



## **APPLICATION NOTE**

**Reading/writing data from an X-gateway EtherNet/IP using  
ControlLogix5000 MSG instruction**

**SCM-1202-097**



## Revision Notes

Date:	Revision:	Notes:	Responsible
2003-08-22	0.10	Document created	Joakim Wiberg
2007-07-25	2.0	Revision	Thorbjörn Palm
2018-03-12	2.1	Added document number Minor changes	KaD

## Abbreviations

PLC	ControlLogix5000
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# 1. System configuration overview

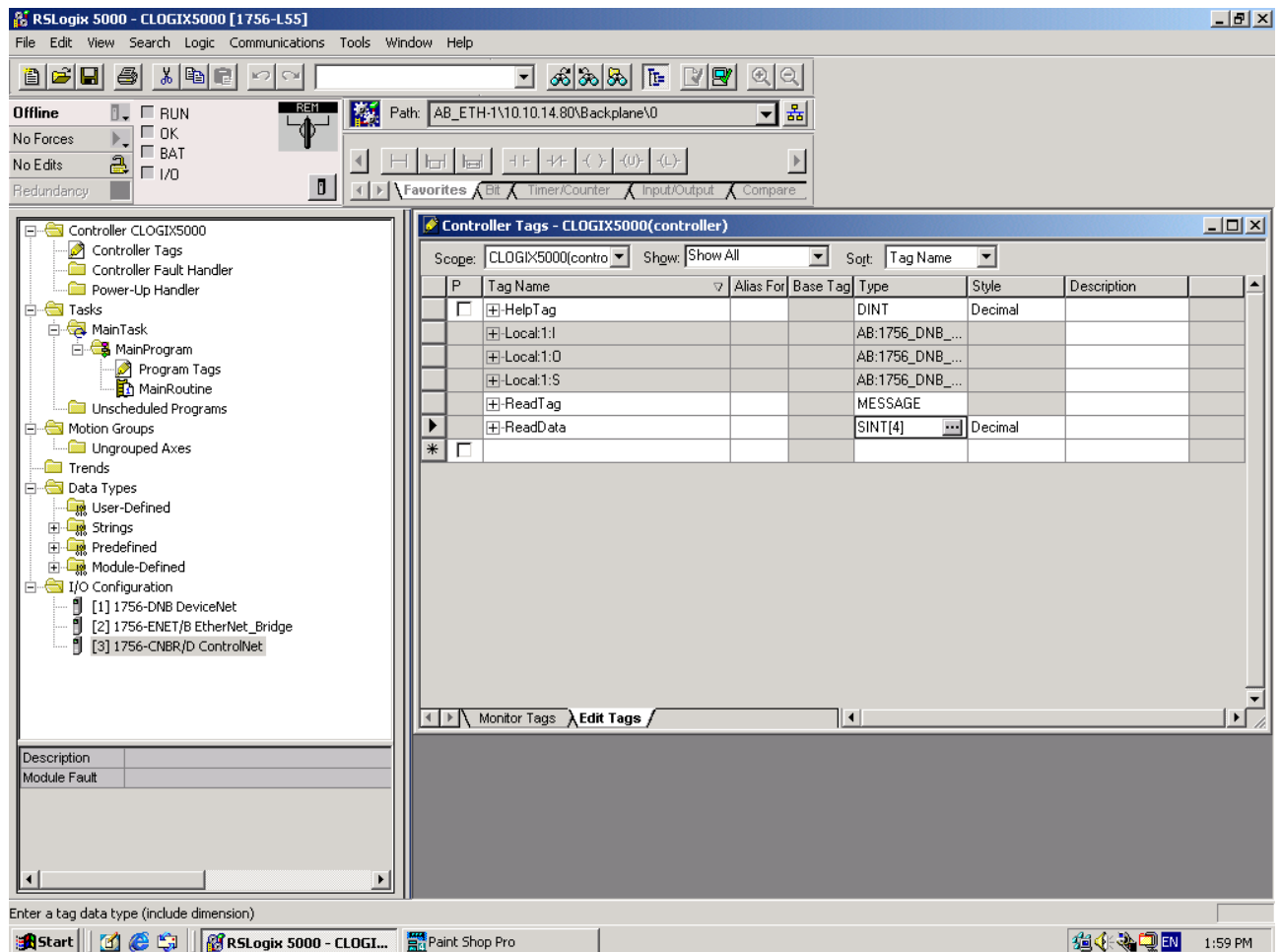
This is an example on how to read/write data in the Anybus X-gateway using the ControlLogix5000 MSG instruction. It should however be possible to use this document as a guide on how to do this using any “generic” EtherNet/IP module from HMS.

This application note assumes that RSLogix5000 and ControlLogix5000 with an EtherNet/IP module/bridge are set up and working correct.

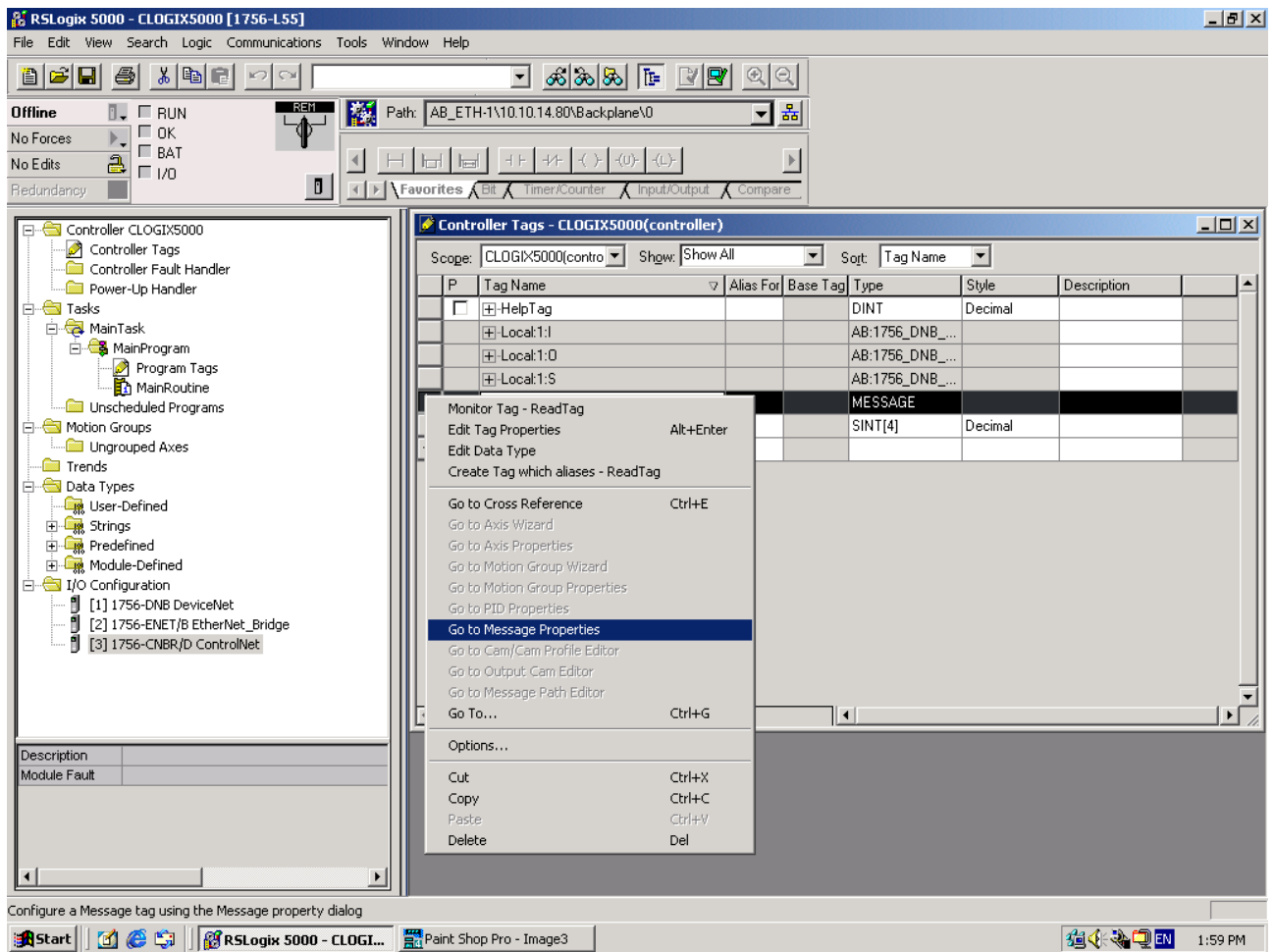
The X-gateway is configured for 4 bytes of data each direction, and have been assigned the IP-address 10.10.14.225.

# 2. Reading data

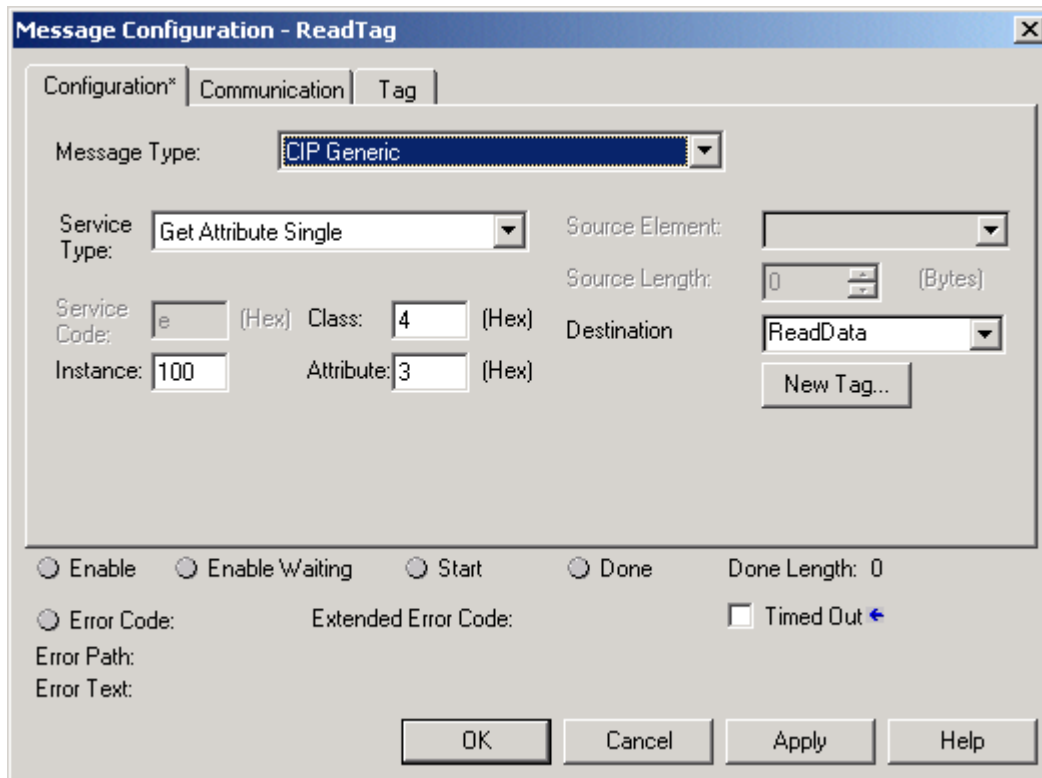
Either create a new project or use an existing, set the program in “Offline” mode. Under “Controller Tags” create two tags named “ReadTag” and “ReadData”, and change the types to MESSAGE and SINT[4] respectively.



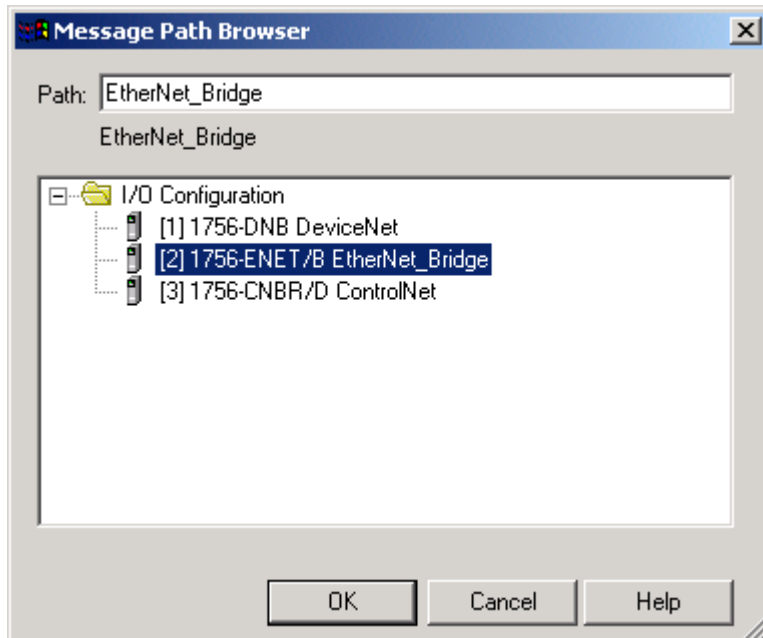
Right click on the “ReadTag” and select “Go to Message Properties”.



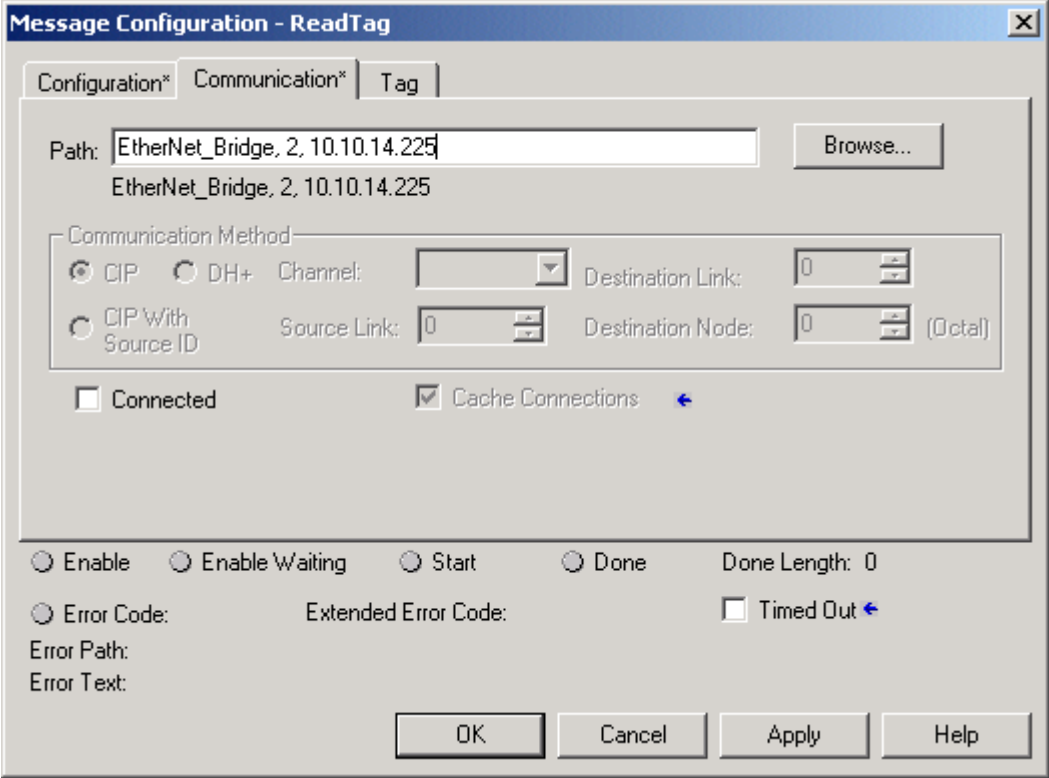
A new dialog window should now occur. Here we select the “Service Type” of “Get Attribute Single”. To access the data stored in the X-gateway, fill in the “Class” as 4, “Instance” as 100 and “Attribute” 3. In the “Destination” dropdown box select the “ReadData” tag; in this tag the read data will be stored.



Next select the “Communication” tab, first click on the “Browse” button. This will bring up a new window. Select the Ethernet module in the PLC and click OK.

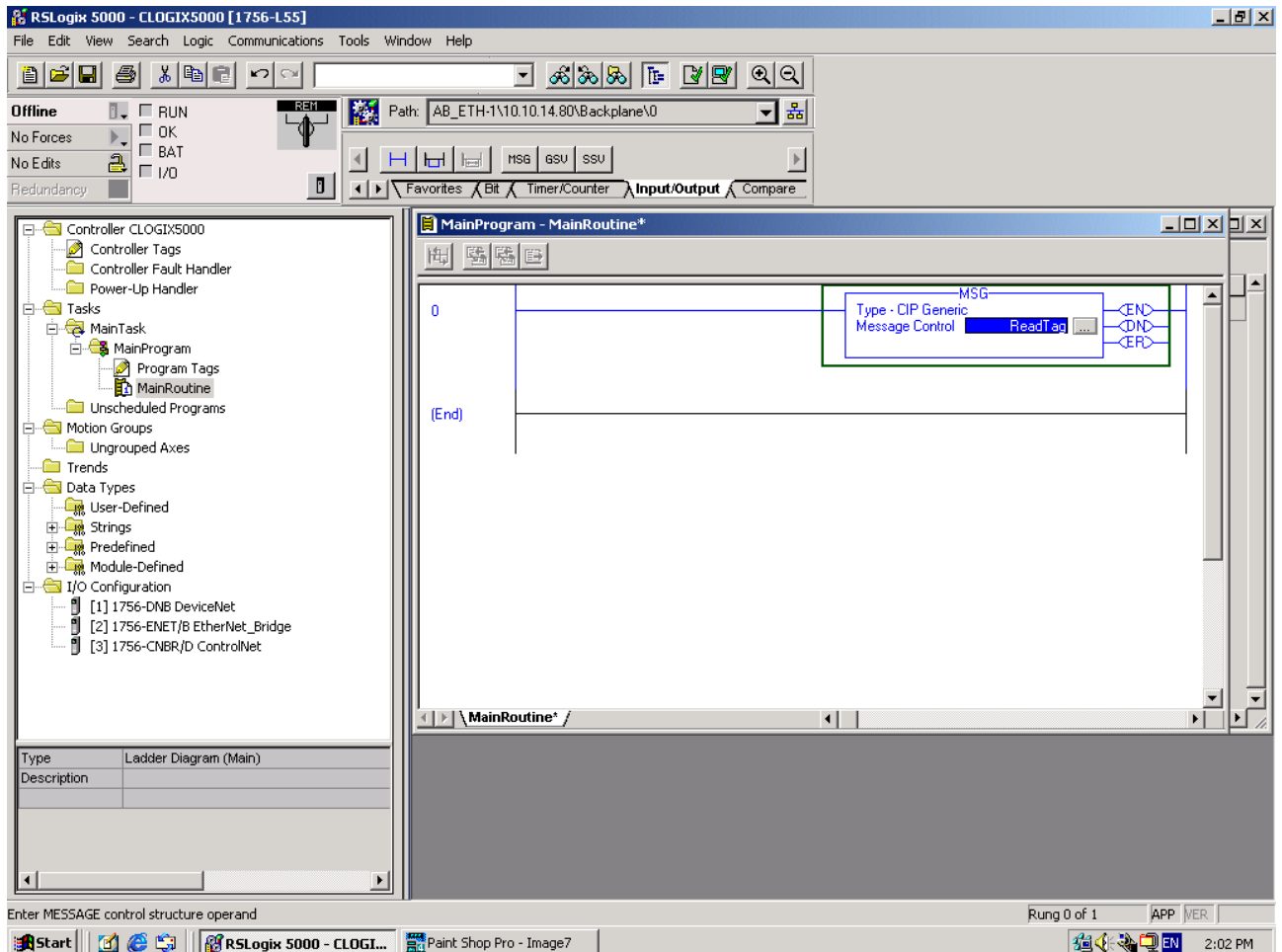


Now the name of the Ethernet module should be visible in the “Path” field. We also have to fill in the full path to the X-gateway (in this example the X-gateway has the IP-address of 10.10.14.225). After the name of the Ethernet module in the PLC, add a comma, a space, and a 2. This indicates that the message should be routed out on Ethernet. Following the 2 add a comma, a space, and the IP-address to the X-gateway, here 10.10.14.225. After this is done, click OK.

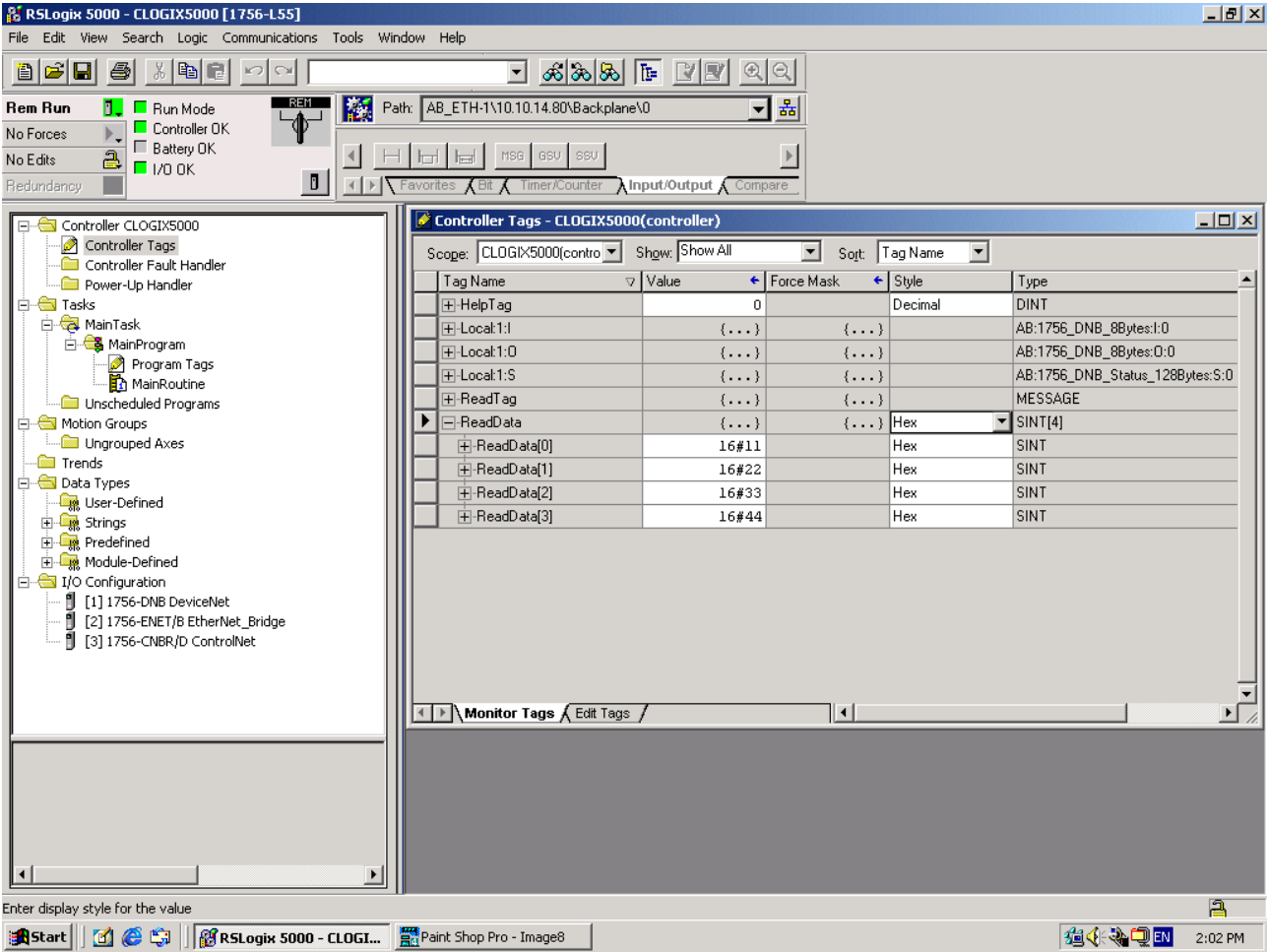


Under the “MainRoutine” in the “MainProgram” add a “MSG” instruction and select “ReadTag” as the “Message Control”. This is a simple example that will only issue one read request, in a normal program some logic have to be added to trigger the instruction again. For more information regarding this issue, refer to documentation for RSLogix5000.

Now download the program to the PLC and go “Online”.



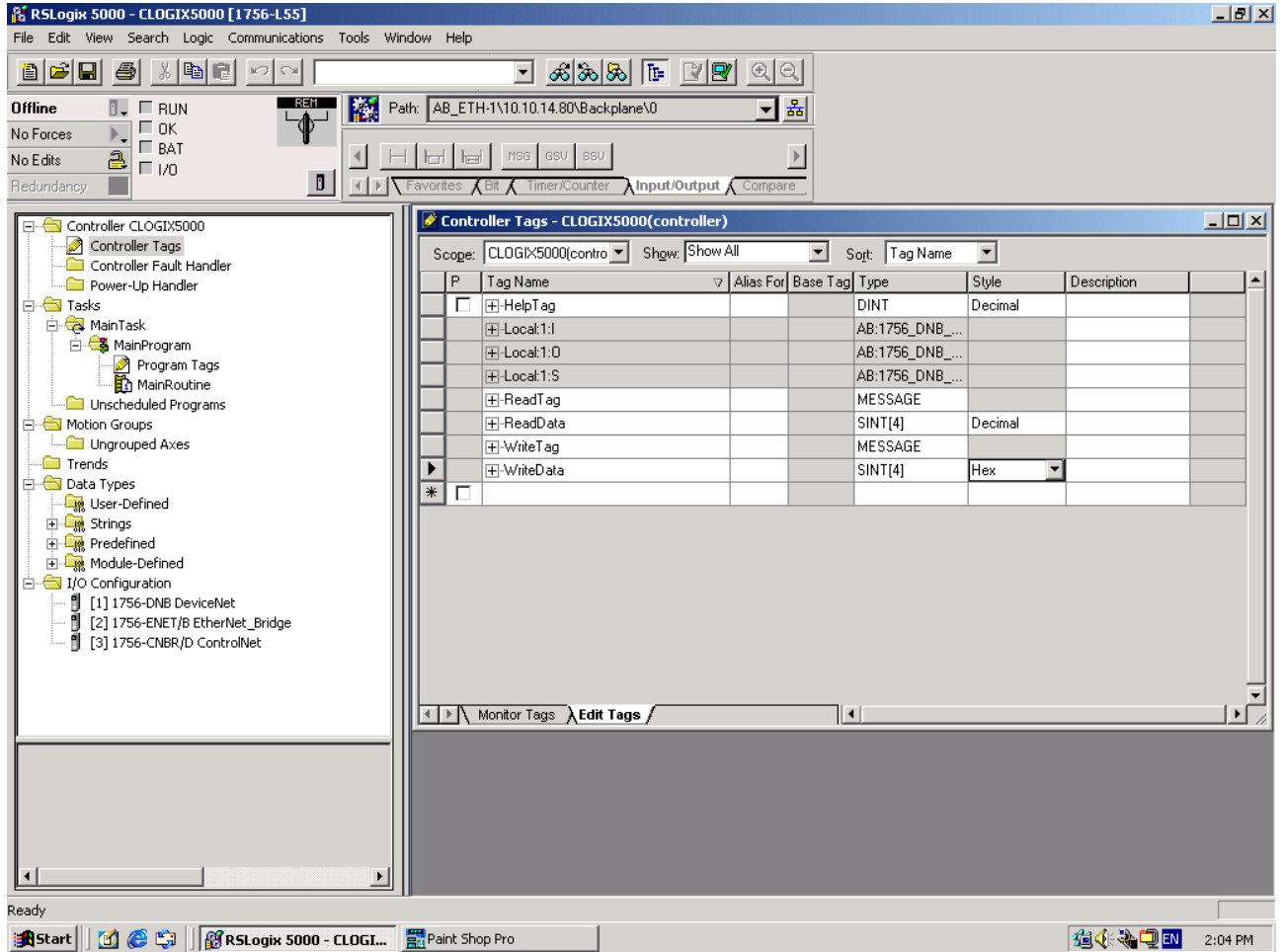
Here is the “Monitor Tags” tab under “Controller Tags” with the “ReadData” tag expanded. The data 0x11, 0x22, 0x33, 0x44 have been read from the X-gateway.





### 3. Writing data

Go “Offline” and create two new tags named “WriteTag” and “WriteData”. Change the types to MESSAGE and SINT[4].



Switch over to the “Monitor Tags” tab and fill in some data in the “WriteData” tag. This data will be written to the X-gateway.

The screenshot displays the RSLogix 5000 software interface. The main window is titled "Controller Tags - CLOGIX5000(controller)". The left-hand pane shows a project tree with the following structure:

- Controller CLOGIX5000
  - Controller Tags
  - Controller Fault Handler
  - Power-Up Handler
  - Tasks
    - MainTask
      - MainProgram
        - Program Tags
        - MainRoutine
      - Unscheduled Programs
    - Motion Groups
      - Ungrouped Axes
      - Trends
    - Data Types
      - User-Defined
      - Strings
      - Predefined
      - Module-Defined
    - I/O Configuration
      - [1] 1756-DNB DeviceNet
      - [2] 1756-ENET/B EtherNet\_Bridge
      - [3] 1756-CNBR/D ControlNet

The main pane shows a table of tags with the following columns: Tag Name, Value, Force Mask, Style, and Type. The "WriteData" tag is selected, and its sub-items are visible:

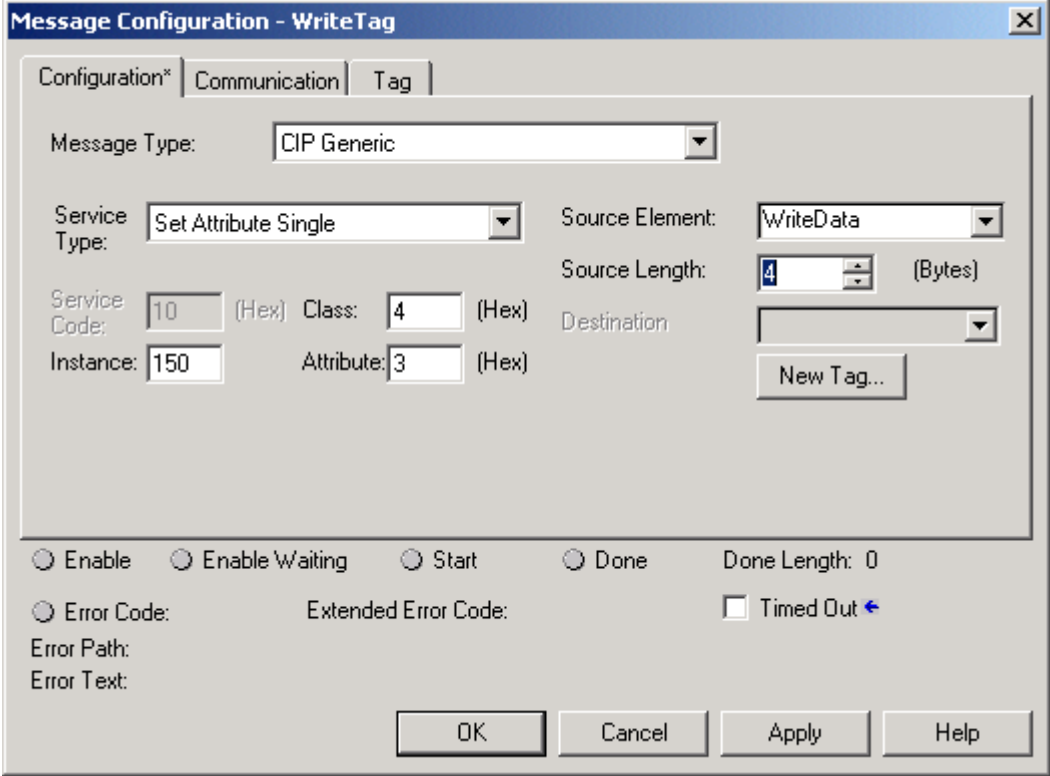
Tag Name	Value	Force Mask	Style	Type
HelpTag	0		Decimal	DINT
Local:1:I	{...}	{...}		AB:1756_DNB_8Bytes:I:0
Local:1:O	{...}	{...}		AB:1756_DNB_8Bytes:O:0
Local:1:S	{...}	{...}		AB:1756_DNB_Status_128Bytes:S:0
ReadTag	{...}	{...}		MESSAGE
ReadData	{...}	{...}	Hex	SINT[4]
WriteTag	{...}	{...}		MESSAGE
WriteData	{...}	{...}	Hex	SINT[4]
WriteData[0]	16#01		Hex	SINT
WriteData[1]	16#02		Hex	SINT
WriteData[2]	16#03		Hex	SINT
WriteData[3]	16#04		Hex	SINT

The bottom of the window shows the Windows taskbar with the Start button, several open applications (including RSLogix 5000 and Paint Shop Pro), and the system clock showing 2:05 PM.

Right click on the write tag and select “Go to Message Properties”, to bring up the configuration window. Now we are writing data so the “Service Type” should be “Set Attribute Single” and the “Instance” 150. The “Class” and “Attribute” should be the same as used when reading data.

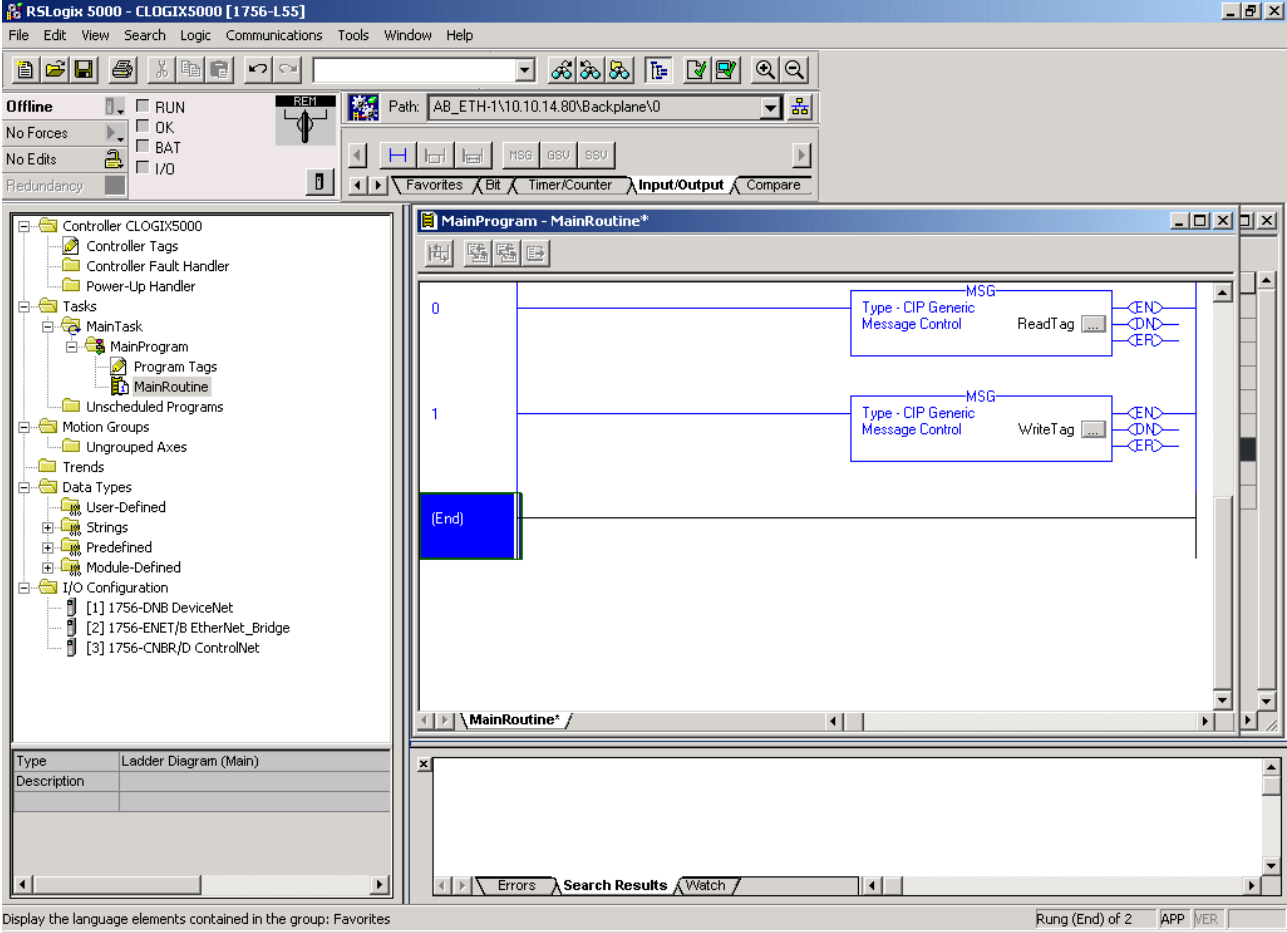
For “Source Element” select the “WriteData” tag. The “Source Length” should be 4 bytes.

Under the “Communication” tab, the “Path” should be the same as the one used to read data.



Go the “MainRoutine”. Add one more MSG instruction, for new instruction select “WriteTag” as the “Message Control”.

Switch to “Online” and download the program, the data what was filled in for the “WriteData” are now being written to the X-gateway.



## 4. Links to information about networks and products

- The latest information and documentation for Anybus X-gateway can be found on <http://www.anybus.com/>.
- The Open DeviceNet Vendor Organization has a homepage, <http://www.odva.org/>, with more information about EtherNet/IP.
- For information concerning the PLC and EtherNet/IP scanner refer to the Allen-Bradley's homepage <http://www.ab.com/>.