Operating Instruction Manual

Configuration of LAN Controlled Master Devices

netHOST

Hilscher Gesellschaft für Systemautomation mbH

www.hilscher.com

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1 Introduction

1.1 About this Document

1.1.1 Description of the Contents

This Operating Instruction Manual describes how to use the SYCON.net configuration software installed on a Windows PC to configure the following LAN controlled netHOST devices as master devices in the corresponding Fieldbus or Real-Time Ethernet system:

NHST-T100-DP/DPM for PROFIBUS DP (order no.: 1890.410/DPM)

NHST-T100-CO/COM for CANopen (order no.: 1890.500/COM)

NHST-T100-DN/DNM for DeviceNet (order no.: 1890.510/DNM)

NHST-T100-EN/PNM for PROFINET IO (order no.: 1890.840/PNM)

NHST-T100-EN/ECM for EtherCAT (order no.: 1890.110/ECM)

NHST-T100-EN/EIM for EtherNet/IP (order no.: 1890.820/EIM)

NHST-T100-EN for PROFINET IO, EtherCAT or EtherNet/IP (order no.: 1890.800; hardware and performance are identical to the **NHST-T100-EN/PNM/ECM/EIM** devices, but firmware has to be loaded into the device by the customer)

This document provides step-by-step instructions for configuring a netHOST, using the **NHST-T100-DP/DPM** (PROFIBUS DP Master) and the **NHST-T100-EN/PNM (**PROFINET IO Controller) devices as examples. Here, you will also find descriptions of the graphical user interface and the dialog windows of the **netHOST Device Type Manager** (**netHOST-DTM**), which is used in SYCON.net to configure and diagnose a netHOST device.

If you are using the **NHST-T100-EN** (which is shipped without pre-installed firmware), you will here find instructions on how to install the firmware with SYCON.net.

The testing of reading and writing of Fieldbus or Real-Time Ethernet data via the netHOST is also described in this document. For this, the **netHOST Device Test Application** running on a Windows PC is being used.

How to update firmware and how to use an SD Memory Card to copy configuration data of the netHOST is also described here.

1.1.2 List of Revisions

Index	Date	Chapter	Revisions
1	2013-08-05	All	Created
2	2014-12-05	Title	Title of document changed from "*Configuration of Fieldbus Devices with Remote Access*" to „*Configuration of LAN controlled master devices*".
		All	Document completely revised, netHOST devices for Real-Time Ethernet added.
3	2015-07-13	All 6	Document revised, netHOST device NHST-T100-EN added. Chapter *NHST-T100-EN: Downloading Firmware to the Device with SYCON.net* added.
4	2015-07-22	1.1.4.1	Firmware version in section *Hardware and firmware* updated to version ≥ v1.7
5	2017-02-27	3.2	Section *System Requirements PC/Notebook*, Internet access added, Windows 8.1 and Windwos 10 added.

Table 1: List of Revisions

1.1.3 Conventions in this Manual

Notes, operation instructions and results of operation steps are marked as follows:

Notes

Important: <important note you must follow to avoid malfunction>

Note: <general note>

<note, where to find further information>

Operation Instructions

1. <instruction>
2. <instruction>

or

➢ <instruction>

Results

⇨ <result>

1.1.4 Reference to Devices, Firmware and Software Versions

1.1.4.1 Hardware and firmware

This document relates to the following versions of hardware and firmware:

Devices with preloaded firmware

netHOST device preloaded with firmware	Order no.	Hardware revision	Protocol	Firmware file	Firmware version
NHST-T100-DP/DPM	1890.410/DPM	4	PROFIBUS DP Master	FT20V010.NXF	1.7.x.x
NHST-T100-CO/COM	1890.500/COM	4	CANopen Master	FT20V040.NXF	1.7.x.x
NHST-T100-DN/DNM	1890.510/DNM	4	DeviceNet Master	FT20V060.NXF	1.7.x.x
NHST-T100-EN/PNM	1890.840/PNM	2	PROFINET IO Controller	FT20C0V0.NXF	1.7.x.x
NHST-T100-EN/ECM	1890.110/ECM	2	EtherCAT Master	FT20E0V0.NXF	1.7.x.x
NHST-T100-EN/EIM	1890.820/EIM	2	EtherNet/IP Scanner	FT20G0V0.NXF	1.7.x.x

Table 2: Reference to devices with preloaded firmware

Device for loadable firmware

(Firmware not loaded in state of delivery of device)

netHOST device for loadable firmware	Order no.	Hardware revision	Supported protocols	Loadable firmware file	Firmware version
NHST-T100-EN	1890.800	2	PROFINET IO Controller	FT20C0V0.NXF	1.7.x.x
			EtherCAT Master	FT20E0V0.NXF	1.7.x.x
			EtherNet/IP Scanner	FT20G0V0.NXF	1.7.x.x

Table 3: Reference to devices for loadable firmware

Note: The device For acting as master device, the **NHST-T100-EN** requires the **NXLIC-Master** license (order no.: **8211.000**). Make sure to order the NHST-T100-EN device together with the master license, so that it will be delivered with the license already loaded.

If necessary, a master license can also be ordered and installed belatedly; instructions for this are provided in section *Ordering and Downloading License to NHST-T100-EN with SYCON.net* on page 36).

1.1.4.2 Software

This document refers to the following software versions:

Software	Version	File name	Path on netHOST Solutions DVD
SYCON.net	1.380.x.x	SYCONnet netX setup.exe	`Setups & Drivers\SYCON.net`
Ethernet Device Configuration Tool	1.501.x.x	EnDevConfigTool.msi	`Setups & Drivers\Ethernet Device Setup Utility`
netHOST Device Test Application	1.0.x.x	netHOST.exe	`Setups & Drivers\netHOST Test`

Table 4: Software

1.2 Documentation Overview

This section lists documents that are relevant to the user of the netHOST device.

Note, that the netHOST Solutions DVD also provides special documentation for developers in the `Documentation\english\3.For Programmers` directory. These special documents are not listed in this section.

1.2.1 Basic documents

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *Configuration of LAN controlled master devices – netHOST* **(this document)**	Configuring, testing, diagnosing and updating firmware of the netHOST devices	DOC130402OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Configuration of netHOST-Devices OI xx EN.pdf`
User Manual *netHOST NHST-T100 – LAN controlled master devices for Fieldbus and Real-Time Ethernet Systems*	Installation, commissioning and hardware description of the netHOST devices	DOC130401UMxxEN	`Documentation\english\2.Hardware\netHOST, Model NHST-T100-xx\netHOST NHST-T100 – Remote Fieldbus Device UM xx EN.pdf`
User Manual *Software Installation netHOST Devices*	Instructions for installing the netHOST software	DOC130501UMxxEN	`Documentation\english\4.Installation Instructions\netHOST - Software Installation UM XX EN.pdf`
User Manual *Wiring Instructions*	Wiring instructions (cable characteristics) for fieldbus protocols	DOC120208UMxxEN	`Documentation\english\4.Installation Instructions\Wiring Instructions UM XX EN.pdf`
Operating Instruction Manual *Ethernet Device Configuration*	Instruction on how to assign an IP address to Hilscher devices	DOC050402OIxxEN	`Documentation\english\1.Software\Ethernet Device Setup Utility\Ethernet Device Configuration OI XX EN.pdf`

Table 5: Basic Documentation for netHOST

1.2.2 Protocol-specific Documents

netHOST as PROFIBUS DP Master

You also need the following documents if you are using an **NHST-T100-DP/DPM** netHOST device:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for Hilscher-PROFIBUS DP Master Devices*	Description of the device type manager for PROFIBUS DP master devices	DOC070401OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFIBUS DP Master\PROFIBUS DP Master DTM OI xx EN.pdf`
Operating Instruction Manual *Generic Slave DTM for PROFIBUS DP Slave Devices*	Description of the device type manager for generic PROFIBUS DP slave devices	DOC031001OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFIBUS DP Master\Slave Configuration\PROFIBUS DP Generic Slave DTM OI xx EN.pdf`

Table 6: Additional Documentation for netHOST as PROFIBUS DP Master

netHOST as CANopen Master

You also need the following documents if you are using an **NHST-T100-CO/COM** netHOST device:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for Hilscher-CANopen Master Devices*	Description of the device type manager for CANopen master devices	DOC070402OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\CANopen Master\CANopen Master DTM OI xx EN.pdf`
Operating Instruction Manual *Generic Slave DTM for CANopen Slave Devices*	Description of the device type manager for generic CANopen slave devices	DOC060203OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\CANopen Master\Slave Configuration\CANopen Generic Slave DTM OI xx EN.pdf`

Table 7: Additional Documentation for netHOST as CANopen Master

netHOST as DeviceNet Master

You also need the following documents if you are using an **NHST-T100-DN/DNM** netHOST device:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for Hilscher-DeviceNet Master Devices*	Description of the device type manager for DeviceNet master devices	DOC070403OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\DeviceNet Master\DeviceNet Master DTM OI xx EN.pdf`
Operating Instruction Manual *Generic Slave DTM for DeviceNet Slave Devices*	Description of the device type manager for generic DeviceNet slave devices	DOC041201OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\DeviceNet Master\Slave Configuration\DeviceNet Generic Slave DTM OI xx EN.pdf`

Table 8: Additional Documentation for netHOST as DeviceNet Master

netHOST as PROFINET IO Controller

You also need the following documents if you are using an **NHST-T100-EN/PNM**, respectively **NHST-T100-EN** device with loaded PROFINET IO Controller firmware:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for Hilscher-PROFINET IO-Controller Devices*	Description of the device type manager for PROFINET IO Controller devices	DOC060302OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFINET IO Controller\PROFINET IO Controller DTM OI xx EN.pdf`
Operating Instruction Manual *Generic DTM for PROFINET IO Devices*	Description of the device type manager for generic PROFINET IO devices	DOC060305OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFINET IO Controller\IO Device Configuration\PROFINET IO Generic Device DTM OI xx EN.pdf`

Table 9: Additional Documentation for netHOST as PROFINET IO Controller

netHOST as EtherCAT Master

You also need the following documents if you are using an **NHST-T100-EN/ECM**, respectively **NHST-T100-EN** device with loaded EtherCAT Master firmware:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for Hilscher EtherCAT Master Device*	Description of the device type manager for EtherCAT Master devices	DOC080404OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherCAT Master\EtherCAT Master DTM OI xx EN.pdf`
Operating Instruction Manual *Generic Slave DTM for EtherCAT Slave Devices*	Description of the device type manager for generic EtherCAT slave devices	DOC071202OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherCAT Master\Slave Configuration\EtherCAT Generic Slave DTM OI xx EN.pdf`
User Manual *Wiring Instructions EtherCAT*	Wiring instructions for EtherCAT networks	DOC121104UMxxEN	`Documentation\english\4.Installation Instructions\ Wiring Instructions UM xx EN.pdf`

Table 10: Additional Documentation for netHOST as EtherCAT Master

netHOST as EtherNet/IP Scanner

You also need the following documents if you are using an **NHST-T100-EN/EIM**, respectively **NHST-T100-EN** device with loaded EtherNet/IP Scanner firmware:

Title	Contents	Document ID	Path on the netHOST Solutions DVD
Operating Instruction Manual *DTM for EtherNet/IP Scanner Devices*	Description of the device type manager for EtherNet/IP Scanner devices	DOC061201OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherNetIP Scanner\EtherNetIP Scanner DTM OI xx EN.pdf`
Operating Instruction Manual *Generic, Modular Generic DTM from EDS File for non-modular and modular EtherNet/IP Adapter Devices*	Description of the generic, modular generic device type manager from EDS file for non-modular EtherNet/IP Adapter devices and modular EtherNet/IP Adapter devices	DOC100221OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherNetIP Scanner\Adapter Configuration\EtherNetIP Generic Adapter DTM EDS OI xx EN.pdf`
Operating Instruction Manual *Generic DTM for EtherNet/IP Adapter Devices and Modular Generic DTM for modular EtherNet/IP Adapter Devices*	Description of the generic device type manager for EtherNet/IP Adapter devices and modular EtherNet/IP Adapter devices	DOC070203OIxxEN	`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherNetIP Scanner\Adapter Configuration\EtherNetIP Generic Adapter DTM OI xx EN.pdf`

Table 11: Additional Documentation for netHOST as EtherNet/IP Scanner

1.2.3 Online Help

The SYCON.net configuration software provides an online help.

- To open the online help of the SYCON.net netFrame application, choose **Help** > **Content and Index** in the menu bar of SYCON.net or press **F1** key on your keyboard.
- If you have opened a netHOST configuration dialog in SYCON.net (i. e. if you have opened the netHOST DTM), you can call-up a context-sensitive online help (featuring parts of this operating manual) by clicking the **Help** button in the dialog window or by pressing the **F1** key on your keyboard.

1.3 Legal Notes

Important notes

Utmost care was/is given in the preparation of the documentation at hand consisting of a user's manual, operating manual and any other document type and accompanying texts. However, errors cannot be ruled out. Therefore, we cannot assume any guarantee or legal responsibility for erroneous information or liability of any kind. You are hereby made aware that descriptions found in the user's manual, the accompanying texts and the documentation neither represent a guarantee nor any indication on proper use as stipulated in the agreement or a promised attribute. It cannot be ruled out that the user's manual, the accompanying texts and the documentation do not completely match the described attributes, standards or any other data for the delivered product. A warranty or guarantee with respect to the correctness or accuracy of the information is not assumed.

We reserve the right to modify our products and the specifications for such as well as the corresponding documentation in the form of a user's manual, operating manual and/or any other document types and accompanying texts at any time and without notice without being required to notify of said modification. Changes shall be taken into account in future manuals and do not represent an obligation of any kind, in particular there shall be no right to have delivered documents revised. The manual delivered with the product shall apply.

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The hardware and/or software was created and tested by Hilscher Gesellschaft für Systemautomation mbH with utmost care and is made available as is. No warranty can be assumed for the performance or flawlessness of the hardware and/or software under all application conditions and scenarios and the work results achieved by the user when using the hardware and/or software. Liability for any damage that may have

occurred as a result of using the hardware and/or software or the corresponding documents shall be limited to an event involving willful intent or a grossly negligent violation of a fundamental contractual obligation. However, the right to assert damages due to a violation of a fundamental contractual obligation shall be limited to contract-typical foreseeable damage.

It is hereby expressly agreed upon in particular that any use or utilization of the hardware and/or software in connection with

- Flight control systems in aviation and aerospace;
- Nuclear fusion processes in nuclear power plants;
- Medical devices used for life support and
- Vehicle control systems used in passenger transport

shall be excluded. Use of the hardware and/or software in any of the following areas is strictly prohibited:

- For military purposes or in weaponry;
- For designing, engineering, maintaining or operating nuclear systems;
- In flight safety systems, aviation and flight telecommunications systems;
- In life-support systems;
- In systems in which any malfunction in the hardware and/or software may result in physical injuries or fatalities.

You are hereby made aware that the hardware and/or software was not created for use in hazardous environments, which require fail-safe control mechanisms. Use of the hardware and/or software in this kind of environment shall be at your own risk; any liability for damage or loss due to impermissible use shall be excluded.

Warranty

Hilscher Gesellschaft für Systemautomation mbH hereby guarantees that the software shall run without errors in accordance with the requirements listed in the specifications and that there were no defects on the date of acceptance. The warranty period shall be 12 months commencing as of the date of acceptance or purchase (with express declaration or implied, by customer's conclusive behavior, e.g. putting into operation permanently).

The warranty obligation for equipment (hardware) we produce is 36 months, calculated as of the date of delivery ex works. The aforementioned provisions shall not apply if longer warranty periods are mandatory by law pursuant to Section 438 (1.2) BGB, Section 479 (1) BGB and Section 634a (1) BGB [Bürgerliches Gesetzbuch; German Civil Code] If, despite of all due care taken, the delivered product should have a defect, which already existed at the time of the transfer of risk, it shall be at our discretion to either repair the product or to deliver a replacement product, subject to timely notification of defect.

The warranty obligation shall not apply if the notification of defect is not asserted promptly, if the purchaser or third party has tampered with the products, if the defect is the result of natural wear, was caused by unfavorable operating conditions or is due to violations against our operating regulations or against rules of good electrical engineering practice, or if our request to return the defective object is not promptly complied with.

Costs of support, maintenance, customization and product care

Please be advised that any subsequent improvement shall only be free of charge if a defect is found. Any form of technical support, maintenance and customization is not a warranty service, but instead shall be charged extra.

Additional guarantees

Although the hardware and software was developed and tested in-depth with greatest care, Hilscher Gesellschaft für Systemautomation mbH shall not assume any guarantee for the suitability thereof for any purpose that was not confirmed in writing. No guarantee can be granted whereby the hardware and software satisfies your requirements, or the use of the hardware and/or software is uninterruptable or the hardware and/or software is fault-free.

It cannot be guaranteed that patents and/or ownership privileges have not been infringed upon or violated or that the products are free from third-party influence. No additional guarantees or promises shall be made as to whether the product is market current, free from deficiency in title, or can be integrated or is usable for specific purposes, unless such guarantees or promises are required under existing law and cannot be restricted.

Confidentiality

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The parties hereby agree to one another that the information that each party receives from the other party respectively is and shall remain the intellectual property of said other party, unless provided for otherwise in a contractual agreement.

The customer must not allow any third party to become knowledgeable of this expertise and shall only provide knowledge thereof to authorized users as appropriate and necessary. Companies associated with the customer shall not be deemed third parties. The customer must obligate authorized users to confidentiality. The customer should only use the confidential information in connection with the performances specified in this agreement.

The customer must not use this confidential information to his own advantage or for his own purposes or rather to the advantage or for the purpose of a third party, nor must it be used for commercial purposes and this confidential information must only be used to the extent provided for in this agreement or otherwise to the extent as expressly authorized by the disclosing party in written form. The customer has the right, subject to the obligation to confidentiality, to disclose the terms and conditions of this agreement directly to his legal and financial consultants as would be required for the customer's normal business operation.

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The delivered product (including technical data) is subject to the legal export and/or import laws as well as any associated regulations of various countries, especially such laws applicable in Germany and in the United States. The products / hardware / software must not be exported into such

countries for which export is prohibited under US American export control laws and its supplementary provisions. You hereby agree to strictly follow the regulations and to yourself be responsible for observing them. You are hereby made aware that you may be required to obtain governmental approval to export, reexport or import the product.

1.4 Registered Trademarks

Adobe Reader® is a registered trademark of the Adobe Systems Incorporated.

CANopen® is a registered trademark of CAN in AUTOMATION - International Users and Manufacturers Group e.V. (CiA), Nürnberg.

DeviceNet™ and EtherNet/IP™ are trademarks of ODVA (Open DeviceNet Vendor Association, Inc).

EtherCAT® is a registered trademark and a patented technology of Beckhoff Automation GmbH, Verl, Germany, formerly Elektro Beckhoff GmbH.

PROFIBUS® and PROFINET® are registered trademarks of PROFIBUS International, Karlsruhe.

Windows® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 8.1 and Windows® 10 are registered trademarks of Microsoft Corporation.

All other mentioned trademarks are property of their respective legal owners.

2 Description

The netHOST device allows you to access data of a fieldbus or Real-Time Ethernet network from your PC, terminal or other host system via TCP/IP (Ethernet LAN). The netHOST device thus serves as a gateway (respectively programming interface) between your PC/terminal/host system and the Fieldbus or Real-Time Ethernet network.
Once configured, the netHOST device operates the Fieldbus or RTE network on its own. An appropriate application program establishes the TCP/IP connection to the device and accesses the data of the secondary network.
Access to the netHOST device takes place according to the “Ethernet Marshalling” procedures, by which locally generated service requests of an initiator (i. e. the host application) are being transmitted to a receiver (i. e. the netHOST device) by an appropriate method (i. e. coded/decoded in Ethernet telegrams). The service requests are then called and executed “by remote” on the netHOST device.

The host system can be based on a Windows operating system, but is, however, not restricted to Windows only. For Windows developers, the netHOST Solutions DVD provides the code with the Ethernet Marshalling function both as C++ source code and as Windows DLL (netXTransport.dll). For developers of embedded systems, the DVD provides a C source code which is independent from any specific type of operating system.

Important: The Ethernet connection to the netHOST device is not protected by password or encryption. Protection against unauthorized access by external networks has to be ensured by using adequate measures !

The following figure illustrates the data flow of “Ethernet Marshalling” with the netHOST:

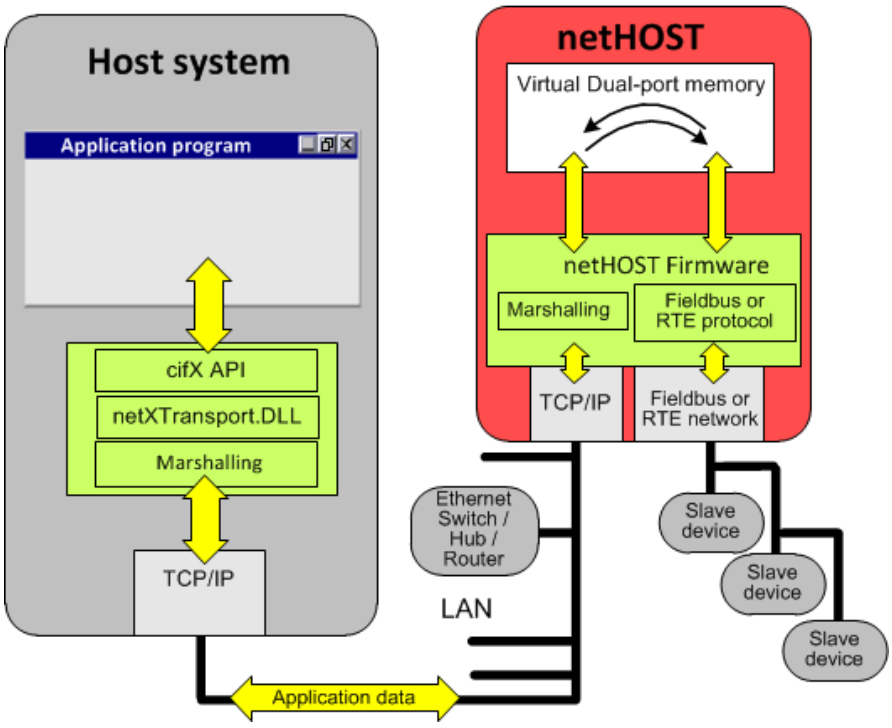


Figure 1: Data Flow of LAN Controlled netHOST Device

3 Requirements for Configuring the netHOST

3.1 Required Software

Software components needed on a PC or host system under Windows to configure or test the netHOST device, or to download/update its firmware, are provided on the netHOST Solutions DVD.

These are:

- **Ethernet Device Configuration Tool**
  This tool is needed to assign a temporary IP address to the netHOST device (by default/factory setting, the IP address of the netHOST is `0.0.0.0`), so that SYCON.net can access the netHOST and download the configuration (and in case of an NHST-T100-EN the initial firmware) via LAN.
  The tool is included in the SYCON.net installation, but can also be installed separately on a Windows PC or notebook. The installation program for separate installation is called *EnDevConfigTool.msi* and can be found in the `Setups & Drivers\Ethernet Device Setup Utility` directory of the netHOST Solutions DVD.
- **SYCON.net**
  To configure the netHOST device, you need to install the configuration and diagnosis software SYCON.net, version 1.360.x.x or higher, on your Windows PC or notebook. From version 1.360.x.x upwards, SYCON.net contains the appropriate Device Type Manager (netHOST-DTM) for configuring and diagnosing the netHOST device.
  You also need SYCON.net in order to download/update firmware files.
  You can start the installation program for SYCON.net in the menu of the start screen of the netHOST Solutions DVD. You can also start the installation by double-clicking the *SYCONnet netX setup.exe* file in the `Setups & Drivers\SYCON.net` directory of the DVD.

Detailed instructions on how to install SYCON.net are provided in the user manual *Software Installation netHOST Devices*, DOC130501UMxxEN.

- **netHOST Device Test Application**
  This application is needed to test the remote access and to read and write data of the secondary network, in case you don't have an own application program for this purpose.
  This application does not need to be installed on your Windows PC or notebook. It can be started by clicking **Run Windows Test Application** in the menu of the start screen of the netHOST Solutions DVD. You can also execute the application by double-clicking the *netHOST.exe* file in the `Setups & Drivers\netHOST Test` directory of the DVD.

- **netXTransport.dll**
  The netXTransport.dll contains the Ethernet Marshalling functionality. It is needed on the Windows PC or accessing host system for communicating with the netHOST device via TCP/IP (Ethernet LAN). The DLL is included in the SYCON.net installation, but can also be installed separately on a Windows PC or notebook. The separate netXTransport.dll for Windows can be found on the netHOST Solutions DVD in the directory
  `Supplements & Examples\netXTransport Protocol DLL – Win32 Test Application with Source Code`

Note: Windows developers will find **C++ source code** containing the Ethernet marshalling functionality in the `Programming & Development\Developing own remote accessing Applications\netXTransport Protocol DLL\Source Codes` directory of the netHOST Solutions DVD.

For host systems not based on Windows, **C source code** containing the Ethernet marshalling functionality is available in the `Programming & Development\Developing own remote accessing Applications\netXTransport Protocol C-Toolkit` directory.

- **USB driver**
  The USB driver is needed on the Windows PC or notebook only in the exceptional case of having to reset the netHOST device to its “factory settings” (firmware recovery via USB). This can be necessary if, e. g., the firmware file of the device is corrupted. When performing a recovery via USB, a fresh firmware file is reloaded into the device with the **ComProX** tool.

Instructions on how to reset the netHOST device to its factory settings can be found in the user manual *netHOST NHST-T100 – LAN controlled master devices for Fieldbus and Real-Time Ethernet systems,* DOC130401UMxxEN, in the *Firmware recovery* chapter.

Instructions on how to install the USB driver under Windows are provided in the user manual *Software Installation netHOST Devices*, DOC130501UMxxEN.

The figure below depicts the interaction of the required software components and the data flow.

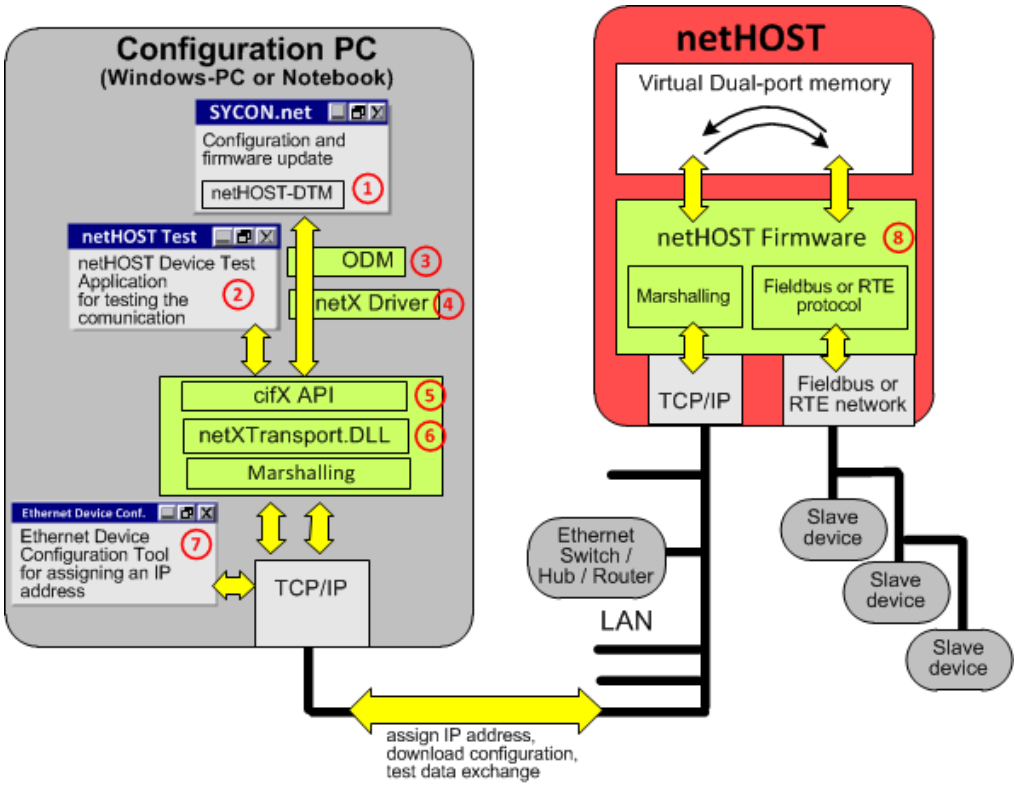


Figure 2: Data Flow and Software Components for Configuration and Testing

1. **SYCON.net with netHOST-DTM**: Configuration, diagnosis and downloading/updating firmware of the netHOST device via TCP/IP.
2. **netHOST Device Test Application**: Allows testing the communication.
3. **Online Data Manager (ODM)**: Connects the application layer (SYCON.net) to the communication layer (netX Driver). The ODM is included in the SYCON.net installation.
4. **netX Driver**: Windows driver for communication between SYCON.net and the netHOST device. The netX Driver is included in the SYCON.net installation.
5. **cifX Application Interface (API)**: Enables an application program to access the fieldbus/RTE network via netHOST.
6. **netXTransport.DLL for Windows**: Integrates the commands of the application program into an Ethernet protocol and sends the data to the netHOST device. Contains the Marshalling function of the host. The DLL is included in the SYCON.net installation, but can also be installed separately.
7. **Ethernet Device Configuration Tool**: Assigns a temporary IP address to the netHOST device. The tool is included in the SYCON.net installation.
8. **netHOST firmware**: Contains the protocol stack and the Marshalling function of the device.

3.2 System Requirements PC/Notebook

For installing and using the SYCON.net configuration software, you need a PC or notebook with:

- PC with 1 GHz processor or higher
- Windows® XP SP3,
  Windows® Vista (32 bit) SP2,
  Windows® 7 (32 bit und 64-Bit) SP1,
  Windows® 8 (32-Bit und 64-Bit),
  Windows® 8.1 (32-Bit und 64-Bit),
  Windows® 10 (32-Bit und 64-Bit)
- Administrator privilege required for installation
- Internet Explorer 5.5 or higher
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse
- Restriction: Touch screen is not supported.

Note: If the project file is used on another PC,

- the other PC must also comply to these system requirements,
- the device description files of the devices used in the project must be imported to the configuration software SYCON.net on the other PC,
- respectively the DTMs of the devices used in the project must be installed on the other PC.

4 Getting Started

netHOST Devices with preloaded firmware

The subsequent table provides an overview of the steps which need to be performed in order to configure and test the netHOST devices

NHST-T100-DP/DPM

NHST-T100-CO/COM

NHST-T100-DN/DNM

NHST-T100-EN/PNM

NHST-T100-EN/ECM

NHST-T100-EN/EIM

#	Step	For details, refer to
1	**Install netHOST** - Mount netHOST device. - Connect the netHOST device to the LAN network (primary network) and the configuration PC. - Connect the netHOST device to the fieldbus or Real-Time Ethernet (secondary network). - Connect the netHOST device to a voltage supply.	User Manual *netHOST NHST-T100 – LAN controlled master devices for Fieldbus and Real-Time Ethernet networks*
2	**Install SYCON.net configuration software on configuration PC.**	User Manual *Software Installation netHOST Devices*
3	**Use Ethernet Device Configuration tool to assign a temporary IP address to the netHOST device.**	Section *Assigning Temporary IP Address to netHOST Device* on page 24
4	**Configure netHOST with SYCON.net.**	Section *Configuring netHOST for Fieldbus Systems with SYCON.net: NHST-T100-DP/DPM Example* on page 49 or section *Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example* on page 64
5	**Test Communication**	Section *Testing Communication of netHOST for Fieldbus: NHST-T100-DP/DPM Example* on page 80 or section *Testing Communication of netHOST for RTE Systems: NHST-T100-EN/PNM Example* on page 86

Table 12: Overview Configuration and Testing of netHOST with Preloaded Firmware

NHST-T100-EN (device without preloaded firmware)

The subsequent table provides an overview of the steps which need to be performed in order to commission, configure and test the **NHST-T100-EN**

#	Step	For details, refer to
1	**Install NHST-T100-EN** - Mount netHOST device. - Connect the netHOST device to the LAN network (primary network) and the configuration PC. - Connect the netHOST device to the fieldbus or Real-Time Ethernet (secondary network). - Connect the netHOST device to a voltage supply.	User Manual *netHOST NHST-T100 – LAN controlled master devices for Fieldbus and Real-Time Ethernet networks*
2	**Install SYCON.net configuration software on configuration PC**	User Manual *Software Installation netHOST Devices*
3	**Use Ethernet Device Configuration tool to assign a temporary IP address to the NHST-T100-EN device**	Section *Assigning Temporary IP Address to netHOST Device* on page 24
4	**Download firmware to NHST-T100-EN device**	Section *NHST-T100-EN: Downloading Firmware to the Device with SYCON.net* on page 27
5	**Configure netHOST with SYCON.net.**	Section *Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example* on page 64
6	**Test Communication**	Section *Testing Communication of netHOST for RTE Systems: NHST-T100-EN/PNM Example* on page 86

Table 13: Overview Configuration and Testing of NHST-T100-EN

5 Assigning Temporary IP Address to netHOST Device

In its state of delivery, the netHOST device has the IP address `0.0.0.0`. Also, the DHCP option (i. e. the option of the netHOST receiving its IP address dynamically from a DHCP server) at first is deactivated by default in the firmware (if required, you can activate the DHCP server option in SYCON.net later). Because the netHOST is configured via Ethernet LAN and SYCON.net, you first need to assign a valid temporary IP address to the netHOST, in order to enable SYCON.net to establish an Ethernet connection to the device in the first place (the initial firmware download for the NHST-T100-EN is also done via Ethernet LAN and SYCON.net and thus also requires the assignment of a tempory IP address). You can use the Hilscher **Ethernet Device Configuration** Tool to assign this temporary IP address from your configuration PC.

The **Ethernet Device Configuration** Tool is described in the operating instructions manual *Ethernet Device Configuration*, DOC050402OIxxEN, which is stored on the netHOST Solutions DVD in the `Documentation\english\1.Software\Ethernet Device Setup Utility` directory.

5.1 Prerequisites

- You have installed the Hilscher **Ethernet Device Configuration** Tool on your configuration PC (is included in the SYCON.net installation).
- The netHOST device is connected to a voltage supply.
- The configuration PC and the netHOST device are connected to the same local Ethernet network.

Note: When using netHOST devices for Fieldbus systems (i. e. NHST-T100-DP/DPM, NHST-T100-CO/COM or NHST-T100-DN/DNM), plug-in the Ethernet LAN cable into one of the two RJ45 sockets on the left side of the device (X2 interface).
When using netHOST devices for RTE systems (i. e. NHST-T100-EN, NHST-T100-EN/PNM, NHST-T100-EN/ECM or NHST-T100-EN/EIM), plug-in the Ethernet LAN cable into the single RJ45 socket on the right side of the device (X3 interface).

5.2 Step-By-Step Instructions

1. Start **Ethernet Device Configuration** tool on your PC.

➢ In the Windows **Start** menu, choose **Start** > **All Programs** > **SYCON.net System Configurator** > **Ethernet Device Setup**.
(If you haven't installed **SYCON.net** on your PC and have installed the **Ethernet Device Configuration** tool separately, then choose **Start** > **All Programs** > **Hilscher GmbH** > **Ethernet Device Configuration** > **Ethernet Device Configuration**.)

↬ The tool starts:

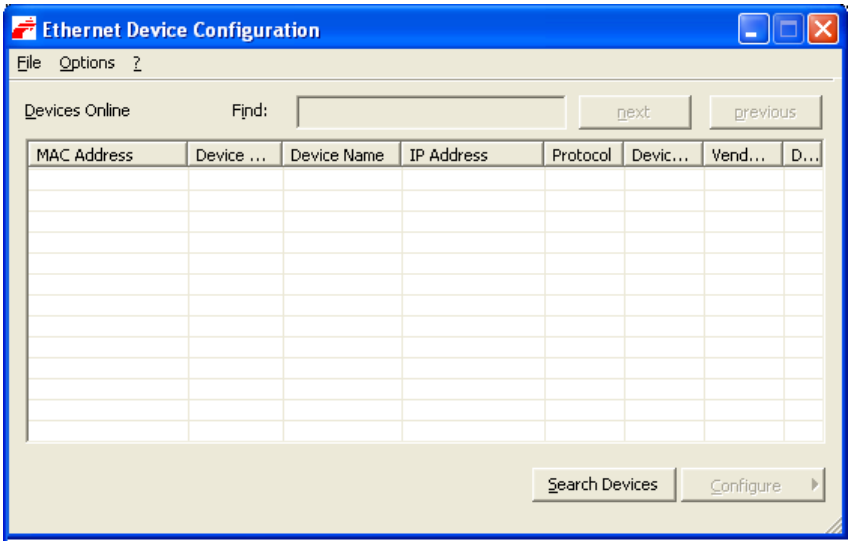


Figure 3: Ethernet Device Configuration Tool (1)

2. Search for Hilscher devices in the IP network.

➢ Click **Search Devices** to identify connected Hilscher devices.

↬ All found devices are listed:

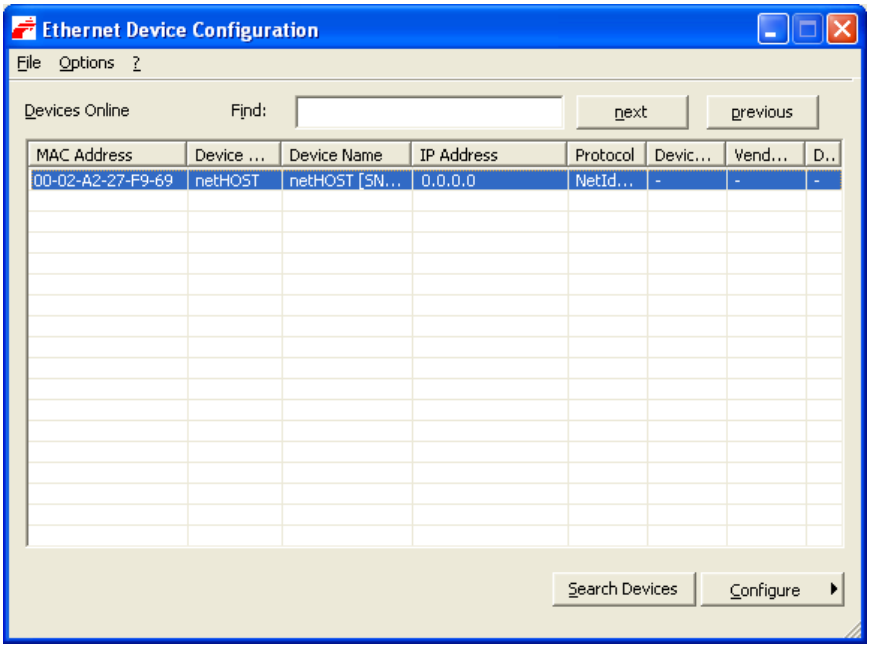


Figure 4: Ethernet Device Configuration Tool (2)

3. Assign IP address.

➢ Select the line featuring the netHOST device.

➢ Click **Configure**, then choose **Set IP Address…** from the menu.

➪ The **IP Configuration** dialog opens:

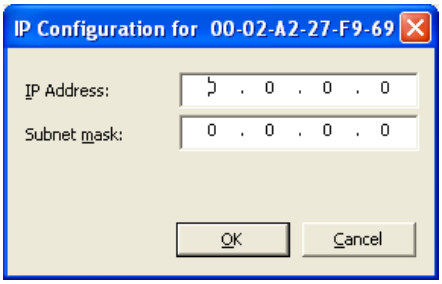


Figure 5: Ethernet Device Configuration Tool (3)

➢ Enter the IP address by which the netHOST device shall be reached in your local IP network. The IP address must be in the same sub net as the later to be used configuration PC.

➢ Click **OK**.

➪ The netHOST device receives the entered IP address.

Note: The IP address assigned by the **Ethernet Device Configuration Tool** is kept by the netHOST device only until next power-on cycle or device reset, or until a permanent IP address has been configured and downloaded with SYCON.net.

6 NHST-T100-EN: Downloading Firmware to the Device with SYCON.net

This chapter is relevant only to users of the **NHST-T100-EN** device (order no.: 1890.800), which – unlike all other netHOST devices – is shipped with its firmware not yet loaded. The user thus has to perform the download of the firmware file himself.
One of the following master protocols can be loaded to the **NHST-T100-EN**:

Supported protocol	Loadable firmware file
PROFINET IO Controller	FT20C0V0.NXF
EtherCAT Master	FT20E0V0.NXF
EtherNet/IP Scanner	FT20G0V0.NXF

Table 14: Loadable firmware for NHST-T100-EN

The firmware files are stored on the product DVD in the `Firmware\netHOST` folder.

A netHOST acting as master device requires the **NXLIC-Master** license. If you have ordered the **NHST-T100-EN** device together with the **NXLIC-Master** license (order no. **8211.000**), the device was delivered with an already installed and activated master license, and you therefore only have to download the desired firmware file.
If your **NHST-T100-EN** device is not yet equipped with the master license for any reason, you can use **SYCON.net** to order the license from Hilscher and then download the license to the device. Instructions for this are provided in section *Ordering and Downloading License to NHST-T100-EN with SYCON.net* on page 36). Note that you have to download the firmware first.

The following section describes how to download the PROFINET IO Controller firmware to the **NHST-T100-EN** device. The procedure for the EtherCAT master and EtherNet/IP Scanner firmware is the same.

6.1 Prerequisites

- You have installed **SYCON.net** on your configuration PC.
- You have inserted the netHOST Solutions DVD into your local DVD drive or have access to the firmware file intended for download (e. g. you have stored the file on your configuration PC).
- The configuration PC and the NHST-T100-EN device are connected to the same local Ethernet network.
- The NHST-T100-EN device is connected to a voltage supply.
- You have assigned a suitable temporary IP address to the netHOST device (see section *Assigning Temporary IP Address to netHOST Device* on page 24).

6.2 Step-By-Step Instructions

1. Start **SYCON.net** configuration software.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

➢ A login dialog appears:

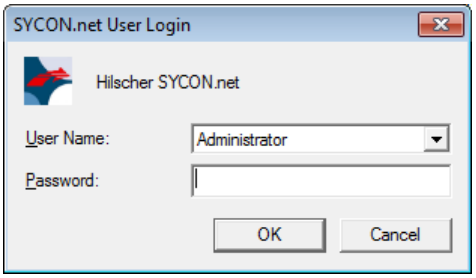


Figure 6: SYCON.net Login

➢ Enter your password, then click **OK**.

➢ SYCON.net opens with a new empty project:

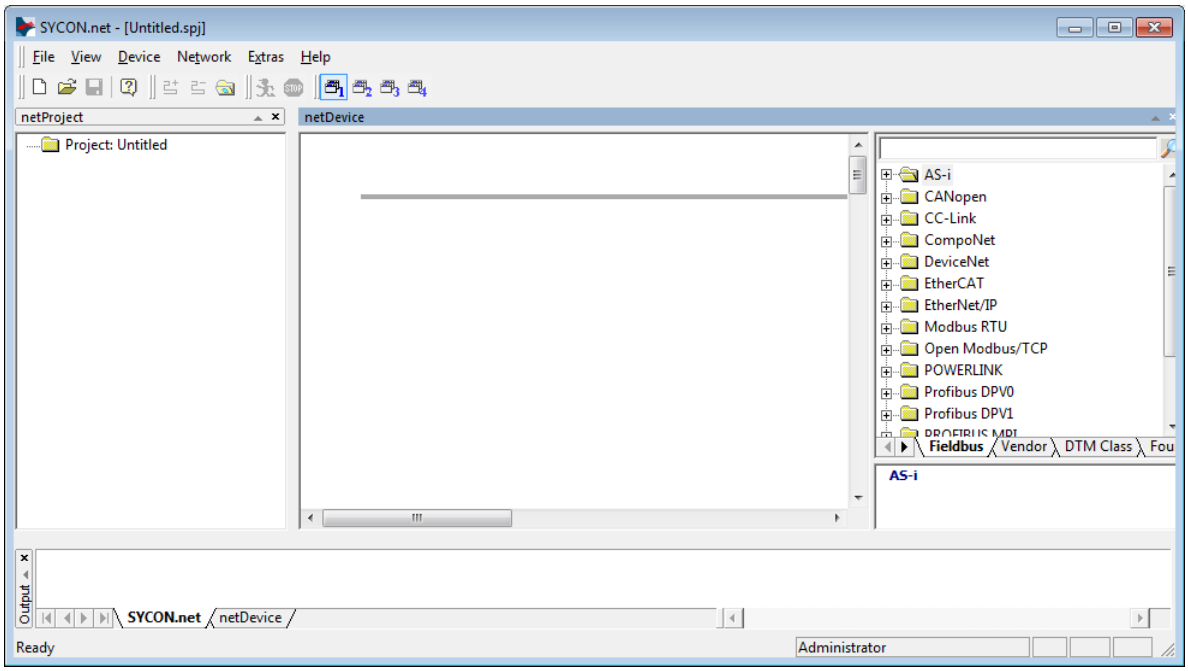


Figure 7: Empty Project in SYCON.net

2. Create a new project.

➢ In the **Vendor** tab of the **Device Catalog** (right window), open folder **Hilscher GmbH** > **Master**. Then select the netHOST DTM symbol corresponding to the protocol of your firmware and drag & drop it onto the bus configuration line in the middle window.

Use the following netHOST-DTMs:

for PROFINET IO Controller: **NHST-T100-EN/PNM**
for EtherCAT Master: **NHST-T100-EN/ECM**
for EtherNet/IP Scanner: **NHST-T100-EN/EIM**

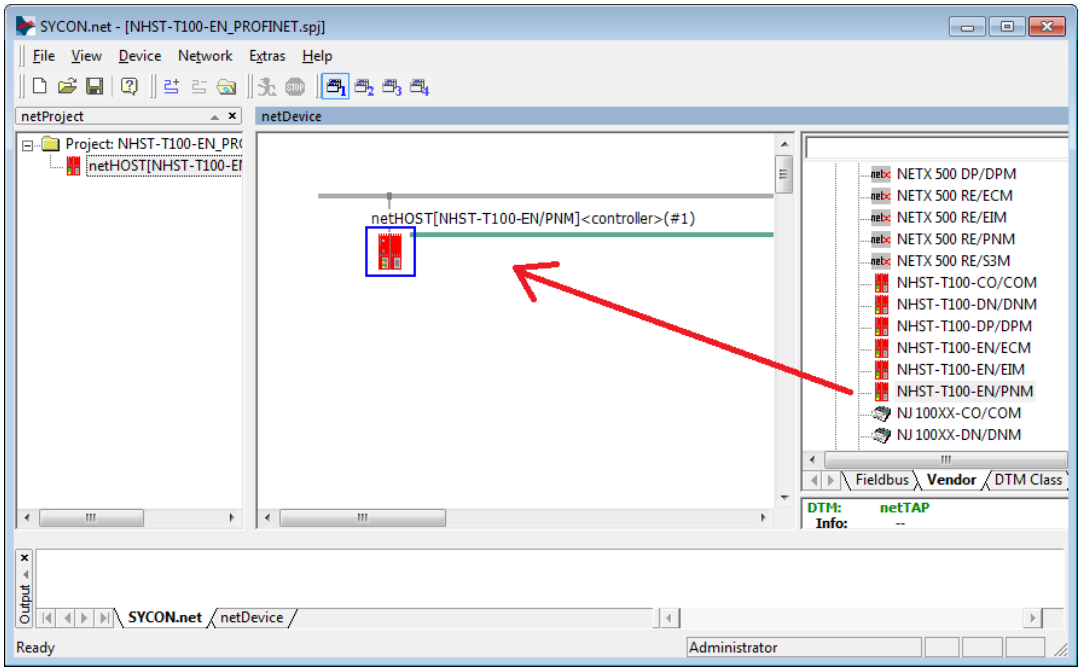


Figure 8: Select NHST-T100-EN DTM

3. Open the netHOST configuration window (i. e. the netHOST DTM).

➢ Double-click the netHOST symbol in the bus configuration line, or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

➧ The netHOST DTM opens with the **Device Assignment** dialog window. SYCON.net automatically starts to search for connected devices.

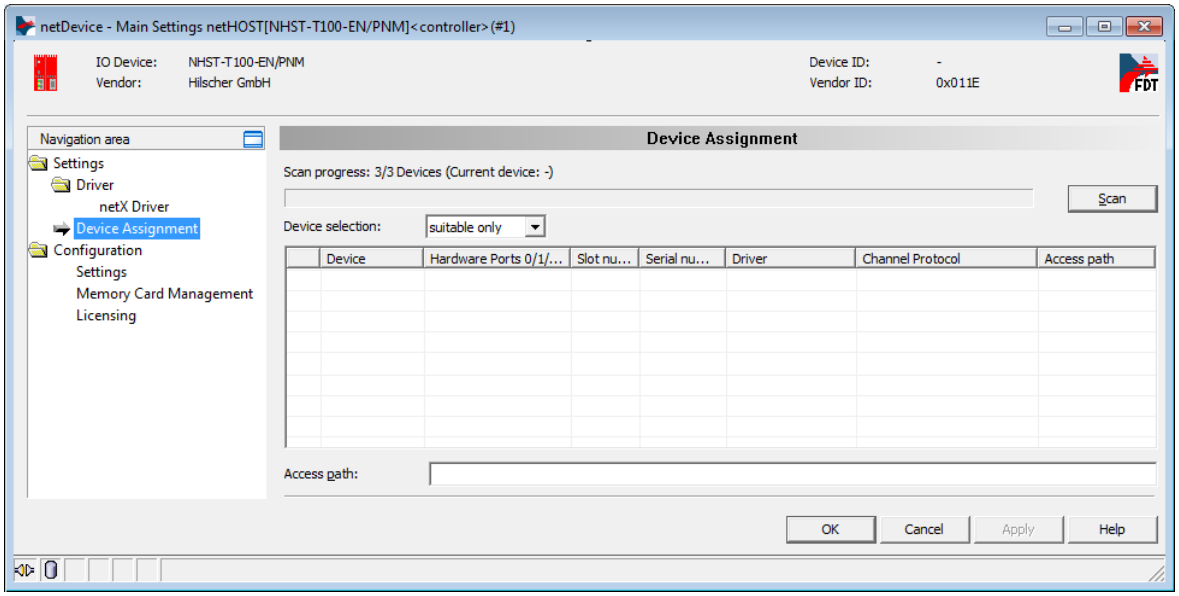


Figure 9: Scanning for Devices in SYCON.net

➧ Because the netX Driver (which enables the Ethernet LAN connection to the netHOST device) is not yet acquainted with the IP address of the device, the netHOST is not found for the time being. You therefore first have to enter the IP address in the driver configuration dialog.

4. Select driver.

➢ In the **Navigation Area**, select **Settings** > **Driver**.

➧ The **Driver** dialog window opens. It lists all available drivers:

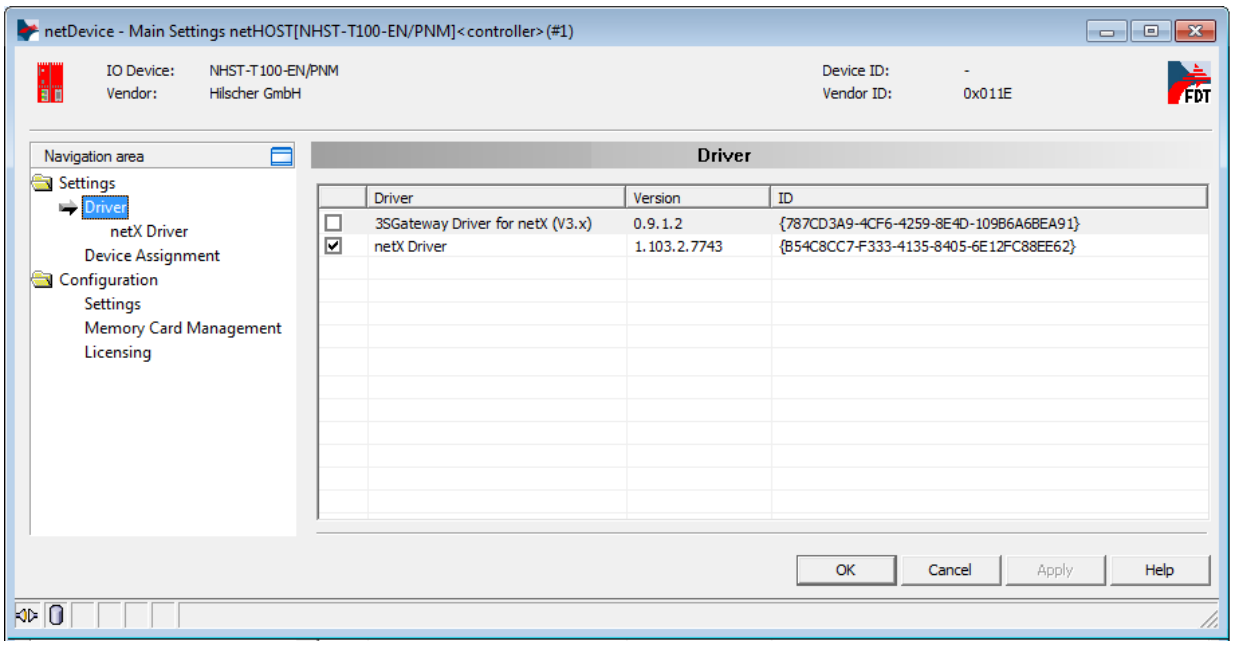


Figure 10: Select Driver

➢ Make sure the **netX Driver** is selected (check box must be activated).

Note: In the netHOST DTM, the netX Driver usually is already selected by default. If this is not the case, activate the check box in front of the netX driver.

➢ Click **OK** or **Apply**.

5. Set IP address of netHOST in netX Driver.

➢ In the **Navigation Area**, select **Settings** > **Driver** > **netX Driver**.

↬ The **netX Driver** dialog window opens.

➢ Select **TCP Connection** tab:

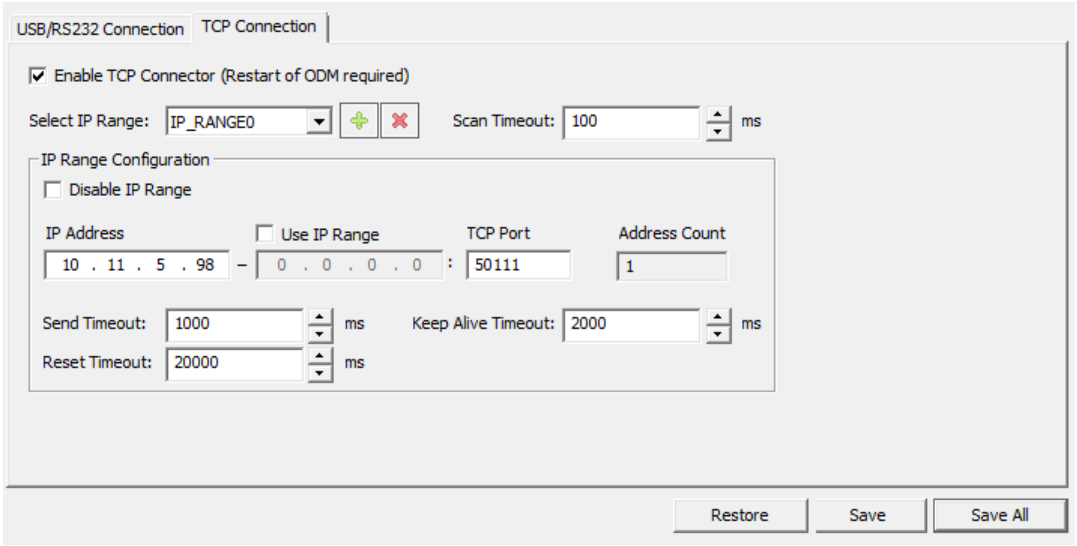


Figure 11: Set IP Address in netX Driver

➢ Make sure the **Enable TCP Connector** option is selected (check box must be activated).

➢ Click on button next to the **Select IP Range** drop-down list.

➢ In the **IP Address** field, enter the IP address which you have assigned to the netHOST device with the **Ethernet Device Configuration** Tool (see *Assigning Temporary IP Address to netHOST Device* section on page 24).

Note: You will find a detailed description of this dialog in the *netX Driver Dialog Window* section on page 114.

➢ Click **Save**.

6. Assign netHOST device.

➢ In the Navigation Area, select **Settings** > **Device Assignment**.

➧ The **Device Assignment** dialog window opens.

➢ In the **Device selection** drop-down list, choose **suitable only** entry.

➢ Click **Scan**.

➧ If all prerequisites are fulfilled (see *Prerequisites* section on page 49) and the IP address has been properly set in the netX Driver, the NHST-T100-EN device will now be found and displayed in the list.

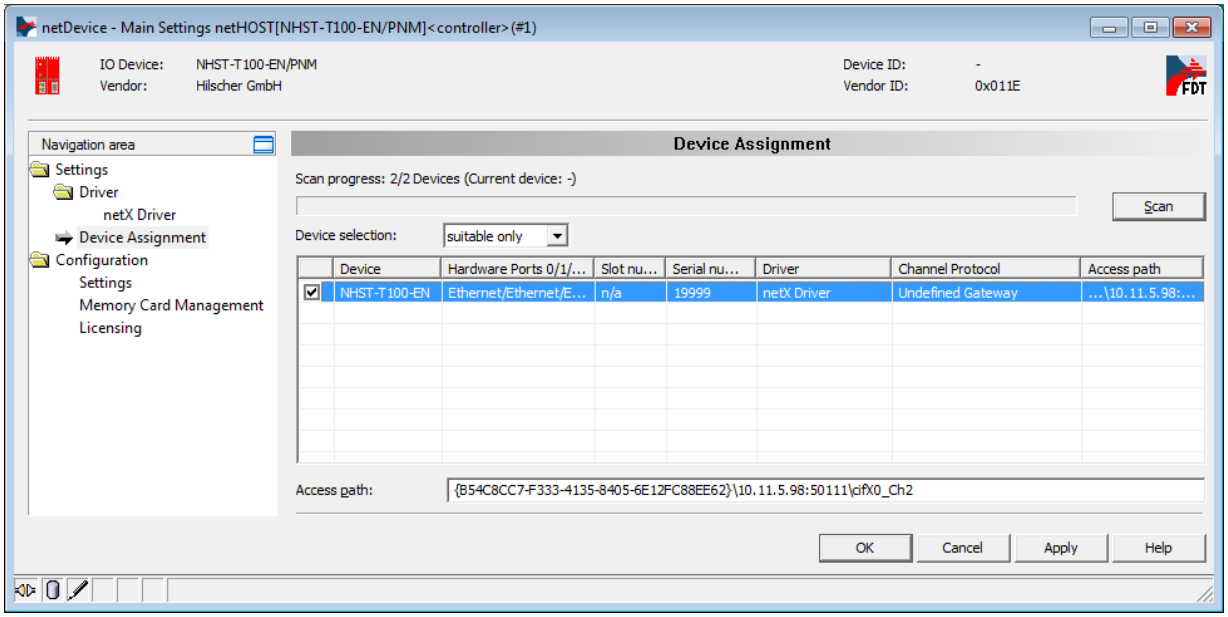


Figure 12: Select Device

➢ Activate the check box in front of the netHOST device.

➢ Click **Apply**.

7. Browse for firmware.

➢ In the **Navigation Area**, select **Configuration** > **Settings**.

➧ The **Settings** dialog window opens:

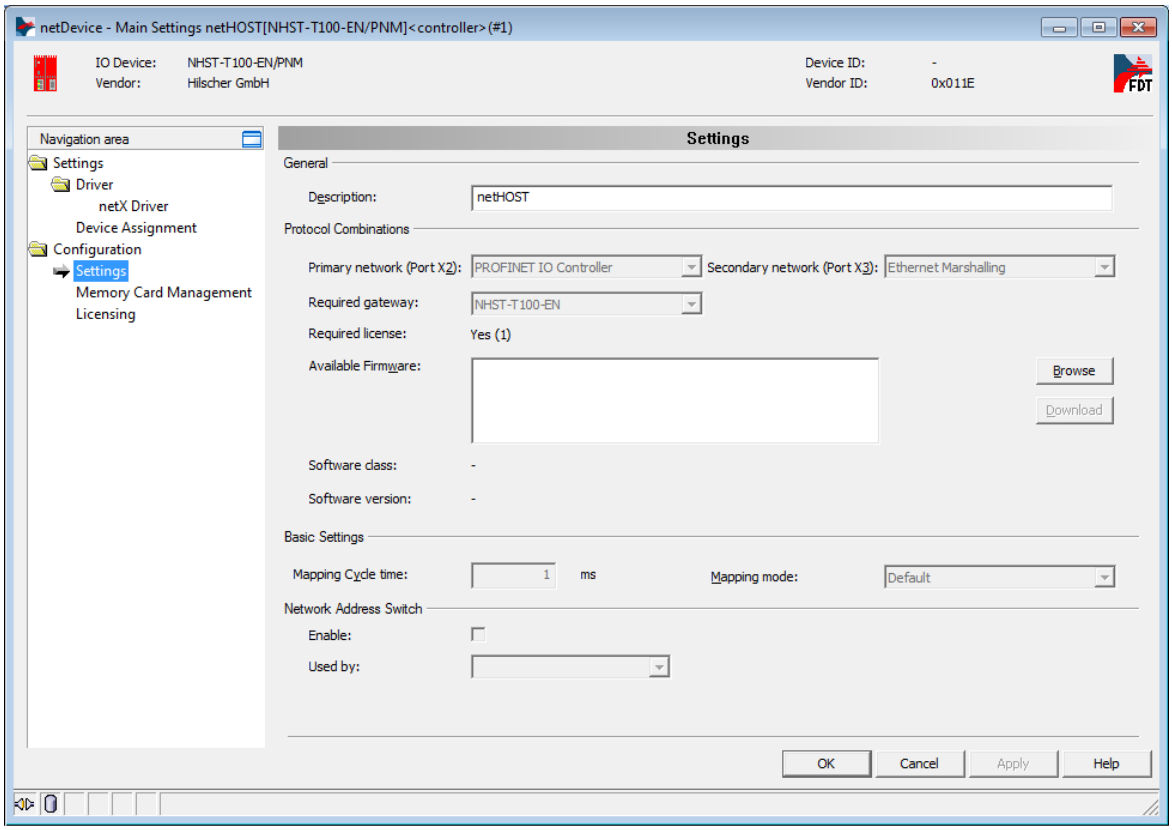


Figure 13: Settings Dialog

➢ Click **Browse** button next to the **Available Firmware** field in order to search for the appropriate firmware file.

➧ The **Select Firmware File** dialog opens:

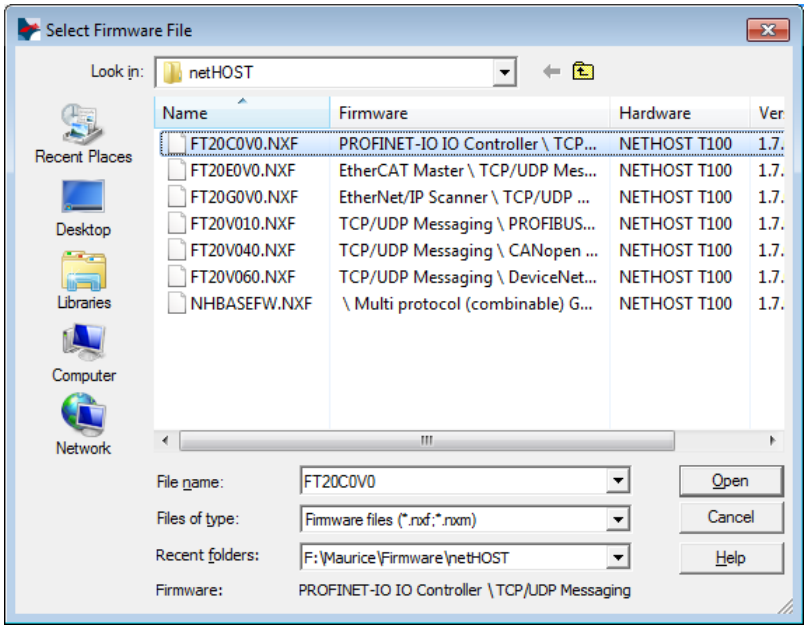


Figure 14: Select Firmware File Dialog in SYCON.net

➢ Navigate to the directory where the firmware file is stored. Firmware files are stored on the netHOST Solutions DVD in the `Firmware\netHOST` directory.
The subsequent table indicates which file belongs to which protocol:

Protocol	Firmware file
PROFINET IO Controller	FT20C0V0.NXF
EtherCAT Master	FT20E0V0.NXF
EtherNet/IP Scanner	FT20G0V0.NXF

Table 15: Protocol/Firmware for NHST-T100-EN

➢ Select the appropriate firmware file, then click **Open**.

➢ Back in the **Settings** dialog window, the selected firmware file is now displayed in the **Available Firmware** field:

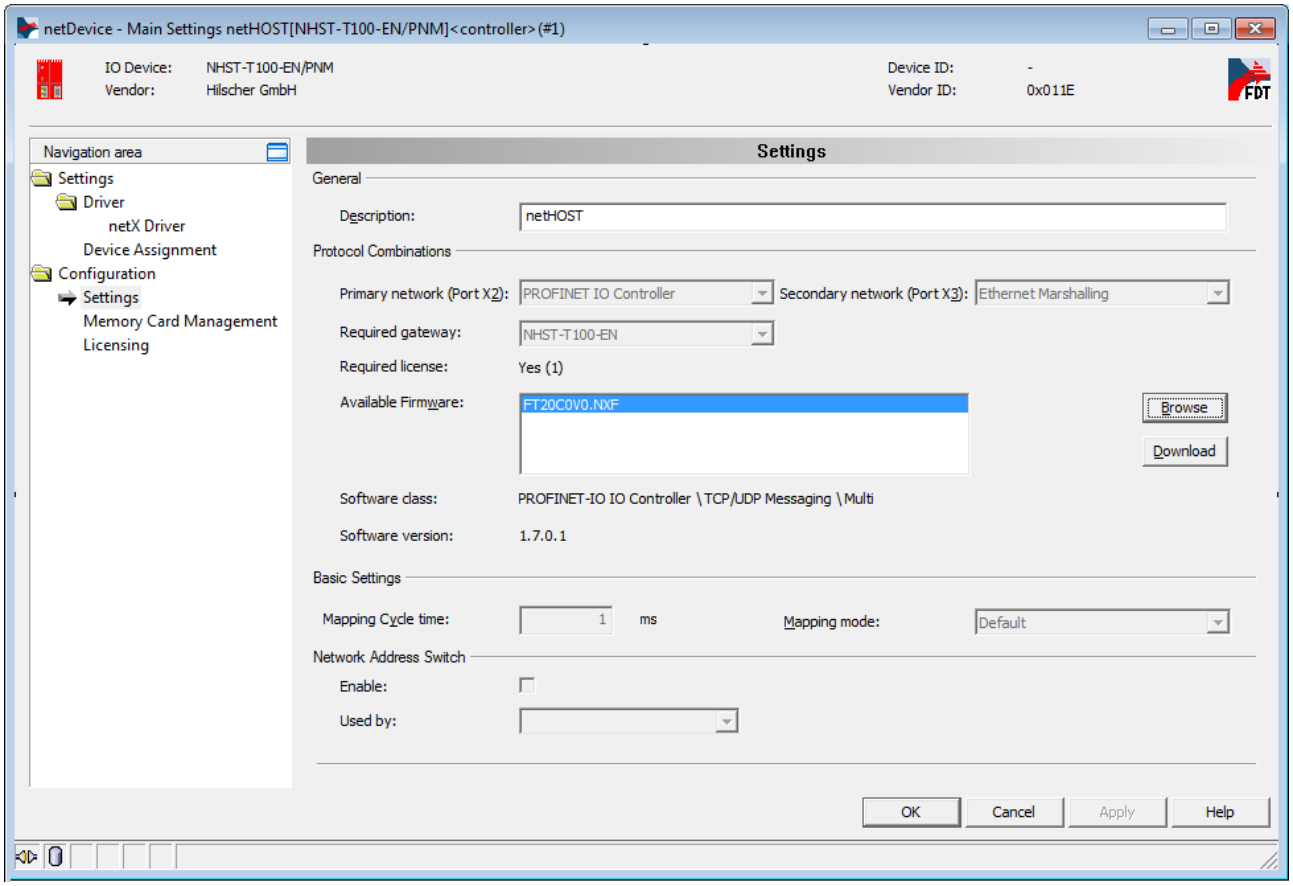


Figure 15: Firmware Download in SYCON.net

8. Download firmware to netHOST device.

➢ In the **Available Firmware** field, select the firmware file.

➢ Class and version of the software are displayed.

➢ Check whether you have selected the appropriate firmware file.

NOTICE

Hazard of device damage by disruption of voltage supply during firmware update!

Do not interrupt the voltage supply while downloading the firmware to the netHOST. Power failure during a writing process in the file system can cause severe malfunctioning of the device.

➢ If you have selected the appropriate firmware file, click **Download**, to start downloading the file to the netHOST device.

➢ The following security question pops up:

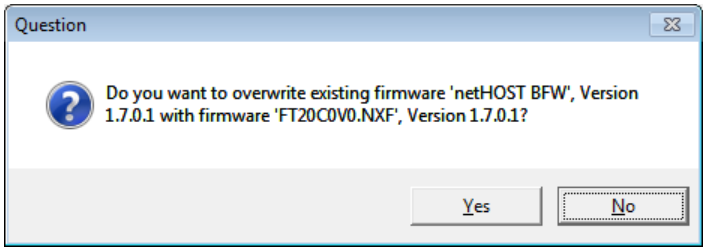


Figure 16: Security Question Firmware Download

Note: The existing firmware **netHOST BFW**, which is to be overwritten, is a so-called “base firmware” which is present in each NHST-T100-EN device in its state of delivery. The purpose of the base firmware is to enable access to the device via LAN and SYCON.net, so that the initial firmware download can be done by the customer. When downloading the “full” firmware, the base firmware is not needed any longer in the device and can thus be overwritten.

➢ The firmware is downloaded to the netHOST.

Note: The temporary IP address assigned to the netHOST device by the **Ethernet Device Configuration** Tool will be erased by the firmware download. The device falls back to its default `0.0.0.0` address, therefore you have to re-assign an IP address to the netHOST afterwards with the **Ethernet Device Configuration** Tool. Instructions for this can be found in the *Assigning Temporary IP Address to netHOST Device* section on page 24.
A permanent IP address can be assigned to the netHOST during configuration of the “Ethernet Marshalling”, see section *Configuring Ethernet Marshalling* on page 70.

➢ To close the netHOST DTM, click **OK** or **Cancel**.

➢ You have downloaded the firmware to the NHST-T100-EN device. If you did order the device together with the **NXLIC-Master** license (this is usually the case), the device was delivered with an activated license, and you can now proceed to configure your device. If your NHST-T100-EN device has not yet been endowed with a master license, you must now proceed to order and download the license as described in the following section.

6.3 Ordering and Downloading License to NHST-T100-EN with SYCON.net

This section describes how to order and download a master license to the **NHST-T100-EN** with SYCON.net. This is only necessary in the unusual case that the device had not been ordered together with an **NXLIC-Master** license, and has thus been delivered without the license already installed.

6.3.1 Prerequisites

- The configuration PC and the NHST-T100-EN device are connected to the same local TCP/IP (Ethernet LAN) network.
- The device is connected to a voltage supply.
- You have successfully downloaded the firmware to the NHST-T100-EN.
- You have re-assigned a suitable temporary IP address to the netHOST device after firmware download (the device loses its temporary IP address after firmware download and subsequent device reset). For instructions, see section *Assigning Temporary IP Address to netHOST Device* on page 24.
- You have opened the SYCON.net project of your NHST-T100-EN device.
- You have access to the internet (for downloading the license file from the Hilscher web site)

6.3.2 Instructions

6.3.2.1 Open License Dialog

1. Open the configuration dialog.

➢ Double-click the netHOST symbol in the bus configuration line, or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

➮ The configuration dialog opens.

2. Open license dialog

➢ Select in the navigation area under the folder **Configuration** the entry **Licensing**.

➮ The license dialog opens.

6.3.2.2 License Dialog

In the **License**[1] pane you can:

- check, which licenses for Master protocols or Utilities are present in the device (Position ① in the figure below),
- order licenses (Positions ② to ⑪),
- transfer licenses to the device ⑫.

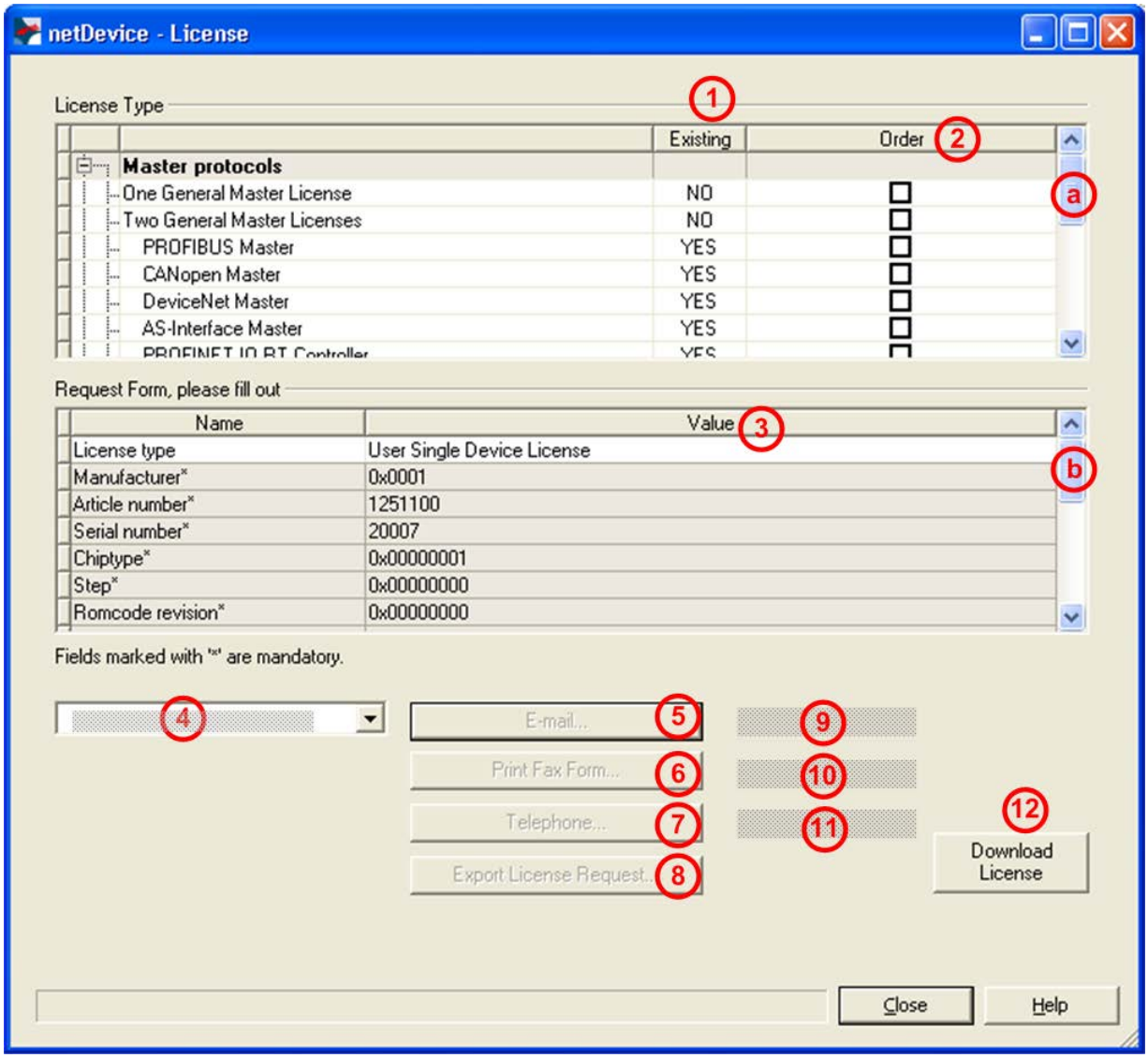


Figure 17: License Pane

Note: To display further entries under **License Type**, move the scroll box ⓐ downwards or upwards. To display further entries under **Request Form, please fill out**, move the scroll box ⓑ downwards or upwards.

1 The title bar contains the notation of the **device description**:
Symbolic Name [Device Description] <Station Address > (#Network ID).

6.3.2.3 Which Licenses are present in the Device?

Check, which licenses are present in the device.

How to proceed:

➢ Open the **License** pane as described under section *Open License Dialog* on page 36.

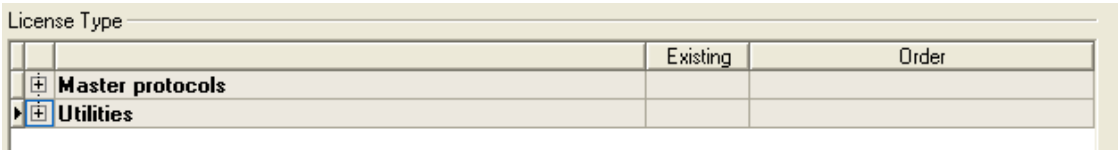


Figure 18: License Pane - License Type

➢ Under **License Type** click ⊞ at **Master protocols**.

➢ The **Master protocols** overview opens:

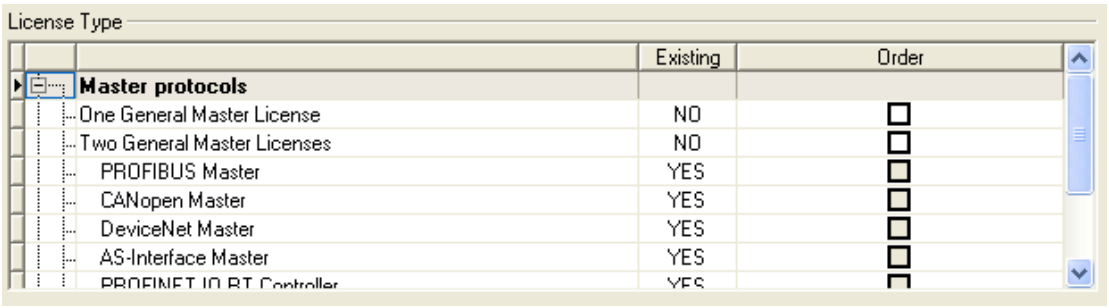


Figure 19: License Pane – License Type / Master protocols

➢ Or click ⊞ at **Utilities**.

➢ The **Utilities** overview opens:

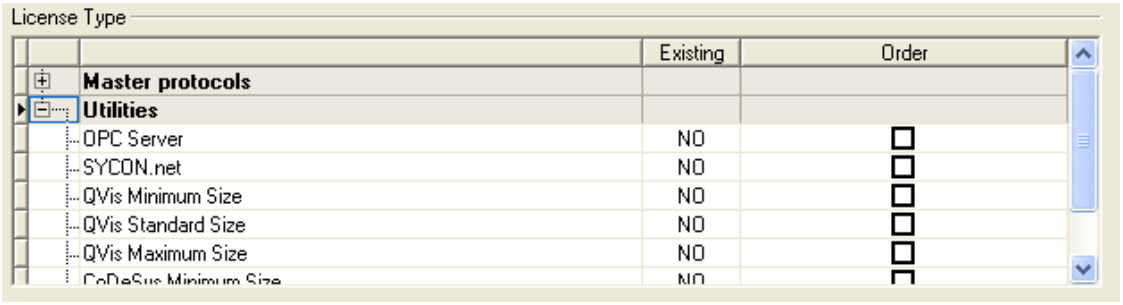


Figure 20: License Pane – License Type / Utilities

➢ The column **Existing** indicates which licenses are present in the device.

Yes = License is present in the device.

No = License is not present in the device.

Note: In newer versions of the present configuration software under **License Type** may be displayed additional licenses or other protocols that can be ordered later.

License for Master Protocols

One General Master License:

On the device maximally 1 communication protocol with master function can be implemented.

Two General Master Licenses:

On the device maximally 2 communication protocols with master function can be implemented.

The license includes the following Master protocols:

- AS-Interface Master
- CANopen Master
- DeviceNet Master
- EtherCat Master
- EtherNet/IP Scanner
- PROFIBUS Master
- PROFINET IO RT Controller
- Sercos Master

License for Utilities

- SYCON.net
- OPC Server
- QVis Minimum Size
- QVis Standard Size
- QVis Maximum Size
- CoDeSys Minimum Size
- CoDeSys Standard Size
- CoDeSys Maximum Size

For the utilities QVis and CoDeSys, only one license each may be chosen alternatively as:

- *Minimum Size*,
- *Standard Size* or
- *Maximum Size*.

6.3.2.4 How to order a License

To order a license, proceed as follows:

		Refer to Section:	*Page*
1.	Open the license dialog.	*Open License Dialog*	36
2.	Select the required licenses.	*Selecting License*	40
3.	Enter the ordering data.	*Ordering Data*	41
4.	Place your order.	*Ordering the License*	43

6.3.2.5 Selecting License(s)

You can select licenses for Master protocols and / or utilities.

1. Selecting license(s) for Master protocol(s):

- Under **License Type** click ⊞ at **Master protocols** in the **License** pane.
- Under **Order** check as many licenses must run simultaneously on your device:
  One General Master License or
  Two General Master Licenses.

2. And/or select license(s) for utility(utilities):

- In the **License** pane under **License Type** click ⊞ at **Utilities**.
- Under **Order** check the required utility(utilities) (*single or several*)[2]:

- SYCON.net
- OPC Server
- QVis Minimum Size*
- QVis Standard Size*
- QVis Maximum Size*
- CoDeSys Minimum Size**
- CoDeSys Standard Size**
- CoDeSys Maximum Size**

2 For *) and **) minimum size, standard size or maximum size can be selected only as an alternative.

6.3.2.6 Ordering Data

1. Device Information

➭ The *Device Information* required for the order are read from the device and automatically filled in the order.

2. Ordering Data

Enter the *Ordering Data* into the **License** pane.

➢ Enter the **Data to manage the Order** (therefore refer to section *Data to manage the Order (License Information)*on page 42).

Device Information (Ordering data read from the Device)

The following ordering data are read from the device and displayed in the **License** pane:

- Manufacturer
- Device number
- Serial number
- Chiptype
- Step (chip revision)
- Romcode revision
- Checksum (checksum of the device data)

➭ The gray fields under **Request Form, please fill out** contain the ordering data read from the device:

Request Form, please fill out

Name	Value
Manufacturer*	0x0001
Article number*	1251100
Serial number*	20007
Chiptype*	0x00000001
Step*	0x00000000
Romcode revision*	0x00000000
Checksum*	G

Fields marked with '*' are mandatory.

Figure 21: License Pane - Request Form, please fill out / Device Information

➭ These ordering data read out from the device are displayed automatically from the device.

Data to manage the Order (License Information)

For your order you must enter the following data to the **License** pane:

1. License Type (User Single Device License).

Figure 22: License Pane - Request Form, please fill out / License Type

➢ Select the license type under **Request Form, please fill out** > **Value**, (for future application, currently only *User Single Device License* can be selected).

2. Mandatory data to the order request (editable fields):

- First Name
- Surname
- E Mail (address, to which the license download link shall be send.)
- Telephone
- Company
- Address
- Country
- City, State, Zip

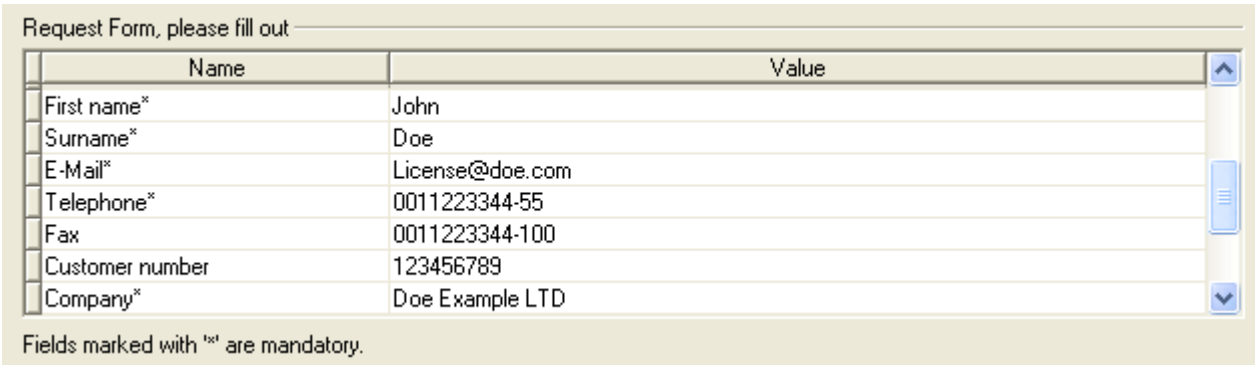


Figure 23: License Pane - Request Form, please fill out / Mandatory data

➢ Enter all mandatory fields under **Request Form, please fill out** > **Value** (marked with*).

3. Additional order data, not mandatory (editable fields):

- Fax
- Customer Number
- Order Number
- Value added tax identification number

➢ Under **Request Form, please fill out** > **Value** enter all fields for the additional data, which are not mandatory.

6.3.2.7 Ordering the License

Place your order in the **License** pane. Therefore:

Figure 24: License Pane – Selecting the Subsidiary / Ordering / Contacts

1. Select the *Subsidiary* (4), to which the order shall be send.
2. Place the order:

	Refer to Section:	*Page*
• by **E-Mail** (5),	*Ordering the License by E Mail*	44
• or by **Fax** (6) or by **Telephone** (7),	*Ordering the License by Fax or by Telephone*	45
• or in a **File** (8).	*Exporting License Request to a File*	47

➪ The **Contact Data** of the selected subsidiary are displayed under Position (9), (10) and (11).

Ordering the License by E Mail

You can place your order by e-mail.

Figure 25: License Pane – placing the order by E-mail

➢ Click **E-mail…** (5).

➢ The order E-mail **License request** opens:

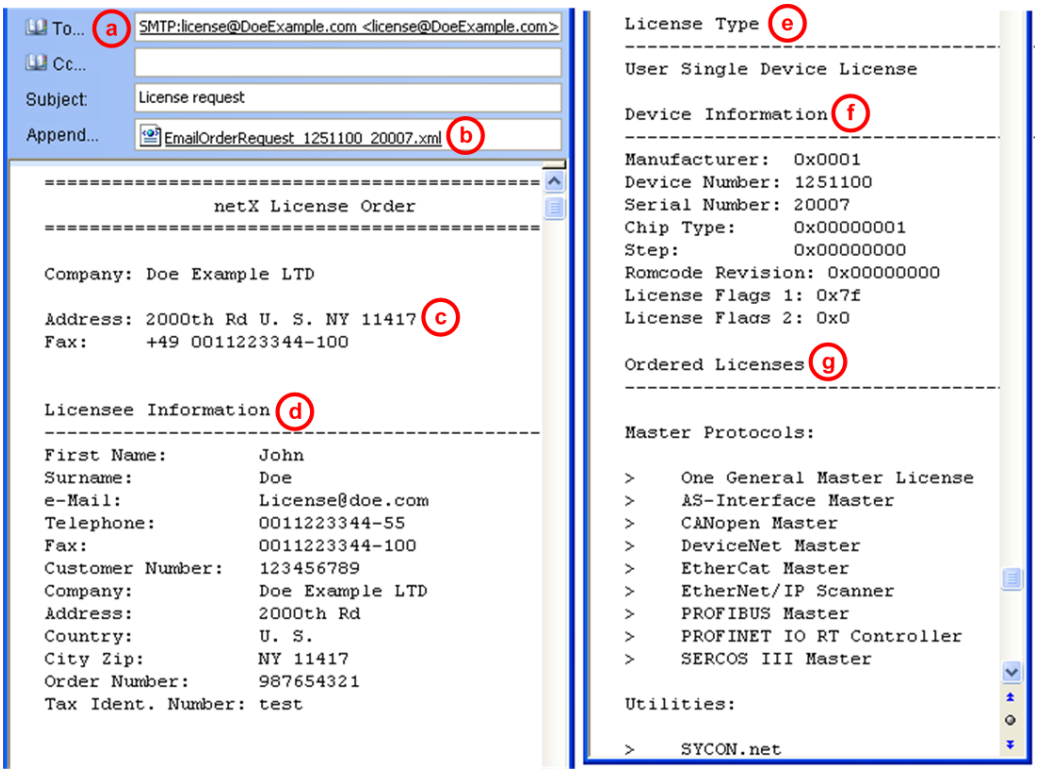


Figure 26: Example: Order E-Mail License request

➢ The order e-mail **License request** contains:

- the **E-mail…** of the selected subsidiary (a),
- the automatically generated **XML file** (b) *EmailOrderRequest_-[Devicenumber]_[Serialnumber].xml* with a summary info of the **order information**,
- the **Order Address** (c),
- the **License Information** (d),
- the **License Type** (e),
- the **Device Data** (f),
- the **ordered Licenses** (g).

➢ Send the order e-mail **License request**.

➢ The order process is complete.

Ordering the License by Fax or by Telephone

You can place your order by Fax or by Telephone.

Figure 27: License Pane - placing the order by Fax or by Telephone

- Click **Print Fax Form** (6) or **Telephone…** (7).
- The summary of the ordering data *PrintOrderRequest_[Devicenumber]_[Serialnumber].html* is opened in a browser window.

Note: If your browser does not display the order data or the window **Move Element** or **Copy Element** are displayed, check the safety settings of your system.

netX License Order Form

Doe Example LTD
2000th Rd
(c)
NY 11417
U. S.
fax: +11223344-100

Licensee Information (d)

First Name:	*John*
Surname:	*Doe*
e-Mail:	*License@doe.com*
Telephone:	*0011223344-55*
Fax:	*0011223344-100*
Customer No:	*123456789*
Company:	*Doe Example LTD*
Address:	*2000th Rd*
Country:	*U. S.*
City Zip:	*NY 11417*
Order Number:	*987654321*
Tax Ident. Number:	*test*

License Type (e)

User Single Device License

Device Information (f)

Manufacturer:	*0x0001*
Device Number:	*1251100*
Serial Number:	*20007*
Chip Type:	*0x00000001*
Step:	*0x00000000*
Romcode Revision:	*0x00000000*
License Flags 1:	*0x7f*
License Flags 2:	*0x0*

Ordered Licenses (g)

Master Protocols
- One General Master License
- Sercos III Master

Utilities
- SYCON.net

Date: _____ Signature: _____

Figure 28: Example: Order Data Form PrintOrderRequest

- The order data form contains:
- the **Order Address** ⓒ,
- the **License Information** ⓓ,
- the **License Type** ⓔ,
- the **Device Data** ⓕ,
- the **ordered Licenses** ⓖ.

➢ Print the order data form, sign it and send it by Fax.

Figure 29: License Pane – Fax Number of the selected Subsidiary

➢ Use the Fax number ⑩, which is displayed after the subsidiary was selected in the **License** pane.

Or:

➢ Keep ready the order data form and communicate the order data via telephone.

Figure 30: License Pane – Telephone Number of the selected Subsidiary

➢ Use the telephone number ⑪, which is displayed after the subsidiary was selected in the **License** pane.

➢ The order process is complete.

6.3.2.8 Exporting License Request to a File

If you are working on a process computer without an e-mail client, you can export your order information to a file, save the file to a removable disk and place your order manually via e-mail from a different PC.

Figure 31: License Pane - Ordering by exported File and E-Mail

- Click **Export License Request…** (8).
- The window **Browse For Folder** is displayed.
- Choose for or create a new folder on a removable disk.
- Save the automatically generated **XML file** *EmailOrderRequest_-[Devicenumber]_[Serialnumber].xml* with a summary info of the **order information** to this folder.
- Send this file from a PC with an e-mail client manually via e-mail.
- Therefore use an e-mail address , which is displayed after the subsidiary was selected in the **License** pane (see Position (9) Figure *License Pane* on page 37).
- The order process is complete.

6.3.2.9 How to get the License and transfer it to the Device

Note: License files can only be delivered via e-mail. The e-mail contains a link to download the license file.

According to the license you ordered, you will receive an e-mail containing a **Link to download the License File**. This leads to a server PC on which the license file is provided. Using the received link you will have to save the license file on your PC and then transfer the license to your device. If your e-mail client is on another PC as your device, you must save your license file e. g. to an USB stick.

Steps how to proceed

1. Save the license file to a PC or a disk.

➢ Click to the **Link to download the License File** in the e-mail.

➢ Save the license file **.nxl* to a PC or a removable disk.

2. Download the license file to the device.

➢ Respectively connect the removable disk with the license file to the PC, which is connected to your device.

➢ Click **Download License** ⑫ in the **License** pane in the configuration software.

Figure 32: License Pane - Download License

↬ The File selection window **Open** is displayed.

➢ Therein select the license file *netX License Files (*.nxl)*.

➢ Click **Open**.

↬ The license file is transferred to the device.

↬ After this the license is present in the device and is activated with the next device reset.

3. Activate Device Reset

Hint: To activate the license in the first device, a device reset is required.

➢ To check whether the license has been activated, follow the steps in section *Which Licenses are present in the Device?* on page 38.

7 Configuring the netHOST Step-By-Step

7.1 Overview

This chapter provides exemplary step-by-step instructions on how to configure a NHST-T100-DP/DPM netHOST as PROFIBUS DP master and how to configure a NHST-T100-EN/PNM as PROFINET IO Controller by using the SYCON.net configuration software provided by Hilscher. The configuration of the netHOST devices for DeviceNet, CANopen, EtherCAT and EtherNet/IP can, in principle, be carried out as described for the PROFIBUS DP and PROFINET IO examples in this chapter – except, of course, for the specific settings of the individual fieldbus/RTE protocols.

Details of the parameters which have to be set for each individual fieldbus or RTE protocol can be found in the operating instruction manuals for the DTMs of the corresponding protocols. These DTM manuals are stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\[protocol]`.

During configuration in SYCON.net, you can also open a context-sensitive online help by clicking the **Help** button in the opened dialog window of the DTM, or by pressing the **F1** key on your keyboard.

7.2 Configuring netHOST for Fieldbus Systems with SYCON.net: NHST-T100-DP/DPM Example

In this example for PROFIBUS DP, a pre-configured Hilscher CB-AB32-DPS IO test board serves as Fieldbus slave device.

7.2.1 Prerequisites

- You have installed **SYCON.net** on your configuration PC.
- You have the user right **Maintenance**, **Planning Engineer** or **Administrator** in SYCON.net.
- The slave devices have been configured properly and you know the required configuration parameters of the slaves. In this example for PROFIBUS DP, you must know the number of bytes of the input/output modules.
- If the slave devices you want to add to the Fieldbus are missing in the device catalog of SYCON.net, you first have to import the device description files of these devices into SYCON.net. Instructions for this can be found in the *Importing Device Description Files into SYCON.net* chapter on page 95.
- You have assigned a suitable temporary IP address to the netHOST device (see section *Assigning Temporary IP Address to netHOST Device* on page 24).
- The netHOST device is connected to a voltage supply.
- The configuration PC and the netHOST device are connected to the same local TCP/IP (Ethernet LAN) network.

Note: Plug-in the Ethernet LAN cable into one of the two RJ45 sockets on the left side of the device (X2 interface).

7.2.2 Step-By-Step Instructions

7.2.2.1 Creating New netHOST Project in SYCON.net

1. Start **SYCON.net** configuration software.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

➢ A login dialog appears:

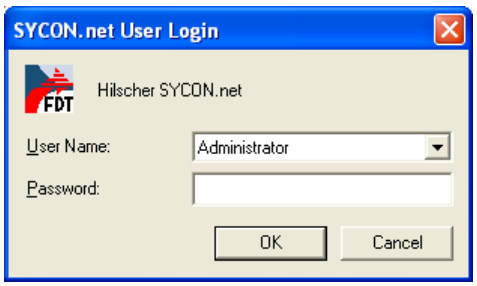


Figure 33: SYCON.net Login

➢ Enter your password, then click **OK**.

➢ SYCON.net opens with a new empty project:

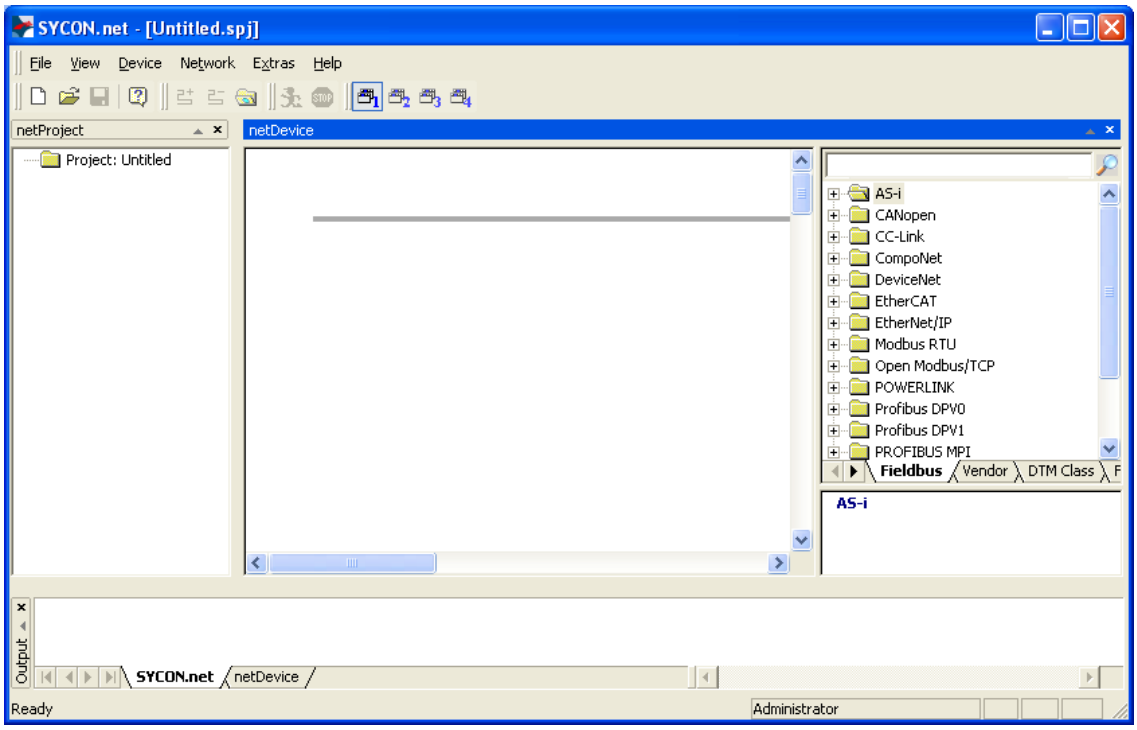


Figure 34: Empty Project in SYCON.net

2. Add netHOST device to the configuration project.

➢ In the **Vendor** tab of the **Device Catalog** (right window), open folder **Hilscher GmbH** > **Master**.

➢ Then select **NHST-T100-DP/DPM** device and drag & drop it onto the bus configuration line in the configuration window (middle window):

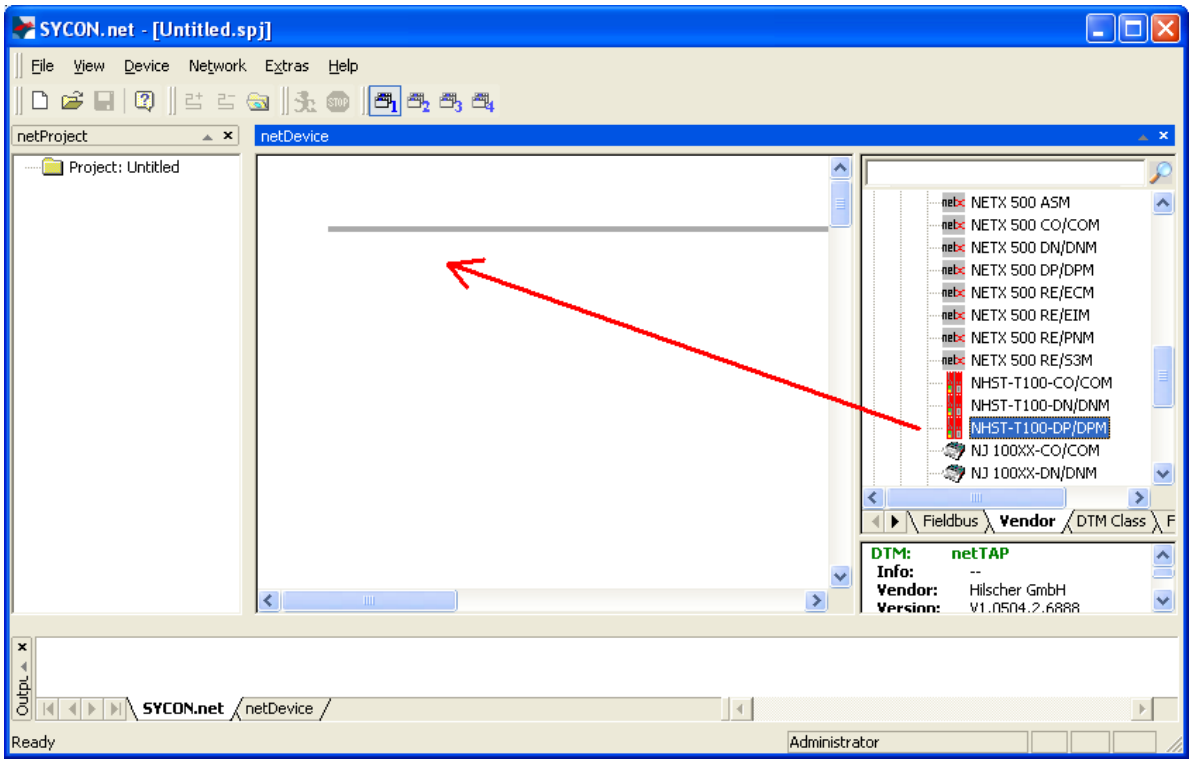


Figure 35: Add netHOST Device in Configuration Project

➢ The gateway device appears in the project:

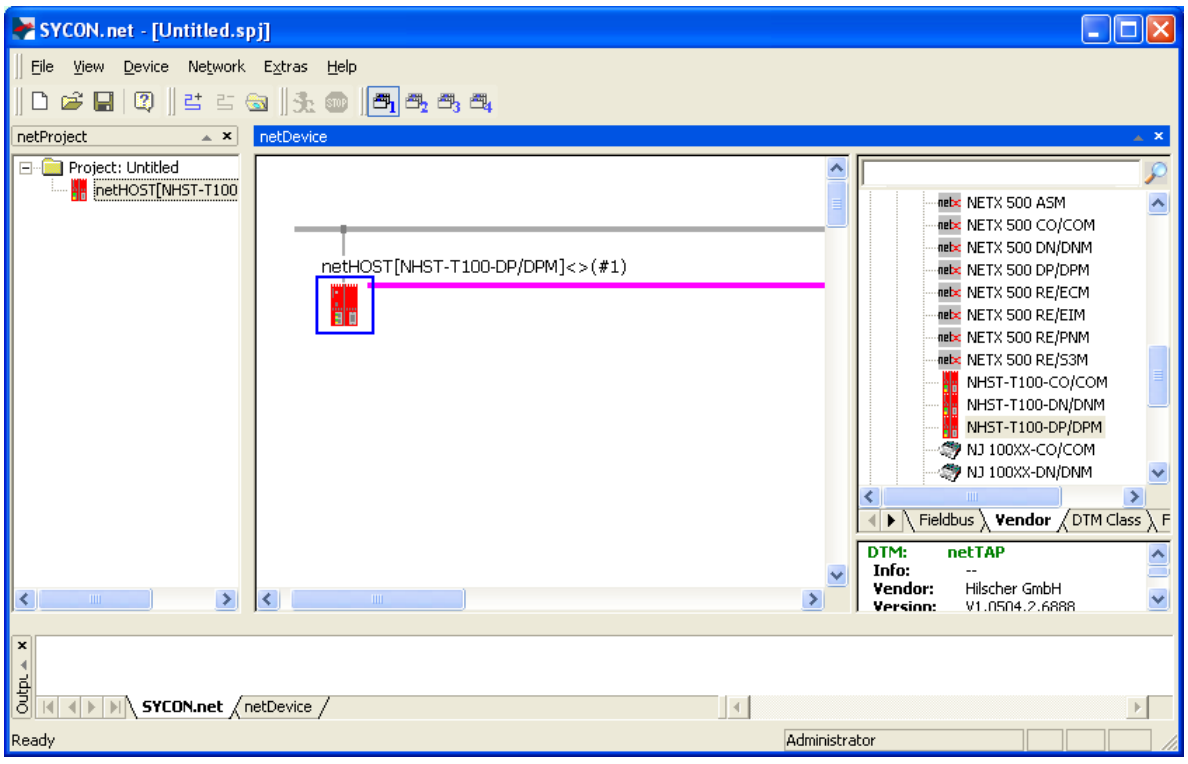


Figure 36: netHOST Device in Configuration Project

3. Save project.

➢ In the menu, choose **File** > **Save As** to save the netHOST configuration project.

7.2.2.2 Assigning Device to Driver and Configuring Driver

1. Open the netHOST configuration window (i. e. the netHOST DTM).

➢ Double-click the netHOST symbol in the bus configuration line or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

➧ The netHOST DTM opens with the **Device Assignment** dialog window. SYCON.net automatically starts to search for connected devices.

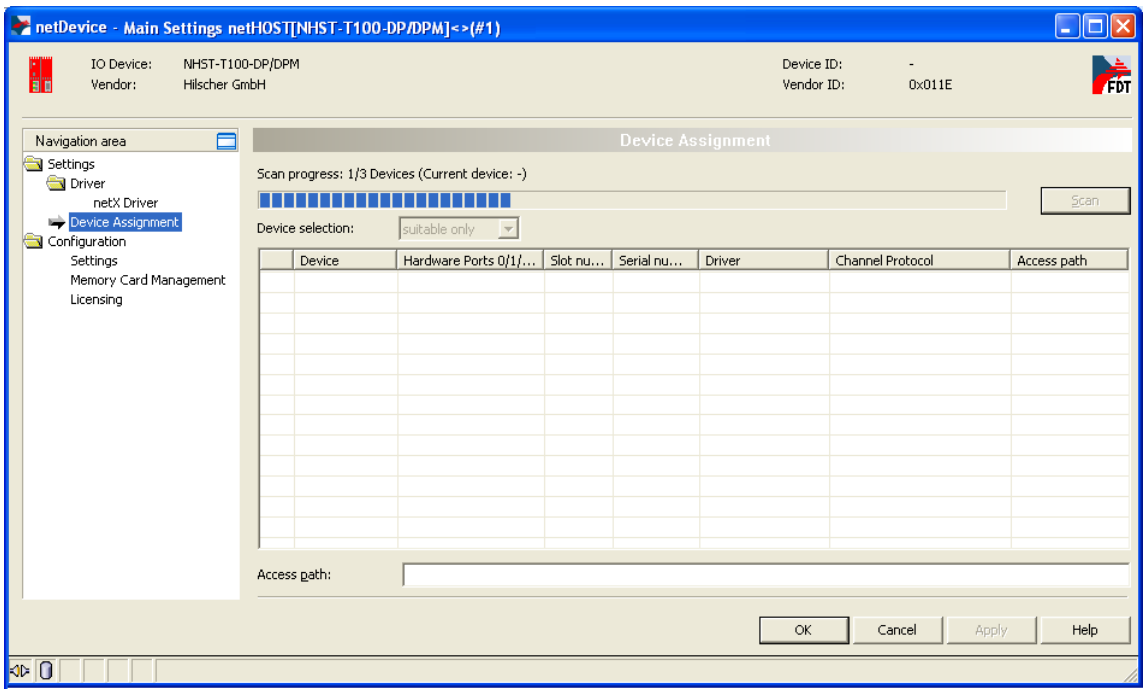


Figure 37: Scanning for Devices in SYCON.net

➧ Because the netX Driver (which enables the Ethernet LAN connection to the netHOST device) is not yet acquainted with the IP address of the device, the netHOST is not found for the time being.

2. Select driver.

➢ In the **Navigation Area**, select **Settings** > **Driver**.

The **Driver** dialog window opens. It lists all available drivers:

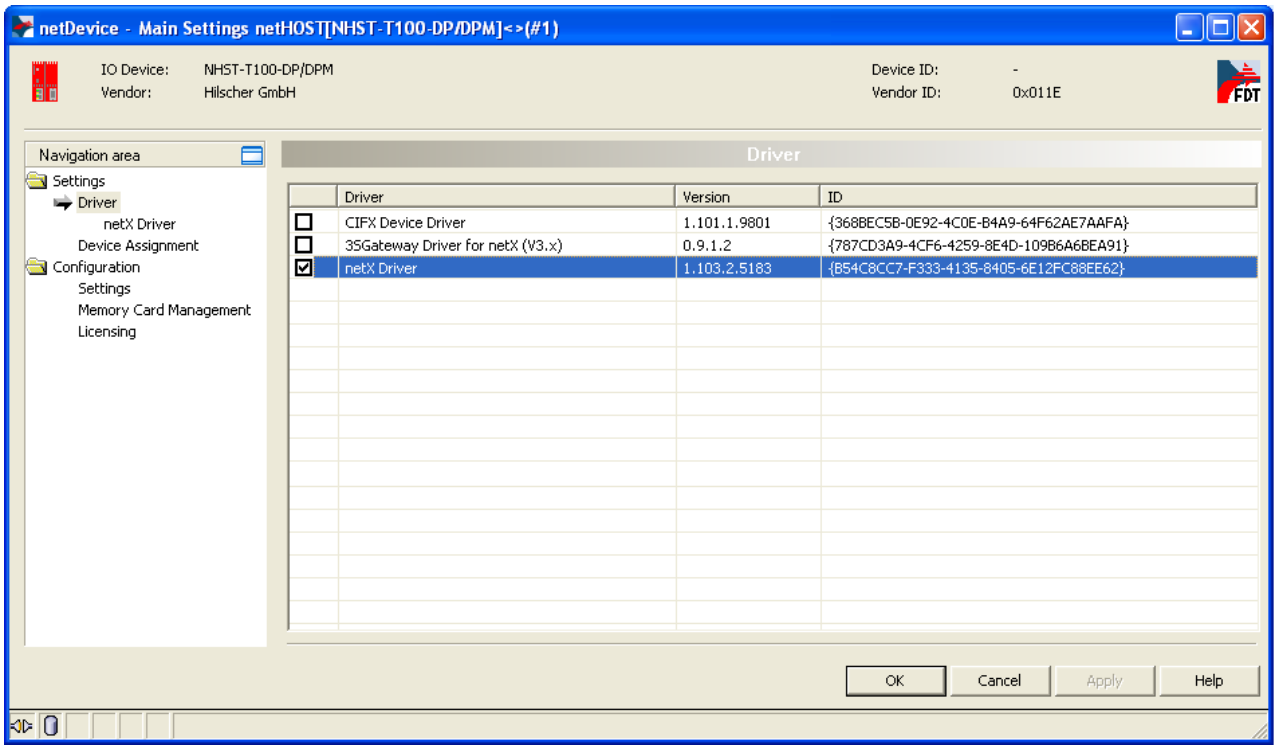


Figure 38: Select Driver

- Make sure the **netX Driver** is selected (check box must be activated).

Note: In the netHOST DTM, the netX Driver usually is already selected by default. If this is not the case, activate the check box in front of the netX driver.

- Click **OK** or **Apply**.

3. Set IP address of netHOST in netX Driver.

- In the **Navigation Area**, select **Settings** > **Driver** > **netX Driver**.

The **netX Driver** dialog window opens.

- Select **TCP Connection** tab:

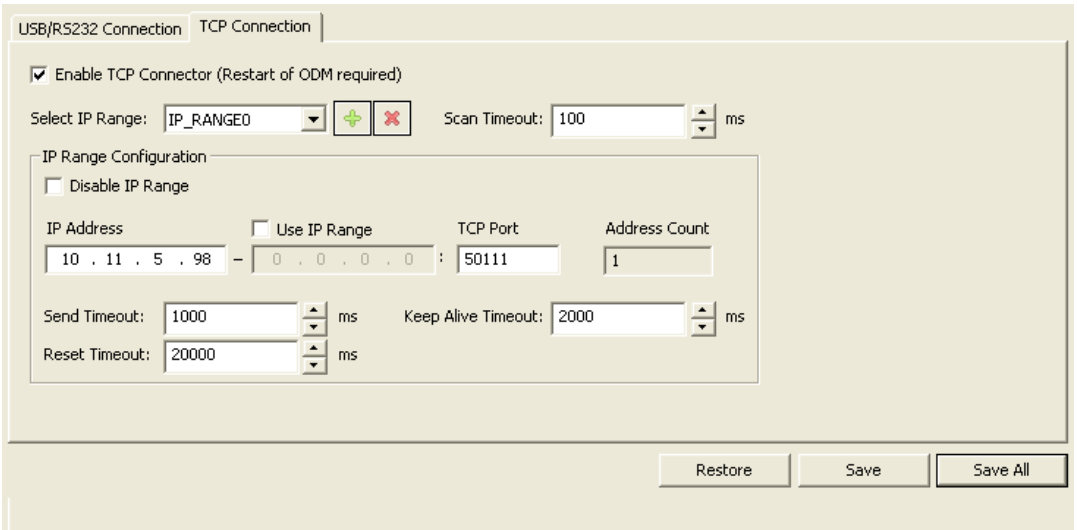


Figure 39: Set IP Address in netX Driver

- Make sure the **Enable TCP Connector** option is selected (check box must be activated).
- Click on button next to the **Select IP Range** drop-down list.
- In the **IP Address** field, enter the IP address which you have assigned to the netHOST device with the **Ethernet Device Configuration** Tool (see *Assigning Temporary IP Address to netHOST Device* section on page 24).

Note: You will find a detailed description of this dialog in the *netX Driver Dialog Window* section on page 114.

- Click **Save**.

4. Assign netHOST device.

- In the Navigation Area, select **Settings** > **Device Assignment**.
- The **Device Assignment** dialog window opens.
- In the **Device selection** drop-down list, choose **suitable only** entry.
- Click **Scan**.
- If all prerequisites are fulfilled (see *Prerequisites* section on page 49) and the IP address has been properly set in the netX Driver, the netHOST device will now be found and displayed in the list.

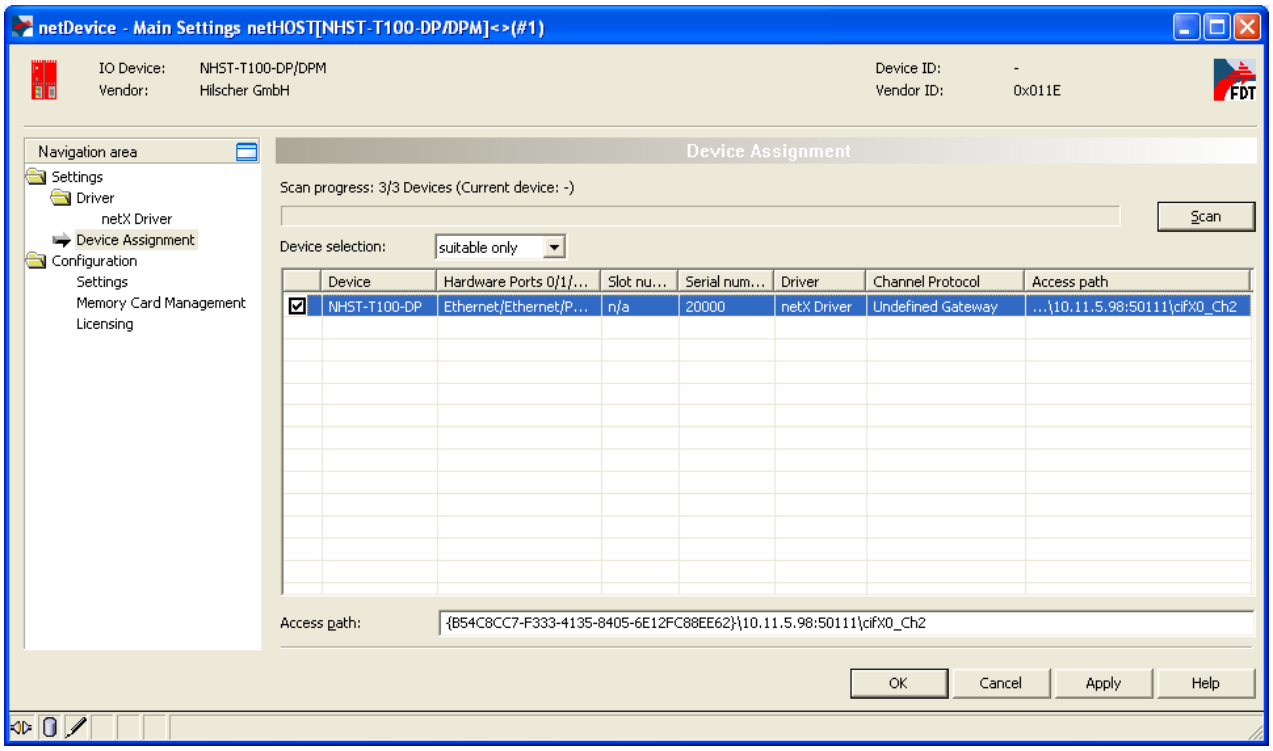


Figure 40: Select Device

- Activate the check box in front of the netHOST device.
- Click **Apply**.

Note: You can create and edit a configuration project for the netHOST device without being actually connected to the device via Ethernet LAN. In this case, no netHOST device will be found in the **Device Assignment** dialog window. For downloading the configuration, however, you eventually need an Ethernet LAN connection to the netHOST device, and then you also need to assign the device in this dialog window.

7.2.2.3 Configuring Ethernet Marshalling

1. Open the configuration window for the Ethernet Marshalling.

➢ Select the netHOST symbol, then choose **Configuration** > **Ethernet Marshalling** from the context menu (to open context menu, right-click on the netHOST symbol).

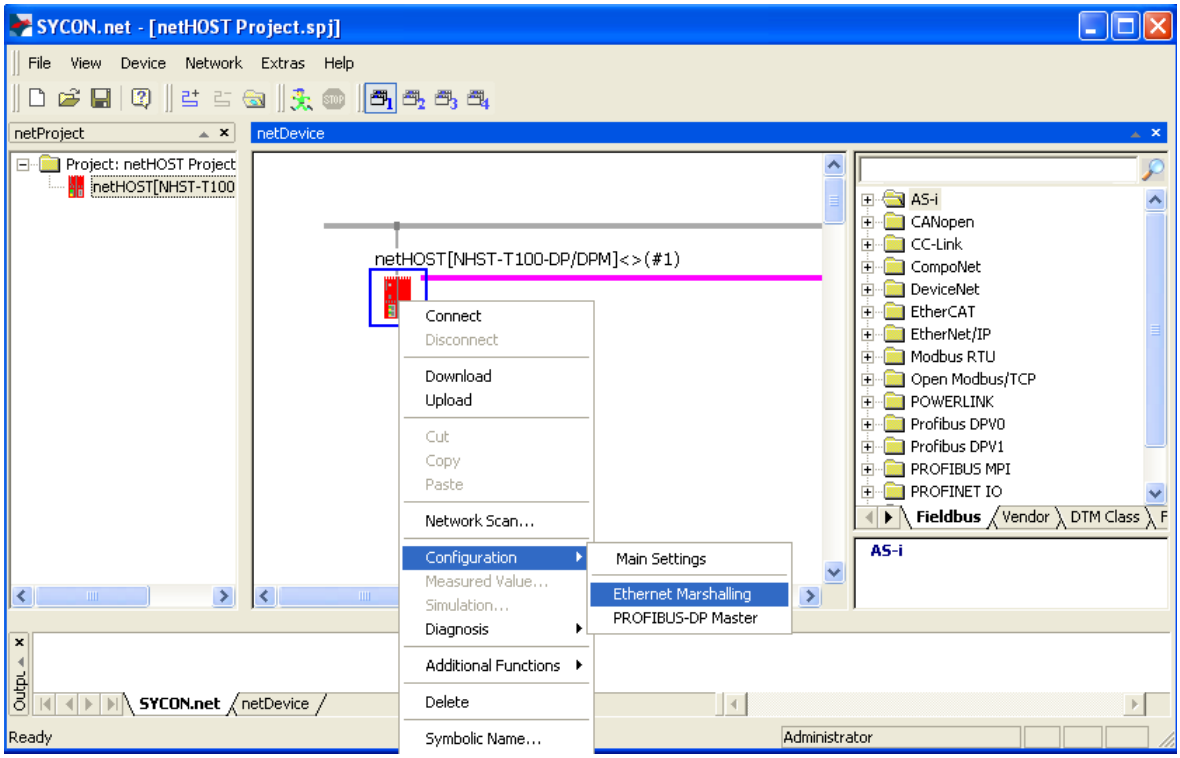


Figure 41: Open Configuration Dialog for Primary Network

The **General** dialog of the **Ethernet Marshalling** configuration opens:

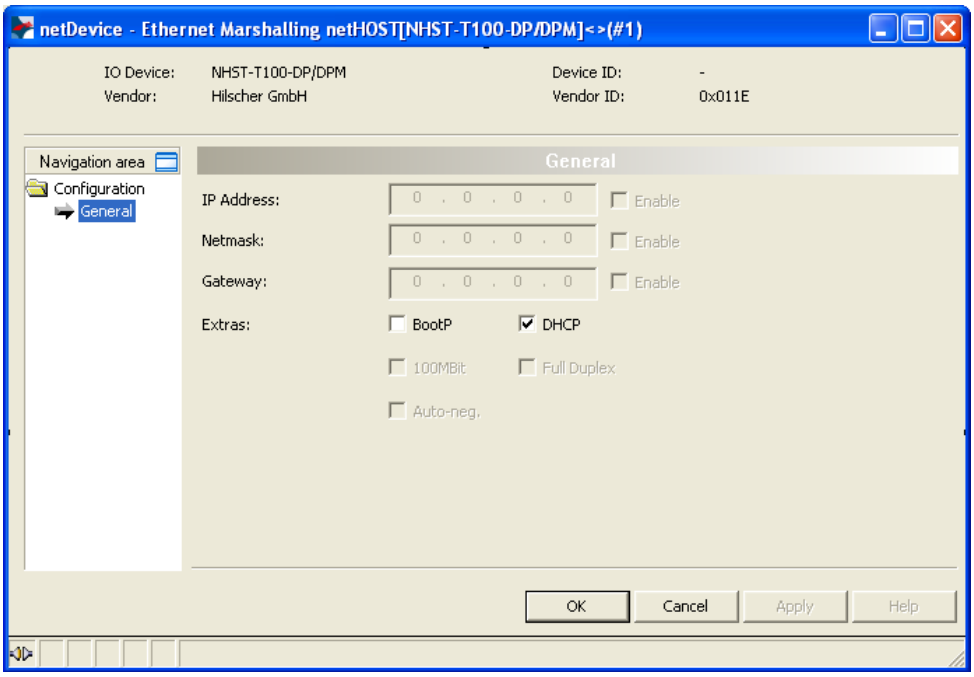


Figure 42: Setting IP Address (1)

2. Set IP parameters.

- In the **Extras** section, uncheck the **DHCP** option to deactivate the assignment of the IP address by DHCP server. This enables you to set the address parameters manually.

The **Enable** check boxes can now be selected.

- Select **Enable** option for each of the address parameters that you want to configure here.

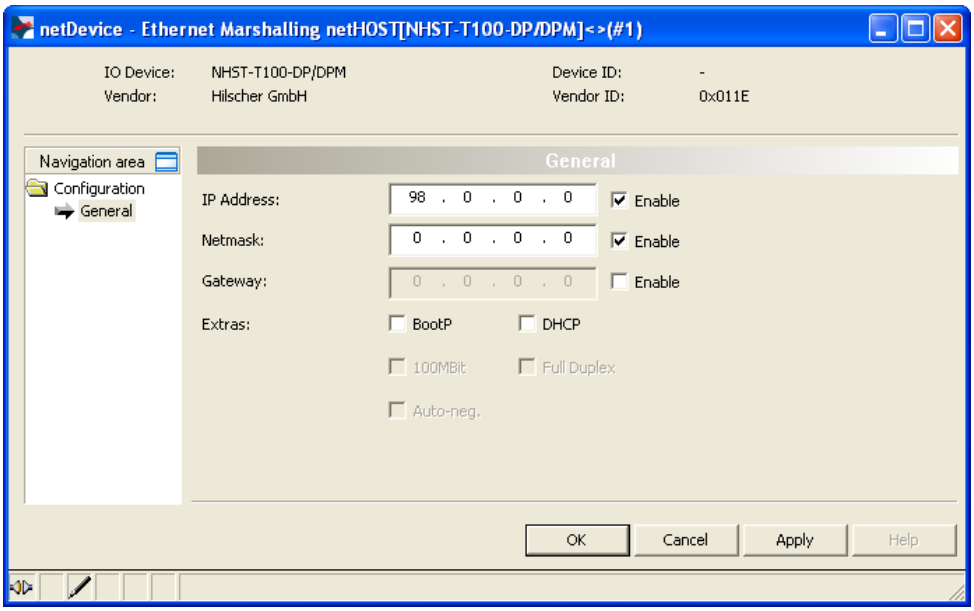


Figure 43: Setting IP Address (2)

- Enter the IP address parameters.

Note: The IP address which you configure here will be stored “non-volatile” (i. e. permanently) in the netHOST device after download – unlike the temporary address which you before have assigned with the Ethernet Device Configuration Tool. If this new permanent address differs from the old temporary address, and if you later want to re-establish a connection between SYCON.net and the netHOST device after downloading the configuration, you need to enter this new permanent address (which now has become valid) in the netX Driver dialog window (see step 3: “Set IP address of netHOST in netX Driver” in the previous section), thus overwriting the obsolete old temporary IP address assigned by the Ethernet Device Configuration Tool. Otherwise you won’t be able to re-establish a connection between SYCON.net and the new IP address of the netHOST device.

At least during testing, it is recommended to work with a fixed IP address. It is, however, possible to have the netHOST device receive its IP address from a BOOTP or DHCP server utility.
If you choose the **BootP** or **DHCP** options in the dialog window by activating the corresponding check boxes, the manually entered address parameters stay (remain) in the dialog fields, but they are not authoritative any longer. Thus, if you later want to re-use the manually entered address parameters, just uncheck **BootP** or **DHCP** options and enable the address parameters.

- Click **OK** to close the **Ethernet Marshalling** dialog window.

7.2.2.4 Adding and Configuring Slave Devices in Fieldbus

Note: In this manual, the Hilscher CB-AB32-DPS IO test board serves as example of a slave device in the PROFIBUS DP network (secondary network).
Should any other device that you might want to add and configure as slave in your Fieldbus not be listed in the **Device Catalog** of SYCON.net, you have to import the corresponding device description file into SYCON.net. Instructions for this can be found in the *Importing Device Description Files into SYCON.net* chapter on page 95.

1. Add PROFIBUS DP slave.

➢ In the **Fieldbus** tab of the **device catalog** (right window), open folder **PROFIBUS DPV0** > **Slave**.

➢ Select **CB_AB32-DPS** device, then drag it into the middle window and drop it onto the line symbolizing the secondary network (next to the netHOST symbol).

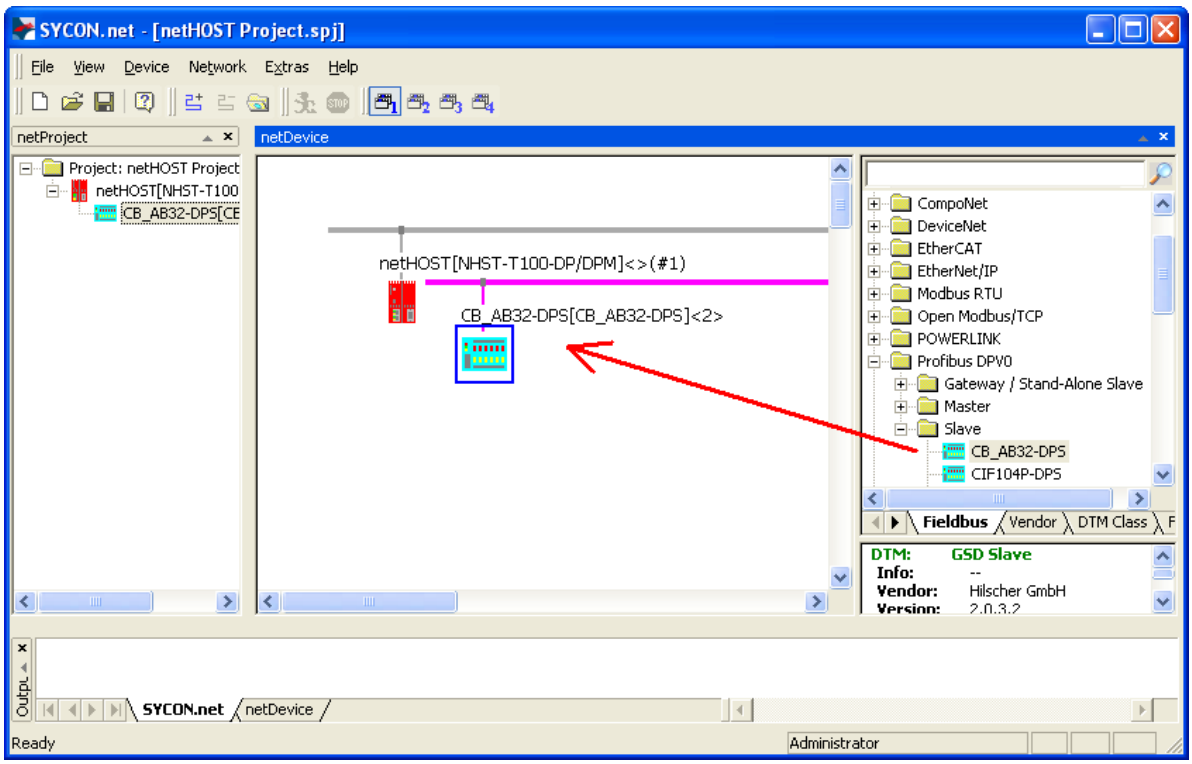


Figure 44: Add Slave Device

➢ The device is displayed as slave in the PROFIBUS (secondary network) line.

2. Configure PROFIBUS DP slave.

➢ To open the configuration dialog window, double-click the slave device on the secondary bus line, or select the device, then choose **Configuration…** from the context menu (to open context menu, right-click on the slave symbol).

➢ The configuration dialog window of the PROFIBUS DP slave opens:

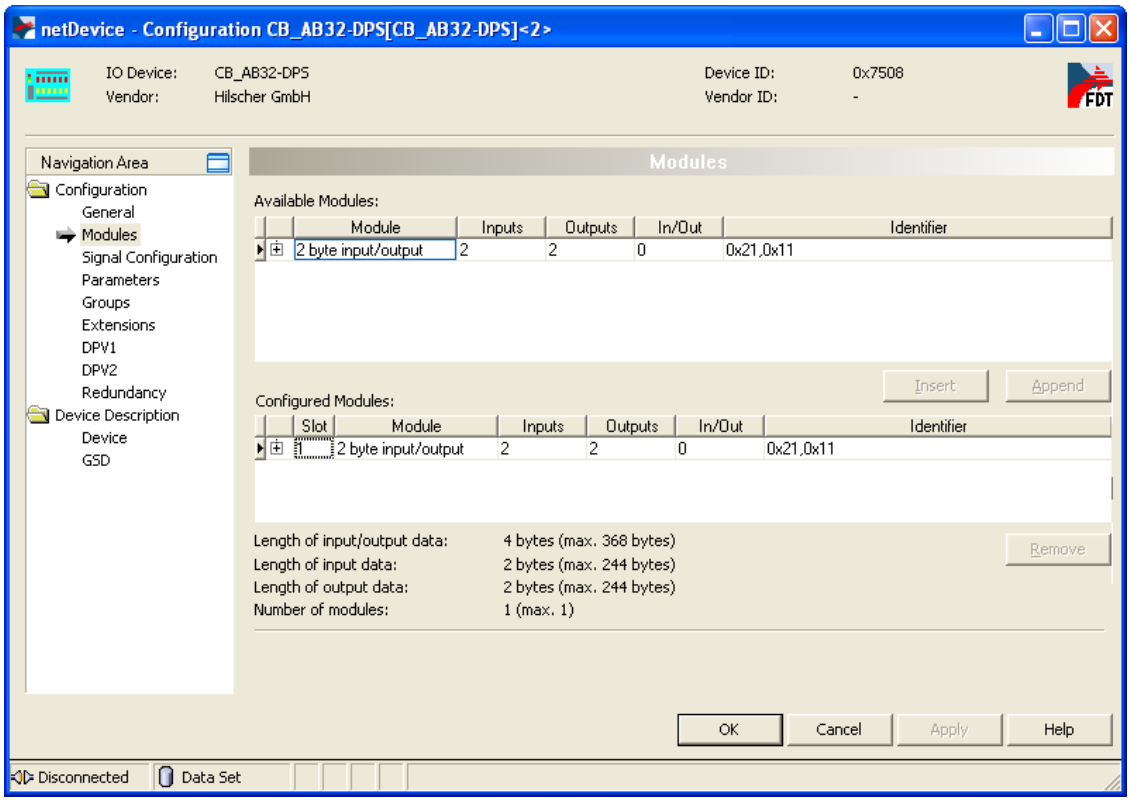


Figure 45: Configure Slave Device

➢ Configure the slave device.

Detailed instructions on how to configure a slave device in the fieldbus network can be found in the operating instruction manual of the corresponding slave DTM. The slave DTM manuals are stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\[protocol]\Slave Configuration`.
For our PROFIBUS DP example, you need the operating instruction manual *Generic Slave DTM for PROFIBUS DP Slave Devices*, DOC031001OIxxEN.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

➢ Click **OK** to close the dialog window.

➢ Repeat this process for each slave device in the Fieldbus.

7.2.2.5 Configuring Fieldbus Master

1. Open the configuration dialog window of the PROFIBUS DP master.

➢ Select the netHOST symbol, then choose **Configuration** > **PROFIBUS DP Master** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ The **Bus Parameters** dialog of the **PROFIBUS DP Master** configuration window opens:

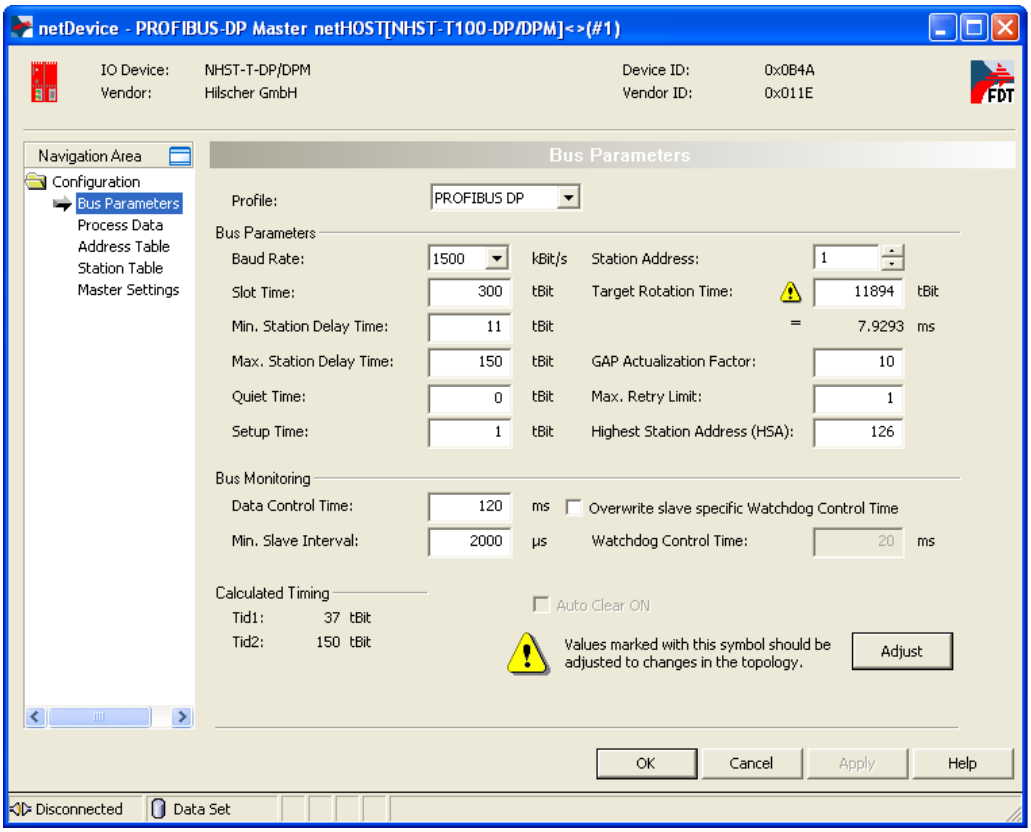


Figure 46: PROFIBUS DP Master – Bus Parameters

2. Configure PROFIBUS DP bus parameters.

➢ Set the bus parameters.

Detailed instructions on how to configure the master device in the Fieldbus network can be found in the operating instruction manual of the corresponding master DTM. The master DTM manuals are stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\[protocol]`.
For our PROFIBUS DP example, you need the operating instruction manual *DTM for Hilscher-PROFIBUS DP Master Devices*, DOC070401OIxxEN.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

➢ Click **Apply**.

3. Define addresses of the stations.

➢ In the **Navigation Area**, select **Configuration** > **Station Table**.

➢ The **Station Table** dialog opens:

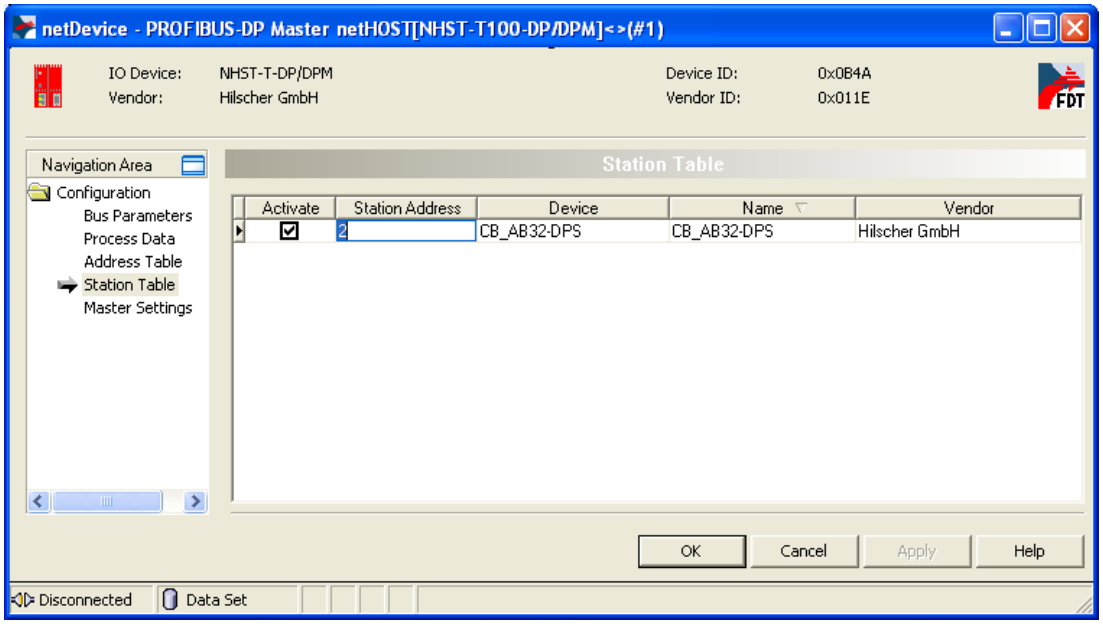


Figure 47: PROFIBUS DP Slave Station Address

➢ In the **Station Address** fields, enter an individual station address for each slave device.

➢ Click **OK** to close the **PROFIBUS DP Master** configuration dialog.

➢ You can now save the completed configuration project on your configuration PC, and then download the configuration to the netHOST device.

4. Save project on configuration PC.

Note: Save the project on your configuration PC after you have completed the configuration. Thus, you can later edit the project and reload it into the netHOST device or into a different (e. g. a substitute) device. Configuration projects stored only in a netHOST device can not be “read back” into SYCON.net.

➢ In the menu, choose **File** > **Save** or **Save as…** to save the configuration project, or click symbol.

7.2.2.6 Loading Configuration into netHOST Device

1. Start SYCON.net.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

2. Open configuration project.

➢ In the menu of SYCON.net, choose **File** > **Open…** to open the project.

3. Download configuration to netHOST.

➢ Select netHOST symbol, then choose **Download** from the context menu (to open context menu, right-click on the netHOST symbol).

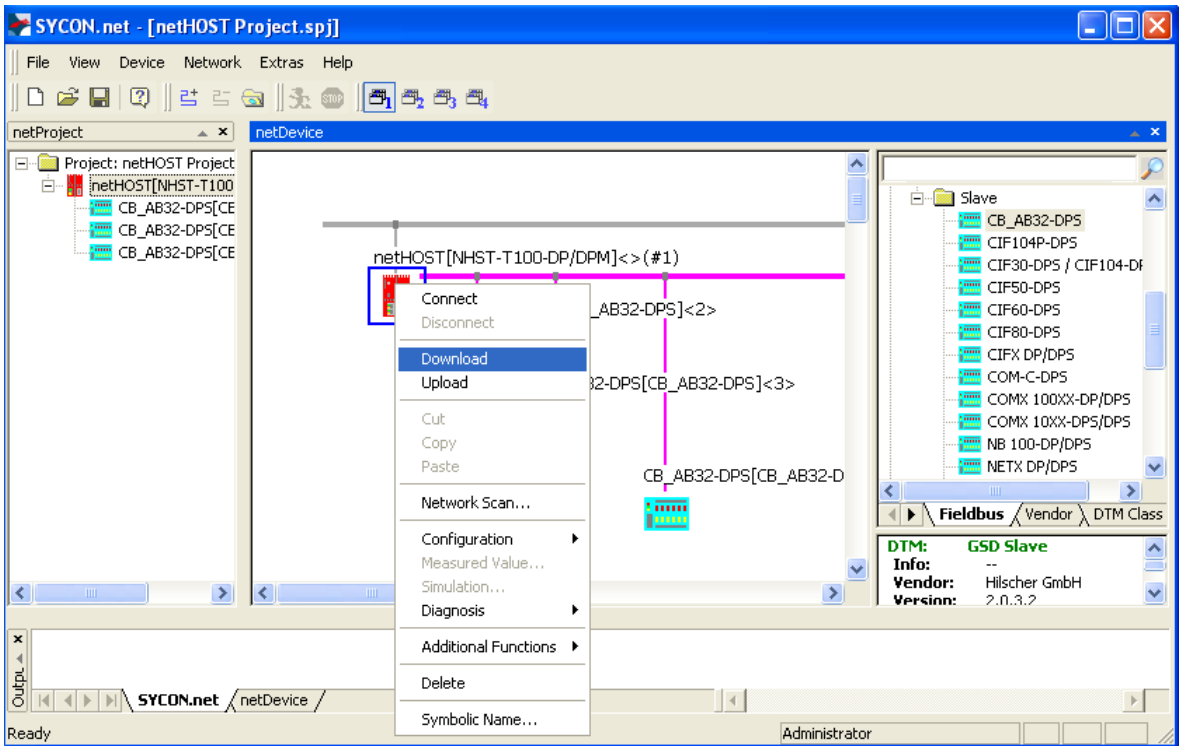


Figure 48: Download Configuration

NOTICE

Hazard of device damage by disruption of voltage supply during configuration download!

Do not interrupt the voltage supply while downloading the configuration to the netHOST. Power failure during a writing process in the file system can cause severe malfunctioning of the device.

➢ Answer the security question with **Yes**.

➢ The configuration file is downloaded to the netHOST. After the download has been completed, the netHOST device automatically resets itself.

Note: By default, the start of the bus communication is controlled by the application. In the **Master Settings** dialog window of the Fieldbus Master DTM you can configure whether the bus communication is to be started automatically by the device itself or whether it is to be started by the application. To open the Fieldbus Master DTM, right-click netHOST symbol, then choose **Configuration** -> **[Fieldbus system] Master**) from the context menu.
How to start Fieldbus communication manually in the **netHOST Device Test Application** is described in section *Testing Communication of netHOST for RTE Systems: NHST-T100-EN/PNM Example* on page 86.

7.3 Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example

In this example for PROFINET IO, a pre-configured PC card CIFX 50-RE/PNS serves as IO Device (slave device) in the RTE network.

7.3.1 Prerequisites

- You have installed **SYCON.net** on your configuration PC.
- You have the user right **Maintenance**, **Planning Engineer** or **Administrator** in SYCON.net.
- The slave devices have been configured properly and you know the required configuration parameters of the slaves. In this example for PROFINET IO, you must know the “name of station” of each IO Device and the number of bytes of the input/output modules.
- If the slave devices you want to add to the RTE network are missing in the device catalog of SYCON.net, you first have to import the device description files of these devices into SYCON.net. Instructions for this can be found in the *Importing Device Description Files into SYCON.net* chapter on page 95.
- You have assigned a suitable temporary IP address to the netHOST device (see section *Assigning Temporary IP Address to netHOST Device* on page 24).
- The netHOST device is connected to a voltage supply.
- The configuration PC and the netHOST device are connected to the same local TCP/IP (Ethernet LAN) network.

Note: Plug-in the Ethernet LAN cable in the single RJ45 socket on the right side of the device (X3 interface).

7.3.2 Step-By-Step Instructions

7.3.2.1 Creating New netHOST Project in SYCON.net

1. Start **SYCON.net** configuration software.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

➢ A login dialog appears:

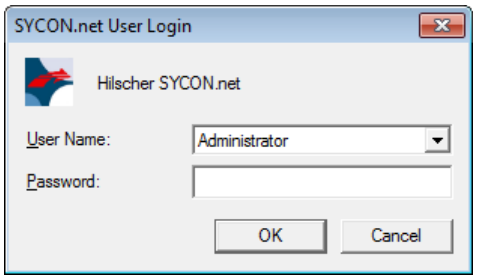


Figure 49: SYCON.net Login

➢ Enter your password, then click **OK**.

➔ SYCON.net opens with a new empty project:

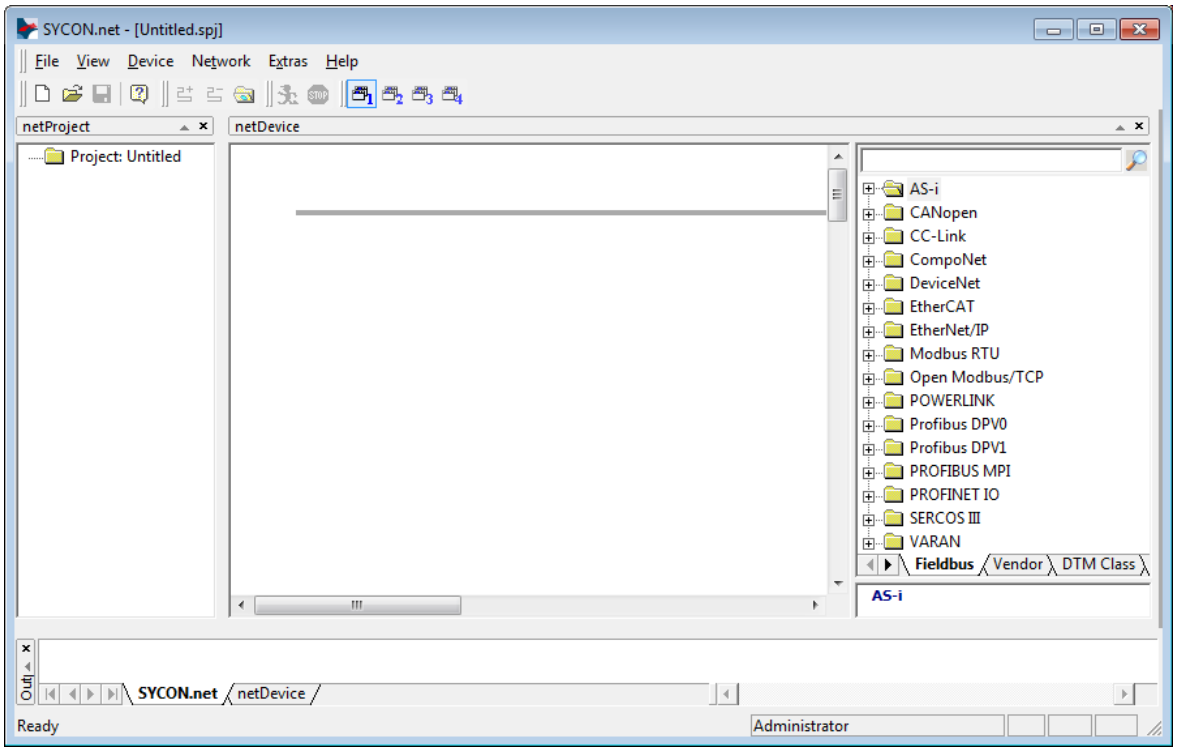


Figure 50: Empty Project in SYCON.net

2. Add netHOST device to the configuration project.

➢ In the **Vendor** tab of the **Device Catalog** (right window), open folder **Hilscher GmbH** > **Master**.

➢ Then select **NHST-T100-EN/PNM** device and drag & drop it onto the bus configuration line in the **SYCON.net** configuration window (middle window):

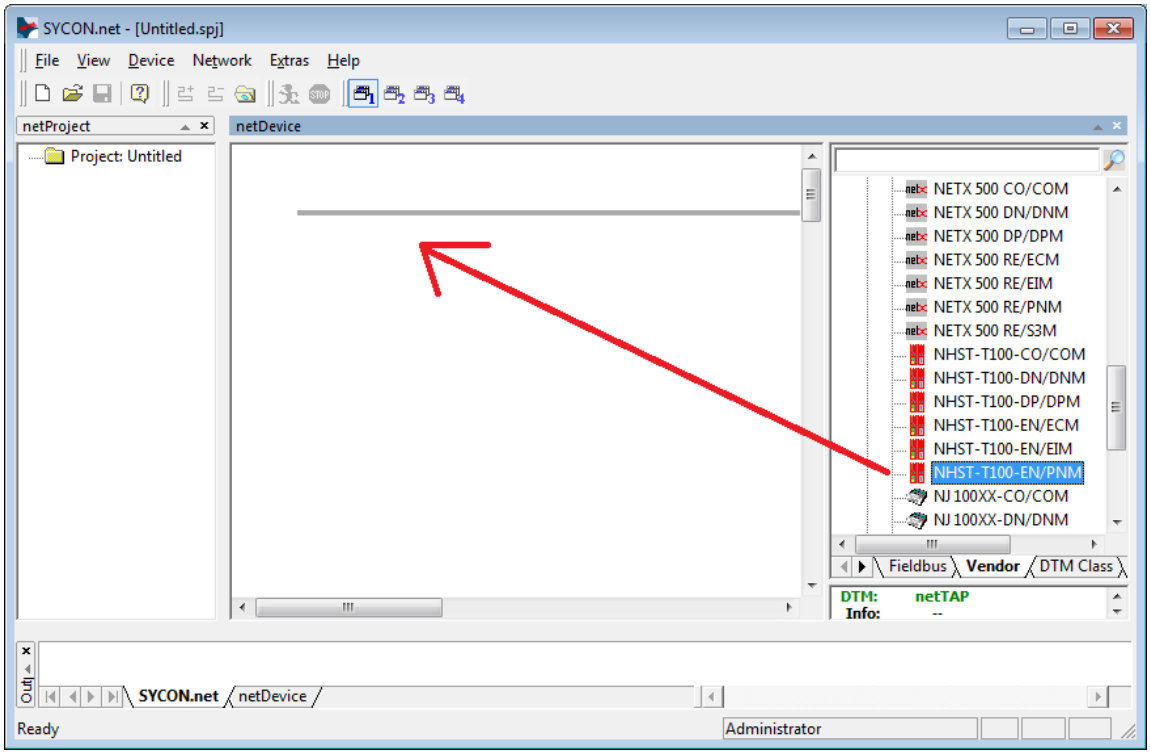


Figure 51: Add netHOST Device in Configuration Project

➢ The netHOST device appears in the project:

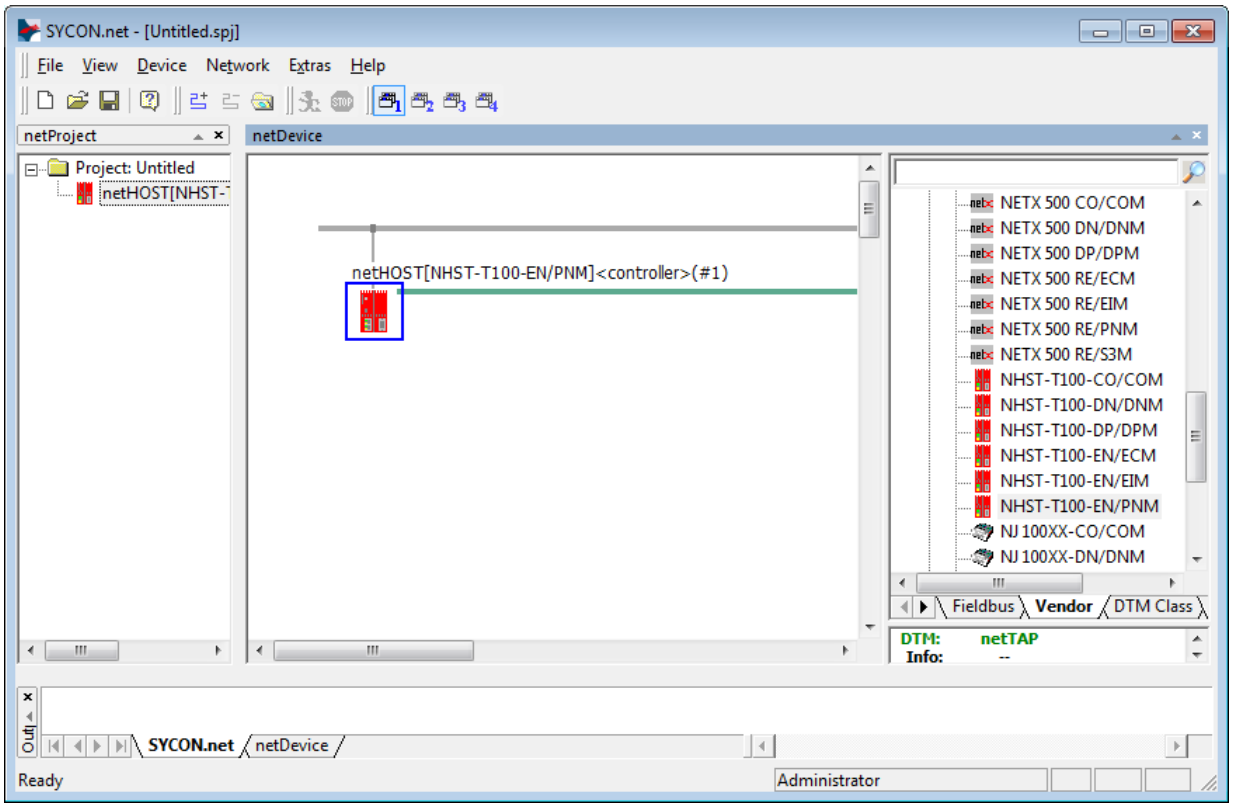


Figure 52: netHOST Device in Configuration Project

3. Save project.

➢ In the menu, choose **File** > **Save As** to save the netHOST configuration project.

7.3.2.2 Assigning Device to Driver and Configuring Driver

1. Open the netHOST configuration window (i. e. the netHOST DTM).

➢ Double-click the netHOST symbol in the bus configuration line or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ The netHOST DTM opens with the **Device Assignment** dialog window. SYCON.net automatically starts to search for connected devices.

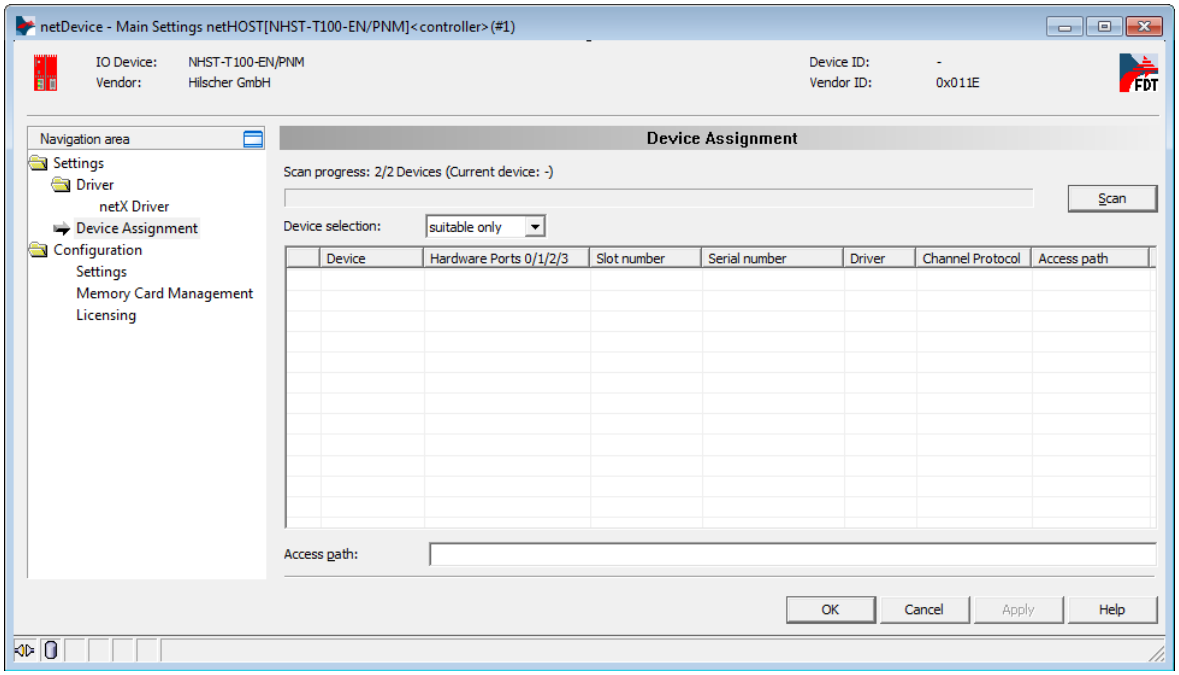


Figure 53: Scanning for Devices in SYCON.net

➢ Because the netX Driver (which enables the Ethernet LAN connection to the netHOST device) is not yet acquainted with the IP address of the device, the netHOST is not found for the time being.

2. Select driver.

➢ In the **Navigation Area**, select **Settings** > **Driver**.

➮ The **Driver** dialog window opens. It lists all available drivers:

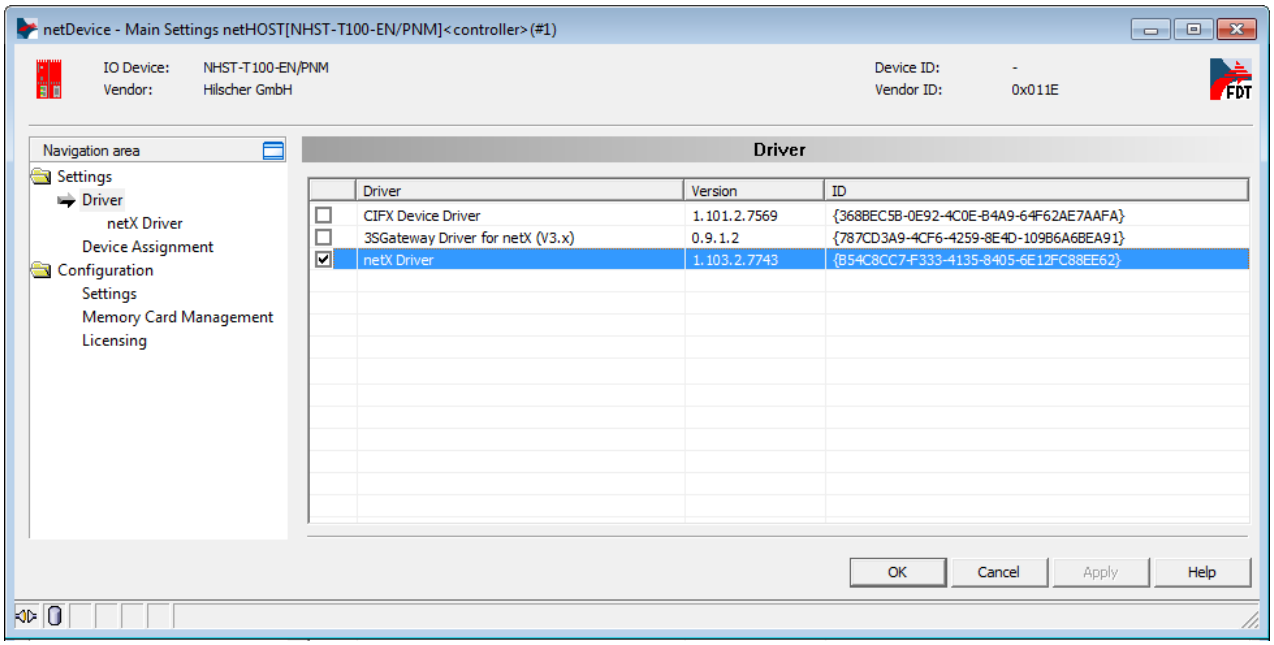


Figure 54: Select Driver

➢ Make sure the **netX Driver** is selected (check box must be activated).

Note: In the netHOST DTM, the netX Driver usually is already selected by default. If this is not the case, activate the check box in front of the netX driver.

➢ Click **OK** or **Apply**.

3. Set IP address of netHOST in netX Driver.

➢ In the **Navigation Area**, select **Settings** > **Driver** > **netX Driver**.

➮ The **netX Driver** dialog window opens.

➢ Select **TCP Connection** tab:

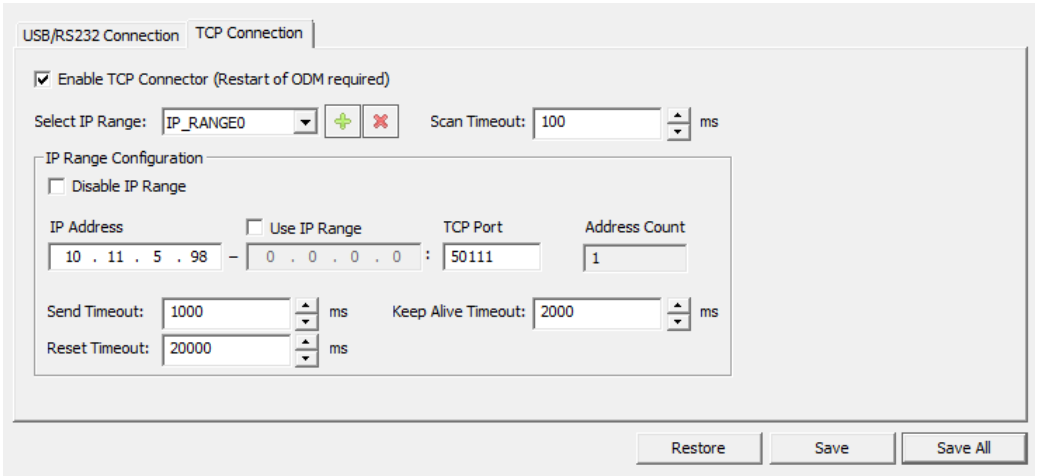


Figure 55: Set IP Address in netX Driver

- Make sure the **Enable TCP Connector** option is selected (check box must be activated).
- Click on button next to the **Select IP Range** drop-down list.
- In the **IP Address** field, enter the IP address which you have assigned to the netHOST device with the **Ethernet Device Configuration** Tool (see *Assigning Temporary IP Address to netHOST Device* section on page 24).

Note: You will find a detailed description of this dialog in the *netX Driver Dialog Window* section on page 114.

- Click **Save**.

4. Assign netHOST device.

- In the **Navigation area**, select **Settings** > **Device Assignment**.
- The **Device Assignment** dialog window opens.
- In the **Device selection** drop-down list, choose **suitable only** entry.
- Click **Scan**.
- If all prerequisites are fulfilled (see *Prerequisites* section on page 49) and the IP address has been properly set in the netX Driver, the netHOST device will now be found and displayed in the list.

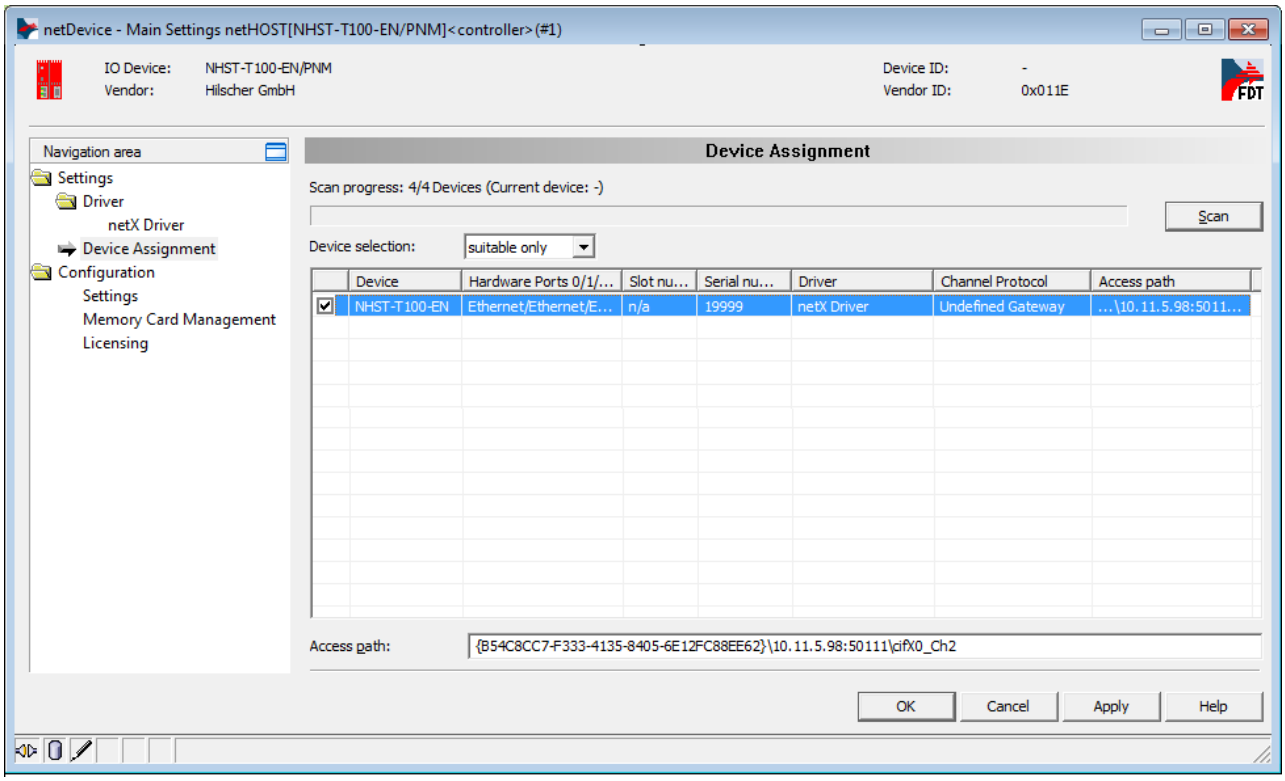


Figure 56: Select Device

- Activate the check box in front of the netHOST device.
- Click **Apply**.

Note: You can create and edit a configuration project for the netHOST device without being actually connected to the device via Ethernet LAN. In this case, no netHOST device will be found in the **Device Assignment** dialog window. For downloading the configuration, however, you eventually need an Ethernet connection to the netHOST device, and then you also need to assign the device in this dialog window.

7.3.2.3 Configuring Ethernet Marshalling

1. Open the configuration window for the Ethernet Marshalling.

- Select the netHOST symbol, then choose **Configuration** > **Ethernet Marshalling** from the context menu (to open context menu, right-click on the netHOST symbol).

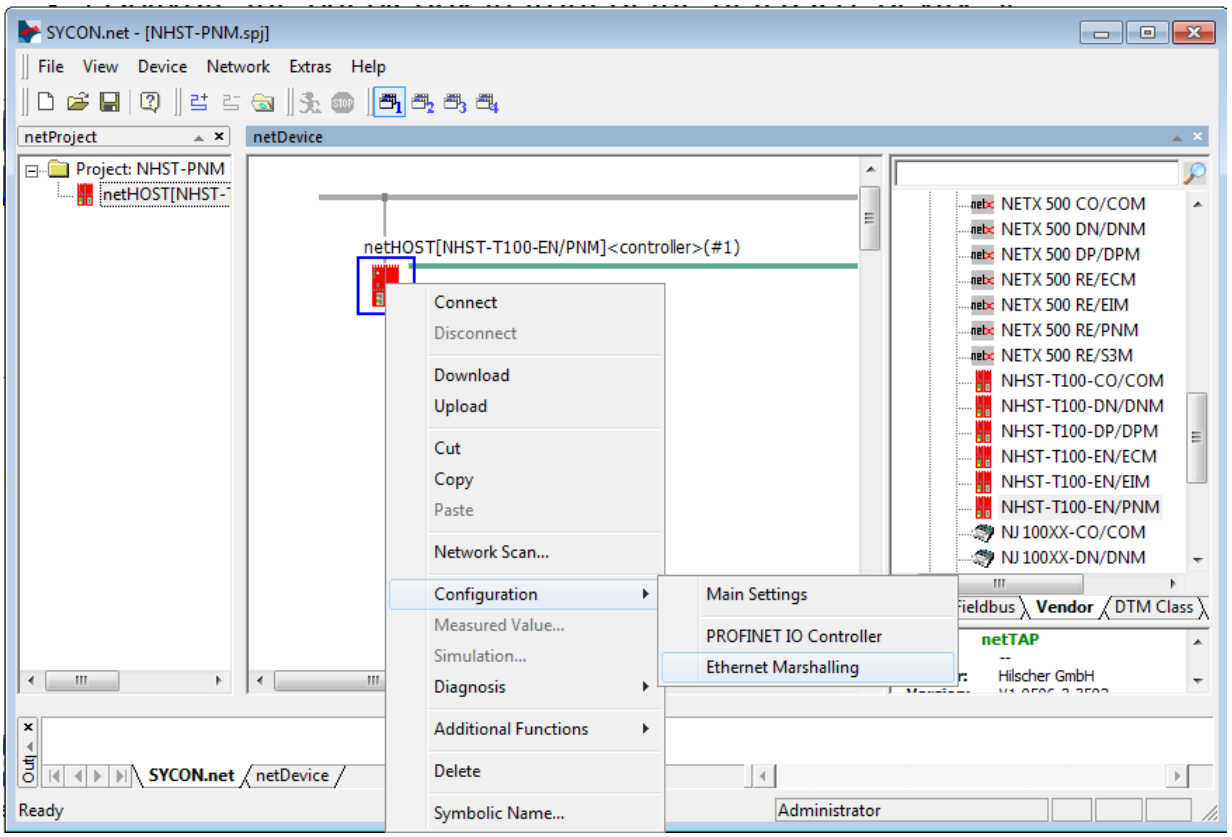


Figure 57: Open Configuration Dialog for Ethernet Marshalling

➧ The **General** dialog of the **Ethernet Marshalling** configuration opens:

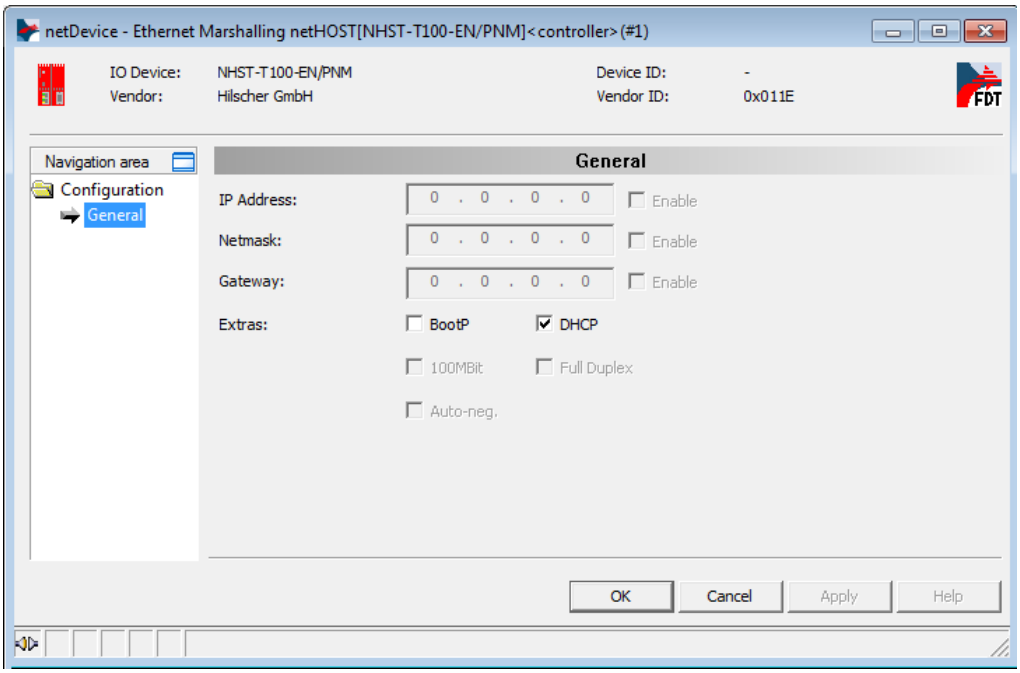


Figure 58: Setting IP Address (1)

2. Set IP parameters.

➢ In the **Extras** section, uncheck the **DHCP** option to deactivate the assignment of the IP address by DHCP server. This enables you to set the address parameters manually.

➧ The **Enable** check boxes can now be selected.

➢ Select **Enable** option for each of the address parameters that you want to configure here.

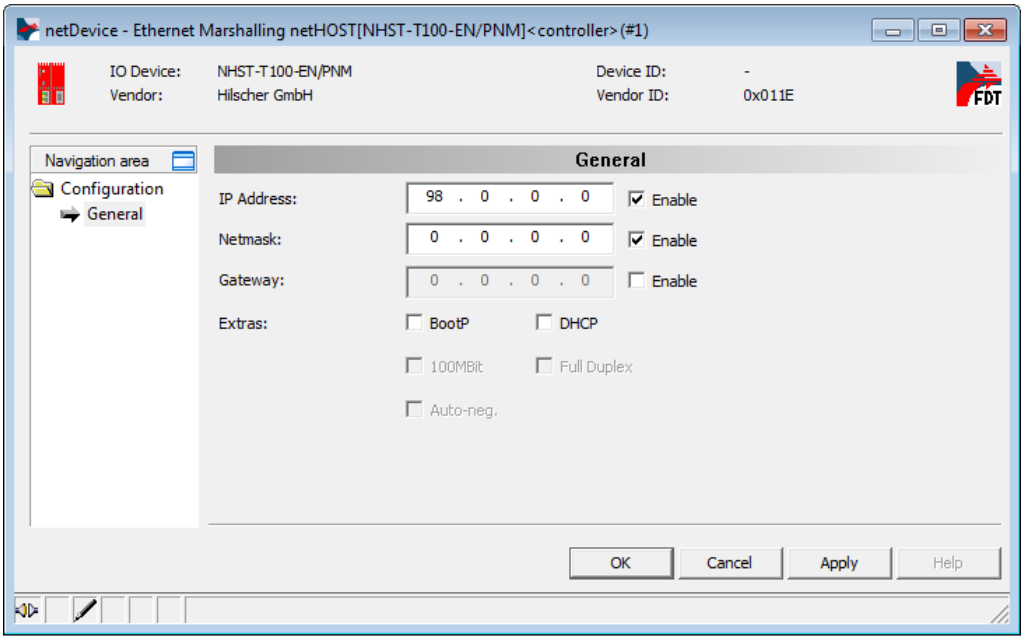


Figure 59: Setting IP Address (2)

➢ Enter the IP address parameters.

Note: The IP address which you configure here will be stored “non-volatile” (i. e. permanently) in the netHOST device after download – unlike the temporary address which you before have assigned with the Ethernet Device Configuration Tool. If this new permanent address differs from the old temporary address, and if you later want to re-establish a connection between SYCON.net and the netHOST device after downloading the configuration, you need to enter this new permanent address (which now has become valid) in the netX Driver dialog window (see step 3: “Set IP address of netHOST in netX Driver” in the previous section), thus overwriting the obsolete old temporary IP address assigned by the Ethernet Device Configuration Tool. Otherwise you won’t be able to re-establish a connection between SYCON.net and the new IP address of the netHOST device.

At least during testing, it is recommended to work with a fixed IP address. It is, however, possible to have the netHOST device receive its IP address from a BOOTP or DHCP server utility.
If you choose the **BootP** or **DHCP** options in the dialog window by activating the corresponding check boxes, the manually entered address parameters stay (remain) in the dialog fields, but they are not authoritative any longer. Thus, if you later want to re-use the manually entered address parameters, just uncheck **BootP** or **DHCP** options and enable the address parameters.

➢ Click **OK** to close the dialog window.

7.3.2.4 Adding and Configuring IO Devices (Slaves) in RTE Network

Note: In this example for PROFINET IO, the Hilscher PC card cifX serves as example of a slave device in the RTE network. The PC card has already been loaded with firmware and a proper IO device configuration; therefore downloading firmware and configuration files to the cifX card are not described here.

Should any other device which you might want to add and configure as slave in your RTE network not be listed in the **Device Catalog** of SYCON.net, you have to import the corresponding device description file into SYCON.net. Instructions for this can be found in the *Importing Device Description Files into SYCON.net* chapter on page 95.

1. Add PROFINET IO Device.

➢ In the **Fieldbus** tab of the **device catalog** (right window), open folder **PROFINET IO** > **Slave**.

➢ Select **CIFX RE/PNS V3.4.19 – V3.4.x** device, then drag it into the middle window and drop it onto the line symbolizing the RTE network (next to the netHOST symbol).

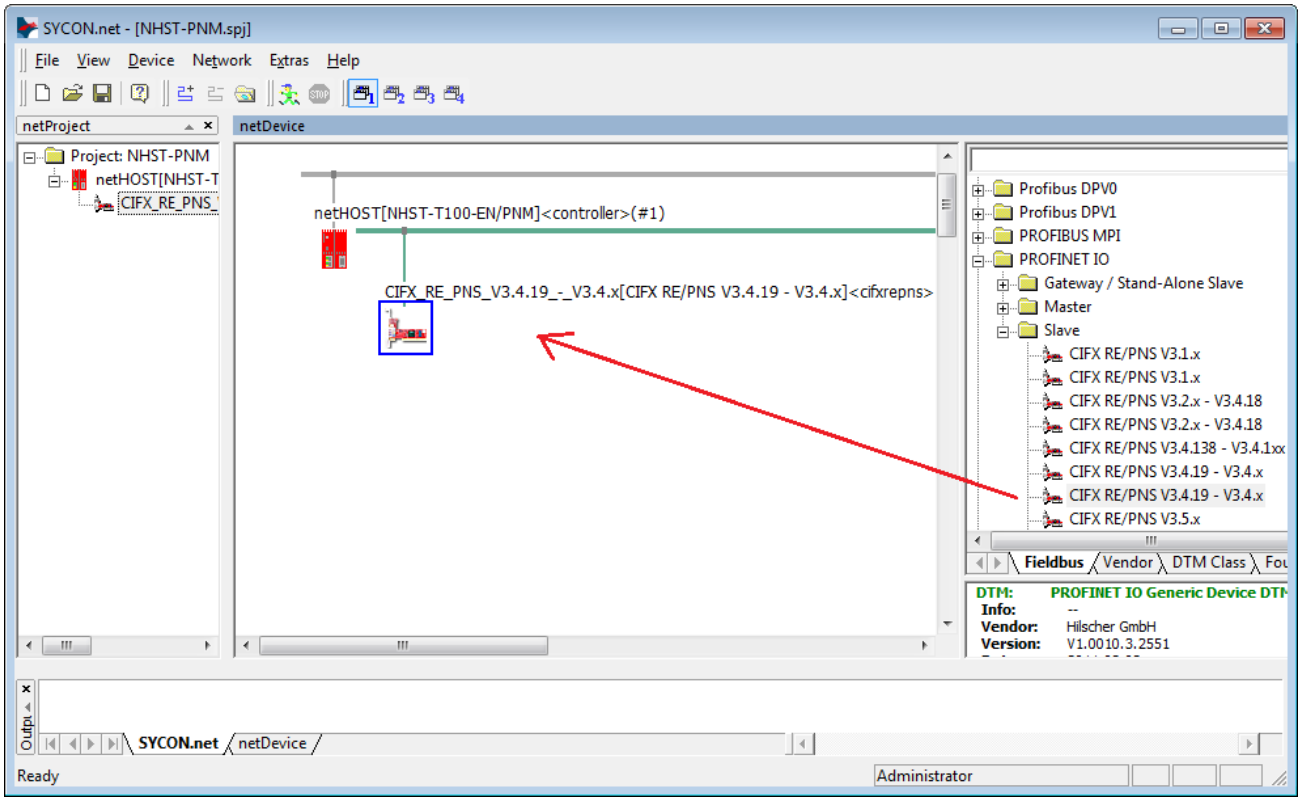


Figure 60: Add IO Device to RTE Network

➢ The PROFINET IO Device (i. e. the PC Card cifX) is displayed as slave in the RTE network line.

2. Configure PROFINET IO Device.

➢ To open the configuration dialog window, double-click the slave device on the RTE bus line, or select the device, then choose **Configuration…** from the context menu (to open context menu, right-click on the device symbol).

➪ The **Modules** configuration dialog window of the PROFINET IO Device opens:

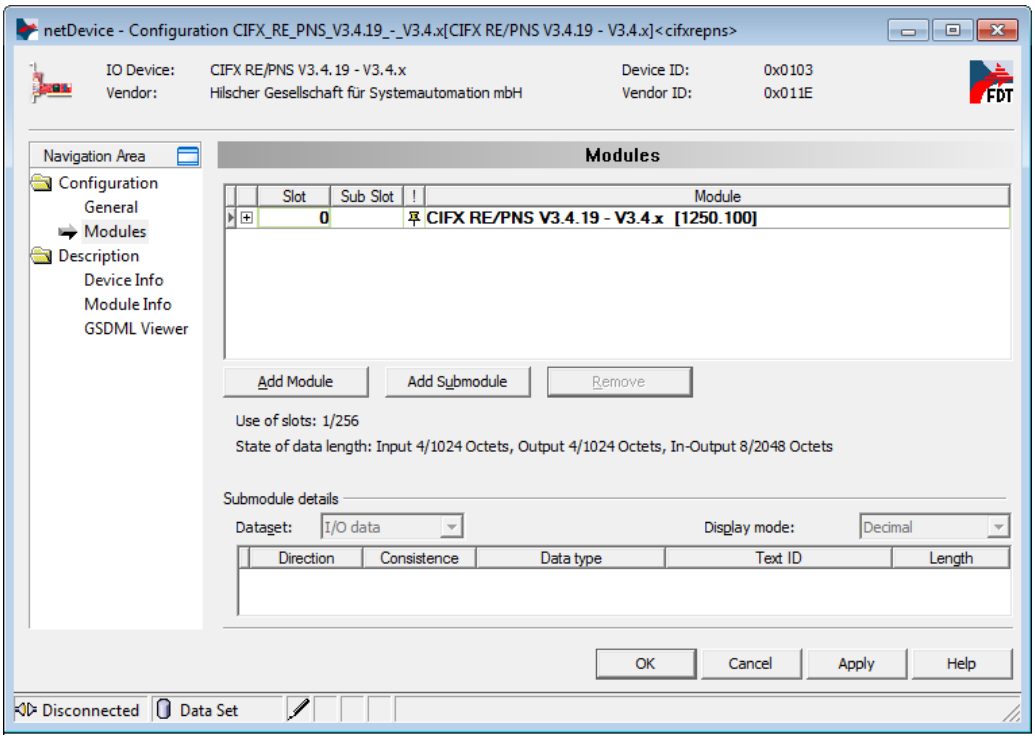


Figure 61: Configure IO Device (1)

➢ Click **Add Module** button to add a module for input data.

- Click in the **Module** field of the newly added module, then select the number of input bytes of your IO Device from the drop-down list. In this example, the PC card cifX has 16 Bytes Input and 16 Bytes Output data. Therefore select **16 Bytes Input** from the drop-down list.

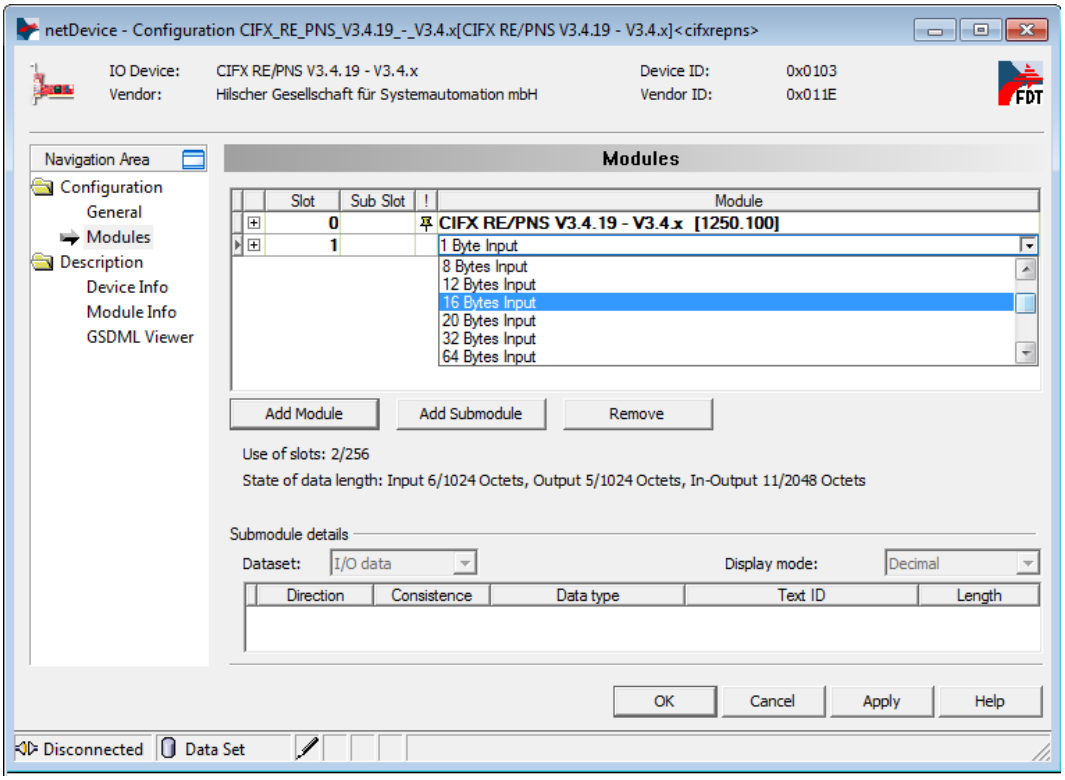


Figure 62: Configure IO Device (2)

- Click **Add Module** button again to add a module for the output data.
- Click in the **Module** field of the newly added module, then select **16 Byte Output** from the drop-down list.

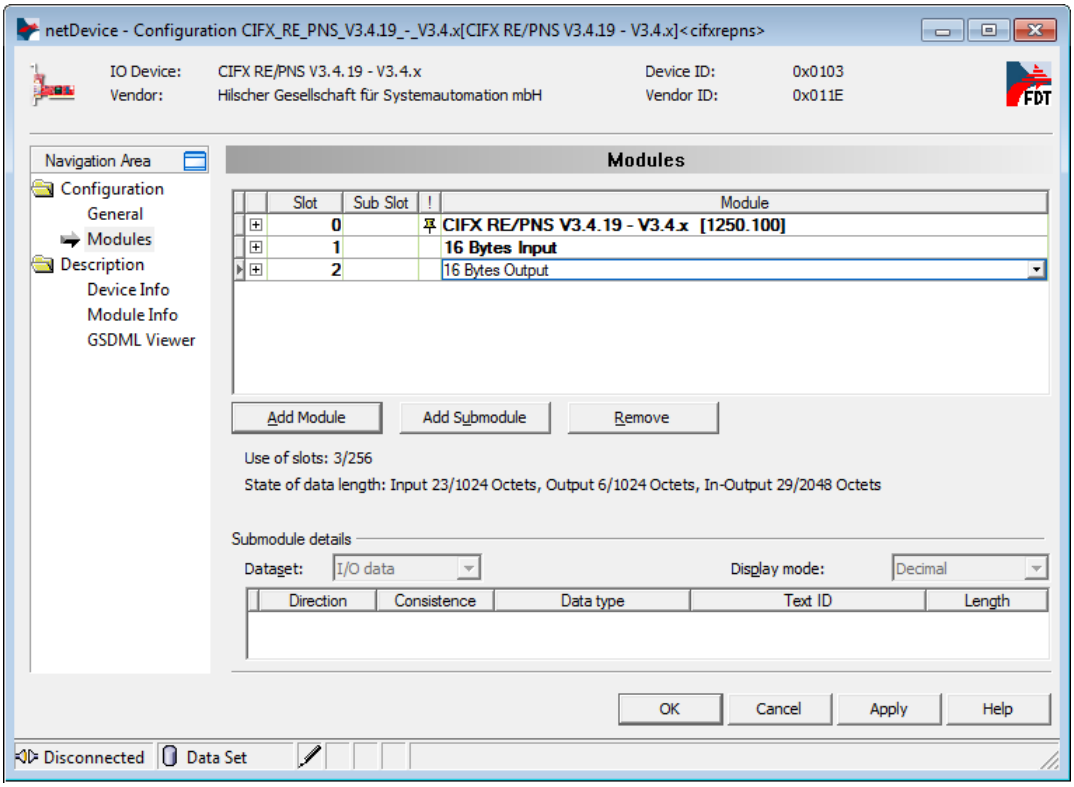


Figure 63: Configure IO Device (3)

Detailed information on how to configure a slave device in the Real-Time Ethernet network can be found in the operating instruction manual of the corresponding slave DTM. The slave DTM manuals are stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\[protocol]\[Slave Configuration]`.
For our PROFINET IO example, you need the operating instruction manual *Generic DTM for PROFINET IO Devices*, DOC060305OIxxEN.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

➢ Click **OK** to close the dialog window.

➢ You have configured the I/O data of the PROFINET IO Device.

Repeat this process for each slave device in the RTE network.

7.3.2.5 Configuring IO Controller (Master) of RTE Network

Note: In this example you do not need to change the default settings of the IO Controller configuration.

1. Open the configuration dialog window of the PROFINET IO Controller.

➢ Select the netHOST symbol, then choose **Configuration** > **PROFINET IO Controller** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ The **Controller Network Settings** dialog of the **PROFINET IO Controller** configuration window opens:

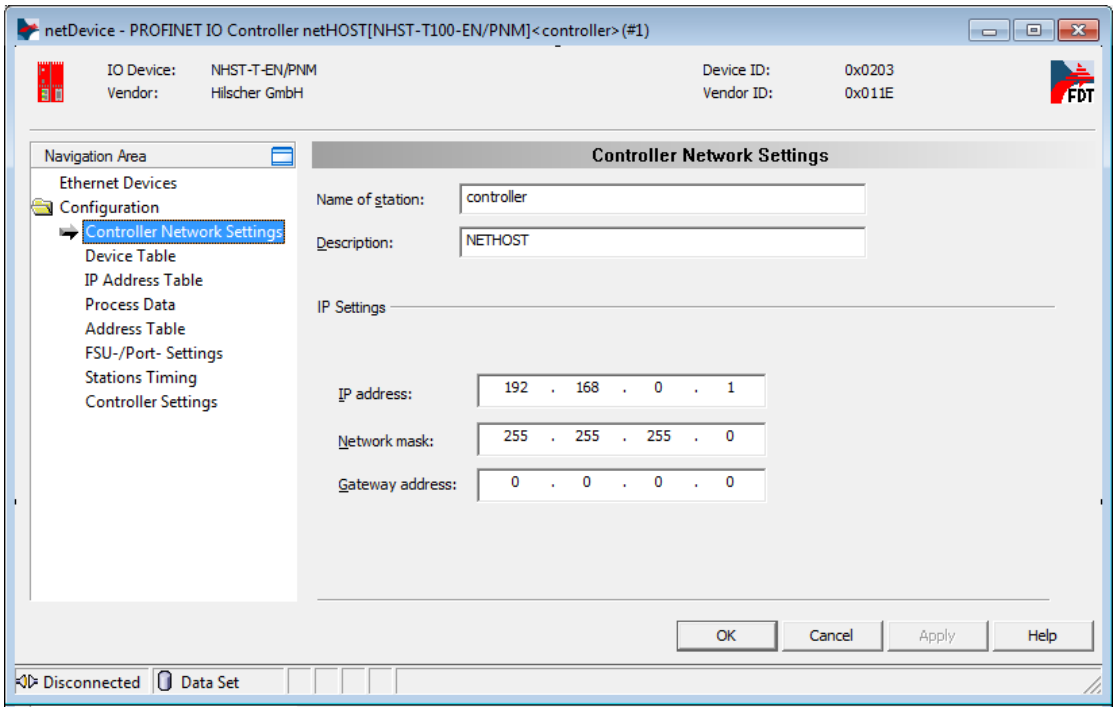


Figure 64: PROFINET IO Controller – Network Settings

2. Check or change (if necessary) the IO Controller settings.

➢ Navigate through the configuration dialog windows and check or change individual parameters, if necessary.

Detailed information on how to configure the master device in the RTE network can be found in the operating instruction manual of the corresponding master DTM. The master DTM manuals are stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\[protocol]`.
For the PROFINET IO Controller, for instance, you need the operating instruction manual *DTM for Hilscher-PROFINET IO-Controller Devices*, DOC060302OIxxEN.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

➢ After having finished the configuration, click **Apply**, respectively **OK**.

3. Save project on configuration PC.

Note: Save the project on your configuration PC after you have completed the configuration. Thus, you can later edit the project and reload it into the netHOST device or into a different (e. g. a substitute) device. Configuration projects stored only in a netHOST device can not be “read back” into SYCON.net.

➢ In the menu, choose **File** > **Save** or **Save as…** to save the configuration project, or click symbol.

7.3.2.6 Loading Configuration into netHOST Device

1. Start SYCON.net.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

2. Open configuration project.

➢ In the menu of SYCON.net, choose **File** > **Open…** to open the project.

3. Download configuration to netHOST.

➢ Select netHOST symbol, then choose **Download** from the context menu (to open context menu, right-click on the netHOST symbol).

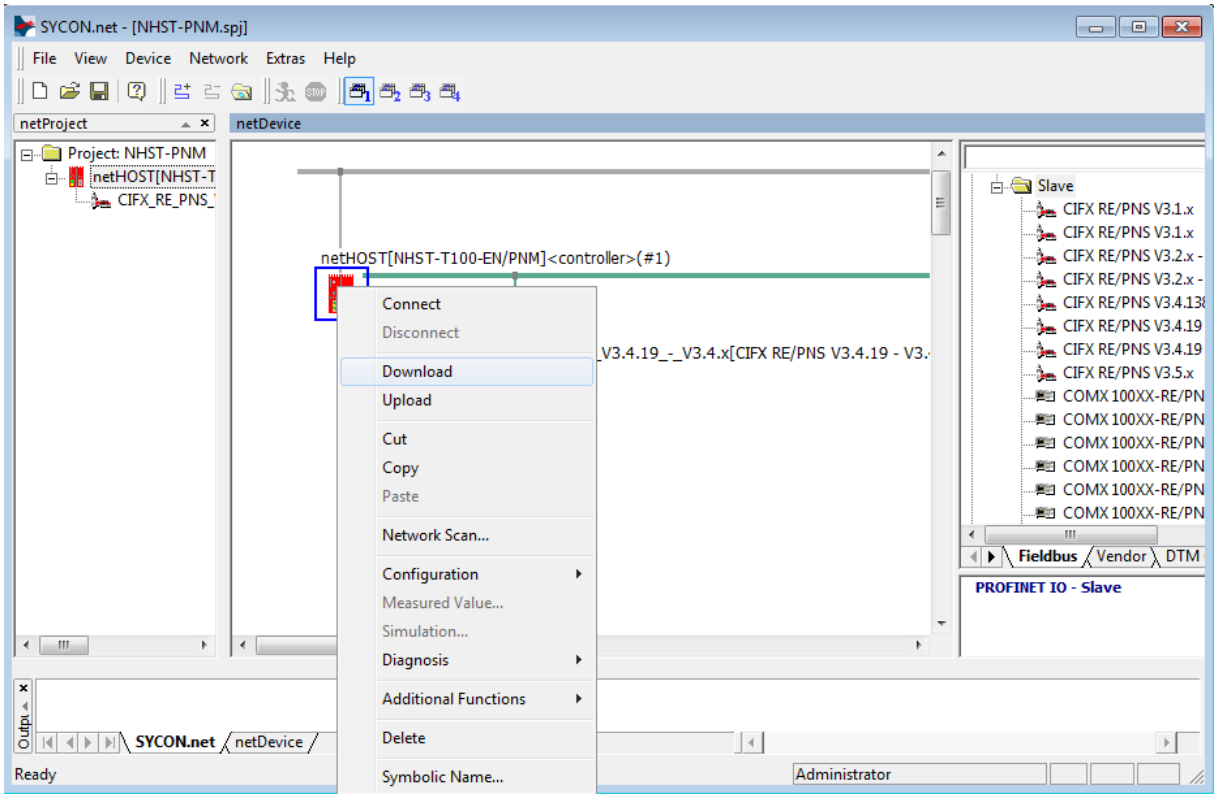


Figure 65: Download Configuration

NOTICE

Hazard of device damage by disruption of voltage supply during configuration download!

Do not interrupt the voltage supply while downloading the configuration to the netHOST. Power failure during a writing process in the file system can cause severe malfunctioning of the device.

- Answer the security question with **Yes**.
- The configuration file is downloaded to the netHOST. After the download has been completed, the netHOST device automatically resets itself.

Note: By default, the start of the communication of the RTE systems PROFINET IO and EtherNet/IP is controlled by the application; EtherCAT communication on the other hand is started automatically by the device. In the **Master Settings** dialog window of the RTE Master DTM you can configure whether the bus communication is to be started automatically by the device itself or whether it is to be started by the application. To open the RTE Master DTM, right-click netHOST symbol, then choose **Configuration** -> **[RTE system] Master**) from the context menu.
For **PROFINET IO**: open **Controller Settings** dialog window,
for **Ethernet/IP**: open **Scanner Settings** dialog window
for **EtherCAT**: open **General** dialog window,
then set the start of the bus communication according to your needs.

How to start RTE communication manually in the **netHOST Device Test Application** is described in section *Testing Communication of netHOST for RTE Systems: NHST-T100-EN/PNM Example* on page 86.

8 Testing Communication Step-By-Step

8.1 Testing Communication of netHOST for Fieldbus: NHST-T100-DP/DPM Example

This chapter describes how to use the Hilscher **netHOST Device Test Application** to test the bus communication of the netHOST acting as master in a PROFIBUS DP network.

8.1.1 Prerequisites

- You have inserted the netHOST Solutions DVD (on which the **netHOST Device Test Application** is stored) into the DVD drive of your Windows PC/notebook. Alternatively, you can copy the `netHOST Test` folder (stored on the DVD in the `Setups & Drivers` directory) from the DVD to a local drive of your Windows PC/notebook.
- The Windows PC/notebook and the netHOST device are connected to the same Ethernet LAN.
- The netHOST device and the fieldbus slave devices are connected to the Fieldbus, are properly configured and supplied with voltage.

8.1.2 Step-By-Step Instructions

1. Start netHOST Device Test Application.

➢ Insert the netHOST Solutions DVD into your local DVD ROM drive.

↬ The **netHOST Solutions** start screen opens.

➢ In the menu of the start screen, choose **Run Windows Test Application**.

Note: As an alternative, you can also start the Test Application by double-clicking the *netHOST.exe* file stored in the `netHOST Test` folder.

↬ netHOST Device Test Application opens.

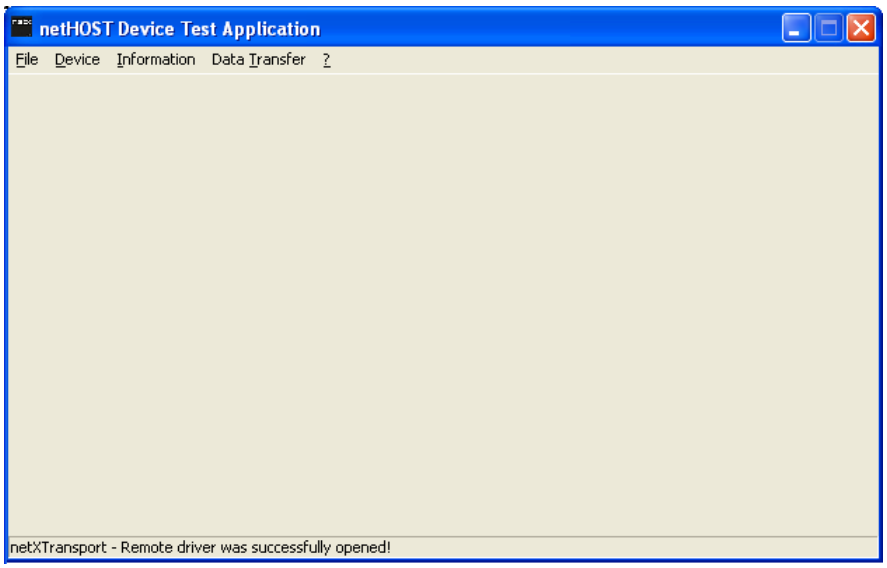


Figure 66: Start netHOST Device Test Application

2. Check TCP/IP settings of the netX Driver.

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

➢ The **Connector Configuration** dialog opens.

➢ Choose **TCP Connection** tab:

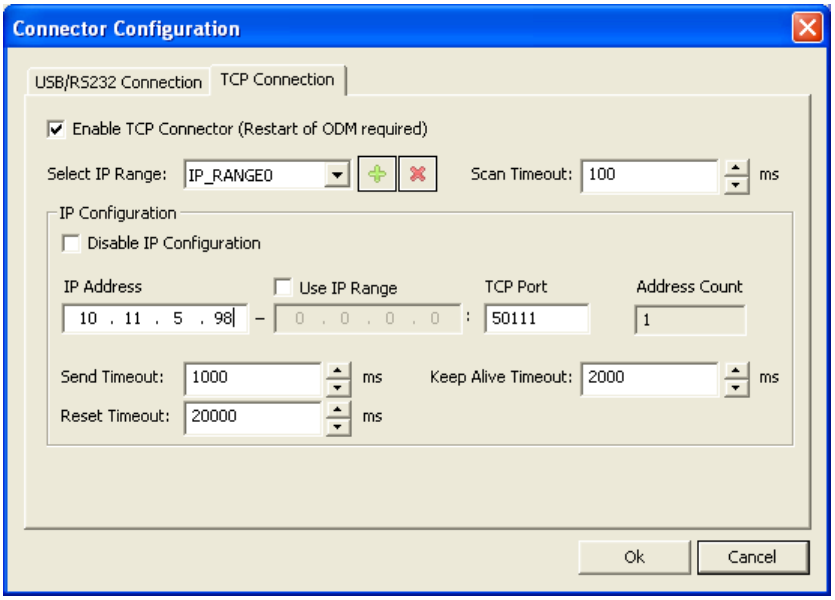


Figure 67: TCP Connection netX Driver

➢ Check whether the **IP Address** field displays the actual address of the netHOST. If not, enter the correct address.

Note: The netHOST Device Test Application uses the same netX Driver parameters as SYCON.net. If you have already configured the right IP address in the **netX Driver** dialog window in SYCON.net, this address is also displayed and taken over by the netHOST Device Test Application.

➢ Click **OK**.

➢ The **Connector Configuration** dialog closes.

3. Open communication channel.

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

➧ The Test Application establishes an Ethernet connection to the netHOST. This may take a few seconds. Afterwards, the **Channel Selection** dialog window opens:

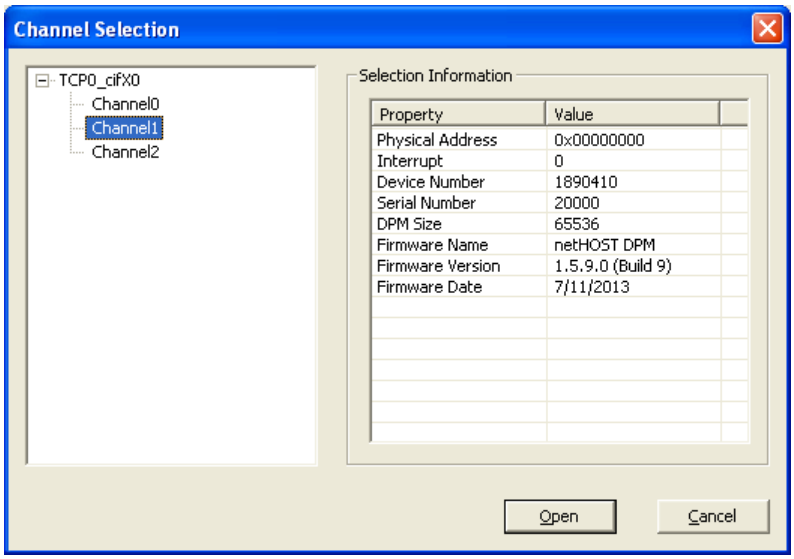


Figure 68: Channel Selection in netHOST Device Test Application

➢ In the navigation tree on the left side, select **Channel1** entry. This is the channel of the fieldbus master, in this case the PROFIBUS DP master.

Important: Please note that in netHOST devices for **Fieldbus** (NHST-T100-DP/DPM, NHST-T100-CO/COM and NHST-T100-DN/DNM), the communication stack of the Fieldbus master is always located in **Channel 1**.

On the other hand, in netHOST devices for **Real-Time Ethernet** systems (NHST-T100-EN/PNM, NHST-T100-EN/ECM and NHST-T100-EN/EIM), the communication stack of the RTE master is always located in **Channel 0**.

➧ In the right part of the dialog window, the device parameters of the connected netHOST are displayed.

Note: You can check whether you are connected to the right device by comparing the number indicated in the **Serial Number** field with the serial number printed on the device label of the netHOST.

➢ Click **Open**.

➧ The **Channel Selection** dialog window closes. The opened channel afterwards is displayed in the header of the netHOST Device Test Application.

4. Start bus communication.

➢ In the menu, choose **Device** > **Bus State**.

➧ The **Bus State Test** dialog window opens:

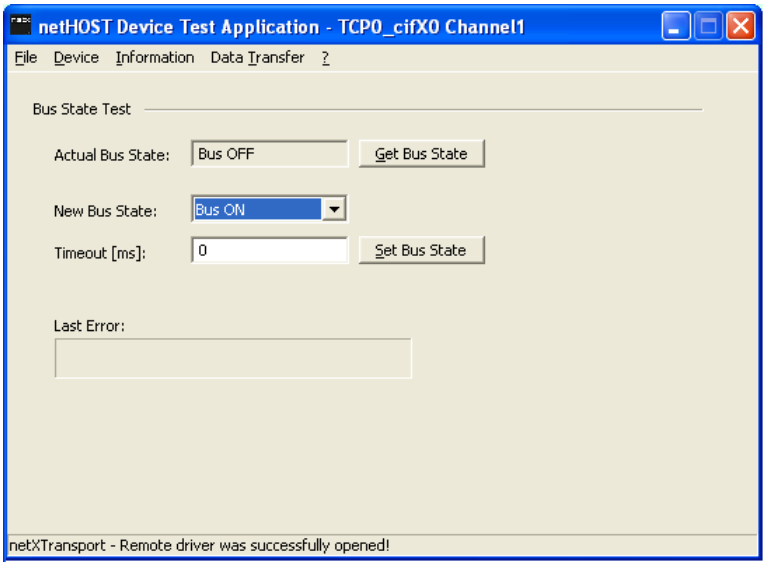


Figure 69: Bus State Test in netHOST Device Test Application

➢ In the **New Bus State** drop-down list, select **Bus ON** option.

➢ Click **Set Bus State**.

➧ The fieldbus communication is being started.

5. Read and write I/O data.

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

➧ **The Process Data I/O Image** dialog window opens:

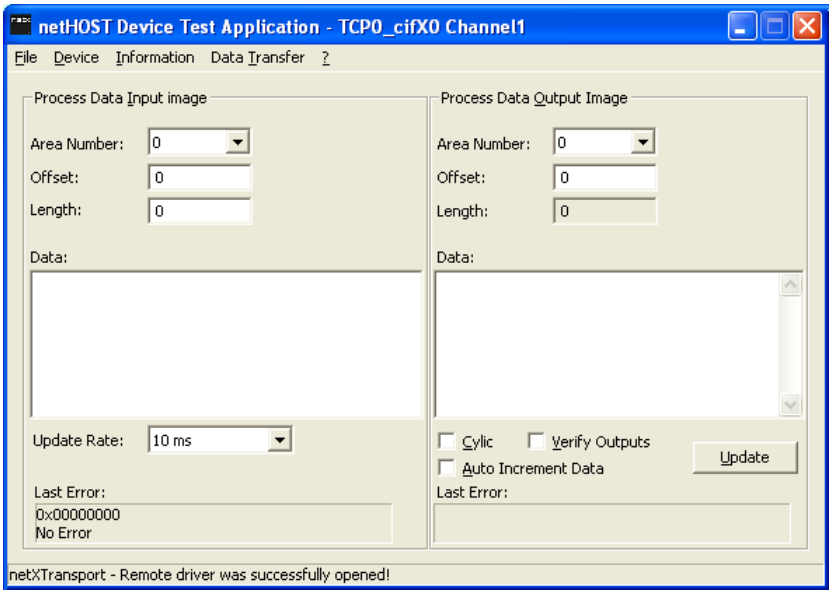


Figure 70: I/O Data in netHOST Device Test Application

➢ In the **Length** field of the **Process Data Input Image** area, enter the number of bytes to be displayed.

➢ Then click into the **Data** field.

- Make sure that one or several slave devices belonging to the secondary network (i. e. slaves in the fieldbus) produce output signals, which then in turn will be displayed as incoming data in the **Data** field in the **Process Data Input Image** area of the Test Application. In our configuration example using the **CB-AB32-DPS IO test board** as fieldbus slave device, you can, for instance, press the **S1** button on the test board.

➧ The signal of the slave device is being displayed in the **Data** field.

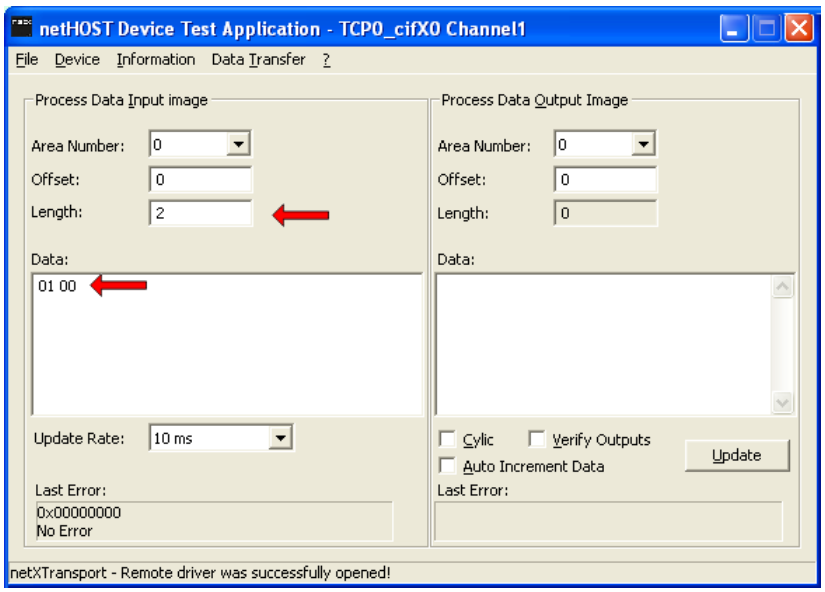


Figure 71: Displaying Input Data in the netHOST Device Test Application

- In the **Data** field of the **Process Data Output Image** area, enter output data that can be sent to the slave device and trigger an event there. In our configuration example using the CB-AB32-DPS IO test board as fieldbus slave device for instance, you can enter the value **02 00**.
- Then click **Update**.

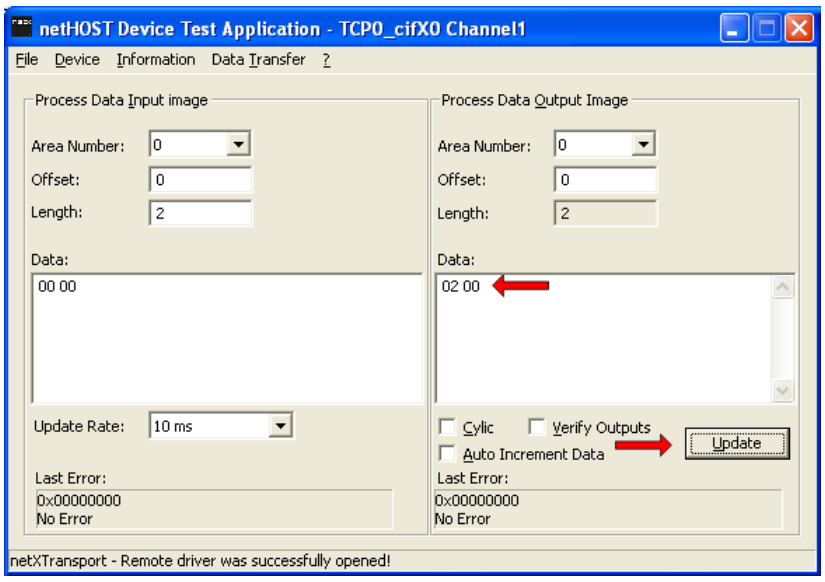


Figure 72: Entering Output Data in the netHOST Device Test Application

➧ At the slave device, the corresponding Bits are being received. (In our configuration example using the CB-AB32-DPS IO test board as fieldbus slave device for instance, the **OUT** LED at **S2** lights up.)

6. End testing.

- In the menu, choose **Device** > **Bus State**.
- The **Bus State Test** dialog window opens.
- In the **New Bus State** drop-down list, select **Bus OFF** option, then click **Set Bus State**.
- In the menu, choose **Device** > **Close** to close the communication channel.
- In the menu, choose **File** > **Quit** to exit the netHOST Device Test Application.

8.2 Testing Communication of netHOST for RTE Systems: NHST-T100-EN/PNM Example

This chapter describes how to use the Hilscher **netHOST Device Test Application** to test the bus communication of the netHOST acting as IO Controller in a PROFINET network. In this example a PC card **CIFX 50-RE/PNS** is used as IO device and the **cifX Test Application** (which is part of the cifX driver installed on the PC hosting the cifX card) serves as slave application.

8.2.1 Prerequisites

- You have inserted the netHOST Solutions DVD (on which the **netHOST Device Test Application** is stored) into the DVD drive of your Windows PC/notebook. Alternatively, you can copy the `netHOST Test` folder (stored on the DVD in the `Setups & Drivers` directory) from the DVD to a local drive of your Windows PC/notebook.
- The Windows PC/notebook and the netHOST device are connected to the same local Ethernet LAN.
- The netHOST device and the slave devices are connected to the Real-Time Ethernet network, are properly configured and supplied with voltage.
- For this example you need a **CIFX 50-RE/PNS** serving as IO device and the **cifX Test Application** (which is part of the cifX driver installed on the PC hosting the cifX card).

8.2.2 Step-By-Step Instructions

1. Start netHOST Device Test Application.

➢ Insert the netHOST Solutions DVD into your local DVD ROM drive.

↬ The **netHOST Solutions** start screen opens.

➢ In the menu of the start screen, choose **Run Windows Test Application**.

Note: As an alternative, you can also start the Test Application by double-clicking the *netHOST.exe* file stored in the `netHOST Test` folder.

↬ netHOST Device Test Application opens.

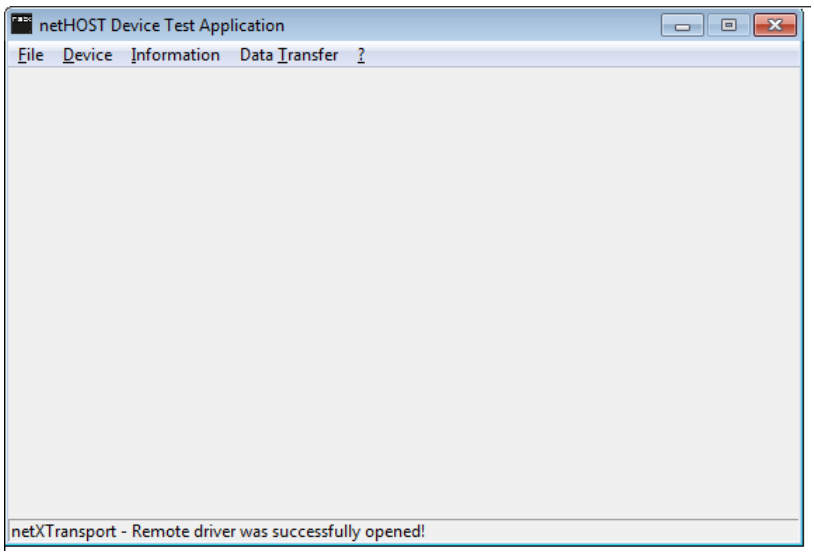


Figure 73: Start netHOST Device Test Application

2. Check TCP/IP settings of the netX Driver.

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

➢ The **Connector Configuration** dialog opens.

➢ Choose **TCP Connection** tab:

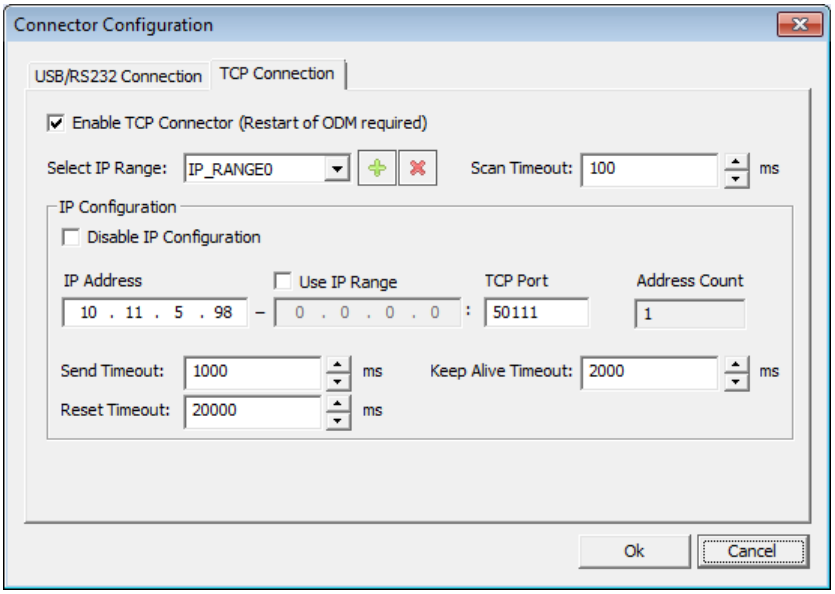


Figure 74: TCP Connection netX Driver

➢ Check whether the **IP Address** field displays the actual address of the netHOST. If not, enter the correct address.

Note: The netHOST Device Test Application uses the same netX Driver parameters as SYCON.net. If you have already configured the right IP address in the **netX Driver** dialog window in SYCON.net, this address is also displayed and taken over by the netHOST Device Test Application.

➢ Click **OK**.

➢ The **Connector Configuration** dialog closes.

3. Open communication channel.

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

➧ The Test Application establishes an Ethernet connection to the netHOST. This may take a few seconds. Afterwards, the **Channel Selection** dialog window opens:

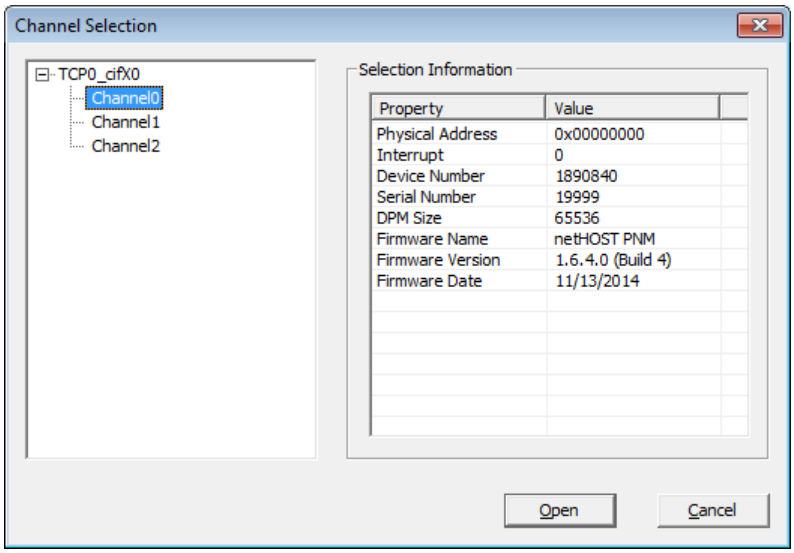


Figure 75: Channel Selection in netHOST Device Test Application

➢ In the navigation tree on the left side, select **Channel0** entry. This is the channel of the RTE master, in this case the PROFINET IO Controller.

Important: Please note that the communication stack of the RTE master in netHOST devices for **Real-Time Ethernet** systems (NHST-T100-EN/PNM, NHST-T100-EN/ECM and NHST-T100-EN/EIM) is always located in **Channel 0**.

On the other hand, in netHOST devices for **Fieldbus** (NHST-T100-DP/DPM, NHST-T100-CO/COM and NHST-T100-DN/DNM), the Fieldbus master is always located in **Channel 1**.

➧ In the right part of the dialog window, the device parameters of the connected netHOST are displayed.

Note: You can check whether you are connected to the right device by comparing the number indicated in the **Serial Number** field with the serial number printed on the device label of the netHOST.

➢ Click **Open**.

➧ The **Channel Selection** dialog window closes. The opened channel afterwards is displayed in the header of the netHOST Device Test Application.

4. Start bus communication.

➢ In the menu, choose **Device** > **Bus State**.

➢ The **Bus State Test** dialog window opens:

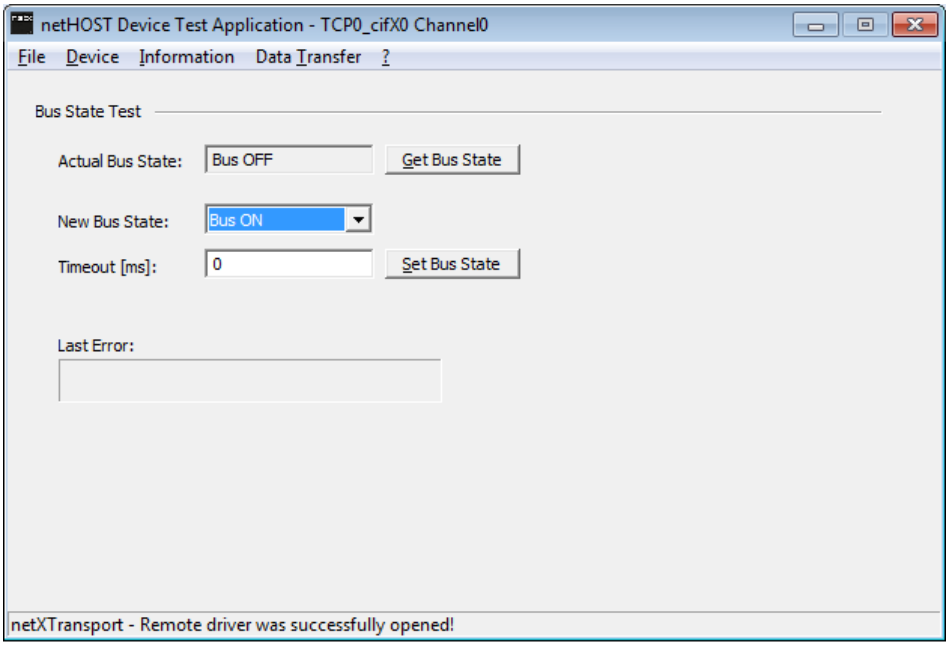


Figure 76: Bus State Test in netHOST Device Test Application

➢ In the **New Bus State** drop-down list, select **Bus ON** option.

➢ Click **Set Bus State**.

➢ Communication of the RTE network is being started.

5. Read and write I/O data.

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

➢ **The Process Data I/O Image** dialog window opens:

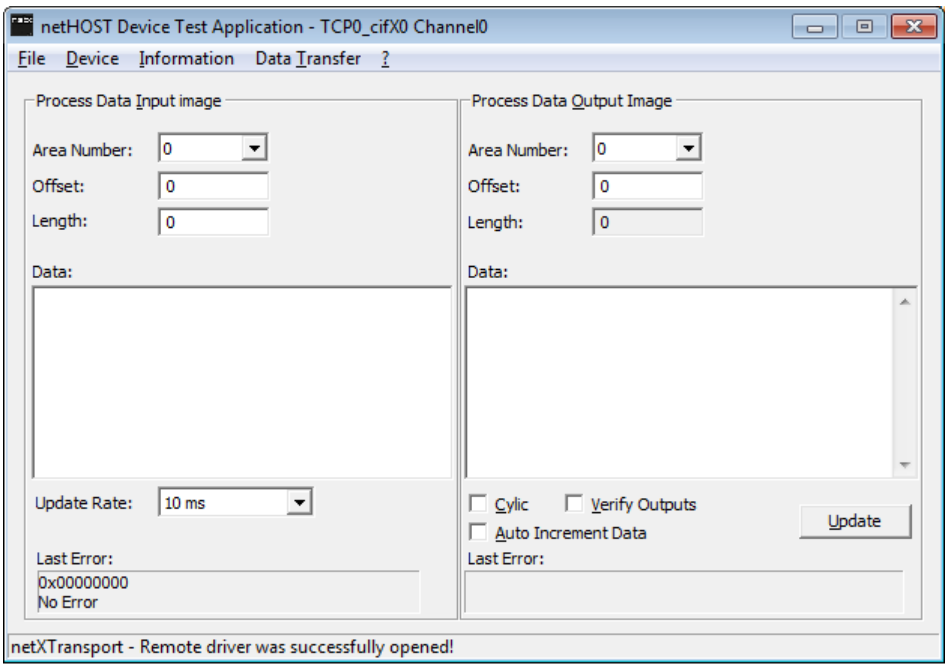


Figure 77: I/O Data in netHOST Device Test Application

- In the **Length** field of the **Process Data Input Image** area, enter the number of bytes to be displayed.
- Then click into the **Data** field.

Note: Make sure that one or several slave devices belonging to the RTE network) produce output signals, which then in turn will be displayed as incoming data in the **Data** field in the **Process Data Input Image** area of the Test Application. Using the PC card CIFX 50-RE/PNS as IO Device, the following steps describe how to use the **cifX Test Application** (which is part of the cifX driver installed on the PC hosting the cifX card) for this.

6. Open the **cifX Test Application** on your PC.

- In the Windows **Start** menu of the PC hosting your PC card cifX, choose **Control Panel** > **cifX Test**.
- The **cifX Test Application** opens:

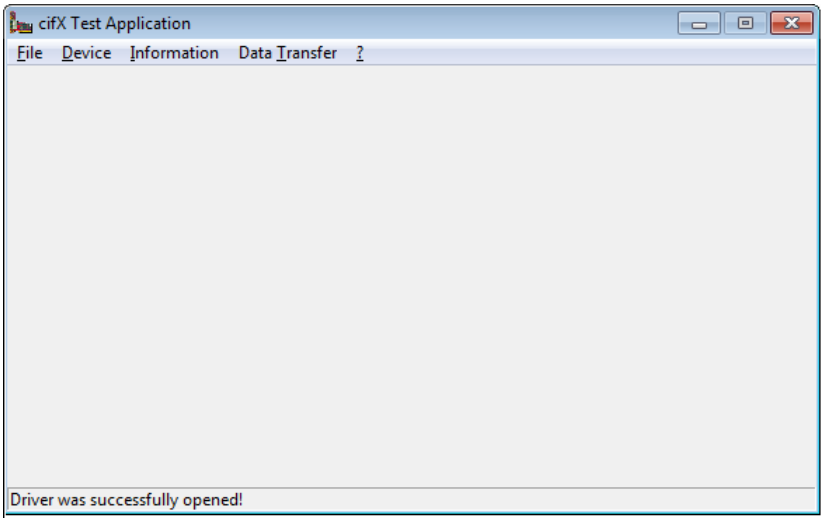


Figure 78: Start cifX Test Application

7. Open connection to PC Card cifX in cifX Test Application.

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

The cifX Test Application establishes a connection to the PC card via cifX driver and PCI interface. After a while, the **Channel Selection** dialog box opens:

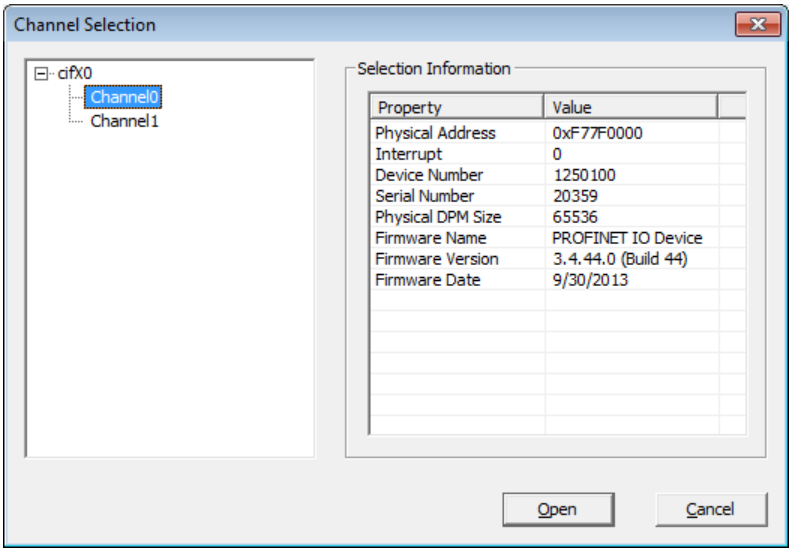


Figure 79: Channel Selection Dialog in cifX Test Application

- In the left part of the dialog box, select **Channel0**. This is the channel of the PROFINET IO Device.
- Click **Open** button.

The **Channel Selection** dialog box closes. The header of the **cifX Test Application** now displays the selected channel:

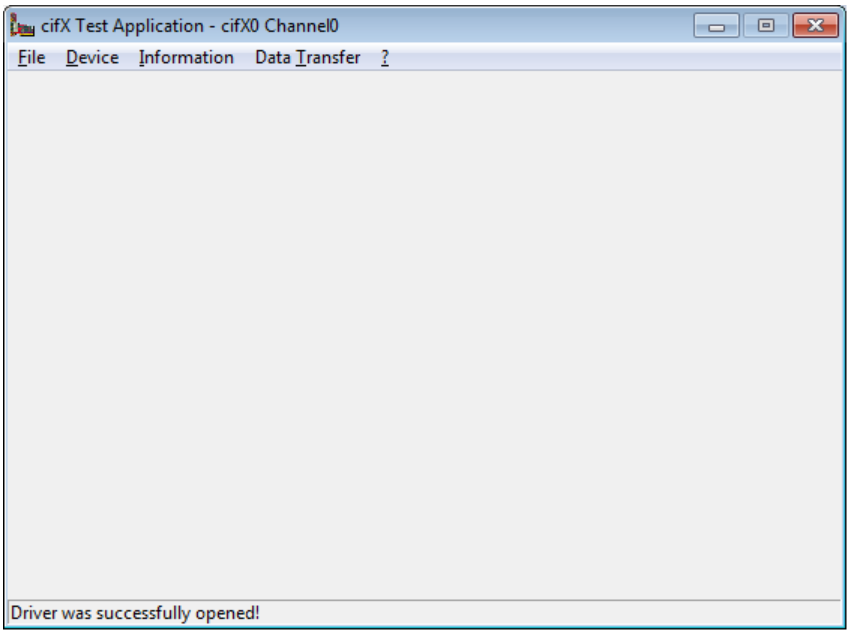


Figure 80: cifX Test Application After Channel Selection

8. Send output data.

➢ In the menu of the cifX Test Application, choose **Data Transfer** > **I/O Data**.

➧ The **Process Data I/O Image** dialog window opens:

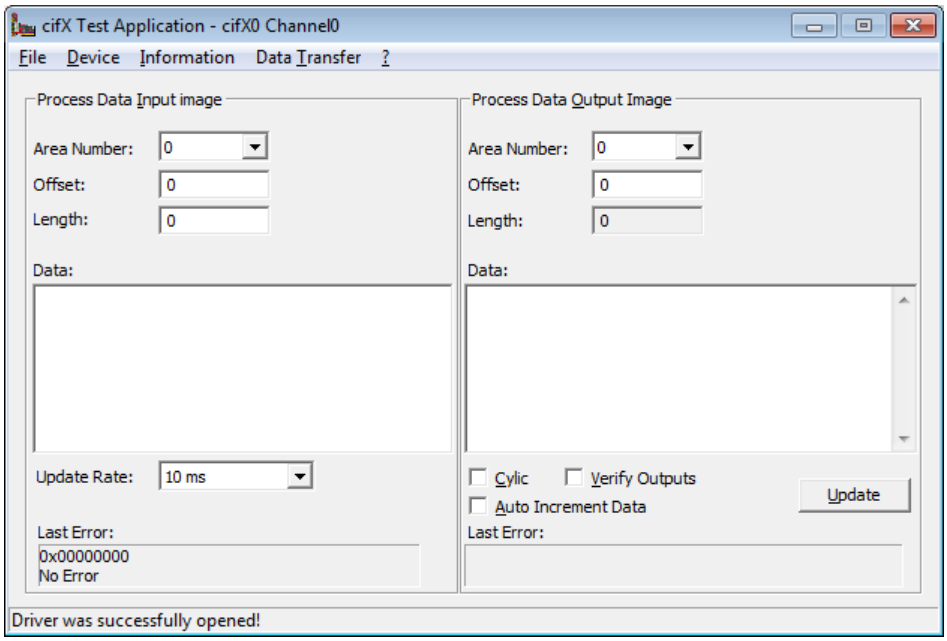


Figure 81: I/O Data Dialog in cifX Test Application (1)

➢ In the **Data** field of the **Process Data Output Image** area, enter output data that can be sent to the PROFINET IO Controller (i. e. the netHOST) in order to be displayed in the netHOST Device Test Application.

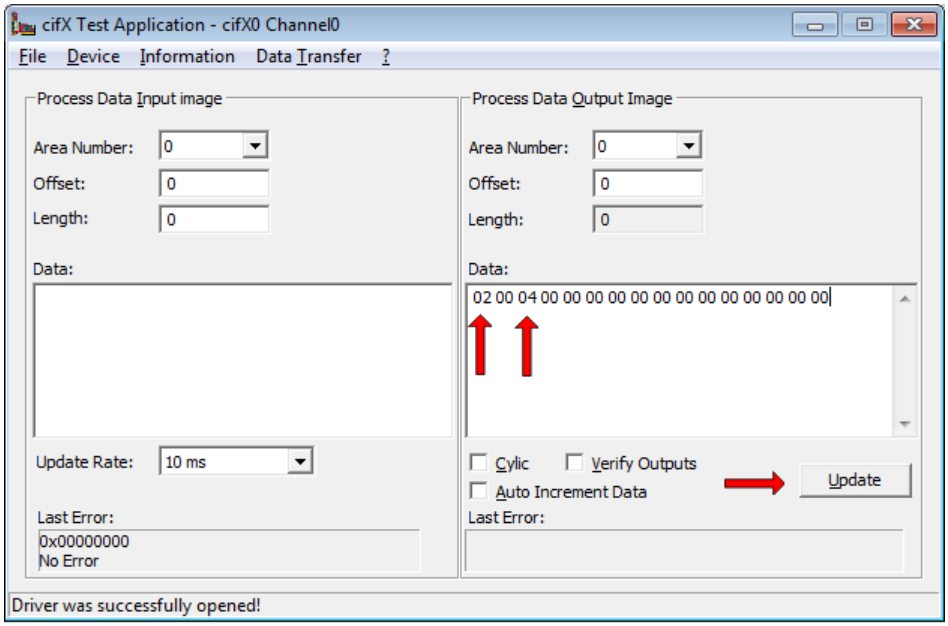


Figure 82: I/O Data Dialog in cifX Test Application (2)

➢ After having entered the output data, click **Update**.

➧ The data is sent from the IO Device (i. e. the PC card cifX) to the IO Controller (i. e. the netHOST) via PROFINET network.

9. Read I/O data from IO Device in netHOST Device Test Application.

➢ Change to the netHOST Device Test Application.

➢ The incoming data from the IO Device is displayed in the **Data** field in the **Process Data Input Image** area:

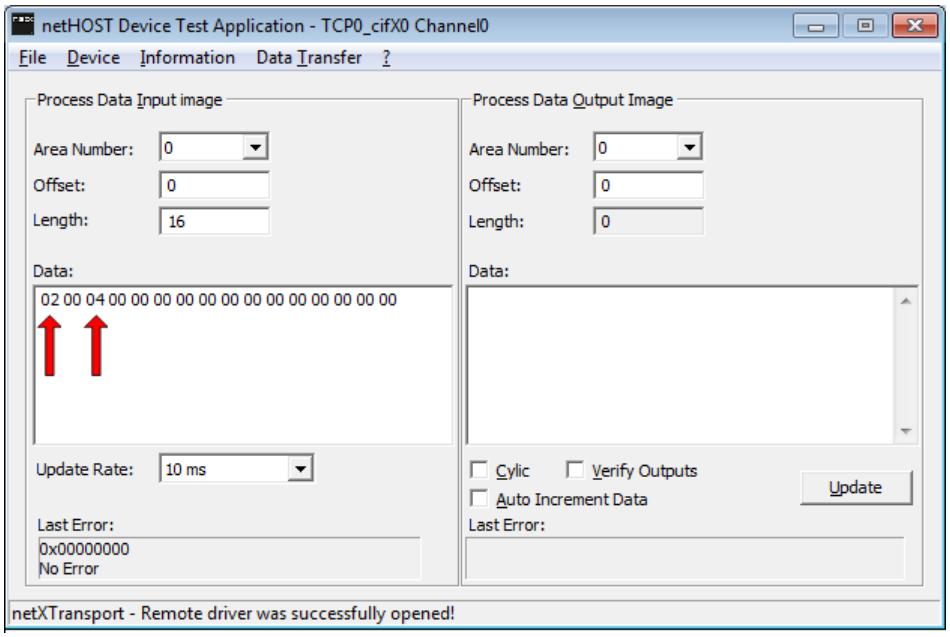


Figure 83: Displaying Incoming Data in netHOST Device Test Application

10. Send Output data from IO Controller to IO Device.

➢ In the **Data** field of the **Process Data Output Image** of the netHOST Device Test Application, enter output data that can be sent to the IO Device.

➢ Click **Update** Button.

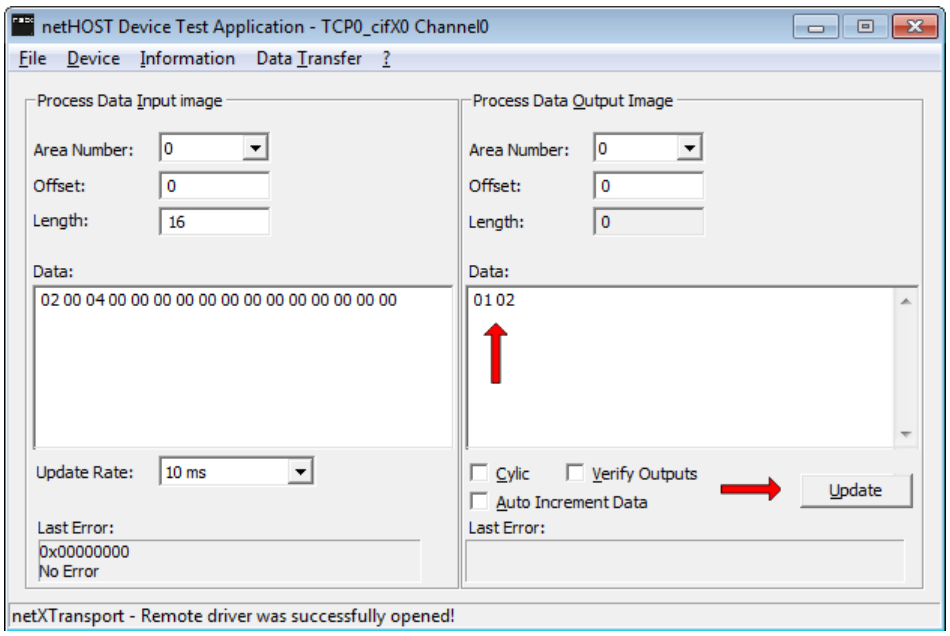


Figure 84: Entering Output Data in netHOST Device Test Application

11. Display input data in cifX Test Application.

➢ Change to the cifX Test Application.

➢ In the **Length** field of the **Process Data Input Image** area, enter the number of bytes to be displayed. Then click into the **Data** field.

➧ The incoming signals of the IO Controller are being displayed in the **Data** field:

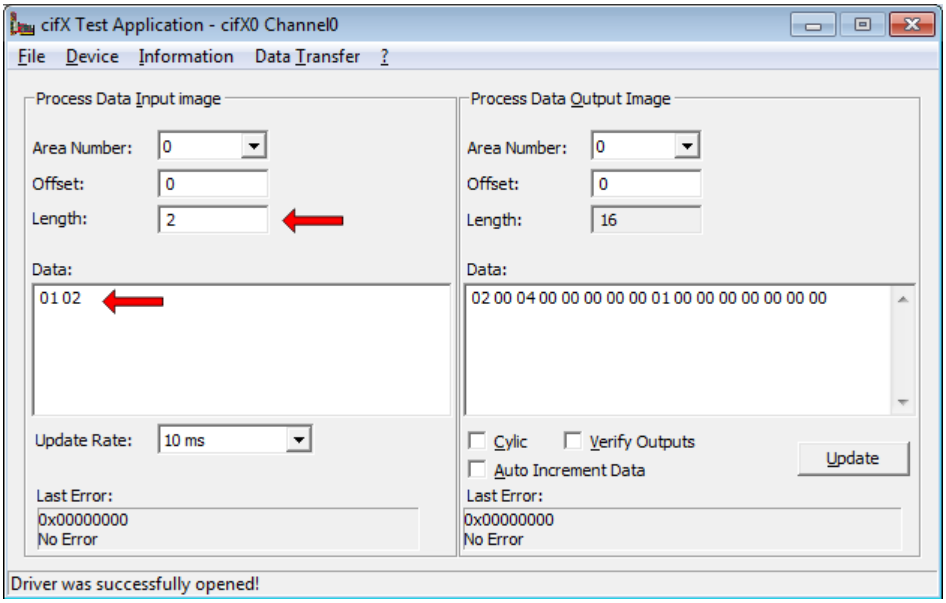


Figure 85: Displaying Input Data in cifX Test Application

12. End testing.

➢ In the menu of the netHOST Device Test Application, choose **Device** > **Bus State**.

➧ The **Bus State Test** dialog window opens.

➢ In the **New Bus State** drop-down list, select **Bus OFF** option, then click **Set Bus State**.

➢ In the menu, choose **Device** > **Close** to close the communication channel.

➢ In the menu, choose **File** > **Quit** to exit the netHOST Device Test Application.

9 Importing Device Description Files into SYCON.net

This section is only relevant to you if the slave device, which you want to add to your netHOST configuration project in SYCON.net, is not listed in the device catalog of SYCON.net. In this case, you have to import the device description file of the slave device into SYCON.net. To do so, proceed as follows:

- Open your netHOST configuration project in SYCON.net.
- In the SYCON.net menu, choose **Network** > **Import Device Descriptions…**

↬ The following dialog window opens:

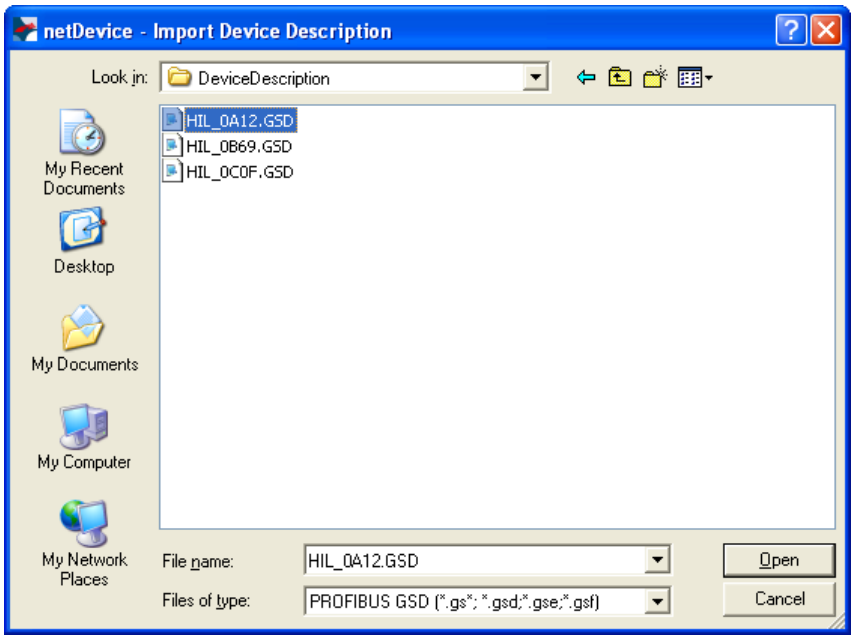


Figure 86: Import Device Description File (PROFIBUS GSD Example)

- In the **Files of type** drop-down list, select the appropriate file type for the fieldbus/RTE system.
- Then navigate to the directory where the device description file is stored.

↬ All device description files fitting the chosen type of fieldbus/RTE system are displayed in the dialog window.

- Select the appropriate file, then click **Open**.
- Answer the security question, whether you want to reload the catalog, with **Yes**.

↬ You have imported the device description file into SYCON.net, and you can now add the device to the secondary network in your configuration project.

10 Updating Firmware with SYCON.net

10.1 Overview

With the exception of the **NHST-T100-EN** device (order no.: 1890.800), all netHOST devices are shipped with their firmware already loaded.
In case updating the firmware of the netHOST becomes necessary, this chapter describes how to use the SYCON.net configuration software to do so. The **NHST-T100-DP/DPM** serves as example device in this chapter.

Note that any configuration file and IP address stored in the netHOST device will be erased by the firmware update. The device falls back to its default `0.0.0.0` IP address, therefore you have to re-assign an IP address to the netHOST device with the **Ethernet Device Configuration** Tool before you can download a new configuration with SYCON.net (see *Assigning Temporary IP Address to netHOST Device* section on page 24).

Note: Updating firmware with SYCON.net as described in this chapter is only possible if a firmware is running in the netHOST device. If the firmware inside the device is defective or altogether missing, you have to perform a so-called “firmware recovery” by using an SD memory card or a USB connection. Instructions on this can be found in the user manual *netHOST NHST-T100 – LAN controlled master devices for Fieldbus and Real-Time Ethernet networks* in the *Firmware recovery* chapter.

10.2 Prerequisites for Updating Firmware with SYCON.net

- You have installed **SYCON.net** on your configuration PC.
- You have inserted the netHOST Solutions DVD into your local DVD drive or have access to the firmware file intended for download (e. g. you have stored the file on your configuration PC).
- The configuration PC and the netHOST device are connected to the same local Ethernet network.
- The netHOST device is connected to a voltage supply.
- You know the IP address of the netHOST device.

10.3 Step-By-Step Instructions for Updating Firmware with SYCON.net

1. Start **SYCON.net** configuration software.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

➢ A login dialog appears:

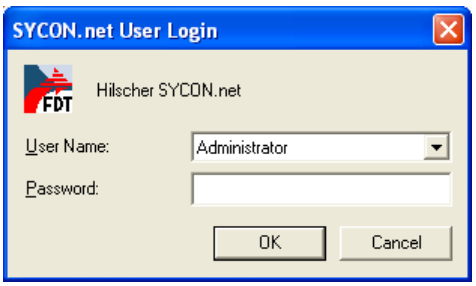


Figure 87: SYCON.net Login

➢ Enter your password, then click **OK**.

➢ SYCON.net opens with a new empty project:

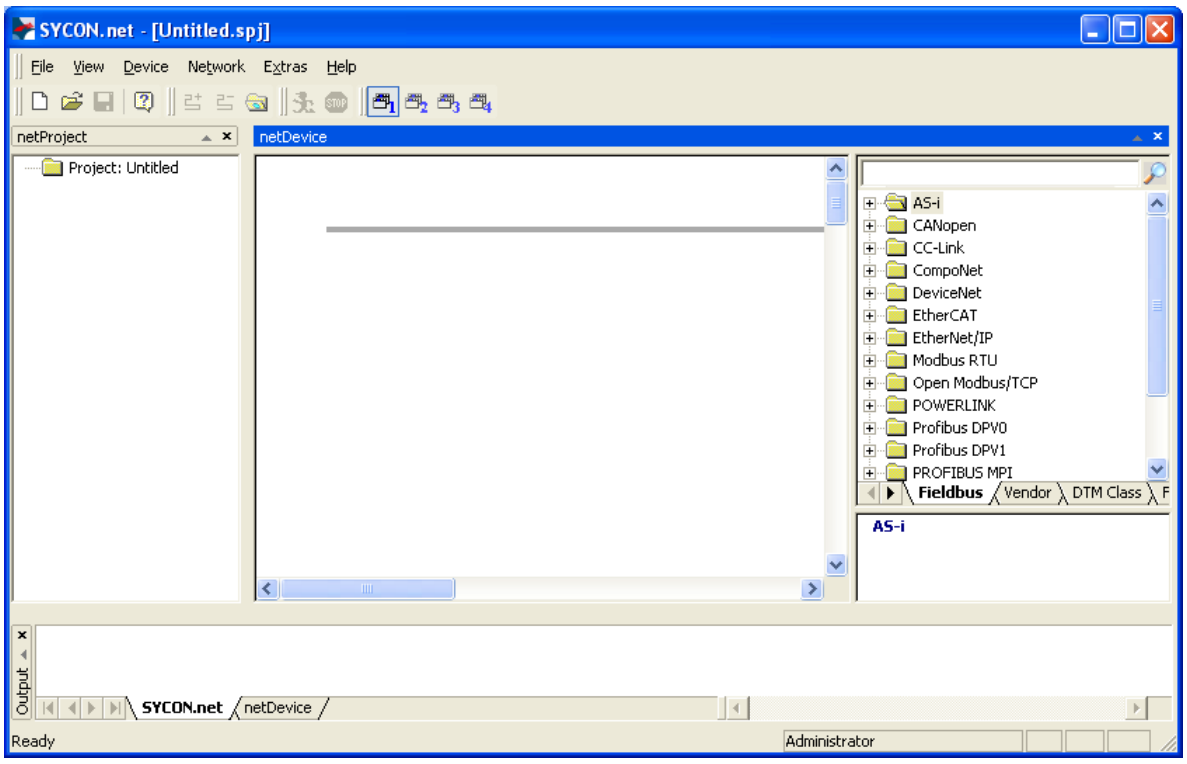


Figure 88: Empty Project in SYCON.net

2. Open existing netHOST project or create a new project.

Note: To download the firmware to the netHOST, you can use your already existing configuration project. If you don't have access to the old configuration project file, you can create a provisional new project, consisting only of the netHOST symbol, and use this makeshift project to establish an online connection and download the firmware file to the device.

- In the menu, choose **File** > **Open…** to open an existing netHOST project.

OR

- In the **Vendor** tab of the **Device Catalog** (right window), open folder **Hilscher GmbH** > **Master**. Then select the netHOST device (in this example the **NHST-T100-DP/DPM**) and drag & drop it onto the bus configuration line in the middle window.

3. Open the netHOST configuration window (i. e. the netHOST DTM).

- Double-click the netHOST symbol in the bus configuration line, or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

If you are using an existing netHOST project (for which the configuration of the driver and the device assignment had already taken place) the netHOST DTM now opens with the **Settings** dialog window, which features the download function. In this case, you can directly proceed with step 4 and start downloading the firmware.

OR

If you have just now created a new project, the netHOST DTM opens with the **Device Assignment** dialog window and automatically starts to search for connected devices.
In this case, you first have to assign the device and configure the driver before you can proceed to download the firmware in the **Settings** dialog window. Information on how to assign the device and configure the driver can be found in the *Assigning Device to Driver and Configuring Driver* section on page 52.

4. Browse for firmware.

➢ In the **Navigation Area**, select **Configuration** > **Settings**.

➢ The **Settings** dialog window opens:

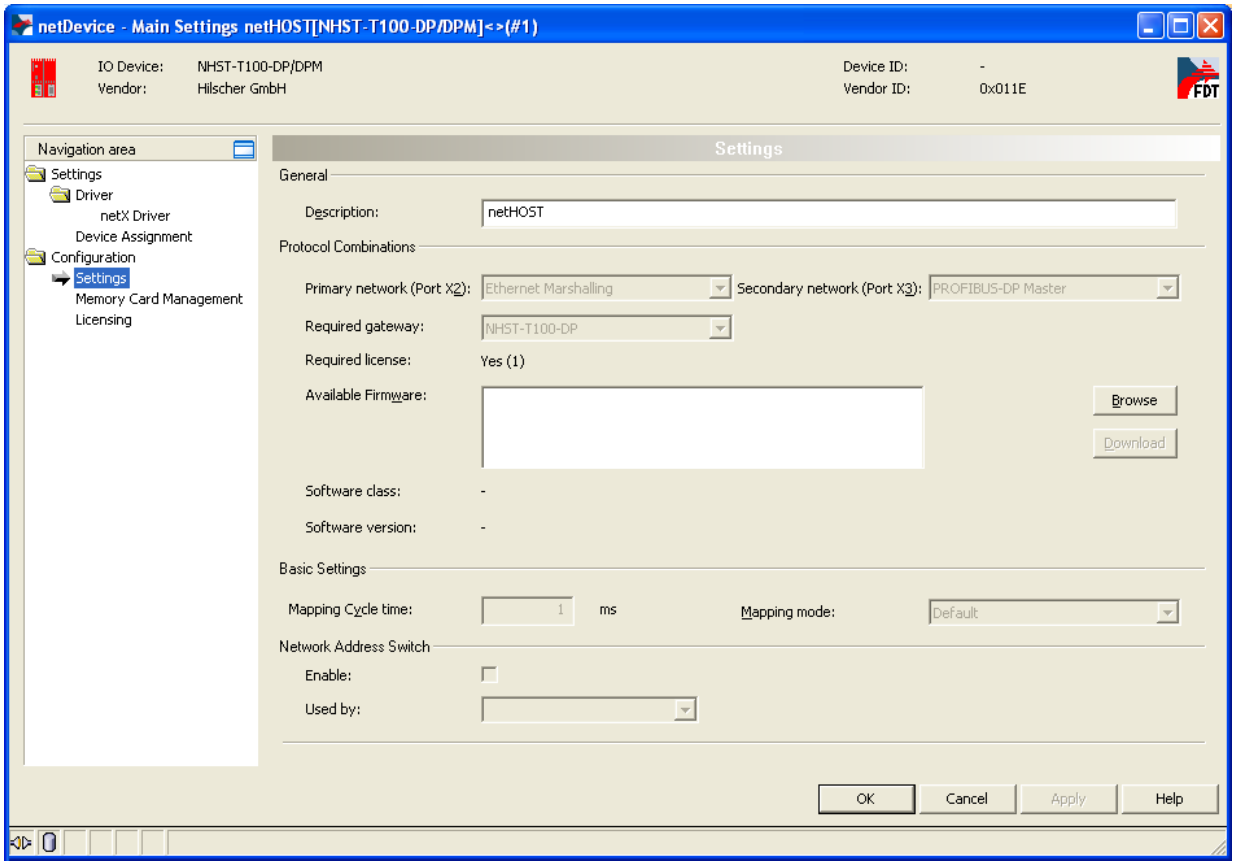


Figure 89: Settings Dialog

➢ Click **Browse** button next to the **Available Firmware** field, in order to search for the appropriate firmware file.

➢ The **Select Firmware File** dialog opens:

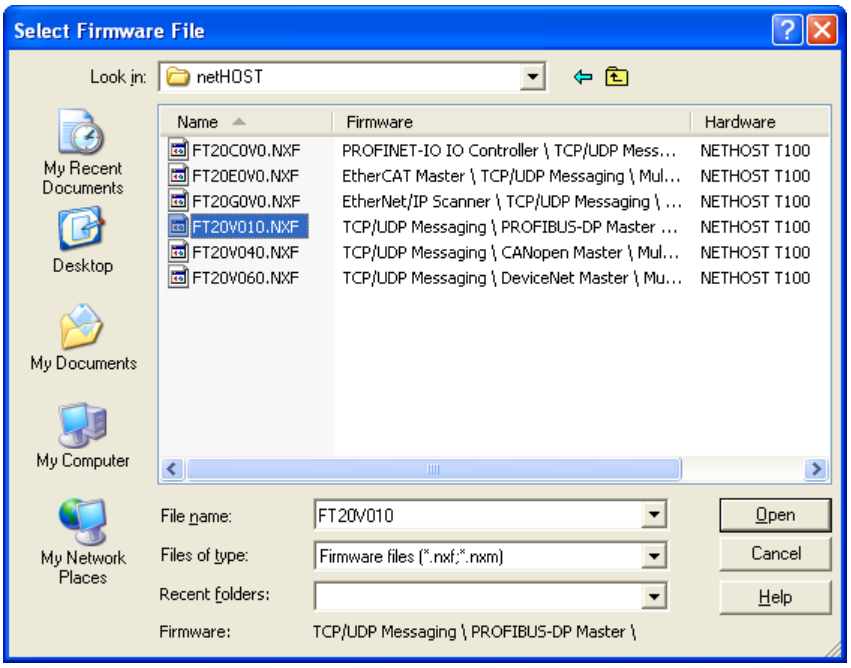


Figure 90: Select Firmware File Dialog in SYCON.net

➢ Navigate to the directory where the firmware file is stored. Firmware files are stored on the netHOST Solutions DVD in the `Firmware\netHOST` directory.
The subsequent table indicates which file belongs to which device:

netHOST device	Protocol (Fieldbus or RTE)	Firmware file
NHST-T100-DP/DPM	PROFIBUS DP Master	FT20V010.NXF
NHST-T100-CO/COM	CANopen Master	FT20V040.NXF
NHST-T100-DN/DNM	DeviceNet Master	FT20V060.NXF
NHST-T100-EN/PNM	PROFINET IO Controller	FT20C0V0.NXF
NHST-T100-EN/ECM	EtherCAT Master	FT20E0V0.NXF
NHST-T100-EN/EIM	EtherNet/IP Scanner	FT20G0V0.NXF

Table 16: netHOST Firmware

➢ Select the appropriate firmware file, then click **Open**.

↬ Back in the **Settings** dialog window, the selected firmware file is now displayed in the **Available Firmware** field:

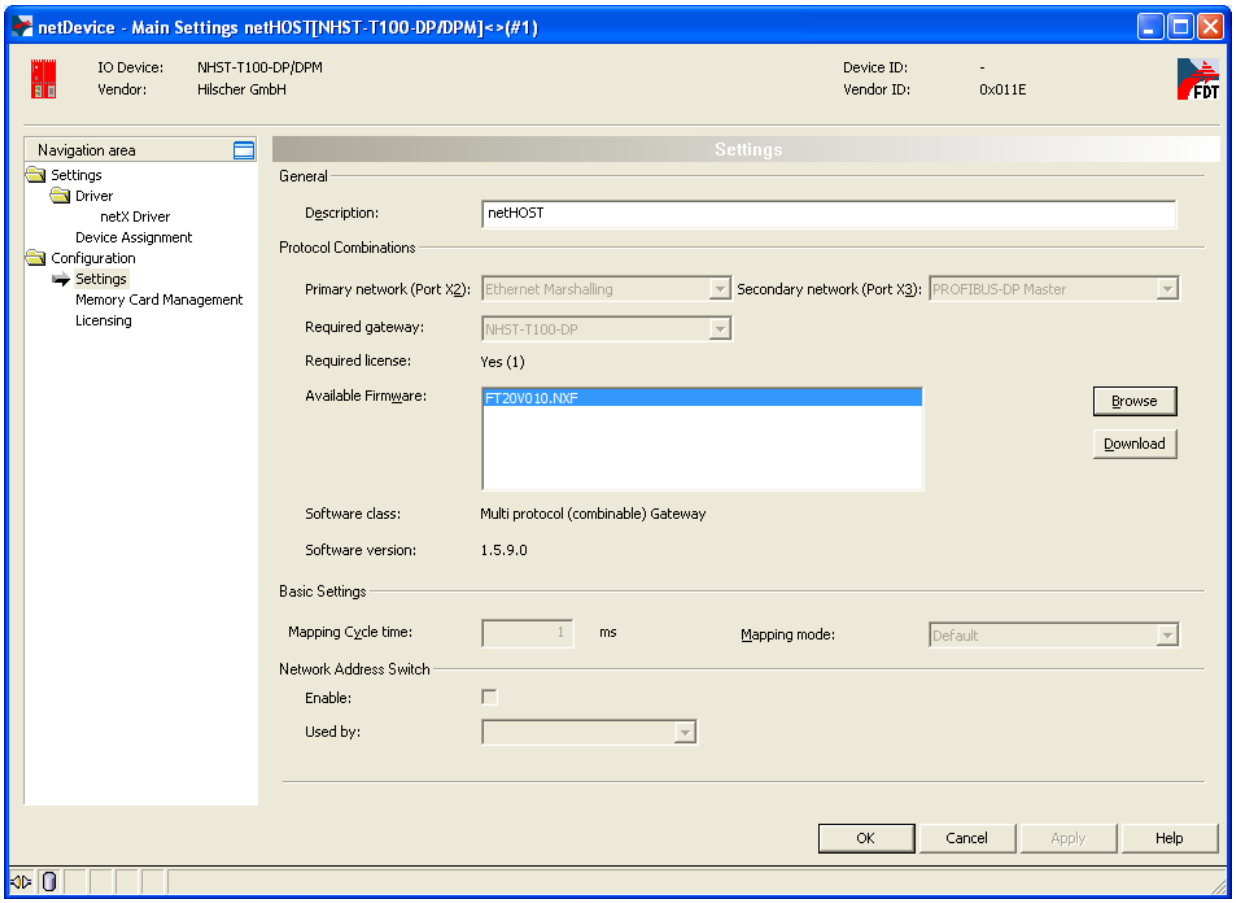


Figure 91: Firmware Download in SYCON.net

5. Download firmware to netHOST device.

➢ In the **Available Firmware** field, select the firmware file.

↬ Class and version of the software are displayed.

➢ Check whether you have selected the appropriate firmware file.

NOTICE

Hazard of device damage by disruption of voltage supply during firmware update!

Do not interrupt the voltage supply while updating the firmware of the netHOST. Power failure during a writing process in the file system can cause severe malfunctioning of the device.

➢ If you have selected the appropriate firmware file, click **Download**, to start downloading the file to the netHOST device.

↬ The firmware is downloaded to the netHOST.

Note: Any configuration file and IP address stored in the netHOST device will be erased by the firmware download. The device falls back to its default `0.0.0.0` IP address, therefore you have to re-assign an IP address to the netHOST device afterwards with the **Ethernet Device Configuration** Tool. Instructions for this can be found in the *Assigning Temporary IP Address to netHOST Device* section on page 24.

- To close the netHOST DTM, click **OK** or **Cancel**.

11 Using SD Memory Card to Copy Configuration Data into Spare netHOST Devices

11.1 Overview

With the **Memory Card Management** function of the netHOST DTM in SYCON.net, you can copy an already downloaded configuration together with the firmware and the IP address from the internal load memory of the netHOST device onto an SD memory card, which has been inserted into the netHOST device. Thus, you can “backup” this data to an external storage medium. Afterwards, you can remove the SD memory card from the netHOST device, insert it into other devices and thus copy the data into their internal load memory.
By this method, you can easily bring several devices to an identical state of configuration (i. e. “clone” a primary device) without having each time to establish an online connection between the configuration PC (respectively SYCON.net) and the individual devices.
This can be useful, e. g., if you want to prepare an identical “spare” device.

This chapter describes this procedure using the NHST-T100-DP/DPM as example device.

11.2 Prerequisites

- SD memory card, FAT16 formatted.

Note: The SD memory card is not included in the delivery of the netHOST device, but can be obtained from Hilscher, part number 1719.003.

- A configuration has been downloaded to the netHOST device.
- The Windows PC/Notebook with SYCON.net and the netHOST device are connected to the same local Ethernet network.
- The netHOST device is connected to a voltage supply.

11.3 Step-By-Step Instructions

1. Start **SYCON.net** configuration software.

➢ In the Windows Start menu, select **All Programs** > **SYCON.net System Configurator** > **SYCON.net**.

➢ A login dialog appears:

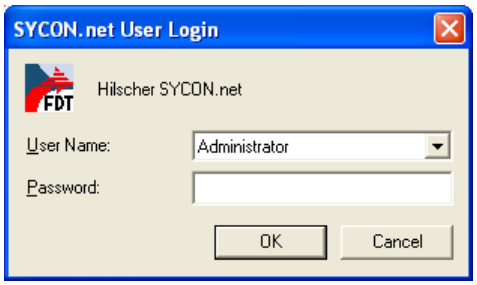


Figure 92: SYCON.net Login

➢ Enter your password, then click **OK**.

➧ SYCON.net opens with a new empty project:

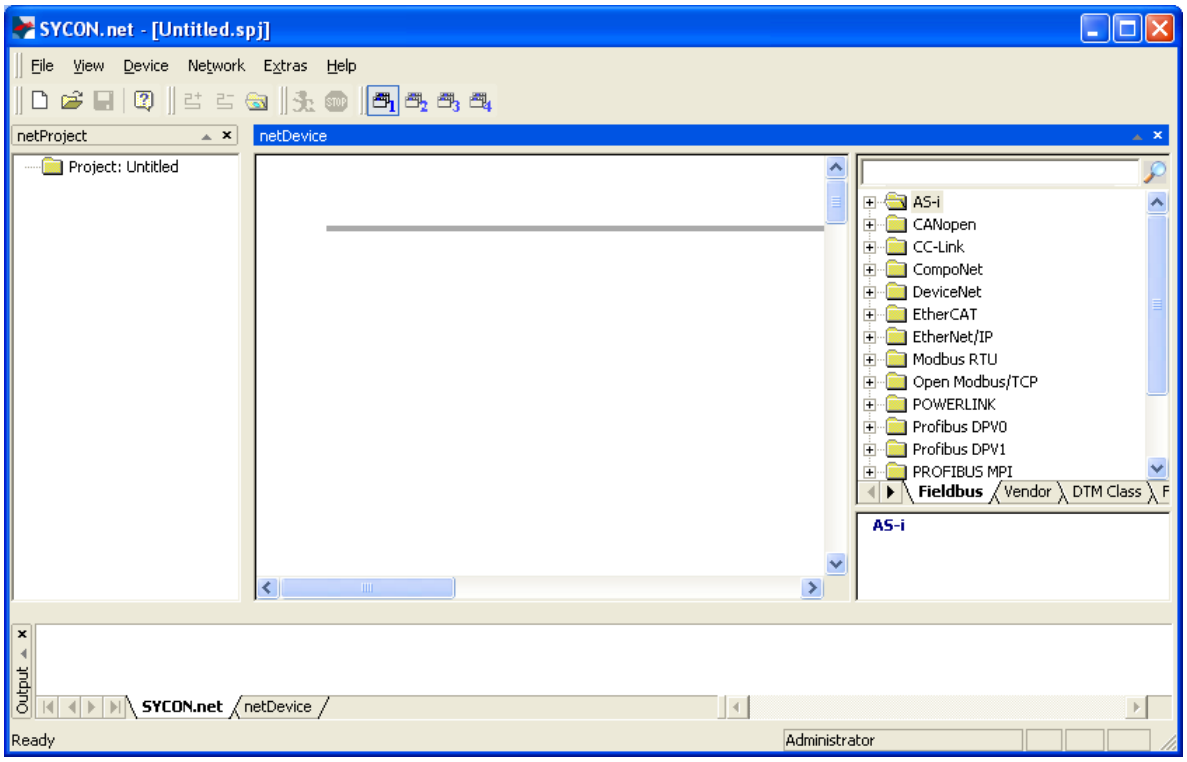


Figure 93: Empty Project in SYCON.net

2. Open existing netHOST project or create a new project.

Note: You can use your already existing configuration project to establish an online connection between SYCON.net and the netHOST device, and to open the **Memory Card Management** dialog. If you don't have access to the old configuration project file, you can create a provisional new project, consisting only of the netHOST symbol, and use this makeshift project to establish the online connection.

➢ In the menu, choose **File** > **Open…** to open an existing netHOST project.

OR

➢ In the **Vendor** tab of the **Device Catalog** (right window), open folder **Hilscher GmbH** > **Master**. Then select **NHST-T100-DP/DPM** device and drag & drop it onto the bus configuration line in the middle window.

3. Open the netHOST configuration window (i. e. the netHOST DTM).

➢ Double-click the netHOST symbol in the bus configuration line, or select the netHOST symbol and choose **Configuration** > **Main Settings** from the context menu (to open context menu, right-click on the netHOST symbol).

➧ If you are using an existing netHOST project, for which the configuration of the driver and the device assignment had already taken place, the netHOST DTM now opens with the **Settings** dialog window. In this case, you can directly proceed with *step 4*.

OR

- If you have just now created a new project, the netHOST DTM opens with the **Device Assignment** dialog window and automatically starts to search for connected devices.
  In this case, you first have to assign the device and configure the driver before you can use the **Memory Card Management** dialog window to access the SD memory card inserted in the netHOST device. Information on how to assign the device and configure the driver can be found in the *Assigning Device to Driver and Configuring Driver* section on page 52.

4. Copy configuration data from netHOST device to SD memory card.

- In the **Navigation Area**, select **Configuration** > **Memory Card Management**.
- The **Memory Card Management** dialog window opens. If no SD memory card has been inserted into the netHOST device, the **Folder** field in the **Directory** area of the dialog window displays the file system of the internal load memory of the netHOST device.

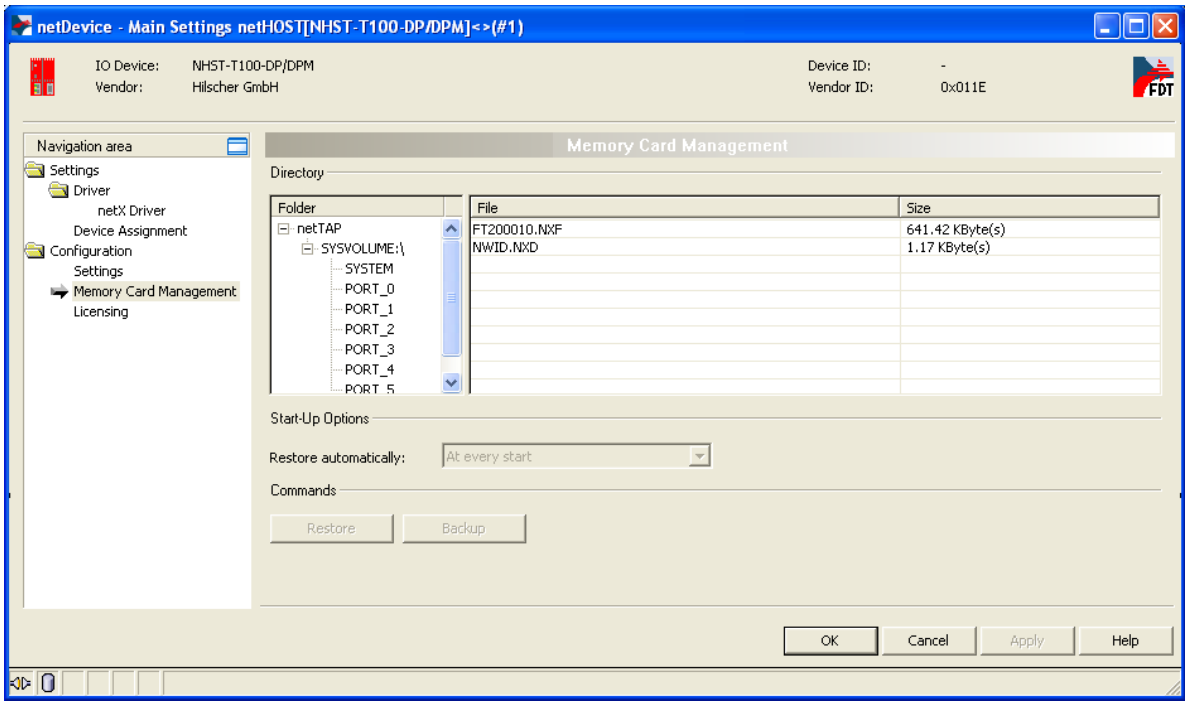


Figure 94: Memory Card Management of the netHOST DTM

- Insert the SD memory card into the netHOST device.
- In order to refresh the display, close the **Memory Card Management** dialog window, then open it again.

➧ After having inserted the SD memory card into the netHOST device, the **Folder** field in the **Directory** area of the dialog window displays the file system of the internal load memory of the netHOST device. Below that, the file system of the SD memory card is displayed. Furthermore, the **Restore** and **Backup** buttons are now active and can be used:

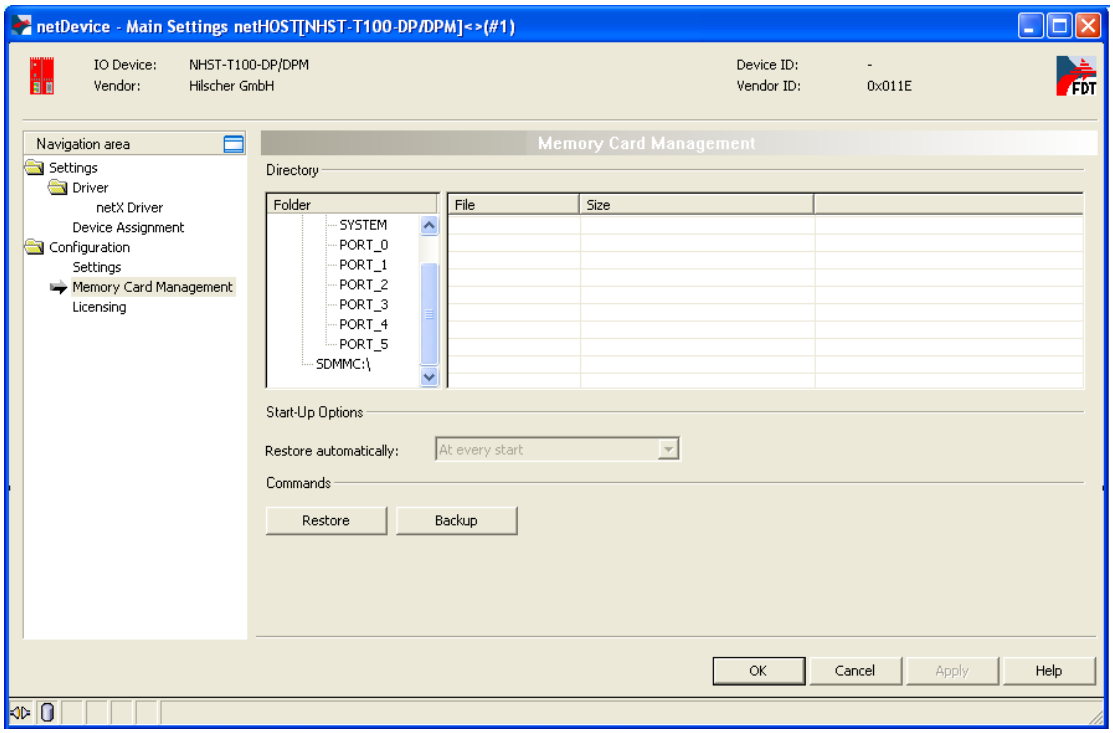


Figure 95: Memory Card Management After Inserting SD Memory Card

➢ Click **Backup** to copy the data stored in the internal load memory of the netHOST to the SD memory card.

➧ The data is copied to the SD memory card and is then displayed below **SDMMC:\Backup** in the **Folder** field:

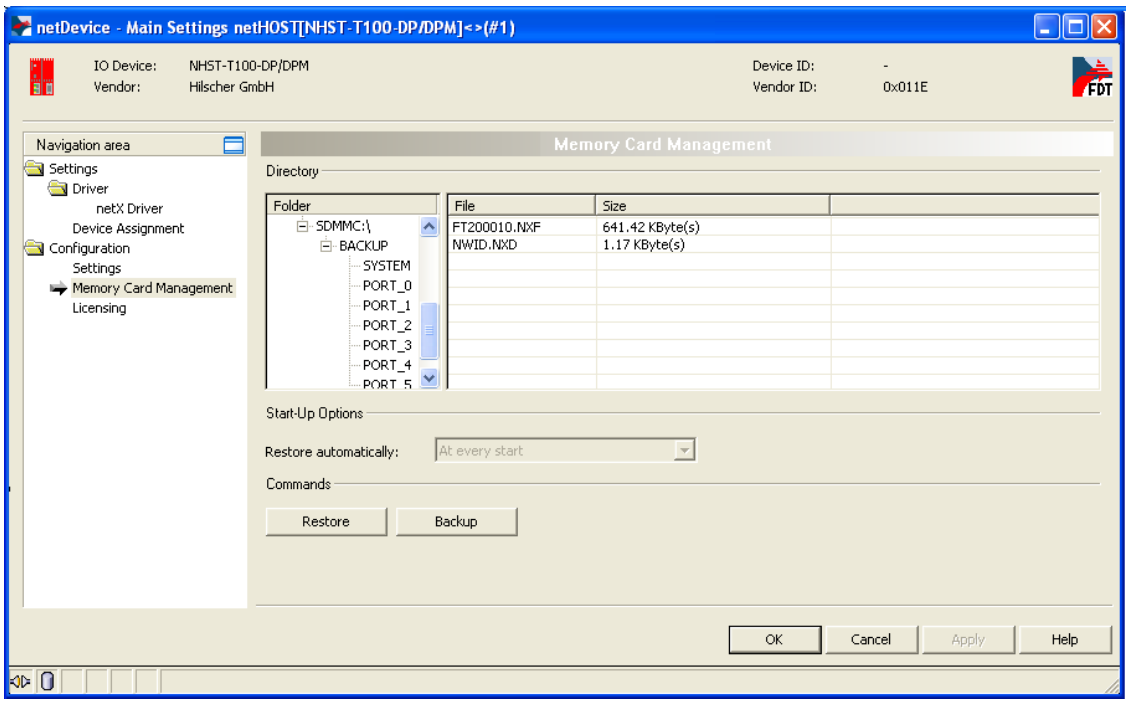


Figure 96: Memory Card Management After Backup to SD Memory Card

- Click **OK** to close the netHOST DTM.
- Exit SYCON.net.

5. Copy data from SD memory card to spare netHOST device.

- Remove the SD memory card from the original netHOST device.
- Insert the SD memory card into the spare device.
- Connect spare device to voltage supply or briefly disconnect voltage supply (in case the device had already been connected to voltage supply).

The spare netHOST device then loads the data from the SD memory card into its own internal load memory. While loading, the SYS LED quickly alternates between green and yellow for approximately eight seconds, then shows steady yellow for approximately ten seconds, then is switched off for a short while before it finally shows steady green light.
The device automatically starts the loaded firmware and the configuration.

- Remove the SD memory card from the netHOST device.

12 Description of the netHOST DTM

12.1 Overview

The SYCON.net configuration software consists of an FDT frame application (FDT = Field Device Tool) and individual DTMs (Device Type Managers). DTMs are software modules with a graphical user interface for configuring a certain device within the FDT frame application. The DTM contains the specific device and protocol parameters needed for configuration.

This chapter describes the control elements and parameters of the netHOST DTM contained in SYCON.net.

SYCON.net provides a context-sensitive online help for the DTM which can be called up in the opened DTM by clicking the **Help** button or by pressing the **F1** key on your keyboard.

12.2 Description of the GUI

This section describes the structure of the graphical user interface (GUI) of the netHOST DTM. The GUI is divided into five areas:

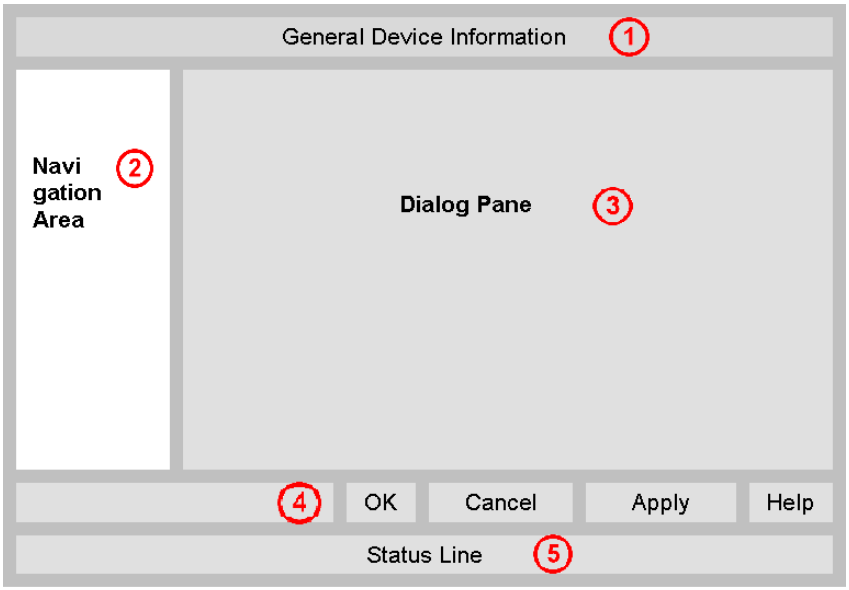


Figure 97: GUI of the netHOST DTM

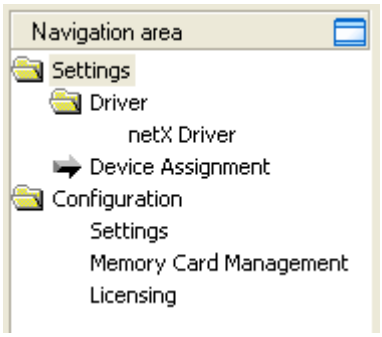
① General Device Information

Parameter	Meaning
IO Device	Name of the device
Vendor	Vendor name of the device
Device ID	Identification number of the device
Vendor ID	Identification number of the vendor

Table 17: General Device Information

② Navigation Area

In the navigation area, you can open individual dialog windows of the DTM by clicking on an entry in the navigation tree. The entries are grouped into different categories and folders.
Note that the categories/folders displayed in this area depend on whether there is an active online connection between SYCON.net and the netHOST device. If the netHOST DTM in SYCON.net has an online connection to the netHOST device, only the dialog windows for **Diagnosis** will be offered in the navigation area. If there is no active online connection, only the dialog windows belonging to the **Settings** and **Configuration** categories will be displayed here.



By clicking on the button, you can hide the navigation area. By clicking the Show navigation area control element on the bottom left side of the currently opened dialog window, you can re-open the navigation area.

Figure 98: Navigation Area of the netHOST DTM

③ Dialog Pane (main area on the right side)

The Dialog Pane displays the dialog windows which have been selected in the navigation area. If there is no active online connection, the dialog windows for **Settings** and **Configuration** can be chosen here:

Dialog window	Description
Settings	
Driver	In the **Driver** dialog window, you can select a driver from the drivers list. For further information, refer to *Driver Dialog Window* section on page 113.
netX Driver	In the **netX Driver** dialog window, you can configure the driver enabling communication between the DTM in SYCON.net and the netHOST device. For instance, you have to specify the IP address of the netHOST device here. For further information, refer to *netX Driver Dialog Window* section on page 114.
Device Assignment	In the **Device Assignment** dialog window, you have to select the device which you want to configure, and assign it to the driver. For further information, refer to *Device Assignment Dialog Window* section on page 116.
Configuration	
Settings	In the **Settings** dialog window, you can update the firmware of the netHOST, if necessary. You can also define a name for the configuration. For further information, refer to *Settings Dialog Window* section on page 119.
Memory Card Management	In the **Memory Card Management** dialog window, you can save the firmware and the configuration file from the netHOST to an SD memory card. You can also restore the saved files from memory card to netHOST device here. For further information, refer to *Memory Card Management Dialog Window* section on page 121.

Licensing	In the **Licensing** dialog window, you can check which license is present in the netHOST device. You can also order a license from Hilscher and download the license to the netHOST device. For further information, refer to *Licensing Dialog Window* section on page 123.

Table 18: Dialog Windows in the Dialog Pane

If there is an active online connection, the dialog windows for **Diagnosis** are displayed here instead of the **Settings** and **Configuration** dialog windows described above. For a description of the **Diagnosis** dialog windows, see *Windows of the "Diagnosis" Group* section on page 124.

④ OK, Cancel, Apply and Help buttons

	Meaning
OK	To confirm your latest settings, click **OK**. All changed values will be applied on the frame application database. *The dialog then closes.*
Cancel	To cancel your latest changes, click **Cancel**. Answer to the safety query **Configuration data has been changed. Do you want to save the data?** by **Yes**, **No** or **Cancel**. **Yes**: The changes are saved or the changed values are applied on the frame application database. *The dialog then closes.* **No**: The changes are not saved or the changed values are not applied on the frame application database. *The dialog then closes.* **Cancel**: *Back to the DTM.*
Apply	To confirm your latest settings, click **Apply**. All changed values will be applied on the frame application database. *The dialog remains opened.*
Help	To open the DTM online help, click **Help**.

Table 19: Standard Command Buttons in the netHOST DTM

⑤ **Status Bar** (Footer)

The **Status Bar** displays information about the current state of the DTM. The current activity, e.g. download, is signaled graphically via icons in the status bar.

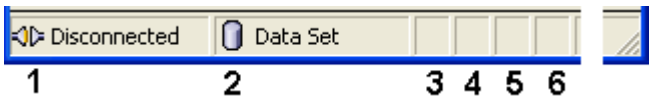
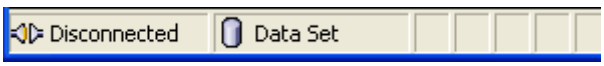


Figure 99: Status Bar – Status Fields 1 to 6

Status Field	Icon / Meaning	
1	**DTM Connection States**	
		Connected: Icon closed = Device is online
		Disconnected: Icon opened = Device is offline
2	**Data Source States**	
		Data set: The displayed data are read out from the instance data set (database).
		Device: The displayed data are read out from the device.
3	**States of the instance Date Set**	
		Valid Modified: Parameter is changed (not equal to data source).
4	**Changes directly made on the Device**	
		Load/configure diagnosis parameters: Diagnosis is activated.
6	**Device Diagnosis Status**	
		Save operation succeeded: The save operation has been successful.
		Further messages due to successful handling of device data.
		Firmware Download: Firmware Download is running
		Save operation failed: The save operation has failed.
		Further fail operation messages due to incorrect communication due to malfunction in the field device or its peripherals.

Table 20: Status Bar Icons [1]

Offline State



Save operation succeeded

Firmware Download

Firmware Download successful

Online State and Diagnosis

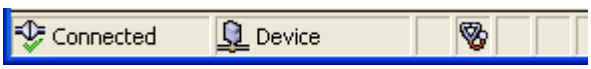


Figure 100: Status Bar Display Examples

Table lines

In the DTM dialog pane table lines can be selected, inserted or deleted.

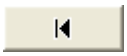
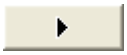
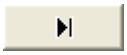
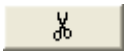
	Meaning
	To select the first line of a table use **First Line**.
	To select the previous line of a table use **Previous Line**.
	To select the next line of a table use **Next Line**.
	To select the last line of a table use **Last Line**.
	**Create a new Line** inserts new lines into the table.
	**Delete selected Line** deletes the selected line from the table.

Table 21: Selecting, inserting, deleting Table Line

12.3 Dialog Windows of the “Settings” Group

12.3.1 Overview

This section describes the dialog windows belonging to the **Settings** category of the netHOST DTM.

Note: You need the user right **Maintenance**, **Planning Engineer** or **Administrator** in order to be allowed to edit the dialog windows belonging to the **Settings** category. For information about user rights for the netHOST DTM, see *User Rights for the netHOST DTM* section on page 155.

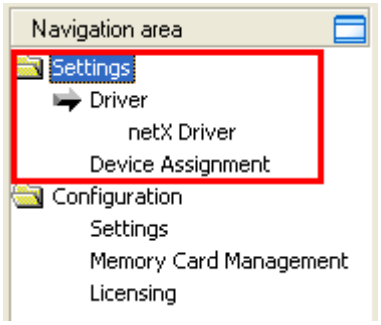


Figure 101: Settings in netHOST DTM

12.3.2 Driver Dialog Window

In the **Driver** dialog window, you can select the driver needed for establishing a connection between SYCON.net and the field device which is to be configured. For the netHOST, you need the netX Driver. The netX Driver is included in the SYCON.net installation and already pre-selected in the netHOST DTM.

➢ To open the **Driver** dialog window, click **Driver** entry in the **Settings** folder in the **Navigation Area** of the opened netHOST DTM.

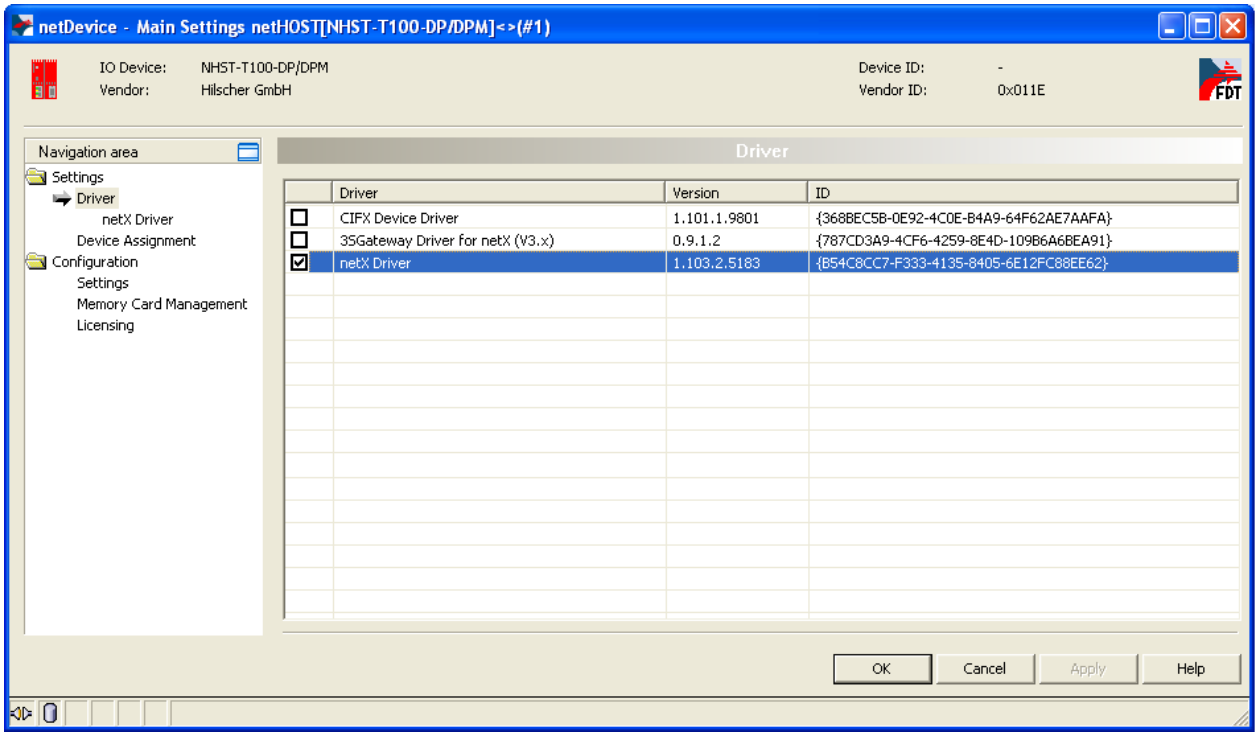


Figure 102: Driver List

Note: The **Driver** dialog window lists all Hilscher drivers installed on your system, which means that also drivers not relevant for the netHOST might be displayed here.

Parameter	Meaning
Driver	Name of the driver
Version	Version of the driver
ID	ID of the driver (driver identification)

Table 22: Driver Selection List Parameters

12.3.3 netX Driver Dialog Window

The **Driver** folder in the **Navigation Area** lists all drivers that can be configured by a configuration dialog.
The **netX Driver** dialog window allows you to configure the USB/RS232 and the TCP connection of the netX Driver to the netHOST device.

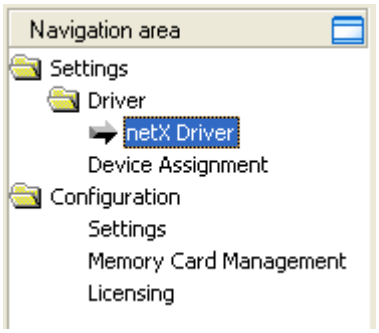


Figure 103: netX Driver

Note: The USB/RS232 interface of the netX Driver is not needed for configuring the netHOST.

- To configure the **netX Driver**, select **Settings** > **Driver** > **netX Driver** in the **Navigation Area** of the opened netHOST DTM.
- The **netX Driver** dialog window opens.
- Select **TCP Connection** tab:

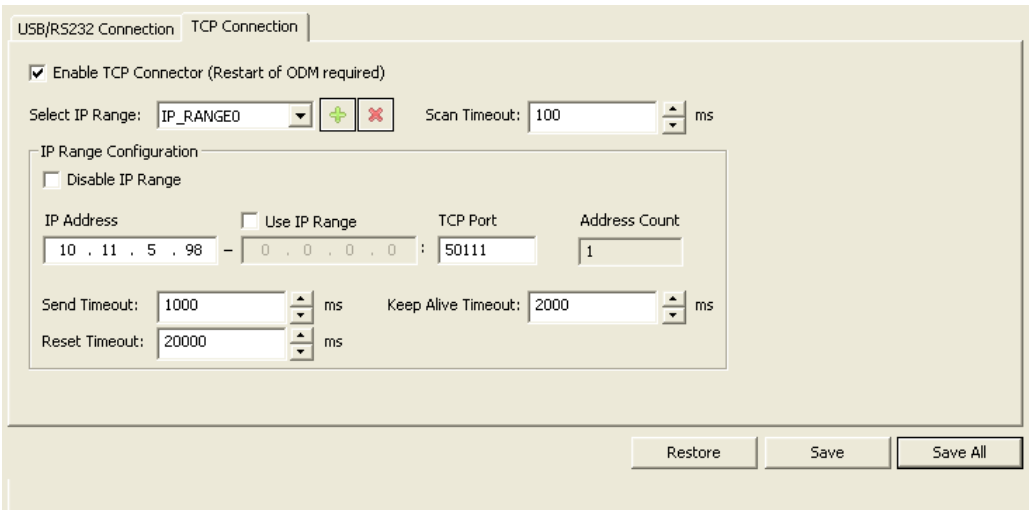


Figure 104: Configure TCP/IP Connection in netX Driver

The subsequent table provides a description of the parameters:

Parameter	Meaning	Range of Value / Default Value
Enable TCP Connector (Restart of ODM required)	checked: The netX Driver can communicate via the TCP/IP interface. unchecked: The netX Driver can not communicate via the TCP/IP interface. If the check mark for **Enable TCP Connector** is set or removed, then the ODM server must be restarted[1], to make the new setting valid. _____ [1] Restart the ODM server via the **ODMV3 Tray Application**: -In the foot line click on  using the right mouse key. - In the context menu select **Service > Start**.	checked, unchecked; Default: unchecked
Select IP Range	Via **Select IP Range** already created IP ranges can be selected. Via  an additional IP range can be added. Via  an IP range can be deleted.	
Scan Timeout [ms]	With **Scan Timeout** can be set, how long to wait for a response while a connection is established.	10 … 10000 [ms]; Default: 100 ms
IP Range Configuration		
Disable IP Range	checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured TCP/IP interface.	checked, unchecked (Default)
IP Address (left)	Enter the IP address of the device, (if **Use IP Range** is not checked). Enter the start address of the IP scanning range, (if **Use IP Range** is checked).	valid IP address; Default: 192.168.1.1
Use IP Range	checked: An IP address range is used. unchecked: Only one IP address is used.	checked, unchecked; Default: unchecked
IP Address (right)	Enter the ending address of the IP scanning range, (only if **Use IP Range** is checked).	valid IP address; Default: 0.0.0.0
Address Count	Displays the scanning range address count, depending on the selected IP-start or IP-end address. (For this read the note given below.)	recommended: 10
TCP Port	Identifies the endpoint of a logical connection or addresses a specific endpoint on the device or PC.	0 - 65535; Default Hilscher device: 50111
Send Timeout [ms]	Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full.	100 … 60.000 [ms]; Default (TCP/IP): 1000 ms
Reset Timeout [ms]	Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.	100 … 60.000 [ms]; Default (TCP/IP): 2000 ms
Keep Alive Timeout [ms]	The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism will be initiated after the set time has elapsed if the communication has failed.	100 … 60.000 [ms]; Default (TCP/IP): 2000 ms
Restore	Resets all settings in the configuration dialog to the default values.	
Save	Saving all settings made in the configuration dialog **netX Driver > Save TCP/IP Connection**, i. e. only for the selected connection type.	
Save All	Saving all settings made in the configuration dialog **netX Driver**, i. e. for all connection types.	

Table 23: Parameters netX Driver > TCP Connection

Note: Do not use large IP ranges in combination with a low scan timeout. In Windows® XP SP2, Microsoft has introduced a limit for concurrent half-open outbound TCP/IP connections (connection attempts) to slow the spread of virus and malware from system to system. This limit makes it impossible to have more than 10 concurrent half-open outbound connections. Every further connection attempt is put in a queue and forced to wait. Due to this limitation, a large IP range used in combination with a low scan timeout could prevent the connection establishment to a device.

12.3.4 Device Assignment Dialog Window

In order to establish an online connection between SYCON.net/the netHOST DTM and the netHOST device, you first need to assign the netHOST device to the netX Driver in the **Device Assignment** dialog window.

Note: Before you can assign the netHOST device to the netX driver in the **Device Assignment** window, the driver has to be selected in the **Driver** dialog window. In the netHOST DTM, the appropriate driver for the netHOST – i. e. the netX driver – is already pre-selected by default. Note, however, that you still have to set the IP address of the netHOST in the **netX Driver** dialog window.

➢ To assign the netHOST device to the driver, select **Settings** > **Device Assignment** in the **Navigation Area** of the opened netHOST DTM.

➢ The **Device Assignment** dialog window opens and SYCON.net automatically starts scanning for connected devices:

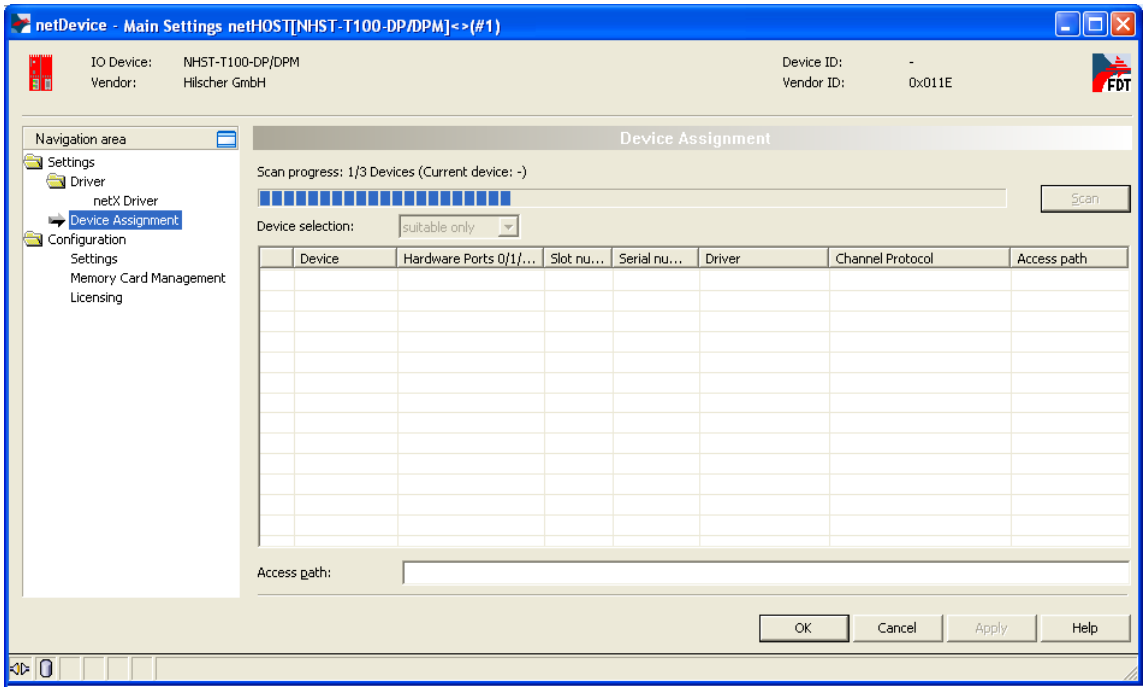


Figure 105: Scanning for Devices in SYCON.net

➢ Afterwards, select the netHOST device which you want to assign to the netX driver.

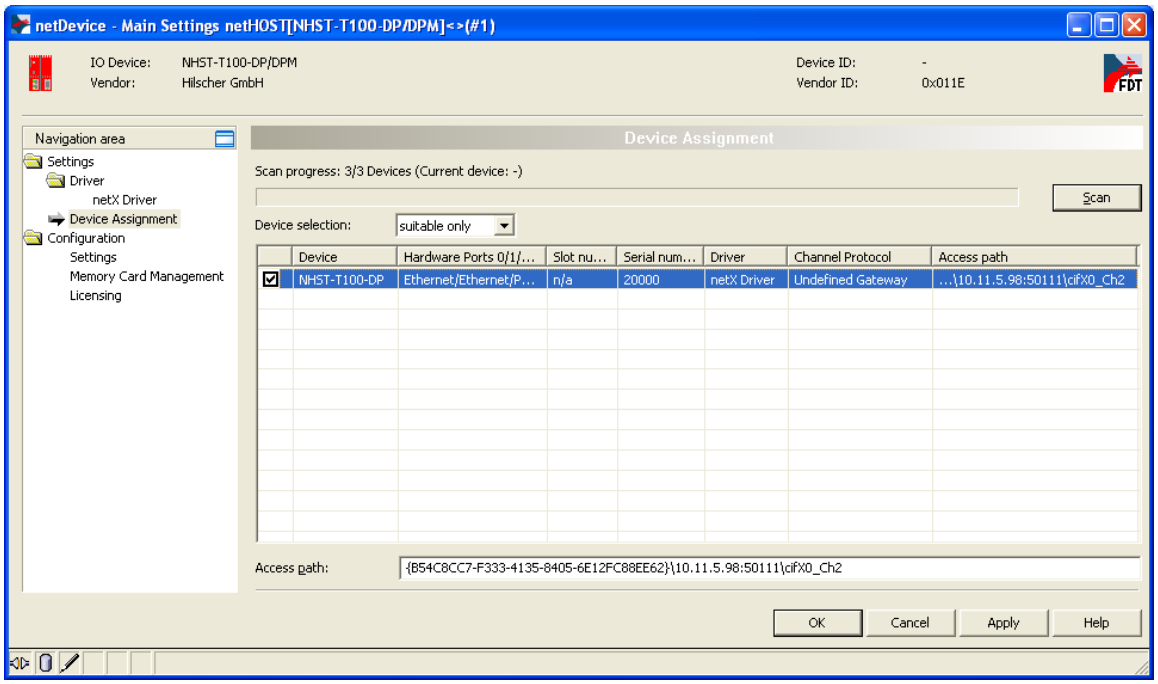


Figure 106: Device Assignment in netHOST DTM

The subsequent table provides a description of the parameters:

Parameter	Meaning	Range of Value / Value
Device selection	Selecting **suitable only** or **all** devices.	suitable only, all
Device	Device name.	
Hardware Port 0/1/2/3	Shows, which hardware is assigned to which communication interface.	
Slot number	When using netHOST devices, the **n/a** entry means that no **Slot-Nummer (Karten-ID)** exists. **Note**: When using cifX PC cards, this parameter indicates the **Slot Number (Card ID)** preset at the cifX card via the **Rotary Switch Slot Number (Card ID)**.	1 to 9, n/a
Serial number	Serial number of the device	
Driver	Name of the driver	
Channel Protocol	Shows, which firmware is loaded to which device channel. The data for the used channel consists of the protocol class and the communication class. a.) For devices without firmware: Undefined Undefined, b.) For devices with firmware: Protocol name according to the used Firmware	
Access path (under Device selection, last column on the right)	Depending on the used driver, the column **Access path** shows various data concerning the access path. For the **cifX Device Driver** the following data is displayed: a.) For devices without firmware: …\cifX[*0toN*]_**SYS**, b.) For devices with firmware: …\cifX[*0toN*]_**Ch**[*0to3*]. cifX[*0toN*] = Board number 0 to N Ch[*0to3*] = Channel number 0 to 3	Depending on the device and on the driver: board or channel number, IP address or COM interface
Access path (at the lower side of the dialog pane)	If under **Device selection** the check box for a device is checked, under **Access path** (at the lower side of the dialog pane) the driver identification or (depending on the used driver) additional data of the device is displayed. For the **cifX Device Driver** the following data are displayed: a.) For devices without firmware: …\cifX[*0toN*]_**SYS**, b.) For devices with firmware: …\cifX[*0toN*]_**Ch**[*0to3*]. cifX[*0toN*] = Board number 0 to N Ch[*0to3*] = Channel number 0 to 3	driver identification (ID) depending on the device and on the driver: board or channel number, IP address or COM interface

Table 24: Parameters of the Device Assignment

12.4 Dialog Windows of the “Configuration” Group

12.4.1 Overview

This section describes the dialog windows belonging to the **Configuration** category of the netHOST DTM.

Note: You need the user right **Maintenance**, **Planning Engineer** or **Administrator** in order to be allowed to edit the dialog windows belonging to the **Configuration** category. For information about user rights for the netHOST DTM, see *User Rights for the netHOST DTM* section on page *155*.

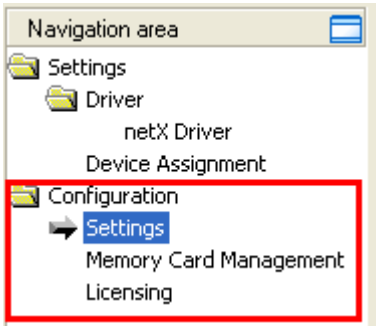


Figure 107: „Configuration“ in netHOST DTM

12.4.2 Settings Dialog Window

In the **Settings** dialog window, you can download firmware into the netHOST device (firmware update) and define a name for the configuration.

➢ To open the **Settings** dialog window, click **Settings** entry in the **Configuration** folder in the **Navigation Area** of the opened netHOST DTM.

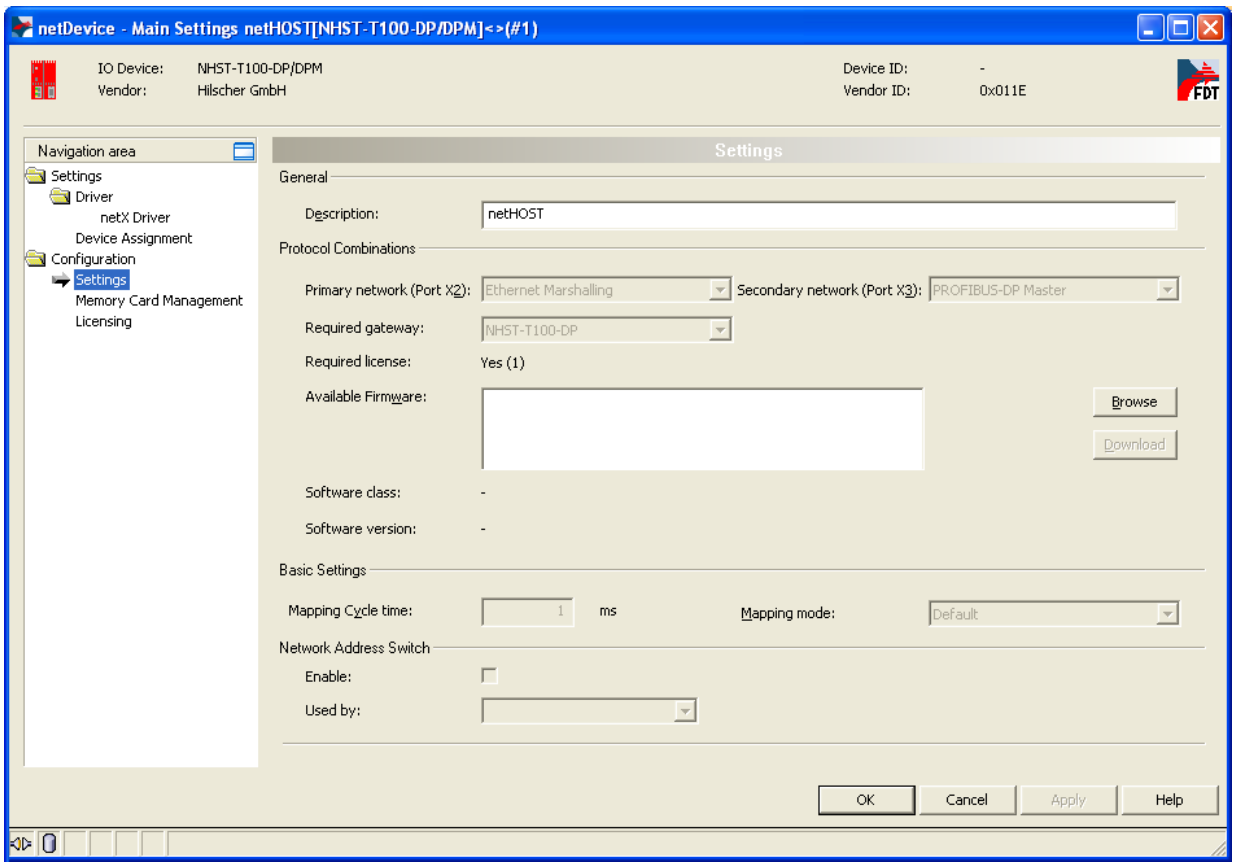


Figure 108: „Settings" Dialog Window in the netHOST DTM

Note: In the **Settings** dialog window, only the **Description** field, the **Available Firmware** field and the **Browse** and **Download** buttons are active and can be used. All other fields or parameters are preset and can not be edited by the user.

Name		Description
General		
	Description	Here you can enter a descriptive or symbolic name for the netHOST device. Afterwards, this name will be displayed in SYCON.net in front of the device.
Protocol Combination		
	Primary network (Port X2)	Displays the protocol of the network connected to port X2 of the netHOST device.
	Secondary network (Port X3)	Displays the protocol of the network connected to port X3 of the netHOST device.
	Required gateway	Displays the netHOST device type.
	Required license	Displays the number of master licenses required in the device if a netHOST with master functionality is being used.
	Available Firmware	Lists the firmware file selected for the device. Firmware files are stored on the netHOST Solutions DVD in the `Firmware\netHOST` directory.
	Browse	Opens a dialog to select a firmware file for download. The selected firmware file is shown in the **Available Firmware** field.
	Download	Transfers the firmware file which has been in the **Available Firmware** field into the netHOST device.
	Software class	Displays the Software class of the selected firmware file.
	Software version	Displays the version of the selected firmware file.
Basic Settings		
	Mapping Cycle time	Displays the cycle time for the device internal transfer of the input and output data from the buffer of port X2 to the buffer of X3 and visa versa (default = 1 ms).
	Mapping mode	Always set to default.
Network Address Switch		
	enable	Not applicable for netHOST devices.
	Used by	Not applicable for netHOST devices.

Table 25: Elements in the “Settings” Dialog Window

12.4.3 Memory Card Management Dialog Window

In the **Memory Card Management** dialog window, you can:

- copy the firmware file and the configuration data from the netHOST device to an inserted SD memory card (backup),
- copy the firmware file and the configuration data from the inserted SD memory card to the netHOST device (restore). All old files stored in the netHOST device will thereby be overwritten.

Note: For these functions, you need a FAT16-formatted SD memory card, which you insert into the netHOST device. You also need an active online connection between SYCON.net and the netHOST device.

The SD memory card is not included in the delivery of the netHOST device and can be ordered from Hilscher, part number 1719.003.

➢ To open the **Memory Card Management** dialog window, click **Memory Card Management** entry in the **Configuration** folder in the **Navigation Area** of the opened netHOST DTM.

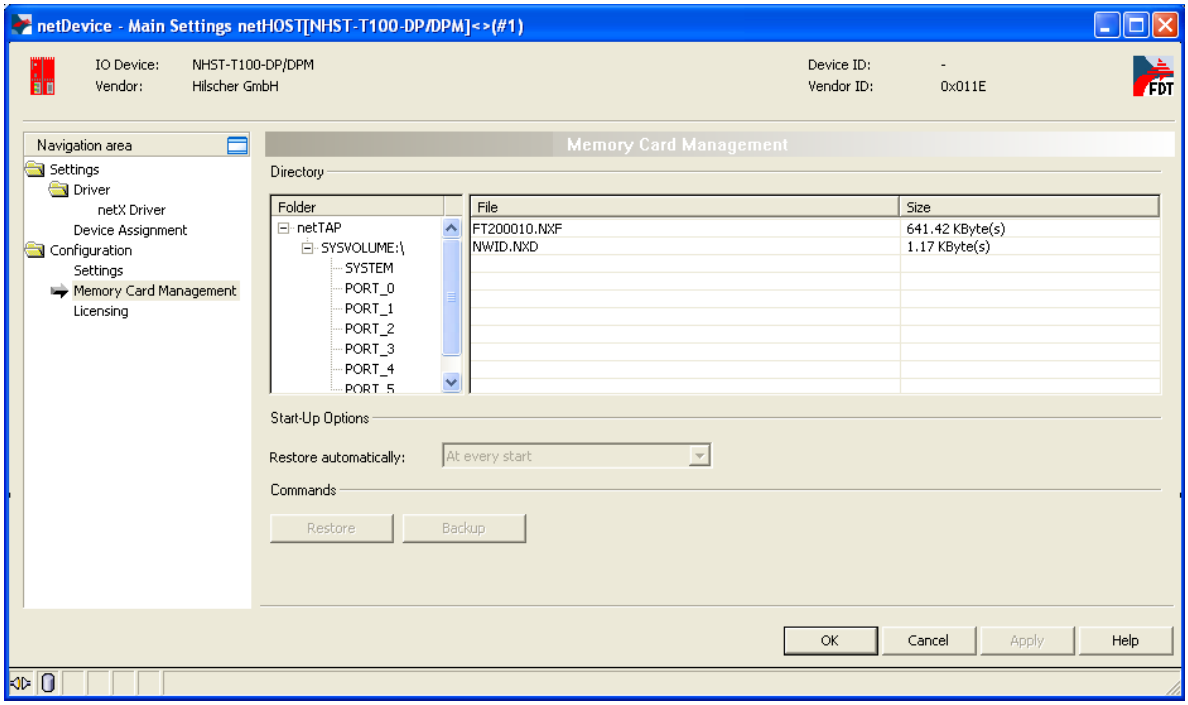


Figure 109: Memory Card Management of the netHOST DTM

Name		Description
Directory		
	Folder	If no SD memory card has been inserted, the file system of the netHOST device is displayed here. If an SD memory card has been inserted into the netHOST device, the file system of the card is displayed here in addition to the file system of the netHOST. You can select a folder in order to display its contents in the adjacent **File** field.
	File	Displays the names of the files stored in the selected folder.
	Size	Displays the size of the files stored in the selected folder.
Start-Up Options		
	Restore automatically	Sets start-up options for booting from SD memory card. Selecting an option is currently not supported. **At every start** (preset): If an SD memory card is inserted in the netHOST device at the time of power return, the netHOST takes over the data from the SD card. **If different**: Data from the SD card is only taken over if it differs from the data stored in the internal load memory of the netHOST.
Commands		
	Restore	Copies the firmware and the configuration files stored on the SD memory card to the netHOST device. All old files stored in the netHOST device will thereby be overwritten. This button is only active if an SD memory card has been inserted into the netHOST device. If this is the case, the **Folder** field displays the directory of the memory card. The root directory of the card is „SDMMC“.
	Backup	Copies the firmware and the configuration files stored in the netHOST device to the SD memory card. This button is only active if an SD memory card has been inserted into the netHOST device. If this is the case, the **Folder** field displays the directory of the memory card. The root directory of the card is „SDMMC“.

Table 26: Elements of the Memory Card Management

12.4.4 Licensing Dialog Window

Note: Usually, all netHOST devices are already equipped with the necessary license on delivery. The individual control elements in this dialog window are therefore not described here. In case you want to belatedly order and download a license for the NHST-T100-EN device, see section *Ordering and Downloading License to NHST-T100-EN with SYCON.net* on page 36 for more information.

In the **Licensing** dialog window, you can check which license is present in the netHOST device.

Note: For these functions, you need an active online connection between SYCON.net and the netHOST device.

➢ To open the **Licensing** dialog window, click **Licensing** entry in the **Configuration** folder in the **Navigation Area** of the opened netHOST DTM.

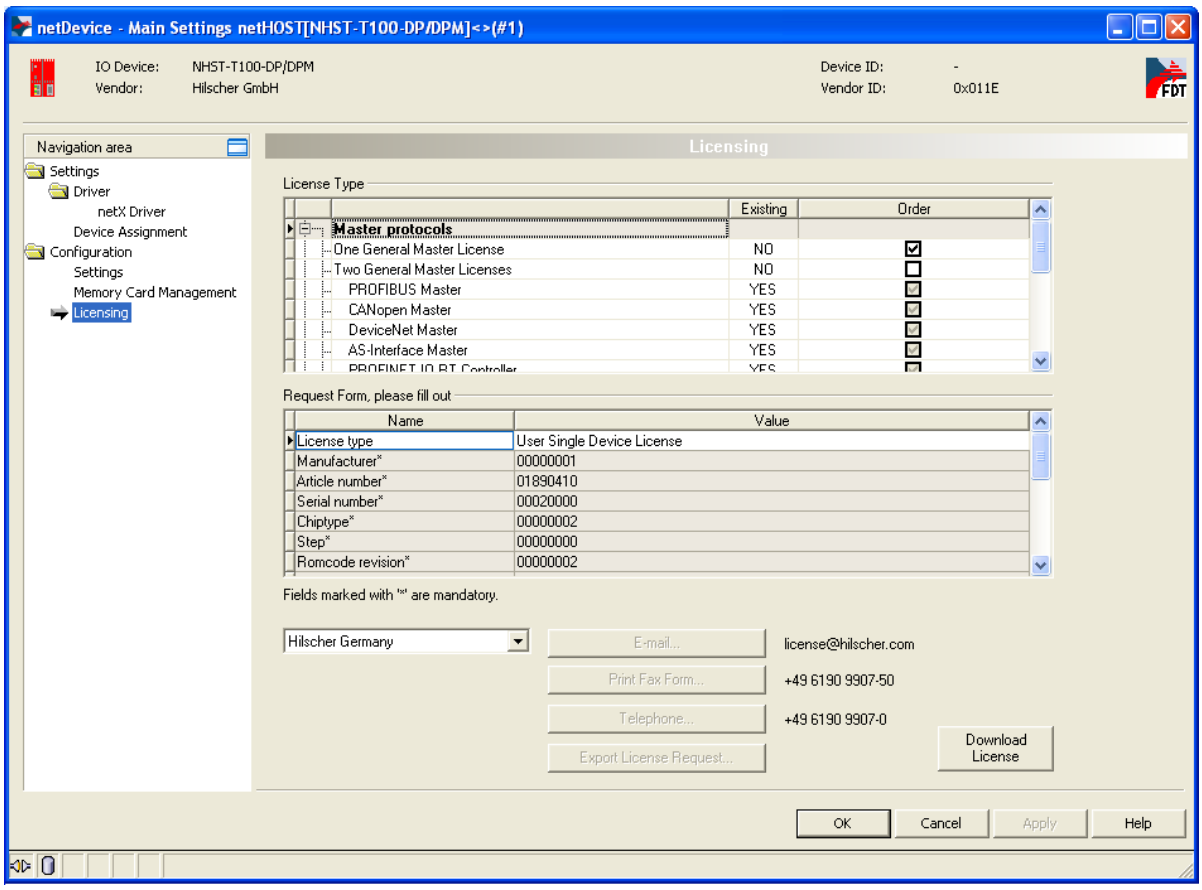


Figure 110: Licensing Dialog Window of the netHOST DTM

12.5 Windows of the “Diagnosis“ Group

12.5.1 Overview

This section describes the dialog windows belonging to the **Diagnosis** category of the netHOST DTM. With the diagnosis functions, you can check the behavior of the device and detect communication errors.
An active online connection between the netHOST DTM in SYCON.net and the netHOST device is needed for this. Double-clicking the netHOST symbol during an active online connection automatically opens the **Diagnosis** windows. (Without an active online connection, double-clicking the netHOST automatically opens the **Settings** and **Configuration** dialog windows.) Alternatively, you can open the diagnosis by selecting the netHOST symbol and then choosing **Diagnosis** > **Main Settings** from the context menu.

The **Extended Diagnosis** helps to find communication and configuration errors if the functions of the general diagnosis do not suffice.

Note: You need the user right **maintenance**, **Planning Engineer** or **Administrator** in order to be allowed to open the diagnosis windows. For information about user rights for the netHOST DTM, see *User Rights for the netHOST DTM* section on page 155.

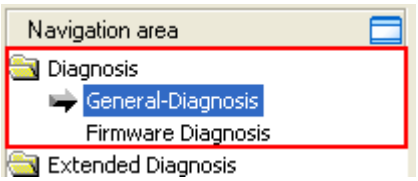


Figure 111: Diagnosis in netHOST DTM

12.5.2 General Diagnosis Window

The **General Diagnosis** window displays information about the current states of device, network and configuration.

➢ To open the **General Diagnosis** window, click **General Diagnosis** entry in the **Diagnosis** folder in the **Navigation Area** of the opened netHOST DTM.

Note: You need an active online connection between the netHOST DTM and the netHOST device for this.

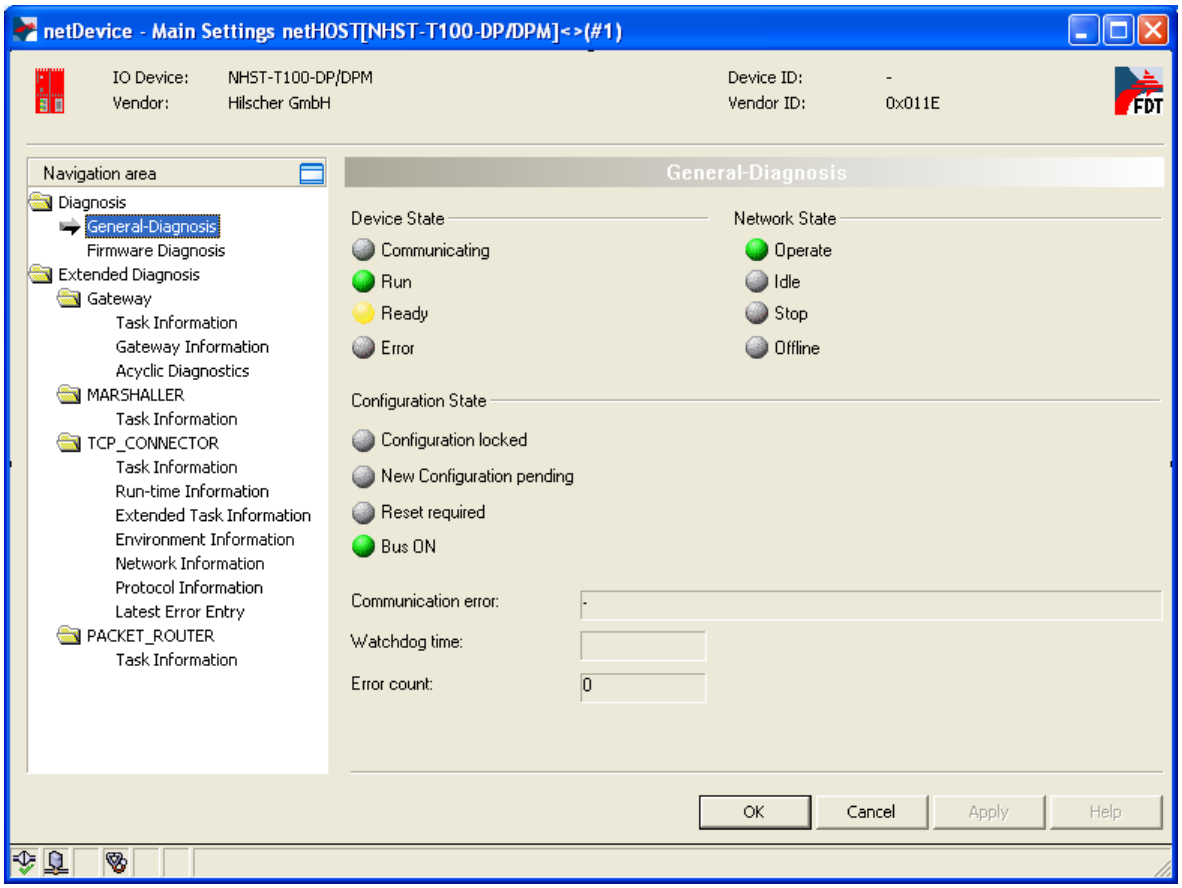


Figure 112: General Diagnosis in netHOST DTM

Indication	Meaning
Device State	
Communicating	Shows that the netHOST firmware executes the network communication.
Run	Shows that the netHOST firmware has been configured correctly.
Ready	Shows that the netHOST firmware has been started correctly. The netHOST firmware waits for a configuration.
Error	Shows that the netHOST firmware records a device status error. For further information about the error characteristics and the number of counted errors, please refer to the extended diagnosis.

Network State	
Operate	Shows that the netHOST firmware is in data exchange.
Idle	Shows that the netHOST firmware is in idle mode.
Stop	Shows that the netHOST firmware is in Stop state: There is no cyclic data exchange at the network. The netHOST firmware was stopped by the application program or it changed to the Stop state because of a bus error.
Offline	The netHOST firmware is offline, it does not have a valid configuration.

Configuration State	
Configuration locked	Shows that the netHOST firmware configuration is locked in order to avoid that the configuration data is being typed over.
New Configuration pending	Shows that a new netHOST firmware configuration is available.
Reset required	Shows that a firmware reset is required because a new netHOST firmware configuration has been loaded into the device.
Bus ON	Shows whether the bus communication was started or stopped. I. e., whether the device is active on the bus or no bus communication to the device is possible and no response telegrams are sent.

Table 27: Indications General Diagnosis

Parameter	Meaning
Communication Error	Shows the message text of the communication error. If the cause of the current error is resolved, „ – “ is displayed.
Watchdog time	Shows the watchdog time in ms.
Error Count	This field holds the total number of errors detected since power-up, respectively after reset. The protocol stack counts all sorts of errors in this field no matter if they were network related or caused internally.

Table 28: Further Parameter General Diagnosis

12.5.3 Firmware Diagnosis Window

The **Firmware Diagnosis** window displays information about the current tasks of the firmware.

➢ To open the **Firmware Diagnosis** window, click **Firmware Diagnosis** entry in the **Diagnosis** folder in the **Navigation Area** of the opened netHOST DTM.

Note: You need an active online connection between the netHOST DTM and the netHOST device for this.

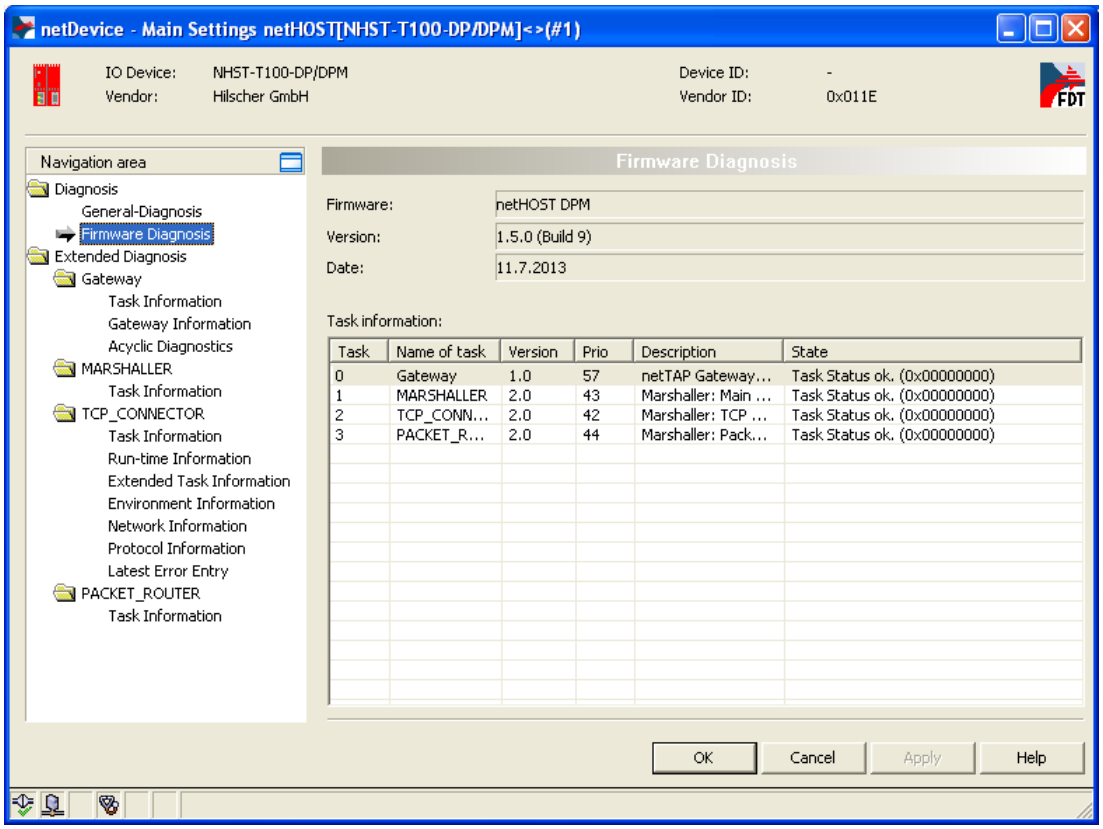


Figure 113: Firmware Diagnosis in netHOST DTM

Column	Meaning
Task	Task number
Name of Task	Name of the task
Version	Version of the task
Prio	Priority of the task
Description	Description of the task
State	Status of the task

Table 29: Parameters Task Information

12.6 Establishing Online Connection

For some functions of the netHOST DTM – like diagnosis or downloading the configuration or firmware to the device – an active online connection between SYCON.net/netHOST DTM and the netHOST device is required.

Prerequisites

Prerequisites for an online connection are:

- The configuration PC with SYCON.net/netHOST DTM and the netHOST device are connected to the same local Ethernet network.
- The netHOST device is connected to a voltage supply.
- You have assigned a suitable IP address to the netHOST device.
- The netX Driver has been configured in the **netX Driver** dialog window (i. e. the IP address of the device has been set) and the netHOST Device has been assigned to the driver in the **Device Assignment** dialog window (see *Assigning Device to Driver and Configuring Driver* on page 52).

Establish online connection

Once you have opened certain dialog windows of the netHOST DTM, e. g. the **Device Assignment** dialog window, SYCON.net automatically establishes an online connection between the DTM and the device.

If the netHOST Device is closed, you can manually establish an online connection in SYCON.net. For this:

➢ Select the netHOST symbol in the configuration window, then choose **Connect** from the context menu (to open context menu, right-click on the netHOST symbol):

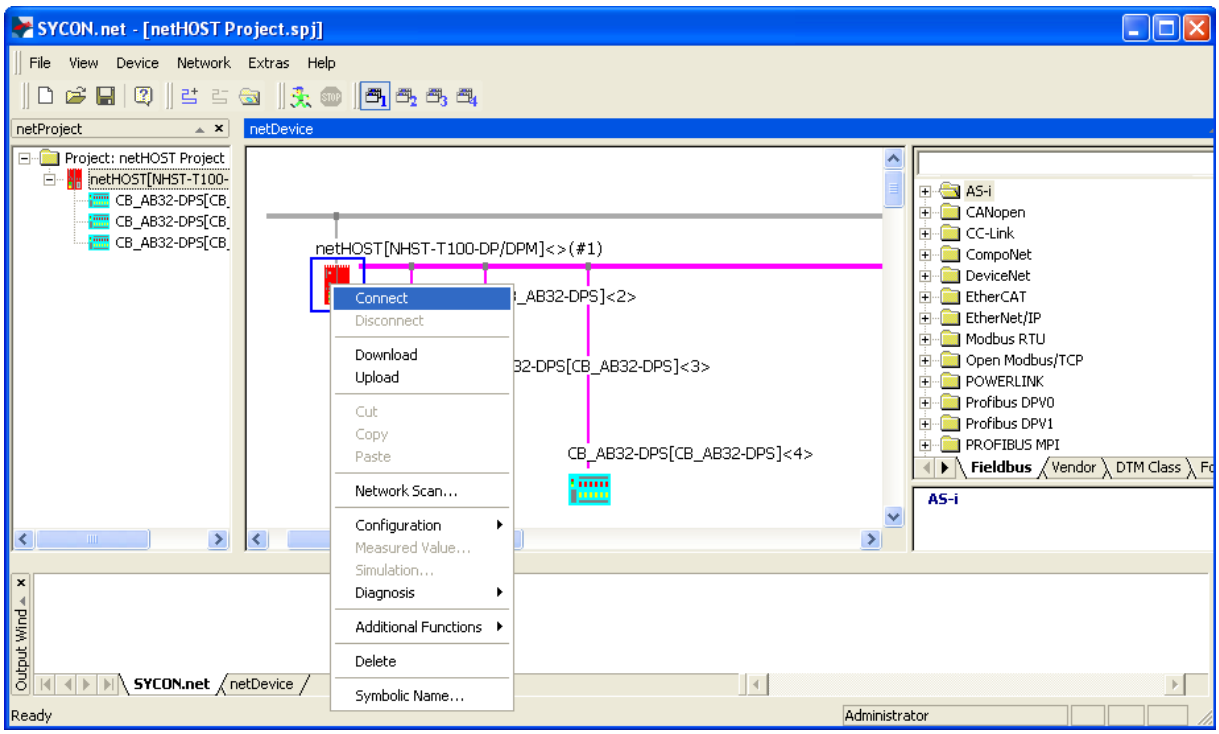


Figure 114: Connect netHOST

OR

➢ In the menu bar of SYCON.net, choose **Device** > **Connect**.

↬ An active online connection is indicated in the configuration window by the green highlighted netHOST label:

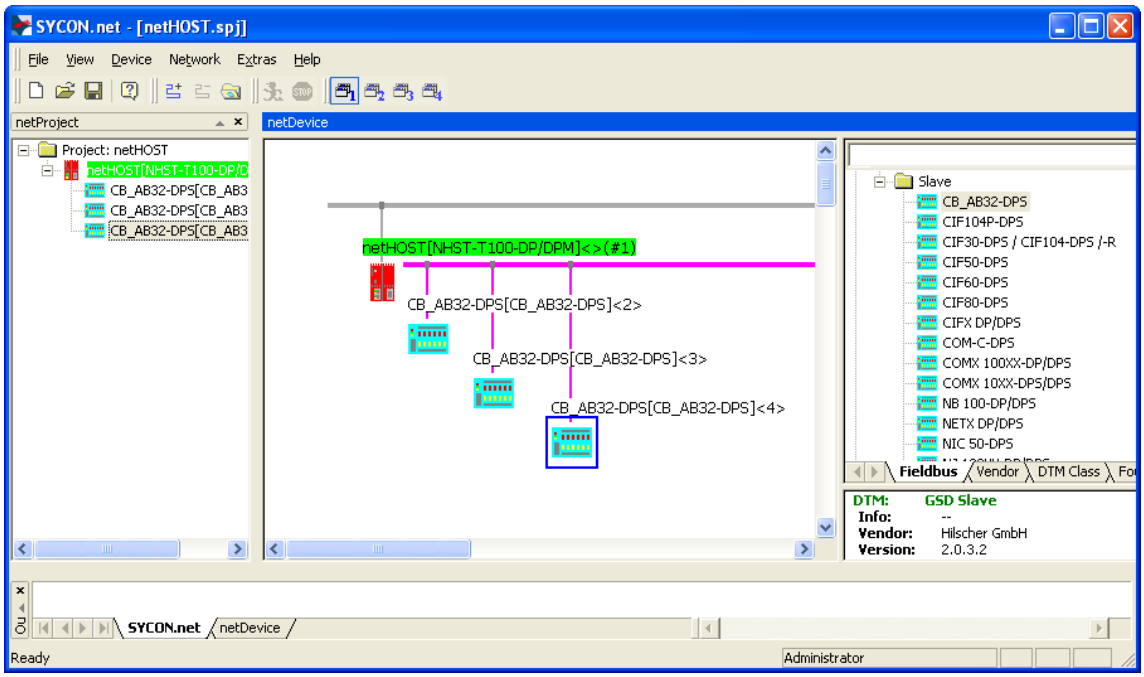


Figure 115: netHOST Connected

Note: It is not possible to open the **Settings** and **Configuration** dialog windows of the netHOST DTM during an active online connection. If you double-click on the netHOST symbol while the device is online, the **Diagnosis** windows of the netHOST DTM open instead of the **Settings** and **Configuration** dialog windows.

Close online connection

You can close the online connection by

➢ choosing **Disconnect** from the context menu of the netHOST symbol.

OR

➢ choosing **Device** > **Disconnect** in the menu bar of SYCON.net.

13 Brief Instructions for Configuring netHOST Master Devices

13.1 netHOST as Master for Fieldbus Systems

13.1.1 CANopen Master: NHST-T100-CO/COM

The NHST-T100-CO/COM as CANopen Master device needs a configuration, i. e., for instance, information about how many CANopen Slave devices with how many input and output data are to be connected to the master.

This section provides cursory instructions on how to configure the NHST-T100-CO/COM netHOST device as CANopen Master in SYCON.net. More detailed instructions on how to configure a netHOST as Fieldbus master (on the basis of an example for PROFIBUS DP) can be found in section *Configuring netHOST for Fieldbus Systems with SYCON.net: NHST-T100-DP/DPM Example* on page 49.

1. Add CANopen slave devices to configuration project.

➢ Open device catalog and drag & drop as many CANopen slave(s) as needed onto the bus line of the CANopen master.

2. Configure CANopen slave devices.

➢ Open the configuration dialog for each CANopen slave device and configure the device.

Detailed information on this can be found in the operating instruction manual *Generic Slave DTM for CANopen Slave Devices*, DOC060203OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\CANopen Master\Slave Configuration`.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure CANopen master (NHST-T100-CO/COM).

➢ Select the netHOST symbol, then choose **Configuration** > **CANopen Master** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the master device.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher-CANopen Master Devices*, DOC070402OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\CANopen Master`.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

13.1.2 DeviceNet Master: NHST-T100-DN/DNM

The NHST-T100-DN/DNM as DeviceNet Master device needs a configuration, i. e., for instance, information about how many DeviceNet Slave devices with how many input and output data are to be connected to the master.

This section provides cursory instructions on how to configure the NHST-T100-DN/DNM netHOST device as DeviceNet Master in SYCON.net. More detailed instructions on how to configure a netHOST as Fieldbus master (on the basis of an example for PROFIBUS DP) can be found in section *Configuring netHOST for Fieldbus Systems with SYCON.net: NHST-T100-DP/DPM Example* on page 49.

1. Add DeviceNet slave devices to configuration project.

➢ Open device catalog and drag & drop as many DeviceNet slave(s) as needed onto the bus line of the DeviceNet master.

2. Configure DeviceNet slave devices.

➢ Open the configuration dialog for each DeviceNet slave device and configure the device.

Detailed information on this can be found in the operating instruction manual *Generic Slave DTM for DeviceNet Slave Devices*, DOC041201OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\DeviceNet Master\Slave Configuration`.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure DeviceNet master (NHST-T100-DN/DNM).

➢ Select the netHOST symbol, then choose **Configuration** > **DeviceNet Master** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the master device.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher-DeviceNet Master Devices*, DOC070403OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\DeviceNet Master`.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

13.1.3 PROFIBUS DP Master: NHST-T100-DP/DPM

The NHST-T100-DP/DPM as PROFIBUS DP Master device needs a configuration, i. e., for instance, information about how many PROFIBUS DP Slave devices with how many input and output data are to be connected to the master.

This section provides only cursory instructions on how to configure the NHST-T100-DP/DPM netHOST device as PROFIBUS DP Master in SYCON.net. Detailed instructions can be found in section *Configuring netHOST for Fieldbus Systems with SYCON.net: NHST-T100-DP/DPM Example* on page 49.

1. Add PROFIBUS DP slave devices to configuration project.

➢ Open device catalog and drag & drop as many PROFIBUS DP slave(s) as needed onto the bus line of the PROFIBUS DP master.

2. Configure PROFIBUS DP slave devices.

➢ Open the configuration dialog for each PROFIBUS DP slave device and configure the device.

Detailed information on this can be found in the operating instruction manual *Generic Slave DTM for PROFIBUS DP Slave Devices*, DOC031001OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFIBUS DP Master\Slave Configuration`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure PROFIBUS DP master (NHST-T100-DP/DPM).

➢ Select the netHOST symbol, then choose **Configuration** > **PROFIBUS DP Master** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the master device.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher-PROFIBUS DP Master Devices*, DOC070401OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFIBUS DP Master`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

13.2 netHOST as Master for Real-Time Ethernet Systems

13.2.1 EtherCAT Master: NHST-T100-EN/ECM

The NHST-T100-EN/ECM as EtherCAT Master device (respectively the NHST-T100-EN with loaded EtherCAT master firmware) needs a configuration, i. e., for instance, information about how many EtherCAT Slave devices with how many input and output data are to be connected to the master.

This section provides cursory instructions on how to configure the NHST-T100-EN/ECM netHOST device as EtherCAT Master in SYCON.net. More detailed instructions on how to configure a netHOST as master device in a Real-Time Ethernet network (on the basis of an example for PROFINET IO) can be found in section *Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example* on page 64.

1. Add EtherCAT slave devices to configuration project.

➢ Open device catalog and drag & drop as many EtherCAT slave(s) as needed onto the bus line of the EtherCAT master.

2. Configure EtherCAT slave devices.

➢ Open the configuration dialog for each EtherCAT slave device and configure the device.

Detailed information on this can be found in the operating instruction manual *Generic Slave DTM for EtherCAT Slave Devices*, DOC071202OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherCAT Master\Slave Configuration`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure EtherCAT master (NHST-T100-EN/ECM).

➢ Select the netHOST symbol, then choose **Configuration** > **EtherCAT Master** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the master device.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher EtherCAT Master Device*, DOC080404OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherCAT Master`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

13.2.2 EtherNet/IP Scanner: NHST-T100-EN/EIM

The NHST-T100-EN/EIM as EtherNet/IP Scanner (respectively the NHST-T100-EN with loaded EtherNet/IP Scanner firmware) needs a configuration, i. e., for instance, information about how many EtherNet/IP Adapter (slave devices) with how many input and output data are to be connected to the scanner.

This section provides cursory instructions on how to configure the NHST-T100-EN/EIM netHOST device as EtherNet/IP Scanner in SYCON.net. More detailed instructions on how to configure a netHOST as master device in a Real-Time Ethernet network (on the basis of an example for PROFINET IO) can be found in section *Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example* on page 64.

1. Add EtherNet/IP Adapters to configuration project.

➢ Open device catalog and drag & drop as many EtherNet/IP slaves as needed onto the bus line of the EtherNet/IP Scanner.

2. Configure EtherNet/IP Adapters.

➢ Open the configuration dialog for each EtherNet/IP Adapter and configure the device.

Detailed information on this can be found in the following operating instruction manuals:

Generic, Modular Generic DTM from EDS File for non-modular and modular EtherNet/IP Adapter Devices, DOC100221OIxxEN

and

Generic DTM for EtherNet/IP Adapter Devices and Modular Generic DTM for modular EtherNet/IP Adapter Devices, DOC060305OIxxEN,

both stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherNetIP Scanner\Adapter Configuration`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure EtherNet/IP Scanner (NHST-T100-EN/EIM).

➢ Select the netHOST symbol, then choose **Configuration** > **EtherNet/IP Scanner** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the Scanner.

Detailed information on this can be found in the operating instruction manual *DTM for EtherNet/IP Scanner Devices*, DOC061201OIxxEN.
This manual is stored on the netHOST Solutions DVD in the directory `Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\EtherNetIP Scanner`.
As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

13.2.3 PROFINET IO Controller: NHST-T100-EN/PNM

The NHST-T100-EN/PNM as PROFINET IO Controller (respectively the NHST-T100-EN with loaded PROFINET IO Controller firmware) needs a configuration, i. e., for instance, information about how many PROFINET IO Devices (slaves) with how many input and output data are to be connected to the Controller.

This section provides only cursory instructions on how to configure the NHST-T100-EN/PNM netHOST device as PROFINET IO Controller in SYCON.net. Detailed instructions can be found in section *Configuring netHOST for RTE Systems with SYCON.net: NHST-T100-EN/PNM Example* on page 64.

1. Add PROFINET IO Devices (slaves) to configuration project.

➢ Open device catalog and drag & drop as many PROFINET IO Devices as needed onto the bus line of the PROFINET IO Controller.

2. Configure PROFINET IO Devices.

➢ Open the configuration dialog for each PROFINET IO Device and configure the device.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher-PROFINET IO-Controller Devices,* DOC060302OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory

`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFINET IO Controller\IO Device Configuration`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the slave DTM, or by pressing the **F1** key on your keyboard.

3. Configure PROFINET IO Controller.

➢ Select the netHOST symbol, then choose **Configuration** > **PROFINET IO Controller** from the context menu (to open context menu, right-click on the netHOST symbol).

➢ Configure the Controller.

Detailed information on this can be found in the operating instruction manual *DTM for Hilscher-PROFINET IO-Controller Devices*, DOC060302OIxxEN. This manual is stored on the netHOST Solutions DVD in the directory

`Documentation\english\1.Software\SYCON.net Configuration Software\Master Configuration\PROFINET IO Controller`.

As an alternative, you can open the corresponding online help by clicking the **Help** button in the opened configuration dialog window of the DTM, or by pressing the **F1** key on your keyboard.

14 Error Codes

14.1 Error Code Definitions

For COM based application, like the ODM Server and ODM drivers, a common error definition is used, similar to the Microsoft Windows® HRESULT definition.

Error Code Structure:

COM Errors are HRESULTs, which are 32 bit values using the following layout:

```
 3 3 2 2 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1
 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0
+---+-+-+-----------------------+-------------------------------+
|Sev|C|R|     Facility          |               Code            |
+---+-+-+-----------------------+-------------------------------+

where
 Sev       - is the severity code:
        00 - Success
        01 - Informational
        10 - Warning
        11 - Error
 C         - is the Customer code flag
 R         - is a reserved bit
 Facility  - is the facility code
 Code      - is the facility's status code
```

In this common error definition, several error code regions are already reserved by Windows® itself, the ODM and some other modules.

14.2 Overview Error Codes

Overview Error Codes	Range
General Hardware Errors RCX Operating System	*RCX General Task Errors*: 0xC02B0001 to 0xC02B4D52
	RCX Common Status & Errors Codes: 0x00000000 to 0xC002000C
	RCX Status & Error Codes: 0x00000000 to 0xC0000008
ODM Server	*General ODM Error Codes*: 0x8004C700 to 0x8004C761
	General ODM Driver Error Codes: 0x8004C7A0 to 0x8004C7C2
ODM Drivers	*cifX Driver Specific ODM Error Codes*: 0x8004C001 to 0x8004C0A4
cifX Device Driver and netX Driver	*Generic Error Codes*: 0x800A0001 to 0x800A0017
	Generic Driver Error Codes: 0x800B0001 to 0x800B0042
	Generic Device Error Codes: 0x800C0010 to 0x800C0041
netX Driver	*CIFX API Transport Error Codes*: 0x800D0001 to 0x800D0013
	CIFX API Transport Header State Error Codes: 0x800E0001 to 0x800E000B
DBM	*ODM Error Codes DBM V4*: 0xC004C810 to 0xC004C878

Table 30: Overview Error Codes and Ranges

The protocol-specific error codes are described in the Protocol API manuals of the corresponding communication protocols.
These manuals are provided on the netHOST Solutions DVD in the `Documentation\english\3.For Programmers\4.Communication Protocol specific APIs.` directory.

14.3 General Hardware Error Codes

14.3.1 RCX General Task Errors

Error Code (Definition)	Value	Description
RCX_E_QUE_UNKNOWN	0xC02B0001	Unknown Queue
RCX_E_QUE_INDEX_UNKNOWN	0xC02B0002	Unknown Queue Index
RCX_E_TASK_UNKNOWN	0xC02B0003	Unknown Task
RCX_E_TASK_INDEX_UNKNOWN	0xC02B0004	Unknown Task Index
RCX_E_TASK_HANDLE_INVALID	0xC02B0005	Invalid Task Handle
RCX_E_TASK_INFO_IDX_UNKNOWN	0xC02B0006	Unknown Index
RCX_E_FILE_XFR_TYPE_INVALID	0xC02B0007	Invalid Transfer Type
RCX_E_FILE_REQUEST_INCORRECT	0xC02B0008	Invalid File Request
RCX_E_TASK_INVALID	0xC02B000E	Invalid Task
RCX_E_SEC_FAILED	0xC02B001D	Security EEPROM Access Failed
RCX_E_EEPROM_DISABLED	0xC02B001E	EEPROM Disabled
RCX_E_INVALID_EXT	0xC02B001F	Invalid Extension
RCX_E_SIZE_OUT_OF_RANGE	0xC02B0020	Block Size Out Of Range
RCX_E_INVALID_CHANNEL	0xC02B0021	Invalid Channel
RCX_E_INVALID_FILE_LEN	0xC02B0022	Invalid File Length
RCX_E_INVALID_CHAR_FOUND	0xC02B0023	Invalid Character Found
RCX_E_PACKET_OUT_OF_SEQ	0xC02B0024	Packet Out Of Sequence
RCX_E_SEC_NOT_ALLOWED	0xC02B0025	Not Allowed In Current State
RCX_E_SEC_INVALID_ZONE	0xC02B0026	Security EEPROM Invalid Zone
RCX_E_SEC_EEPROM_NOT_AVAIL	0xC02B0028	Security EEPROM Eeprom Not Available
RCX_E_SEC_INVALID_CHECKSUM	0xC02B0029	Security EEPROM Invalid Checksum
RCX_E_SEC_ZONE_NOT_WRITEABLE	0xC02B002A	Security EEPROM Zone Not Writeable
RCX_E_SEC_READ_FAILED	0xC02B002B	Security EEPROM Read Failed
RCX_E_SEC_WRITE_FAILED	0xC02B002C	Security EEPROM Write Failed
RCX_E_SEC_ACCESS_DENIED	0xC02B002D	Security EEPROM Access Denied
RCX_E_SEC_EEPROM_EMULATED	0xC02B002E	Security EEPROM Emulated
RCX_E_INVALID_BLOCK	0xC02B0038	Invalid Block
RCX_E_INVALID_STRUCT_NUMBER	0xC02B0039	Invalid Structure Number
RCX_E_INVALID_CHECKSUM	0xC02B4352	Invalid Checksum
RCX_E_CONFIG_LOCKED	0xC02B4B54	Configuration Locked
RCX_E_SEC_ZONE_NOT_READABLE	0xC02B4D52	Security EEPROM Zone Not Readable

Table 31: RCX General Task Errors

14.3.2 RCX Common Status & Errors Codes

Error Code (Definition)	Value	Description
RCX_S_OK	0x00000000	Success, Status Okay
RCX_E_FAIL	0xC0000001	Fail
RCX_E_UNEXPECTED	0xC0000002	Unexpected
RCX_E_OUTOFMEMORY	0xC0000003	Out Of Memory
RCX_E_UNKNOWN_COMMAND	0xC0000004	Unknown Command
RCX_E_UNKNOWN_DESTINATION	0xC0000005	Unknown Destination
RCX_E_UNKNOWN_DESTINATION_ID	0xC0000006	Unknown Destination ID
RCX_E_INVALID_PACKET_LEN	0xC0000007	Invalid Packet Length
RCX_E_INVALID_EXTENSION	0xC0000008	Invalid Extension
RCX_E_INVALID_PARAMETER	0xC0000009	Invalid Parameter
RCX_E_WATCHDOG_TIMEOUT	0xC000000C	Watchdog Timeout
RCX_E_INVALID_LIST_TYPE	0xC000000D	Invalid List Type
RCX_E_UNKNOWN_HANDLE	0xC000000E	Unknown Handle
RCX_E_PACKET_OUT_OF_SEQ	0xC000000F	Out Of Sequence
RCX_E_PACKET_OUT_OF_MEMORY	0xC0000010	Out Of Memory
RCX_E_QUE_PACKETDONE	0xC0000011	Queue Packet Done
RCX_E_QUE_SENDPACKET	0xC0000012	Queue Send Packet
RCX_E_POOL_PACKET_GET	0xC0000013	Pool Packet Get
RCX_E_POOL_GET_LOAD	0xC0000015	Pool Get Load
RCX_E_REQUEST_RUNNING	0xC000001A	Request Already Running
RCX_E_INIT_FAULT	0xC0000100	Initialization Fault
RCX_E_DATABASE_ACCESS_FAILED	0xC0000101	Database Access Failed
RCX_E_NOT_CONFIGURED	0xC0000119	Not Configured
RCX_E_CONFIGURATION_FAULT	0xC0000120	Configuration Fault
RCX_E_INCONSISTENT_DATA_SET	0xC0000121	Inconsistent Data Set
RCX_E_DATA_SET_MISMATCH	0xC0000122	Data Set Mismatch
RCX_E_INSUFFICIENT_LICENSE	0xC0000123	Insufficient License
RCX_E_PARAMETER_ERROR	0xC0000124	Parameter Error
RCX_E_INVALID_NETWORK_ADDRESS	0xC0000125	Invalid Network Address
RCX_E_NO_SECURITY_MEMORY	0xC0000126	No Security Memory
RCX_E_NETWORK_FAULT	0xC0000140	Network Fault
RCX_E_CONNECTION_CLOSED	0xC0000141	Connection Closed
RCX_E_CONNECTION_TIMEOUT	0xC0000142	Connection Timeout
RCX_E_LONELY_NETWORK	0xC0000143	Lonely Network
RCX_E_DUPLICATE_NODE	0xC0000144	Duplicate Node
RCX_E_CABLE_DISCONNECT	0xC0000145	Cable Disconnected
RCX_E_BUS_OFF	0xC0000180	Network Node Bus Off
RCX_E_CONFIG_LOCKED	0xC0000181	Configuration Locked
RCX_E_APPLICATION_NOT_READY	0xC0000182	Application Not Ready
RCX_E_TIMER_APPL_PACKET_SENT	0xC002000C	Timer App Packet Sent

Table 32: RCX Common Status & Errors Codes

14.3.3 RCX Status & Error Codes

Error Code (Definition)	Value	Description
RCX_S_OK	0x00000000	SUCCESS, STATUS OKAY
RCX_S_QUE_UNKNOWN	0xC02B0001	UNKNOWN QUEUE
RCX_S_QUE_INDEX_UNKNOWN	0xC02B0002	UNKNOWN QUEUE INDEX
RCX_S_TASK_UNKNOWN	0xC02B0003	UNKNOWN TASK
RCX_S_TASK_INDEX_UNKNOWN	0xC02B0004	UNKNOWN TASK INDEX
RCX_S_TASK_HANDLE_INVALID	0xC02B0005	INVALID TASK HANDLE
RCX_S_TASK_INFO_IDX_UNKNOWN	0xC02B0006	UNKNOWN INDEX
RCX_S_FILE_XFR_TYPE_INVALID	0xC02B0007	INVALID TRANSFER TYPE
RCX_S_FILE_REQUEST_INCORRECT	0xC02B0008	INVALID FILE REQUEST
RCX_S_UNKNOWN_DESTINATION	0xC0000005	UNKNOWN DESTINATION
RCX_S_UNKNOWN_DESTINATION_ID	0xC0000006	UNKNOWN DESTINATION ID
RCX_S_INVALID_LENGTH	0xC0000007	INVALID LENGTH
RCX_S_UNKNOWN_COMMAND	0xC0000004	UNKNOWN COMMAND
RCX_S_INVALID_EXTENSION	0xC0000008	INVALID EXTENSION

Table 33: RCX Status & Error Codes

14.3.3.1 RCX Status & Error Codes Slave State

Error Code (Definition)	Value	Description
RCX_SLAVE_STATE_UNDEFINED	0x00000000	UNDEFINED
RCX_SLAVE_STATE_OK	0x00000001	OK
RCX_SLAVE_STATE_FAILED	0x00000002	FAILED (at least one slave)

Table 34: RCX Status & Error Codes Slave State

14.4 ODM Error Codes

14.4.1 General ODM Error Codes

Error Code (Definition)	Value	Description
CODM3_E_INTERNALERROR	0x8004C700	Internal ODM Error
ODM3_E_DESCRIPTION_NOTFOUND	0x8004C701	Description not found in ODM database
CODM3_E_WRITEREGISTRY	0x8004C710	Error writing to the registry
CODM3_E_BAD_REGULAR_EXPRESSION	0x8004C711	Invalid regular expression
CODM3_E_COMCATEGORIE_MANAGER_ FAILED	0x8004C712	Component Category Manager could not be instantiated
CODM3_E_COMCATEGORIE_ENUMERATION_ FAILED	0x8004C713	Driver could not be enumerated by the Category Manager
CODM3_E_CREATE_LOCAL_BUFFER	0x8004C714	Error creating local buffers
CODM3_E_UNKNOWNHANDLE	0x8004C715	Unknown handle
CODM3_E_QUEUE_LIMIT_REACHED	0x8004C717	Queue size limit for connection reached
CODM3_E_DATASIZE_ZERO	0x8004C718	Zero data length passed
CODM3_E_INVALID_DATA	0x8004C719	Invalid data content
CODM3_E_INVALID_MODE	0x8004C71A	Invalid mode
CODM3_E_DATABASE_READ	0x8004C71B	Error reading database
CODM3_E_CREATE_DEVICE_THREAD	0x8004C750	Error creating device thread
CODM3_E_CREATE_DEVICE_THREAD_STOP_ EVENT	0x8004C751	Error creating device thread stop event
CODM3_E_CLIENT_NOT_REGISTERED	0x8004C752	Client is not registered at the ODM
CODM3_E_NO_MORE_CLIENTS	0x8004C753	Maximum number of clients reached
CODM3_E_MAX_CLIENT_CONNECTIONS_ REACHED	0x8004C754	Maximum number of client connections reached
CODM3_E_ENTRY_NOT_FOUND	0x8004C755	Driver/device not found
CODM3_E_DRIVER_NOT_FOUND	0x8004C757	The requested driver is unknown to the ODM
CODM3_E_DEVICE_ALREADY_LOCKED	0x8004C758	Device is locked by another process
CODM3_E_DEVICE_UNLOCKED_FAILED	0x8004C759	Device could not be unlocked, lock was set by another process
CODM3_E_DEVICE_LOCK_NECCESSARY	0x8004C75A	Operation requires a device lock to be set
CODM3_E_DEVICE_SUBSCRIPTIONLIMIT	0x8004C75B	Maximum number of servers registered for this device reached
CODM3_E_DEVICE_NOTSUBSCRIBED	0x8004C75C	Process is not registered as a server on this device
CODM3_E_DEVICE_NO_MESSAGE	0x8004C75D	No message available
CODM3_E_TRANSFERTIMEOUT	0x8004C760	Message transfer timeout
CODM3_E_MESSAGE_INSERVICE	0x8004C761	Message in service

Table 35: ODM Error Codes - General ODM Error Codes

14.4.2 General ODM Driver Error Codes

Error Code (Definition)	Value	Description
CODM3_E_DRV_OPEN_DEVICE	0x8004C7A0	Packet type unsupported by driver
CODM3_E_DRV_INVALID_IDENTIFIER	0x8004C7A1	Invalid device identifier
CODM3_E_DRV_DEVICE_PARAMETERS_ MISMATCH	0x8004C7A3	Parameters differ from requested device
CODM3_E_DRV_BROWSE_NO_DEVICES	0x8004C7A4	No devices found
CODM3_E_DRV_CREATE_DEVICE_INST	0x8004C7A5	Device instance could not be created
CODM3_E_DRV_DEVICE_NOMORE_TX	0x8004C7A6	Device connection limit reached
CODM3_E_DRV_DEVICE_DUPLICATE_TX	0x8004C7A7	Duplicate transmitter ID
CODM3_E_DRV_DEVICE_NOT_CONFIGURED	0x8004C7A8	Device is not configured
CODM3_E_DRV_DEVICE_COMMUNICATION	0x8004C7A9	Device communication error
CODM3_E_DRV_DEVICE_NO_MESSAGE	0x8004C7AA	No message available
CODM3_E_DRV_DEVICE_NOT_READY	0x8004C7AB	Device not ready
CODM3_E_DRV_INVALIDCONFIGURATION	0x8004C7AC	Invalid driver configuration
CODM3_E_DRV_DLINVALIDMODE	0x8004C7C0	Invalid download mode
CODM3_E_DRV_DLINPROGRESS	0x8004C7C1	Download is active
CODM3_E_DRV_ULINPROGRESS	0x8004C7C2	Upload is active

Table 36: ODM Error Codes - General ODM Driver Error Codes

14.4.3 cifX Driver Specific ODM Error Codes

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	**Value**	**Description**
DRV_E_BOARD_NOT_INITIALIZED	0x8004C001	DRIVER Board not initialized
DRV_E_INIT_STATE_ERROR	0x8004C002	DRIVER Error in internal init state
DRV_E_READ_STATE_ERROR	0x8004C003	DRIVER Error in internal read state
DRV_E_CMD_ACTIVE	0x8004C004	DRIVER Command on this channel is active
DRV_E_PARAMETER_UNKNOWN	0x8004C005	DRIVER Unknown parameter in function
DRV_E_WRONG_DRIVER_VERSION	0x8004C006	DRIVER Version is incompatible with DLL
DRV_E_PCI_SET_CONFIG_MODE	0x8004C007	DRIVER Error during PCI set configuration mode
DRV_E_PCI_READ_DPM_LENGTH	0x8004C008	DRIVER Could not read PCI dual port memory length
DRV_E_PCI_SET_RUN_MODE	0x8004C009	DRIVER Error during PCI set run mode
DRV_E_DEV_DPM_ACCESS_ERROR	0x8004C00A	DEVICE Dual port ram not accessable(board not found)
DRV_E_DEV_NOT_READY	0x8004C00B	DEVICE Not ready (ready flag failed)
DRV_E_DEV_NOT_RUNNING	0x8004C00C	DEVICE Not running (running flag failed)
DRV_E_DEV_WATCHDOG_FAILED	0x8004C00D	DEVICE Watchdog test failed
DRV_E_DEV_OS_VERSION_ERROR	0x8004C00E	DEVICE Signals wrong OS version
DRV_E_DEV_SYSERR	0x8004C00F	DEVICE Error in dual port flags
DRV_E_DEV_MAILBOX_FULL	0x8004C010	DEVICE Send mailbox is full
DRV_E_DEV_PUT_TIMEOUT	0x8004C011	DEVICE PutMessage timeout
DRV_E_DEV_GET_TIMEOUT	0x8004C012	DEVICE GetMessage timeout
DRV_E_DEV_GET_NO_MESSAGE	0x8004C013	DEVICE No message available
DRV_E_DEV_RESET_TIMEOUT	0x8004C014	DEVICE RESET command timeout
DRV_E_DEV_NO_COM_FLAG	0x8004C015	DEVICE COM-flag not set. Check if Bus is running
DRV_E_DEV_EXCHANGE_FAILED	0x8004C016	DEVICE I/O data exchange failed
DRV_E_DEV_EXCHANGE_TIMEOUT	0x8004C017	DEVICE I/O data exchange timeout
DRV_E_DEV_COM_MODE_UNKNOWN	0x8004C018	DEVICE I/O data mode unknown
DRV_E_DEV_FUNCTION_FAILED	0x8004C019	DEVICE Function call failed
DRV_E_DEV_DPMSIZE_MISMATCH	0x8004C01A	DEVICE DPM size differs from configuration
DRV_E_DEV_STATE_MODE_UNKNOWN	0x8004C01B	DEVICE State mode unknown
DRV_E_DEV_HW_PORT_IS_USED	0x8004C01C	DEVICE Output port already in use
DRV_E_USR_OPEN_ERROR	0x8004C01E	USER Driver not opened (device driver not loaded)
DRV_E_USR_INIT_DRV_ERROR	0x8004C01F	USER Can't connect to device
DRV_E_USR_NOT_INITIALIZED	0x8004C020	USER Board not initialized (DevInitBoard not called)
DRV_E_USR_COMM_ERR	0x8004C021	USER IOCTRL function failed
DRV_E_USR_DEV_NUMBER_INVALID	0x8004C022	USER Parameter DeviceNumber invalid
DRV_E_USR_INFO_AREA_INVALID	0x8004C023	USER Parameter InfoArea unknown
DRV_E_USR_NUMBER_INVALID	0x8004C024	USER Parameter Number invalid
DRV_E_USR_MODE_INVALID	0x8004C025	USER Parameter Mode invalid
DRV_E_USR_MSG_BUF_NULL_PTR	0x8004C026	USER NULL pointer assignment
DRV_E_USR_MSG_BUF_TOO_SHORT	0x8004C027	USER Message buffer too small

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	**Value**	**Description**
DRV_E_USR_SIZE_INVALID	0x8004C028	USER Parameter Size invalid
DRV_E_USR_SIZE_ZERO	0x8004C02A	USER Parameter Size with zero length
DRV_E_USR_SIZE_TOO_LONG	0x8004C02B	USER Parameter Size too long
DRV_E_USR_DEV_PTR_NULL	0x8004C02C	USER Device address null pointer
DRV_E_USR_BUF_PTR_NULL	0x8004C02D	USER Pointer to buffer is a null pointer
DRV_E_USR_SENDSIZE_TOO_LONG	0x8004C02E	USER Parameter SendSize too large
DRV_E_USR_RECVSIZE_TOO_LONG	0x8004C02F	USER Parameter ReceiveSize too large
DRV_E_USR_SENDBUF_PTR_NULL	0x8004C030	USER Pointer to send buffer is a null pointer
DRV_E_USR_RECVBUF_PTR_NULL	0x8004C031	USER Pointer to receive buffer is a null pointer
DRV_E_DMA_INSUFF_MEM	0x8004C032	DMA Memory allocation error
DRV_E_DMA_TIMEOUT_CH4	0x8004C033	DMA Read I/O timeout
DRV_E_DMA_TIMEOUT_CH5	0x8004C034	DMA Write I/O timeout
DRV_E_DMA_TIMEOUT_CH6	0x8004C035	DMA PCI transfer timeout
DRV_E_DMA_TIMEOUT_CH7	0x8004C036	DMA Download timeout
DRV_E_DMA_DB_DOWN_FAIL	0x8004C037	DMA Database download failed
DRV_E_DMA_FW_DOWN_FAIL	0x8004C038	DMA Firmware download failed
DRV_E_CLEAR_DB_FAIL	0x8004C039	DMA Clear database on the device failed
DRV_E_DEV_NO_VIRTUAL_MEM	0x8004C03C	DMA USER Virtual memory not available
DRV_E_DEV_UNMAP_VIRTUAL_MEM	0x8004C03D	DMA USER Unmap virtual memory failed
DRV_E_GENERAL_ERROR	0x8004C046	DRIVER General error
DRV_E_DMA_ERROR	0x8004C047	DRIVER General DMA error
DRV_E_WDG_IO_ERROR	0x8004C048	DRIVER I/O WatchDog failed
DRV_E_WDG_DEV_ERROR	0x8004C049	DRIVER Device Watchdog failed
DRV_E_USR_DRIVER_UNKNOWN	0x8004C050	USER Driver unknown
DRV_E_USR_DEVICE_NAME_INVALID	0x8004C051	USER Device name invalid
DRV_E_USR_DEVICE_NAME_UKNOWN	0x8004C052	USER Device name unknown
DRV_E_USR_DEVICE_FUNC_NOTIMPL	0x8004C053	USER Device function not implemented
DRV_E_USR_FILE_OPEN_FAILED	0x8004C064	USER File could not be opened
DRV_E_USR_FILE_SIZE_ZERO	0x8004C065	USER File size zero
DRV_E_USR_FILE_NO_MEMORY	0x8004C066	USER Not enough memory to load file
DRV_E_USR_FILE_READ_FAILED	0x8004C067	USER File read failed
DRV_E_USR_INVALID_FILETYPE	0x8004C068	USER File type invalid
DRV_E_USR_FILENAME_INVALID	0x8004C069	USER Invalid filename
DRV_E_FW_FILE_OPEN_FAILED	0x8004C06E	USER Firmware file could not be opened
DRV_E_FW_FILE_SIZE_ZERO	0x8004C06F	USER Not enough memory to load firmware file
DRV_E_FW_FILE_NO_MEMORY	0x8004C070	USER Not enough memory to load firmware file
DRV_E_FW_FILE_READ_FAILED	0x8004C071	USER Firmware file read failed
DRV_E_FW_INVALID_FILETYPE	0x8004C072	USER Firmware file type invalid
DRV_E_FW_FILENAME_INVALID	0x8004C073	USER Firmware file name not valid
DRV_E_FW_DOWNLOAD_ERROR	0x8004C074	USER Firmware file download error
DRV_E_FW_FILENAME_NOT_FOUND	0x8004C075	USER Firmware file not found in the internal table
DRV_E_FW_BOOTLOADER_ACTIVE	0x8004C076	USER Firmware file BOOTLOADER active

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	**Value**	**Description**
DRV_E_FW_NO_FILE_PATH	0x8004C077	USER Firmware file no file path
DRV_E_CF_FILE_OPEN_FAILED	0x8004C078	USER Configuration file could not be opend
DRV_E_CF_FILE_SIZE_ZERO	0x8004C079	USER Configuration file size zero
DRV_E_CF_FILE_NO_MEMORY	0x8004C07A	USER Not enough memory to load configuration file
DRV_E_CF_FILE_READ_FAILED	0x8004C07B	USER Configuration file read failed
DRV_E_CF_INVALID_FILETYPE	0x8004C07C	USER Configuration file type invalid
DRV_E_CF_FILENAME_INVALID	0x8004C07D	USER Configuration file name not valid
DRV_E_CF_DOWNLOAD_ERROR	0x8004C07E	USER Configuration file download error
DRV_E_CF_FILE_NO_SEGMENT	0x8004C07F	USER No flash segment in the configuration file
DRV_E_CF_DIFFERS_FROM_DBM	0x8004C080	USER Configuration file differs from database
DRV_E_DBM_SIZE_ZERO	0x8004C083	USER Database size zero
DRV_E_DBM_NO_MEMORY	0x8004C084	USER Not enough memory to upload database
DRV_E_DBM_READ_FAILED	0x8004C085	USER Database read failed
DRV_E_DBM_NO_FLASH_SEGMENT	0x8004C086	USER Database segment unknown
DEV_E_CF_INVALID_DESCRIPT_VERSION	0x8004C096	CONFIG Version of the descript table invalid
DEV_E_CF_INVALID_INPUT_OFFSET	0x8004C097	CONFIG Input offset is invalid
DEV_E_CF_NO_INPUT_SIZE	0x8004C098	CONFIG Input size is 0
DEV_E_CF_MISMATCH_INPUT_SIZE	0x8004C099	CONFIG Input size does not match configuration
DEV_E_CF_INVALID_OUTPUT_OFFSET	0x8004C09A	CONFIG Invalid output offset
DEV_E_CF_NO_OUTPUT_SIZE	0x8004C09B	CONFIG Output size is 0
DEV_E_CF_MISMATCH_OUTPUT_SIZE	0x8004C09C	CONFIG Output size does not match configuration
DEV_E_CF_STN_NOT_CONFIGURED	0x8004C09D	CONFIG Station not configured
DEV_E_CF_CANNOT_GET_STN_CONFIG	0x8004C09E	CONFIG Cannot get the Station configuration
DEV_E_CF_MODULE_DEF_MISSING	0x8004C09F	CONFIG Module definition is missing
DEV_E_CF_MISMATCH_EMPTY_SLOT	0x8004C0A0	CONFIG Empty slot mismatch
DEV_E_CF_MISMATCH_INPUT_OFFSET	0x8004C0A1	CONFIG Input offset mismatch
DEV_E_CF_MISMATCH_OUTPUT_OFFSET	0x8004C0A2	CONFIG Output offset mismatch
DEV_E_CF_MISMATCH_DATA_TYPE	0x8004C0A3	CONFIG Data type mismatch
DEV_E_CF_MODULE_DEF_MISSING_NO_SI	0x8004C0A4	CONFIG Module definition is missing,(no Slot/Idx)

Table 37: cifX Driver Specific ODM Error Codes

14.5 Error Codes cifX Device Driver and netX Driver

14.5.1 Generic Error Codes

Error Code (Definition)	Value	Description
CIFX_INVALID_POINTER	0x800A0001	Invalid pointer (NULL) passed to driver
CIFX_INVALID_BOARD	0x800A0002	No board with the given nameindex available
CIFX_INVALID_CHANNEL	0x800A0003	No channel with the given index available
CIFX_INVALID_HANDLE	0x800A0004	Invalid handle passed to driver
CIFX_INVALID_PARAMETER	0x800A0005	Invalid parameter
CIFX_INVALID_COMMAND	0x800A0006	Invalid command
CIFX_INVALID_BUFFERSIZE	0x800A0007	Invalid buffer size
CIFX_INVALID_ACCESS_SIZE	0x800A0008	Invalid access size
CIFX_FUNCTION_FAILED	0x800A0009	Function failed
CIFX_FILE_OPEN_FAILED	0x800A000A	File could not be opened
CIFX_FILE_SIZE_ZERO	0x800A000B	File size is zero
CIFX_FILE_LOAD_INSUFF_MEM	0x800A000C	Insufficient memory to load file
CIFX_FILE_CHECKSUM_ERROR	0x800A000D	File checksum compare failed
CIFX_FILE_READ_ERROR	0x800A000E	Error reading from file
CIFX_FILE_TYPE_INVALID	0x800A000F	Invalid file type
CIFX_FILE_NAME_INVALID	0x800A0010	Invalid file name
CIFX_FUNCTION_NOT_AVAILABLE	0x800A0011	Driver function not available
CIFX_BUFFER_TOO_SHORT	0x800A0012	Given buffer is too short
CIFX_MEMORY_MAPPING_FAILED	0x800A0013	Failed to map the memory
CIFX_NO_MORE_ENTRIES	0x800A0014	No more entries available
CIFX_CALLBACK_MODE_UNKNOWN	0x800A0015	Unkown callback handling mode
CIFX_CALLBACK_CREATE_EVENT_FAILED	0x800A0016	Failed to create callback events
CIFX_CALLBACK_CREATE_RECV_BUFFER	0x800A0017	Failed to create callback receive buffer

Table 38: Generic Error Codes

14.5.2 Generic Driver Error Codes

Error Code (Definition)	Value	Description
CIFX_DRV_NOT_INITIALIZED	0x800B0001	Driver not initialized
CIFX_DRV_INIT_STATE_ERROR	0x800B0002	Driver init state error
CIFX_DRV_READ_STATE_ERROR	0x800B0003	Driver read state error
CIFX_DRV_CMD_ACTIVE	0x800B0004	Command is active on device
CIFX_DRV_DOWNLOAD_FAILED	0x800B0005	General error during download
CIFX_DRV_WRONG_DRIVER_VERSION	0x800B0006	Wrong driver version
CIFX_DRV_DRIVER_NOT_LOADED	0x800B0030	CIFx driver is not running
CIFX_DRV_INIT_ERROR	0x800B0031	Failed to initialize the device
CIFX_DRV_CHANNEL_NOT_INITIALIZED	0x800B0032	Channel not initialized (xOpenChannel not called)
CIFX_DRV_IO_CONTROL_FAILED	0x800B0033	IOControl call failed
CIFX_DRV_NOT_OPENED(	0x800B0034	Driver was not opened
CIFX_DRV_DOWNLOAD_STORAGE_UNKNOWN	0x800B0040	Unknown download storage type (RAMFLASH based) found
CIFX_DRV_DOWNLOAD_FW_WRONG_CHANNEL	0x800B0041	Channel number for a firmware download not supported
CIFX_DRV_DOWNLOAD_MODULE_NO_BASEOS	0x800B0042	Modules are not allowed without a Base OS firmware

Table 39: Generic Driver Error Codes

14.5.3 Generic Device Error Codes

Error Code (Definition)	Value	Description
CIFX_DEV_DPM_ACCESS_ERROR	0x800C0010	Dual port memory not accessable (board not found)
CIFX_DEV_NOT_READY	0x800C0011	Device not ready (ready flag failed)
CIFX_DEV_NOT_RUNNING	0x800C0012	Device not running (running flag failed)
CIFX_DEV_WATCHDOG_FAILED	0x800C0013	Watchdog test failed
CIFX_DEV_SYSERR	0x800C0015	Error in handshake flags
CIFX_DEV_MAILBOX_FULL	0x800C0016	Send mailbox is full
CIFX_DEV_PUT_TIMEOUT	0x800C0017	Send packet timeout
CIFX_DEV_GET_TIMEOUT	0x800C0018	Receive packet timeout
CIFX_DEV_GET_NO_PACKET	0x800C0019	No packet available
CIFX_DEV_MAILBOX_TOO_SHORT	0x800C001A	Mailbox too short
CIFX_DEV_RESET_TIMEOUT	0x800C0020	Reset command timeout
CIFX_DEV_NO_COM_FLAG	0x800C0021	COM-flag not set
CIFX_DEV_EXCHANGE_FAILED	0x800C0022	IO data exchange failed
CIFX_DEV_EXCHANGE_TIMEOUT	0x800C0023	IO data exchange timeout
CIFX_DEV_COM_MODE_UNKNOWN	0x800C0024	Unknown IO exchange mode
CIFX_DEV_FUNCTION_FAILED	0x800C0025	Device function failed
CIFX_DEV_DPMSIZE_MISMATCH	0x800C0026	DPM size differs from configuration
CIFX_DEV_STATE_MODE_UNKNOWN	0x800C0027	Unknown state mode
CIFX_DEV_HW_PORT_IS_USED	0x800C0028	Device is still accessed
CIFX_DEV_CONFIG_LOCK_TIMEOUT	0x800C0029	Configuration locking timeout
CIFX_DEV_CONFIG_UNLOCK_TIMEOUT	0x800C002A	Configuration unlocking timeout
CIFX_DEV_HOST_STATE_SET_TIMEOUT	0x800C002B	Set HOST state timeout
CIFX_DEV_HOST_STATE_CLEAR_TIMEOUT	0x800C002C	Clear HOST state timeout
CIFX_DEV_INITIALIZATION_TIMEOUT	0x800C002D	Timeout during channel initialization
CIFX_DEV_BUS_STATE_ON_TIMEOUT	0x800C002E	Set Bus ON Timeout
CIFX_DEV_BUS_STATE_OFF_TIMEOUT	0x800C002F	Set Bus OFF Timeout
CIFX_DEV_MODULE_ALREADY_RUNNING	0x800C0040	Module already running
CIFX_DEV_MODULE_ALREADY_EXISTS	0x800C0041	Module already exists

Table 40: Generic Device Error Codes

14.6 Error Codes netX Driver

14.6.1 CIFX API Transport Error Codes

Error Code (Definition)	Value	Description
CIFX_TRANSPORT_SEND_TIMEOUT	0x800D0001	Time out while sending data
CIFX_TRANSPORT_RECV_TIMEOUT	0x800D0002	Time out waiting for incoming data
CIFX_TRANSPORT_CONNECT	0x800D0003	Unable to communicate to the deviceno answer
CIFX_TRANSPORT_ABORTED	0x800D0004	Transfer has been aborted due to keep alive timeout or interface detachment
CIFX_CONNECTOR_FUNCTIONS_READ_ERRO R	0x800D0010	Error reading the connector functions from the DLL
CIFX_CONNECTOR_IDENTIFIER_TOO_LONG	0x800D0011	Connector delivers an identifier longer than 6 characters
CIFX_CONNECTOR_IDENTIFIER_EMPTY	0x800D0012	Connector delivers an empty dentifier
CIFX_CONNECTOR_DUPLICATE_IDENTIFIER	0x800D0013	Connector identifier already used

Table 41: CIFX API Transport Error Codes

14.6.2 CIFX API Transport Header State Error Codes

Error Code (Definition)	Value	Description
CIFX_TRANSPORT_ERROR_UNKNOWN	0x800E0001	Unknown error code in transport header
CIFX_TRANSPORT_CHECKSUM_ERROR	0x800E0002	CRC16 checksum failed
CIFX_TRANSPORT_LENGTH_INCOMPLETE	0x800E0003	Transaction with inclomplete length detected
CIFX_TRANSPORT_DATA_TYPE_UNKOWN	0x800E0004	Device does not support requested data type
CIFX_TRANSPORT_DEVICE_UNKNOWN	0x800E0005	Device not availableunknown
CIFX_TRANSPORT_CHANNEL_UNKNOWN	0x800E0006	Channel not availableunknown
CIFX_TRANSPORT_SEQUENCE	0x800E0007	Sequence error detected
CIFX_TRANSPORT_BUFFEROVERFLOW	0x800E0008	Buffer overflow detected
CIFX_TRANSPORT_RESOURCE	0x800E0009	Device signals out of resources
CIFX_TRANSPORT_KEEPALIVE	0x800E000A	Device connection monitoring error (Keep alive)
CIFX_TRANSPORT_DATA_TOO_SHORT(	0x800E000B	Received transaction data too short

Table 42: CIFX API Transport Header State Error Codes

14.7 ODM Error Codes DBM V4

ODM Error Codes DBM V4		
Error Code (Definition)	**Value**	**Description**
CDBM_E_MD5_INVALID	0XC004C810	Checksum invalid
CDBM_E_INTERNALERROR	0XC004C811	Internal Error
CDBM_W_WRITEREGISTRY	0X8004C812	Error writing to the registry
CDBM_E_UNEXPECTED_VALUE_ IN_OLD_HEADER_FORMAT	0XC004C813	Error in a file containing the old DBM Header format.
CDBM_E_CHECKSUM_INVALID	0XC004C814	The Checksum of the old Header is invalid
CDBM_E_DB_ALREADY_LOADED_ FORMAT	0XC004C815	A database is already loaded
CDBM_E_NO_VALID_TRANSACTION	0XC004C816	No valid transaction handle given
CDBM_E_STD_STRUCT_ERROR	0XC004C817	An error occurred during validation of data
CDBM_E_UNSUPPORTED_ DATA_TYPE_FORMAT	0XC004C818	Unsupported DataType
CDBM_W_CLASS_DELETED_ FORMAT	0X8004C819 (Warning)	Using an Object which is marked as deleted
CDBM_W_CLIENT_DISCONNECTED	0X8004C81A (Warning)	A Client has already an outstanding connection to a Table. The connection is now destroyed.
CDBM_E_STRUCTURE_DEFINITION_ INVALID	0XC004C81B	A structure definition of an Element in a Table is invalid
CDBM_E_NO_DATA_AVAILABLE	0XC004C81C	No data available for this operation
CDBM_E_NO_VALID_STRUCTURE	0XC004C81D	No valid structure available for this operation
CDBM_E_NO_TOGGLE_STRING_ FOUND	0XC004C81E	No Toggle string found for this number
CDBM_E_ELEMENT_OUT_OF_RANGE	0XC004C81F	An element wasn’t found in the Record of a Table
CDBM_E_ELEMENT_NOT_IN_ TABLE	0XC004C820	The element is not part of the Table
CDBM_E_CANNOT_CONVERT_ INTO_CLIENT_TYPE	0XC004C821	The data can't be converted into the Client type
CDBM_E_TRANSACTION_ ALREADY_OPEN	0XC004C822	A transaction is already open. Please close this one first before opening a new one.
CDBM_I_OLD_WITHOUT_HEADER	0X4004C823 (Informational)	Use of an old DBM file Format without Header
CDBM_E_HR_FROM	0XC004C824	An HRESULT was received from a Subroutine
CDBM_E_PARAMETER	0XC004C825	A Parameter is invalid
CDBM_E_NOTIMPL	0XC004C826	Method is currently not implemented
CDBM_E_OUTOFMEMORY	0XC004C827	Out of memory
CDBM_E_NO_OPEN_TRANSACTION	0XC004C828	No transaction open
CDBM_E_NO_CONTENTS	0XC004C829	No contents available
CDBM_REC_NO_NOT_FOUND	0XC004C82A	Record not found
CDBM_STRUCTURE_ELEMENT_ NOT_FOUND	0XC004C82B	Element of the Structure not found
CDBM_E_NO_MORE_RECORDS_ IN_TABTYPE	0XC004C82C	Table type 3 can contain only one record
CDBM_E_WRITE	0XC004C82D	The data in the VARIANT must be given in a SafeArray
CDBM_E_WRITE_NO_PARRAY	0XC004C82E	The VARIANT contains no valid [parray] element

ODM Error Codes DBM V4		
Error Code (Definition)	**Value**	**Description**
CDBM_E_WRITE_CANT_ ACCESS_DATA	0XC004C82F	Unable to access SafeArray Data in the VARIANT
CDBM_E_WRITE_DATA	0XC004C830	To write the data of this Element it must be given as a BSTR, or as an Array of VT_UI1/VT_I1
CDBM_E_WRITE_BSTR_E1	0XC004C831	The BSTR string must have an even length.
CDBM_E_WRITE_BSTR_E2	0XC004C832	The BSTR string must contain only hex digits (0..9 and a/A..f/F).
CDBM_E_WRITE_CANT_ INTERPRET_ARRAY	0XC004C833	Unable to interpret data in the SafeArray.
CDBM_E_WRITE_VT_ERROR	0XC004C834	Data type in the SafeArray is not VT_UI1 or VT_I1.
CDBM_E_WRITE_LENGTH	0XC004C835	Data length is invalid for write operation of this type.
CDBM_WRITE_ELEMENT	0XC004C836	Element not found in the Record of the Table
CDBM_MIN_MAX_ERROR	0XC004C837	Can't write data because of min underflow or max overflow
CDBM_TABLE_EXIST	0XC004C838	Table already exist in the database
CDBM_MIN_MAX_INVALID	0XC004C839	The Min value is greater than the Max Value
CDBM_DEF_MIN_MAX_INVALID	0XC004C83A	The Default Value is not in the range between the Min value and the Max Value
CDBM_CANT_CHANGE_STRUCTURE_ WHILE_RECORDS_EXIST	0XC004C83B	It's not allowed to change the structure while Records exist in the Table
CDBM_NEW_STRUCT_NEEDS_TYPE	0XC004C83C	In a newly added structure the data type must be set also
CDBM_VALUE_ERROR	0XC004C83D	Range error while validating a value
CDBM_DATATYPE_ UNSUPPORTED_IN_RCS	0XC004C83E	The data type is unsupported in the RCS file format
CDBM_I_COUNT_OF_TABLES_ EXCEEDS_RCS_RANGE	0X4004C83F (Informational)	The count of Tables exceeds the RCS range of Tables. This can cause problems if the file is downloaded to RCS Systems
CDBM_I_COUNT_OF_TABLES_ EXCEEDS_OLDDBM_RANGE	0X4004C840 (Informational)	The count of Tables exceeds the DBM32.DLL range of Tables. This can cause problems if the file is used with older Tools using the DBM32.DLL
CDBM_UNSUPPORTED_DATATYPE_ IN_RCS_MODE	0XC004C841	The Data type is not compatible with the old database format
CDBM_WRITE_UNSTRUCTURED_1	0XC004C842	The data of an unstructured record can only be written with the 'Write' Method not with 'WriteElement'.
CDBM_READ_UNSTRUCTURED_1	0XC004C843	The data of an unstructured record can only be read with the 'Read' Method not with 'ReadElement'
CDBM_WRITE_DATA_LENGTH_ INVALID	0XC004C844	The given data length doesn’t correspond with the expected data length.
CDBM_UNKNOWN_VIEW_MODE	0XC004C845	The View Mode is unknown.
CDBM_E_DIAG_TABLE	0XC004C846	It doesn’t make much sense to add or delete records from a diagnostic table because those changes are never saved.

ODM Error Codes DBM V4		
Error Code (Definition)	**Value**	**Description**
CDBM_E_ADR_STRING_ERROR	0XC004C847	The given Address string doesn't fit the required format of this type where all address bytes must be in the range between 0 and FF
CDBM_ERROR_FROM_VAR_ CHANGE_TYPE	0XC004C848	Function VariantChangeType return an error when trying to convert the Parameter
CDBM_E_MINERROR	0XC004C849	Error while comparing the Value with the lower range
CDBM_E_MAXERROR	0XC004C84A	Error while comparing the Value with the upper range
CDBM_E_RANGE_ERROR	0XC004C84B	Value out of Range
CDBM_E_TABLE_TYPE1	0XC004C84C	Table type 1 doesn't have a unique record length over all records
CDBM_E_TABLE_TYPE3_ ADDREC	0XC004C84D	Table type 3 doesn't allow to insert more than one Record
CDBM_E_TABTYPE1	0XC004C84E	It's not allowed to insert more Records than structure definitions in Table Type 1
CDBM_E_TOGGLE_NOT_FOUND	0XC004C84F	Could not find the string for this value in the list of valid toggle strings
CDBM_E_TOGGLE_VALUE_IS_ EMPTY_STRING	0XC004C850	The toggle string for this value is empty.
CDBM_VARIANT2BYTEARRAY_ ERROR	0XC004C851	Error during conversion of Variant to byte array
CDBM_E_SET_ELEM_PROP_ DEPENDENCY	0XC004C852	The Toggle Type needs also the additional string and the additional number entries in the Method
CDBM_E_TABTYPE1_REC_ DOESNT_CORRESPOND_ WITH_ELEMENT	0XC004C853	When reading the records of Table type 1 elementwise the record number must correspond with the element number
CDBM_TABTYPE1_NO_DATA_ FOUND_FOR_RECORD	0XC004C854	When reading the records of Table type 1 and structure definitions are present it's assumed that for each structure element a corresponding record must exist
CDBM_E_TABTYPE1_WRITE_ ELEMENT_NE_RECORD	0XC004C855	When writing the records of Table type 1 elementwise and structure definitions are present it's only allowed to write the corresponding element number in each record
CDBM_E_TABTYPE1_WRITE_ ELEMENT_NOT_FOUND	0XC004C856	When writing the records of Table type 1 with an array and structure definitions are present it's assumed that a corresponding element number of this record exist
CDBM_I_TABLE_NAME_EXCEEDS_ RCS_RANGE	0X4004C857 (Informational)	The Table name exceeds the maximum length of RCS compatible Table names
CDBM_W_CUT_STRING	0X8004C858 (Warning)	The string exceeds the maximum length and will be limited to the maximum length
CDBM_I_STRING_TOO_SHORT	0X4004C859 (Informational)	The string is below the minimum length. The minimum length will be reduced.
CDBM_I_STRING_TOO_LONG	0X4004C85A (Informational)	The string is exceeding the maximum. The maximum length will be extended.
CDBM_E_STRING_TOO_SHORT	0XC004C85B (Error)	The string is below the minimum length.
CDBM_E_STRING_TOO_LONG	0XC004C85C (Error)	The string is exceeding the maximum length

ODM Error Codes DBM V4		
Error Code (Definition)	**Value**	**Description**
CDBM_E_WRONG_TYPE_ FOR_WRITE	0XC004C85D	Writing on the Element type with the given Data type is not implemented
CDBM_E_NO_APPEND_IN_ STRUCTURED_RECORDS	0XC004C85E	Method IDbmRecord::AppendData is not allowed for structured records
CDBM_E_DATA_UNAVAILABLE	0XC004C85F	No data available
CDBM_E_CANT_CONVERT_ INTO	0XC004C860	Unable to convert the value into the Element type
CDBM_E_DBM_FILE_OVERFLOW	0XC004C861	You try to write a RCS like database which needs too much bytes
CDBM_E_PW_ERROR	0XC004C862	Password not correct
CDBM_E_FILELENGTH_CORRUPT	0XC004C863	The file length doesn't correspond to the length given in the Header.
CDBM_E_STRUCT_TYPE	0XC004C864	Error in the file.
CDBM_E_MD5SUM_INVALID	0XC004C865	MD5 sum invalid
CDBM_E_STRUCT_LENGTH	0XC004C866	Error in the expected and given structure length at a specific offset in the file.
CDBM_E_APPEND	0XC004C867	Append of data is only allowed if the Record contains only one data field and the field type will support this
CDBM_APPEND_NOT_ SUPPORTED	0XC004C868	Append of Data not supported by this filed type
CDBM_DATA_TYPE_APPEND_ ERROR	0XC004C869	Can't append Data of this type.
CDBM_E_UNSTRUCTURED_TABLE_ DOESNT_SUPPORT_LENGTH	0XC004C86A	A Table without structure information doesn't support a record length
CDBM_E_DISABLED_WHILE_ TRANSACTION_IS_OPEN	0XC004C86B	The Method is disabled while a transaction is open. Please close this one first and call the Method again.
CDBM_E_UNABLE_TO_CALL_ READ_ON_LINKED_LIST	0XC004C86C	The Method is disabled on a LinkedList type. Please use the IRecordCollection on this type.
CDBM_E_ELEMENT_HAS_NO_ SUBSTRUCTURE	0XC004C86D	An Element from a Table has no substructure
CDBM_STRUCT_ERROR_FROM_ VAR_CHANGE_TYPE	0XC004C86E	Error from calling VariantChangeType
CDBM_E_FOREIGNKEY_DEF	0XC004C86F	The definition of a FOREIGNKEY must contain the name of the related Table in the description and this Table must exist at this time
CDBM_E_FOREIGNKEY_ REF_TAB	0XC004C870	The description of a FOREIGNKEY must refer to a Table of type 'eDbmTableTypeLinkedList'
CDBM_E_KEY	0XC004C871	To create a Record Collection with a KEY it's necessary to have the data type KEY at the first position in all Records of the searched Table
CDBM_E_KEY_TABLE_TYPE	0XC004C872	This Method needs a Table of type 'eDbmTableTypeLinkedList'
CDBM_DATATYPE_NOT_ IMPLEMENTED	0XC004C873	This data type is currently not implemented
CDBM_INSERT_POS_NOT_ FOUND	0XC004C874	The position of the Record where the new one should be inserted wasn't found
CDBM_E_INSERT_REC_QI	0XC004C875	Error during insertion of a Record
CDBM_E_TAB_PROP	0XC004C876	Invalid Property in Table
CDBM_E_KEY_NOT_FOUND	0XC004C877	The KEY wasn't found in the Table

ODM Error Codes DBM V4		
Error Code (Definition)	**Value**	**Description**
CDBM_E_KEY_INVALID	0XC004C878	The KEY is invalid for this operation

Table 43: ODM Error Codes DBM V4

15 Appendix

15.1 User Rights for the netHOST DTM

The user rights for the netHOST DTM are set within the FDT-container, i. e. SYCON.net. Opening the dialog windows and reading the parameters do not require special user rights. Also, all users can choose between the decimal or hexadecimal display mode or sort table entries.

Editing/configuring the parameters of the dialog windows belonging to the **Settings** and **Configuration** category, however, requires the user right of *Maintenance, Planning Engineer* or *Administrator*.

The following tables give an overview of the existing user groups and their access rights regarding the netHOST DTM.

User rights for the “Settings” dialog windows

Dialog window / activity	Observer	Operator	Maintenance	Planning Engineer	Adminis-trator
Driver Dialog Window	D	D	X	X	X
Select driver	-	-	X	X	X
netX Driver Dialog Window	D	D	X	X	X
Configure driver	-	-	X	X	X
Device Assignment Dialog Window	D	D	X	X	X
Search device	-	-	X	X	X
Select device	-	-	X	X	X

Table 44: Settings (D = Displaying, X = Editing, Configuring)

User rights for the “Configuration” dialog windows

Dialog window	Observer	Operator	Maintenance	Planning Engineer	Adminis-trator
Settings Dialog Window	D	D	X	X	X
Memory Card Management Dialog Window	D	D	X	X	X
Licensing Dialog Window	D	D	X	X	X

Table 45: Configuration (D = Displaying, X = Editing, Configuring)

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15.4 Contacts

Headquarters

Germany
Hilscher Gesellschaft für
Systemautomation mbH
Rheinstrasse 15
65795 Hattersheim
Phone: +49 (0) 6190 9907-0
Fax: +49 (0) 6190 9907-50
E-Mail: info@hilscher.com

Support
Phone: +49 (0) 6190 9907-99
E-Mail: de.support@hilscher.com

Subsidiaries

China
Hilscher Systemautomation (Shanghai) Co. Ltd.
200010 Shanghai
Phone: +86 (0) 21-6355-5161
E-Mail: info@hilscher.cn

Support
Phone: +86 (0) 21-6355-5161
E-Mail: cn.support@hilscher.com

France
Hilscher France S.a.r.l.
69500 Bron
Phone: +33 (0) 4 72 37 98 40
E-Mail: info@hilscher.fr

Support
Phone: +33 (0) 4 72 37 98 40
E-Mail: fr.support@hilscher.com

India
Hilscher India Pvt. Ltd.
Pune, Delhi, Mumbai
Phone: +91 8888 750 777
E-Mail: info@hilscher.in

Italy
Hilscher Italia S.r.l.
20090 Vimodrone (MI)
Phone: +39 02 25007068
E-Mail: info@hilscher.it

Support
Phone: +39 02 25007068
E-Mail: it.support@hilscher.com

Japan
Hilscher Japan KK
Tokyo, 160-0022
Phone: +81 (0) 3-5362-0521
E-Mail: info@hilscher.jp

Support
Phone: +81 (0) 3-5362-0521
E-Mail: jp.support@hilscher.com

Korea
Hilscher Korea Inc.
Seongnam, Gyeonggi, 463-400
Phone: +82 (0) 31-789-3715
E-Mail: info@hilscher.kr

Switzerland
Hilscher Swiss GmbH
4500 Solothurn
Phone: +41 (0) 32 623 6633
E-Mail: info@hilscher.ch

Support
Phone: +49 (0) 6190 9907-99
E-Mail: ch.support@hilscher.com

USA
Hilscher North America, Inc.
Lisle, IL 60532
Phone: +1 630-505-5301
E-Mail: info@hilscher.us

Support
Phone: +1 630-505-5301
E-Mail: us.support@hilscher.com