Using a HMS Anybus Ethernet Communicator with an Allen Bradley SLC 5/05 Controller

Application Summary

This document explains the procedure for configuring communications between an Allen Bradley SLC 5/05 and the HMS Anybus Ethernet Communicator. Through a message instruction called the Ethernet/IP Explicit Message (EEM) in the SLC 5/05 processor, it is possible to read and write data from an Anybus Ethernet Communicator.

Application Equipment and Materials

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

- Hardware used in development of application note: HMS Anybus Communicator Ethernet to Serial Gateway (HMS part no. AB7007), Allen Bradley SLC 5/05 processor with OS firmware level Series C, FRN 10 (AB part no. 1747-L553)
- Software used in the development of application note: HMS ABC Configurator Software Version 2.22, RsLogix 500 Pro Software Version 7.10
- Documentation consulted: Anybus Communicator Ethernet User Manual ver. 2.10, Allen Bradley Publication 1747-RM001E-EN-P January 2006.
- Appropriate Programming Cables (AnyBus Configurator Cable, Ethernet Cable)

Anybus Communicator IO Size

In this example, the Anybus Communicator was setup for 14 bytes of Input data and 7 bytes of Output data. The serial configuration setup for each application in the Anybus Communicator is going to have a different amount of bytes. To check the amount of Input and Output bytes in the application, right click on the Sub-Network and select “Sub-Network Monitor” as shown in figure1 below.

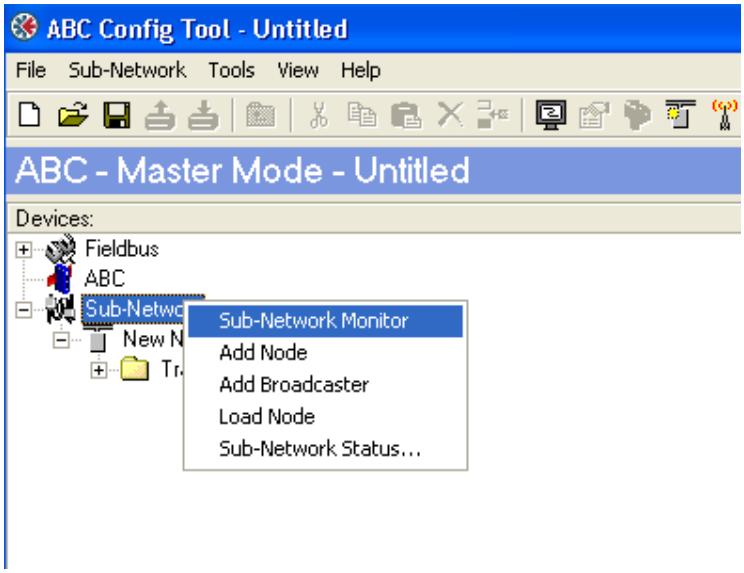

Figure 1

A Sub-Network Monitor screen should now appear. This will show the number of Input bytes (14) and the number of Output bytes (7) in the Anybus Communicator. If there are no colored boxes, this means that the Anybus Communicator has not been setup yet. Proceed to setup the serial interface of the Anybus Communicator before going on.

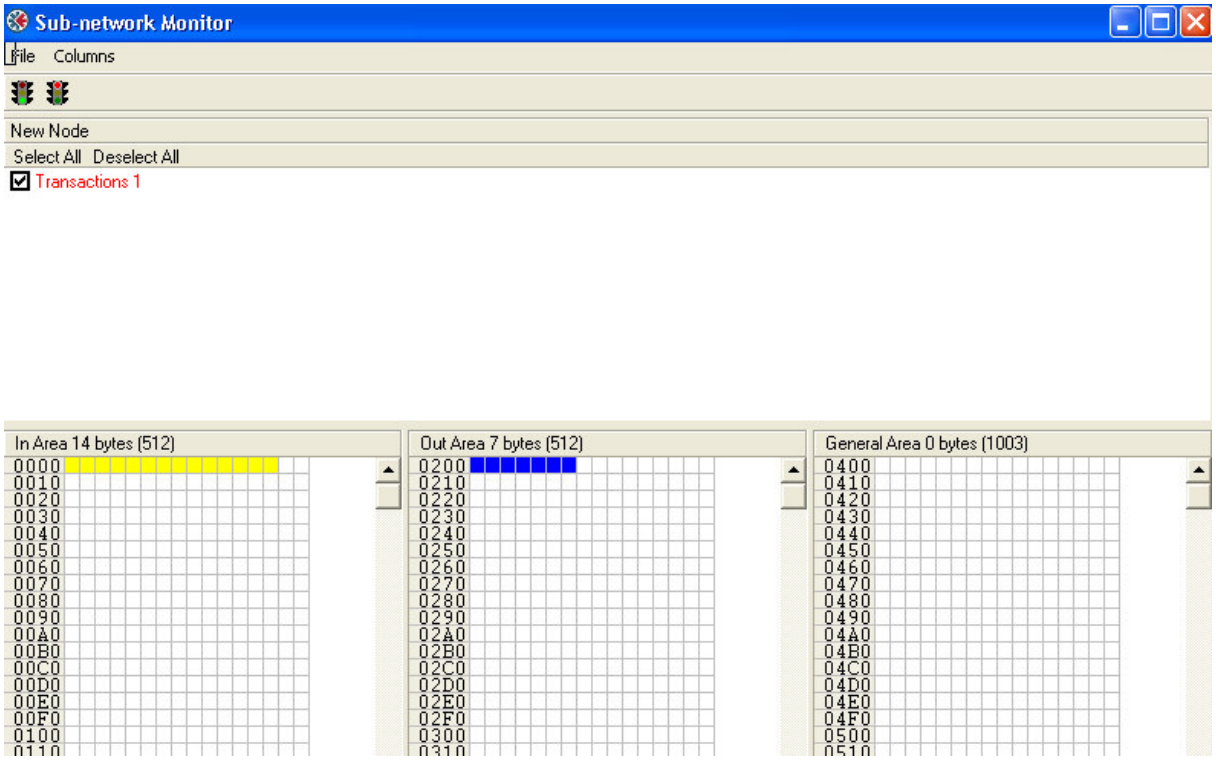

Figure 2

SLC 5/05 Setup

Communicating to the Anybus Communicator for Ethernet is done through a Ethernet/IP Explicit Message (EEM) message instruction. The EEM instruction can be used with any SLC 5/05 processor at OS firmware level Series C, FRN 10 or higher. The EEM message instruction is a control block for storing the instruction parameters and configuration setup screen, similar to a MSG instruction. The Ethernet CIP command consists of a Service Code; the object Class, Instance and Attribute and the Send/Receive Data.

First, to read the Input bytes in the Anybus Communicator, add an EEM message instruction in RsLogix 500. Under, the General tab set the size of the words and the data table address in the message instruction. The service code for a “Read” is an “E” in hexadecimal. The class for the inputs on the Anybus Communicator is 4, with the instance being 64 (hex) and attribute being 3. Also, adjust “Size in Words (Receive Data)” to 124. It should look similar to Figure 3.

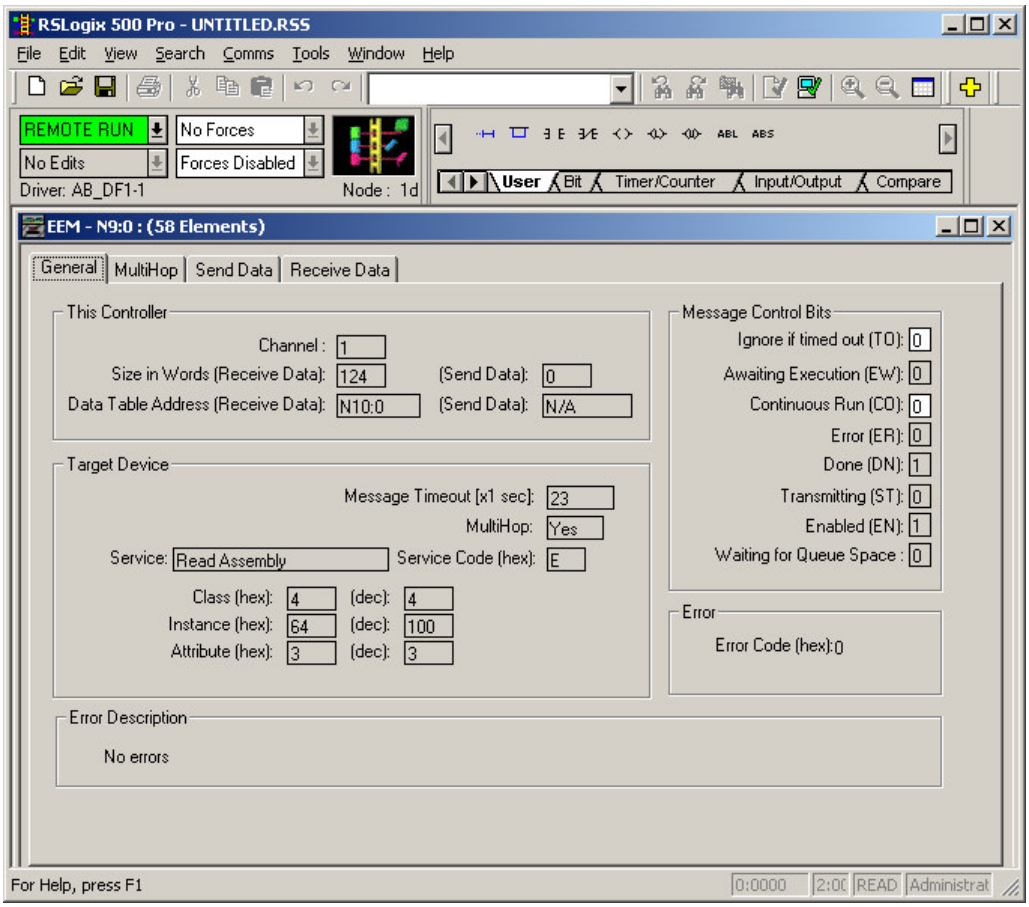

Figure 3

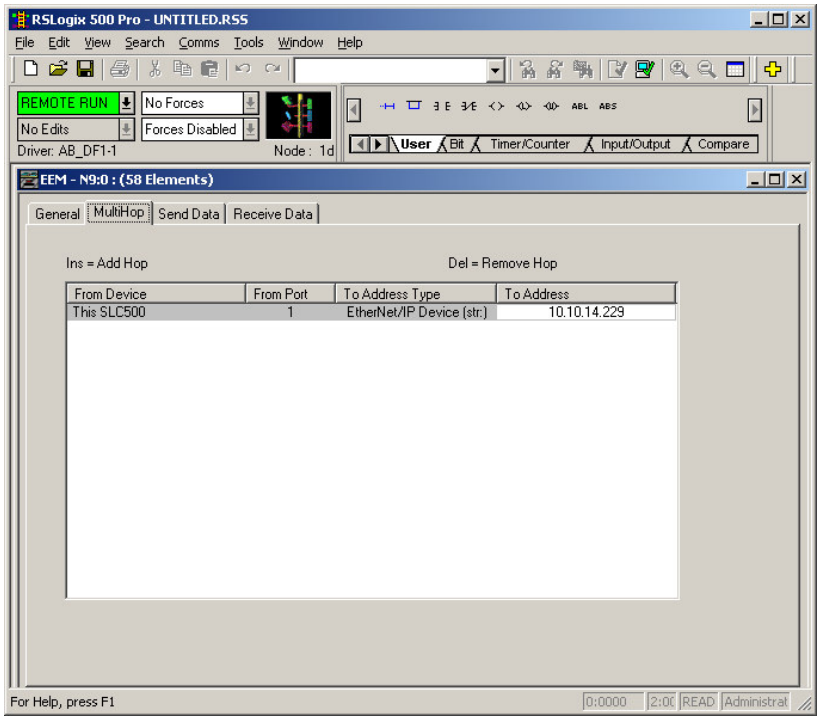

Figure 4

Next, select the “MultiHop” tab. In this tab, enter the IP address of the Anybus Communicator. Save the program and download to the SLC 5/05. This message instruction should now read the 14 input bytes and place them in the N10:0 data table address.

Now, in order to write to the output data in the Anybus Communicator, add an EEM message instruction again to RsLogix 500. Under the “General” tab, the service code will now be 10 (hex). Set the send data size, along with the data table address. In this example, a size of 3 with N11:0 is being used. On the Anybus Communicator, the Class is 4, with the Instance being 96 (hex) and Attribute being 3. This is shown in Figure 5 below.

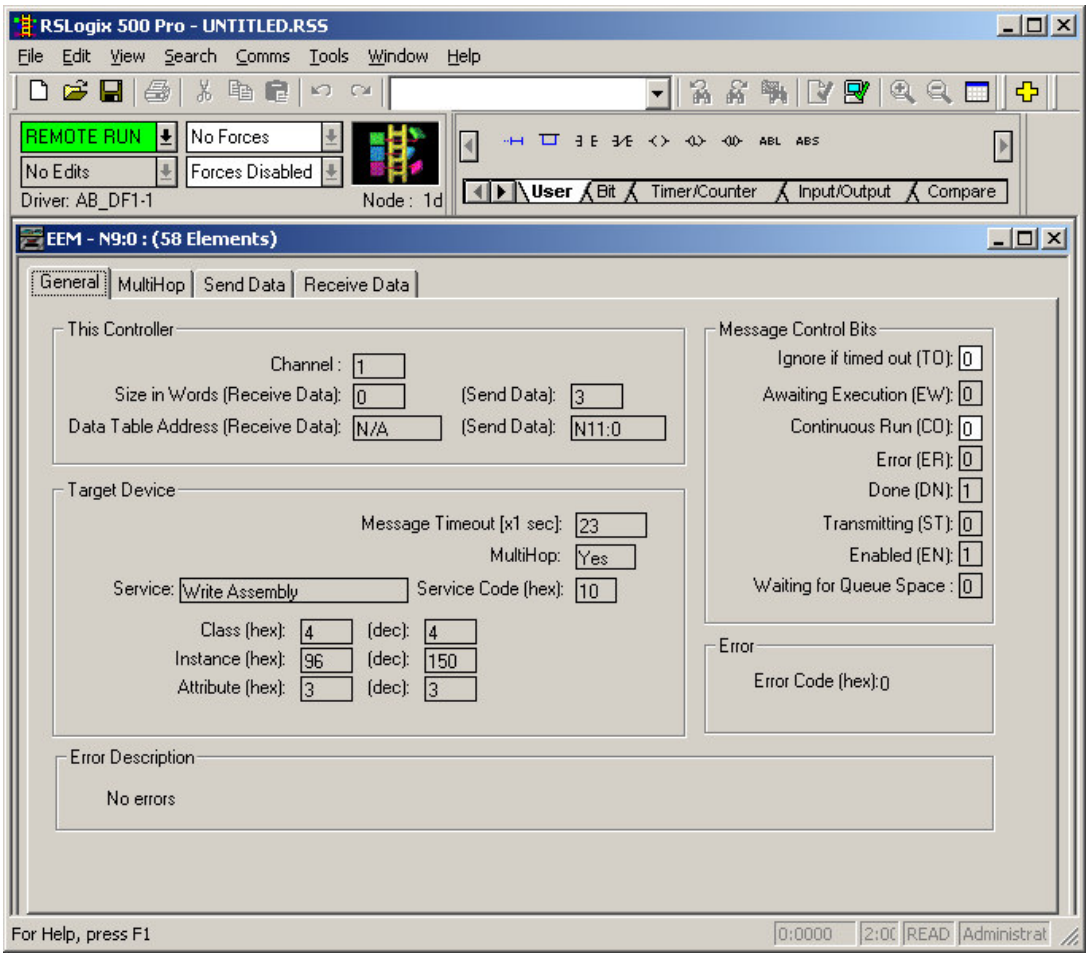

Figure 5

Next, select the “MultiHop” tab and type in the IP address of the Anybus Communicator. Under the “Send Data” tab will be the data that gets sent to the Anybus Communicator module. This is shown in Figure 6.

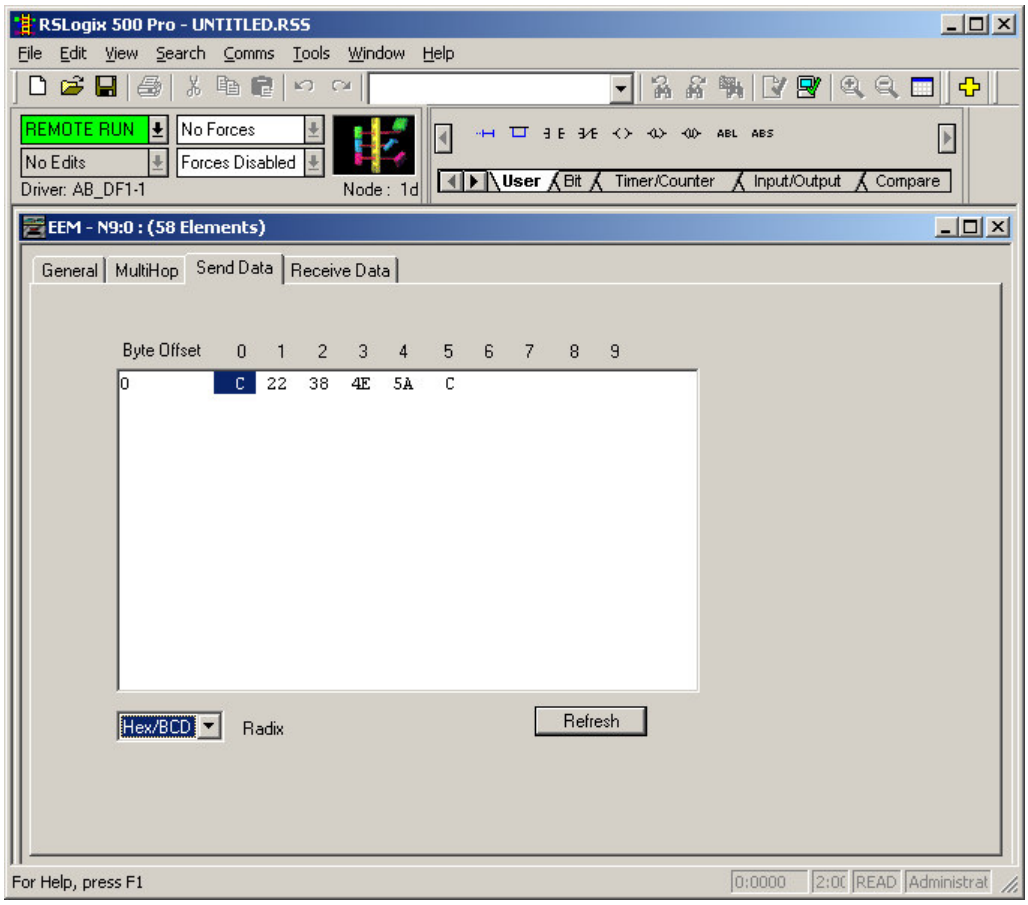

Figure 6

When the message instruction gets executed, the following output values will get sent to the Anybus module. To view the current input and output data that's on the Anybus Communicator, right click on the Node and select "Node Monitor" as shown below in Figure 7. A monitor screen will appear, showing the input and output bytes in grey.

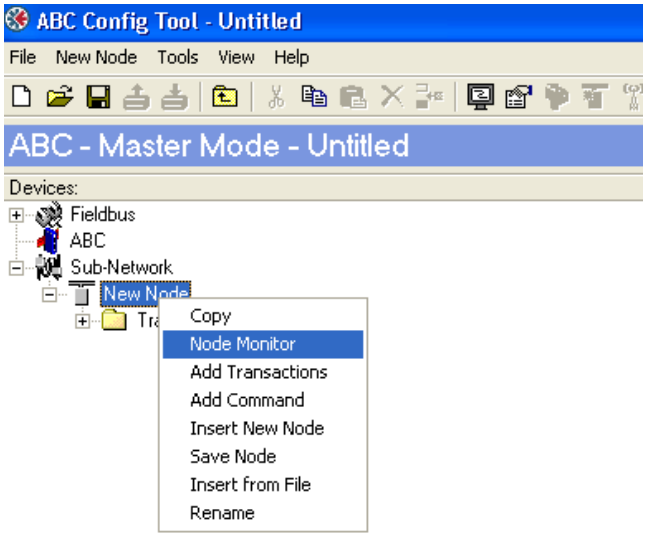

Figure 7

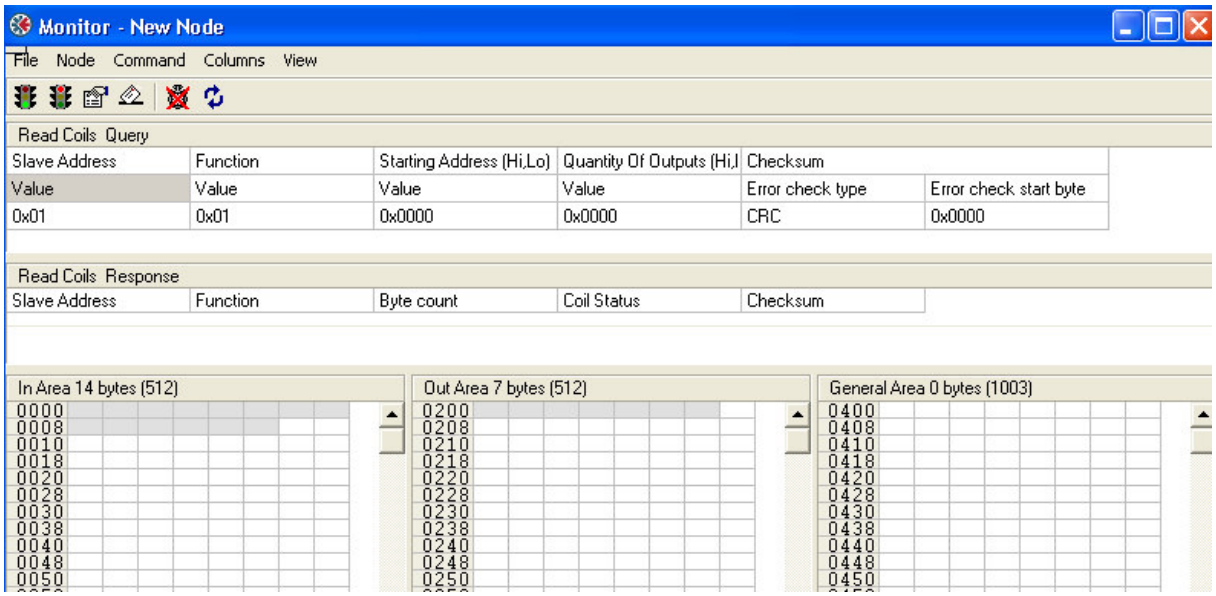

Figure 8

The data shown inside the gray boxes is actual data that is inside the Anybus module. After the message instruction has been executed, the data values set earlier in the message instruction, can now be seen in the output table in the Anybus Communicator through Node Monitor.

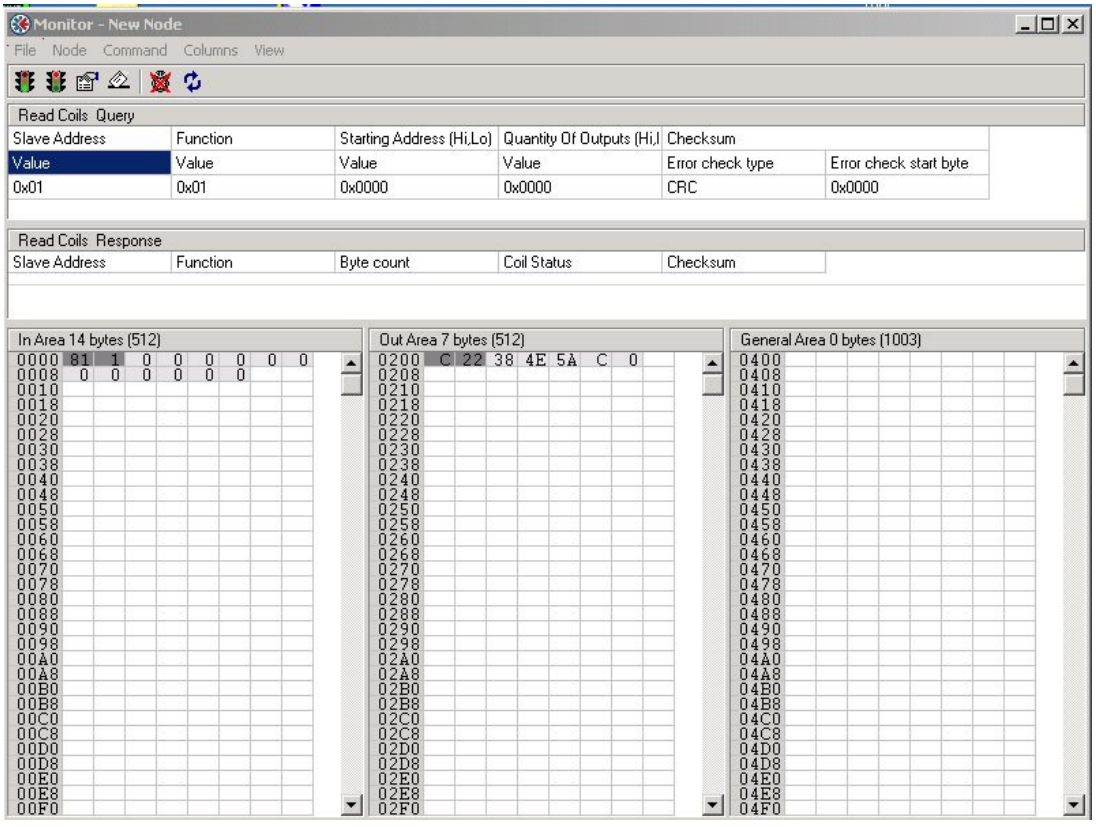

Figure 9

If problems exist, verify cable connection and make sure the communication parameters match between the SLC 5/05 and the Anybus Communicator. If troubles continue, call HMS Industrial Networks for technical support.

Web References:

- www.hms-networks.com
- http://www.ab.com/

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