Anybus® X-gateway™ EtherNet/IP™

Rockwell Studio 5000 – EDS

APPLICATION NOTE

SCM-1202-059 1.0 ENGLISH

HMS Connecting Devices™

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1 Preface

This document explains how to configure EtherNet/IP communication between an Anybus X-gateway 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.
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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 - X-gateway and Rockwell Studio 5000 is assumed.
- The PLC must already be set up in Studio 5000.
- Network communication must already be configured in the Anybus X-gateway.

2.2 Data Exchange Model

The data to be exchanged between the network interfaces in the Anybus X-gateway reside in the same internal memory. The networks read and write data to memory locations that have been specified in Anybus Configuration Manager - X-gateway. These memory locations are then exchanged between the networks.

The data exchange model is different depending on if the X-gateway has a master/slave or slave/slave configuration.

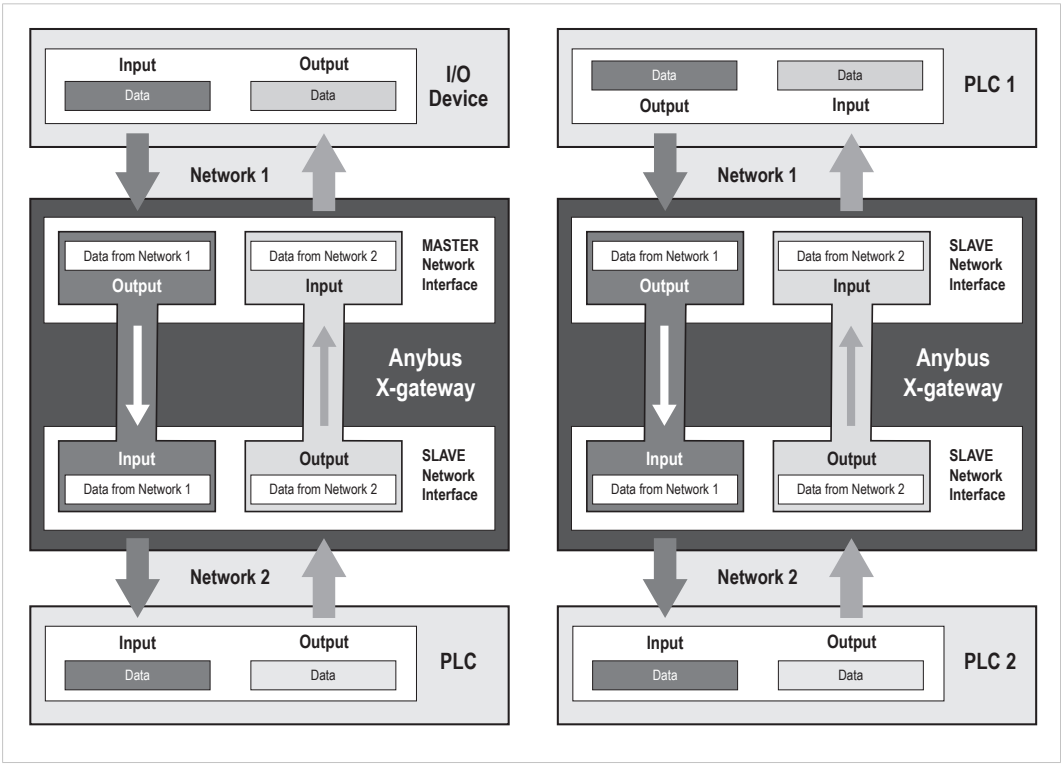

Fig. 1 Data exchange models for master/slave and slave/slave X-gateways

See also the User Manual and Network Guides for the specific Anybus X-gateway.

3 Anybus X-gateway Configuration

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

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.

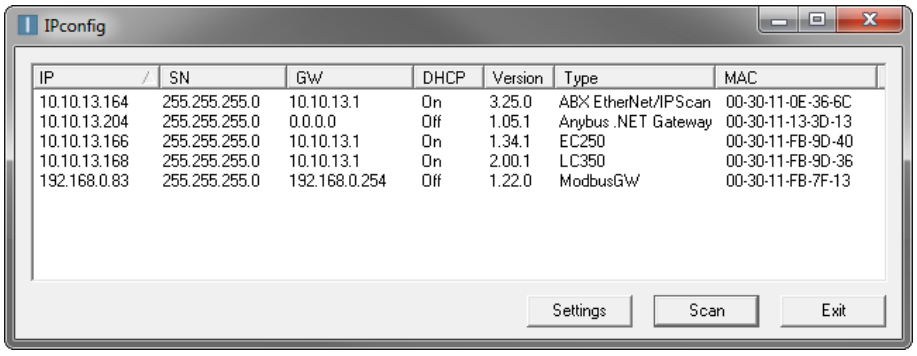

Fig. 2 IPconfig main window

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**.

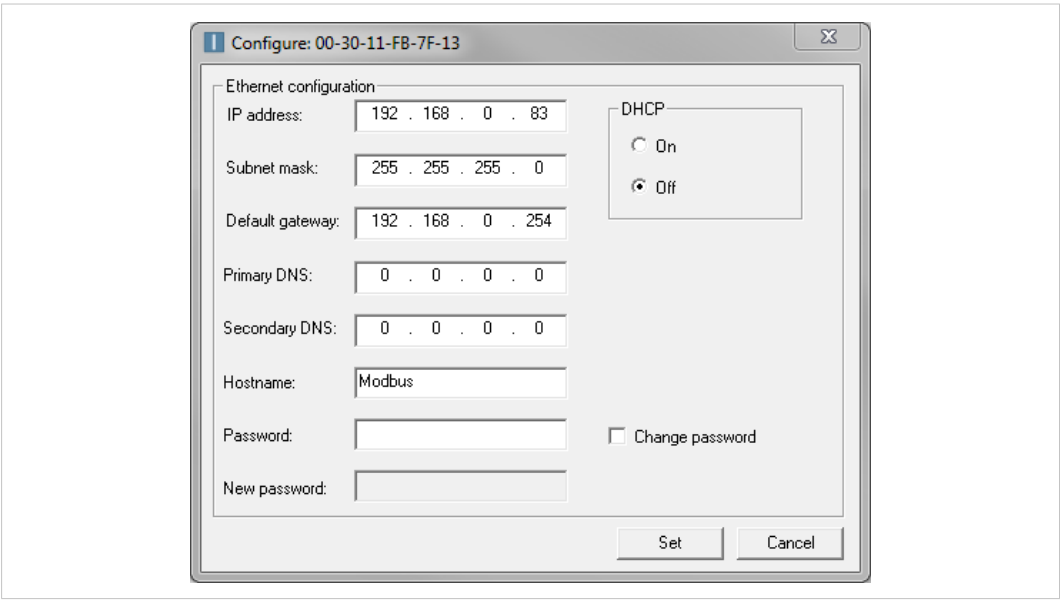

Fig. 3 Ethernet configuration

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**.

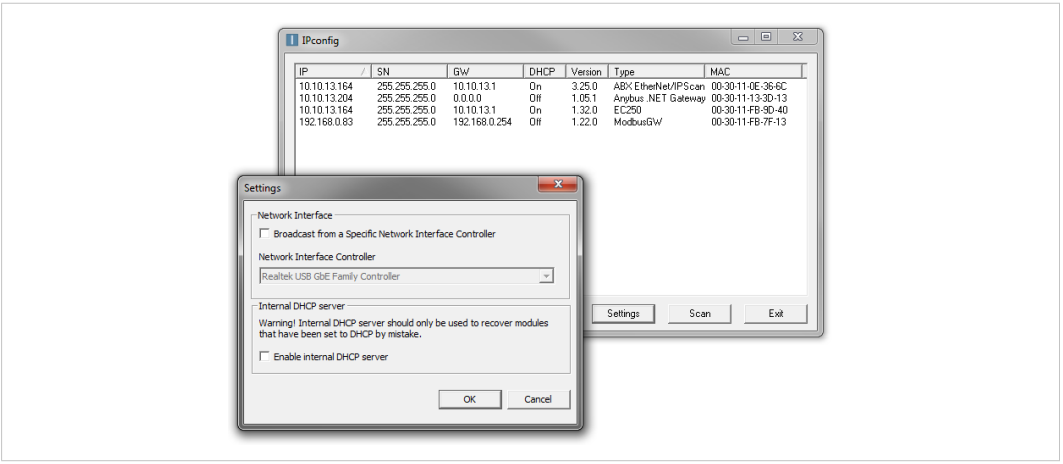

Fig. 4 IPconfig settings

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 byte sizes of input and output data in the Anybus X-gateway should be set up in Anybus Configuration Manager - X-gateway to match the application.

Setup will be slightly different depending on the network type and if using a master/slave or slave/slave configuration. See also *Data Exchange Model, p. 4*.

Examples of Master/Slave and Slave/Slave configurations

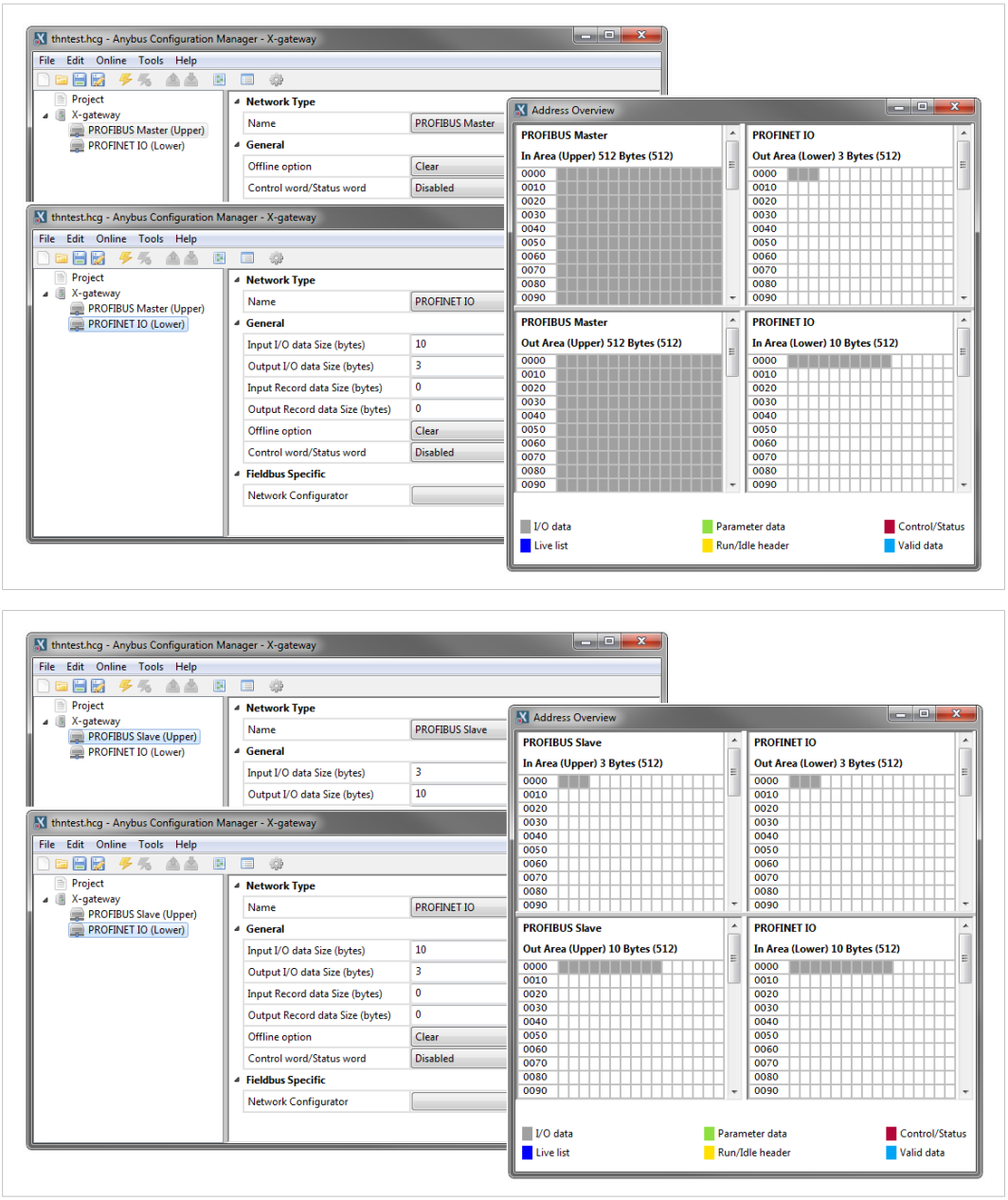

Fig. 5 Anybus Configuration Manager

See the documentation for the X-gateway and Anybus Configuration Manager - X-gateway for more information.

4 Studio 5000 Configuration

This section describes how to configure the EtherNet/IP interface of the Anybus X-gateway in Studio 5000 with EDS configuration.

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

4.1 EtherNet/IP Network Configuration

1. Make sure that Studio 5000 is in **Offline** mode**.**
2. Download the EDS file for the Anybus X-gateway from www.anybus.com/support.
3. Open the **Hardware Installation Tool** wizard from the Start Menu or from the Tools menu in Studio 5000 and follow the on-screen instructions to install the EDS file.

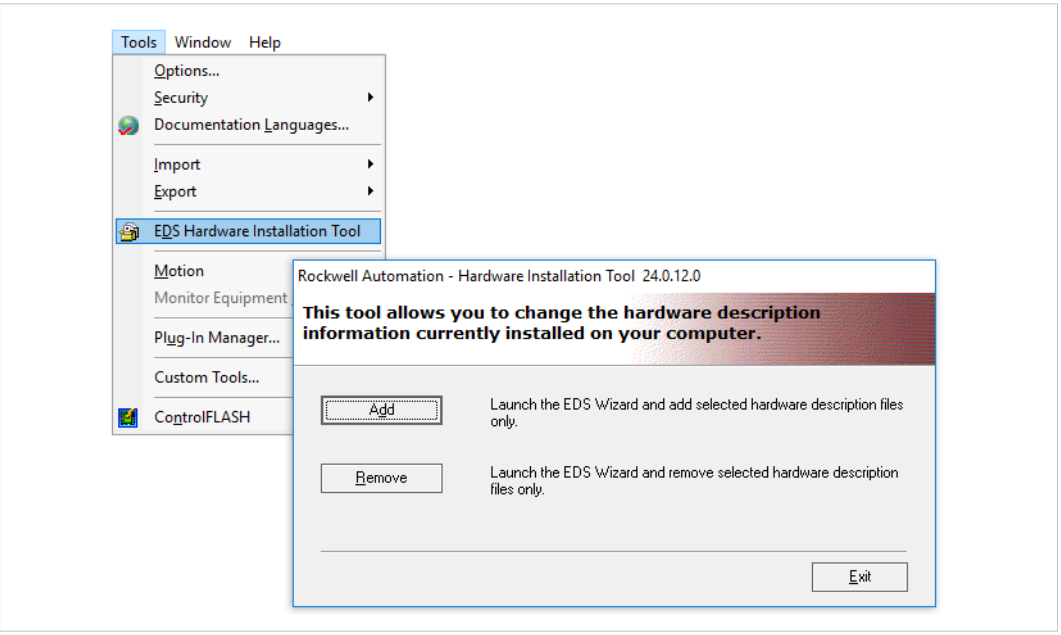

Fig. 6 Hardware Installation Tool

4. Right-click on the EtherNet/IP bridge in the I/O configuration, and select **New Module**

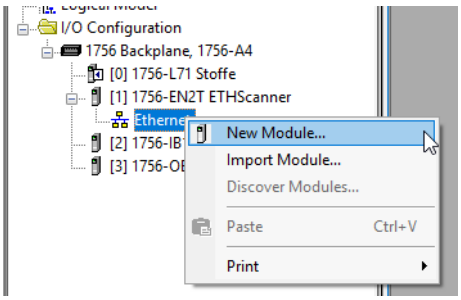

Fig. 7 Adding a module

5. In the **Catalog** tab, select the entry for the Anybus gateway and click on **Create**.

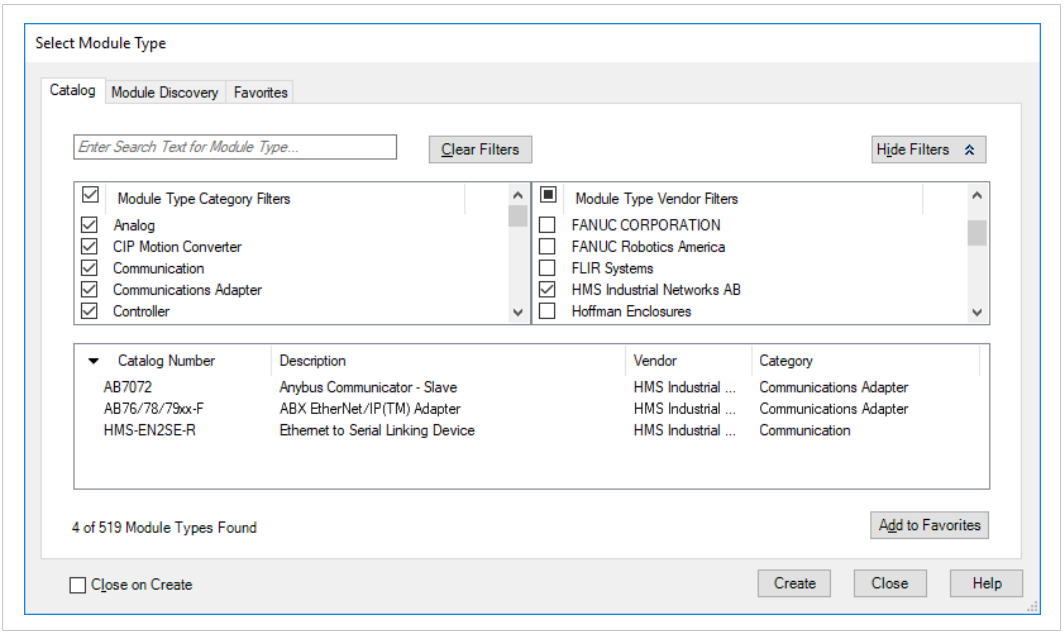

Fig. 8 Module catalog

6. 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 X-gateway is stored.

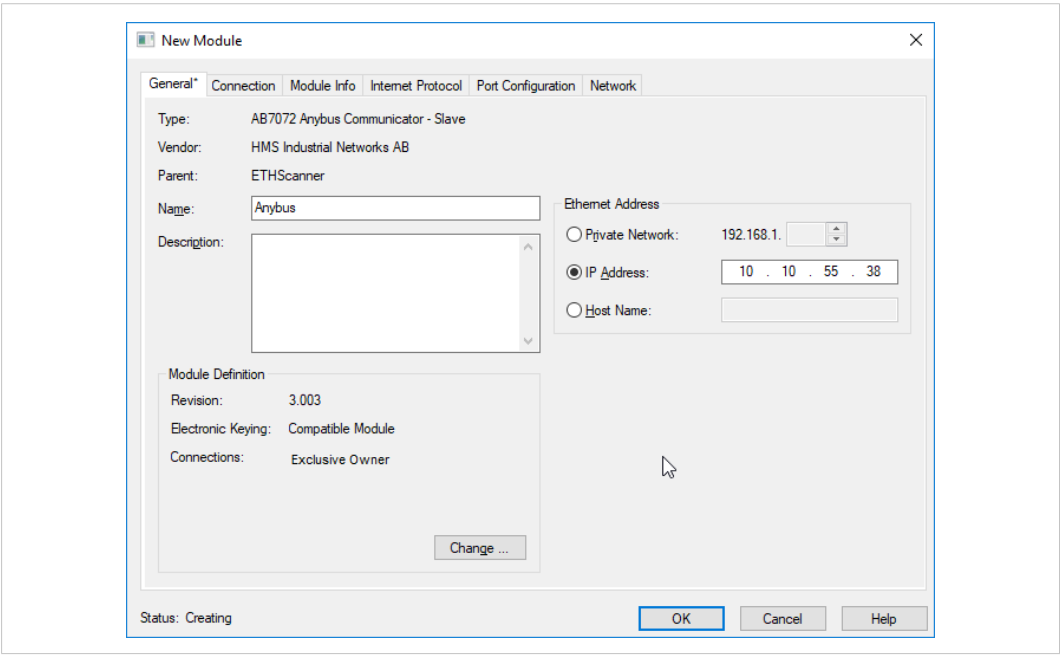

Fig. 9 Module Properties

7. Enter the **IP address** for the module.

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

8. Click on **Change** to open the **Module Definition** window.

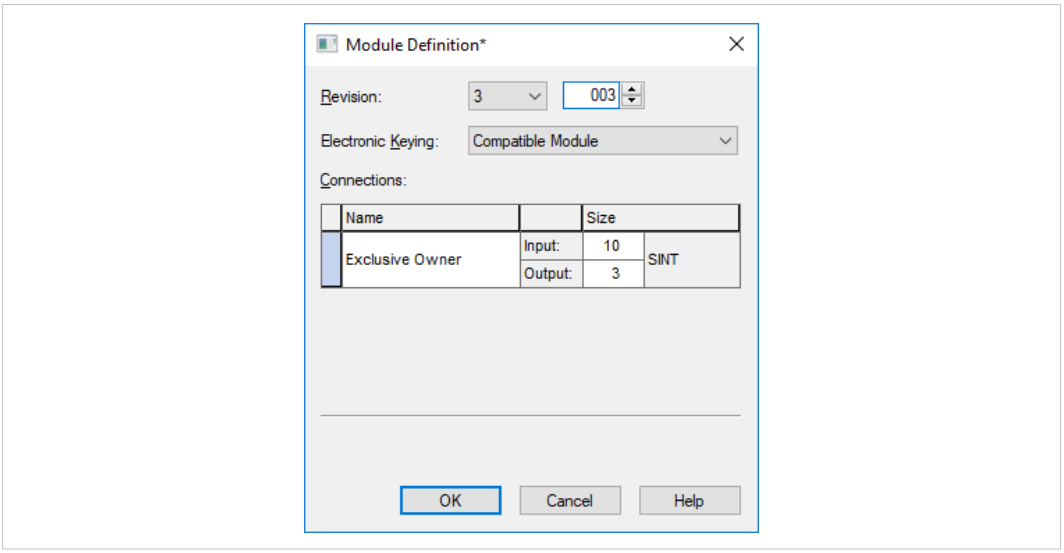

Fig. 10 Module Definition

9. Select the data type. In this example, **SINT** is selected, which will represent the data in the Anybus X-gateway as a field of 8-bit values.

   Other options are **INT**(16-bit values), or **DINT** (32-bit values).

10. Enter input and output data sizes corresponding to the data sizes configured for the Anybus X-gateway, in this case 10 bytes input and 3 bytes output.
11. Click on **OK** to confirm and close the dialog.
12. Click on **OK** in the **Module Properties** window, then click on **OK** again in the next dialog to confirm.

The Anybus X-gateway 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.

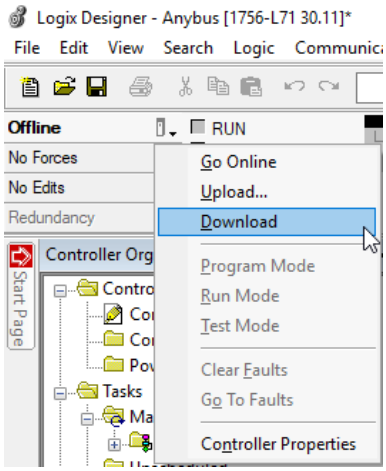

Fig. 11 Download offline project

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

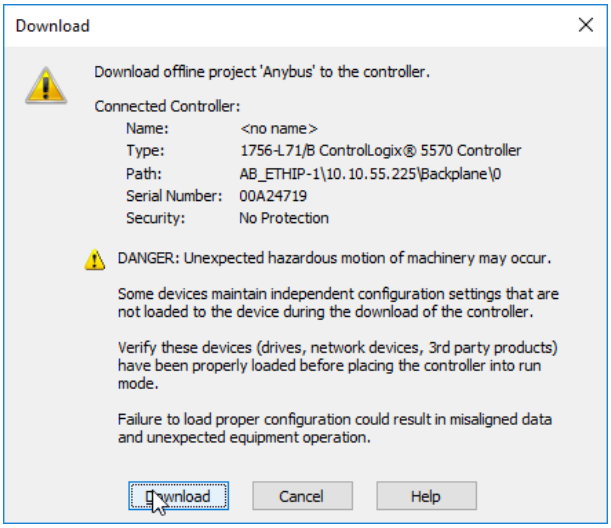

Fig. 12 Confirm download

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. 14*.

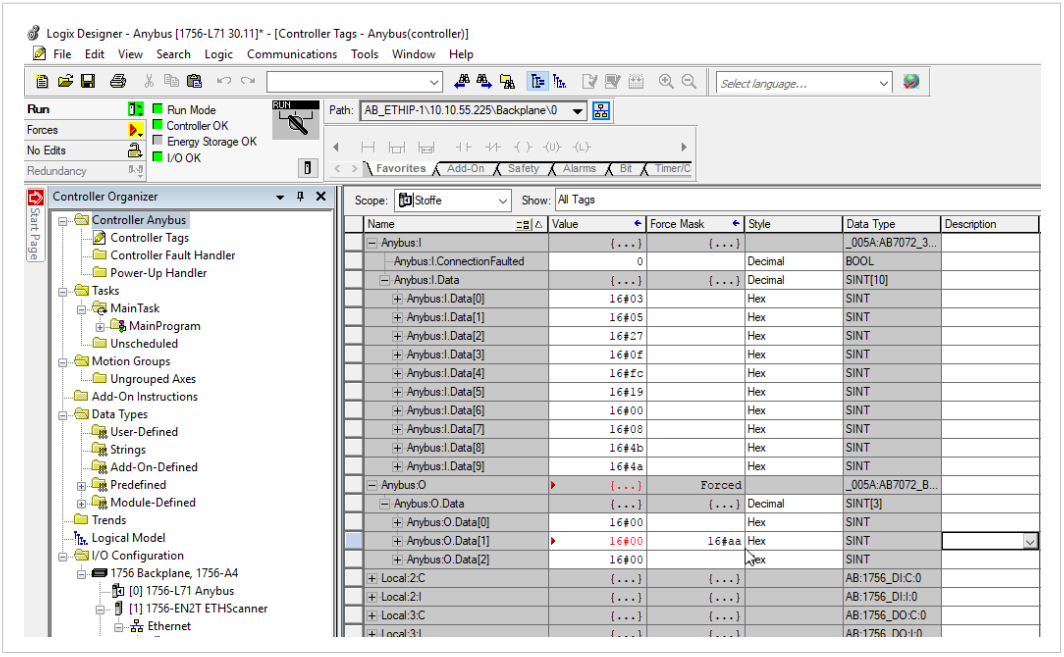

Fig. 13 Online with forced values

5 Verification

5.1 Monitor Page

Open the internal web interface of the Anybus X-gateway EtherNet/IP interface and select the **Monitor** page. This page should display the same I/O data as Studio 5000.

See also the Network Guide for the Anybus X-gateway EtherNet/IP interface.

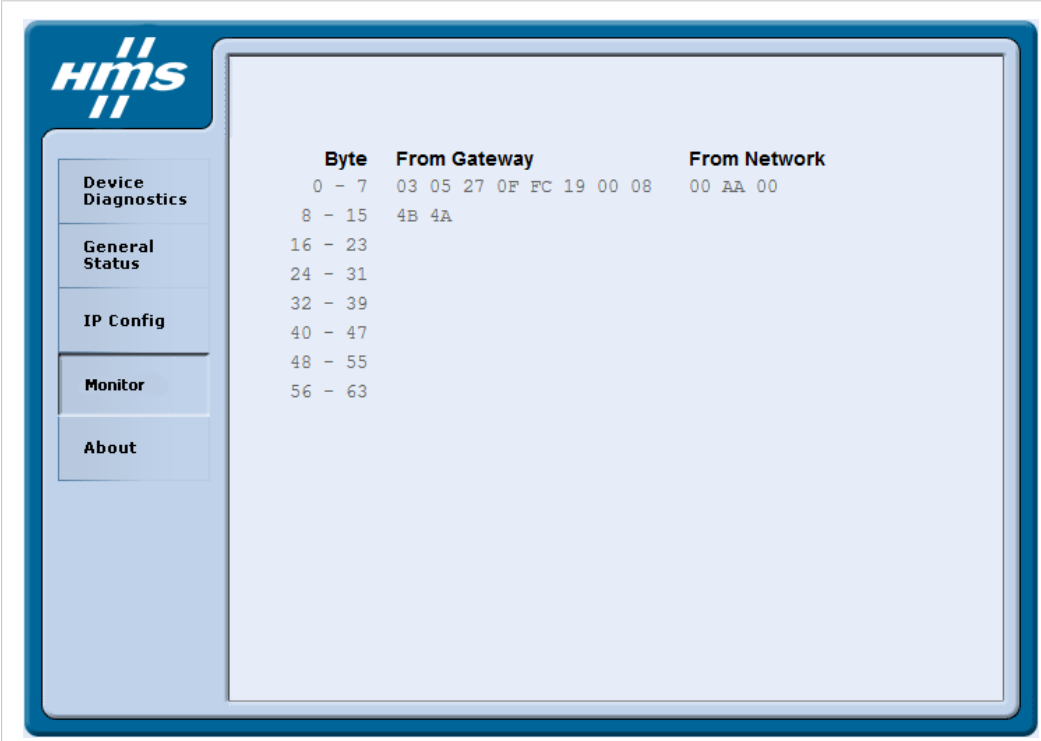

Fig. 14 Web interface in Anybus X-gateway

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