



Anybus[®] Communicator[™] EtherNet/IP[™]

Rockwell Studio 5000 – Generic Module

APPLICATION NOTE

SCM-1202-055 1.0 ENGLISH

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1 Preface

This document explains how to configure EtherNet/IP communication between an Anybus Communicator and a Rockwell PLC using Rockwell Studio 5000.

More documentation and downloads can be found at www.anybus.com/support. For more info regarding Rockwell Studio 5000, please visit the Rockwell Automation website.

1.1 Document History

Version	Date	Description
1.0	2017-11-06	First release

1.2 Document Conventions

Ordered lists are used for instructions that must be carried out in sequence:

1. First do this
2. Then do this

Unordered (bulleted) lists are used for:

- Itemized information
- Instructions that can be carried out in any order

...and for action-result type instructions:

- ▶ This action...
 - ➡ leads to this result

Bold typeface indicates interactive parts such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

Monospaced text is used to indicate program code and other kinds of data input/output such as configuration scripts.

This is a cross-reference within this document: [Document Conventions, p. 3](#)

This is an external link (URL): www.hms-networks.com



This is additional information which may facilitate installation and/or operation.



This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.



Caution

This instruction must be followed to avoid a risk of personal injury.



WARNING

This instruction must be followed to avoid a risk of death or serious injury.

2 General

2.1 Prerequisites

- A basic knowledge of how to use Anybus Configuration Manager - Communicator RS232/422/485 and Rockwell Studio 5000 is assumed.
- The PLC must already be set up in Studio 5000.
- The subnetwork must already be configured in the Anybus Communicator.

2.2 Data Exchange Model

The data to be exchanged between the serial subnetwork and the fieldbus or industrial Ethernet network reside in the same internal memory in the Anybus Communicator. In order to exchange data with the serial subnetwork, the fieldbus or Ethernet network reads and writes data to memory locations that have been specified in Anybus Configuration Manager - Communicator RS232/422/485. These memory locations are then exchanged on the subnetwork.

In this example, a temperature regulator in the serial subnetwork exchanges data with a PLC via the internal memory buffers in the Communicator.

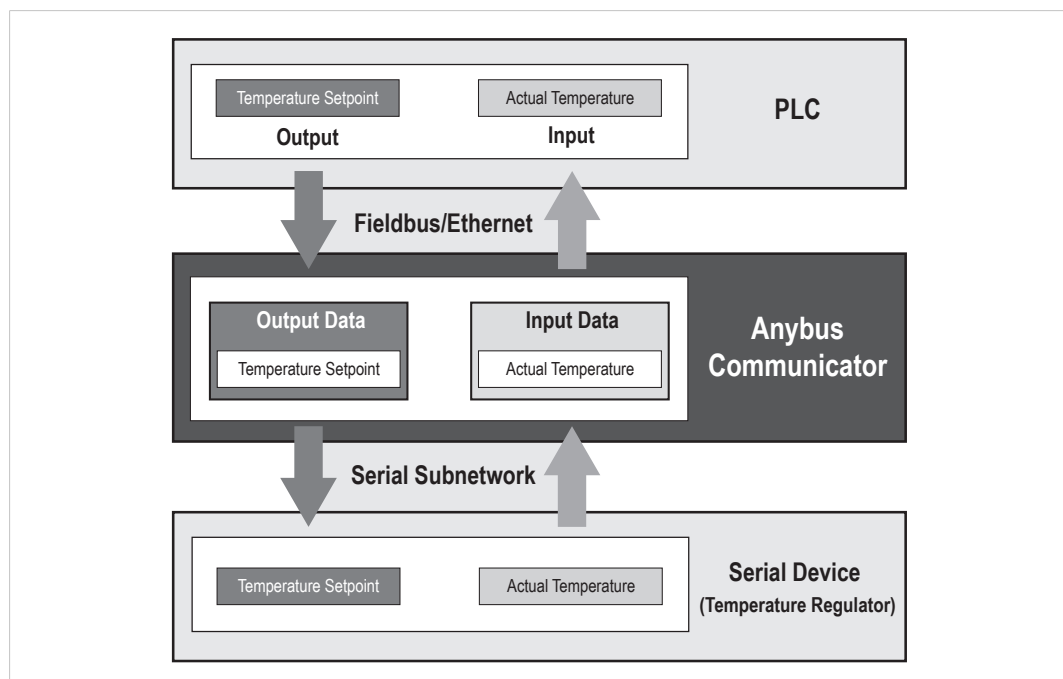


Fig. 1 Example of data exchange

See also the User Manual for the Anybus Communicator.

3 Anybus Communicator Configuration

This section describes how to set up TCP/IP communication and configure I/O data sizes in the Anybus Communicator.

In this example **TCP/IP Settings** must be set to **Disabled** in Anybus Configuration Manager - Communicator RS232/422/485.

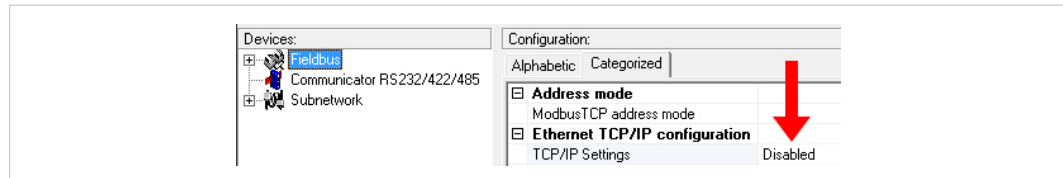


Fig. 2 Anybus Configuration Manager

3.1 TCP/IP Configuration

3.1.1 Installing the IPconfig Utility

IPconfig is a Windows-based tool for configuration of TCP/IP settings in HMS devices. The tool will detect all compatible and active HMS devices on the local network.

1. Download IPconfig from www.anybus.com/support.
2. Unpack the contents of the zip archive and run the installer program.

3.1.2 Scanning for Connected Devices

When IPconfig is started it will automatically scan all available local networks for HMS devices. Detected devices will be listed in the main window. To refresh the list, click on **Scan**.



A device can only be detected if the computer running IPconfig has an active network interface on the same IP subnet.

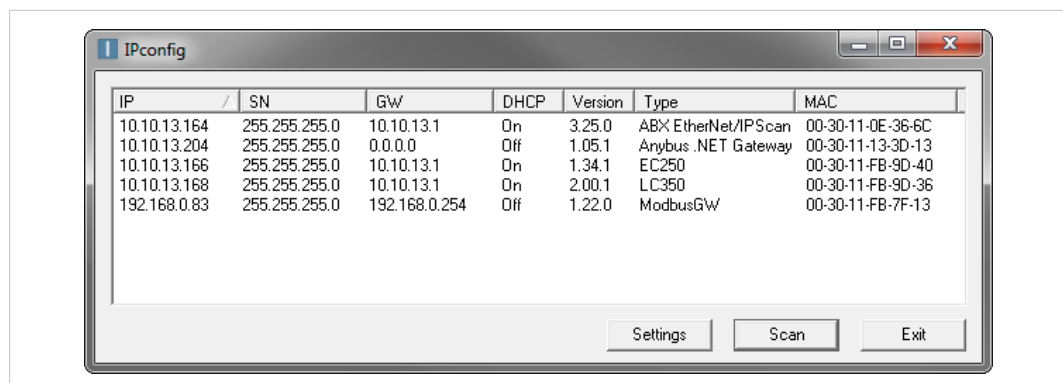


Fig. 3 IPconfig main window

IP	IP address of the device
SN	Subnet mask
GW	Default gateway
DHCP	Automatically managed IP configuration
Version	Firmware version
Type	Product name
MAC	Ethernet MAC address (System ID)

3.1.3 Ethernet Configuration

To change the IP settings for a device, double-click on the entry in the main window or right-click on it and select **Configuration**.

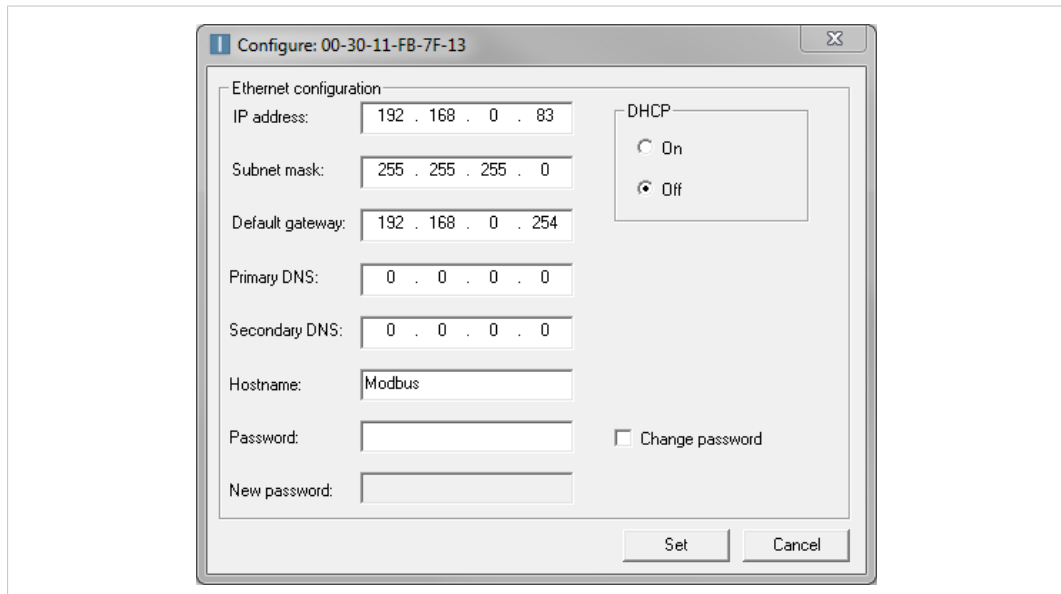


Fig. 4 Ethernet configuration

Enter static IP settings as required, or select DHCP if using dynamic IP addressing.



Do not enable DHCP if there is no DHCP server available on the network.

You can add a name for the device in the **Hostname** field. Only characters a–z, A–Z, 0–9 and _ (underscore) are allowed.

The default password for changing IP settings is blank (no password). If a password has been set for the device you must enter it to be able to change the settings.

To set a new password, check the **Change password** box and enter the current password in the **Password** field, then enter the new password in the **New password** field.



For security reasons the default password should always be changed.

Click on **Set** to save the new settings. The device will reboot automatically.

3.1.4 IPconfig Settings

Additional settings for IPconfig can be accessed by clicking on **Settings**.

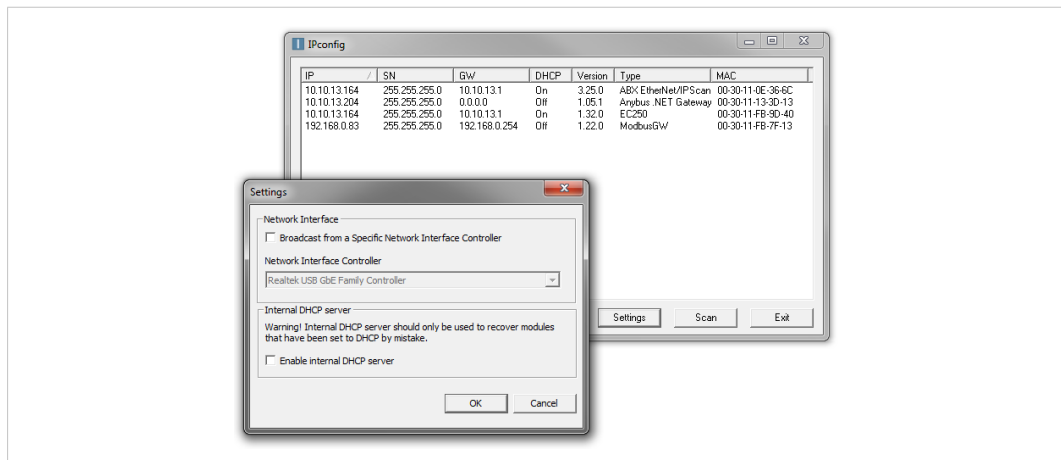


Fig. 5 IPconfig settings

Network Interface

Check this option to select a specific network interface to use when scanning for devices from a computer which has more than one interface. If this option is left unchecked, all available networks will be scanned.

Internal DHCP Server

If a device has been set to use DHCP but there is no DHCP server on the network, the device may not be detected by IPconfig. To recover access to the device an internal DHCP server in IPconfig can be temporarily activated:

1. Click the checkbox for **Internal DHCP Server**, then click **OK**. IPconfig will automatically refresh the scan and list the missing device in the main window.
2. Select the device and configure it to use static IP addressing instead of DHCP.
3. Disable the internal DHCP server.



Do not enable the internal DHCP server if there is already an active DHCP server on the network.

3.2 I/O Data Sizes

The serial configuration for each application in Anybus Communicator will have a different amount of input/output data size. In this example, the application has been set up for 10 bytes of input data and 3 bytes of output data.

In Anybus Configuration Manager - Communicator RS232/422/485, right-click on **Subnetwork** and select **Subnetwork Monitor** to check the data size of the application:

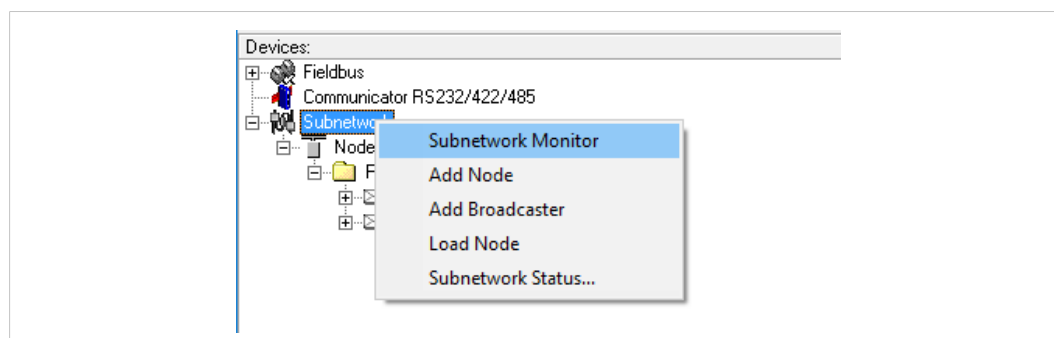


Fig. 6 Accessing the Subnetwork Monitor

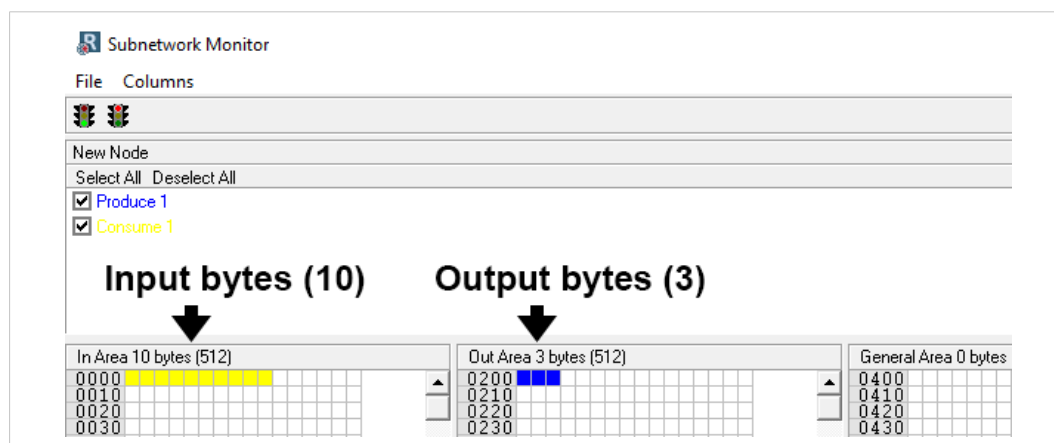


Fig. 7 Subnetwork Monitor

If no boxes are colored, the serial interface of the Anybus Communicator has not yet been configured. You must configure serial communication before proceeding.

4 Studio 5000 Configuration

This section describes how to configure the EtherNet/IP interface of the Anybus Communicator in Studio 5000 with Generic configuration.

The PLC must be configured before continuing to configure the EtherNet/IP network.

4.1 EtherNet/IP Network Configuration

Adding the Anybus Communicator to the configuration

1. Set Studio 5000 in **Offline** mode.
2. Right-click on the EtherNet/IP gateway in the I/O configuration and select **New Module**

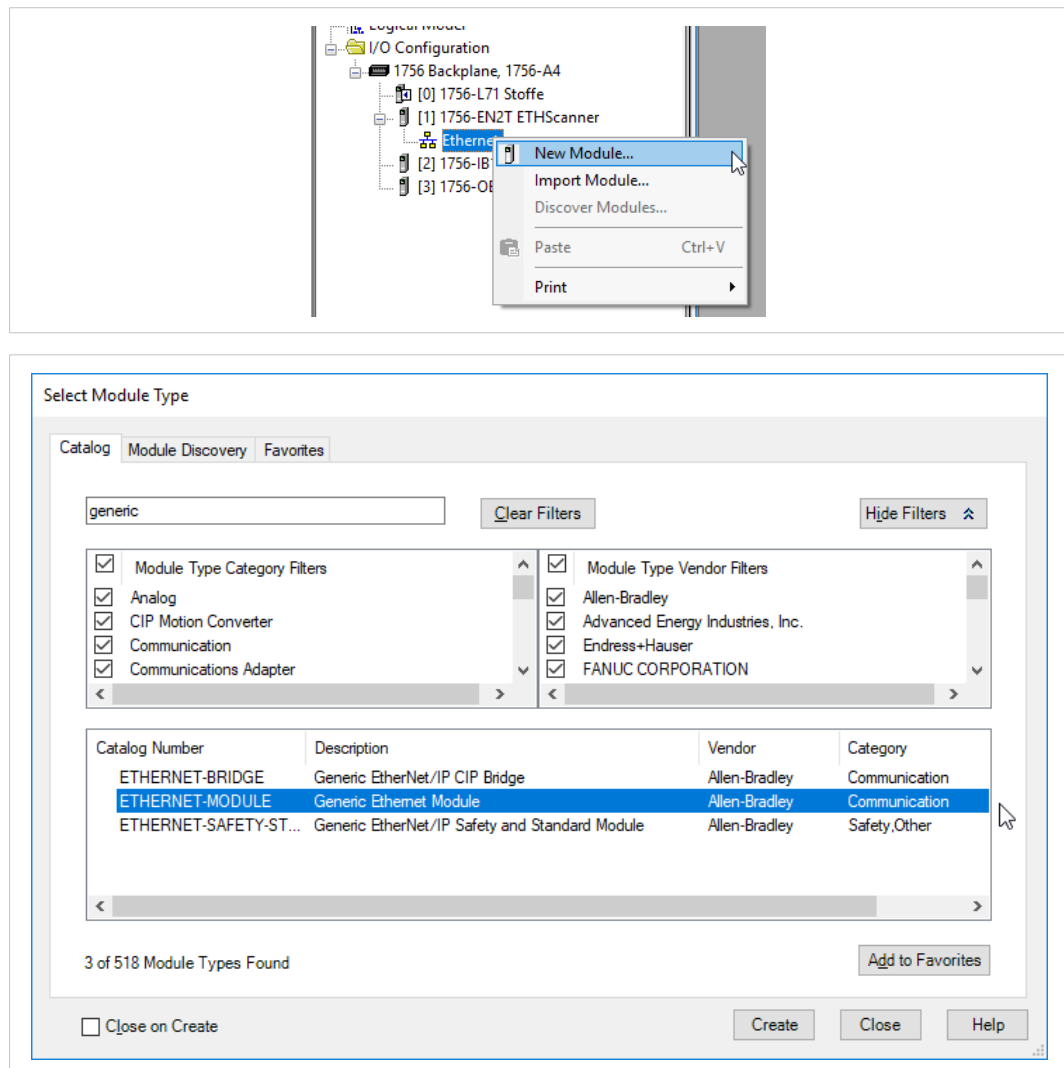


Fig. 8 Adding a module

3. Select **Generic Ethernet Module** and click on **Create**.

- In the **Module Properties** window, enter a name for the new module. In this example the module will be named **Anybus**. This will create a tag in Studio 5000 which can be used to access the memory location in the PLC where the data for the Communicator is stored.

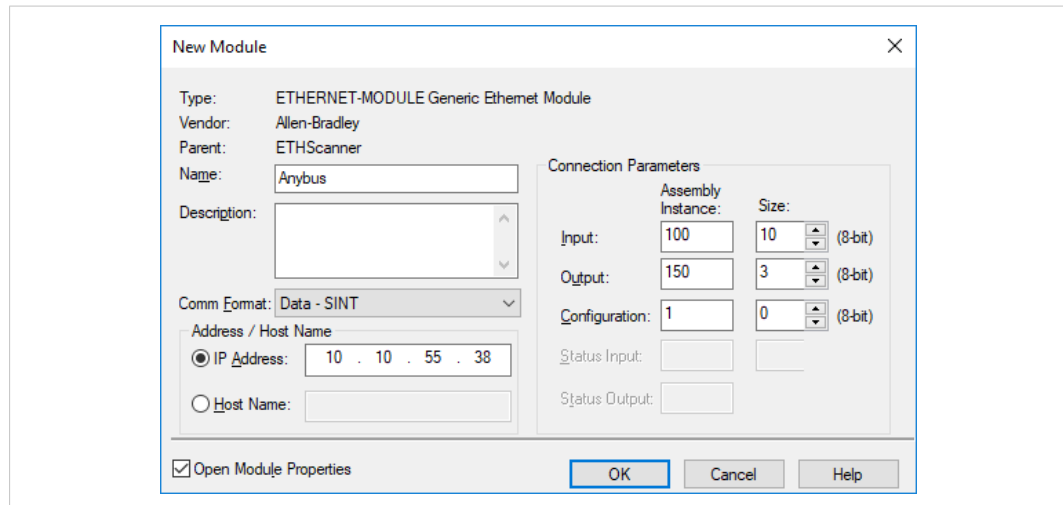


Fig. 9 Module Properties

- Select the **Comm Format** (data type). In this example **Data-SINT** is selected, which will represent the data in the Anybus Communicator as a field of 8-bit values.
Other options are **Data-INT** (16-bit values), and **Data-DINT** (32-bit values).
- Enter the **Assembly Instance** parameters. For the Anybus Communicator these values should be Input = 100, Output = 150 and Configuration = 1.
- Enter the **Size** of the input and output data corresponding to the data sizes configured for the Anybus Communicator, in this case 10 bytes in and 3 bytes out.
- Enter the **IP address** for the module.



The IP address of the module must be in the same subnet as the PLC.

- Click on **OK** to confirm the module properties and continue.

The Anybus Communicator has now been added to the I/O configuration in Studio 5000.

4.2 Downloading the Configuration

1. Download the offline project to the PLC.

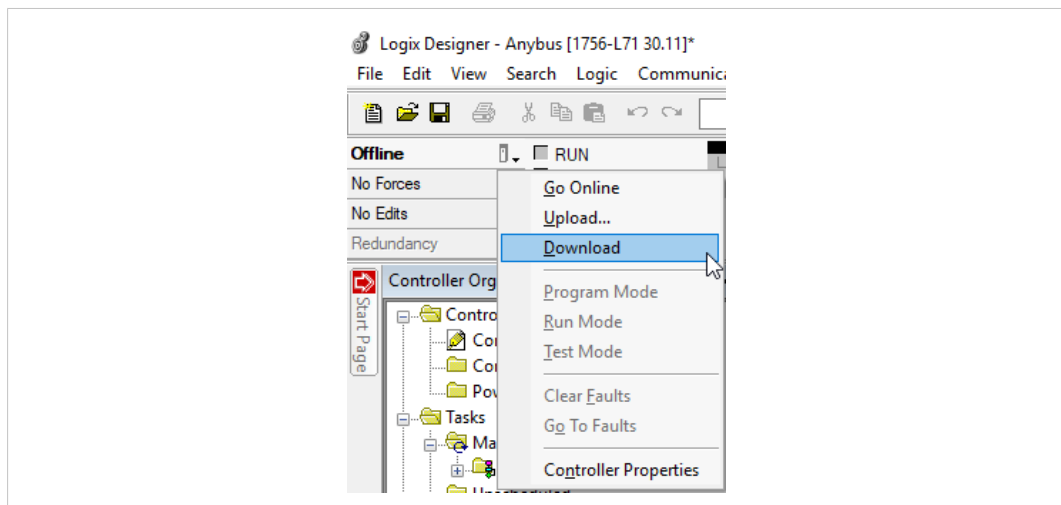


Fig. 10 Download offline project

2. Click on **Download** in the following dialog to confirm.

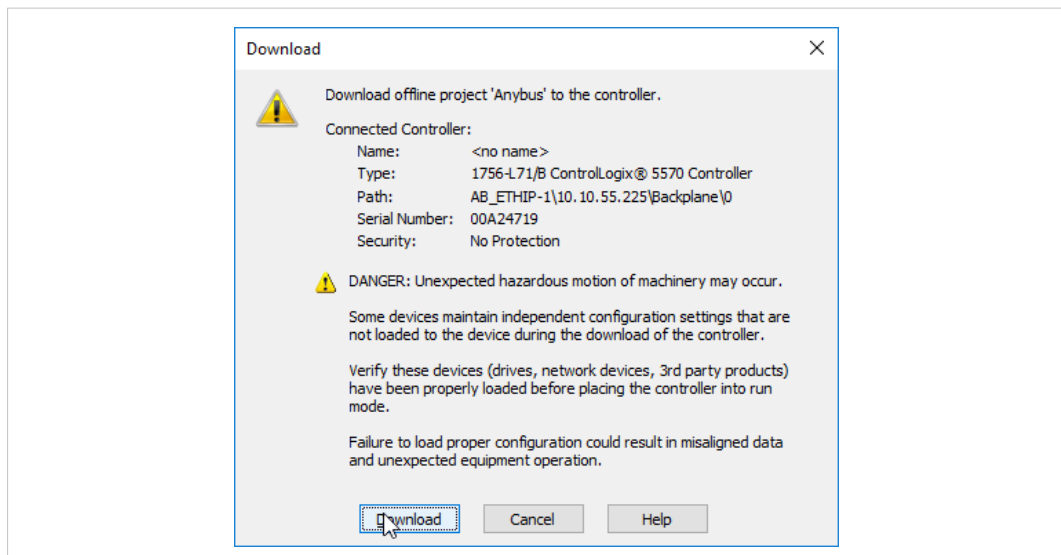


Fig. 11 Confirm download

The configuration will now be downloaded to the PLC.

4.3 Online Monitoring

When Studio 5000 is online, the **Controller Tags** view can be used to verify that data communication is working. See also [Verification, p. 13](#).

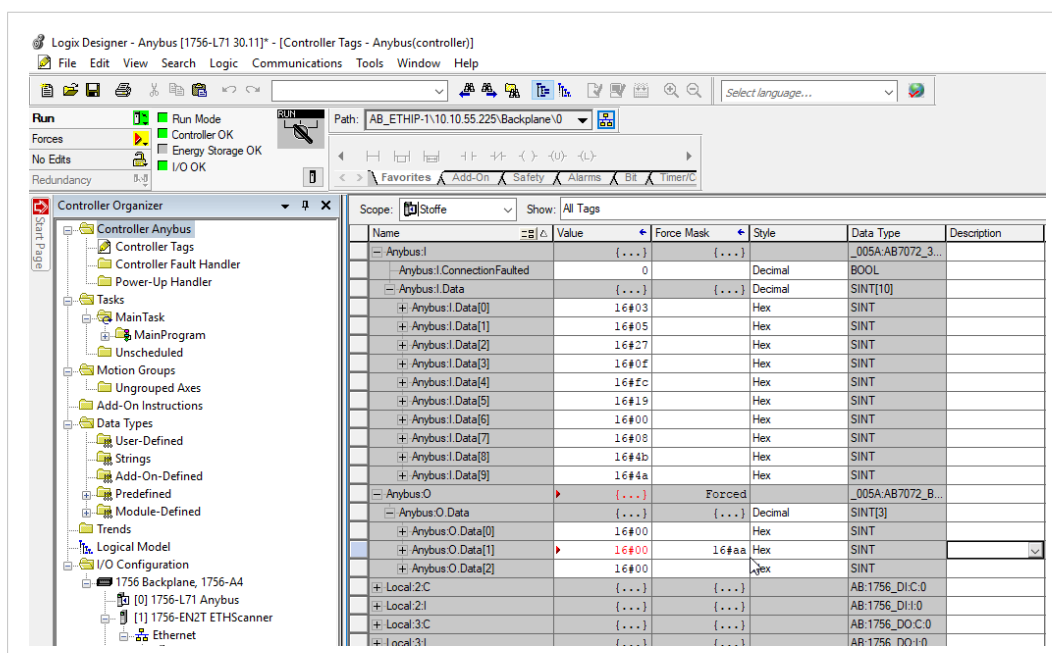


Fig. 12 Online with forced values

5 Verification

5.1 Node Monitor

The *Node Monitor* in Anybus Configuration Manager - Communicator RS232/422/485 shows the current input and output data in the Anybus Communicator, and can be used to verify that data communication is working.

- When online, right-click on the node in Anybus Configuration Manager - Communicator RS232/422/485 and select **Node Monitor**.

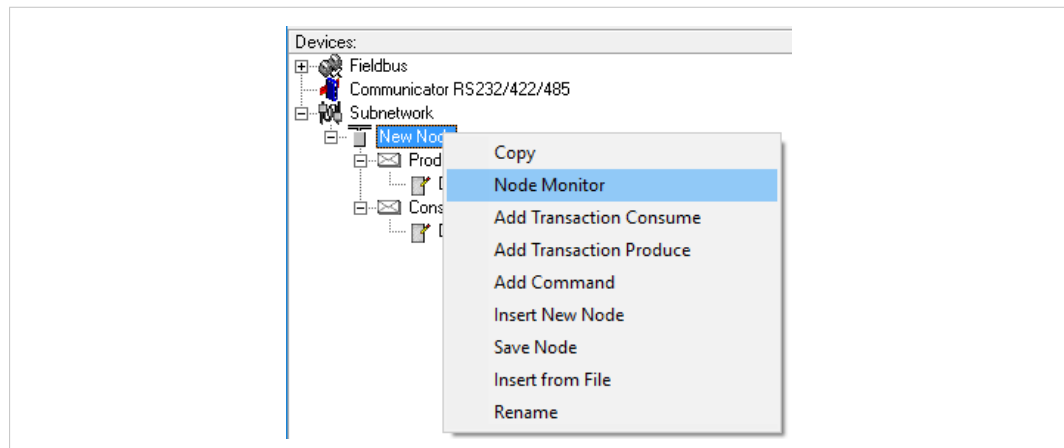


Fig. 13 Open the Node Monitor

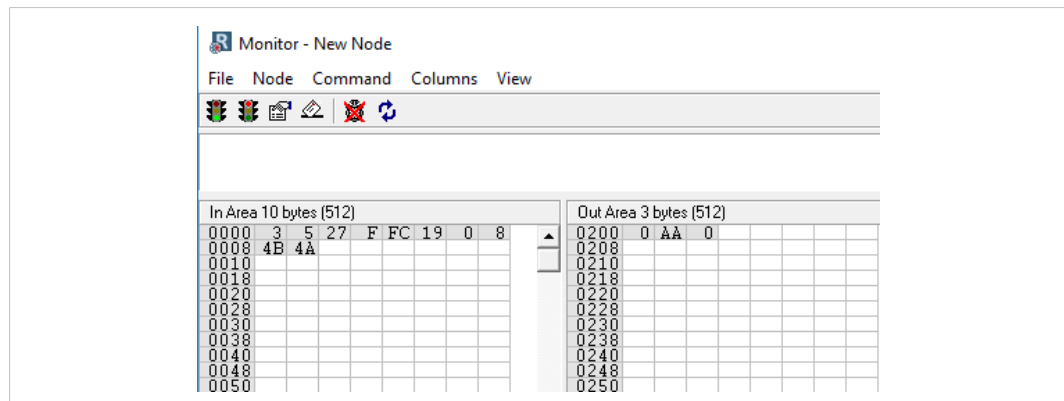


Fig. 14 Node Monitor

The input and output bytes are represented as grey boxes in the Node Monitor. The values shown inside the boxes are the actual data values in Anybus Communicator. This also matches the data shown in Studio 5000.

The force value from the PLC (00AA) can here be seen in the **Out Area**.

