



## **APPLICATION NOTE:**

**Reading/writing data from Anybus-S EtherNet/IP using  
ControlLogix5000 MSG instruction**



## Revision Notes

Date:	Revision:	Notes:	Responsible
2003-08-22	0.10	Document created	Joakim Wiberg
2007-07-25	2.0	Revision	Thorbjörn Palm

## Abbreviations

PLC	ControlLogix5000
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# 1. System configuration overview

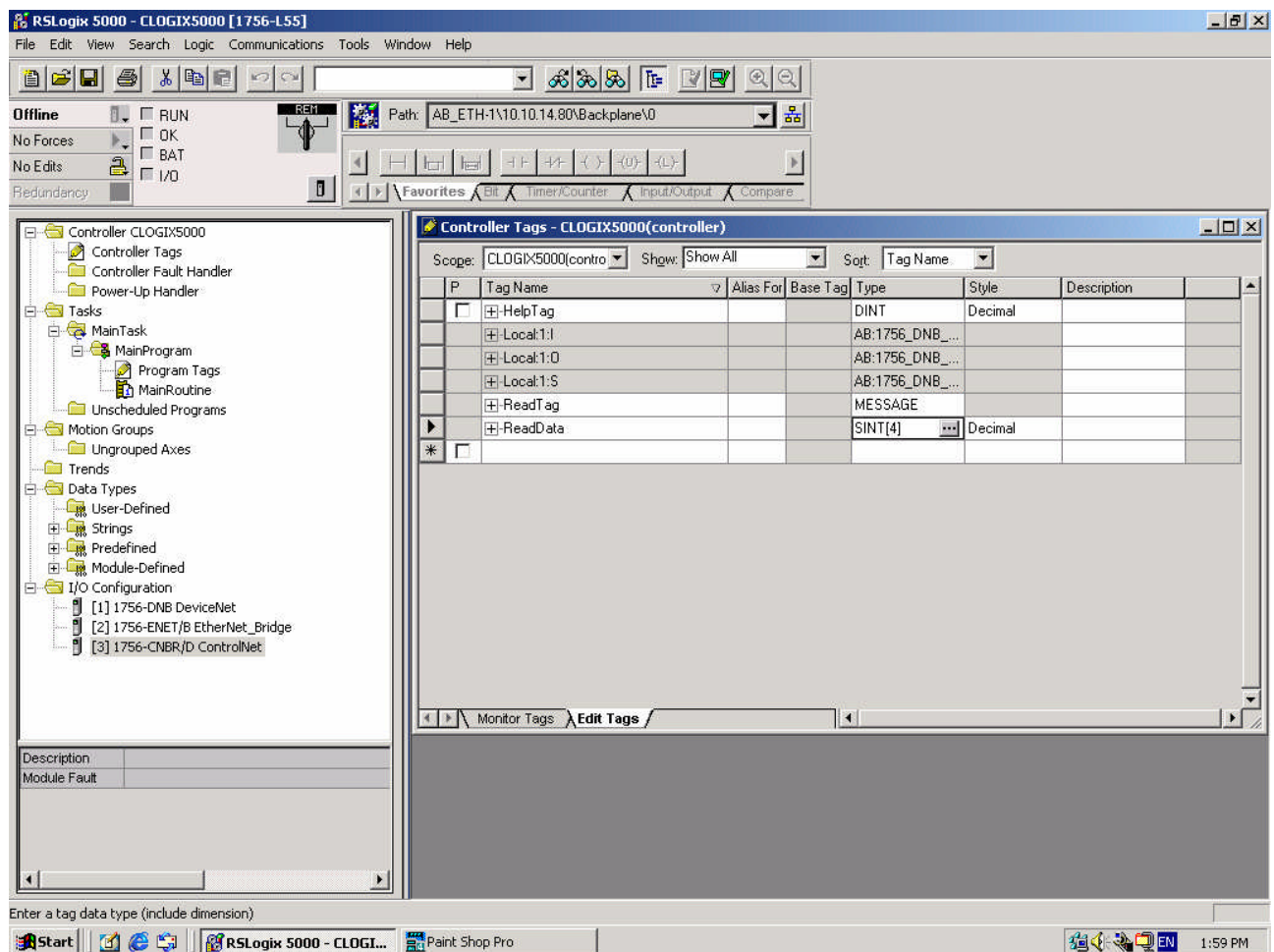
This is an example on how to read/write data in the Anybus-S Slave module using the ControlLogix5000 MSG instruction. It should however be possible to use this document as a guide how to do this using any “generic” EtherNet/IP module from HMS.

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

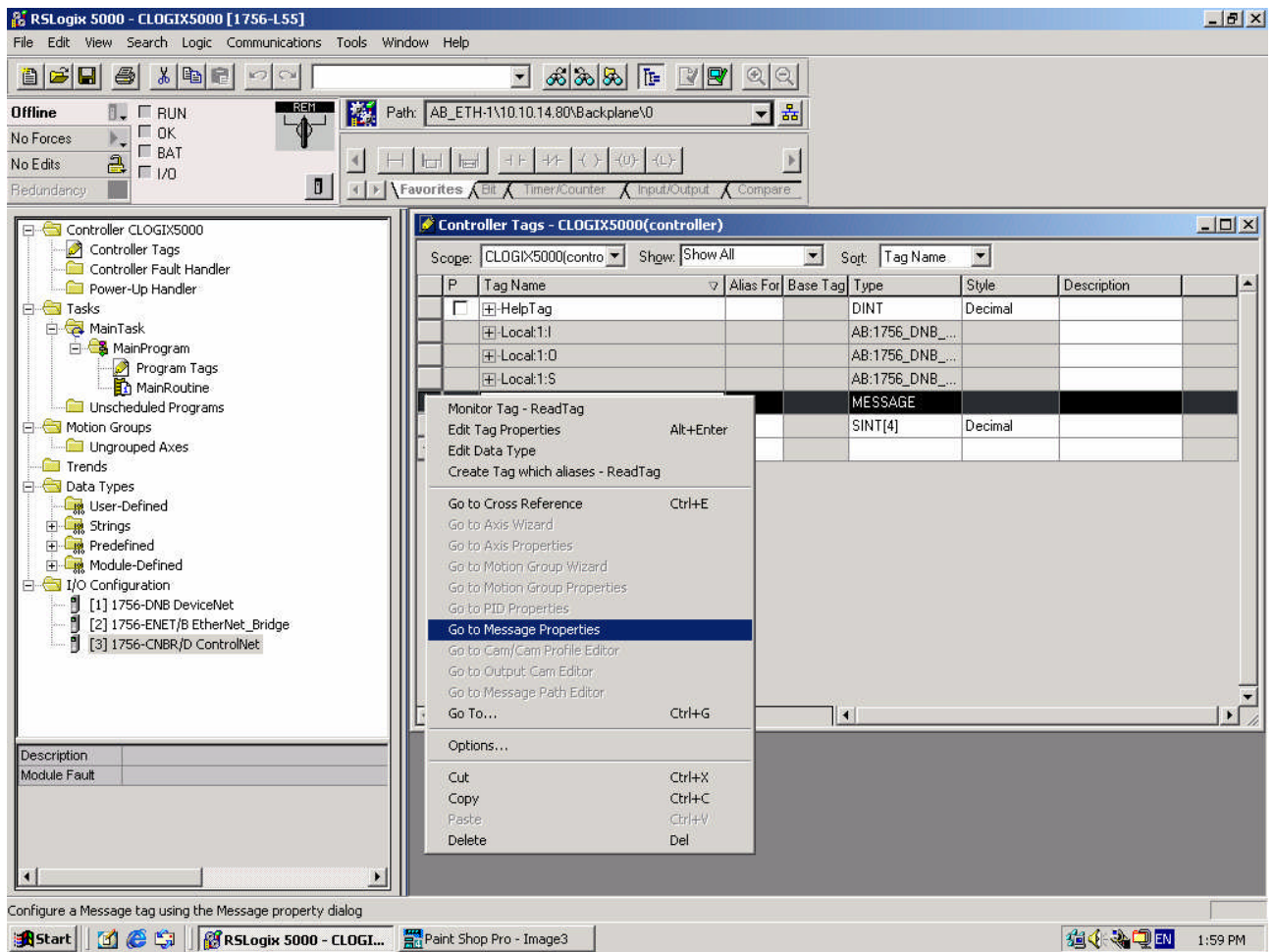
The Anybus-S Slave module is configured for 4 bytes of data each direction, and have been assigned the IP-address 10.10.14.225.

# 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 have to select the “Service Type” of “Get Attribute Single”. To access the data stored in the Anybus-S Slave module 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.

**Message Configuration - ReadTag**

Configuration\* | Communication | Tag

Message Type: CIP Generic

Service Type: Get Attribute Single Source Element:

Service Code: e (Hex) Class: 4 (Hex) Source Length: 0 (Bytes)

Instance: 100 Attribute: 3 (Hex) Destination: ReadData

New Tag...

☐ Enable
 ☐ Enable Waiting
 ☐ Start
 ☐ Done
 Done Length: 0

☐ Error Code:
 Extended Error Code:
 ☐ Timed Out

Error Path:

Error Text:

OK Cancel Apply Help

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

**Message Path Browser**

Path: EtherNet\_Bridge

EtherNet\_Bridge

I/O Configuration

- [1] 1756-DNB DeviceNet
- [2] 1756-ENET/B EtherNet\_Bridge
- [3] 1756-CNBR/D ControlNet

OK Cancel Help

Now the name of the Ethernet module should be filled in at the “Path”, here we also have to fill in the full path to the Anybus-S Slave module (in this example the Anybus-S Slave module have 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 Anybus-S Slave module, here 10.10.14.225. This is everything that has to be done here, click on OK.

**Message Configuration - ReadTag**

Configuration\* Communication\* Tag

Path:

EtherNet\_Bridge, 2, 10.10.14.225

Communication Method

☒ CIP ☐ DH+ Channel:  Destination Link:

☐ CIP With Source ID Source Link:  Destination Node:  (Octal)

☐ Connected ☒ Cache Connections

☒ Enable ☐ Enable Waiting ☐ Start ☐ Done Done Length: 0

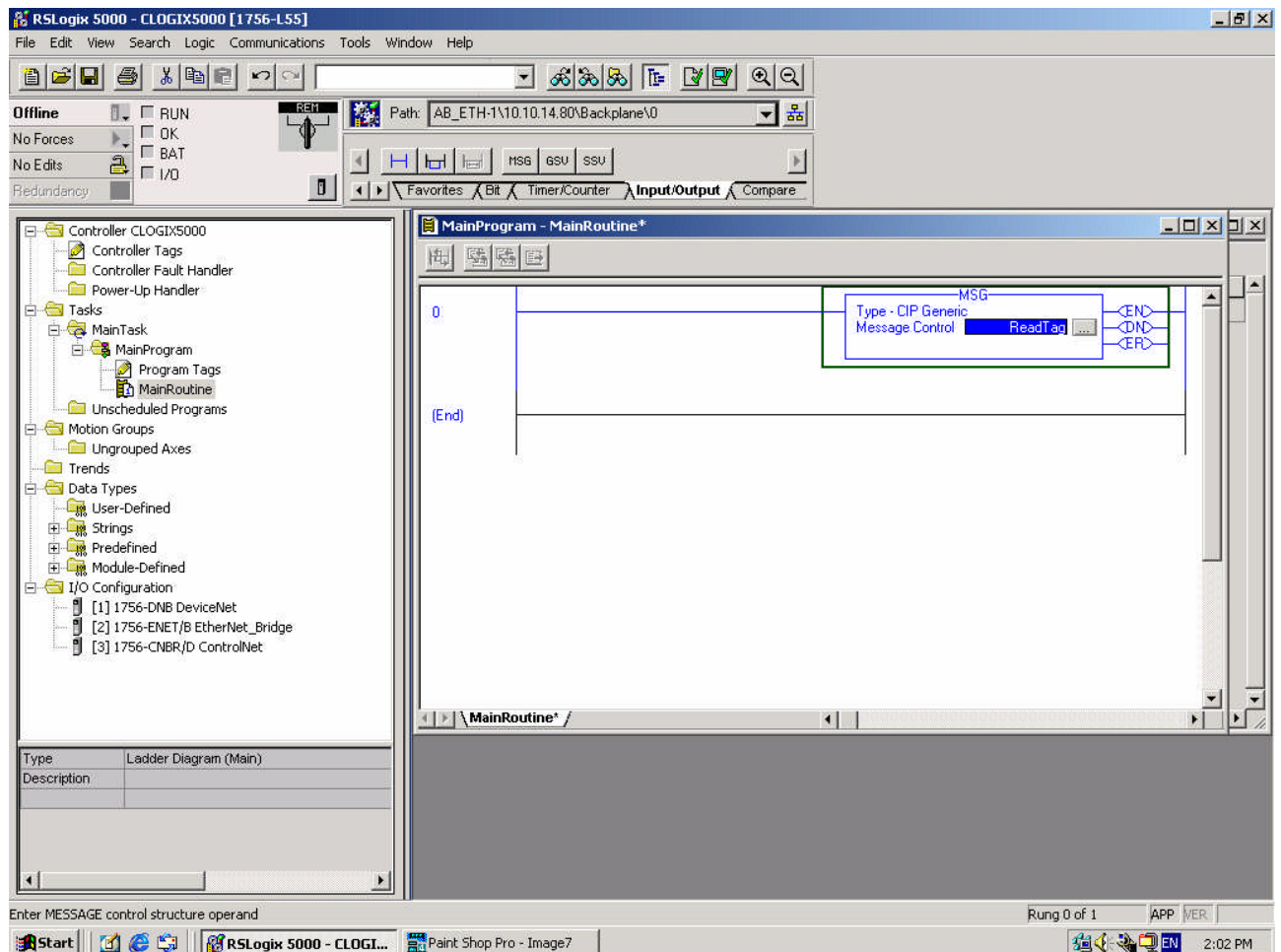
☐ Error Code: Extended Error Code: ☐ Timed Out

Error Path:

Error Text:

Under the “MainRoutine” in the “MainProgram” add a “MSG” instruction and select “ReadTag” as the “Message Control”. This is a simple example that only will 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 ABS model.

The screenshot displays the RSLogix 5000 - CLOGIX5000 [1756-L55] interface. The left pane shows the project tree with 'Controller Tags' expanded. The right pane shows the 'Monitor Tags' tab for 'Controller Tags - CLOGIX5000(controller)'. The 'ReadData' tag is expanded, showing four data points with their values and types.

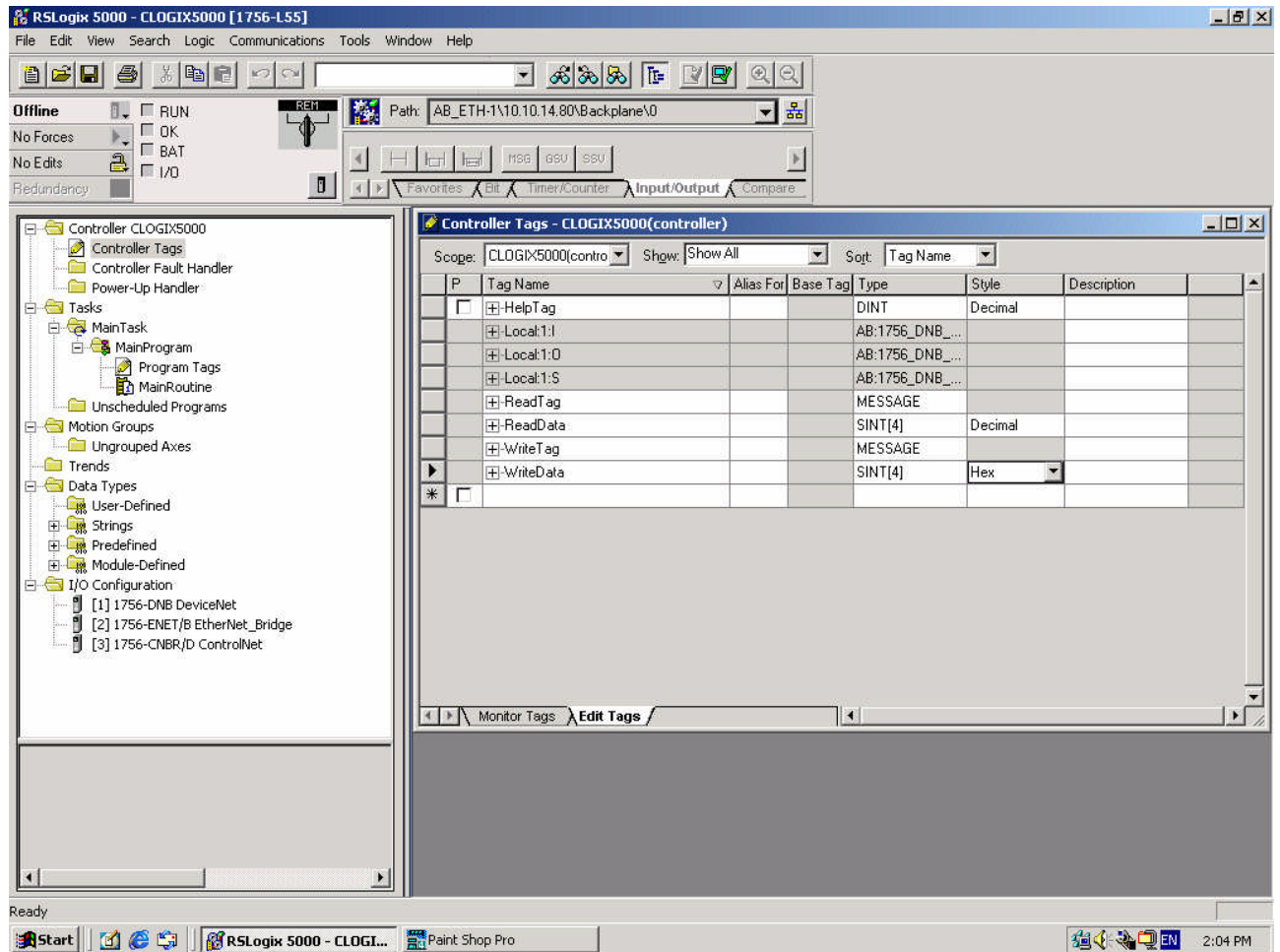
Tag Name	Value	Force Mask	Style	Type
HelpTag	0		Decimal	DINT
Local:1:I	{...}	{...}		AB:1756_DNB_8Bytes:I:0
Local:1:O	{...}	{...}		AB:1756_DNB_8Bytes:O:0
Local:1:S	{...}	{...}		AB:1756_DNB_Status_128Bytes:S:0
ReadTag	{...}	{...}		MESSAGE
ReadData	{...}	{...}	Hex	SINT[4]
ReadData[0]	16#11		Hex	SINT
ReadData[1]	16#22		Hex	SINT
ReadData[2]	16#33		Hex	SINT
ReadData[3]	16#44		Hex	SINT

The status bar at the bottom indicates 'Enter display style for the value'.



### 3. Writing data

Go “Offline” and create two new tags named “WriteTag” and “WriteData”, and 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 Anybus-S Slave module.

The screenshot shows the RSLogix 5000 - CLOGIX5000 [1756-L55] software interface. The 'Monitor Tags' tab is active, displaying a table of tags. The 'WriteData' tag is selected, and its value is being entered as 16#04.

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 'Monitor Tags' tab is active, and the 'WriteData' tag is selected. The 'Value' column shows the current value for each tag. The 'Style' column shows the format (Decimal, Hex). The 'Type' column shows the data type (DINT, SINT, MESSAGE).

Right click on the write tag and select “Go to Message Properties”, to bring up the configuration window. Now we’re 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 and the “Source Length” should be 4 bytes.

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

**Message Configuration - WriteTag**

Configuration\* | Communication | Tag

Message Type: CIP Generic

Service Type: Set Attribute Single

Source Element: WriteData

Source Length: 4 (Bytes)

Service Code: 10 (Hex) Class: 4 (Hex)

Instance: 150 Attribute: 3 (Hex)

Destination: [Dropdown]

New Tag...

☐ Enable ☐ Enable Waiting ☐ Start ☐ Done Done Length: 0

☐ Error Code: Extended Error Code: ☐ Timed Out

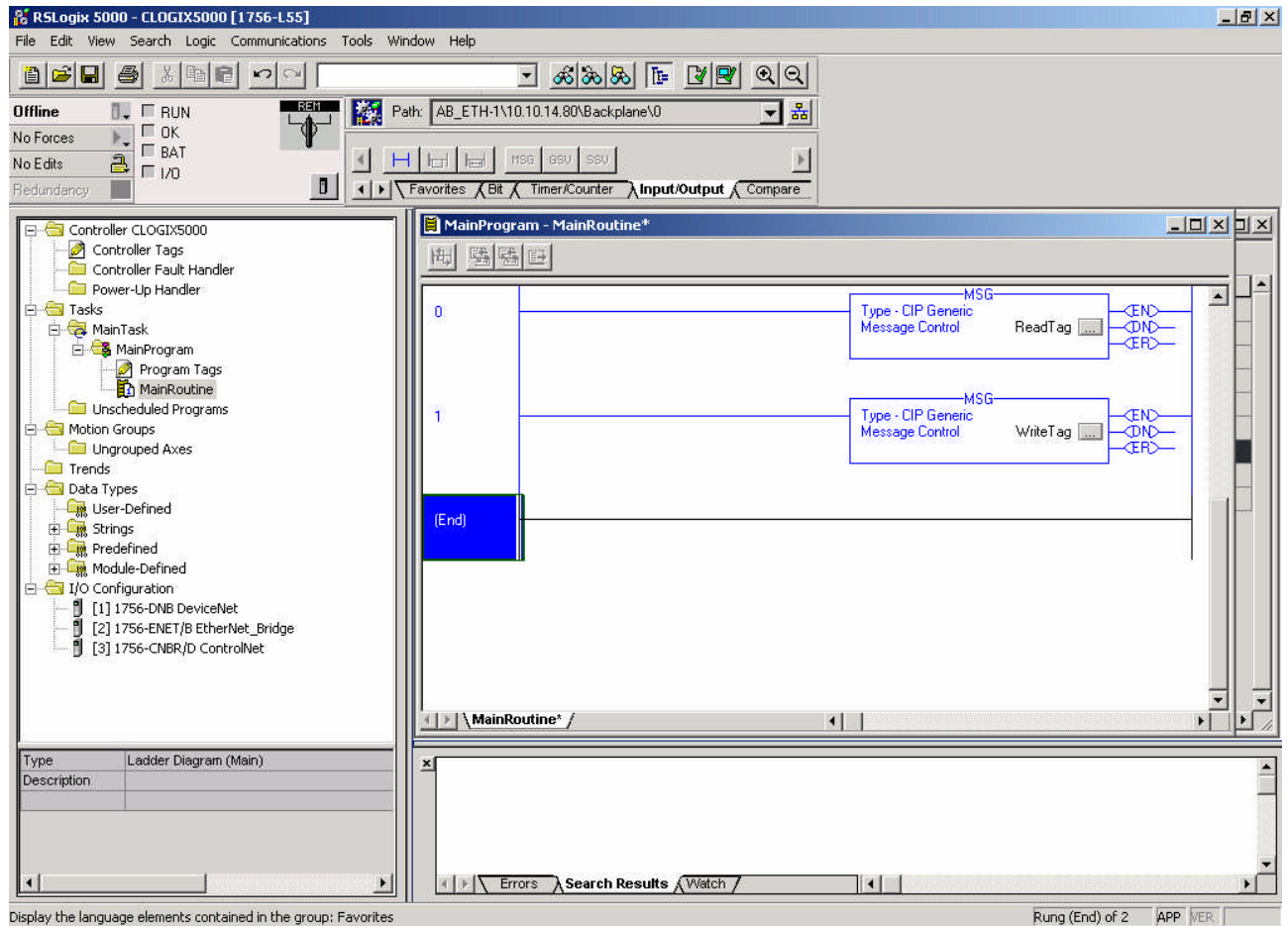
Error Path:

Error Text:

OK Cancel Apply Help

Go the “MainRoutine” and 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 Anybus-S Slave module.



## 4. Links to information about networks and products

- The latest for the ABS module can be found on the HMS homepage <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/>.

## 5. Support

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