How to configure an Anybus Interbus slave module with IBS CMD G4 for Interbus

More info about the network and products

This document gives a brief description of how to configure an Anybus Slave product for Interbus. For further information about the products, please consult the HMS homepage, www.anybus.com. The latest manuals etcetera can be downloaded from that location.

For more information regarding Interbus network, please see the Interbus Club webpage www.interbusclub.com.

Document history

Revision	Date	Description	Responsible
1.00	2008-01-08	Created	Thorbjörn Palm
1.01	2008-01-23	Minor revision	Thorbjörn Palm

Contents

1 Solution overview

This application note describes how to configure an Anybus Interbus Slave module and how to set up the Interbus network using the tool IBS CMD G4. 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.

The configuration is described in two steps.

1. Anybus Slave module configuration.
2. Configuration of the Interbus network.

Note: This document is valid for all Anybus Interbus Slave 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, Interbus networks and Anybus Communicator and X-gateway.

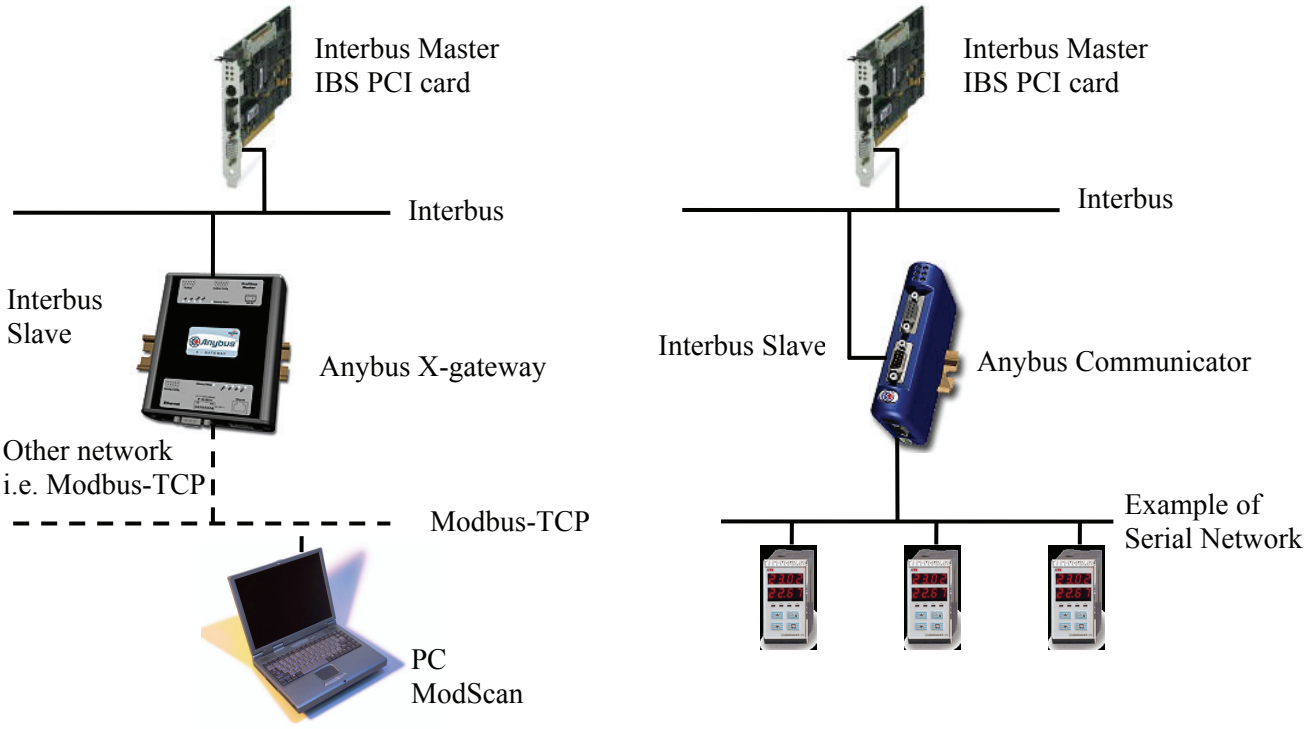


Figure 1 Hardware connection overview.

2 Applicable Anybus products

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

Description	Name / Type
Anybus Communicator Slave	Interbus
Anybus X-gateway Slave	Interbus
Anybus-S Slave	Interbus
Anybus-S Slave Fiber Optic	Interbus

3 Requirements

The following equipment is needed to setup a successful configuration.

Description	Name / Type	Version
Terminal software	HyperTerminal, TeraTermPro	5.1, 2.3
Communicator configuration software	ABC Config Tool	2.32
Interbus Master configuration software	IBS CMD G4	4.62 (7)
Communicator User Manual	Communicator User Manual for Interbus	2.01
X-gateway Interface Addendum	X-gateway Interbus Slave Interface Addendum	1.01
X-gateway Interface Addendum	X-gateway Interbus Fibre Optic Slave Interface Addendum	1.01
X-gateway User Manual	X-gateway User Manual	1.11
Slave Fieldbus Appendix	Anybus-S Slave Interbus Fieldbus Appendix	1.02
Power supply 24VDC	n.a.	n.a
Configuration cables	n.a.	n.a.

4 Anybus configuration

The first step is to set the baudrate jumper in the desired position. In this case 500 kbit/s is used, please see the respective manual or appendix for details.

Note: *Using the Anybus-S the baudrate can also be set by mailbox command.*

In the following chapters the configuration of the Anybus-S Slave, Communicator and X-gateway are explained.

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 a new project. The configuration differs depending on what type of data is used. Using Process data only, please see section 1 Using Process data only, below. Using PCP data please see section 2 Using PCP data below.

1 Using Process data only

Select the fieldbus Interbus and IO sizes Automatic.

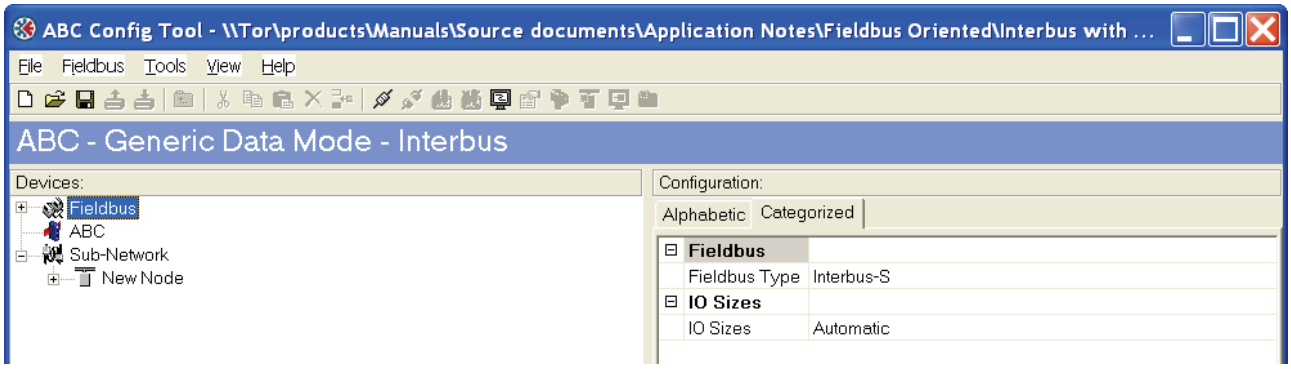


Figure 2 Configuring the Fieldbus.

Note: *Using the Automatic setting for the IO size, the amount of data configured for the fieldbus is depending on the sub-network configuration. The Process data will in that case be of the same size as configured for the sub-network.*

2 Using PCP data

When using PCP data the I/O sizes has to be set to user defined as shown below. In this case 4 bytes of I/O data (Process data) is used.

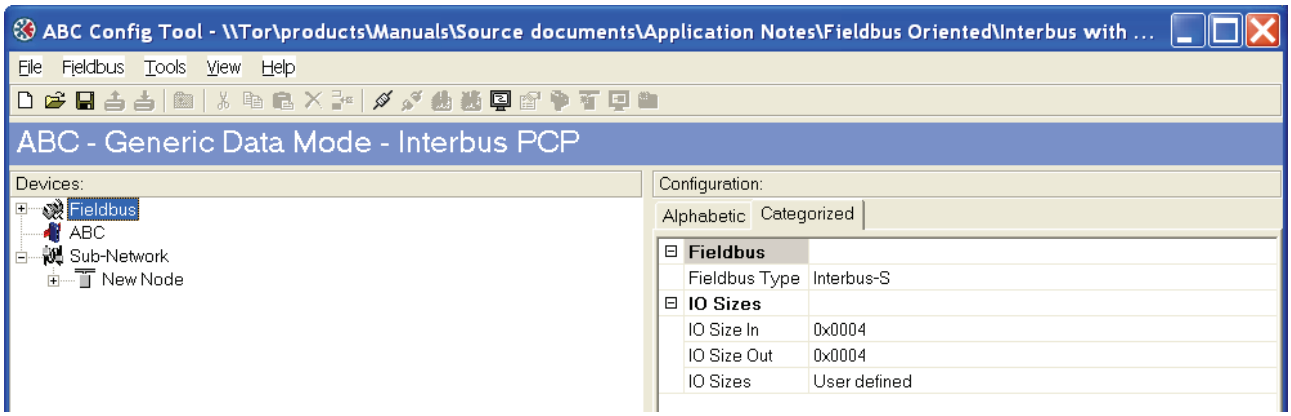


Figure 3 Configuring the Fieldbus using PCP data.

Note: *The IO size IN and Out, in this case 4 bytes, set the size of the Process data. The number of bytes of PCP data will depend on the data configured for the sub-network. The data configured for the sub-network indicates the total I/O size. The number of bytes of PCP data is the difference between the data size configured for the sub-network and the IO Size In and IO Size Out. In this case the total I/O size is 10 bytes (configured for the sub-network) and the Process data size is 4 bytes. The PCP data size is then 10-4=6 bytes.*

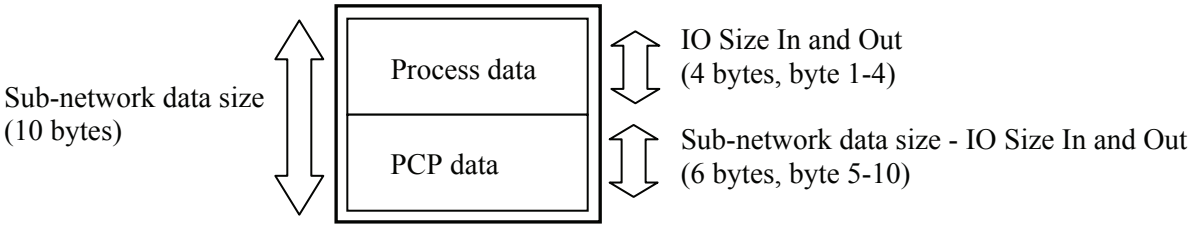


Figure 4 Configuring PCP data in ABC Config Tool.

3 Sub-network configuration

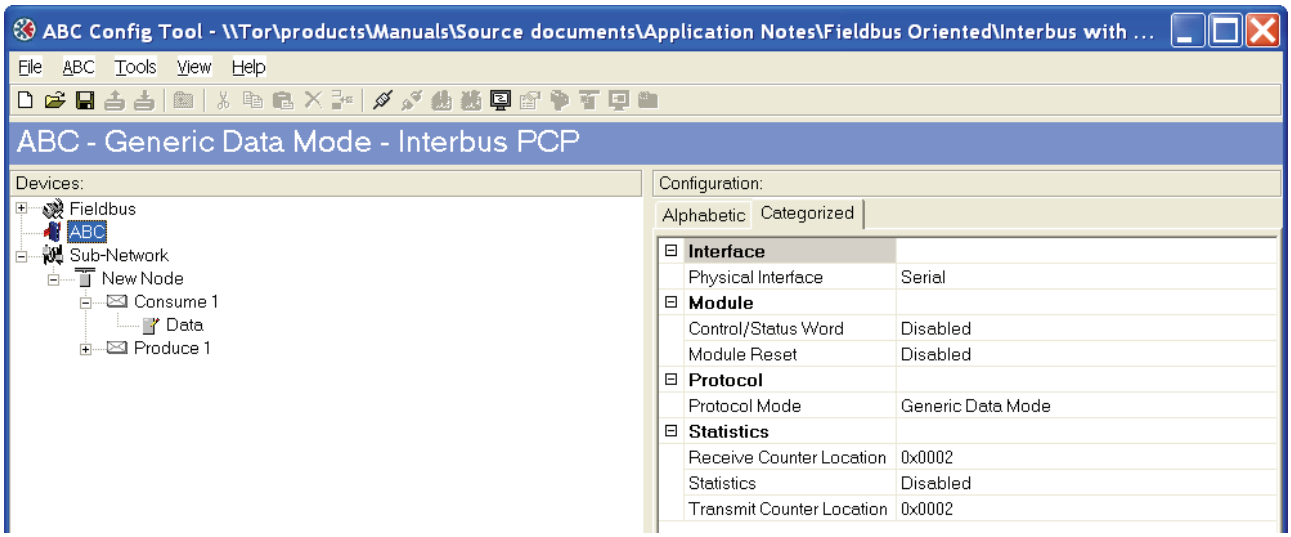


Figure 5 Configuring the Communicator.

The next step is to configure the sub-network. 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. Therefore a test configuration is used to loop data. For this purpose the generic data mode is selected; all other values are left at their defaults.

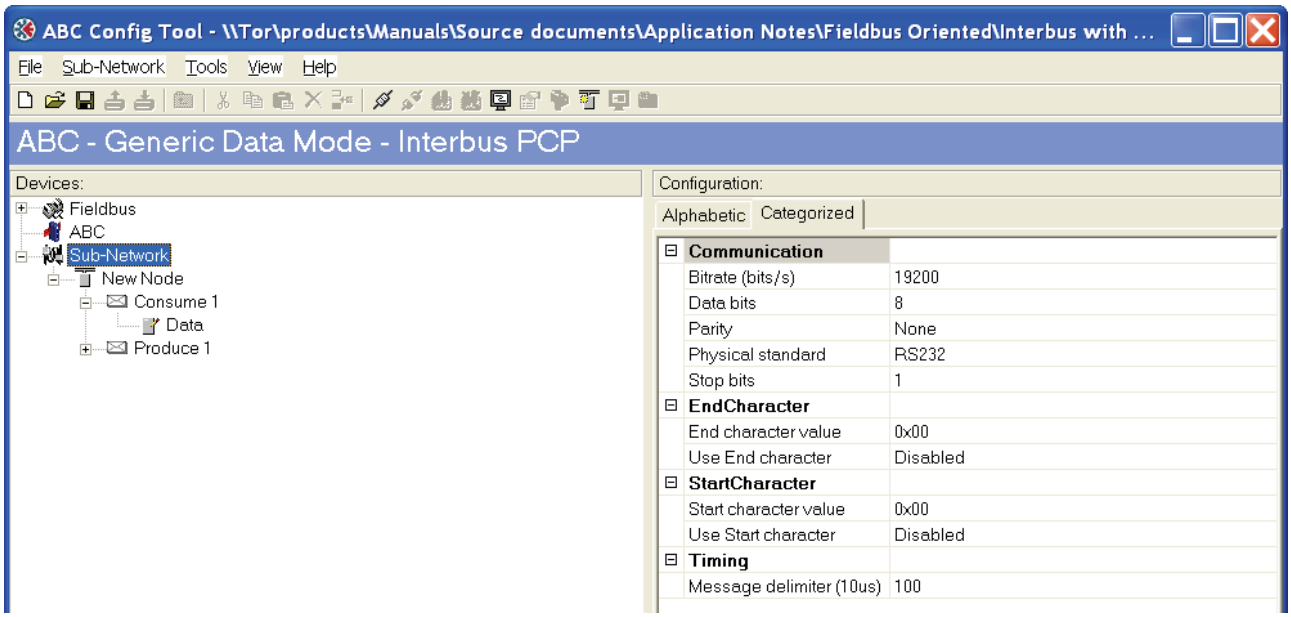


Figure 6 Configuring the sub network.

Right click on new node and add a consume and a produce transaction as shown below.

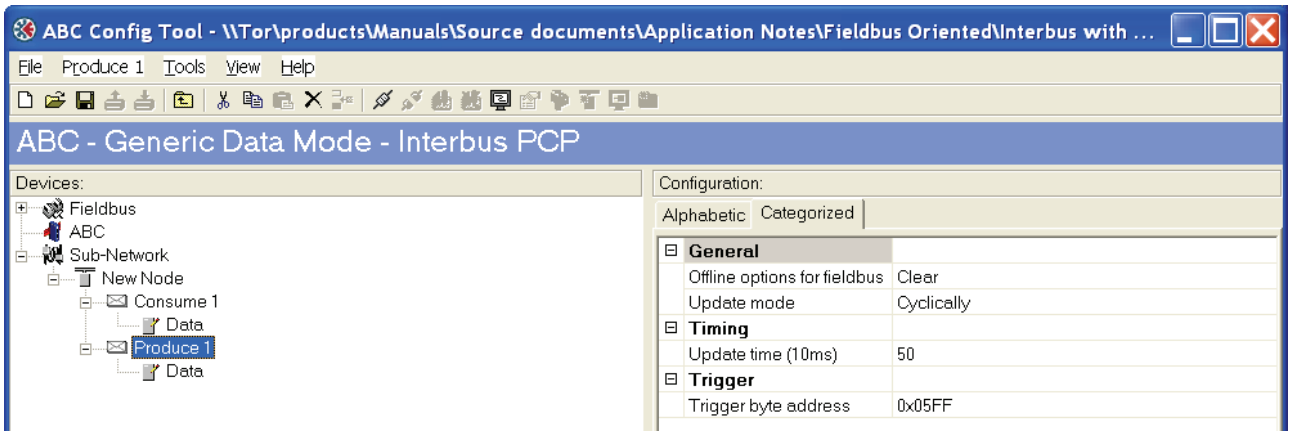
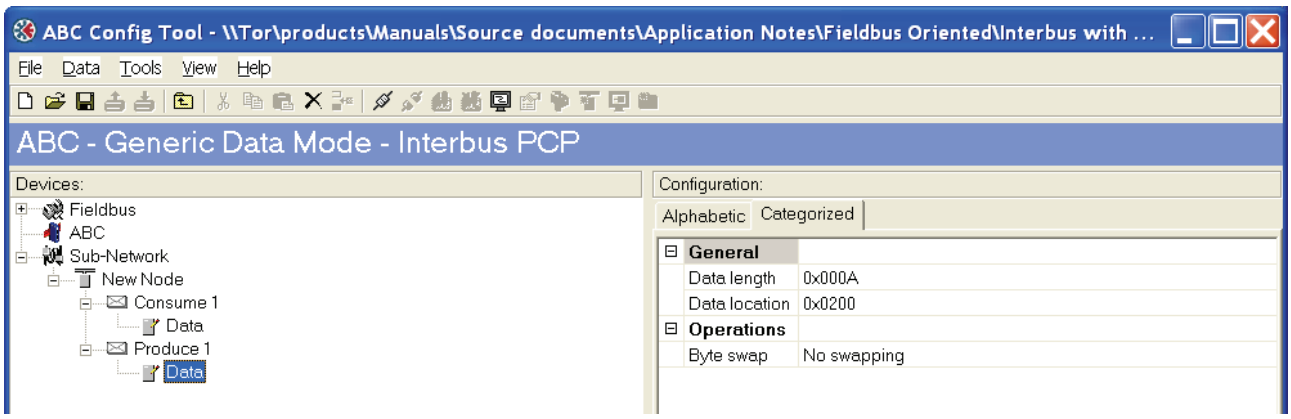


Figure 7 Configuring the Produce data.

Change the Update time to 500ms and leave the settings for the Consume transaction at the defaults. Right click on the produce and consume transaction respectively and select add data. In this case 20 bytes of data is used.

***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.*



***Note:** The configured Data length sets the total data size using Process and PCP data. In this case 10 bytes is used. For a more detailed description see the Communicator User Manual.*

4.3 Anybus X-gateway configuration

Use the HyperTerminal 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.

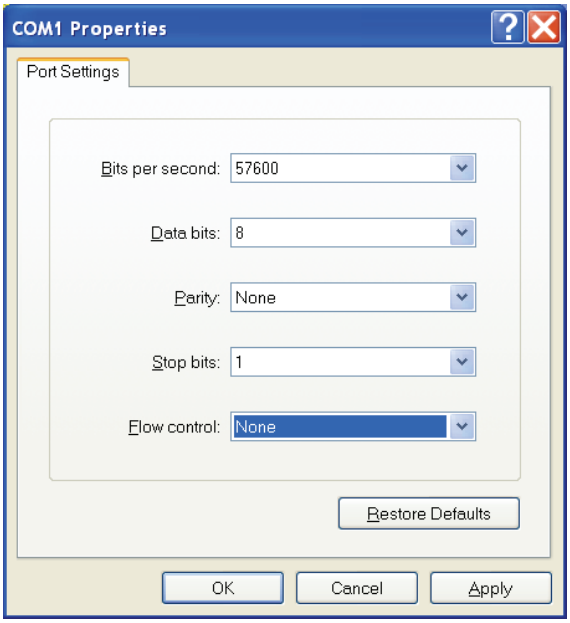


Figure 8 Configuring the connection in the HyperTerminal.

Make sure the settings are identical to those shown in the window above. Alternatively download a HyperTerminal session file from the HMS website[1], double click on it and select COM port.

Connect and press ESC and the following menu will appear.

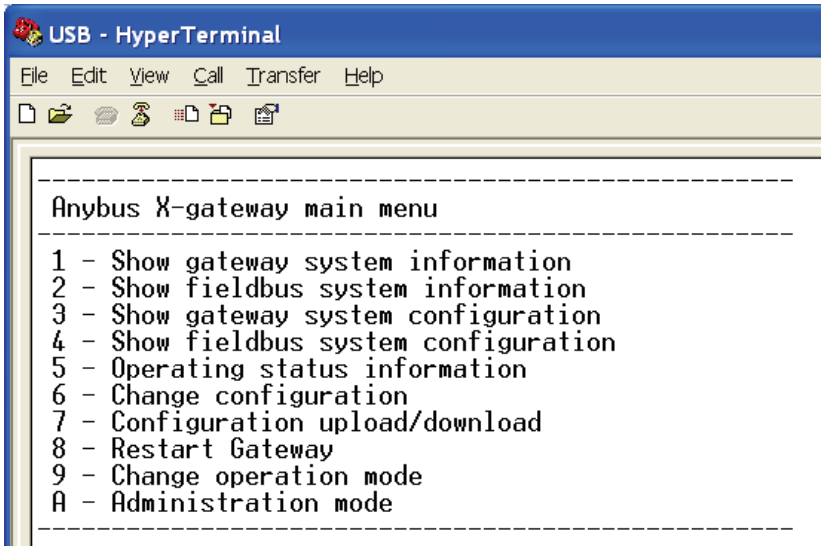


Figure 9 Anybus X-gateway Main menu.

Press 6 and enter the desired configuration.

[1] www.anybus.com

The figure below shows an example; in this case an Interbus Slave to EtherCAT Slave X-gateway is used. 10 bytes of I/O data on the Modbus-TCP side and 4 bytes of process data and 6 bytes of PCP data are configured.

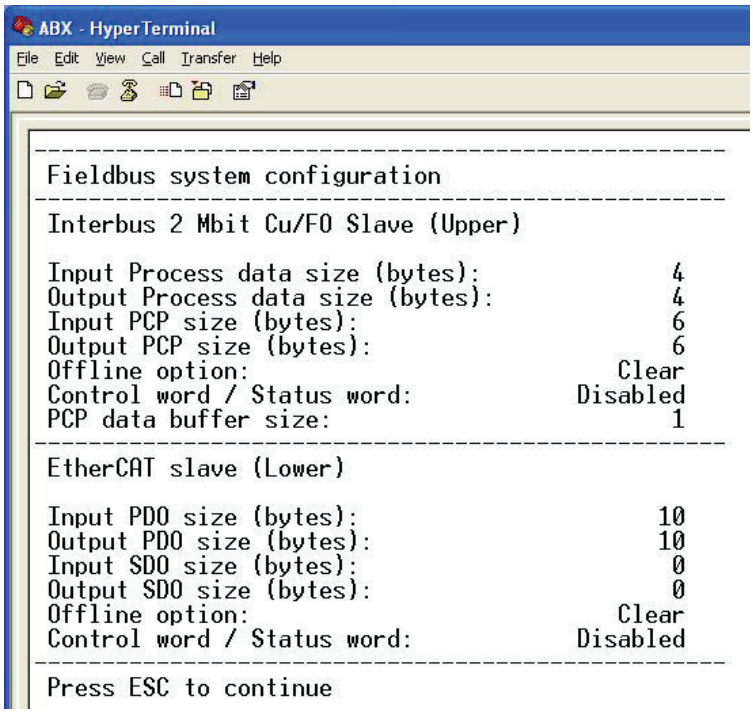


Figure 10 The X-gateway configuration.

The PCP data buffer size, sets the size of PCP data channel.

PCP data channel size (word)	Data
0	Process data only
1	1 PCP word
2	2 PCP word
4	4 PCP word

5 Interbus configuration

To configure the Interbus master start the IBS CMD G4 software.

1 Changing the type of master

Mark the Controller Board and right click to open the menu seen below.

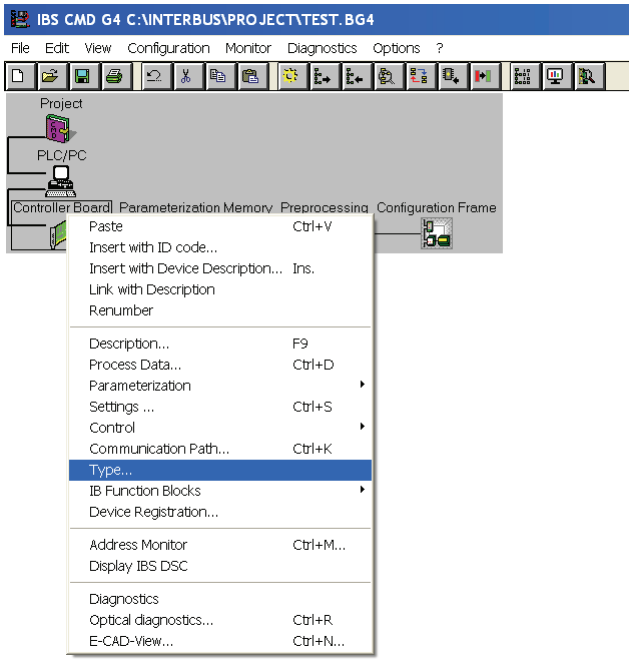


Figure 11 Changing the type of master.

Select Type and the dialogue below will appear.

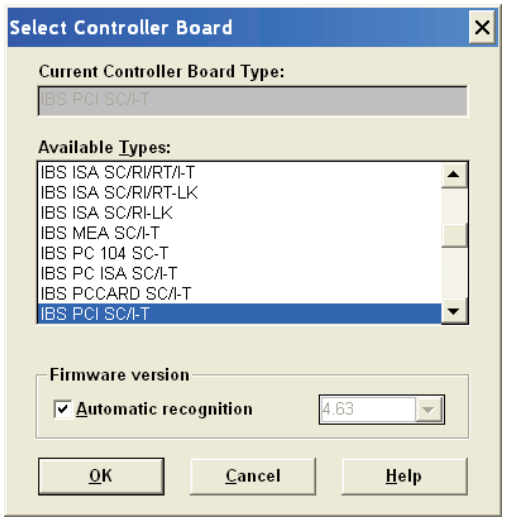


Figure 12 Selecting the type of master.

In this case the IBS PCI SC/I- T card is used.

2 Changing the path to the master

Open the menu again and select Communication path.

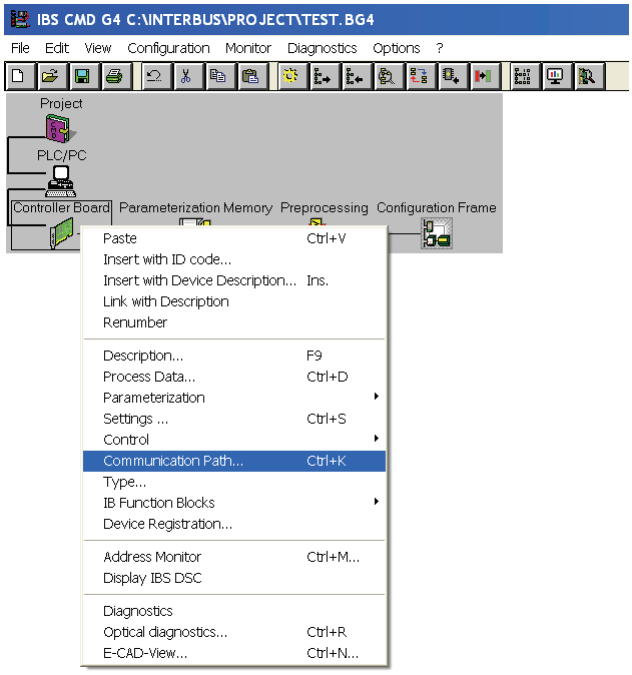


Figure 13 Opening the Communication Path settings.

In the dialogue below open the Project tile and select PC Controller board using a PCI or ISA card. If connecting to the master using the Serial Port chose that alternative.

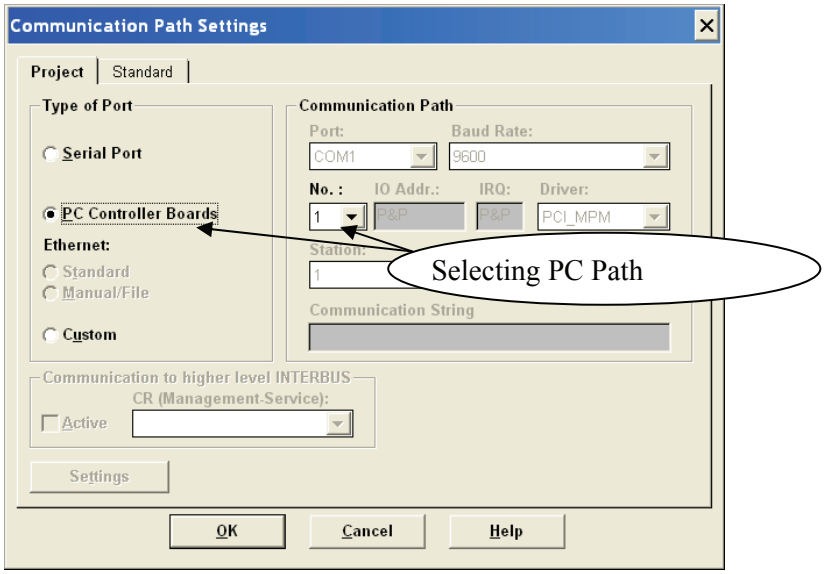


Figure 14 Selecting the type of communication path.

3 Online configuration

Use this alternative when the nodes are connected to the network, in other words when the network is online. If the network is not connected to the master, please see section 6 Offline configuration.

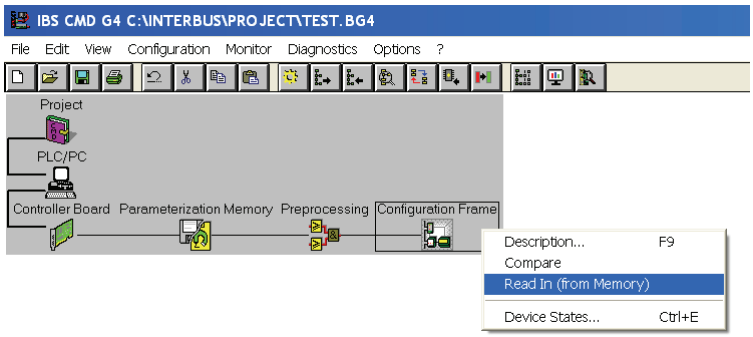


Figure 15 Executing the Read In function.

Mark the Configuration Frame and right click to open the menu seen above. Then select Read In (from Memory).

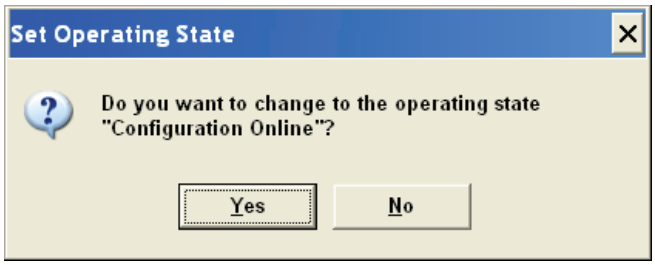


Figure 16 Operating state dialogue.

Click on Yes in the above dialogue.

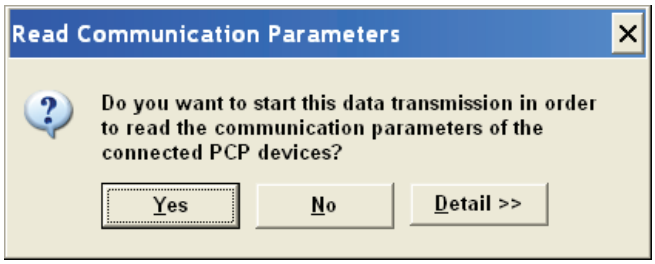


Figure 17 Read In dialogue window.

Click on yes to start the data transmission in the dialogue as shown above. Depending on if PCP data is configured for the node the network will look different. If the node is configured for Process data only, please see section 4

Using Process data only, if the node is configured for PCP data, please see section 5 Using PCP data.

4 Using Process data only

After reading in from memory the nodes in the network will look like below. The nodes will be marked with I/O.

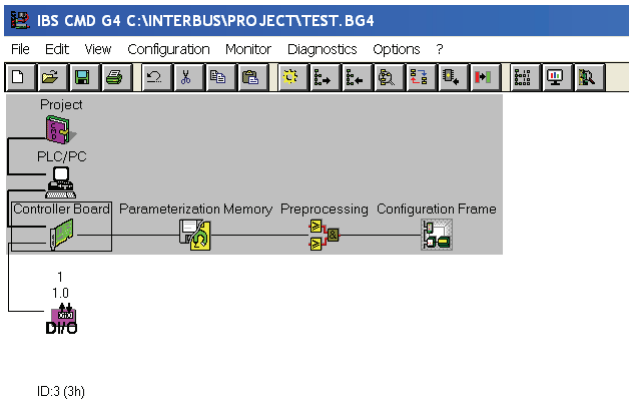


Figure 18 The network after using the Read In function.

5 Using PCP data

In the case when using PCP data the nodes will be marked PCP as in the figure below.

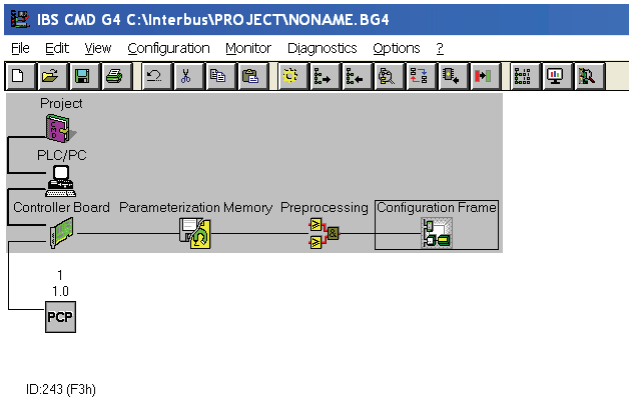


Figure 19 The network after using the Read In function using PCP data.

To be able to get the full information when monitoring the PCP data follow the steps below.

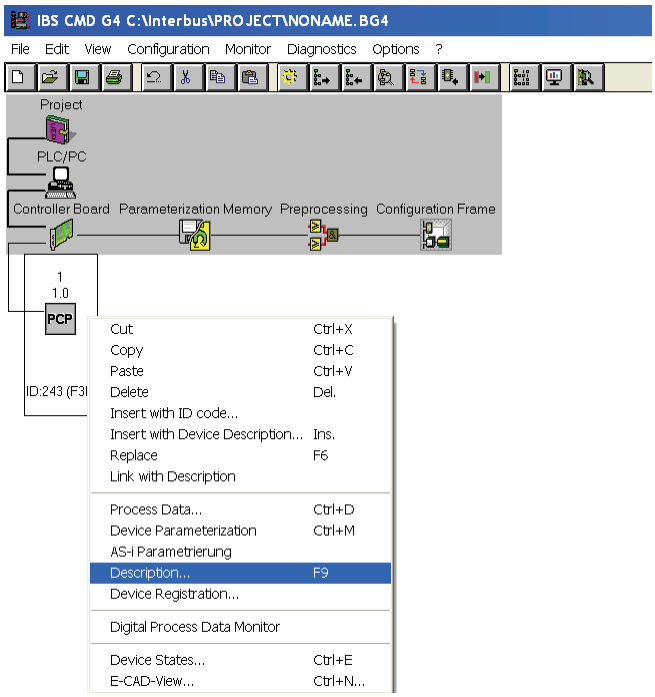


Figure 20 Opening the Description settings.

Mark the node and right click to open the menu. Select the Description menu.

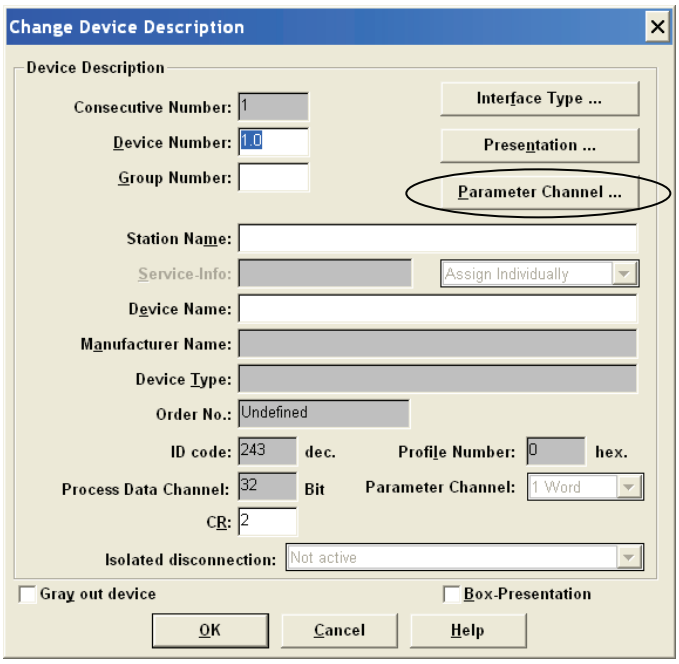


Figure 21 Opening the Parameter Channel settings.

In the Device Description open the Parameter Channel dialogue as seen below.

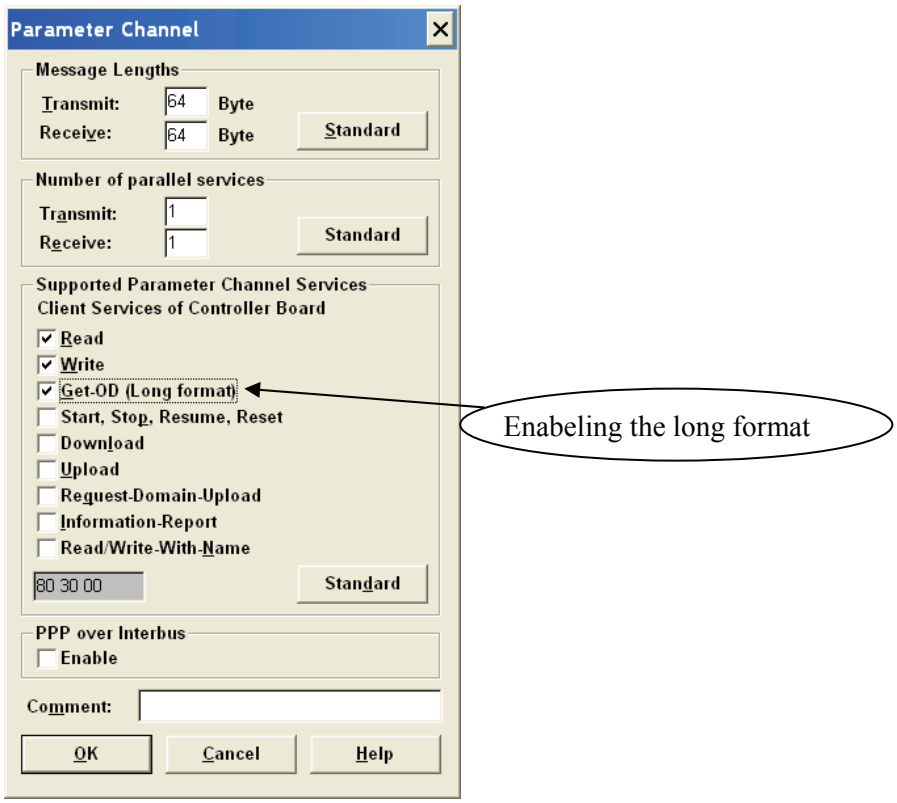


Figure 22 Editing the Parameter Channel settings.

Mark the check box Get-OD (Long format) otherwise leave the settings at the default. Then click on OK.

Note: The Get-OD format will enable the Name field when monitoring the PCP data.

6 Offline configuration

If for example the master is not connected to the network, it is also possible to make an offline configuration. In that case select the Controller Board and chose Insert with ID code.

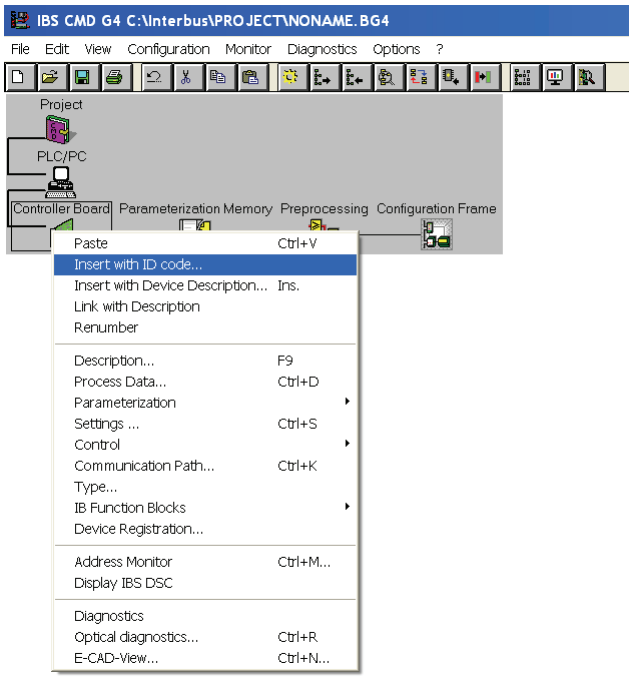


Figure 23 Opening the Insert with ID code function.

A new dialogue window now appears.

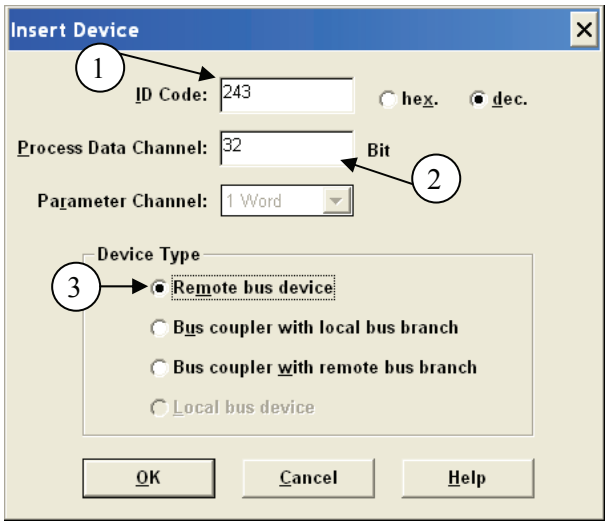


Figure 24 Entering the device ID code.

At first enter the desired ID Code, please see the table below. The ID Code❶ used in this case is 243 when using a Communicator configured for PCP and Process data. The Process Data Channel❷ is 32 bits by default and sets the size of the Process data. In this case 4 bytes of Process data is used so 32 bits is entered. At last the Remote bus device❸ is selected, that is the same for all Anybus modules.

ID Code	Data
3	Process data only
243	1 PCP word
240 (*Anybus-S Slave and X-gateway only)*	2 PCP word
241 (*Anybus-S Slave and X-gateway only)*	4 PCP word

Note: *For the Anybus Communicator only 1 PCP word can be used.* Also the Anybus module has to be configured for the same Process data size and Parameter Channel size as above.

Then click on OK to get to the next dialogue window.

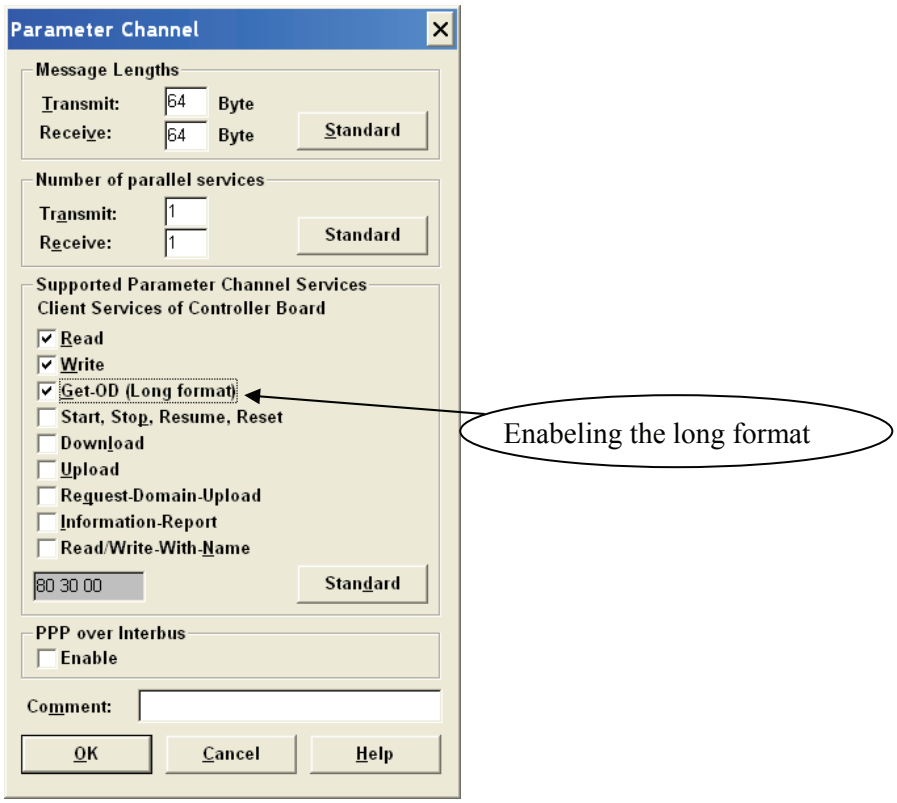


Figure 25 Editing the Parameter Channel settings.

Mark the check box Get-OD (Long format) otherwise leave the settings at the default.

Note: The Get-OD format will enable the Name field when monitoring the PCP data.

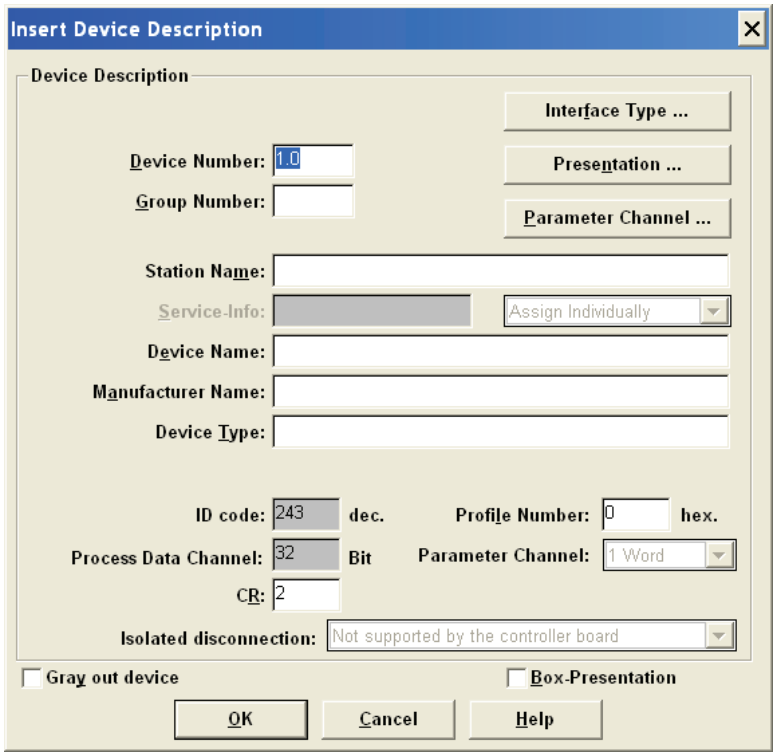


Figure 26 Entering the Device Description.

In this dialogue it is possible to assign a Station name, Device name and so on. It is not necessary to make any changes in this dialogue. Press OK to finish.

Optional: Click on the Interface type and select what type of Interface is of use. This will make it easier to document and diagnose the network.

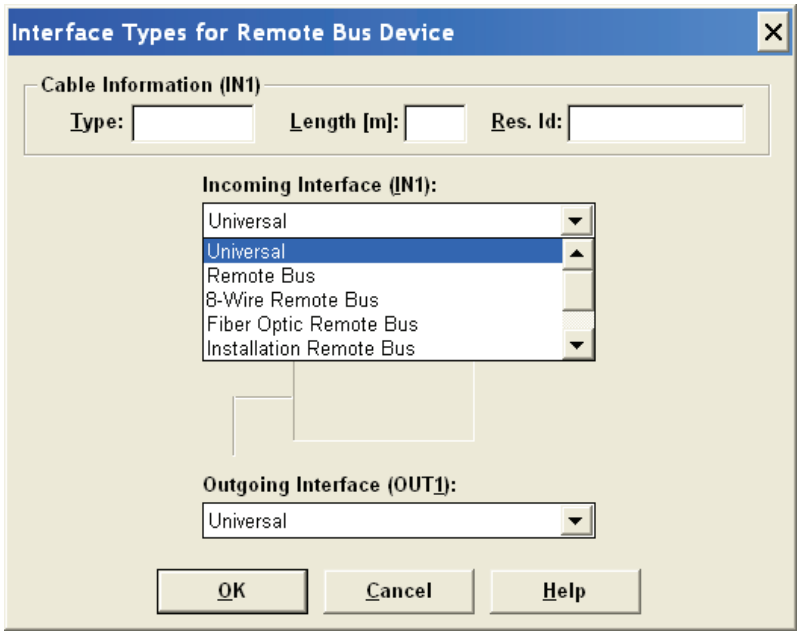


Figure 27 Selecting the type of Interface.

7 Changing the Controller Board settings

To be able to monitor the Process data the Controller Board setting has to be changed. Open the Controller Board menu again and select Settings.

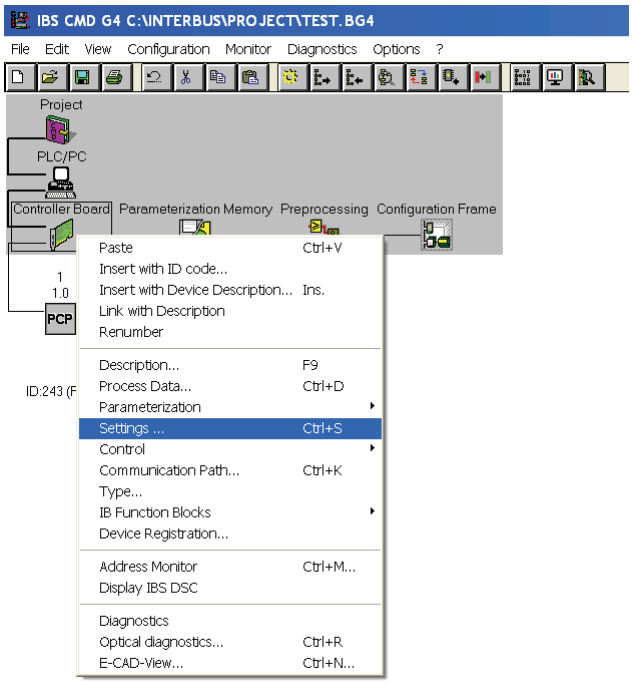


Figure 28 Opening the Controller Board settings.

The next step is to open the Bus Operation tile

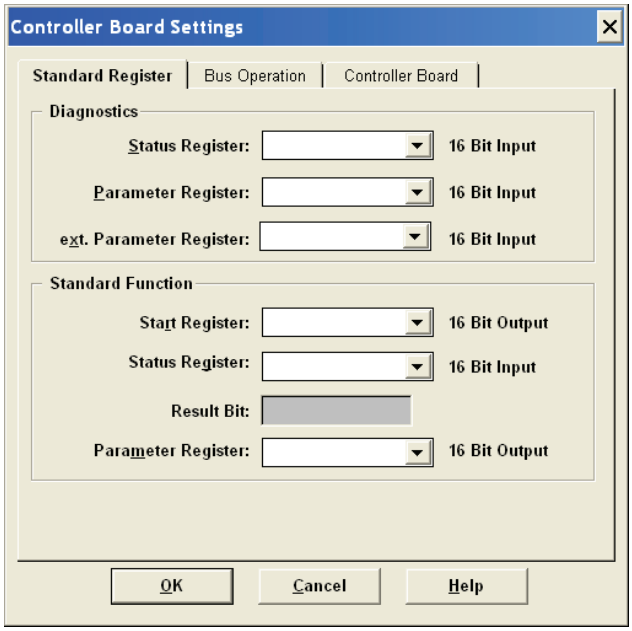


Figure 29 The Controller Board Settings.

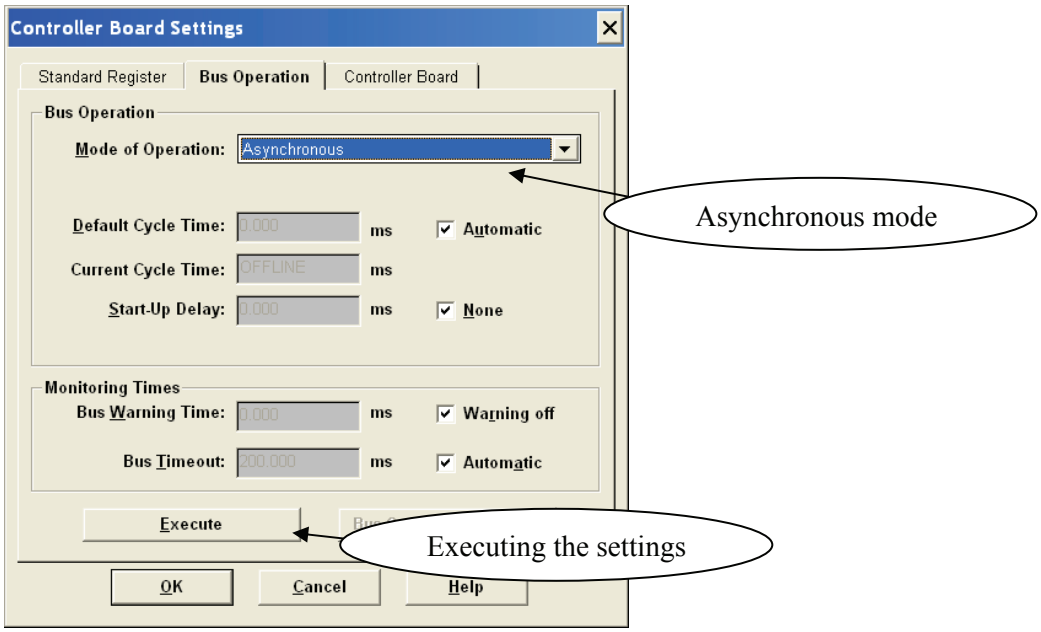


Figure 30 Editing the Controller Board settings.

Change the Mode of Operation to Asynchronous and click on Execute to effect/execute the settings. Then click on the OK button.

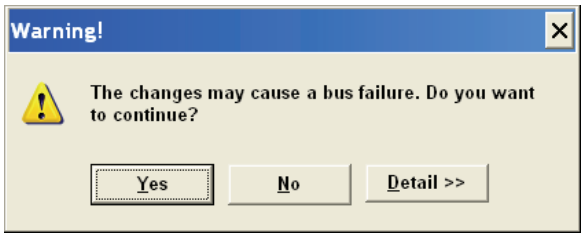


Figure 31 Bus operation dialogue window.

Click on Yes in the above dialogue and then then press the OK button to continue.

8 Downloading the configuration

The next and final step in the configuration process is to execute the parameterization and download the configuration to the master.

Mark the Controller Board and select Parameterization/Execute in the menu as seen below.

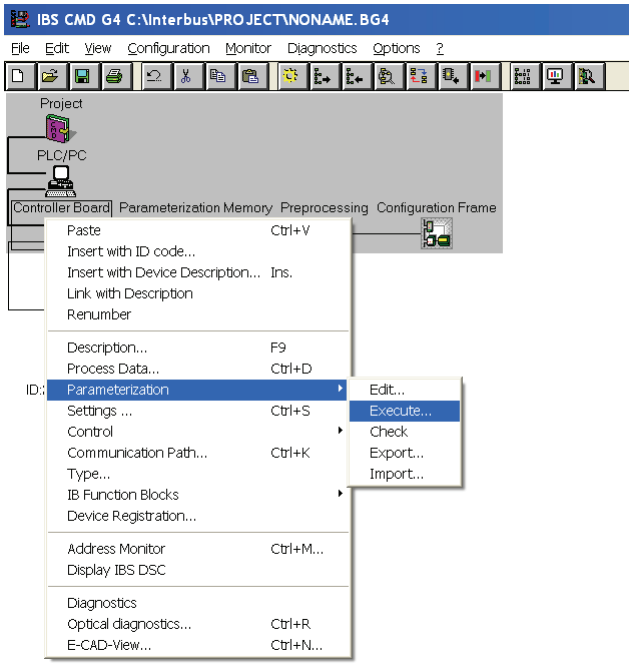


Figure 32 Executing the Parameterization.

Then chose Startup with PDP. This alternative can be chosen also when a programme in the controller is used.

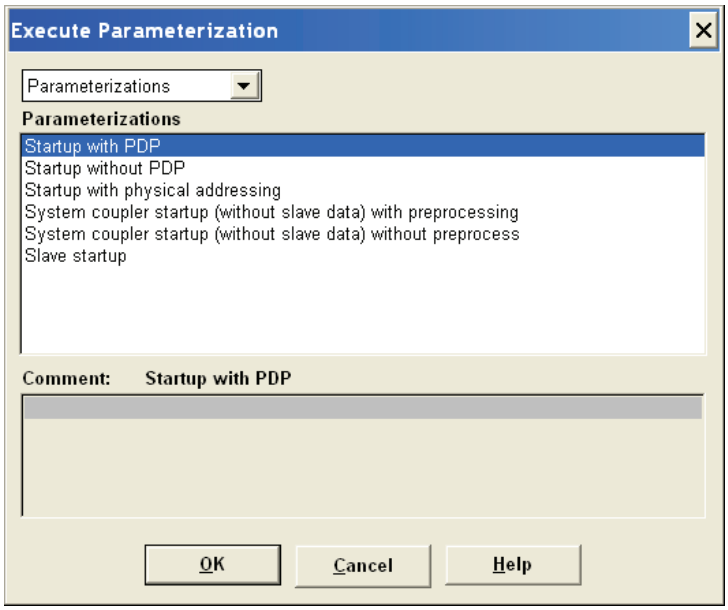


Figure 33 Selecting the type of parameterization.

In the next dialogue window click on yes to read the communication parameters.

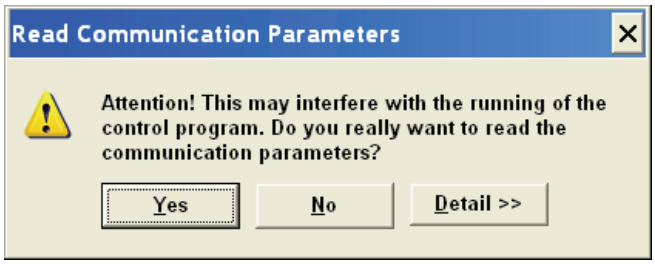


Figure 34 Parameterization dialogue window.

If the execution was successful the following dialogue appears.

Figure 35 Successful Parameterization.

The program window will now look like below.

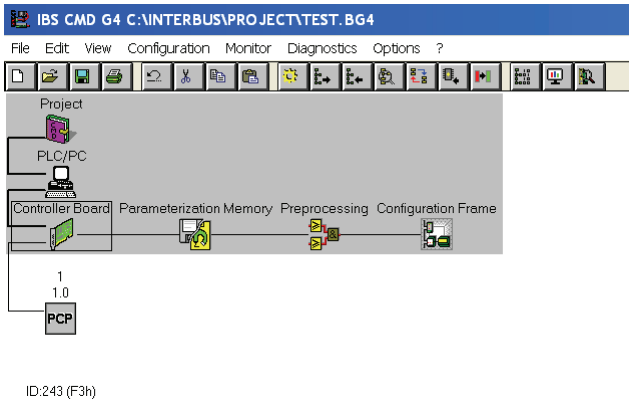


Figure 36 The network after parameterization using PCP data.

6 Testing

The testing of the network can be done after finishing the configuration. In this case the Anybus Communicator with a loop dongle at the sub-network connector is used for test purpose.

6.1 Monitoring using IBS CMD G4

Using the IBS CMD G4 software the procedure differs somewhat depending on if the data to be monitored is Process data or PCP data.

6.1.1 Monitoring Process data

Select the node on the network, in this case node 1.0, and right click to open the menu as seen below.

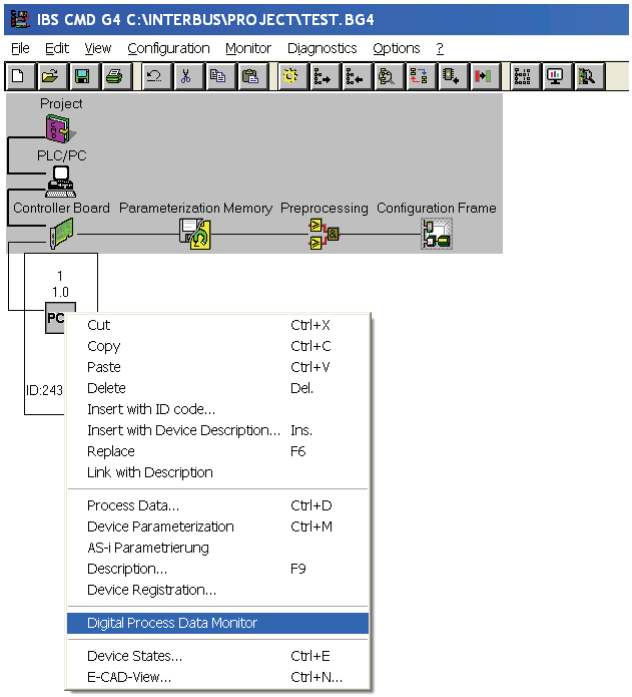


Figure 37 Opening the Digital Process Data Monitor.

Select Digital Process Data Monitor to open the Monitor window.

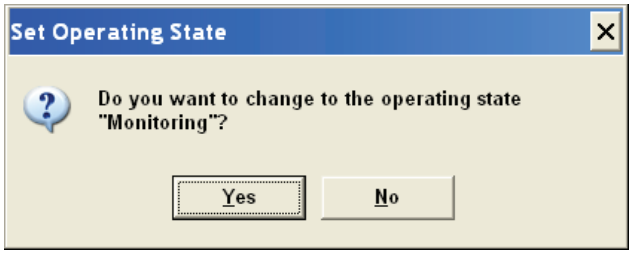


Figure 38 Changing to monitor state.

Click on yes and the next dialogue window will appear.

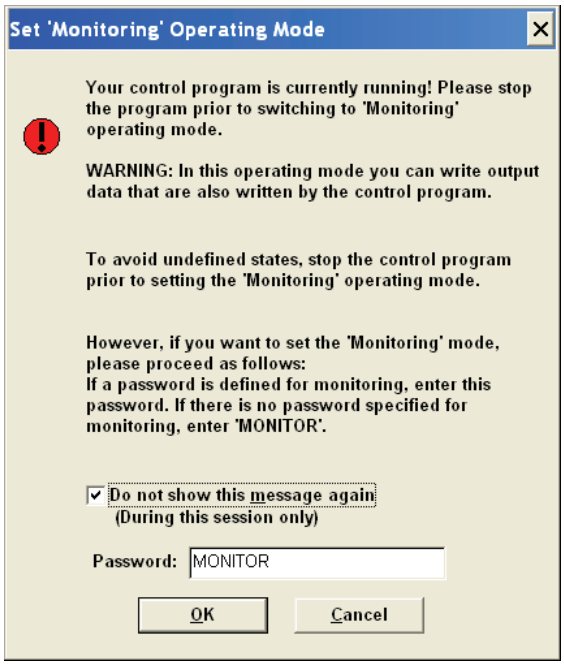


Figure 39 Entering the password in the monitor dialogue.

If desired mark the checkbox to not display the message again. Use the activated password or if no password is activated enter MONITOR.

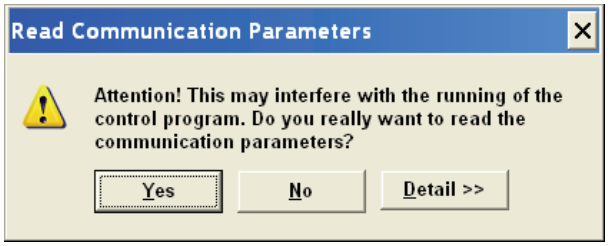


Figure 40 Monitor dialogue window.

Click on yes in the following dialogue. The Process data monitor is then opened.

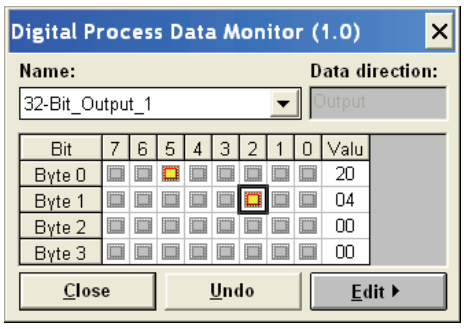


Figure 41 Monitoring the Output bits.

In this test two bits are set. Since the Communicator has a loop connection on the sub-network side the corresponding Input bits will be set.

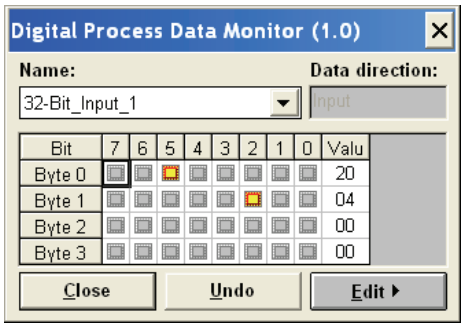


Figure 42 Monitoring the Input bits.

6.1.2 Monitoring PCP data.

To monitor the PCP data right click on the node on the network, in this case node 1.0, and open the menu as seen below.

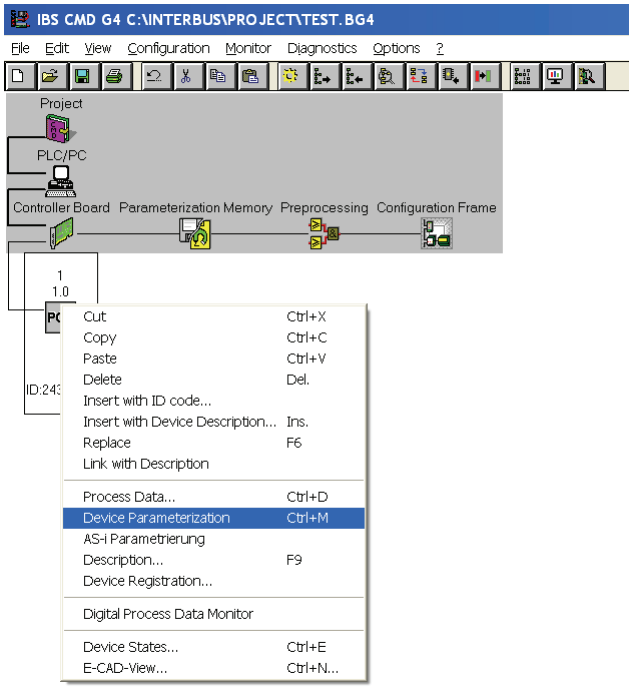


Figure 43 Opening the Device Parameterization dialogue.

Select Device Parameterization and the window seen below will appear.

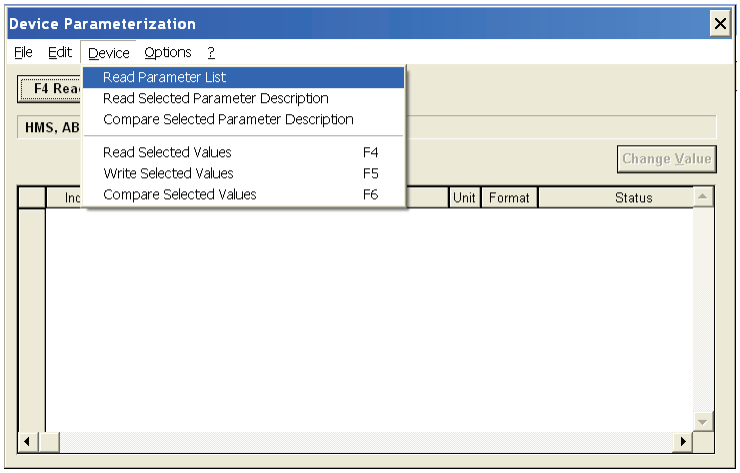


Figure 44 Reading the parameter list.

To see the available parameters open the Device menu and select Read Parameter List.

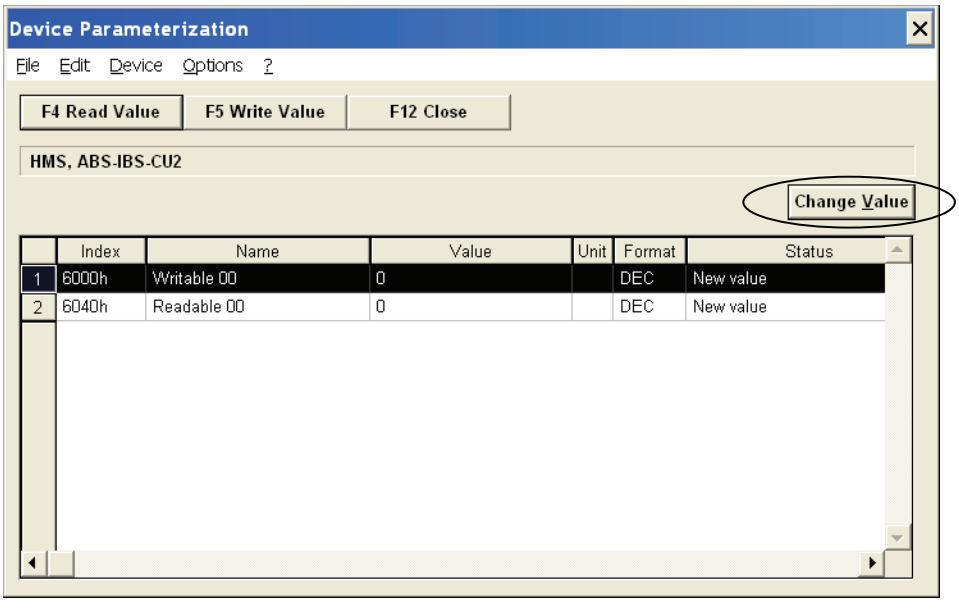


Figure 45 Viewing the available parameters.

Mark the Object 6000 and click on Change value.

Note: If the name of the parameter is not shown as above the Get-OD (Long format) has not been enabled, please see Figure 24 Entering the device ID code.

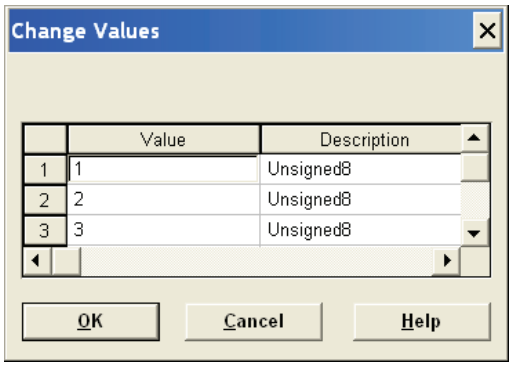


Figure 46 Editing the value of Object 6000.

In this test the values 1, 2 and 3 are entered.

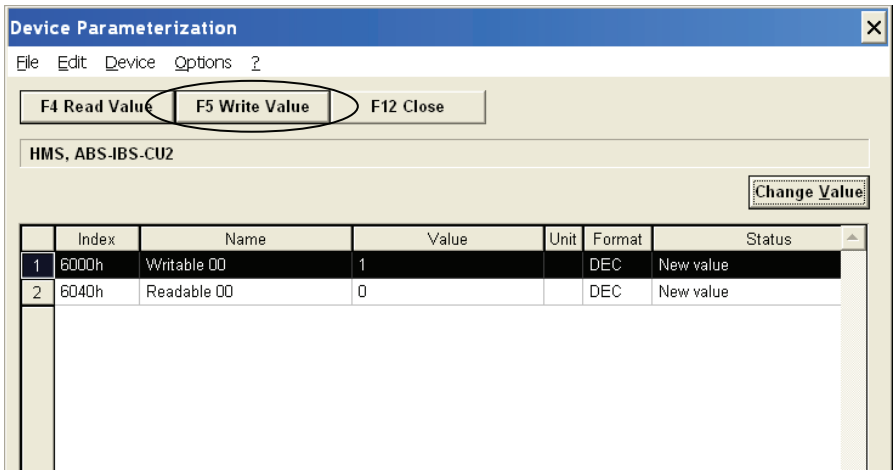


Figure 47 Executing the change of value.

To write the values press the Write Value button.

Since the Communicator is connected to a loop dongle on the serial connector the corresponding Input Object will hold the same values. Mark the Object 6040 and press the Read Value button.

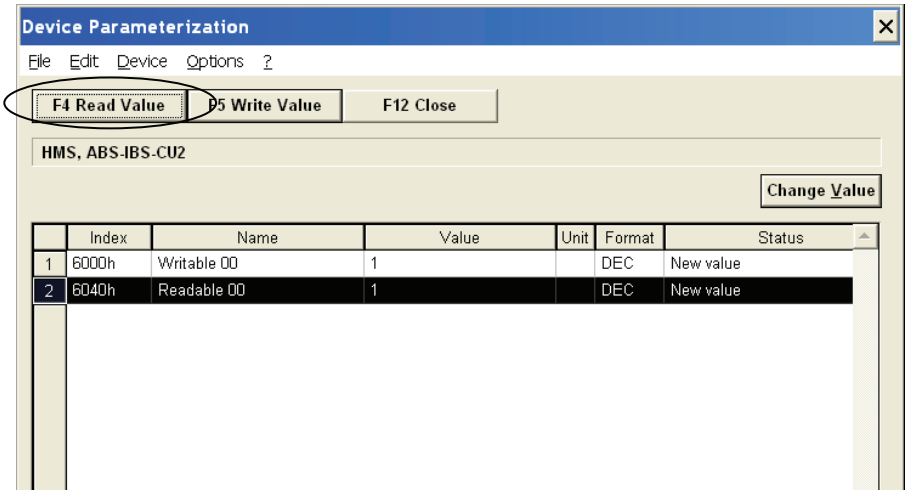


Figure 48 Executing the Read Value function.

Then press the Change Value button to open the window seen below.

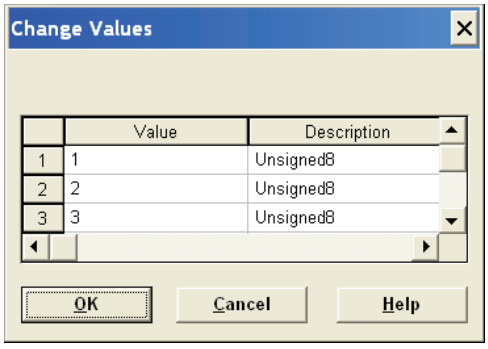


Figure 49 Viewing the input Object 6040

The values written to the Output Object will then be seen monitoring the Input Object as above.

6.2 Monitoring using ABC Config Tool

To test the network it is also possible to use the monitor function in the ABC Config Tool. Start the ABC Config Tool and open the Node Monitor as seen below.

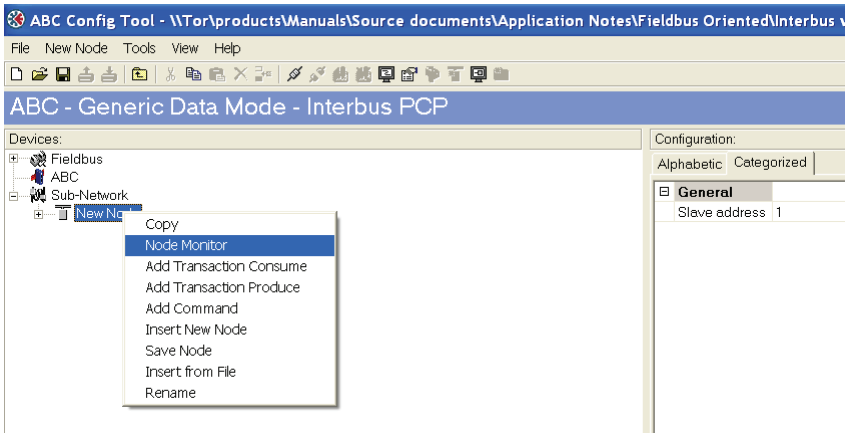


Figure 50 Opening the Node Monitor in ABC Config Tool.

The values can now be seen in hex format.

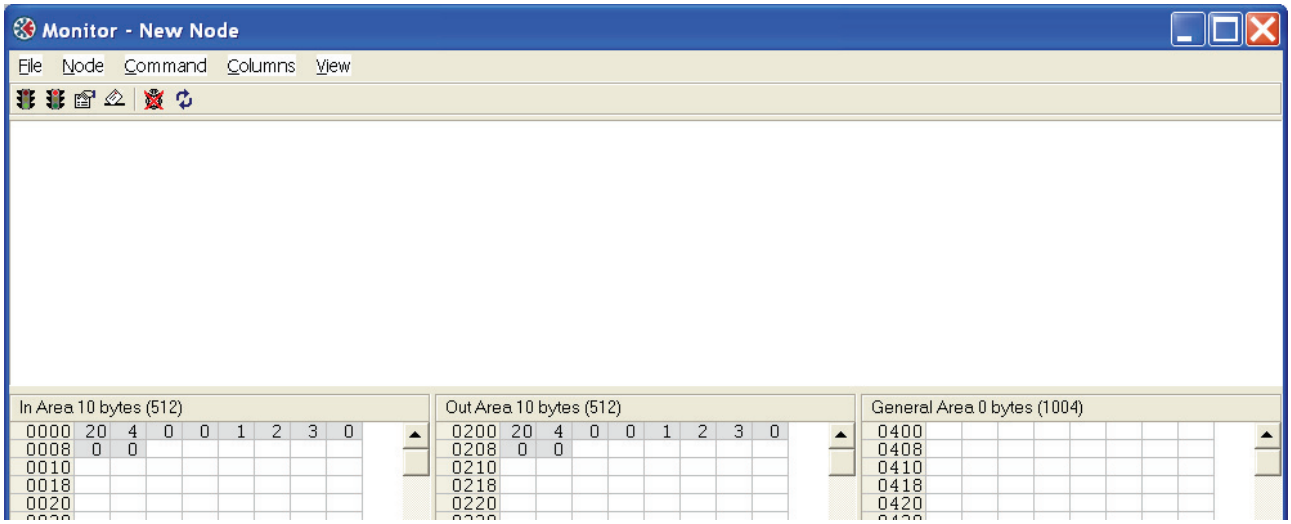


Figure 51 Viewing the Process and PCP data.