

How to connect the HMS AnyBus Communicator to a EtherNet/IP network on the Controllogix 5000 PLC

Application summary

This document explains the procedure for connecting the HMS AnyBus Communicator EtherNet/IP to Serial Gateway with an existing serial application to an EtherNet/IP 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-ENET/B Ethernet Bridge/Scanner card, HMS AB7007 AnyBus Communicator Ethernet to Serial Gateway.
- Software used in the test: HMS ABC Configurator Software Version 1.81, Rockwell Software RSNetWorx for Ethernet, Rockwell Software RSLogix 5000.
- Documentation consulted: AnyBus Communicator Manual ver. 1.60 (Doc ID SDN-7061-059), AnyBus-S Ethernet Appendix.
- Standard Cat. 5e Ethernet Cable
- Ethernet Switch/Router
- Appropriate Programming Cables.

AnyBus Communicator Serial Interface Note

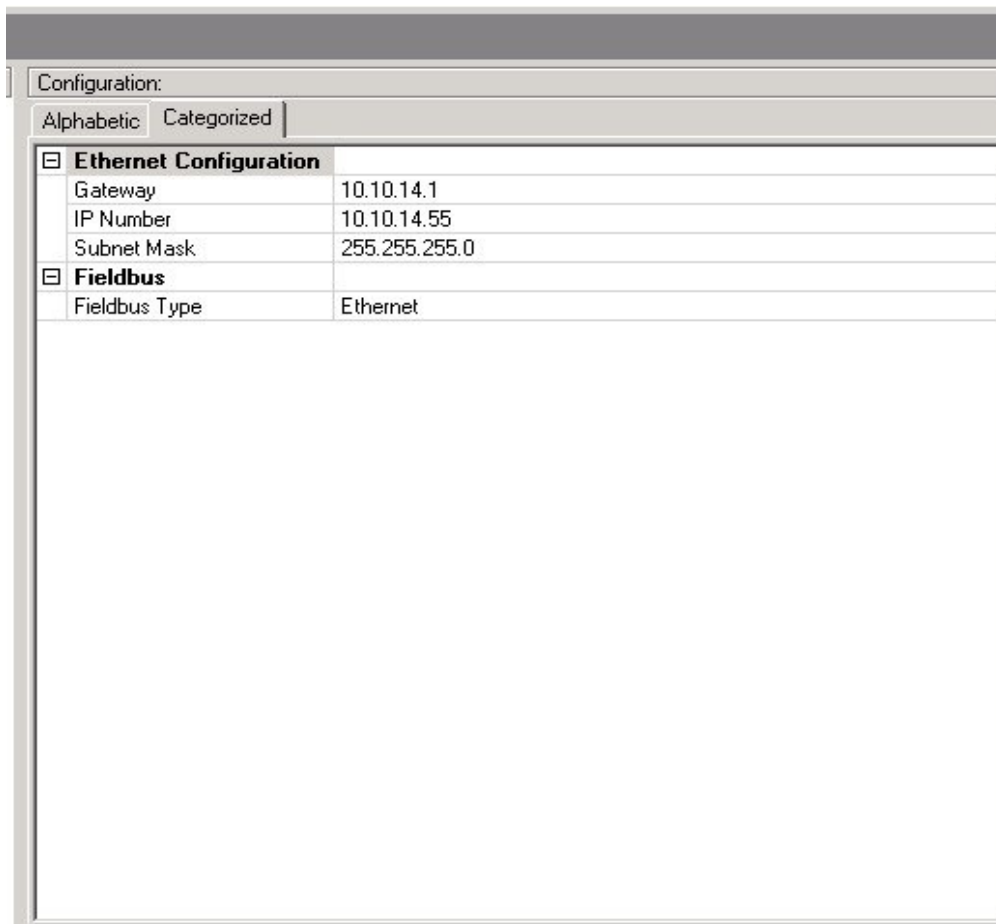
The AnyBus Communicator should already have a configured serial application loaded. This will help determine how much I/O the Communicator takes up on the EtherNet/IP network. Different applications will take up different amounts of I/O based on the number of serial transactions that are configured.

Configuring the EtherNet Network Interface to the Communicator

The last step is to set up the Controllogix's EtherNet/IP network to send and receive data from the AnyBus Communicator which involves two distinct steps, setting the node address of the Communicator and adding the Communicator to the EtherNet/IP Scanner's module list.

Setting Up the Communicator's IP Address

1. The IP address is set either by DIP switches or by software. If configured by DIP switch, only the last part of the IP address is changed. The base is 192.168.0.XXX where XXX is set by DIP switches. If setting by software, make sure all DIP switches are in the off position. Figure 1 gives an example configuration



The screenshot shows a configuration window titled 'Configuration:'. It has two tabs: 'Alphabetic' and 'Categorized'. The 'Alphabetic' tab is selected. Below the tabs is a table with two main sections: 'Ethernet Configuration' and 'Fieldbus'.

Ethernet Configuration	
Gateway	10.10.14.1
IP Number	10.10.14.55
Subnet Mask	255.255.255.0
Fieldbus	
Fieldbus Type	Ethernet

Figure 1

Configuring the Communicator as a Sub-Device of the EtherNet/IP Scanner

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

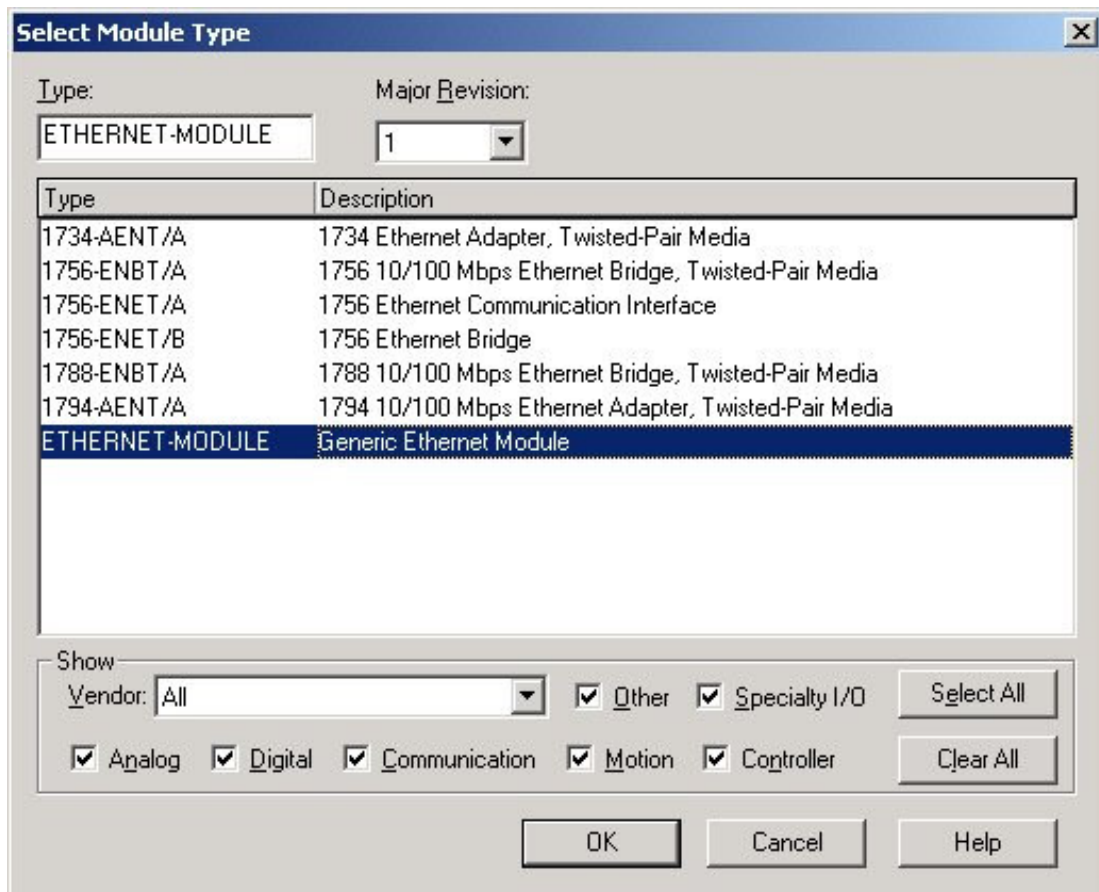


Figure 2

5. 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.
6. Next step is to designate the size of the Input and Output blocks in terms of the selected data format. For the Inputs, 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 3 gives a sample configuration where there is no enabling of the Status/Control Registers and 31 bytes of data are read and one byte of data is written.

Note: In order for the AnyBus Communicator to function properly on Ethernet 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.

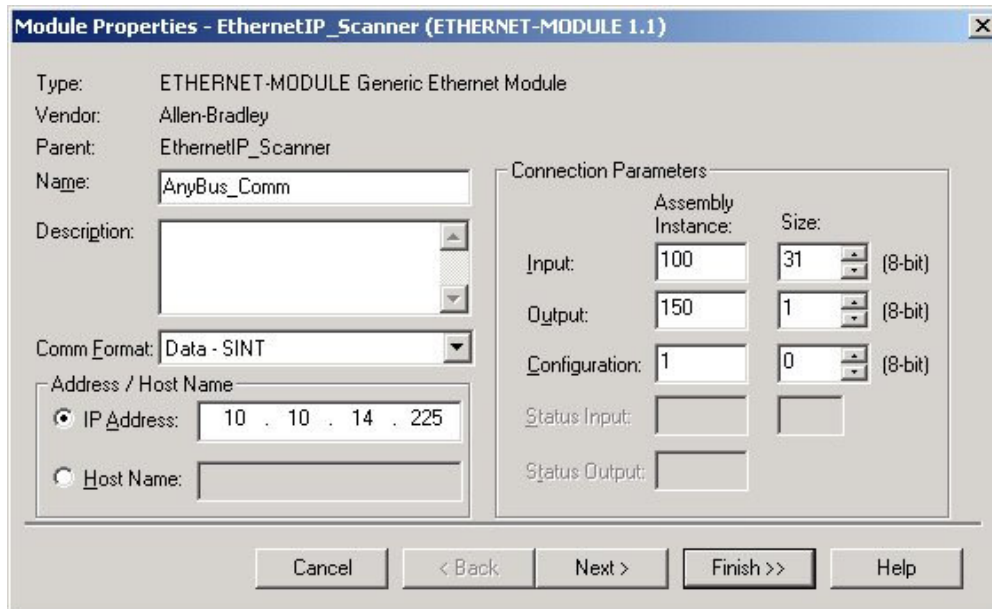


Figure 3

7. 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 or higher. Select Finish ending the configuration.
8. Download the new configuration to the PLC.

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 IP address 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