Training Manual

PROFIBUS DP Master

CIFX, COMX and netJACK - Configuration and Testing - Step by Step

Hilscher Gesellschaft für Systemautomation mbH
www.hilscher.com
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1 Introduction

1.1 About this Training Manual

This document provides step-by-step instructions on how to commission and configure a PROFIBUS master device by using the *SYCON.net* configuration software. How to read input data and how to write output data by using the I/O monitor is described for the *SYCON.net* configuration software and the *cifX Test* auxiliary tool.

The procedures are exemplified by using a cifX PC card. They can, however, also be applied to the comX and netJACK communication modules.

1.2 Required Hardware and Software

Prerequisite for the described commissioning and configuration example is a proper installation of all necessary hardware and software components.

For the example given in this document, you need the following components:

Hardware

- 1 x PC with standard equipment: monitor, keyboard, mouse, DVD drive, PCI slot
- 1 x CIFX 50-DP acting as PROFIBUS DP master (requires master license)
- 1 x CBAB32-DPS acting as PROFIBUS DP slave with power supply unit
- 1 x PROFIBUS cable

Software

- *SYCON.net* configuration software
- Driver for cifX PC card (*cifX Device Driver*)
- Auxiliary tools *cifX Test* and *cifX Setup* (included in the *cifX Device Driver* installation)

For details about how to install the necessary hardware and software components, please refer to the user manual of the respective product.

1.3 List of Revisions

Index	Date	Chapter	Revision
2	2012-12-07	all	created

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2 General Procedure

Set up network	1.1	Create new project in **SYCON.net**.	*Note:* *Hardware has not been assigned yet.* *Firmware has not been loaded yet.* *Network has not been configured yet.*
	1.2	Insert Hilscher master device in network, e. g. **CIFX 50-DP**.	
	1.3	If a non-Hilscher device is used as slave: import device description file first. Add slave to network, e. g. **CBAB32-DPS**.	
	1.4	If a full-scale Hilscher slave device is used (e. g. **CIFX 50-DP**), add also a Stand-Alone Slave.	
Assign hardware and load firmware	2.1	Open **Configuration window** for **master** device.	*Note:* *Hardware has been assigned.* *Firmware has been loaded.* *Network has not been configured yet.*
	2.2	**Select driver** for accessing the master device. Internal device driver → select CIFX Device Driver. External via Serial, USB or TCP/IP → select netX Driver.	
	2.3	Scan for connected hardware and **assign device**.	
	2.4	If PC cards are used: **Select and load Firmware**.	
Configure slave	3.1	Open **Configuration window** for **slave** device.	*Note:* *Slave has been configured in network. Real station address has been set for slave by rotary switch.*
	3.2	Configure **Address** (e. g station address). If a non-Hilscher slave is used: set real address, e. g. by rotary switch.	
	3.3	Configure **I/O data**, i.e. modules and lengths.	
	3.4	Configure **Bus Parameters** and other settings.	
Configure Hilscher Stand-Alone Slave	4.1	Open **Configuration window** for **Stand-Alone Slave**.	*Note:* *Hardware has been assigned to full-scale slave, firmware has been loaded and real address has been set.*
	4.2	**Assign hardware and load firmware**.	
	4.3	Configure **address**, **I/O data** and **Bus Parameters**. These must match the network configuration. **Set real station address of the Hilscher slave device**. (e. g. by SYCON.net.	
	4.4	**Download configuration** to Stand-Alone Slave.	
Configure master	5.1	Open **Configuration window** for **master**.	*Note:* *Network has been completely configured and can be used.*
	5.2	Configure **Bus Parameters** and **Master address**.	
	5.3	Configure **I/O data**. These must match slave and Stand-Alone Slave.	
	5.4	Configure station address of slave in the **Station Table**. It must match slave and Stand-Alone Slave.	
	5.5	Configure **Master Settings**.	
	5.6	**Download configuration** to master.	
Diagnosis	6.1	Establish connection to master and open **Diagnosis** dialog.	*Note:* *Payload data is exchanged.*
	6.2	Use **General Diagnosis** to check state of the network.	
	6.3	Use **I/O Monitor** to test the communication.	
	6.4	Use **cifX Test** auxiliary tool to test the communication.	

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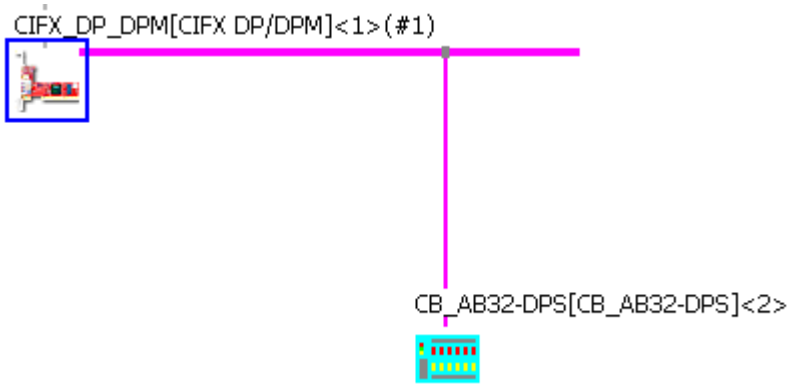
3 Network Setup

The network consists of a master and one slave.

Master: CIFX 50-DP\ML by Hilscher
(flexible PROFIBUS DP PCI Card)

Slave 1: CB-AB32-DPS by Hilscher
(simple PROFIBUS DP test slave)



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4 Step-By-Step Configuration

4.1 Set Up Network

1. Create a new project in SYCON.net.

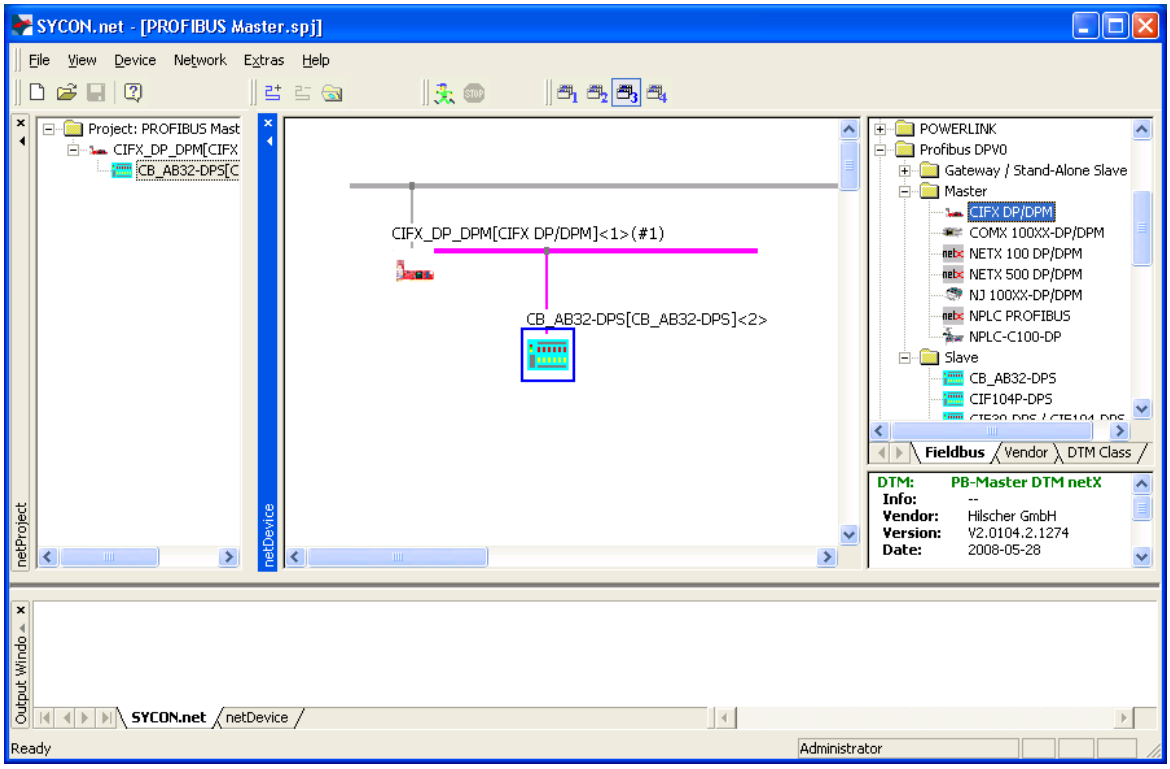
➢ In SYCON.net, choose **File** > **New**.

2. Insert Hilscher PROFIBUS Master device in network.

➢ Select a **CIFX DP/DPM** from the **Device Catalog** (**Master**) and drag and drop it onto the upper line.

3. Add PROFIBUS Slave device to network.

➢ Select a **CB-AB32-DPS** from the **Device Catalog** (**Slave**) and drag and drop it onto the PROFIBUS network line.



➢ If PROFIBUS slave devices of other manufacturers are used, a device description file has to be imported first, so that the slave device will be displayed in the **Device Catalog**.

➢ To import the device description file, choose **Network** > **Import Device Descriptions…** in the SYCON.net menu.

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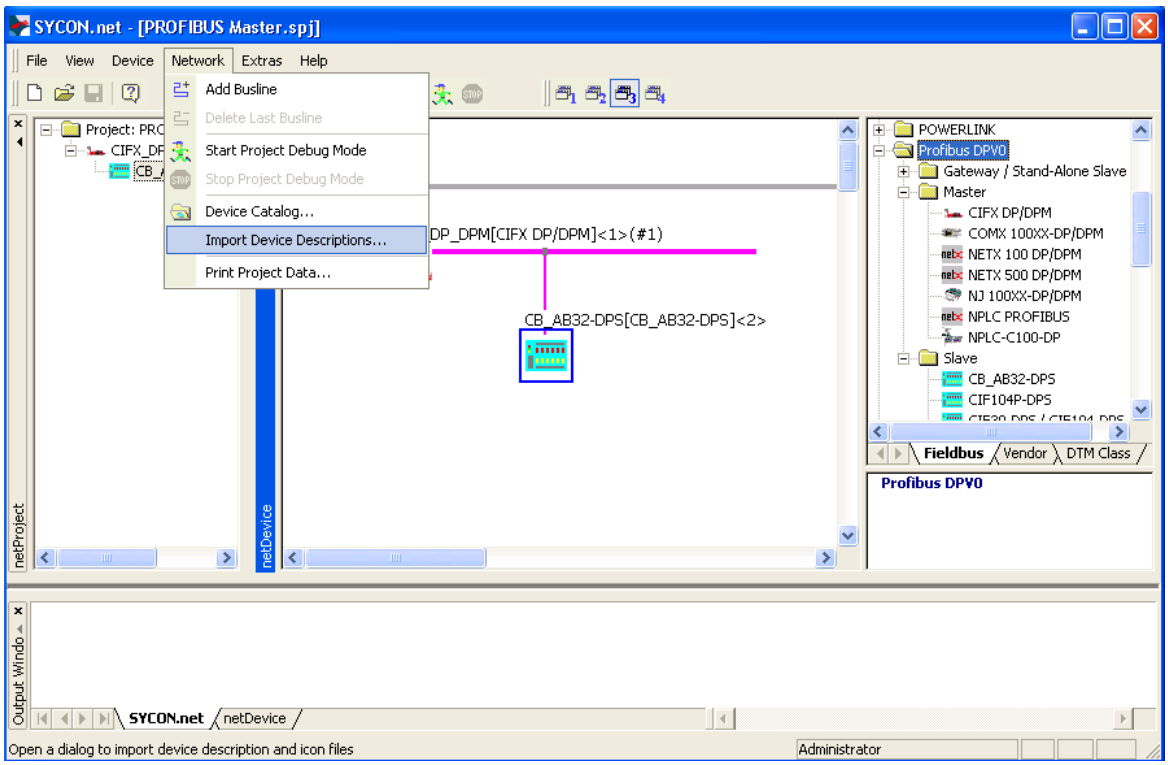
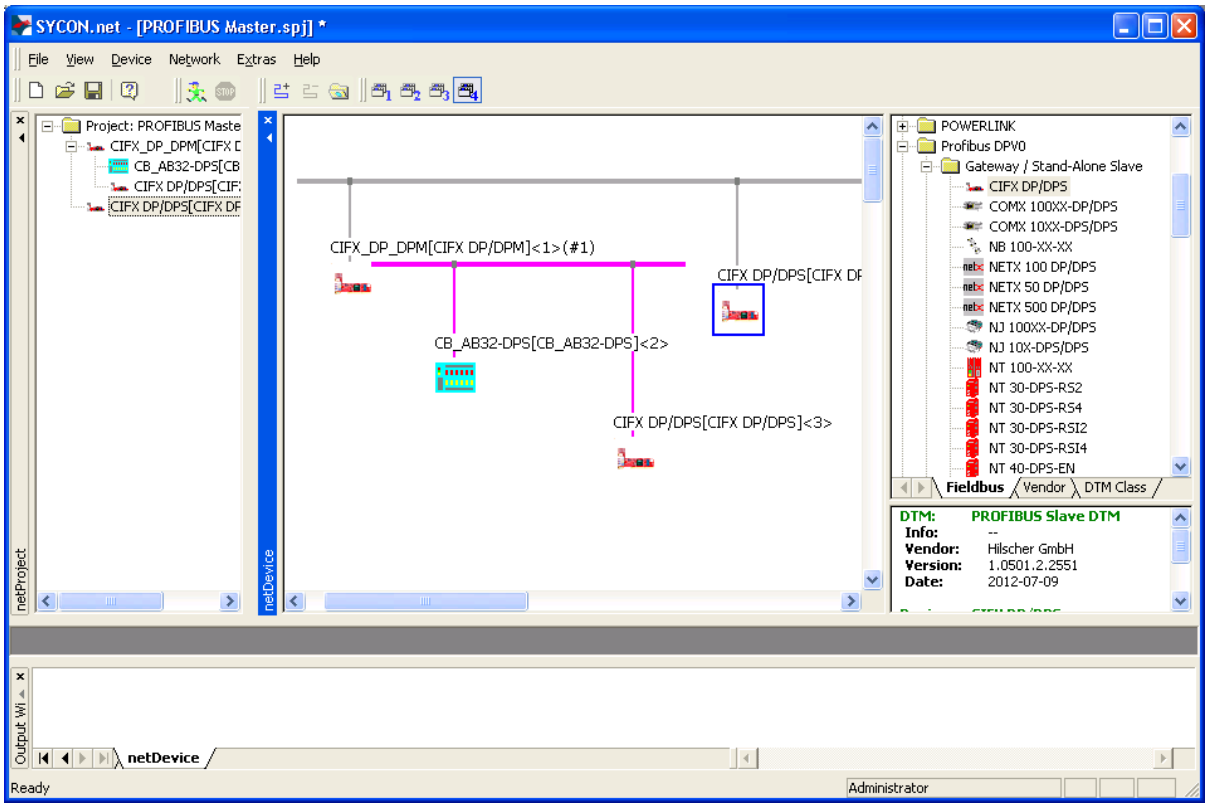


Note: Skip the following step, because it does not need to be performed for this example.

4. If a full-scale Hilscher PROFIBUS slave device is used, place also the corresponding Stand-Alone Slave in the network.

➢ Select a **CIFX DP/DPS** from the **Device Catalog** (**Gateway/Stand-Alone Slave**) and drag and drop it onto the PROFIBUS network line.



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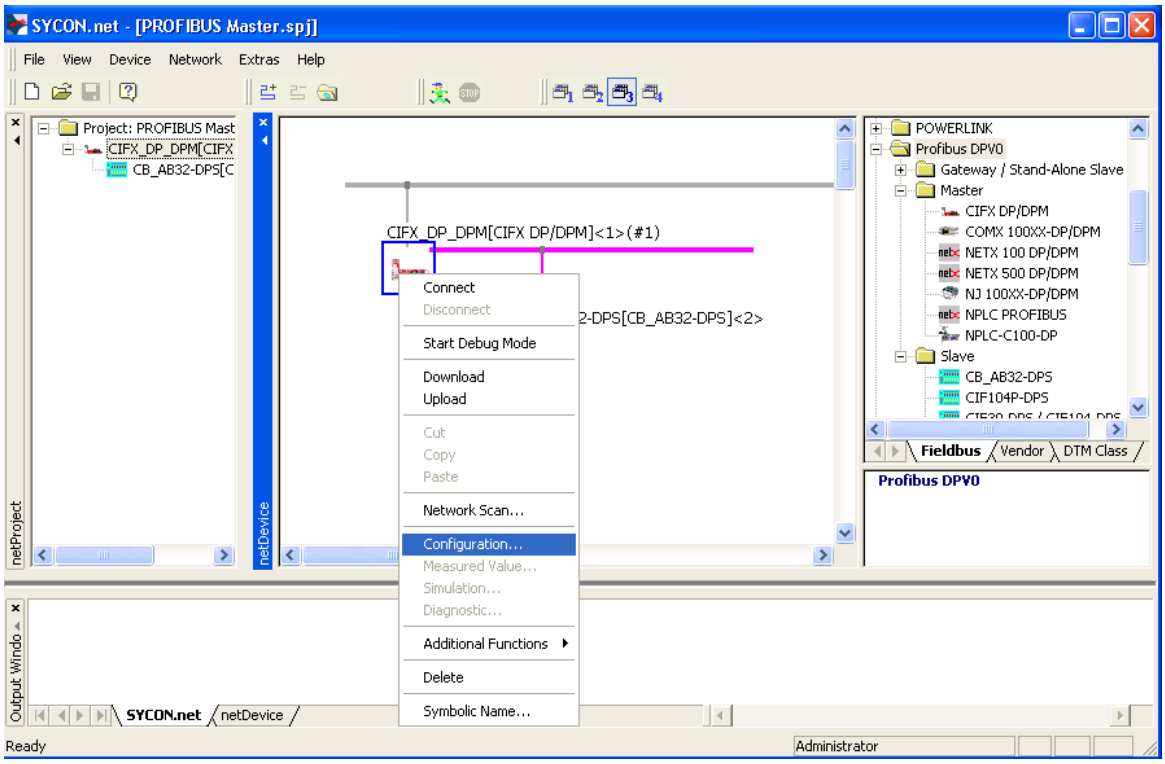
4.2 Assign Hardware and Load Firmware

1. Open Configuration window for **CIFX DP/DPM** master.

➢ Right-click on the master device to open the context menu, then choose **Configuration…**



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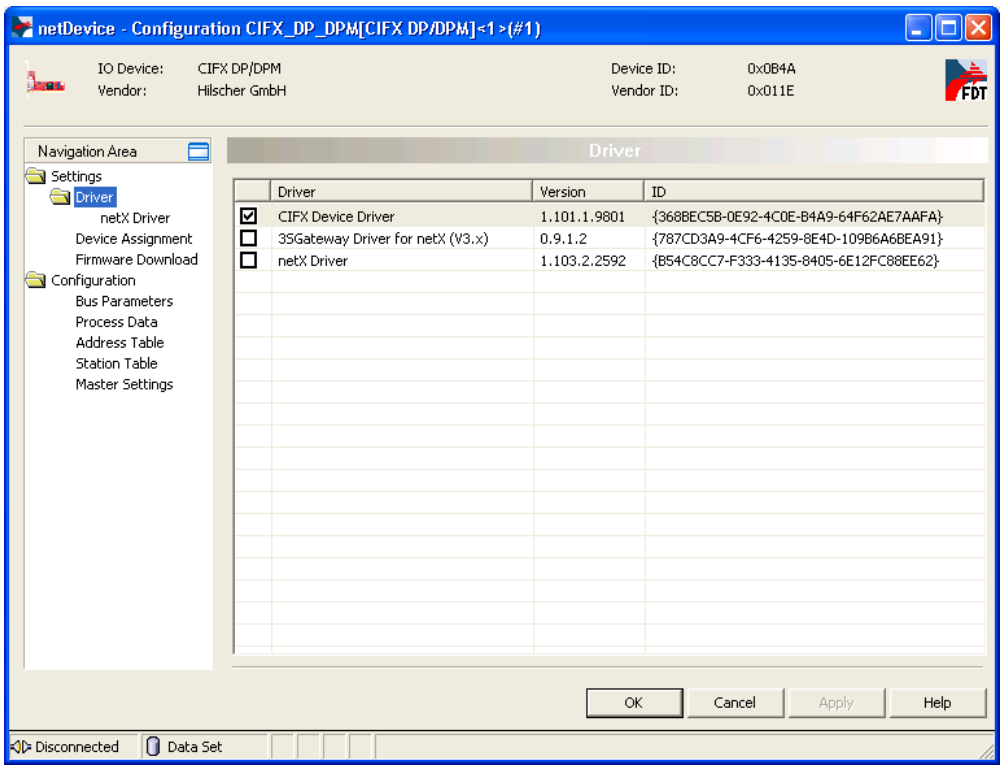
2. Select driver for accessing the master device.

➢ In the **Navigation Area**, choose **Settings** > **Driver**, then select the appropriate driver.

In case of access via RS-232, USB or TCP/IP – i. e. via netX Driver – additional configurations are possible under **Settings** > **Driver** > **netX Driver**.



3. Scan for connected hardware and assign device.

➢ In the **Navigation Area**, choose **Settings** > **Device Assignment** and scan for available Hilscher devices. Click **Scan** button.

➢ Choose the **CIFX 50-DP** device by activating the check box ☑.

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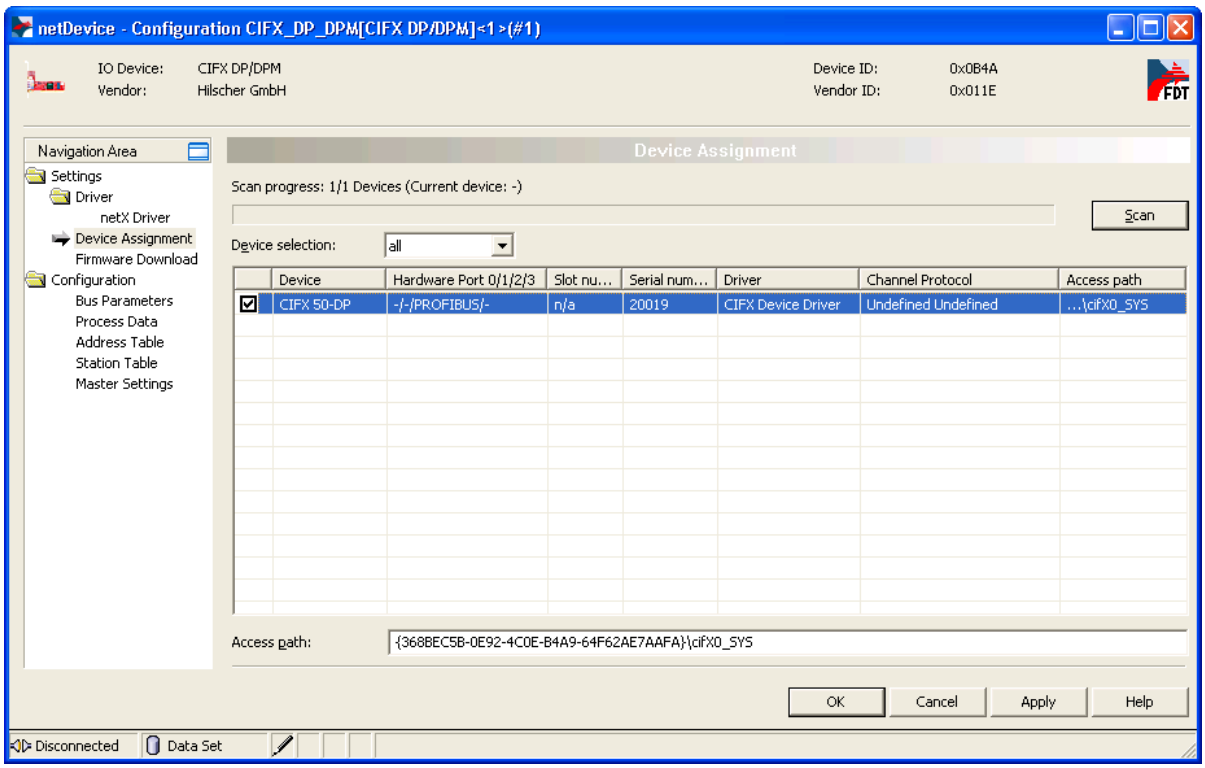

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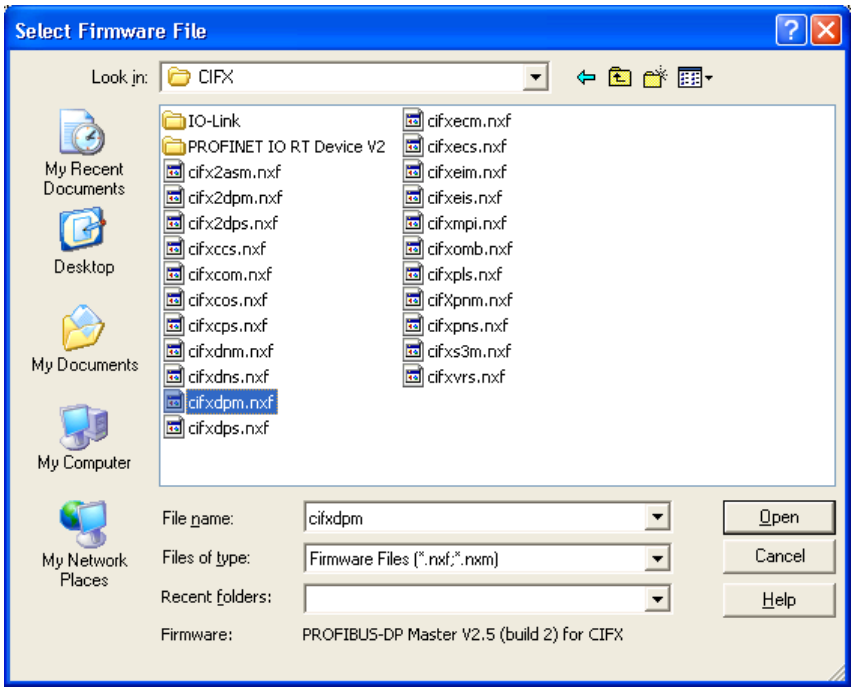
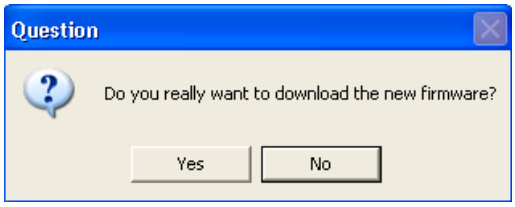
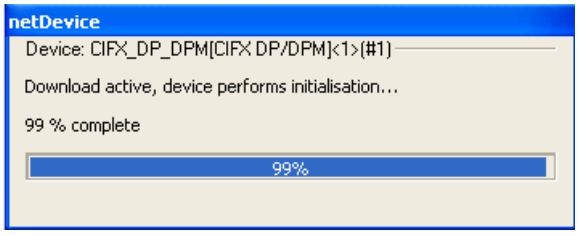
4. In case of PC cards: Select and load firmware.

➢ In the **Navigation Area**, choose **Settings** > **Firmware Download**, then select the appropriate firmware: **cifxdpm.nxf**.

➢ Click **Open** button to load firmware into the PC card.







Note: Click **OK** to finally confirm the assignment of the PC card and the download of the firmware.

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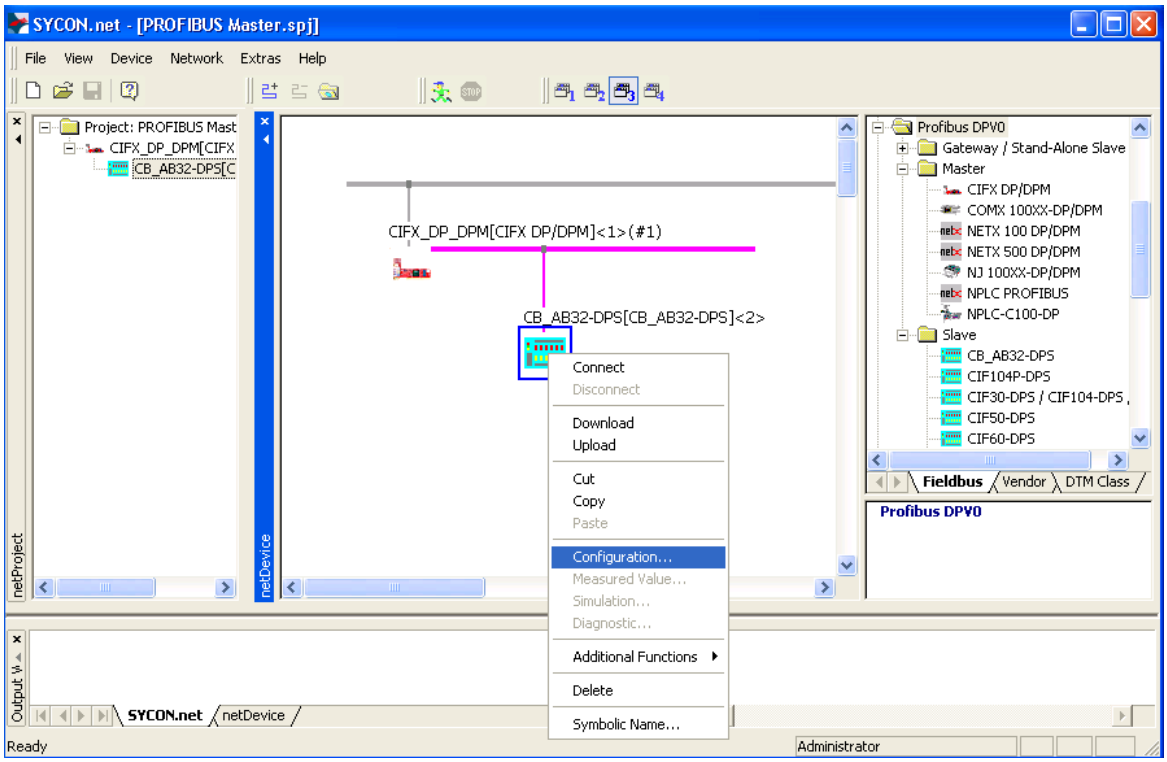
4.3 Configure Slave

1. Open Configuration window for **CB-AB32-DPS** slave.

➢ Right-click on the slave device to open the context menu and choose **Configuration…**



2. Configure address.

➢ The station address of the CB-AB32-DPS in the network can be adjusted via the master.

➢ **Use the rotary switch on the CB-AB32-DPS to set the real address** (e. g. “2”).

Note: The real slave address of full-scale Hilscher slaves can be set via Stand-Alone Slave.

3. Configure I/O Data.

   The quantity of the I/O Data is preconfigured for the CB-AB32-DPS.

4. Configure Bus Parameters and further settings.

➢ Use the default settings.

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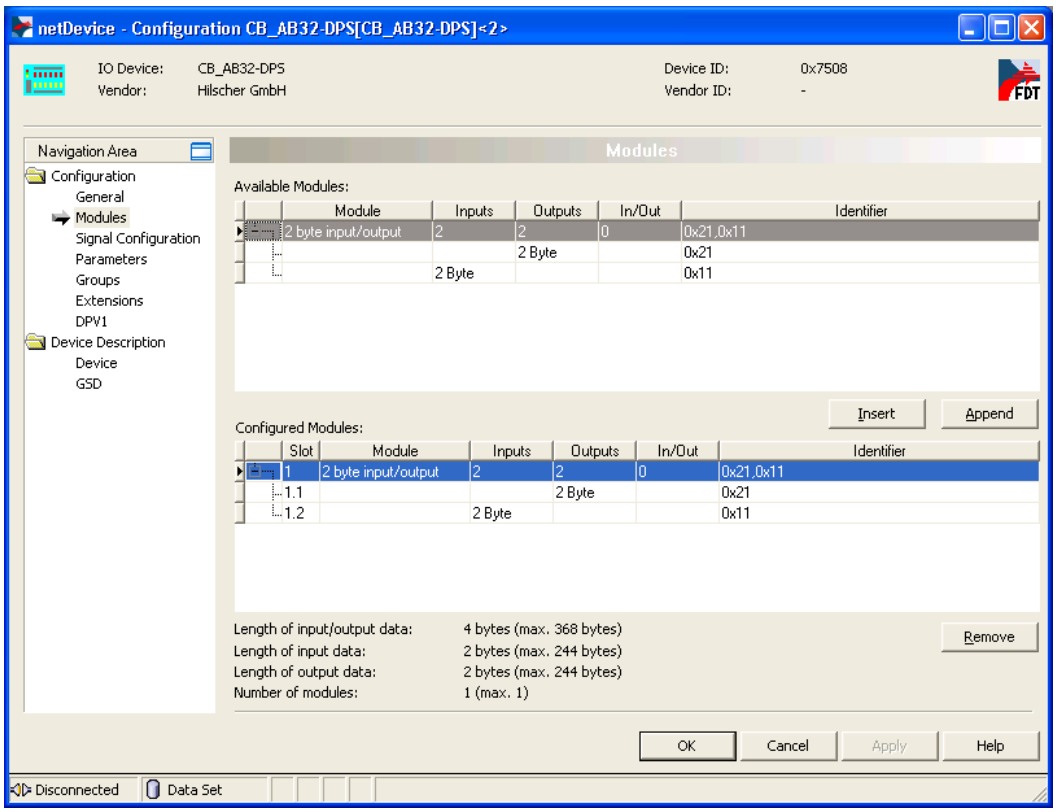

4.4 Configure Hilscher Stand-Alone Slave

Note: It is not necessary to configure a Hilscher Stand-Alone Slave for this example.

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4.5 Configure Master

1. Open Configuration window for **CIFX DP/DPM**.

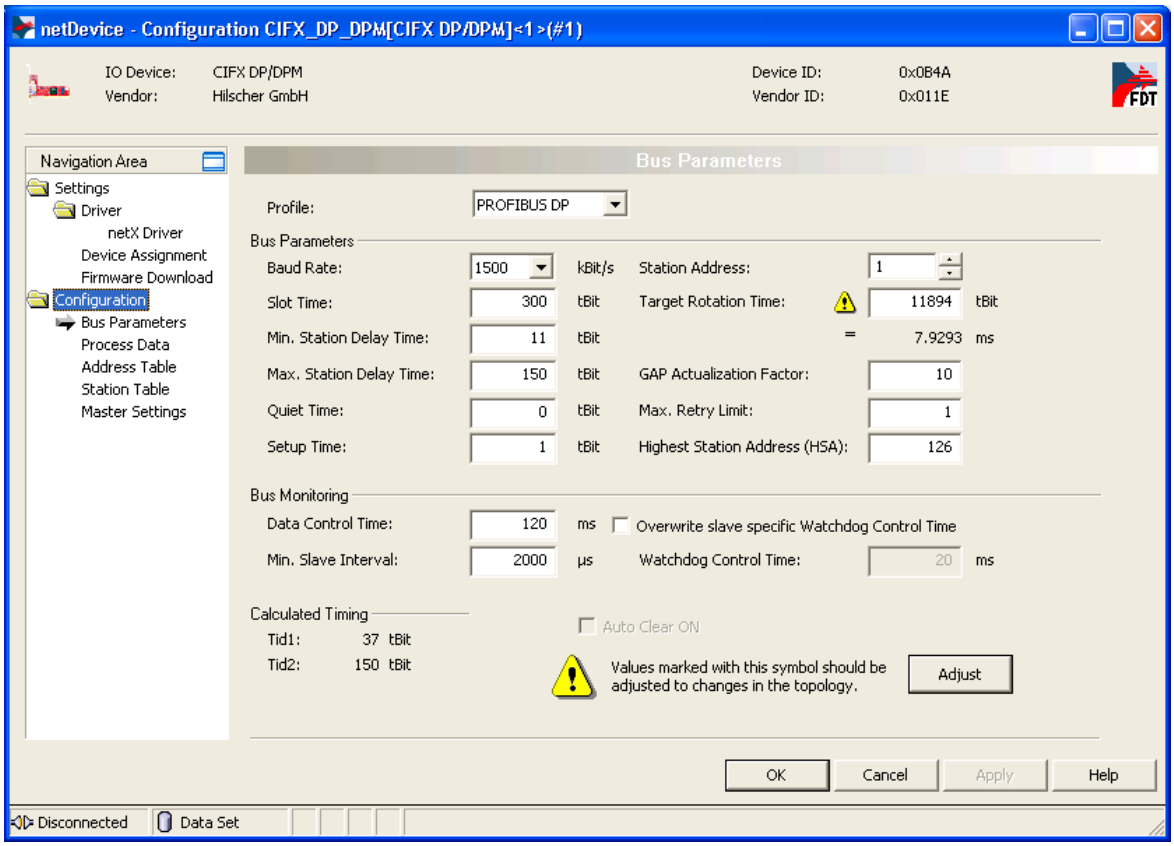
➢ Right-click on the master device to open the context menu, then choose **Configuration…**

2. Configure Bus Parameters.

➢ In the **Navigation Area**, choose **Configuration** > **Bus Parameters**, then set the Baud Rate and the Station Address.

➢ Use the default settings for the other parameters.

Note: Recalculating the Target Rotation Time (by clicking the **Adjust** button) is relevant only for Multi-Master Systems.



3. Configure I/O data.

➢ In the **Navigation Area**, choose **Configuration** > **Process Data**, then set the input and output data. For the CB-AB23-DPS, these parameters are preset.

Note: To ensure communication, the parameters must exactly match the settings in the slave device and in the Stand-Alone Slave.

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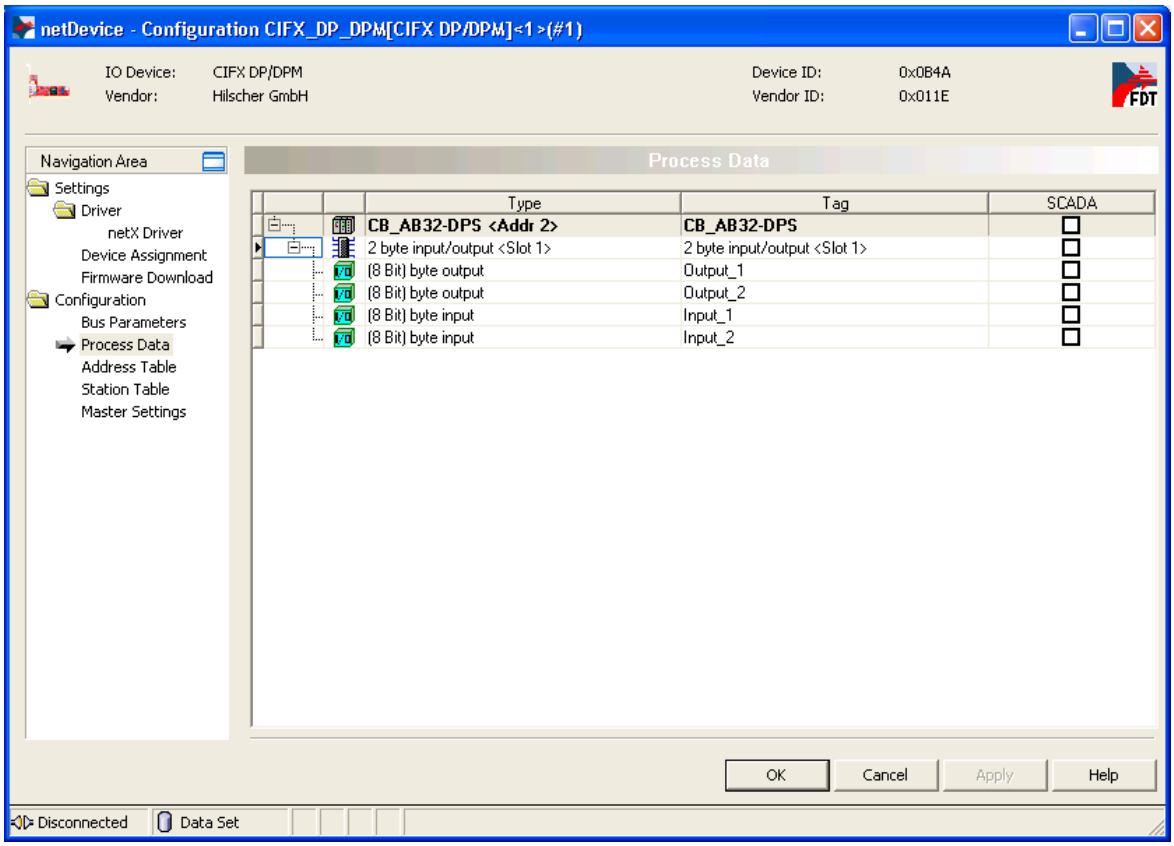

4. Configure slave address in the Station Table.

➢ In the **Navigation Area**, choose **Configuration** > **Station Table**, then set the station address of the slave.

➢ In the **Station Table** window, activate the slave with which the master shall communicate.

Note: The station address of the slave must be identical with the set real address. For the CB-AB32-DPS, the name is set by using the rotary switch (e.g. “2”).

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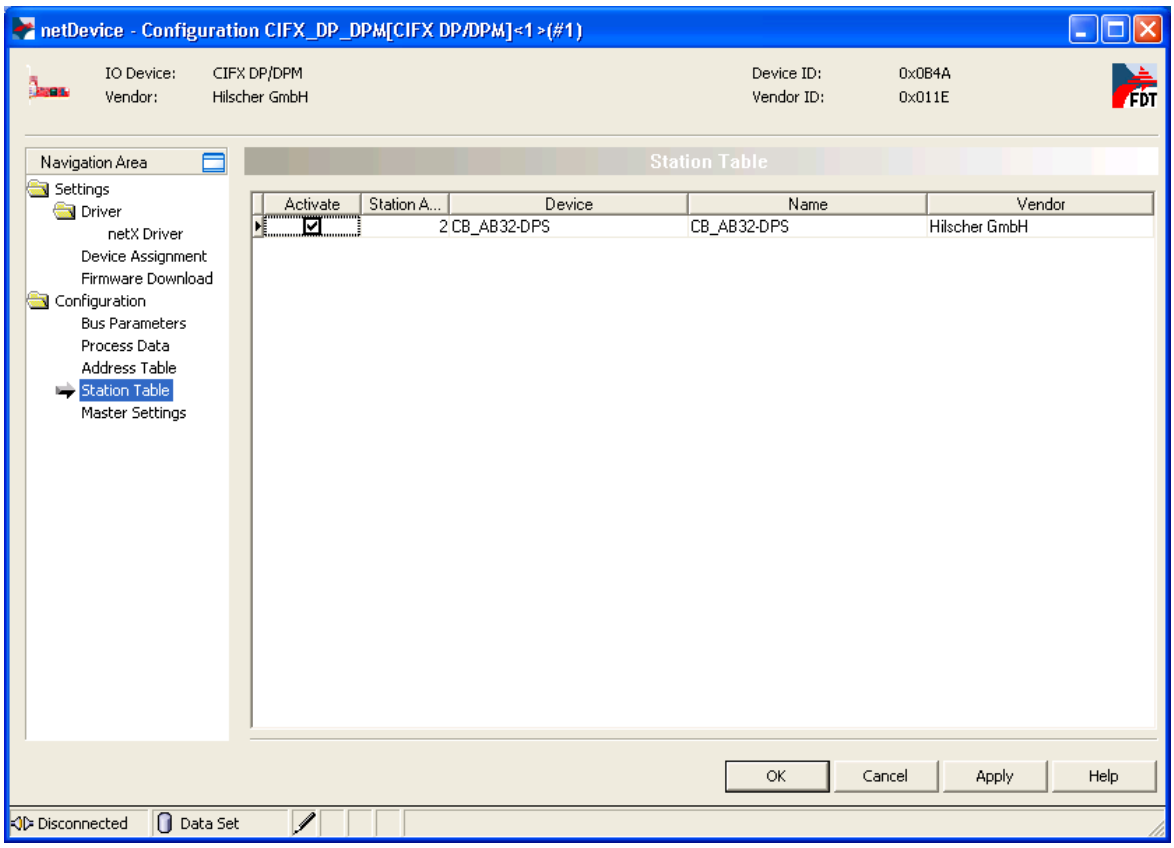
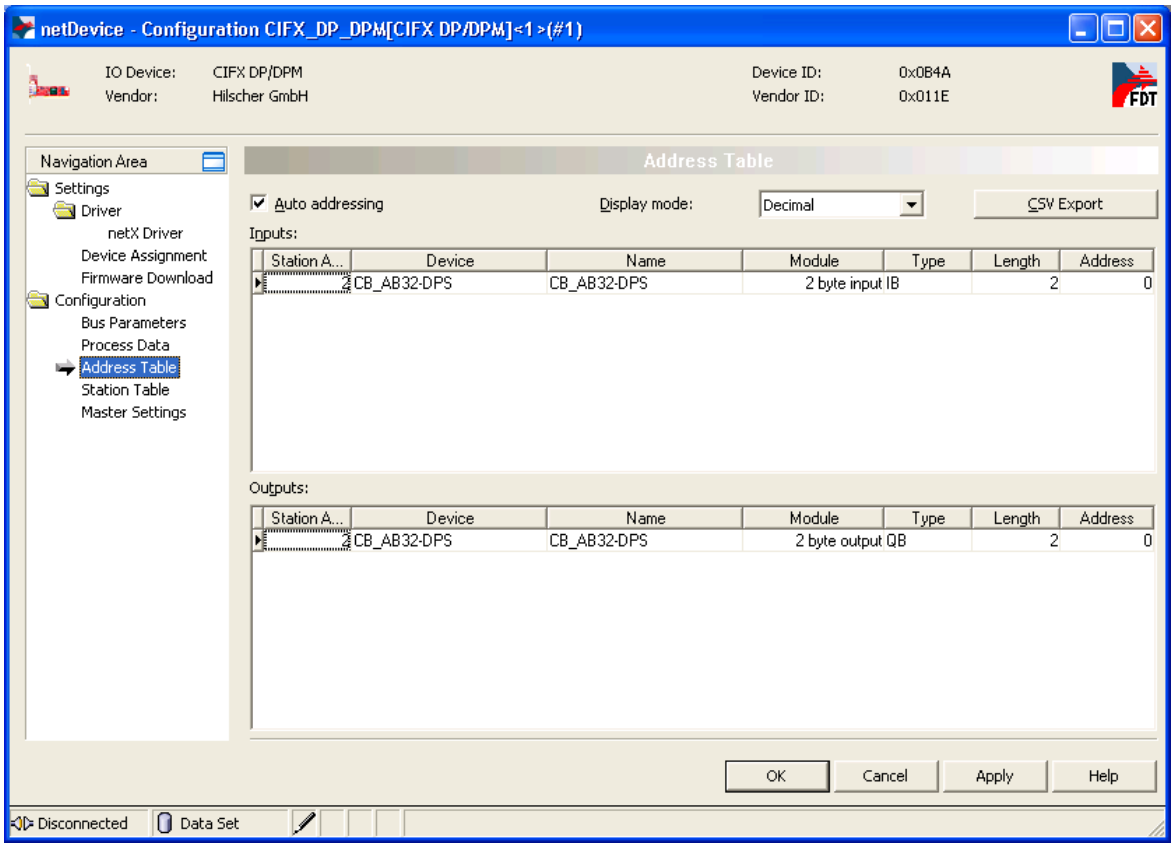


➢ In the **Navigation Area**, choose **Configuration** > **Address Table** to display the mapping of the input and output data.



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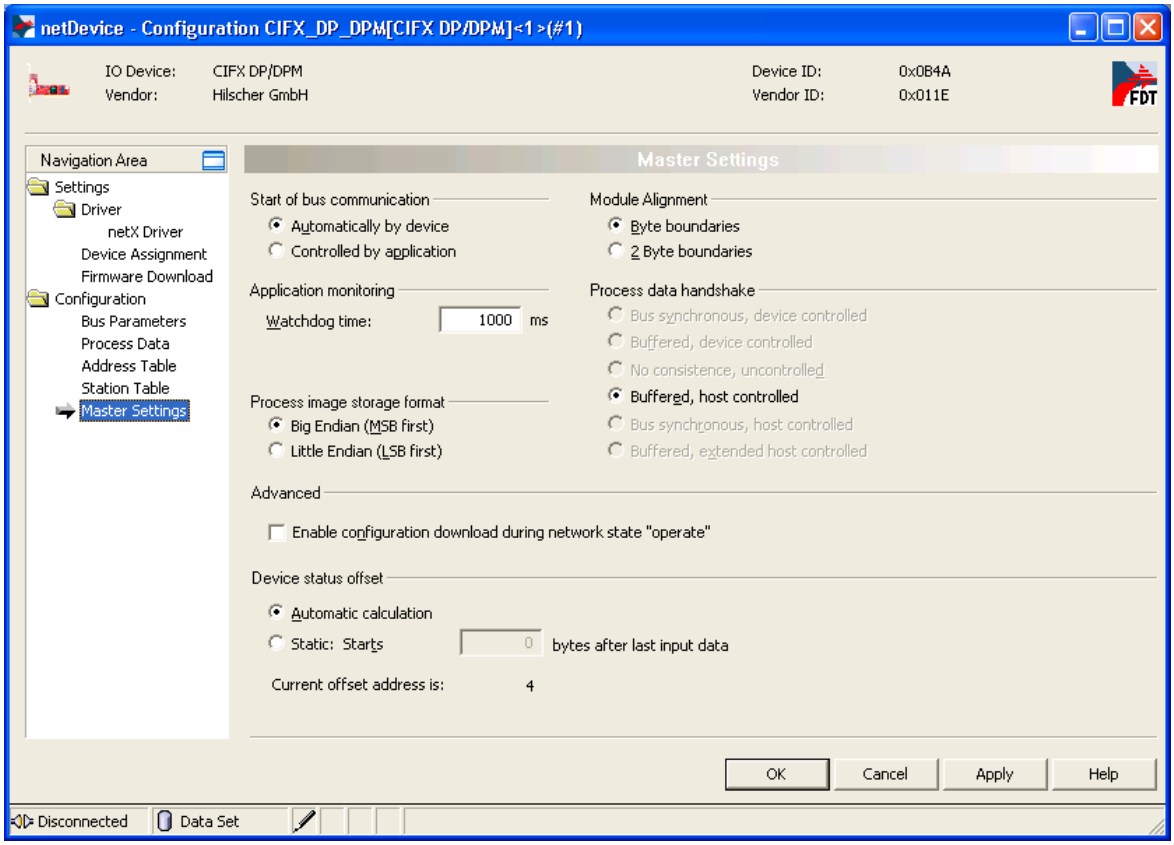
5. Configure master settings.

➢ Under **Configuration** > **Master Settings**, use the default settings.



6. Download configuration to master.

➢ Right-click on the master device to open the context menu, then choose **Download**.

Note: After downloading the configuration, SYCON.net is connected to the master device for diagnostic purposes. The green highlighted display indicates an active connection to the master.

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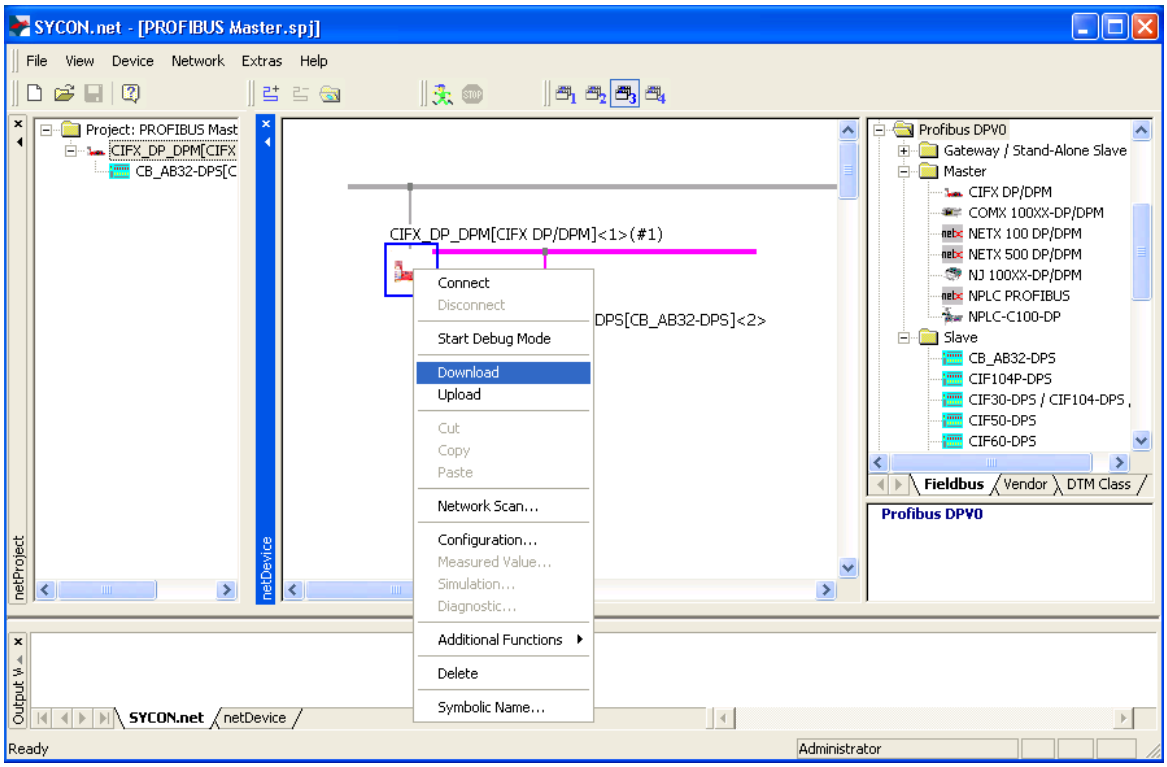

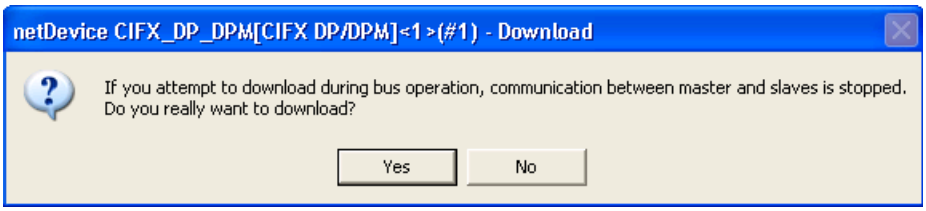

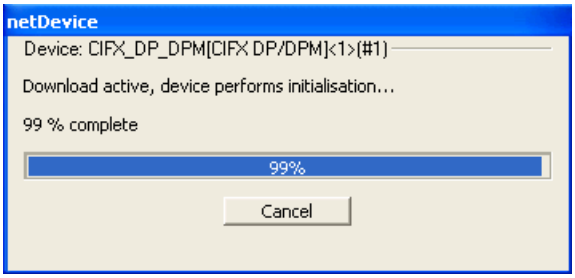

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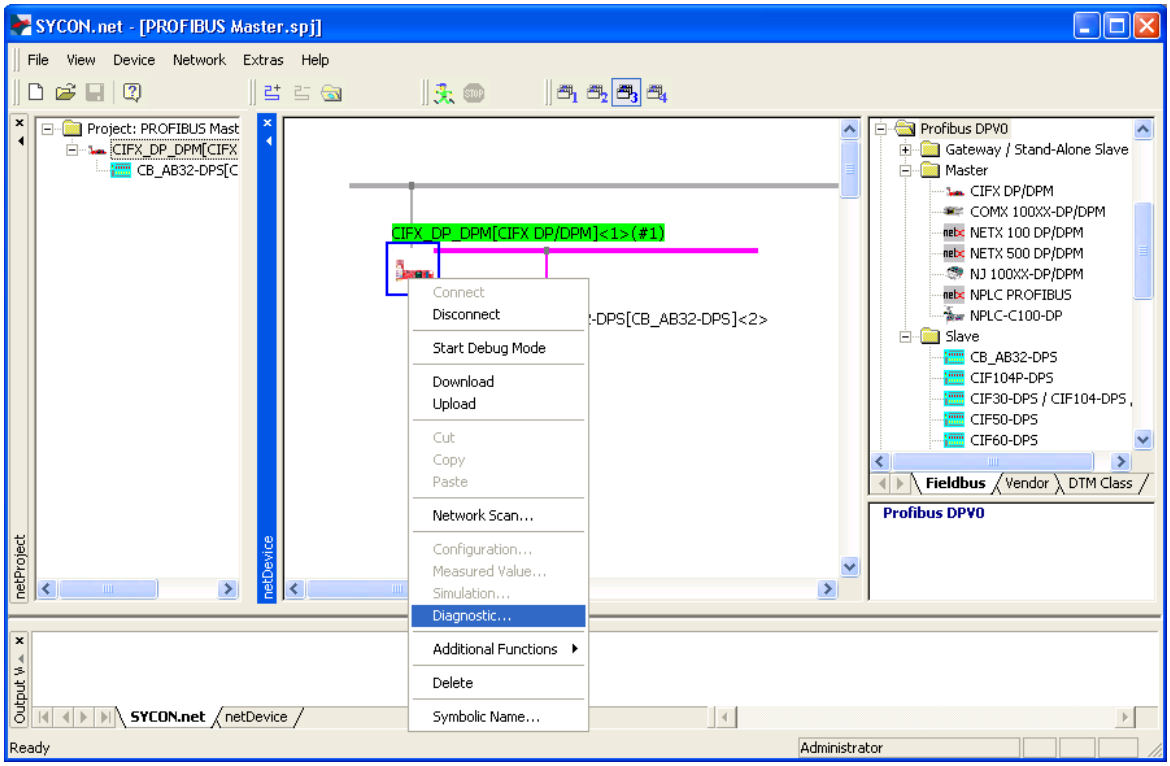
4.6 Diagnosis and Testing

Diagnosis and testing with SYCON.net

1. Connect with master and open diagnosis window for **CIFX DP/DPM**.

➢ Right-click on the master device to open the context menu, then choose **Diagnostic…**

Note: After downloading the configuration, SYCON.net is automatically connected to the master device. If SYCON.net has not yet been connected, right-click on the master device to open the context menu, then choose **Connect**.



2. Check state of the network in **General Diagnosis** window.

➢ In the **Navigation Area**, choose **Diagnosis** > **General Diagnosis**.

➢ Check, whether there is a green light for **Device state** > **Communication** ①, **Network state** > **Operate** ② and **Configuration state** > **Bus ON** ③. This indicates a functioning communication.

➢ In the **Navigation Area**, choose **Diagnosis** > **Station Diagnosis**.

➢ Check, whether there is a green light next to the connected slave(s), indicating an active station status.

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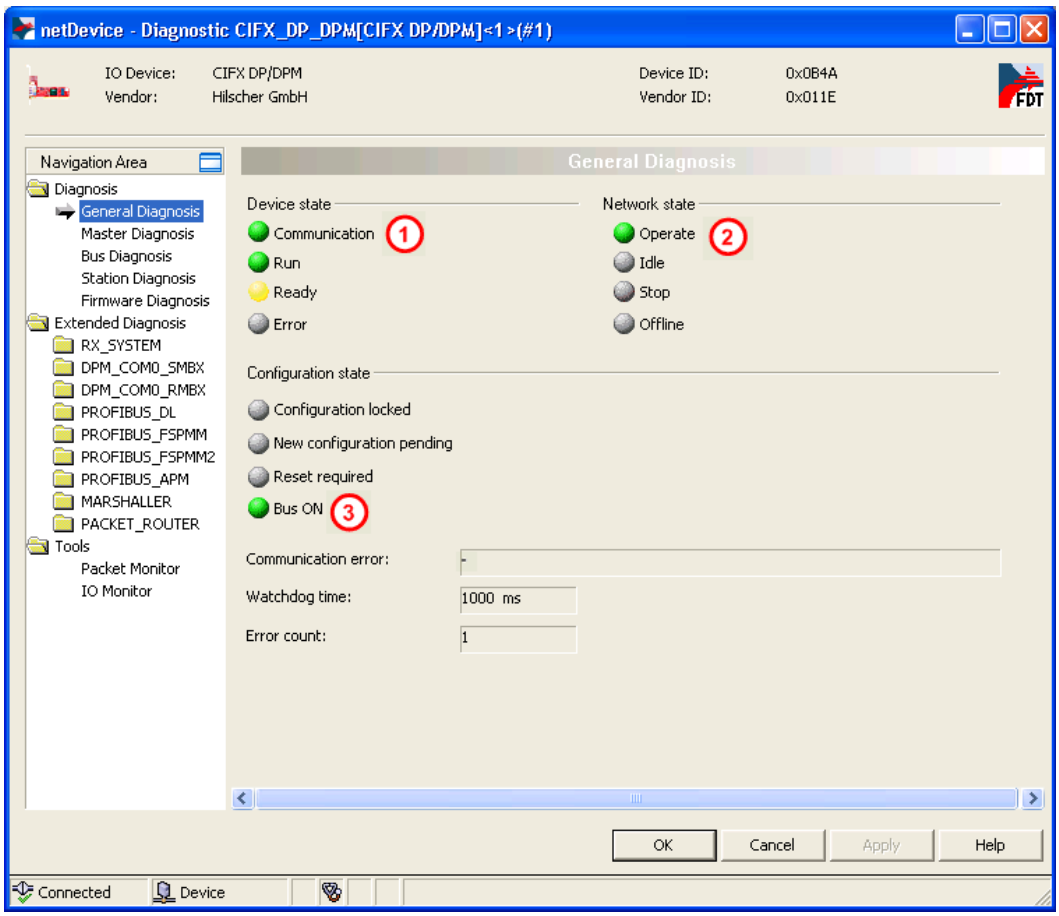

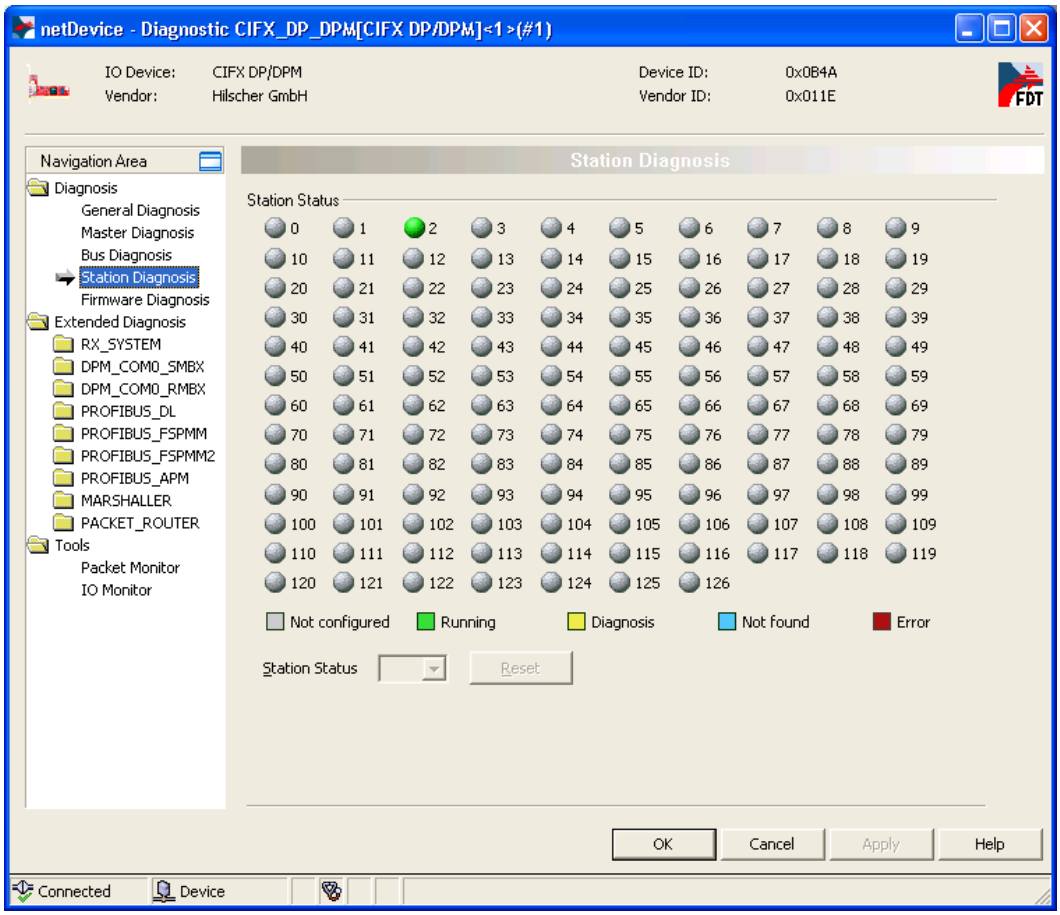

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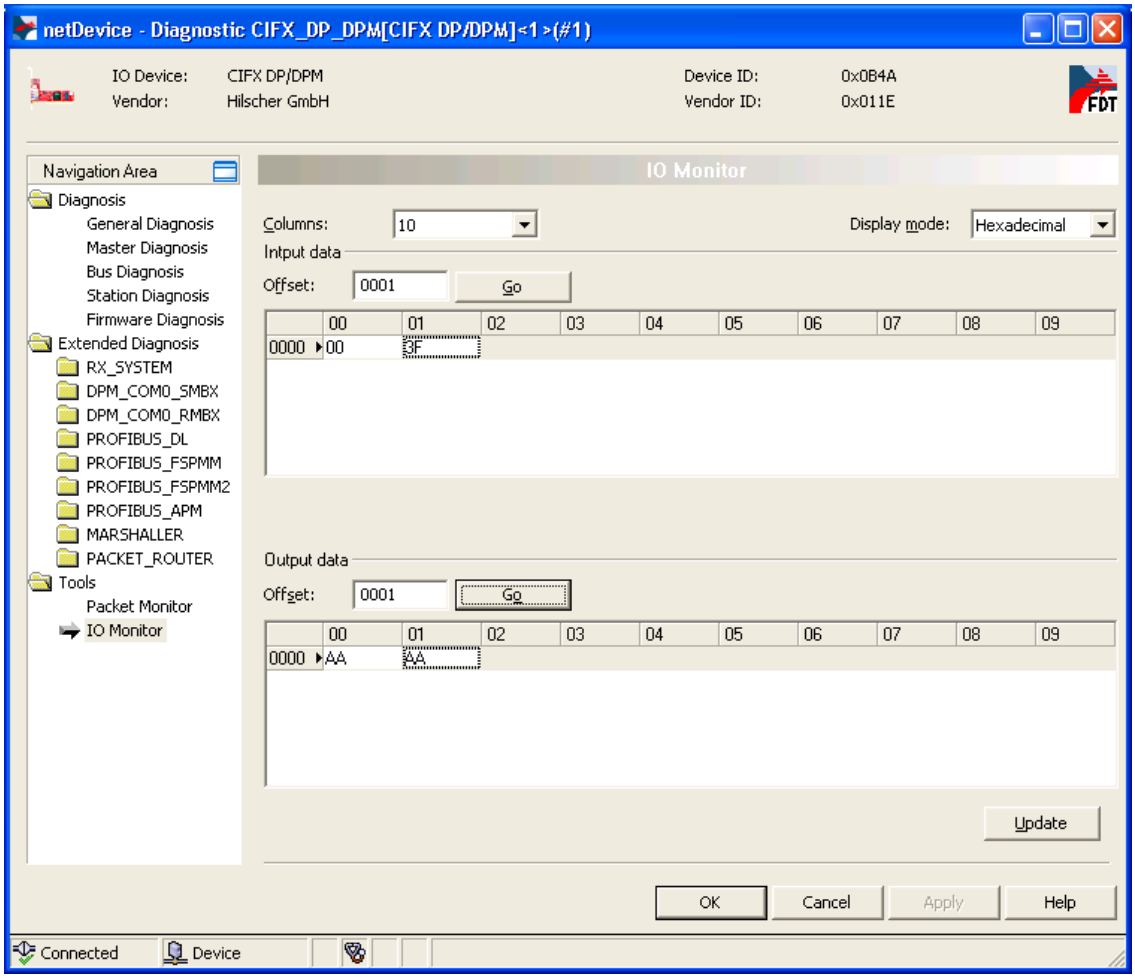
3. Use IO Monitor to test the communication.

➢ In the **Navigation Area**, choose **Tools** > **IO Monitor**.

➢ Enter output data, then click **Update** button.

The input data area displays received input data.



Diagnosis and testing with cifX Test

4. Start cifX Test auxiliary tool.

➢ In Windows, choose **Start** > **Control Panel** > **cifX Test**.

5. Establish connection to Hilscher device.

➢ In the menu, choose **Device** > **Open**.

➢ Select **cifX** > **Channel0**.

Note: If you open the cifX level, you can see and use all functions concerning the PC card, e. g. licenses.

If you open **cifX** > **Channel0**, you can see and use all functions concerning the communication channel, e. g. I/O data.

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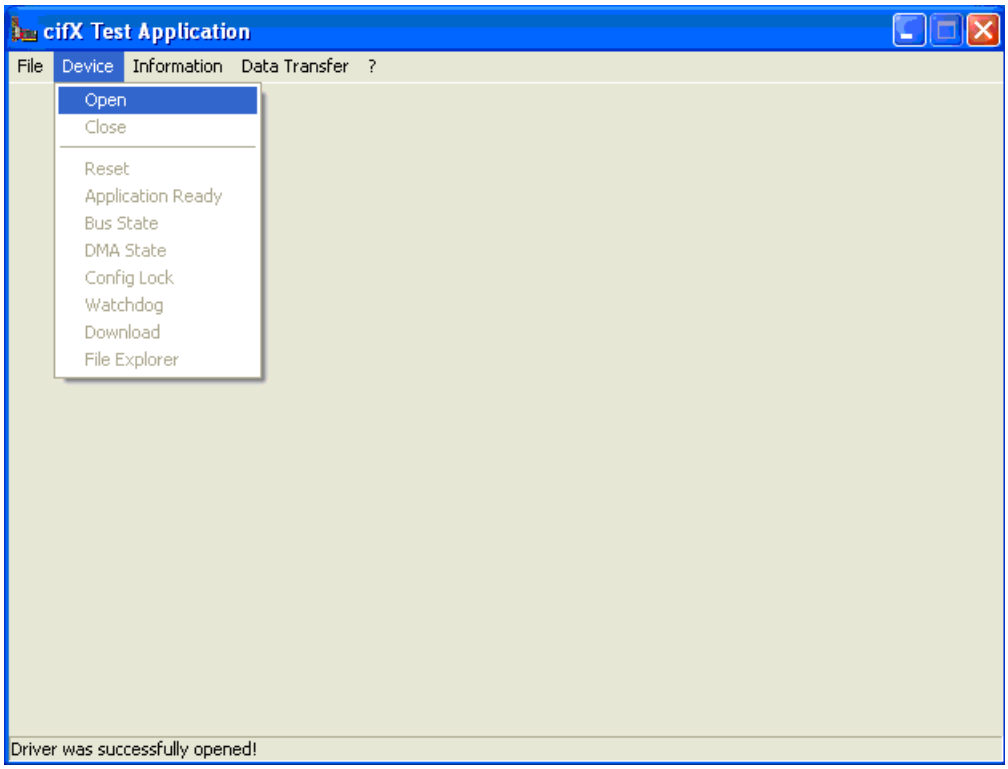

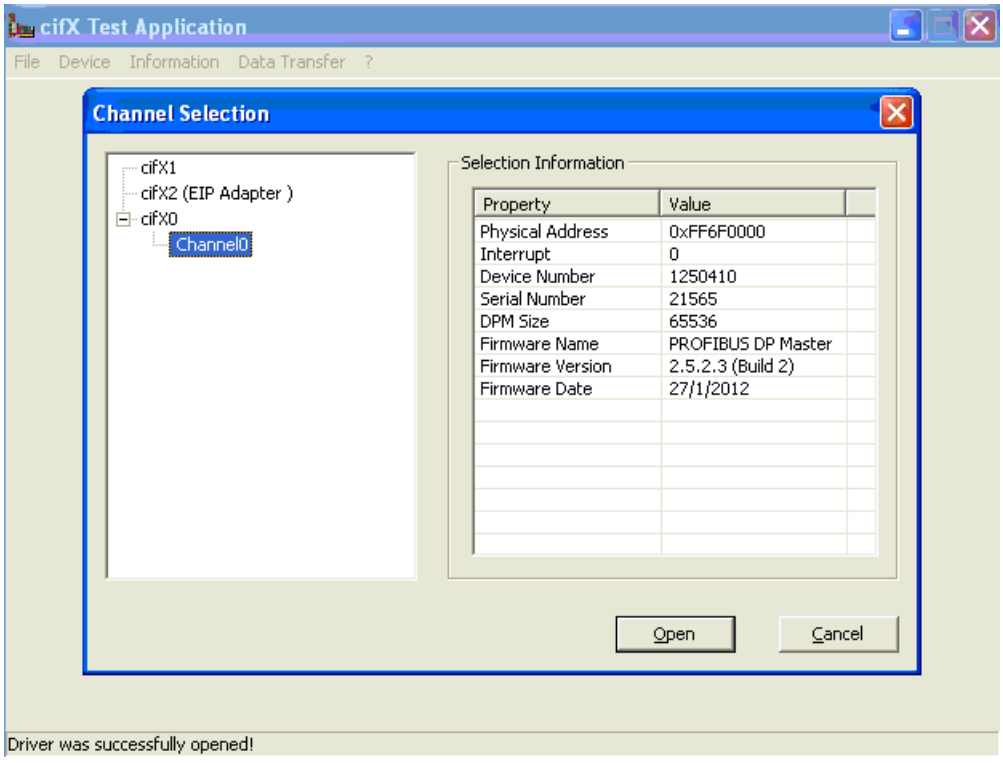

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6. I/O data exchange.

➢ In the menu, choose **Data Transfer** > **I/O Data**.

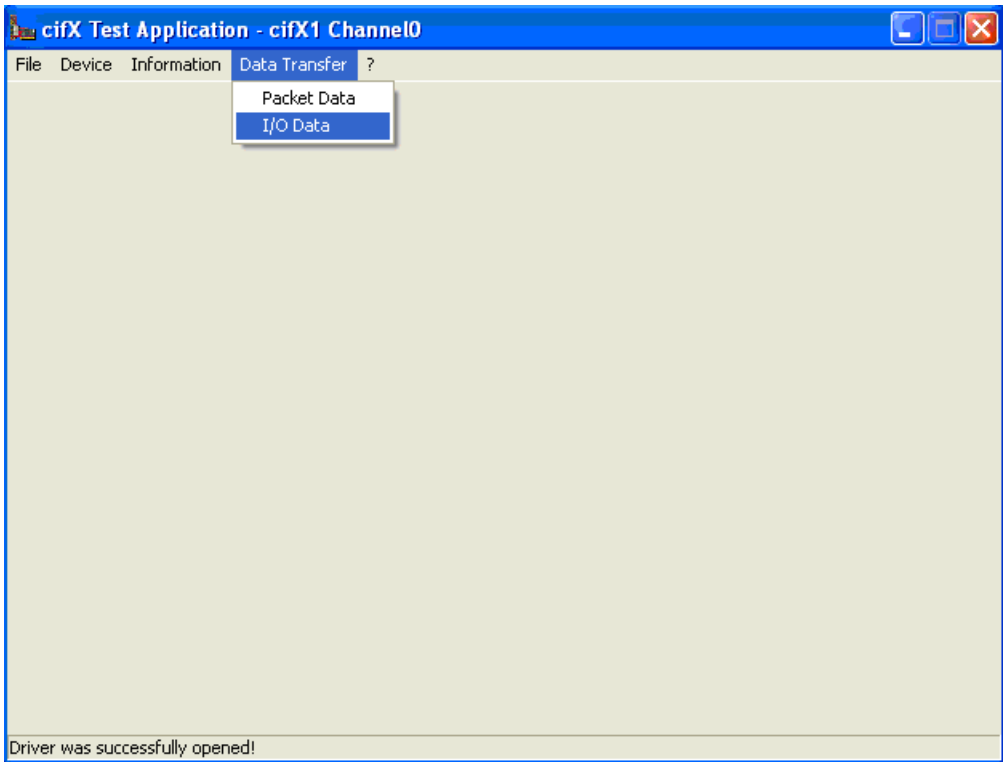
➢ Set output data, then click **Update**.

↬ Data is transferred to the CB-AB32-DPS and displayed by the LEDs.

➢ Enter the length of the input data to be displayed in the cifX Test auxiliary tool.

➢ Use the rotary switch and the buttons on the CB-AB32-DPS to create new data, then watch the incoming data in the cifX Test auxiliary tool.

Note: Observe the data length. It must comply with the configuration.
For the output data, you can use **cyclic** and **auto increment**.



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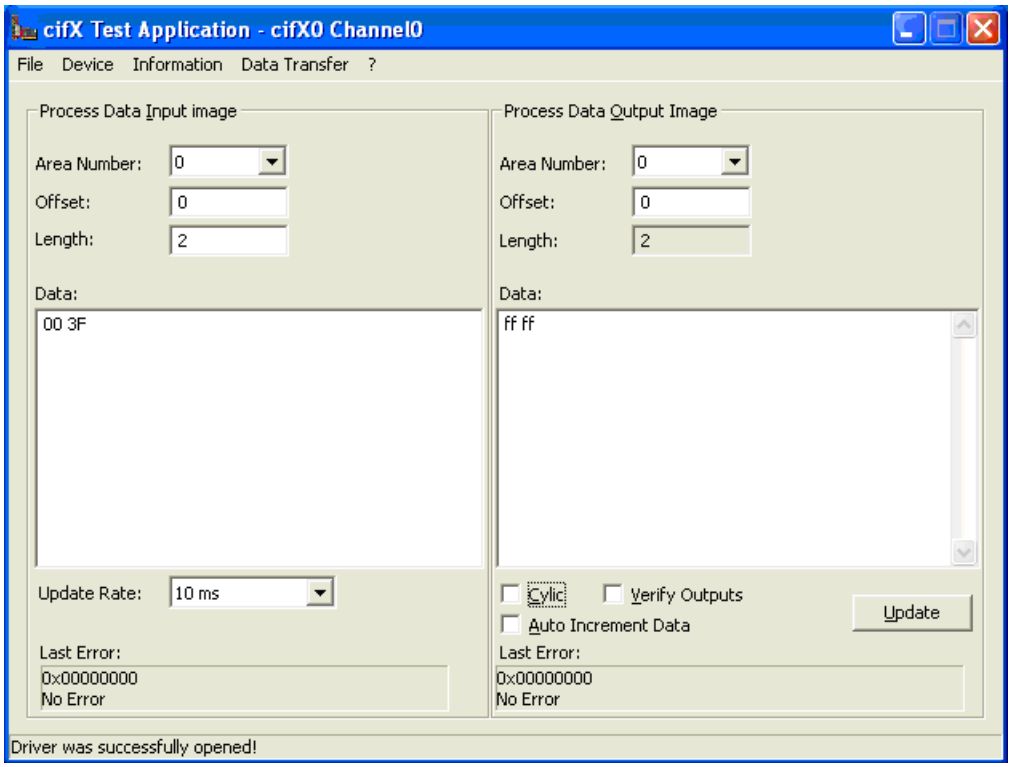

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5 Tips and Tricks

5.1 Checking, Setting and Reordering a License

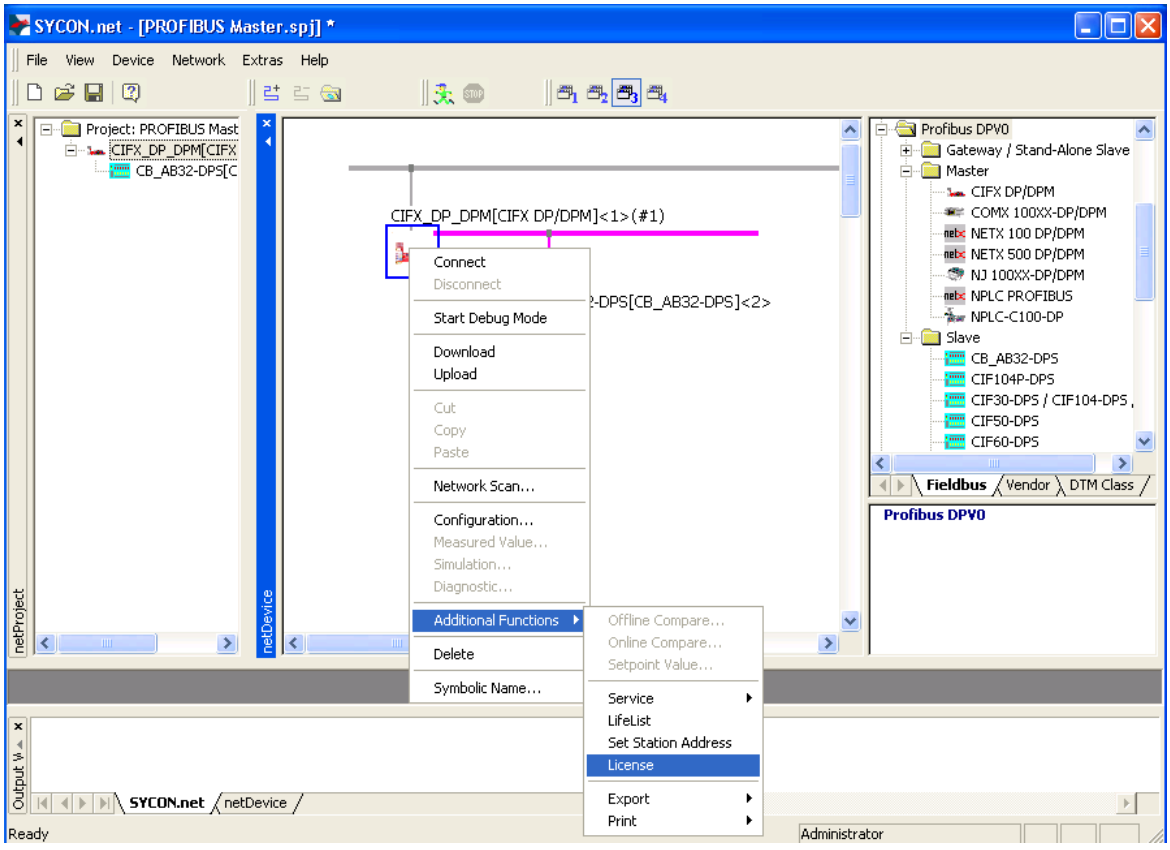
1. Check license, reorder license and set license.

➢ Right-click on the master device to open the context menu, then choose **Additional Functions** > **License**.

Note: To use this function, make sure that SYCON.net is **not** connected to the master for diagnostic purposes. You possibly have to disconnect. To do so, right-click on the master device to open the context menu, then choose **Disconnect**.

Note: Licenses can easily be reordered by simply exporting the filled-in form and handing it over to Hilscher, as if in an ordinary ordering process. Use the **Export License Request…** button for this.

A license is delivered as a license file with the ending **.nxl**. It can be transferred to the device from the same dialog sheet by clicking the **Download License** button.



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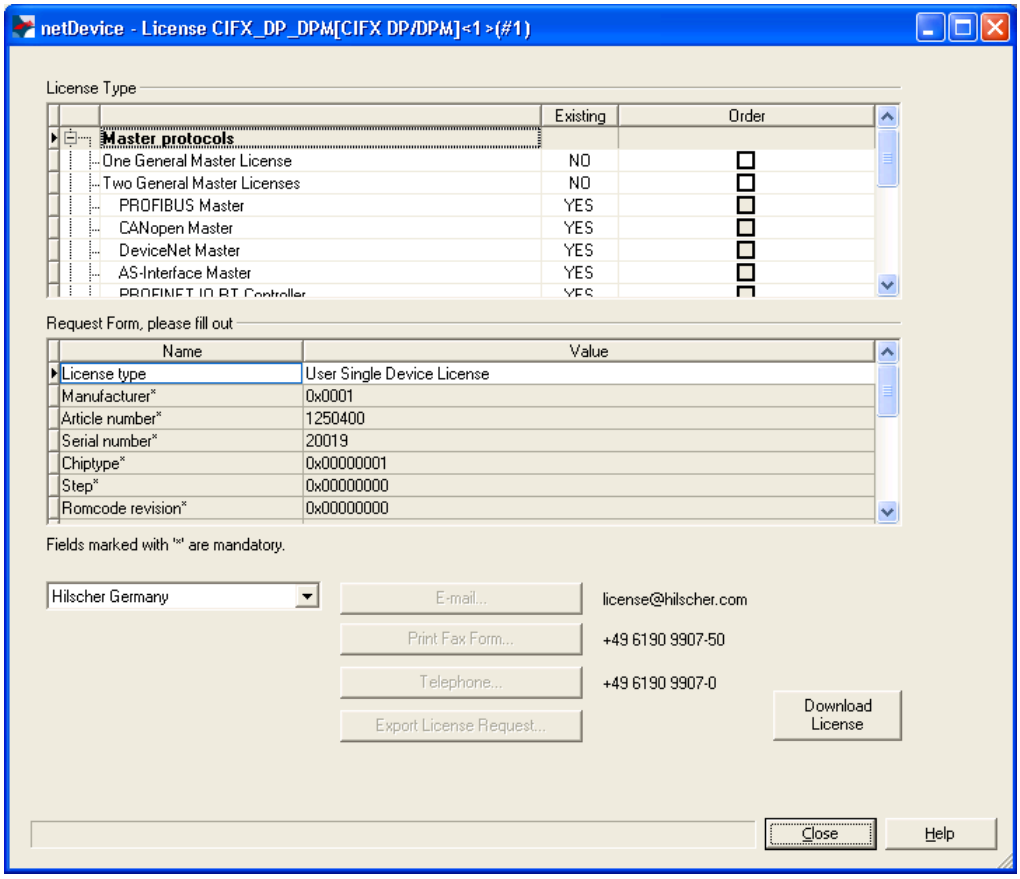

5.2 Use LifeList to Search for Devices Connected to the Bus

1. Search for passive and active devices on the bus.

➢ Right-click on the master device to open the context menu, then choose **Additional Functions** > **LifeList**.

Note: Precondition for using the **LifeList** function is the assignment of hardware to the Hilscher master and the download of the corresponding firmware. Furthermore, the Hilscher master must contain a basic configuration.

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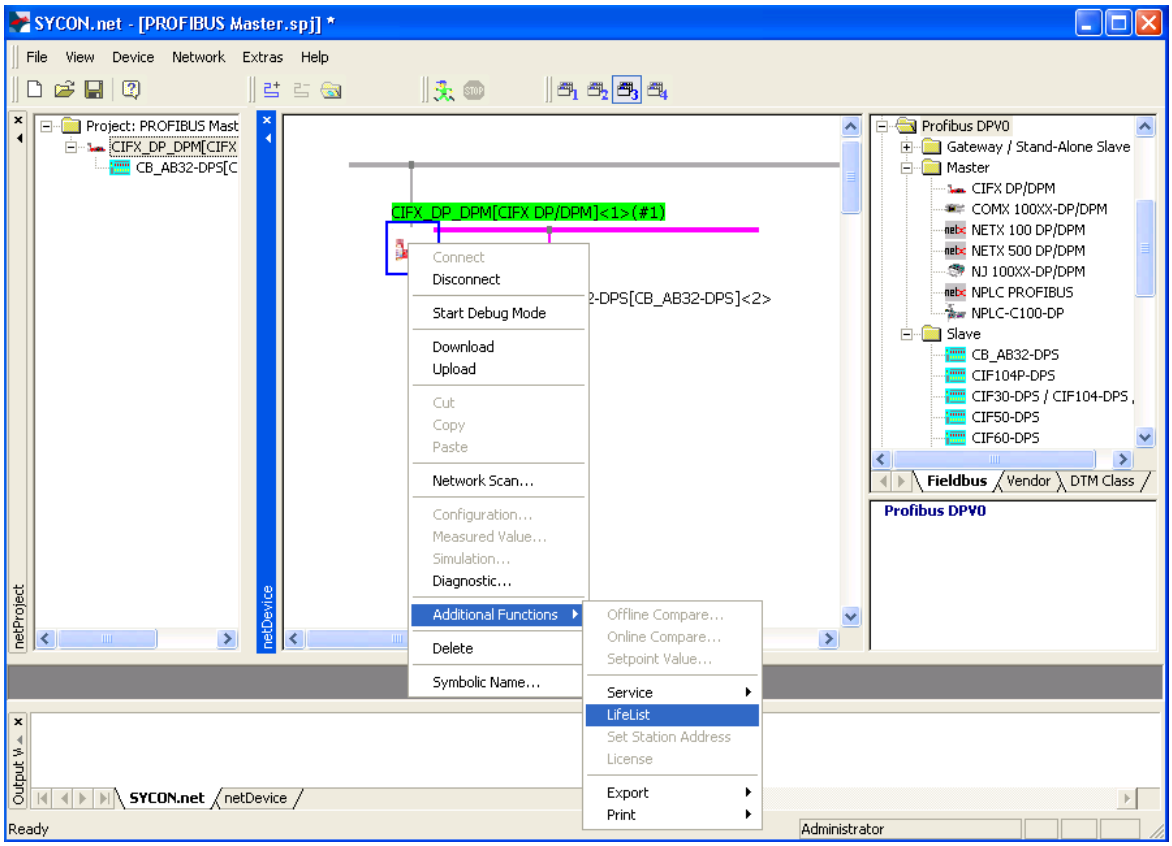

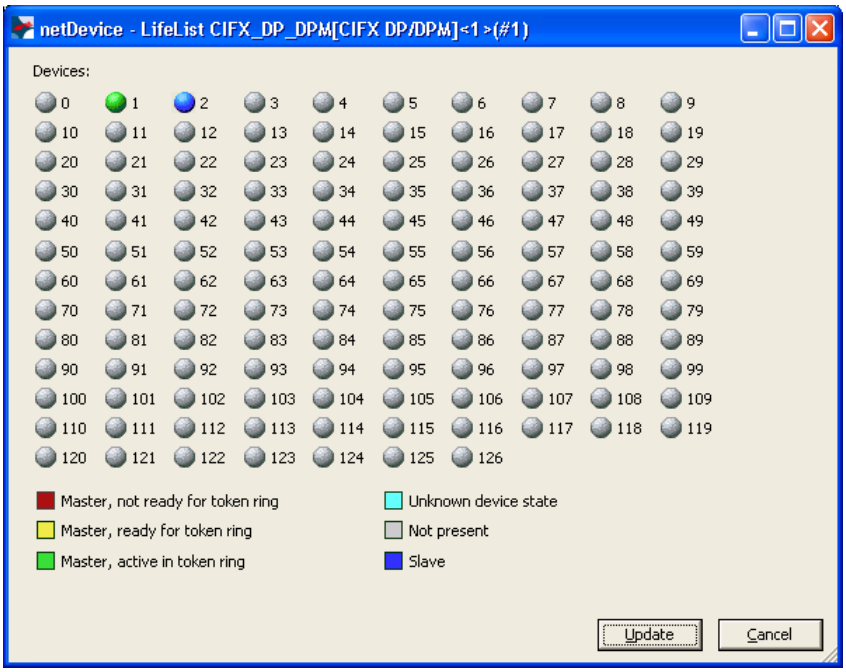

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5.3 Automated Scanning of the Network Structure

1. Let SYCON.net scan the network structure and automatically create a device configuration.

➢ Right-click on the master device to open the context menu, then choose **Network Scan…**

➢ Follow input prompt and configure details.

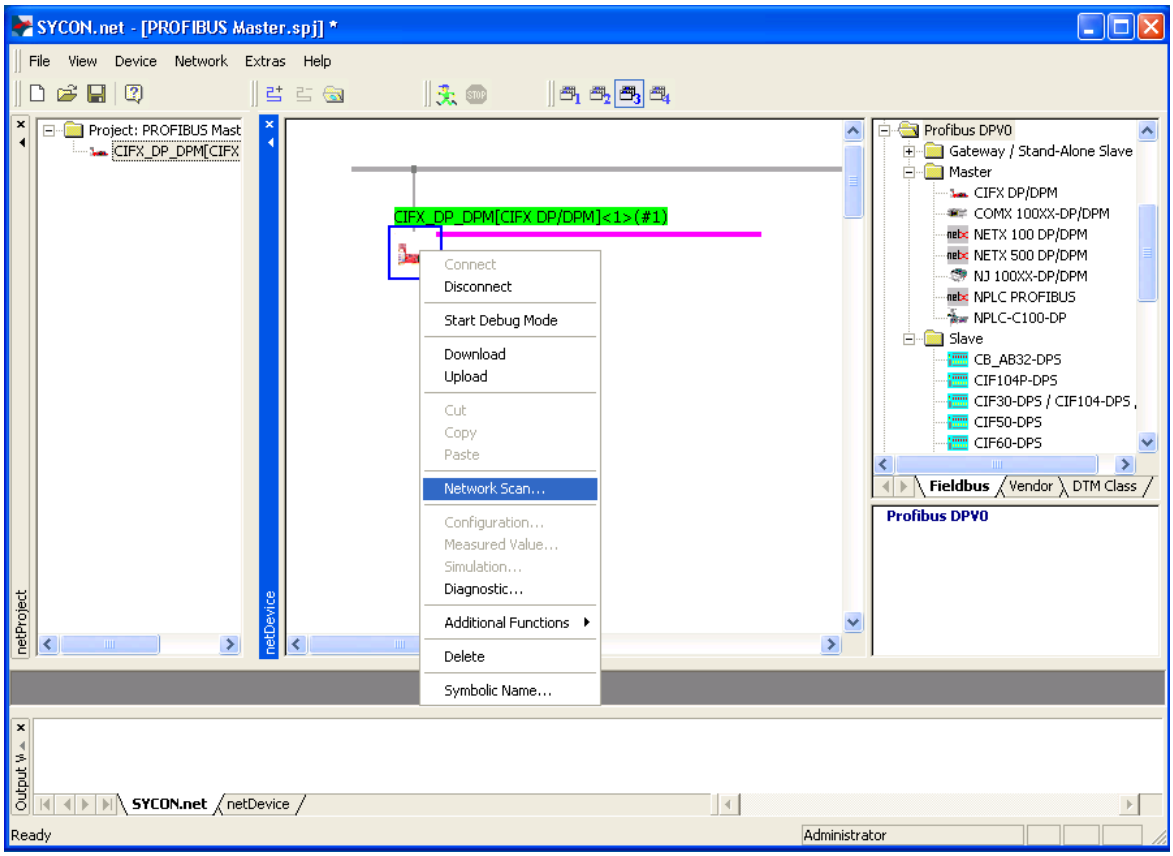
2. Finally, download the configuration to the Hilscher master device.

➢ Right-click on the master device to open the context menu, then choose **Download**.

Note: Precondition for using the **Network Scan…** function is the assignment of hardware to the Hilscher master and the download of the corresponding firmware. Furthermore, the Hilscher master must contain a basic configuration including the bus parameters.

Note: If non-Hilscher slaves are used, first import in SYCON.net all necessary device description files.

Note: After having automatically created a configuration, the configuration has to be downloaded to the Hilscher master.



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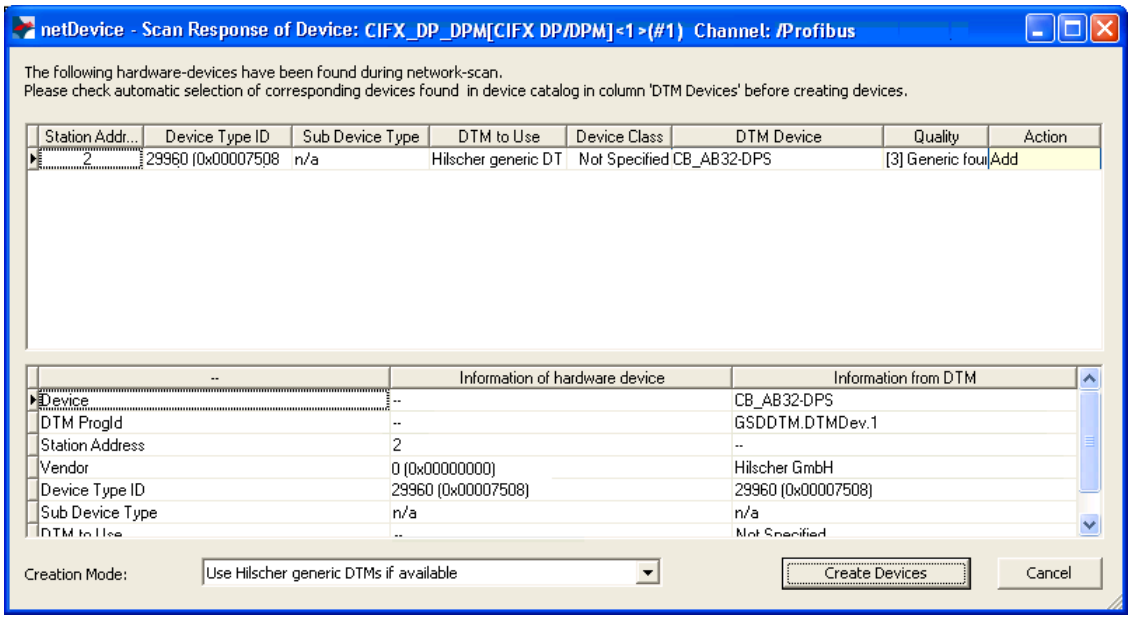

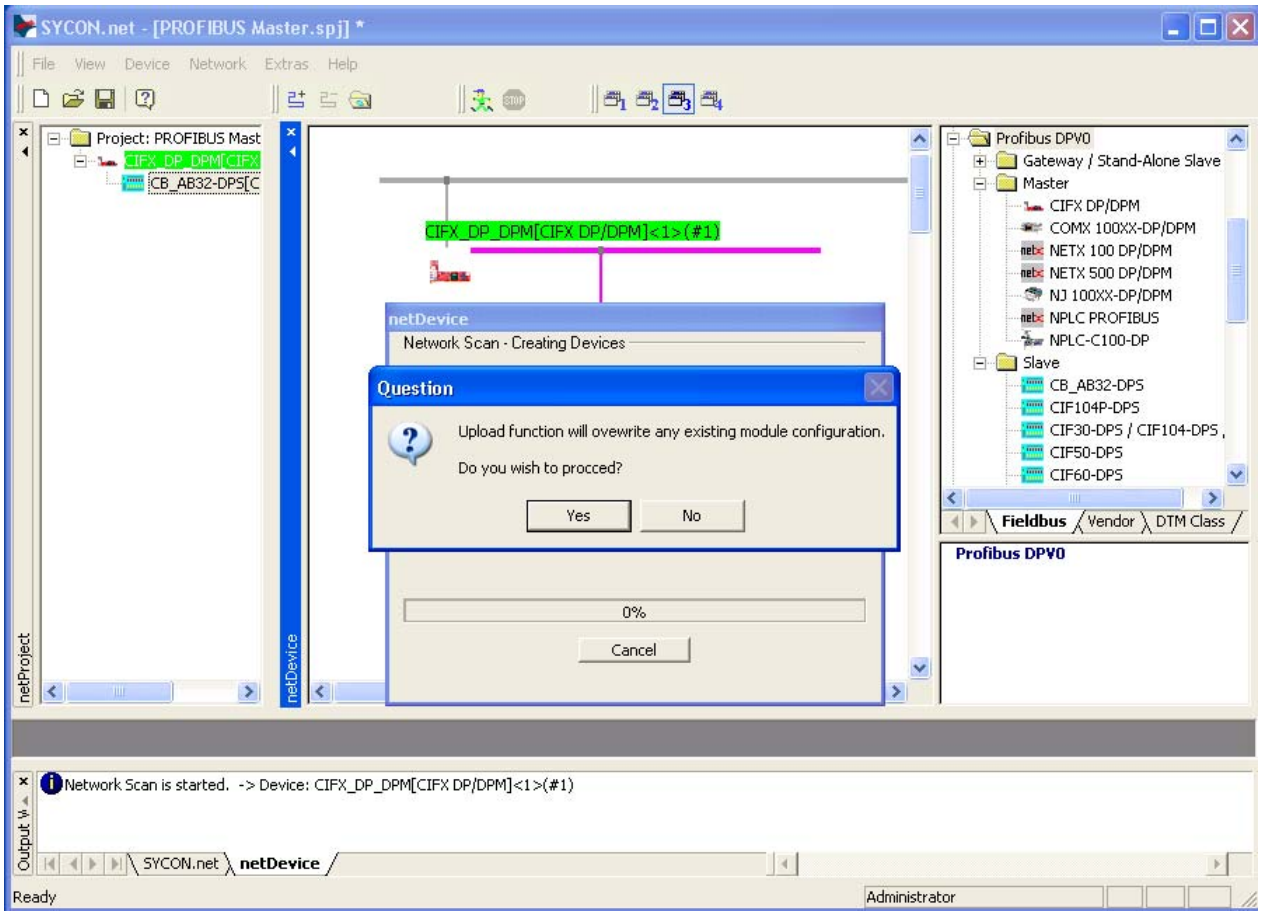

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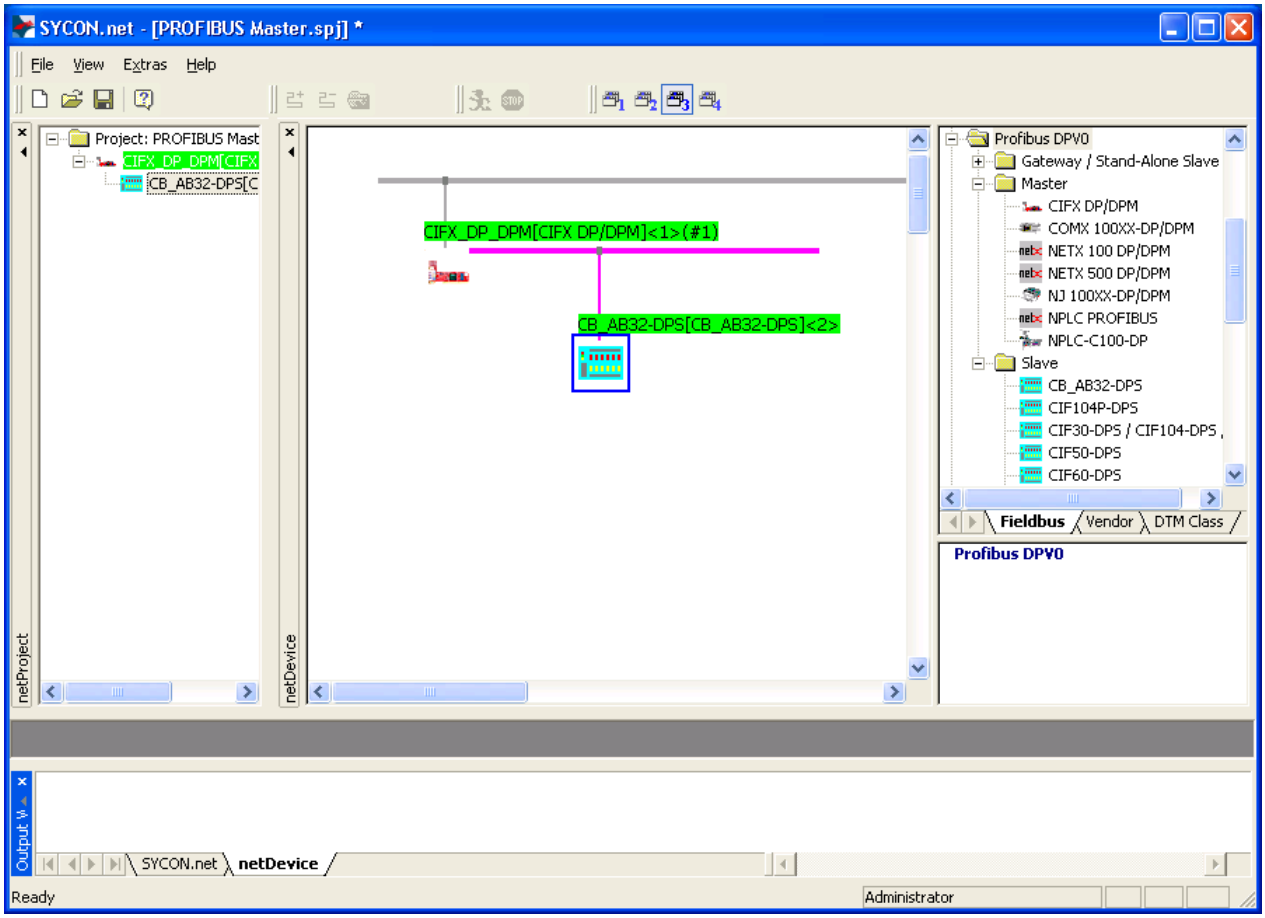

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