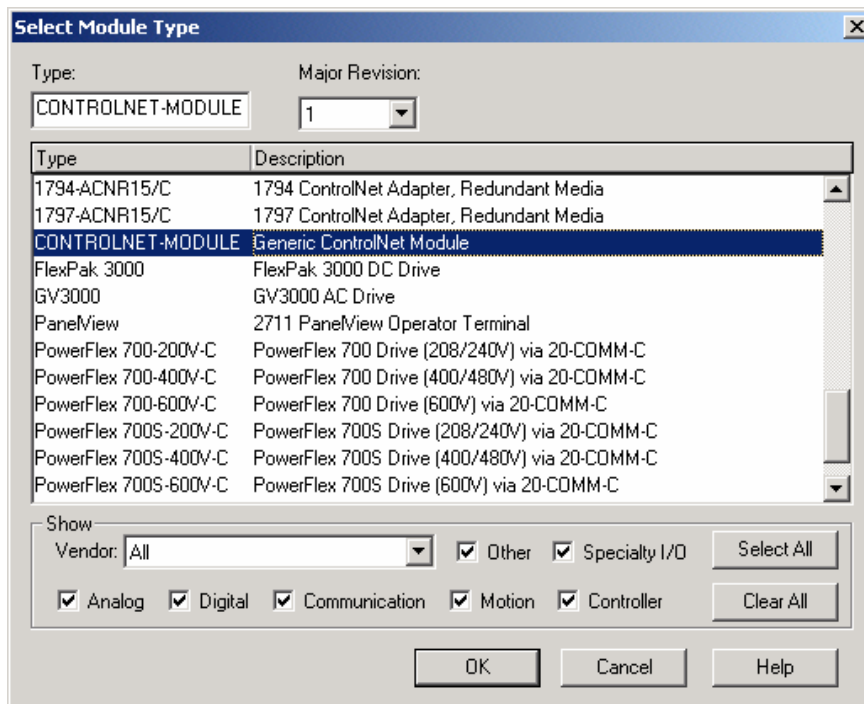


Figure 1

4. A dialogue box will appear for editing the properties of the module. Give the unit the name AnyBus Communicator, set the Node to match the rotary switch settings and set the Comm Format to the appropriate format for the data being transmitted by the communicator (SINT for bytes, DINT for 16-bit registers, etc.). The number of assembly instances should be set to 100 for the Inputs and 150 for the Outputs. Even though the Communicator does not use a Configuration Instance, one must be designated with a size of zero.
5. Next step is to designate the size of the Input and Output blocks in terms of the selected data format. For the Inputs, two 16-bit registers are set aside automatically for the Run/Idle header and if Status and Control Registers are enabled on the Communicator then one 16-bit register is set aside for status (see AnyBus Communicator Manual for information regarding Control/Status Register option). The remainder of the Input size is dependent on the number of registers or bytes being read on the serial link. For the Outputs, if Status and Control Registers are enabled then the size of the Output table is one 16-bit Control Register plus the number of registers or bytes being written on the serial link. Figure 2 gives a sample configuration where there is no enabling of the Status/Control Registers and 52 bytes of data are read and one byte of data is written.

Note: In order for the AnyBus Communicator to function properly on ControlNet with the Controllogix 5000, at least one byte of output data must be configured in the I/O configurations of the Controllogix program and the AnyBus Communicator.

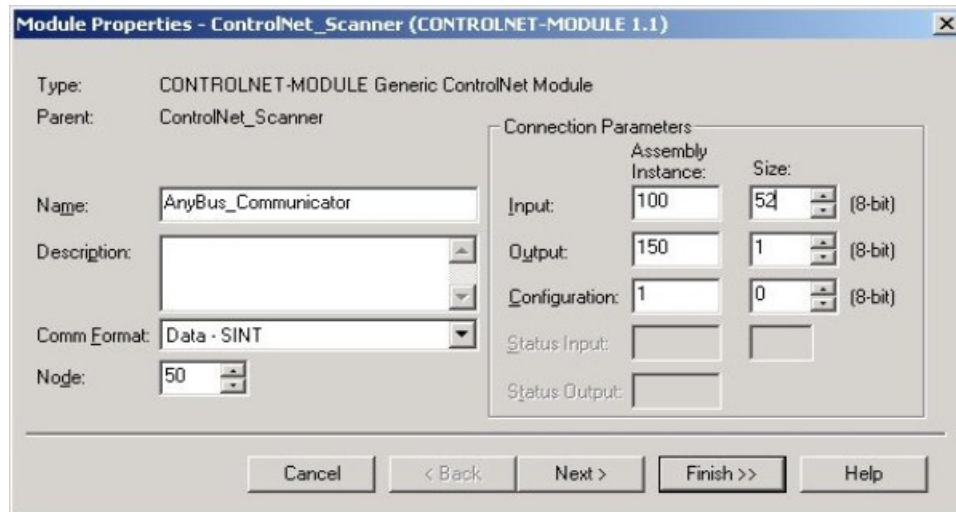


Figure 2

6. After finishing select Next, a second window will appear used to specify the module update rate. Set the Requested Packet Interval (RPI) to 10 ms. Select Finish ending the configuration.
7. Download the changes to the PLC. The I/O light on the PLC will be flashing green for an I/O error. The reason for this is the Communicator has been added to the scanner's I/O list but has not been scheduled on the network.
8. Next step is to schedule the Communicator on the network. Start RSNetWorx for ControlNet and select File>New. This will give you a blank network configuration window as shown in Figure 8. Install the Communicator's EDS file.

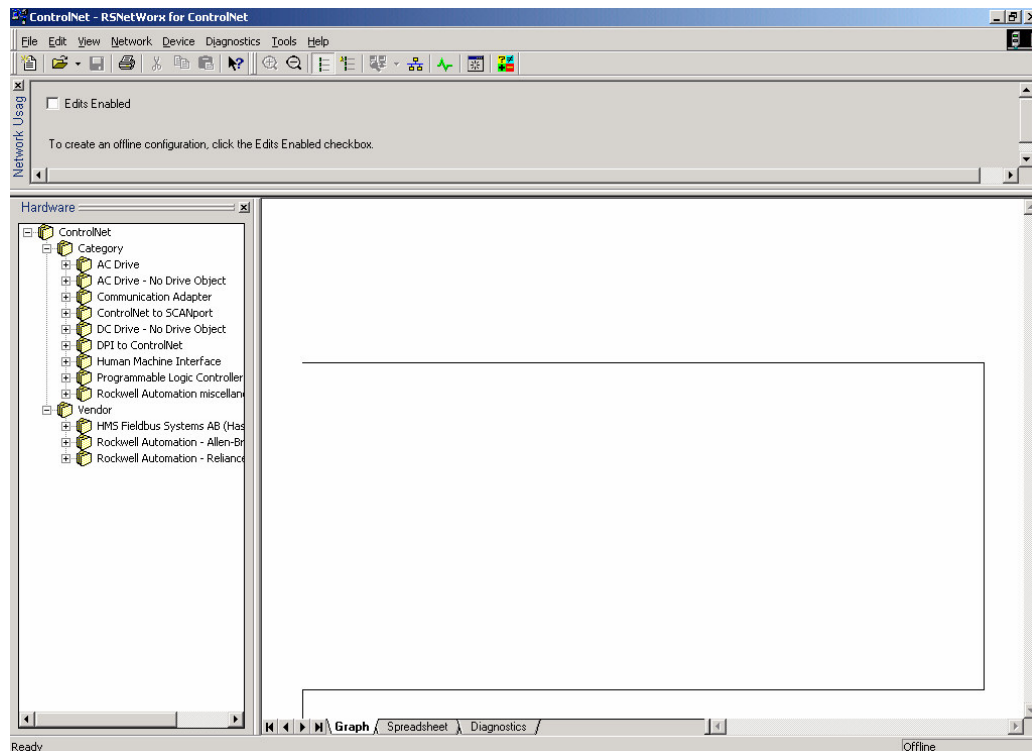


Figure 3

9. The next (and easiest) thing to do here is to scan the network and collect all of the attached devices. From the Network menu, select Online. RSNetWorx will now scan the network for attached devices. A visual diagram will appear with “+” signs above each module. This indicates that the device exists as part of the network configuration but has not been saved as part of the configuration file. This is shown in Figure 4.

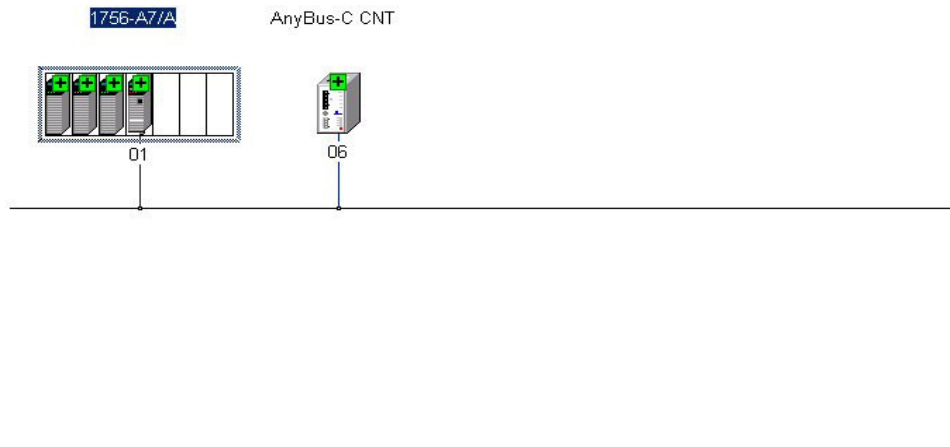


Figure 4

10. In the main window, select the check box marked Edits Enabled. A window will appear indicating a signature mismatch between the online active keeper and the online scanner. Select OK, this will download the offline configuration.
11. Next step is to save the configuration. This will save the configuration to a file and also download the configuration to the scanner. When saving a dialogue box will appear asking whether to Optimize and re-write schedule for all connections or Merge changes into existing schedule. Select Optimize and re-write.
12. RSNetWorx will next indicate a difference between the online and offline configuration in the scanner and ask whether to use the offline or online data. Use the offline data.
13. RSNetWorx will ask for a file name to save the configuration. Choose a file name and save.

Now all of the network elements should be configured and the PLC and AnyBus Communicator should be exchanging I/O data. If problems exist, verify that the I/O configuration matches between the AnyBus Communicator's and the Controllogix's configuration for the Communicator. Also verify that the rotary switch settings on the Communicator match the Controllogix's configuration for the Communicator. If problems persist, call (773) 404-3486 for technical assistance.

Web References:

- www.hms-networks.com, www.ab.com