

How to configure an Anybus FIPIO slave module with PL7



Document history

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1.02	2008-06-10	Updated Schneider programming software name to "PL7 Pro"	Martin Falkman

More information about the network and products

For further information about the Anybus products, please consult the HMS webpage, www.anybus.com. The latest manuals, etcetera can be downloaded from that location.

WorldFIP has a webpage, www.worldfip.org. Several technical guides about FIPIO in general are available in or via this page.

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1 Applicable Anybus products

The following table specifies the relevant Anybus products for this document.

Description	Name / Type
Anybus X-gateway	FIPIO
Anybus Communicator	FIPIO
Anybus-S Slave	FIPIO

2 Requirements

The following equipment is needed to setup a successful configuration.

Description	Name / Type	Version
Schneider Premium PLC	TSX P57253	-
PLC software	PL7 Pro	4.2
Communicator configuration software	ABC Config Tool	2.34
X-gateway terminal software	HyperTerminal or TeraTermPro	5.1, 2.3
X-gateway Network Interface Addendum	Anybus X-gateway FIPIO Slave, Network Interface Addendum	1.01
X-gateway User Manual	X-gateway Generic User Manual	1.11
Communicator User Manual	Anybus Communicator for FIPIO, User Manual	2.03
Slave Fieldbus Appendix	Anybus-S FIPIO, Fieldbus Appendix	1.0
Power supply 24VDC	n.a.	n.a.
Configuration cables	n.a.	n.a.

3 Solution overview

This application note describes how to configure an Anybus FIPIO Slave product with a Schneider PLC. Below you can find an overview of the system described in this document. Other nodes may be attached to the network, but are not necessary. Also make sure the network is terminated in a correct way.

The configuration is described in two steps.

1. The configuration of the communication parameters and the I/O data of the Anybus module are described.
2. The PLC configuration is explained.

Note: This document is valid for all Anybus FIPIO products, however sections written in *italics* describe the configuration of a specific product.

The contents describe step by step how a configuration is done. This document assumes the reader is familiar with industrial communication, FIPIO networks and HMS Communicator and X-gateway.

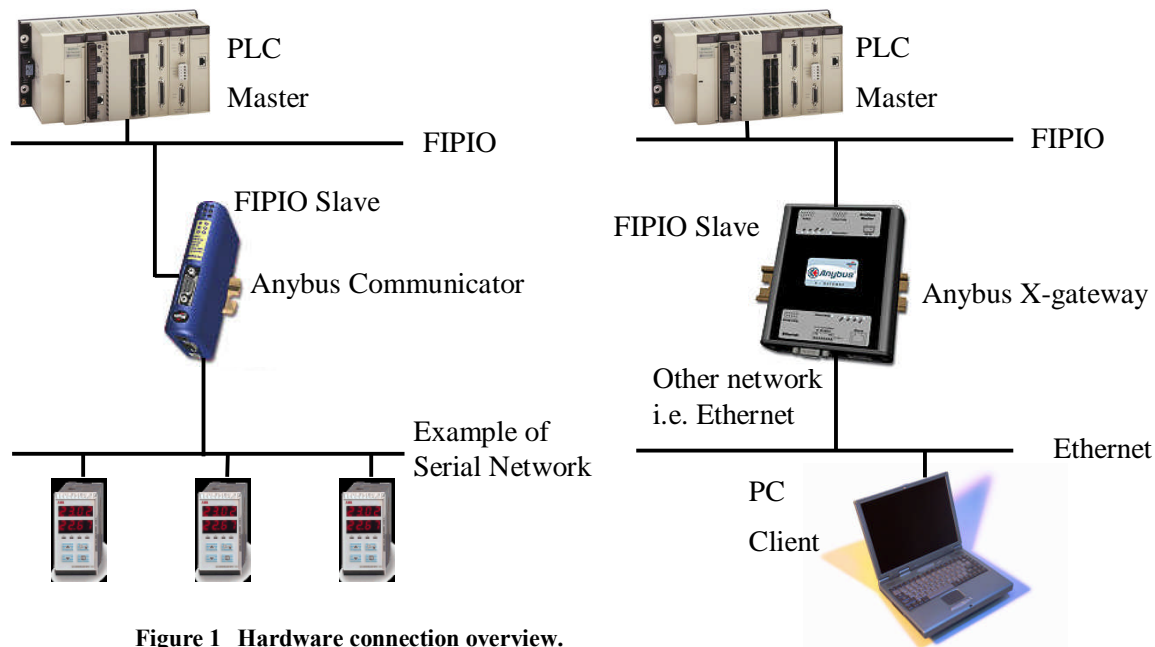


Figure 1 Hardware connection overview.

4 Anybus configuration

The first step is to set the node address switches in the desired positions. The switch next to the fieldbus connector sets the 10x address (referred to as switch B). The other switch sets the 1x address (referred to as switch A).

In this case switch A is set to 4 and switch B to 0, thus the Node address is 4.

Note: *Using the Anybus-S the node address can also be set by switches.*

4.1 Anybus-S Slave configuration

The Anybus-S is initiated and configured via the host application interface using the mailbox interface. Refer to the Anybus-S Fieldbus Appendix for details.

4.2 Communicator configuration

To configure the Communicator, start the ABC Config Tool and start and create a new project. Select the fieldbus FIPIO.

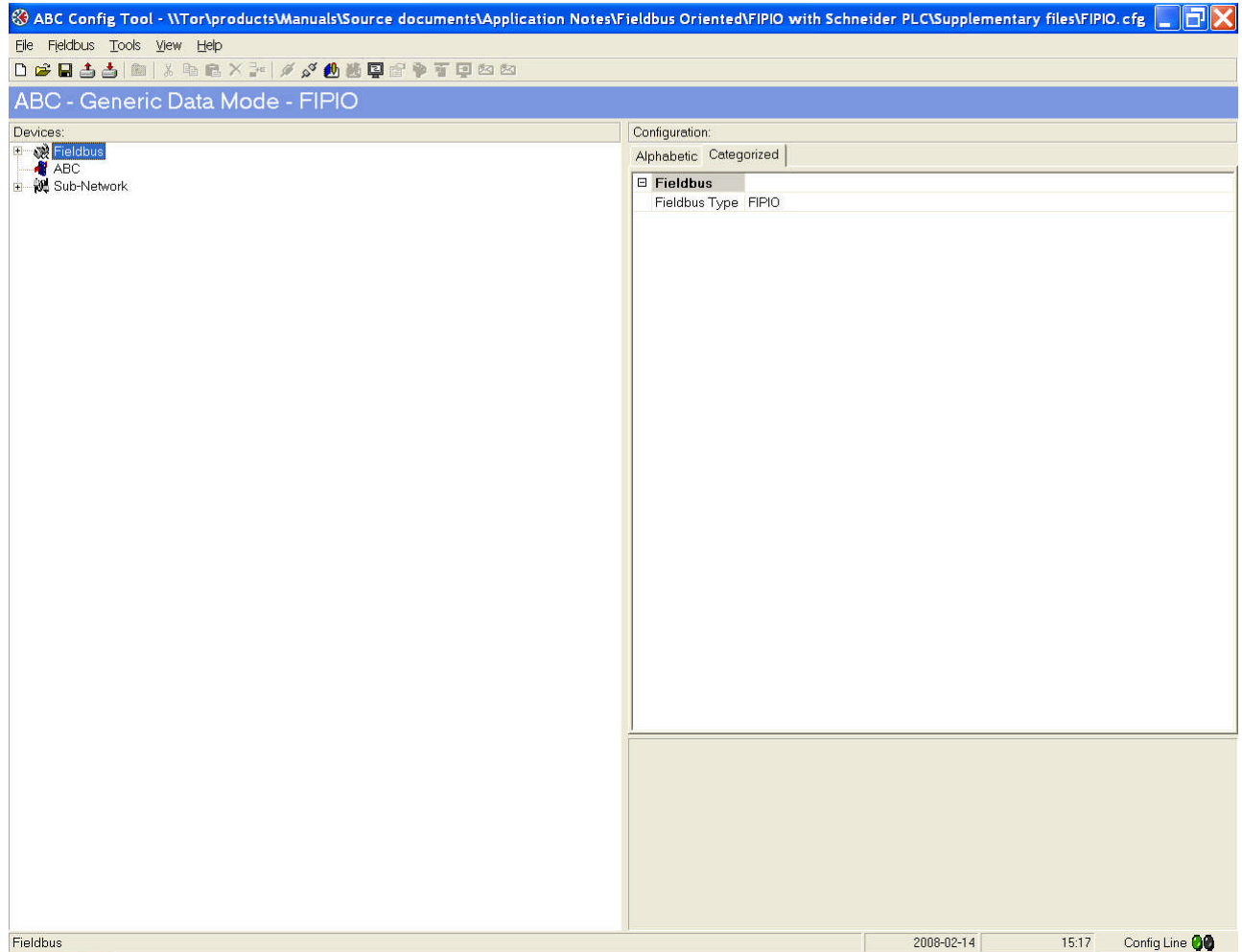


Figure 2 Configuring the Fieldbus.

The next step is to configure the sub-network.

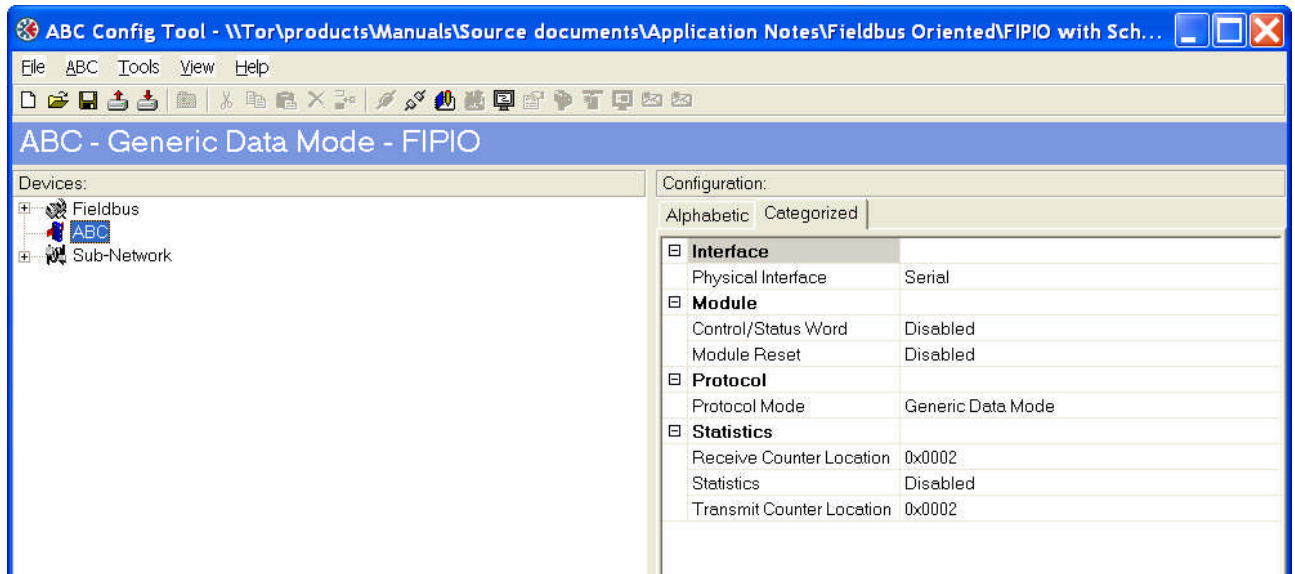


Figure 3 Configuring the Communicator.

The configuration is depending on the application, in other words what nodes are connected. In this case a loop back dongle at the serial connection of the Communicator is connected. For this purpose the generic data mode is selected; all other values are left at their defaults.

Also the sub-network parameters are configured as seen in Figure 4.

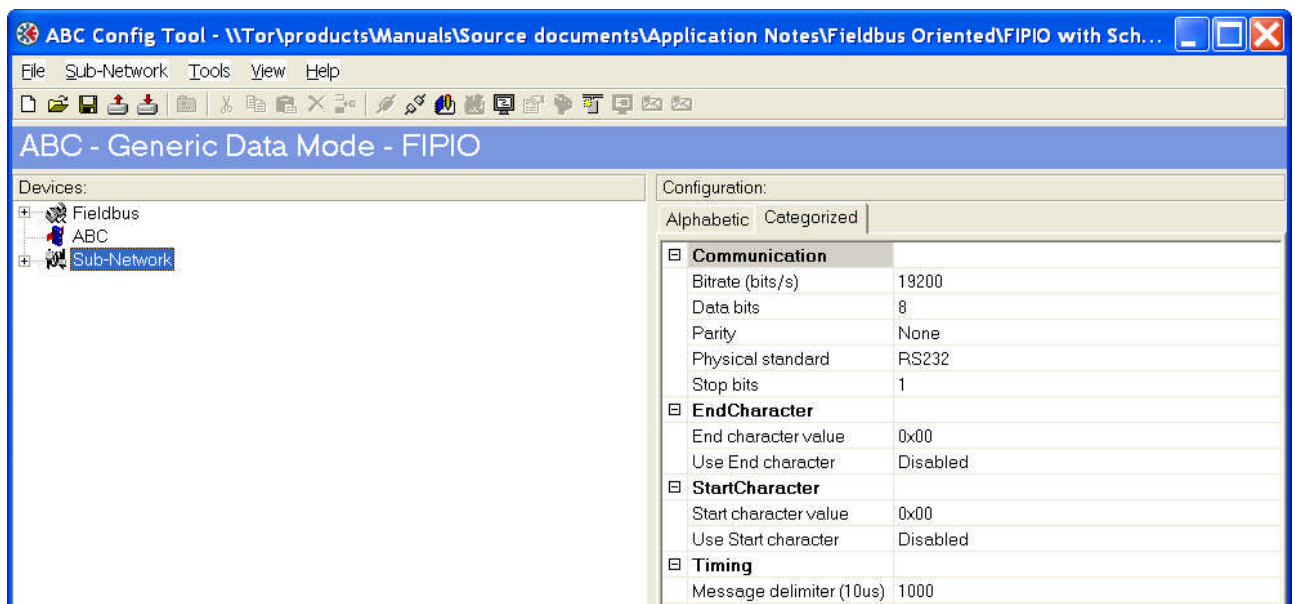


Figure 4 Configuring the sub-network.

Right click on New Node and add a consume and a produce transaction as shown below.

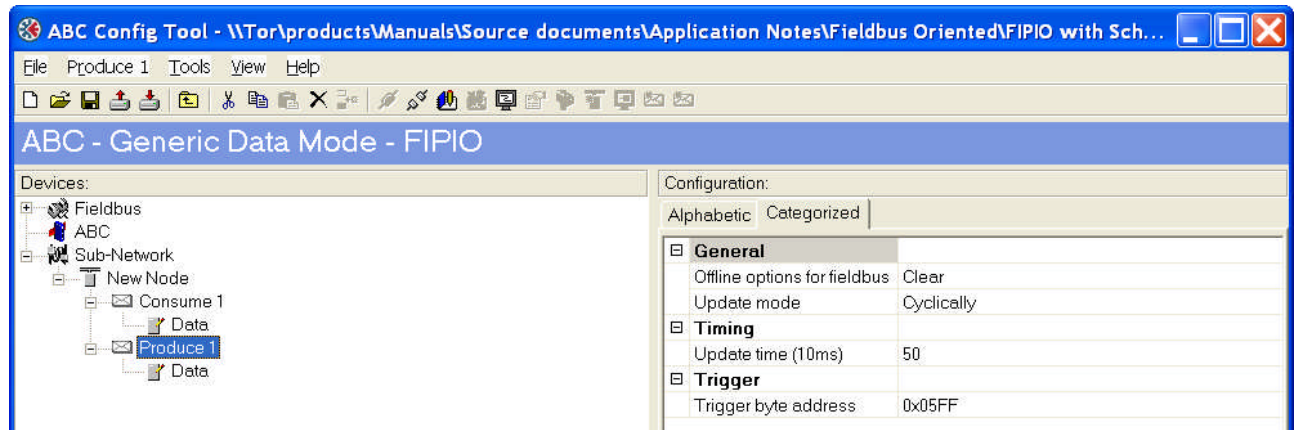


Figure 5 Configuring the Produce Transaction.

Change the Update time to 500ms and leave the settings for the Consume transaction at the defaults.

Note: The update time for the produce transaction is to be set to less than the offline timeout time for the consume transaction; in this case the update time is set to 500ms and the offline timeout time to 1000ms.

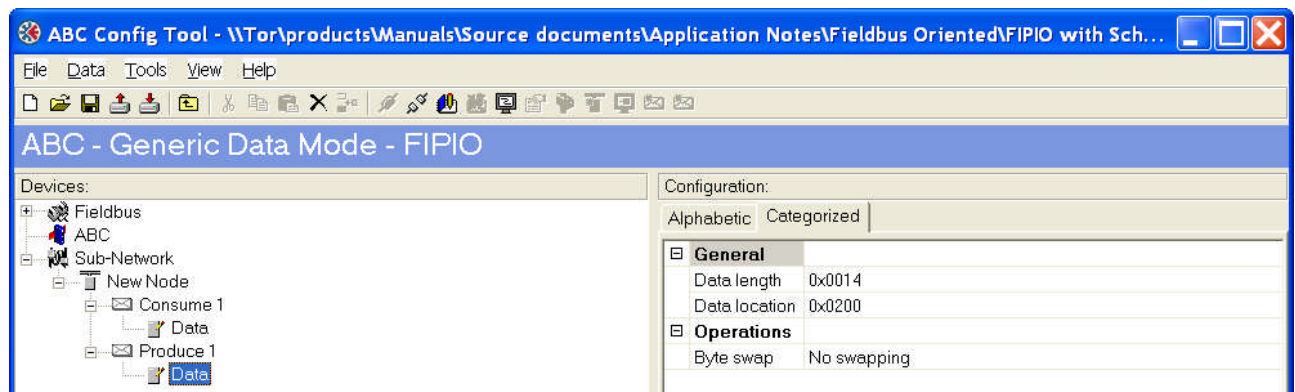


Figure 6 Configuring the data send on the Sub-Network.

Right click on the produce and consume transaction respectively and select add data. In this case 20 bytes of data is used.

Note: Using the Premium and Quantum PLCs the data will get byte swapped. In that case use Byte swap.

The next step is to save the configuration. Then connect to the Communicator and download the configuration to the module.

4.3 Anybus X-gateway configuration

Use the HyperTerminal or TeraTermPro on a PC to configure the X-gateway. Connect a serial cable between the PC and the config port on the X-gateway.

Start the HyperTerminal and open the File menu and click on new. Choose the desired COM port and then click on OK. The following window will appear.

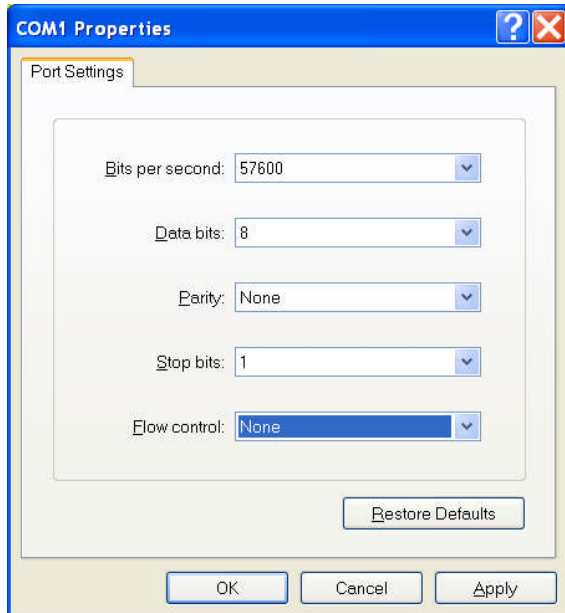


Figure 7 Configuring the connection in the HyperTerminal.

Make sure the settings are identical to those shown in the window above. Alternatively download a HyperTerminal session file from the HMS website¹, double click on it and select COM port.

Connect and press ESC and the following menu will appear.

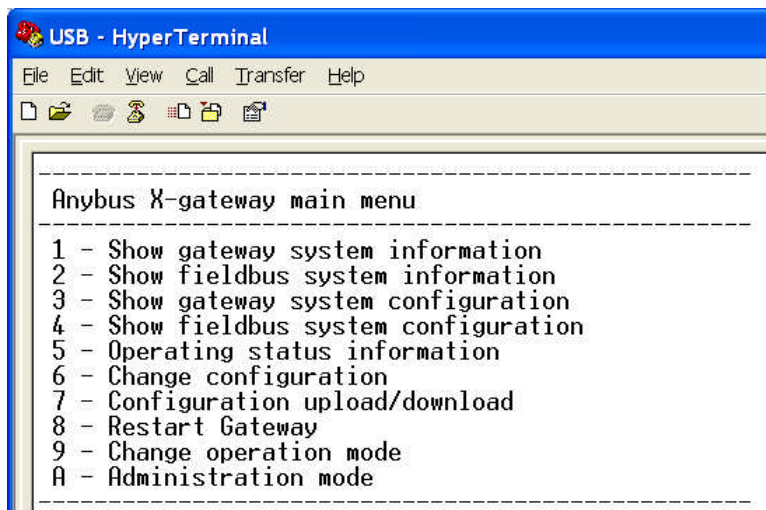


Figure 8 Anybus X-gateway main menu.

Press 6 and enter the desired configuration.

¹ www.anybus.com

The figure below shows an example; in this case a FIPIO Slave to Modbus-TCP Slave X-gateway is used. 20 bytes of I/O data on the Modbus-TCP side and 20 bytes of Process Data on the FIPIO side are configured.

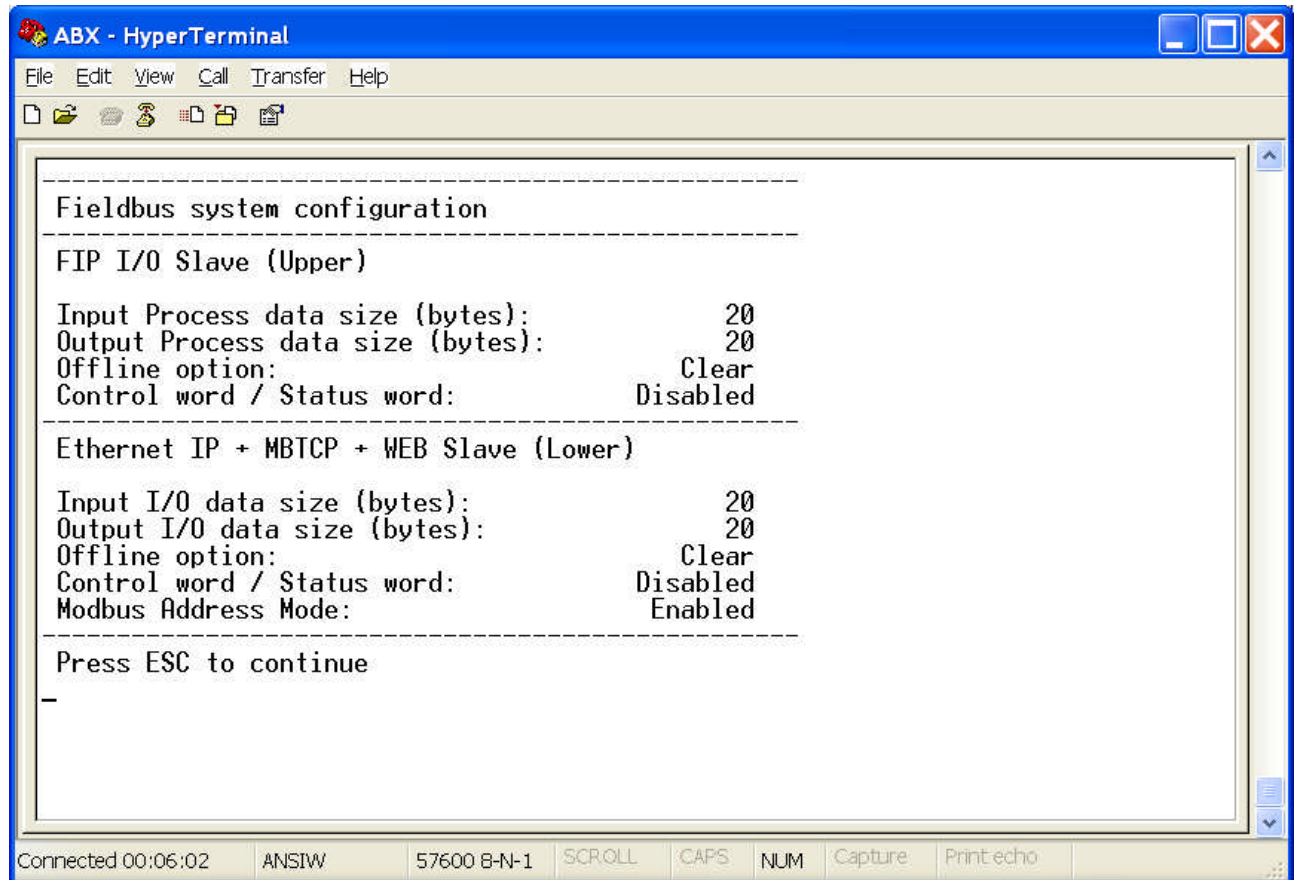


Figure 9 The X-gateway configuration.

5 FIPIO configuration

To configure the FIPIO Master start the PL7 software.

5.1 Configuring the type of master

Start a new project from the File menu. Then select the type of PLC being used. In this case the TSX 57253 ver. 5.0 is selected.

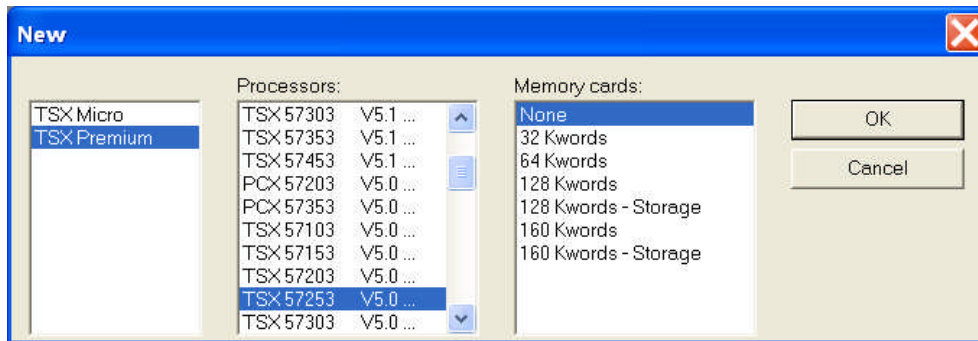


Figure 10 Selecting the type of PLC.

Then double click on the Hardware Configuration to configure the FIPIO bus settings.

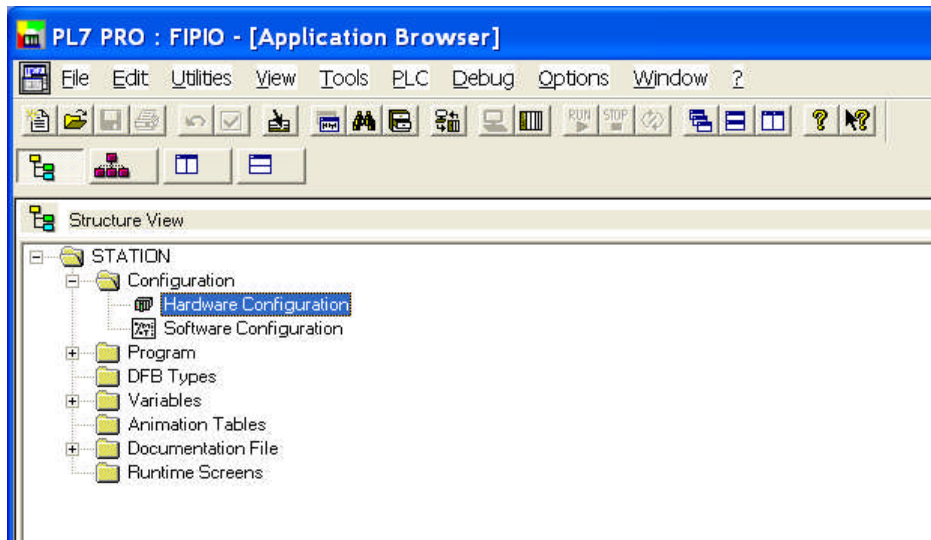


Figure 11 Opening the Hardware Configuration.

FIPIO bus configuration

Double click on the FIPIO to configure the FIPIO bus parameters.

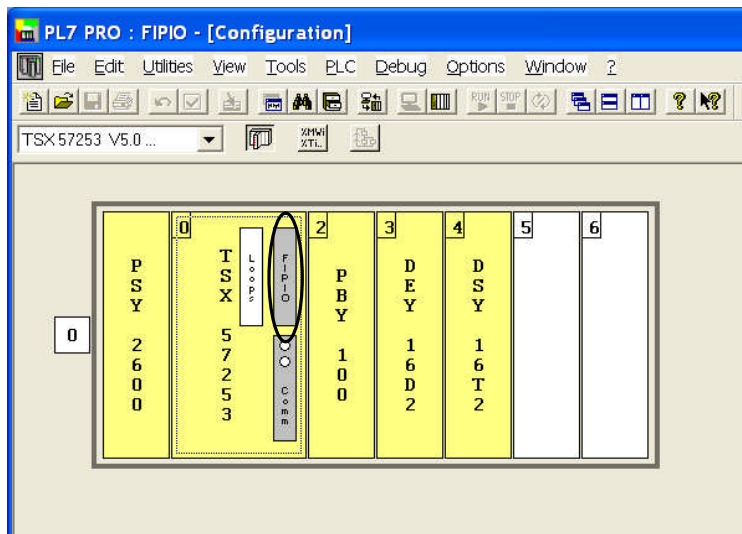


Figure 12 Open the FIPIO configuration.

The next step is to configure the FIPIO bus parameters.

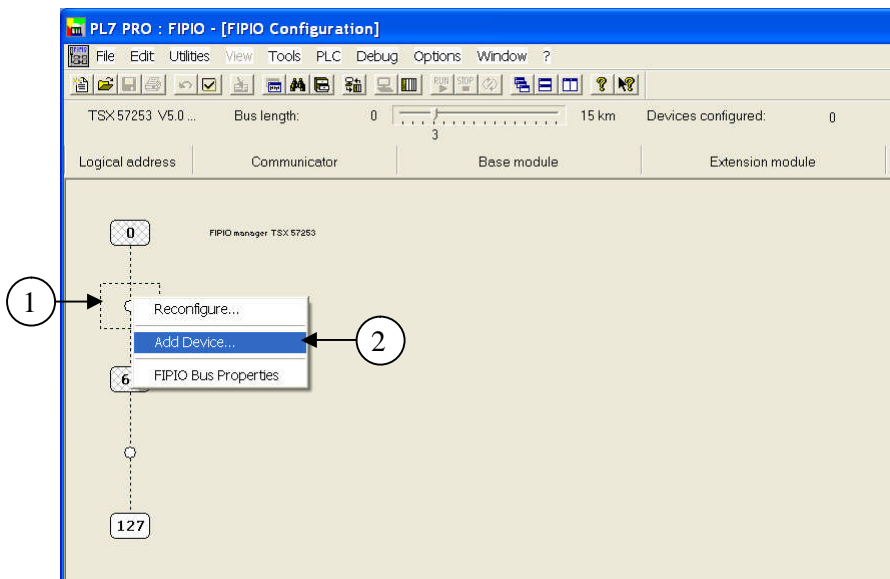


Figure 13 Adding a node on the FIPIO bus.

Mark a free position on the bus ❶ and then right click and select Add Device ❷.

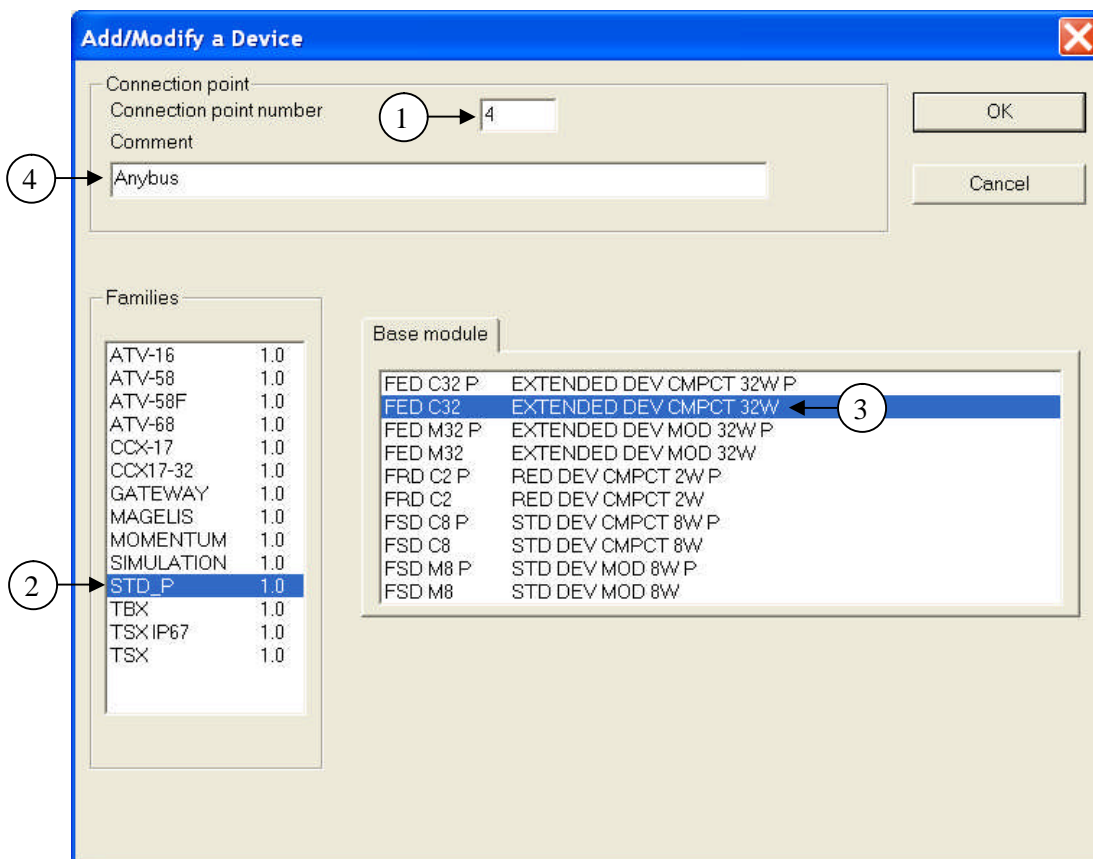


Figure 14 Configuring the Anybus node.

The first step is to select the correct Connection point number ❶. In this case number 4 is entered.

Note: The Connection point number (Node address) configured for the Anybus module must match the Connection point number entered in the PL7 software.

Select the STD_P ❷ Family and the FED C32 EXTENDED DEV CMPCT 32W ❸ Base module. It is also possible to give the node a name. In this case the node is named to Anybus ❹.

The Anybus node can now be seen as below.

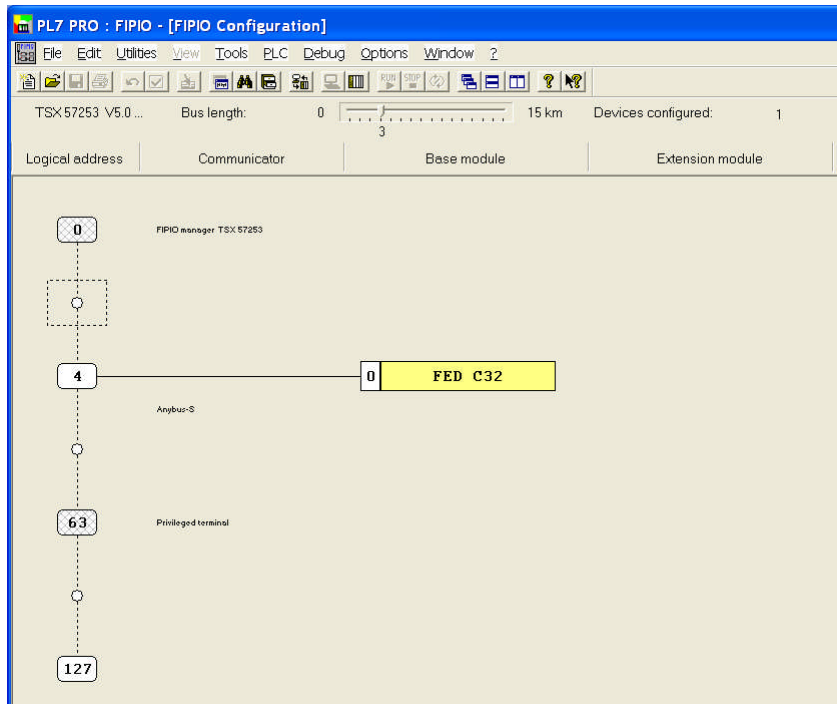


Figure 15 Viewing the FIPIO network configuration.

By double clicking on the node, the settings for the node can be edited. In the case a Task is used this can be configured as seen in the window below. The settings are leaved at the default in this case.

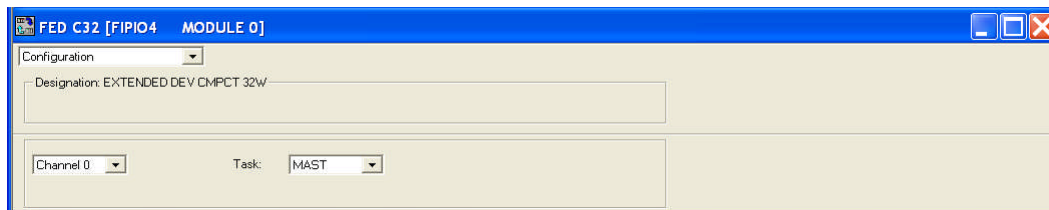


Figure 16 Configuring the node settings.

The project can now be saved and downloaded to the controller.

6 Testing

The testing of the network can now be done after finishing the configuration.

6.1 Monitoring in PL7 Pro

In this particular case the Communicator with a loop dongle at the sub-network connector is used for test purpose.

The Input and Output data can then be monitored in the PL7 Pro program. The first step is to go online by clicking on the connect button❶. Also the PLC has to be set in Run mode❷.

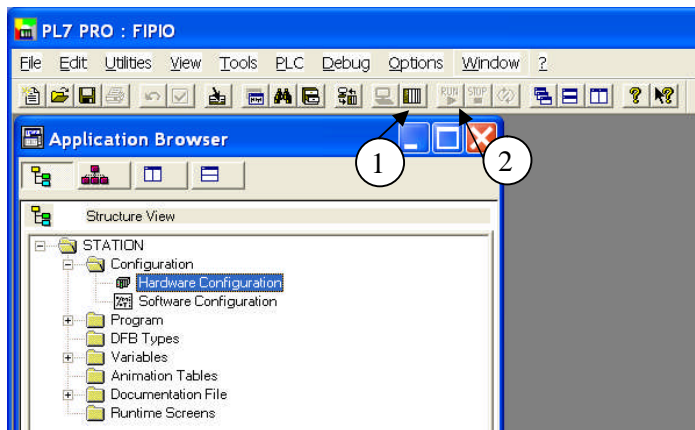


Figure 17 Going online and setting the PLC in Run mode.

Open the FIPIO bus configuration again.

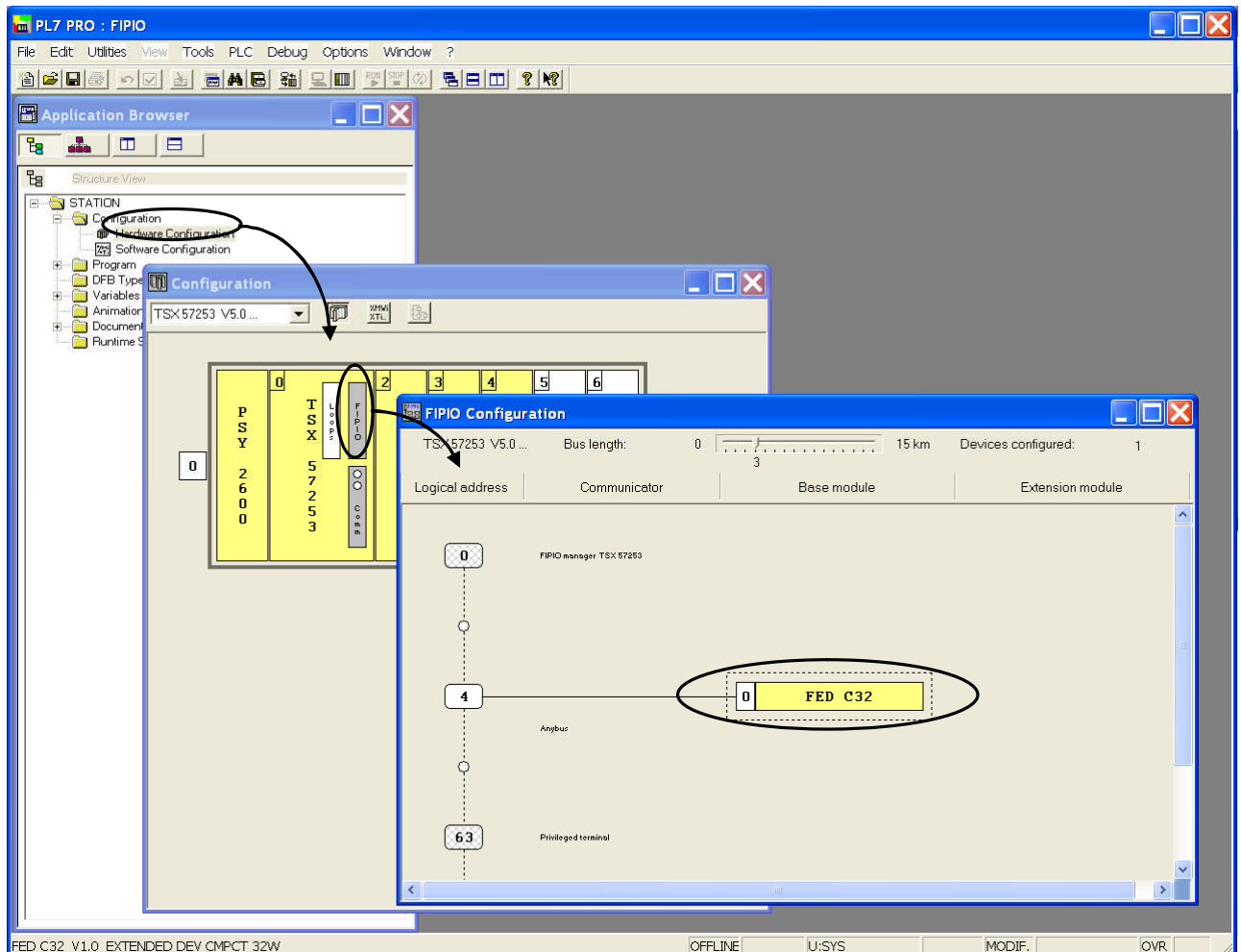


Figure 18 Opening the FIPIO data monitor window.

Double click on the Anybus node (node 4 in this example) to open the monitor window.

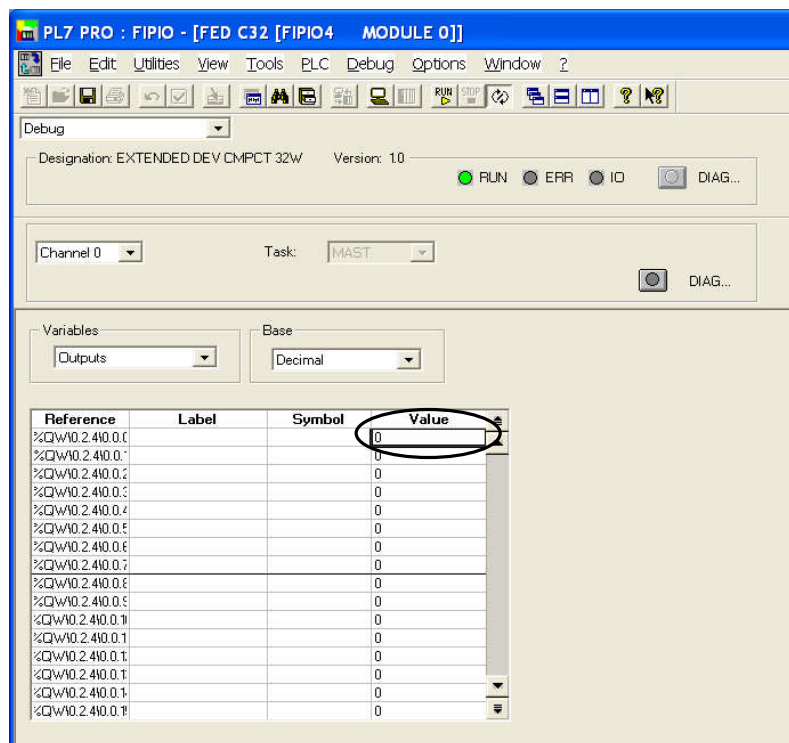


Figure 19 Viewing the data monitor window.

Double click on the first entry field to enter a value to the first Output data word.

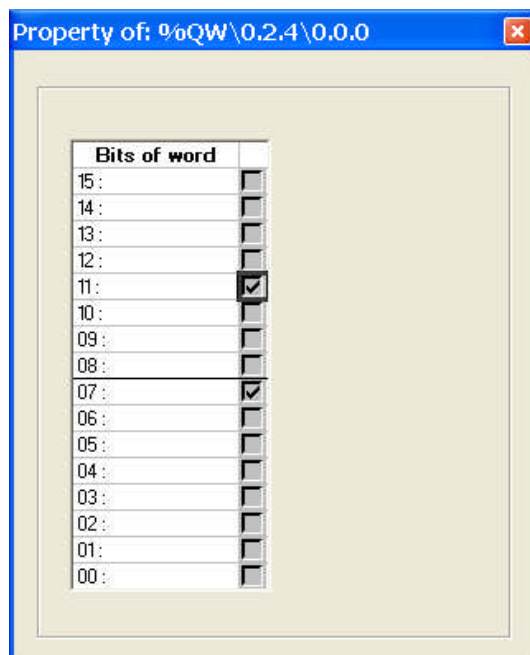


Figure 20 Setting bits of the first word.

In this case bit 7 and 11 are set. The PLC uses Little-endian which means the lowest byte of the word represents the lowest value.

The corresponding value can now be seen in the monitor window. The Base is changed to Hexadecimal.

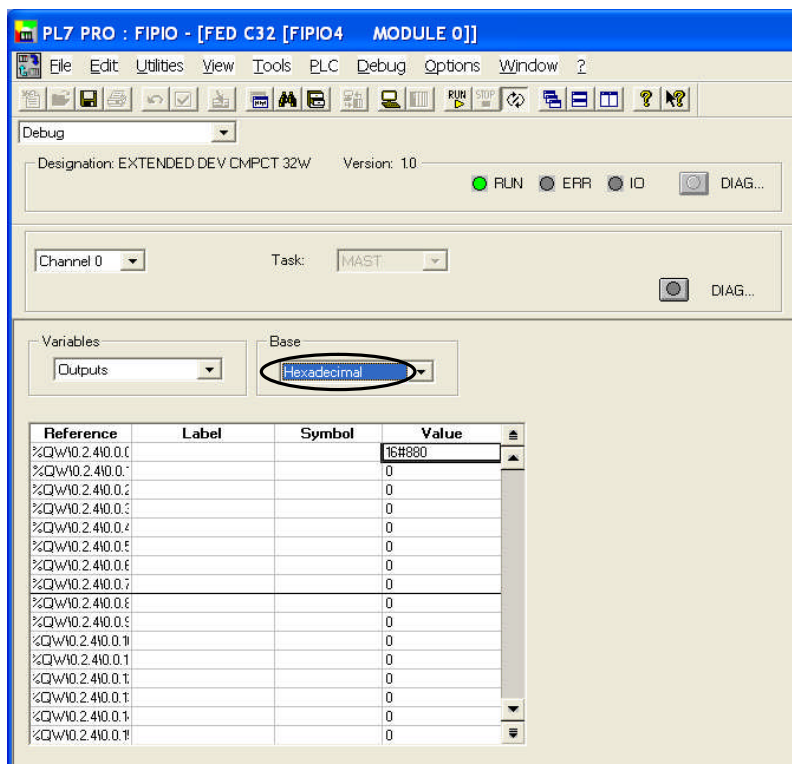


Figure 21 Monitoring the output data.

Since the data is looped back in this test network the same value will appear in the input monitor window.

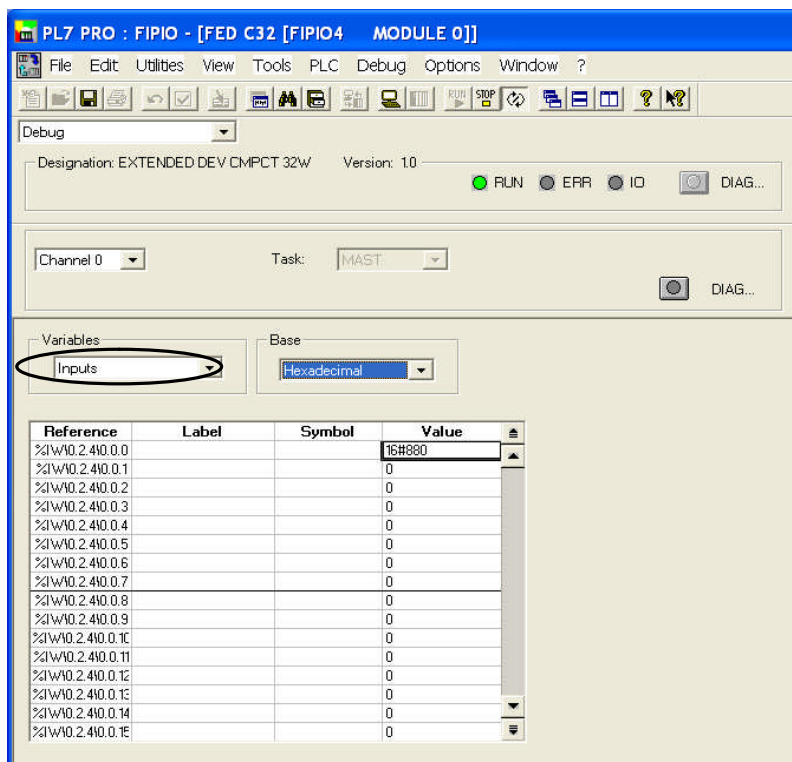


Figure 22 Monitoring the input data.

6.2 Monitoring using the Communicator

Using the ABC Config Tool the Node Monitor can be used to monitor the input and output data. Open the ABC Config Tool and right click on New Node. Select Node Monitor in the menu as seen below.

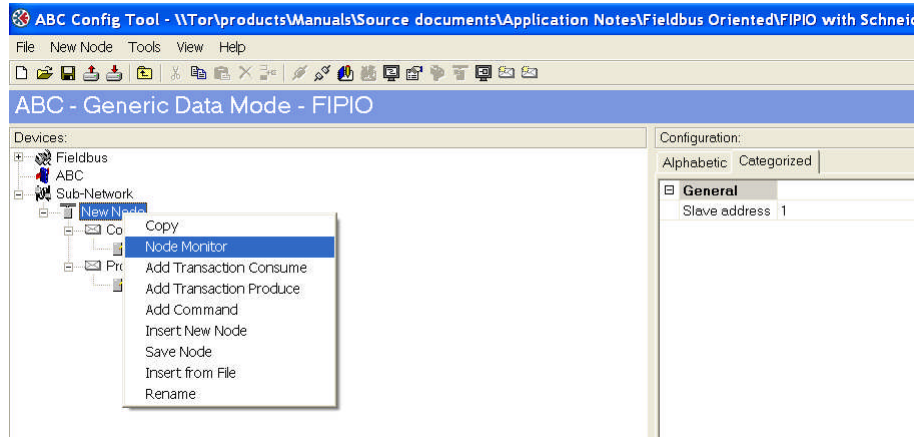


Figure 23 Opening the Node Monitor in the ABC Config Tool.

The Node Monitor shows the data send and received on the sub-network. The In Area represents the data send to the fieldbus side and the Out Area the data received from the fieldbus side.

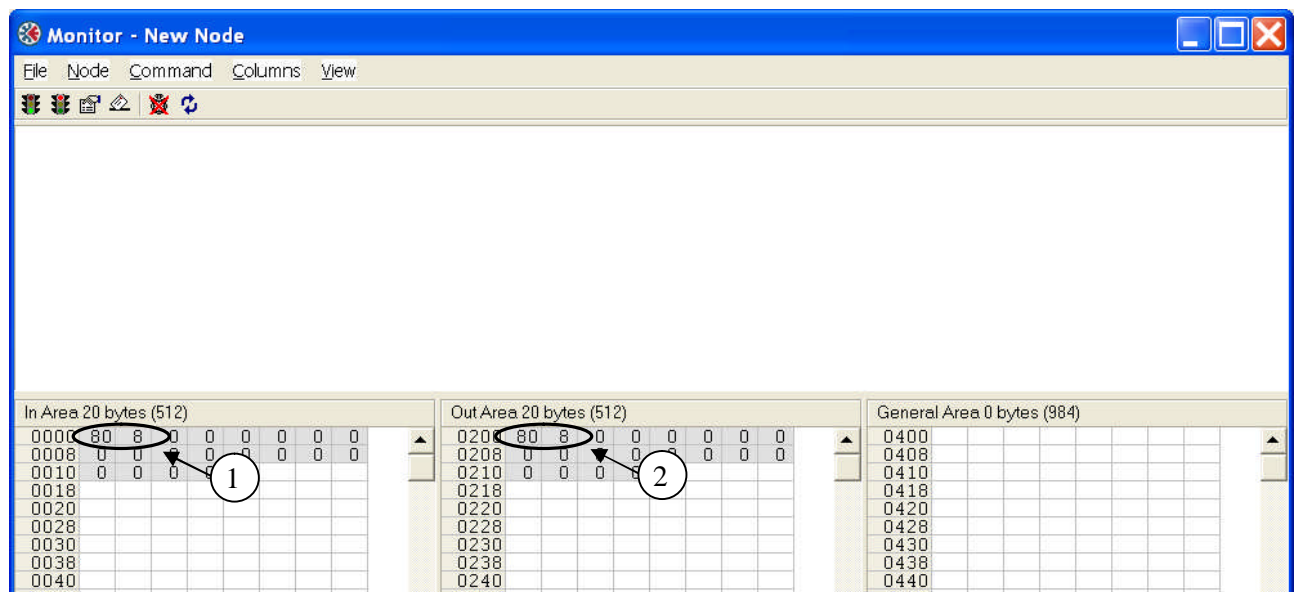


Figure 24 Monitoring using the Node Monitor.

Note: Using the Premium and Quantum PLCs the data will get byte swapped in the Anybus module.

- The Output Data from the fieldbus can be seen at byte 200 and 201 ❶ in the Out Area. The value is corresponding to the value seen in Figure 21 Monitoring the output data.
- Data to the fieldbus can be seen at byte 0 and 1 in the In Area ❷. The value is corresponding to the value seen in Figure 22 Monitoring the input data.

6.3 Monitoring using the X-gateway

To monitor the data in the X-gateway, a program that scans the other network side is needed. If the other network is Ethernet or Modbus based, the tool ModScan32 can be used. In the Ethernet case the X-gateway also has a web interface where the configuration can be viewed.

Note: If the X-gateway has an Ethernet connection, use the Anybus IPconfig to find or set the IP-address. The tool can be downloaded at www.anybus.com.

1 Monitoring using ModScan32

Start the ModScan32 program and connect to the module.

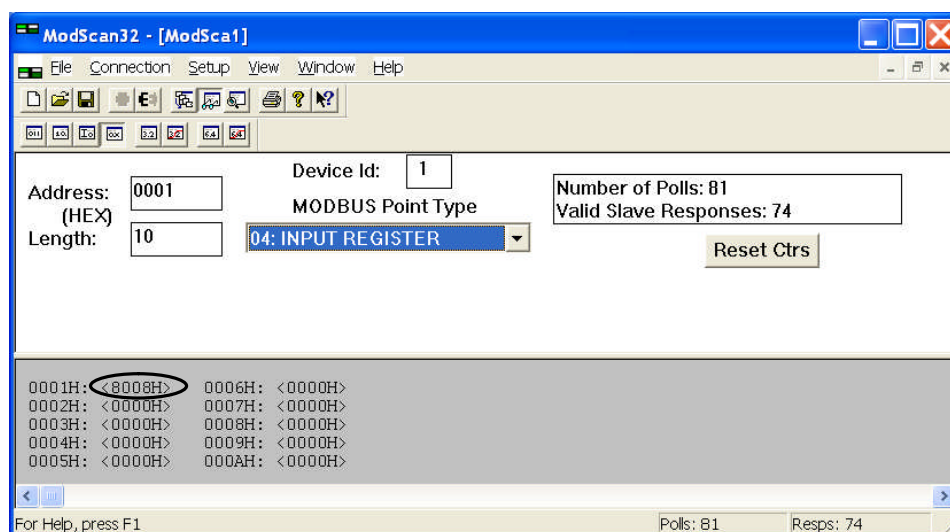


Figure 25 Monitoring the input data using ModScan32.

The window above shows the Input data from the PLC. The data value is corresponding to the data value seen in Figure 21 Monitoring the output data.

Note: Using the Premium and Quantum PLCs the data will get byte swapped

The same value is written to the first Holding register as seen below. The corresponding value in the PLC can be seen in Figure 22 Monitoring the input data.

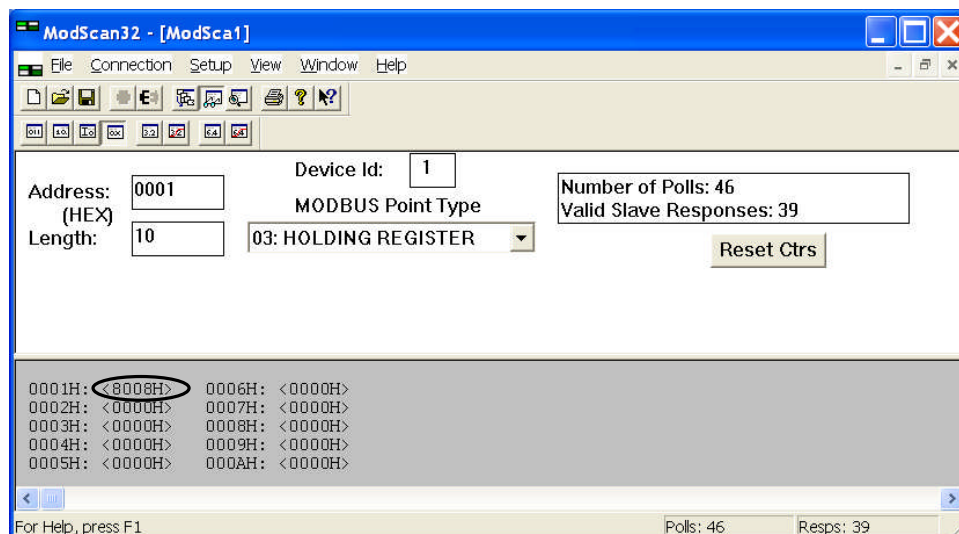


Figure 26 Monitoring the output data using ModScan32.

2 Web interface

The configuration can also be verified using the web interface in the X-gateway.

Note: To use the web interface it is required that the X-gateway has an Ethernet connection

To enter the web interface, enter the IP-address of the Ethernet module in a web browser, e.g.

<http://192.168.0.7>. Open the General Status window to view the slave settings for both network sides. The I/O size is corresponding to the Process Data size.

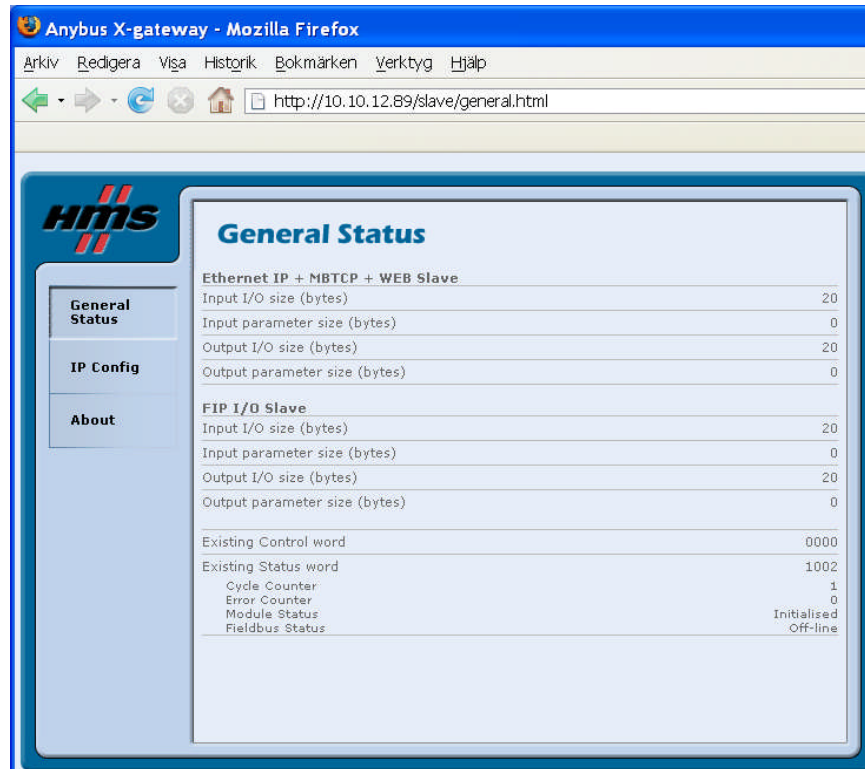


Figure 27 Viewing the General Status in the web interface.