HMS Anybus Communicator for PROFINET with Siemens S7-300 PLC and TIA Portal software

History

Revision	Date	Description	Responsible
1.10	2013-11-08	New template, general update	SDa
1.00	2012-09-24	Minor corrections	NiA
0.99	2012-08-27	First draft	RaD

Contents

1 Background

Materials used in the development of this application note:

- HMS Anybus Communicator PROFINET to Serial Gateway (HMS part no. AB7013)
- Siemens S7 300 PLC (Siemens part no. 6ES7 315-2EH14-0AB0)
- SCALANCE X208 Switch (Siemens part no. 6GK5 208-0BA10-2AA3) with Siemens PS307 power supply (Optional)
- Anybus Configuration Manager – RS232/422/485 Software Version 4.1.1.1
- Siemens TIA Portal Software Version 11.0
- Documentation consulted: Anybus Communicator PROFINET User Manual ver. 3.01
- Documentation consulted: SIMATIC S7-300 Programmable Controller Hardware and Installation Manual
- Programming Cables (Anybus Configuration Cable, PROFINET Cables)

2 Solution Overview

This document explains the procedure for configuring PROFINET communication between a Siemens PLC and the HMS Anybus Communicator, using TIA Portal software. It is assumed that the setup for the Anybus Communicator module for the serial communications has already been performed. If not, communications on the serial end of the Anybus Communicator module must be set up before proceeding.

3 Configuration

3.1 Anybus Communicator IO Size

In this example, the Anybus Communicator is set up for 10 bytes of input data and 3 bytes of output data. The serial configuration setup for each application in the Anybus Communicator will have different amounts of bytes. To check the amount of input and output bytes in the application, right-click on the Sub-Network and select **Sub-Network Monitor**, as shown below.
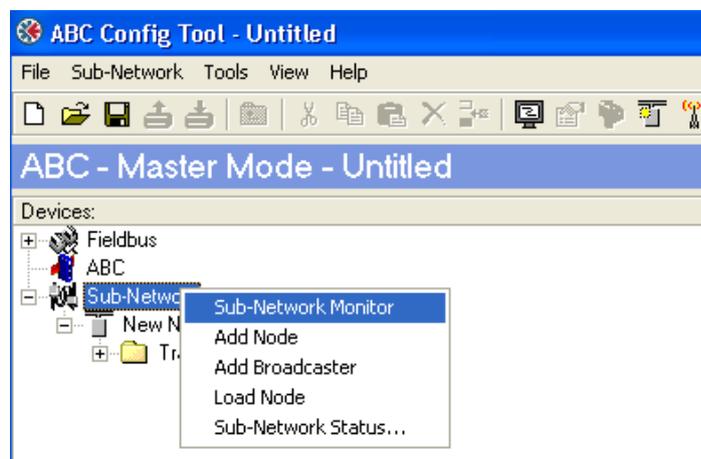
The **Sub-Network Monitor** window should now appear. This will show the number of input bytes (10) and output bytes (3) in the Anybus Communicator. If there are no colored boxes, the Anybus Communicator has not yet been configured.
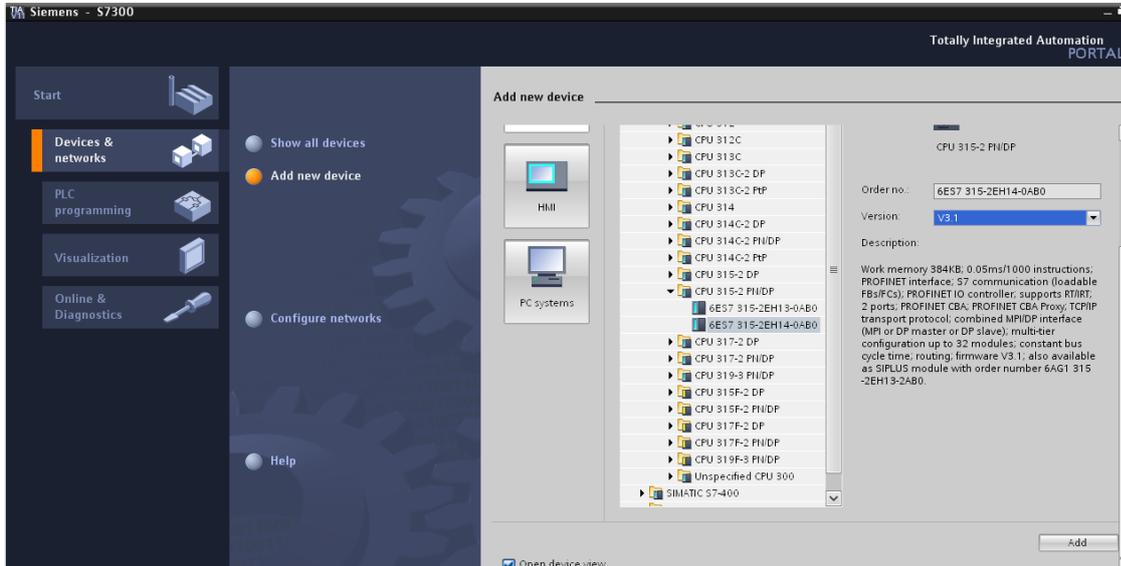
Configure the serial interface of the Anybus Communicator before proceeding.

3.2   TIA Portal Setup

In order to configure the PROFINET network, it is first necessary to set up the PLC and the master hardware.

1) Open the TIA Portal software and select **Add new device**.

2) Select the PLC CPU to be used.

The other components of the rail can now be added to the system, from the **Hardware catalog**. This is where the power supply is selected, along with the digital input/output module.
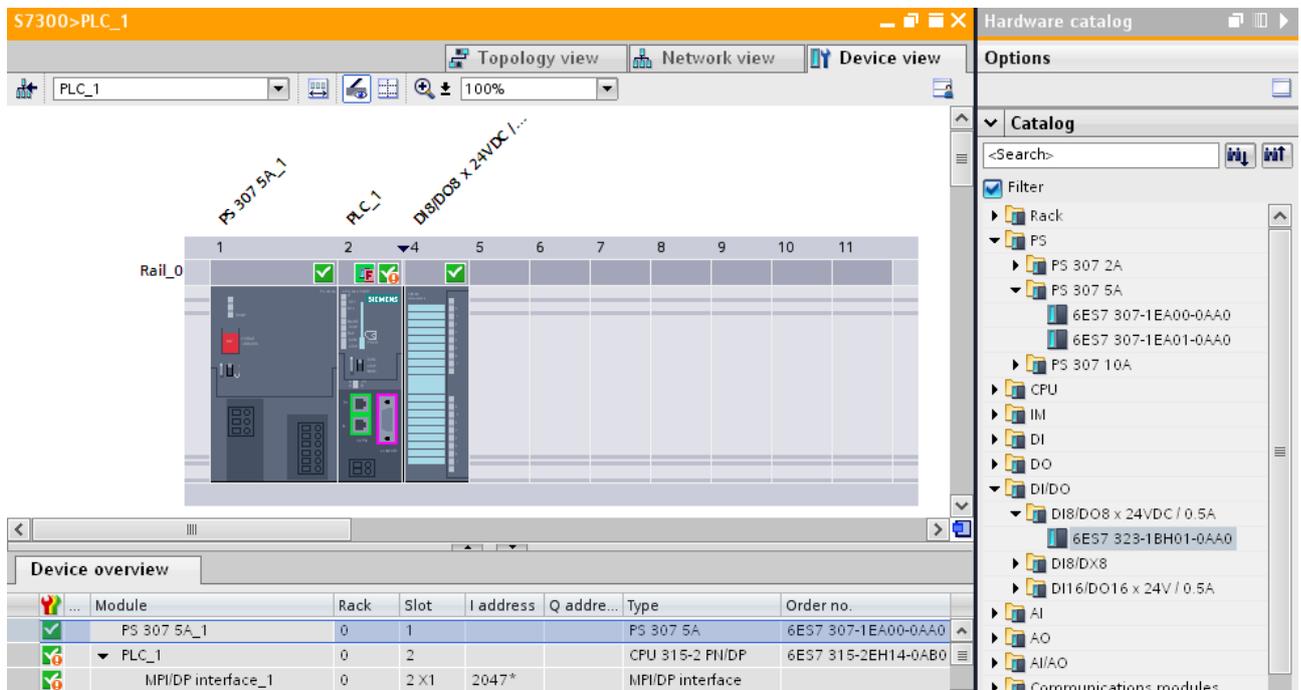
3) Double-click on the **PLC_1** to bring up the properties.

4) In the **PROFINET interface properties**, add a new subnet for PROFINET, and assign an IP address for the protocol.
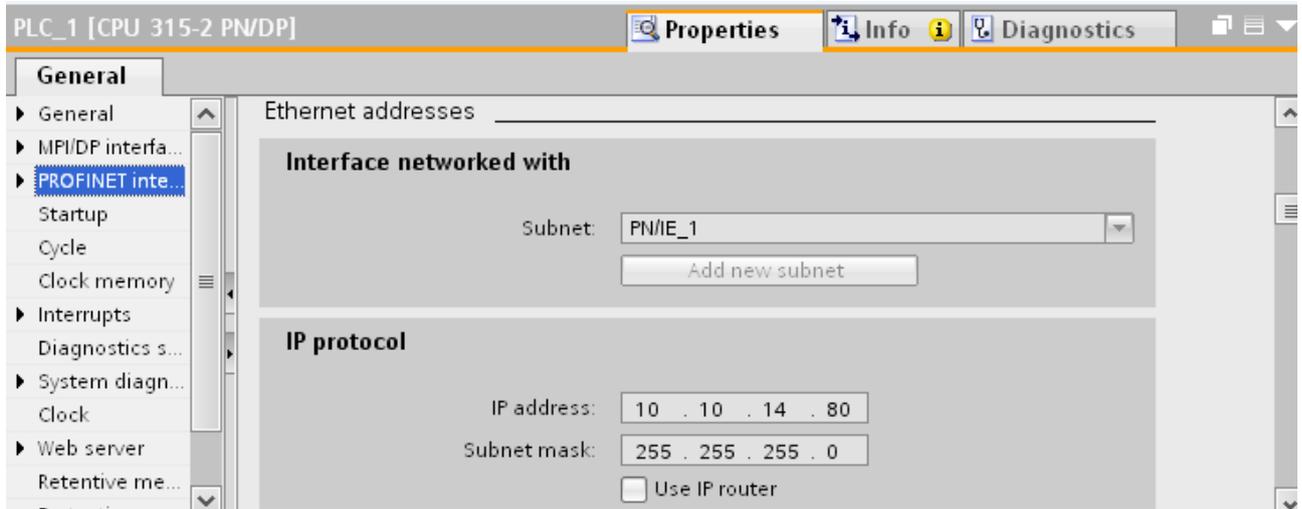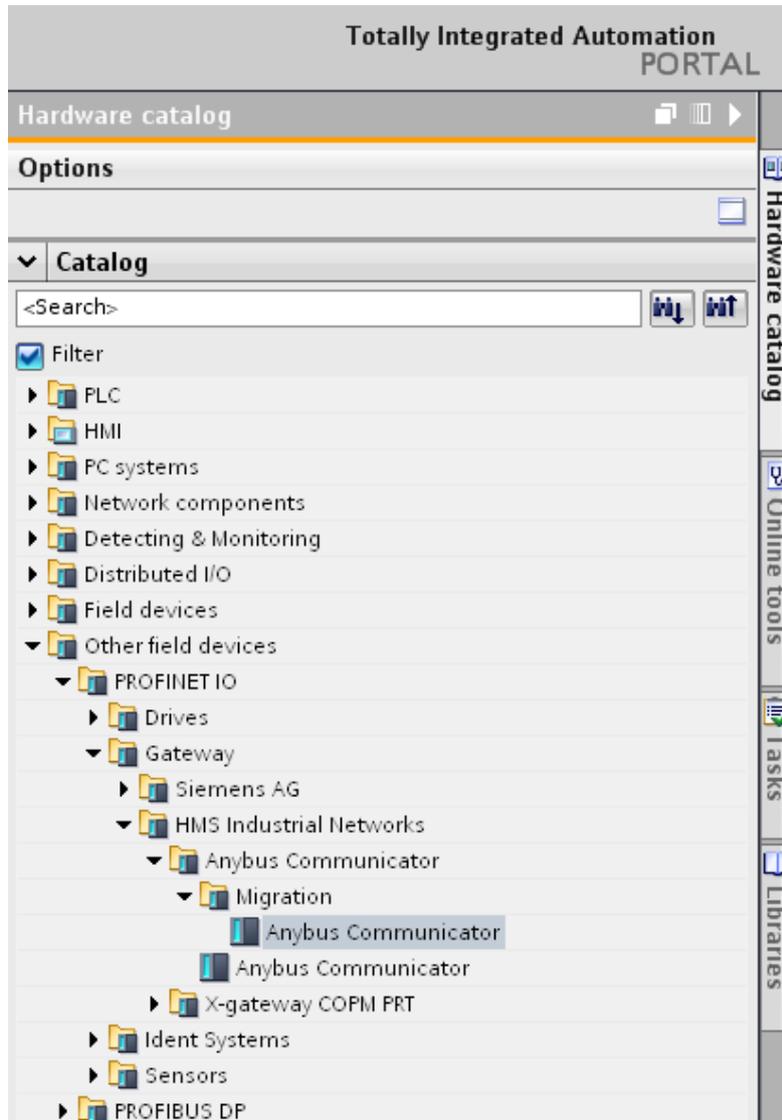

To include the Anybus Communicator in the network, the Anybus Communicator GSDML file must be imported into the configuration tool. This file can be downloaded from the HMS web site.
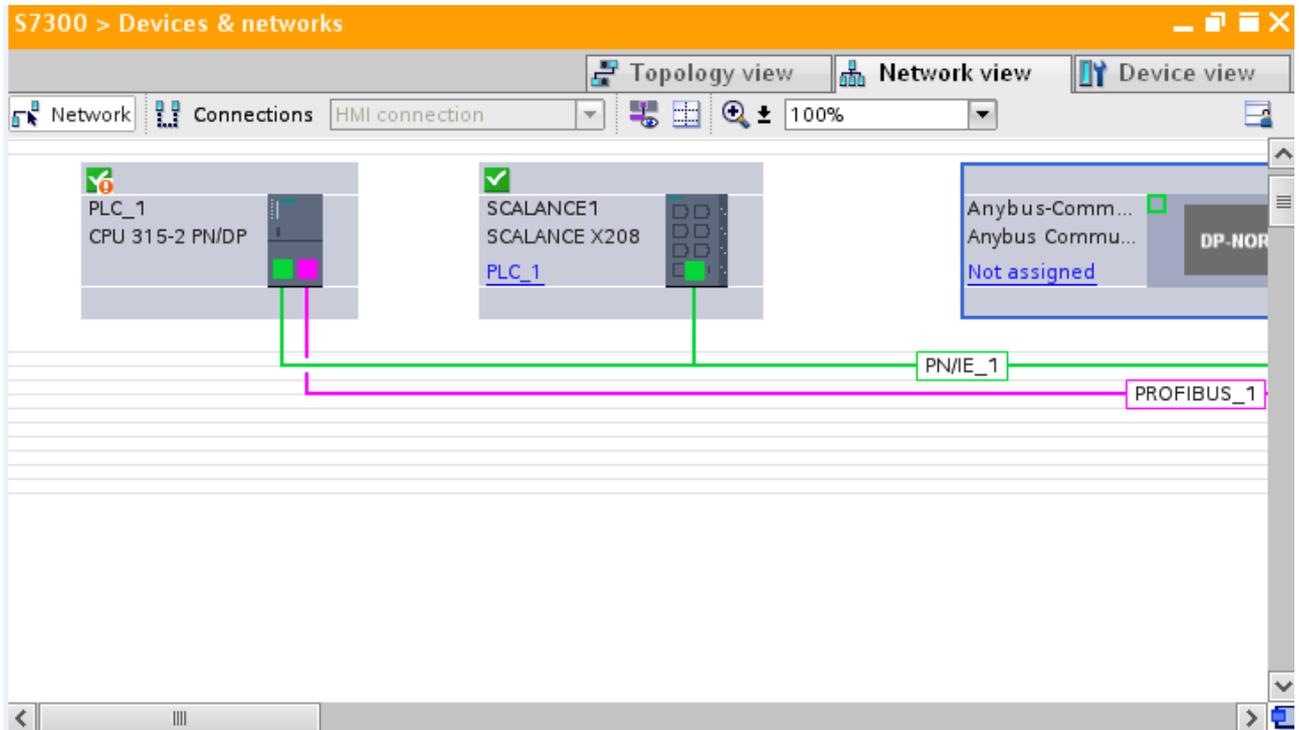
5) Open the **Options** menu as shown below, and select **Install general station description file**.
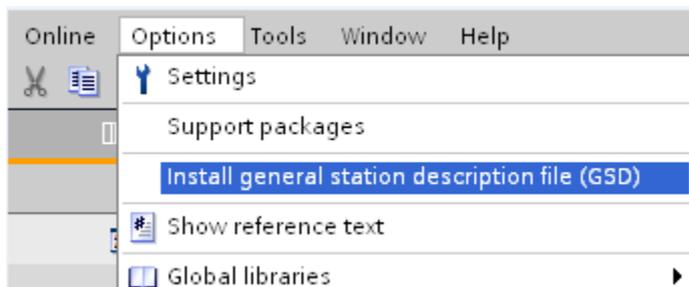
The Anybus Communicator will be available in the hardware catalog after the GSDML file has been imported.

6) Select the **Network View tab**, to show the PROFINET PN/IE_1 network that was created.

7) From the hardware catalog, drag the **Anybus Communicator module** into the network.

8) Double-click on the **Anybus Communicator module** to bring up the **Device View**. The device is named under **General** in the **Properties** tab. The example below uses the name **abc**.
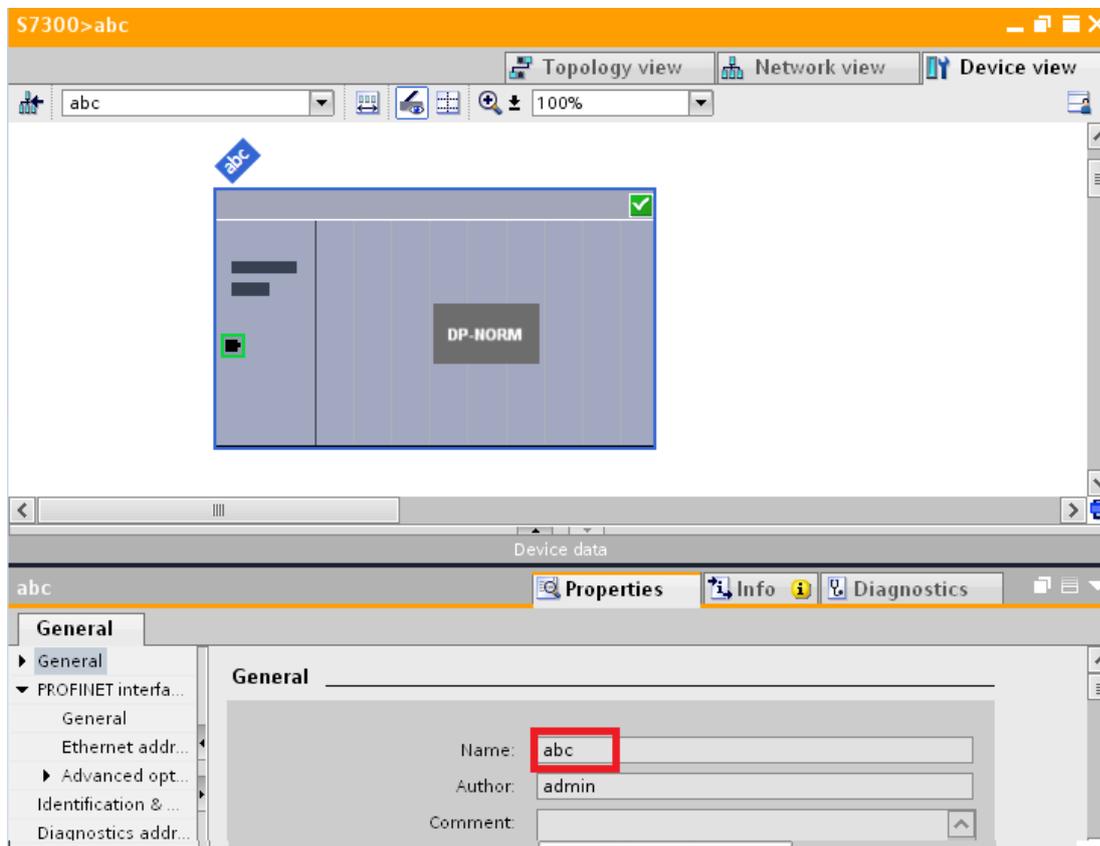
9) In the **PROFINET** interface, select PN/IE_1 as the Subnet.
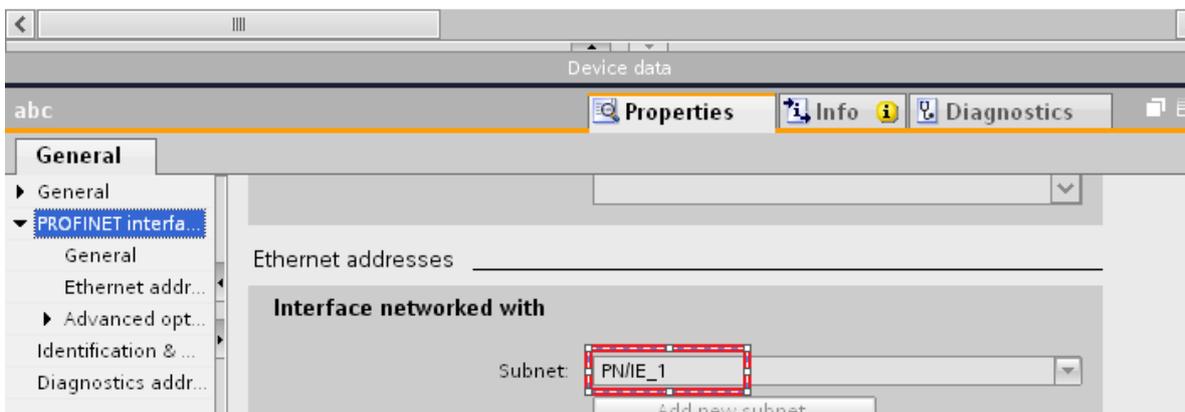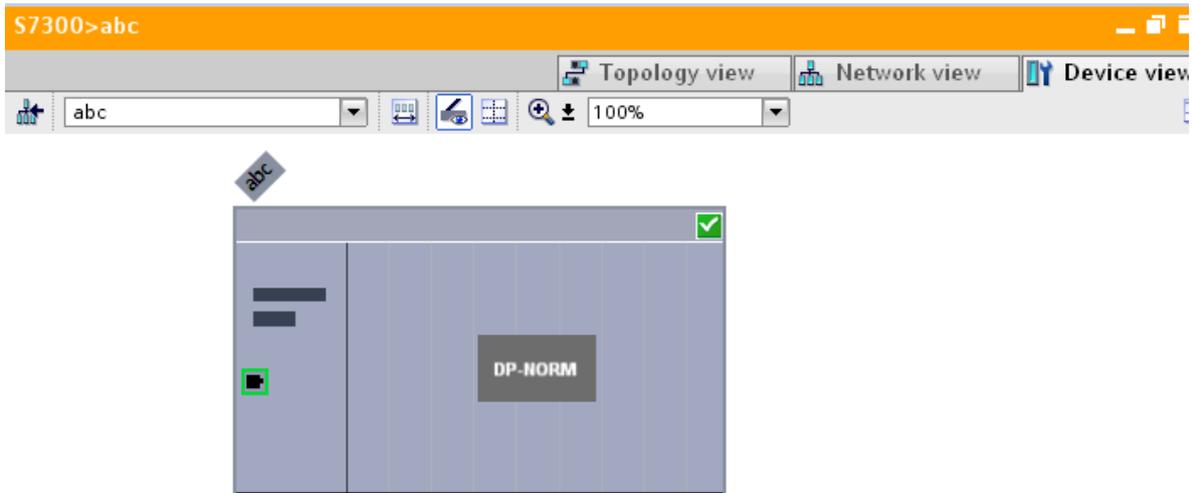
10) Add the **Input** and **Output modules** so that they match the input and output sizes as set on the Anybus Communicator. In the example earlier, the Anybus Communicator was set up for 10 bytes input and 3 bytes output, so these values must be used here too.
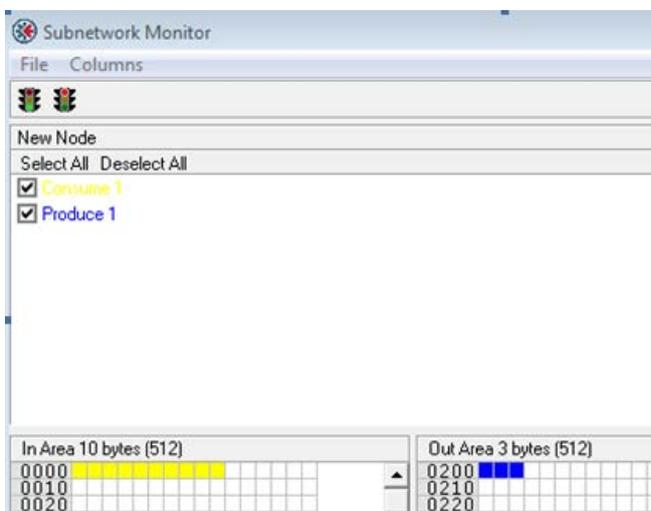
An input 008 byte and an input 2 bytes are dragged from the Hardware catalog into the Device overview list, bringing the total to 10 input bytes.

Similarly, an output 2 byte and an output 1 byte are dragged in, bringing the total to 3 Output bytes.
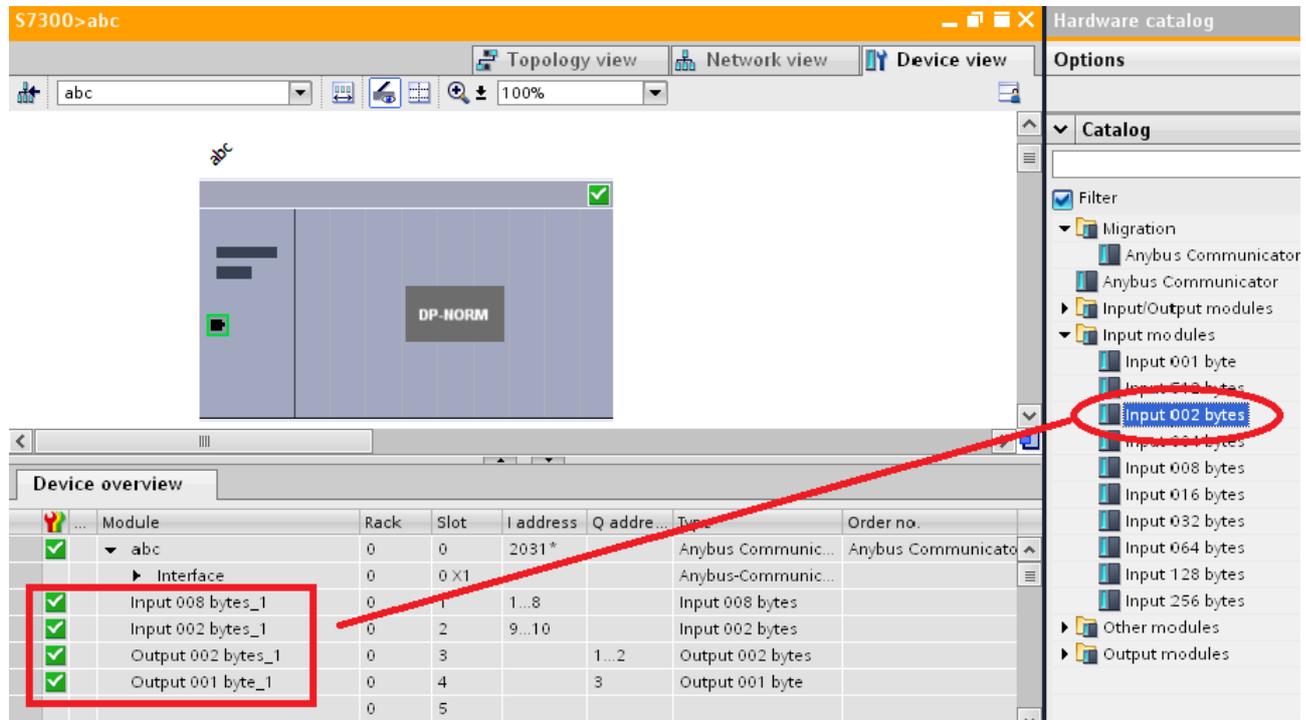

The choice of the modules to add depends on the Anybus Communicator's configuration setup in the Configuration Manager Tool. Other examples are shown below:

| Bytes required by application	Modules to use
4 Input + 2 Output	4 Input + 2 Output
7 In + 12 Out	4 In + 2 In + 1 In + 8 Out + 4 Out
33 Output	32 Output + 1 Output
68 Input	64 Input + 4 Input

3.3   Assigning Device Name

Before communication can start, the **Device Name** for the devices configured must be assigned to the device.

1) Go to the **Network View** and right-click on the PROFINET network.

2) Select **Assign device name**.
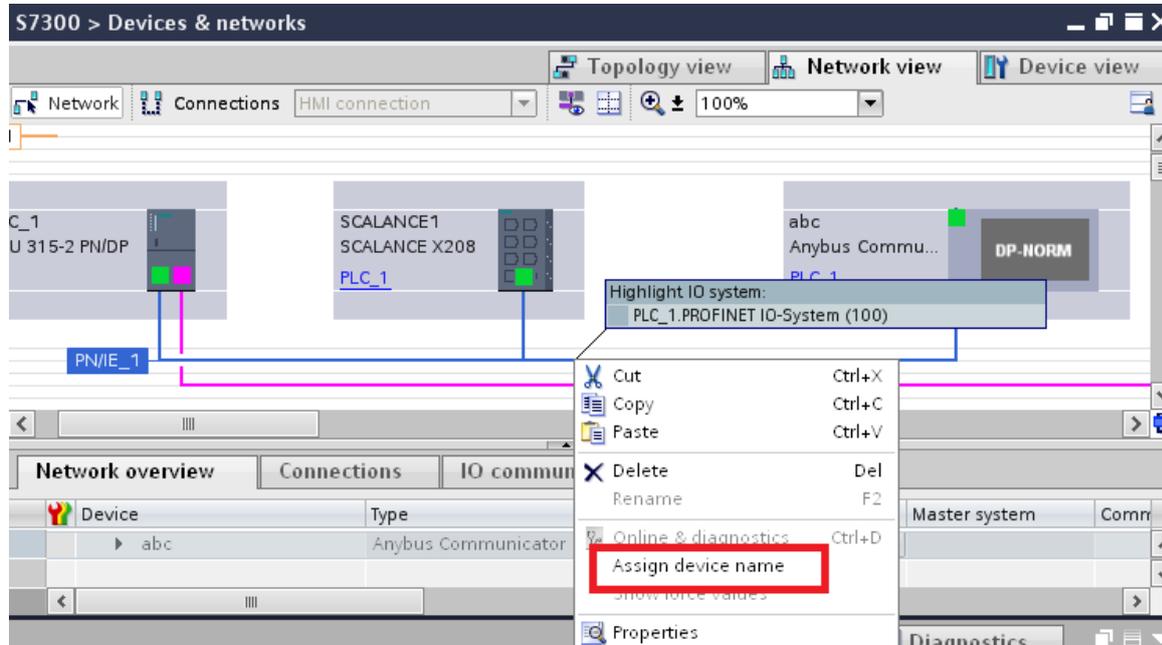
A new popup will now appear, showing a list of the PROFINET devices on the network.

1) Select **abc** from the drop-down menu.

2) Select the **Anybus Communicator**.

3) Click the **Assign Name** button to send the assigned name to the module.
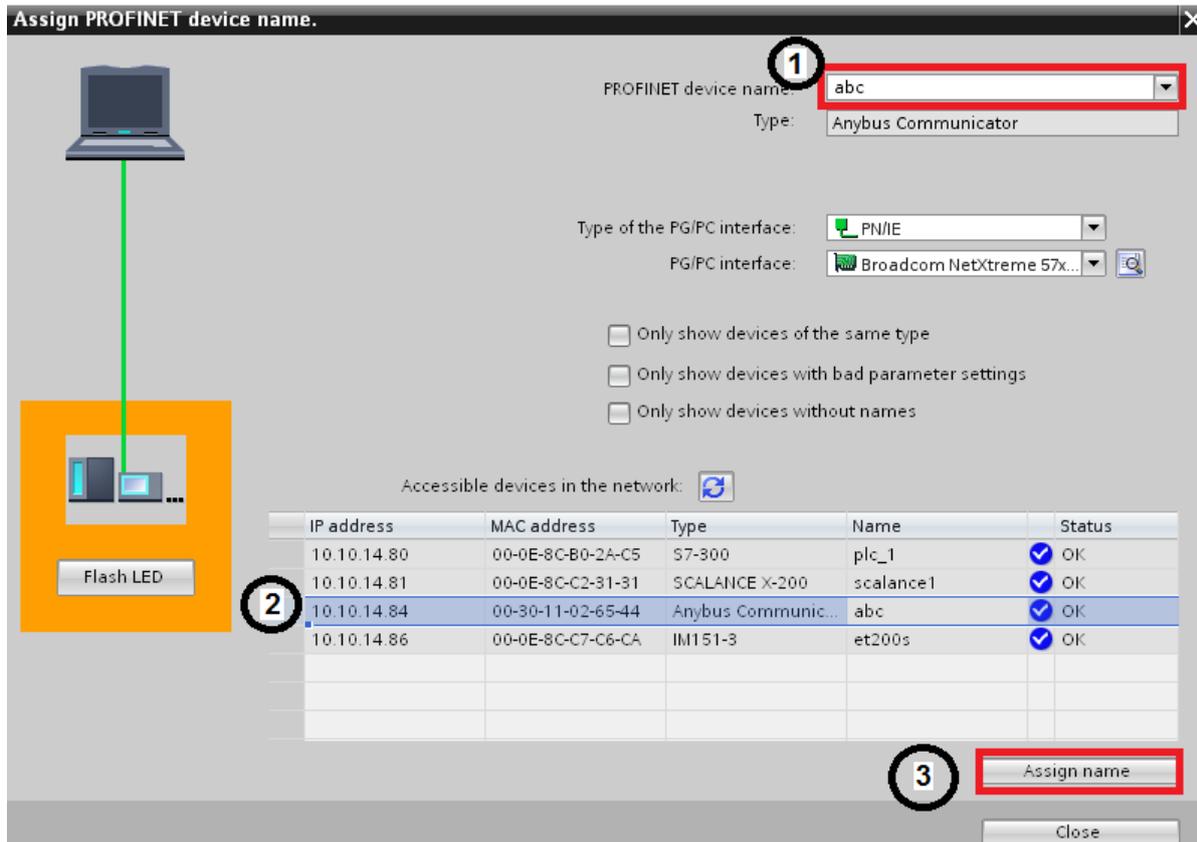
3.4   Setting up the Force and Watch table

To view input and output data, a tag can be added to the watch table. A name can be entered, as well as the data type. For the address, refer to the **I address** of the module that was entered in the Anybus Communicator, as shown below.

Output tags can be entered in the Force table. The test tag **first_output** has been added, with a force value of **#00AA**, referencing the first output address of the Anybus module.
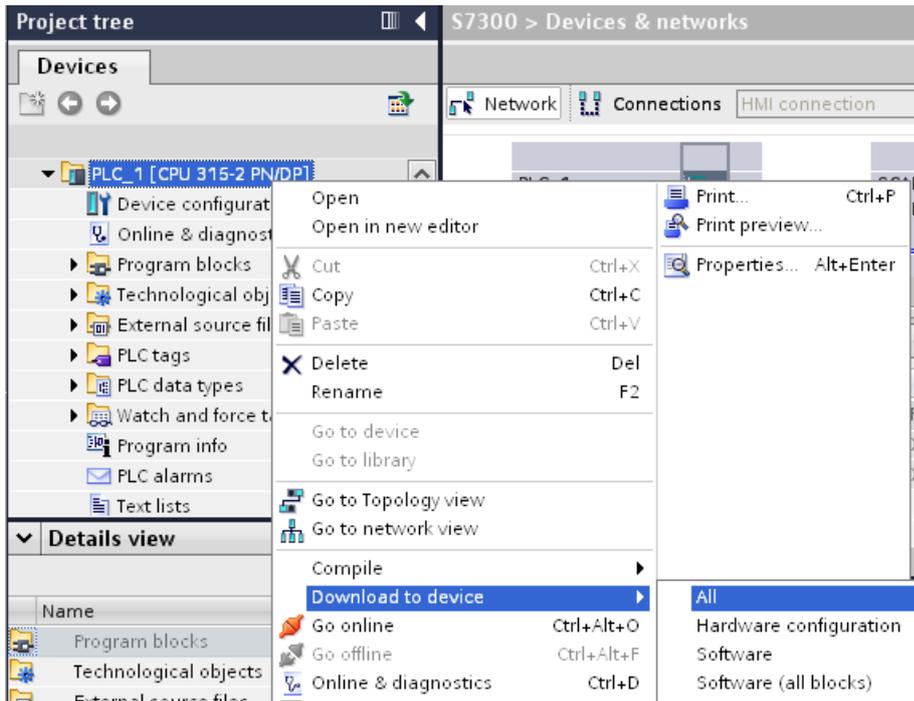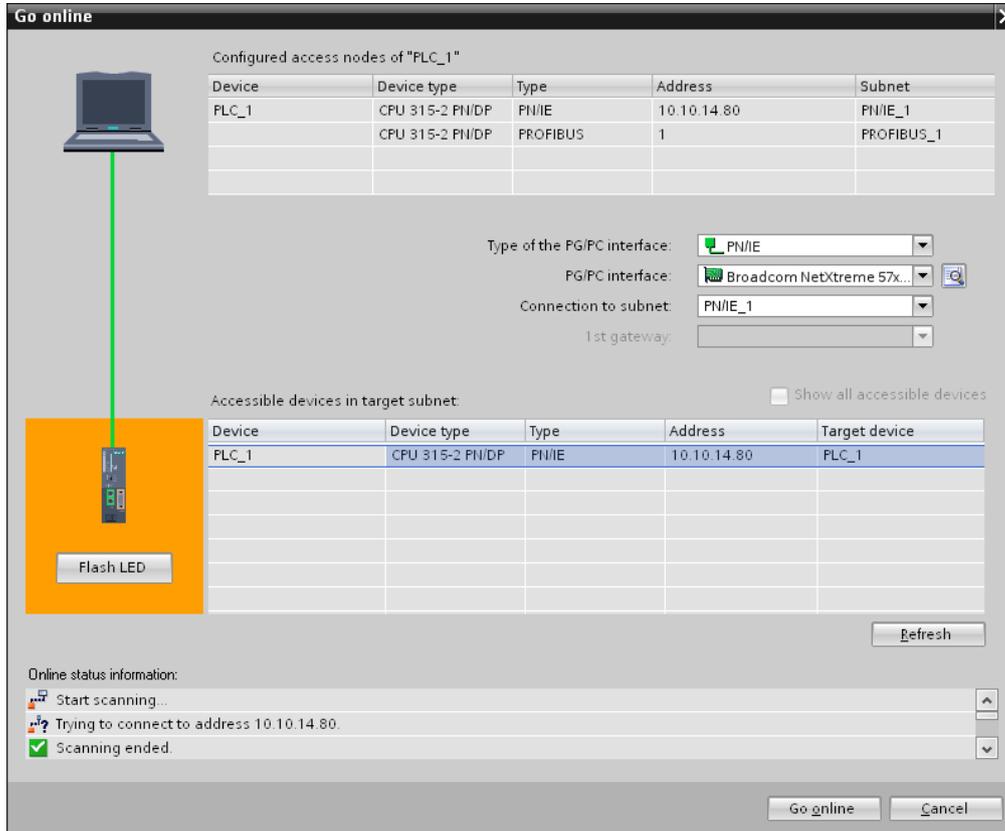
3.5 Compile, Download and Test

1) The project should now be saved.

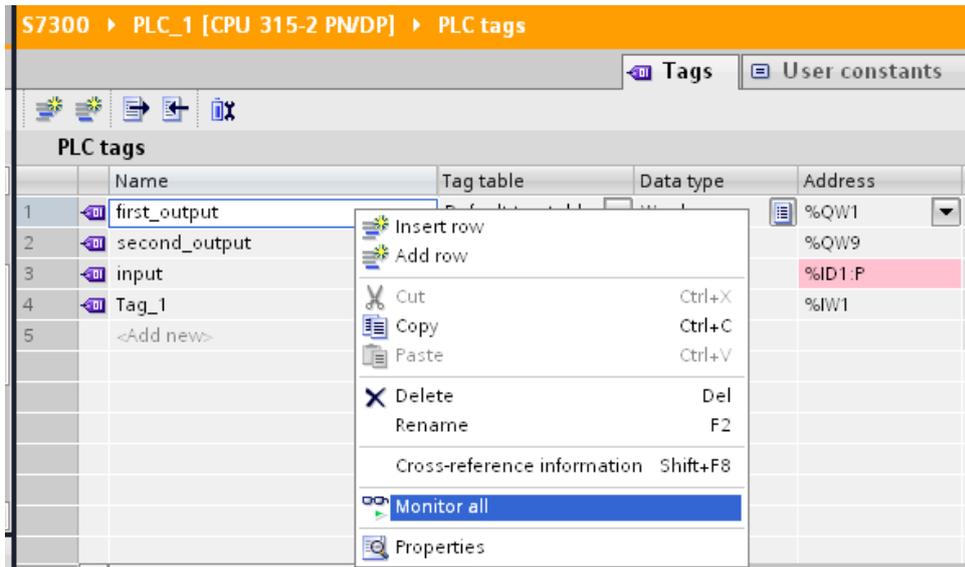2) Compile the program, by right-clicking on the PLC and selecting **Compile >> All**.
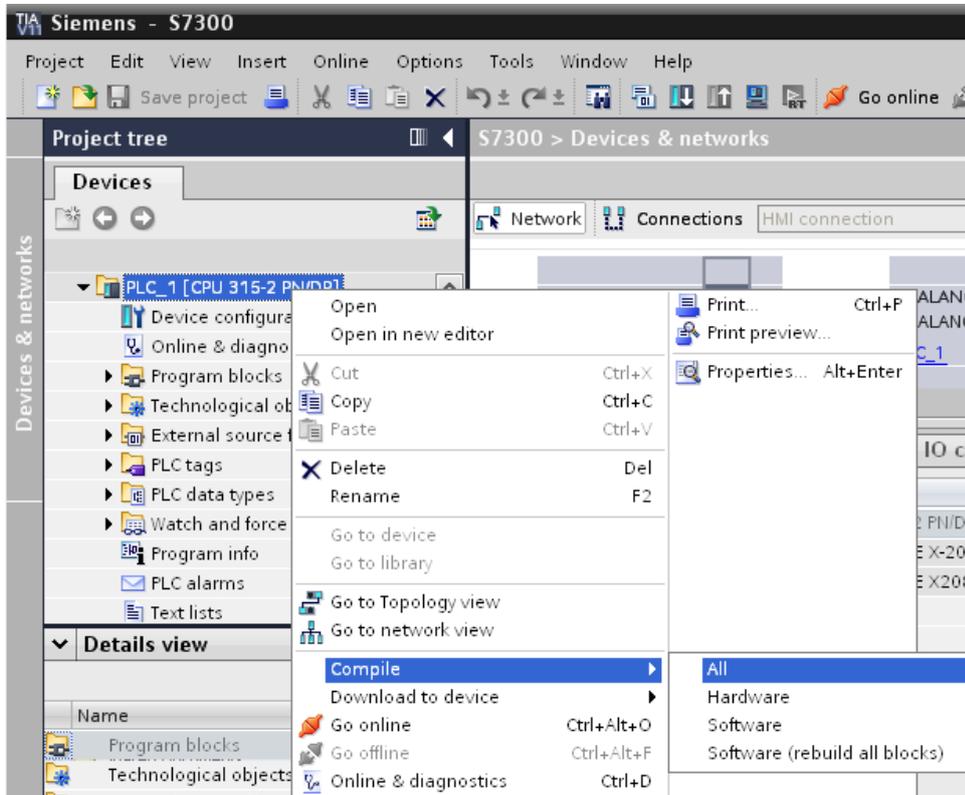
3) Select **Download to device >> All**.

4) Click the **Go online** button for the PLC. A popup will appear for selecting the PG/PC interface. Clicking the **Refresh** button will show the devices accessible in the sub-network.

5) Once online, go to the **PLC tag table**, right-click and select **Monitor All**.


In the **Monitor value** column, the **input** tag shows the first input double word value from the Anybus Communicator. The **first_output** tag set up will force and write the force value of #00AA into the Anybus Communicator output table.

6) Use the **Anybus Configuration Manager Tool** to view the current input and output data on the Anybus Communicator.

7) Right-click on the node and select **Node Monitor**, as shown below. A monitor screen will appear, showing the input and output bytes in grey.
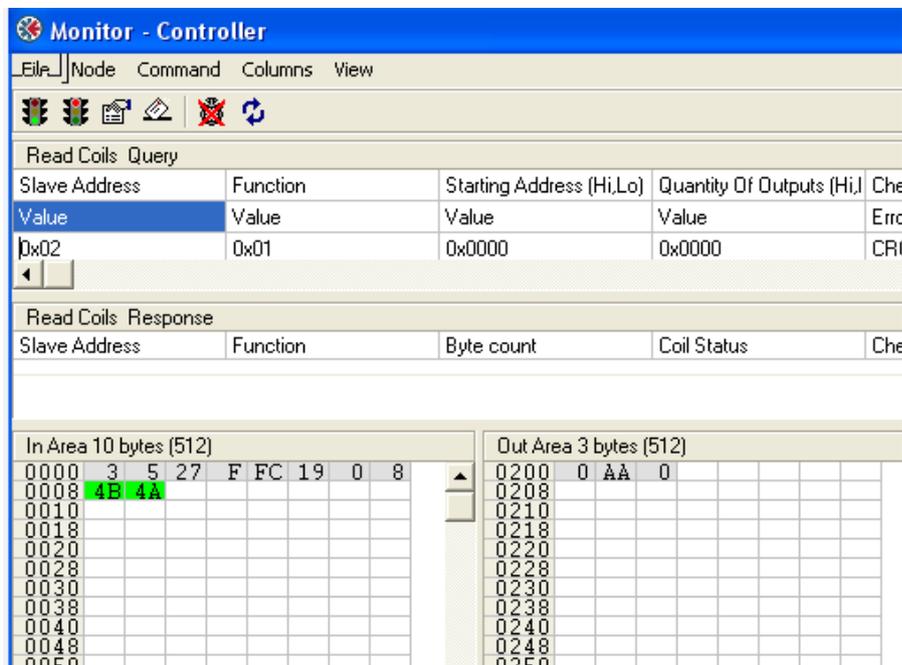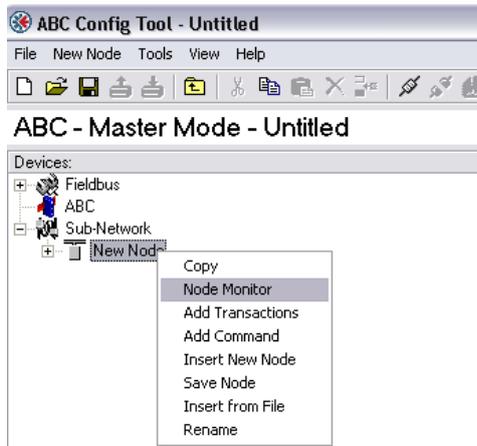
The data shown in the gray boxes is the actual data currently inside the Anybus Communicator. This data matches the data seen in the Monitor column of the TIA portal. The force value from the PLC of 00AA can be seen in the Output area of the Anybus Communicator.

4 Further Information

The latest manuals can be found on HMS homepage: www.anybus.com

See also: http://support.automation.siemens.com