

APPLICATION NOTE:

**Reading/writing data from AnyBus-S DeviceNet using
ControlLogix5000 MSG instruction**

Revision Notes

Date:	Revision:	Notes:
2003-12-09	0.10	Document created

Abbreviations

ABS	AnyBus-S DeviceNet
PLC	ControlLogix5000

1. System configuration overview

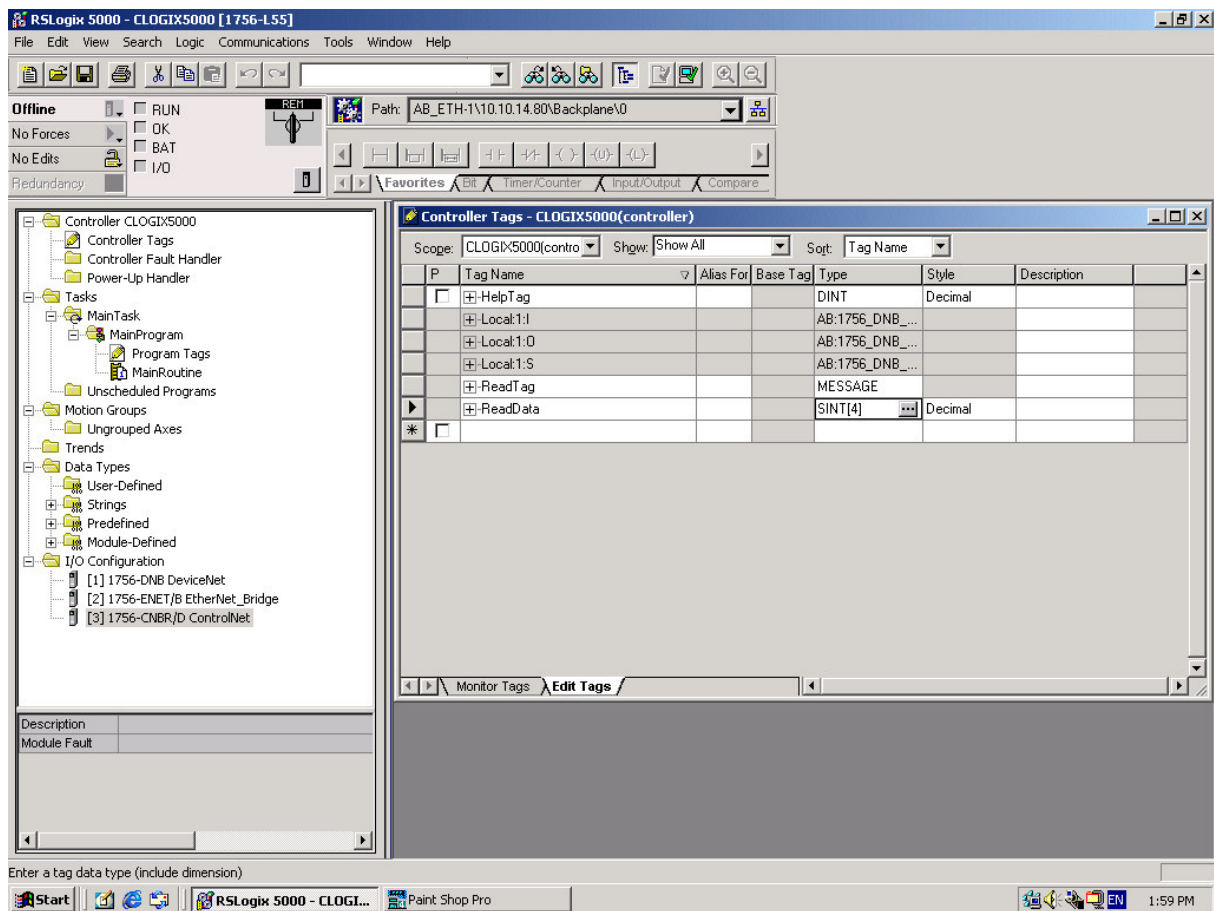
This is an example on how to read/write data in the ABS module using the ControlLogix5000 MSG instruction. It should however be possible to use this document as a guide how to do this using any “generic” DeviceNet module from HMS.

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

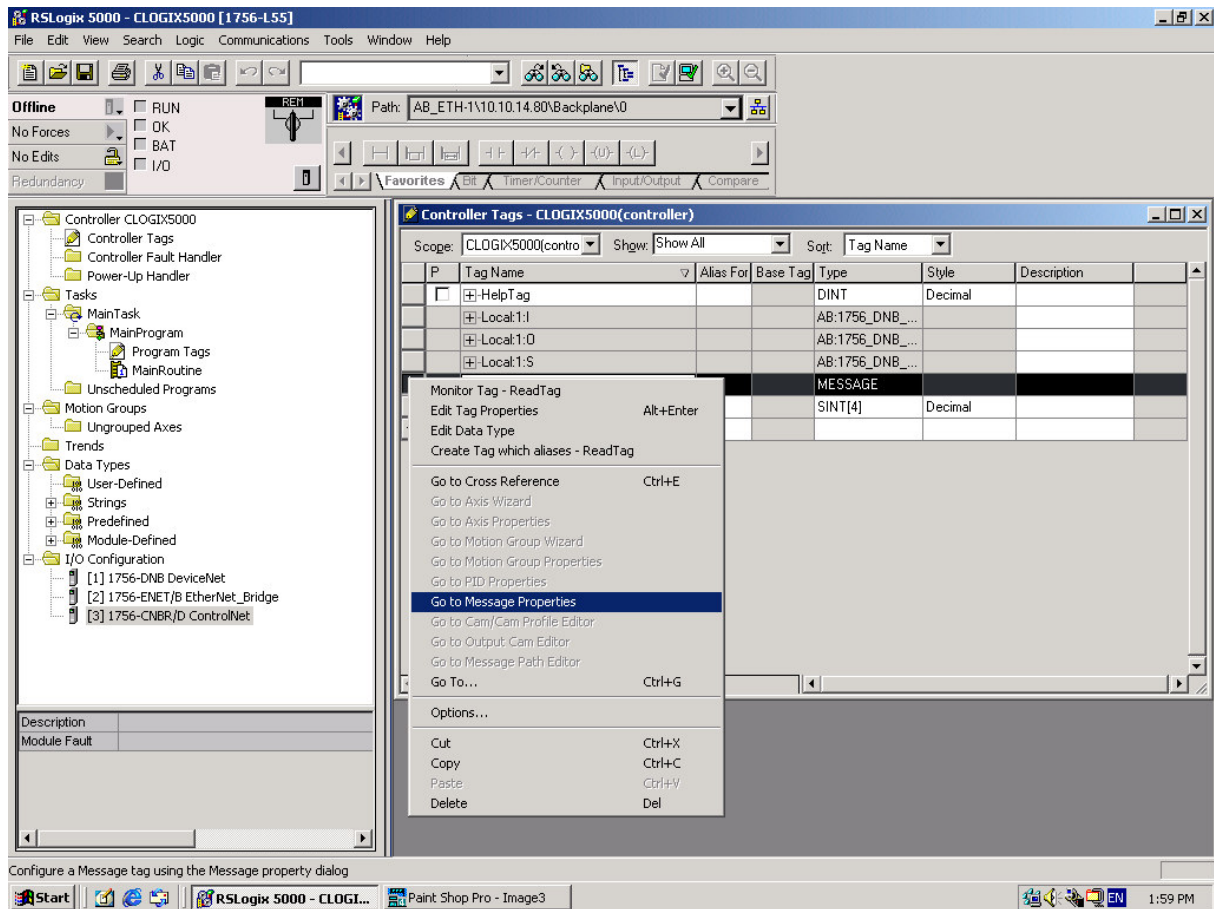
The ABS module is configured for 4 bytes of data each direction, and have been assigned the MAC-address 4.

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 date types to MESSAGE and SINT[4] (array of 4 bytes) respectively.



Go to the edit tab and 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 ABS 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

Service Code: e (Hex) Class: 4 (Hex) Instance: 100 Attribute: 3 (Hex)

Source Element: Source Length: 0 (Bytes) 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 DeviceNet module in the PLC and click OK.

Message Path Browser

Path: DeviceNet_Scanner

DeviceNet_Scanner

I/O Configuration

- [1] 1756-DNB DeviceNet_Scanner
- [2] 1756-ENET/B EthernetIP_Scanner
- ETHERNET-MODULE Anybus
- [3] 1756-CNBR/D ControlNet_Scanner

OK Cancel Help

Now the name of the DeviceNet module should be filled in at the “Path”, here we also have to fill in the full path to the ABS module (in this example the ABS module have the MAC-address of 4). After the name of the DeviceNet module in the PLC, add a comma, a space, and a 2, this indicates that the message should be routed out on DeviceNet. Following the 2 add a comma, a space, and the MAC-address to the ABS module, here 4. This is everything that has to be done here, click on OK.

Message Configuration - ReadTag

Configuration Communication* Tag

Path: Browse...

DeviceNet_Scanner, 2, 4

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

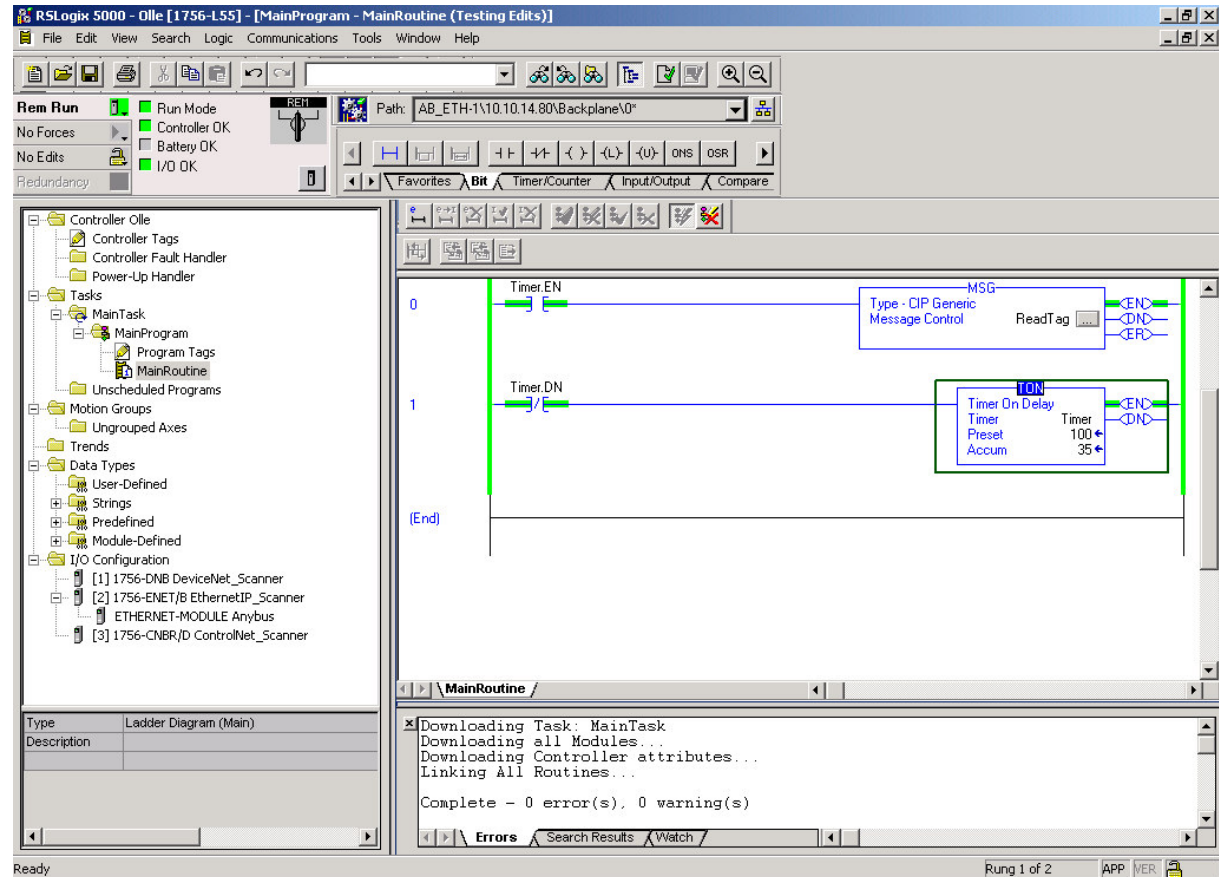
☐ Error Code: Extended Error Code: ☐ Timed Out

Error Path:
Error Text:

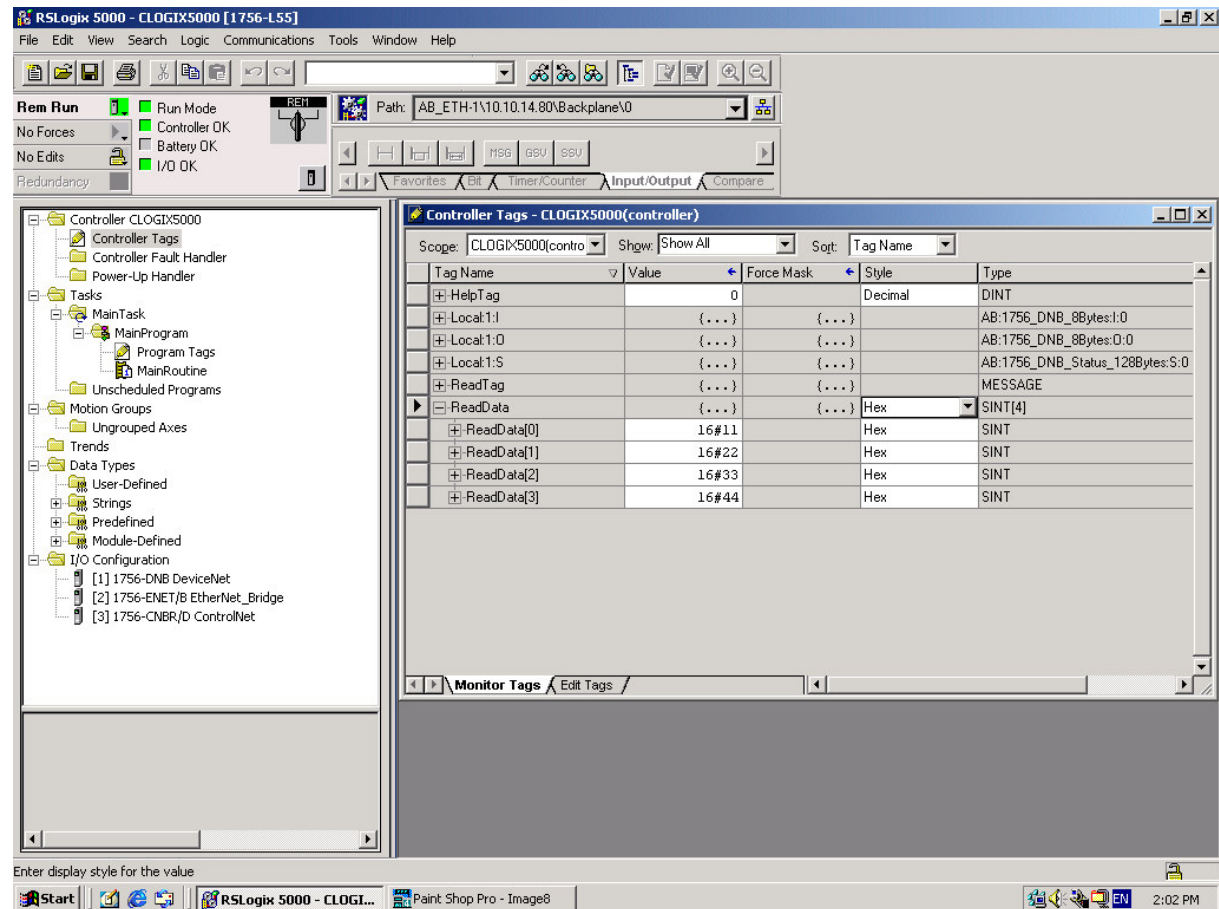
OK Cancel Apply Help

Under the “MainRoutine” in the “MainProgram” add a “MSG” instruction and select “ReadTag” as the “Message Control”. Add a second rung with a Timer On Delay (TON). The Preset value can be set to 100. You will also need to add an (Examine ON) called Timer.EN to the first rung and an (Examine OFF) Timer.DN to the second rung. The program should look like the picture shown below. This is a simple example that will loop a read request. For more information regarding this issue refer to documentation for RSLogix5000.

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

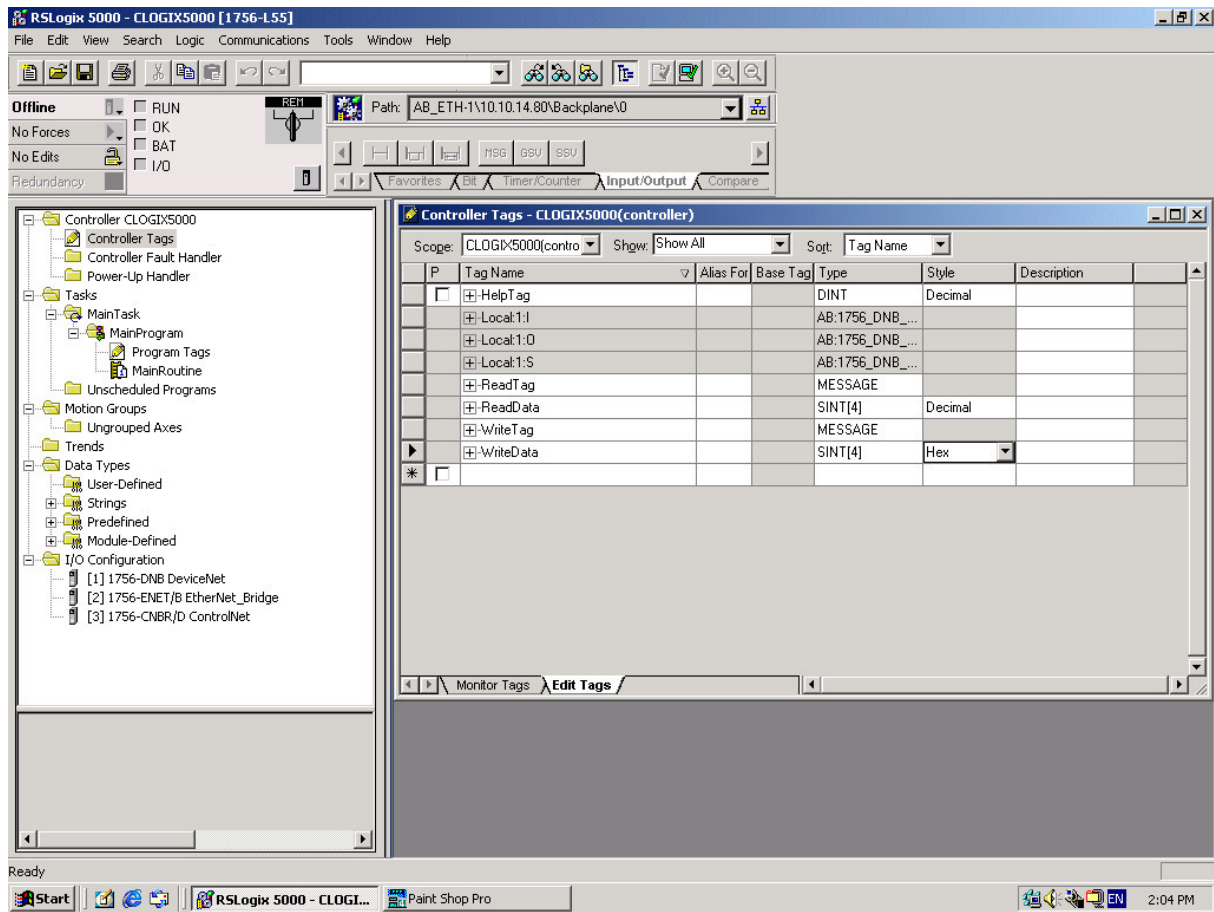


Here is the “Monitor Tags” tab under “Controller Tags” with the “ReadData” tag expanded, the data 0x11, 0x22, 0x33, 0x44 have been read from the ABS model.



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 ABS module.

The screenshot shows the RSLogix 5000 - CLOGIX5000 [1756-L55] interface. The left pane shows the project tree with 'Controller CLOGIX5000' expanded. The right pane shows the 'Controller Tags - CLOGIX5000(controller)' window. The 'Monitor Tags' tab is active, displaying a table of tags.

Tag Name	Value	Force Mask	Style	Type
HelpTag	0		Decimal	DINT
Local:1:1	{...}	{...}		AB:1756_DNB_8Bytes:1:0
Local:1:0	{...}	{...}		AB:1756_DNB_8Bytes:0:0
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 status bar shows the time as 2:05 PM.

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:

New Tag...

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

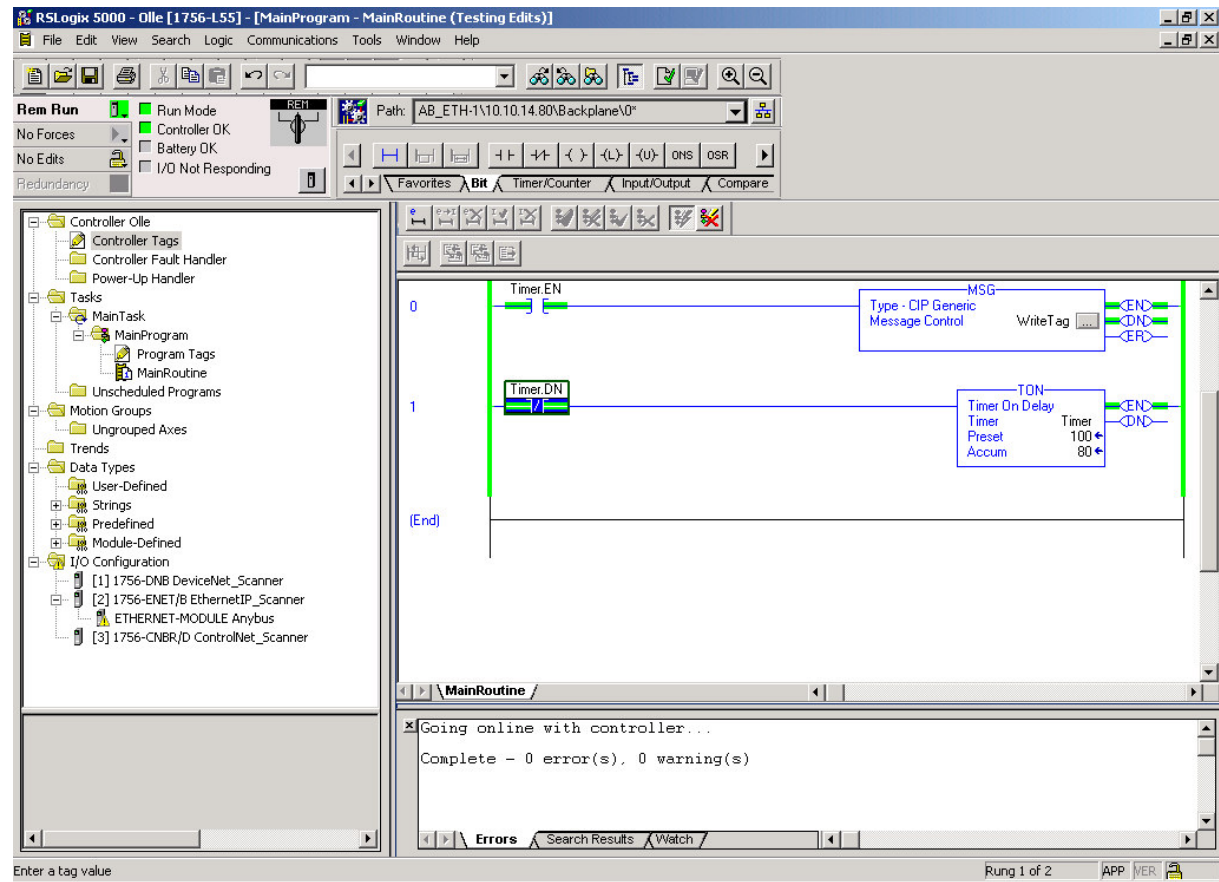
☐ Error Code: Extended Error Code: ☐ Timed Out

Error Path: Error Text:

OK Cancel Apply Help

Go the “MainRoutine” and change the MSG instruction to “WriteTag” as the “Message Control”.

Switch to “Online” and download the program, the data filled in for the “WriteData” tag are now being written to the ABS module.



4. Links to information about networks and products

- The latest for the ABS module can be found on the HMS homepage <http://www.hms-networks.com/downloads/absdownloads.shtml>.
- The Open DeviceNet Vendor Organization has a homepage, <http://www.odva.org/>, with more information about DeviceNet.
- For information concerning the PLC and DeviceNet scanner refer to the Allen-Bradley's homepage <http://www.ab.com/catalogs/b113/controllogix/overview.html>.

5. Support

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