



SIEMENS

PRONETA  
PROFINET Network Analyzer - Configuration and Diagnostic Tool

PRONETA

Initializing PRONETA core...

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Edition

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USER MANUAL

# PRONETA Basic V3.6

## PROFINET Network Analyzer – Configuration and Diagnostic Tool

<https://support.industry.siemens.com/cs/ww/en/view/67460624>



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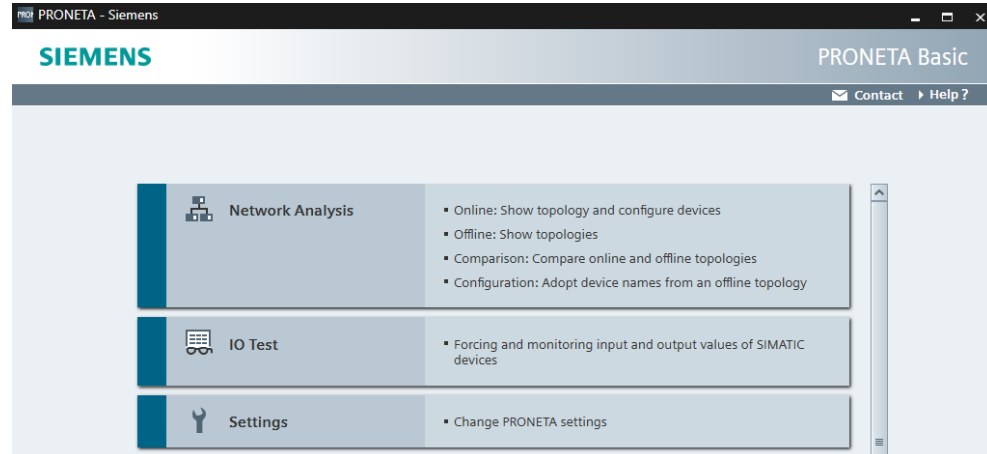
# 1 Introduction

The PROFINET network analyzer PRONETA Basic is a simple tool intended for the rapid analysis and configuration of PROFINET networks and the simple testing of SIMATIC ET 200 IO systems and other components. It is especially well suited for solving two tasks fundamental to the commissioning of PROFINET installations:

- The "Network Analysis" task gives a quick overview of the devices connected to PROFINET. It features simple configuration options, like setting network parameters or assigning a network name to the devices which are part of the subnet the PRONETA PC is connected to. The application also provides powerful mechanisms to compare multiple network topologies with each other, for example to compare an "ideal" topology intended for a project with the actual installation.
- The "IO Test" task is a simple and intuitive method to test the IO wiring of an installation with numerous SIMATIC IO devices. It allows for checks of the wiring and will automatically set up a protocol of the test procedure which can be exported for documentation purposes.

Both tasks can be performed before a CPU is actually integrated into the network. Since there are no other engineering tools required, PRONETA Basic allows fast and convenient checks of the system configuration from early on.

Figure 1-1



PRONETA Basic has the following features:

- Free download from the SIEMENS support websites
- Runs on any contemporary PC, PG or laptop, running Windows
- Allows configuration of networks in early project phases, even before any CPU is installed in the network
- No dedicated installation needed: Simply extract the zip download
- Support for PROFINET devices from all vendors

- IO Test supported for numerous SIMATIC ET 200 IO modules
- Support for project files from STEP 7 V5.4 and higher

For more information see also [13](#).

### How to use this manual

This manual consists of the following sections:

- Chapter [2](#), "[General](#)" gives you an overview of PRONETA Basic's features and provides you with the necessary information to install and run the program.
- Chapter [3](#), "[PRONETA Basic User Guide](#)" is a reference chapter, duplicating the online help, which acquaints you with concepts and the user interface of PRONETA Basic.
- Chapter [4](#), "[Working with PRONETA Basic](#)" will guide you through the most relevant use cases of PRONETA Basic in a step-by-step manner.

## 2 General

### 2.1 PRONETA Basic and PRONETA Professional

PRONETA Professional is a commercial, licensed software product distributed by SIEMENS. It contains the functionality of PRONETA Basic and furthermore provides additional functions (see also [41](#)).

### 2.2 Features

#### Obtaining PRONETA Basic

PRONETA Basic is available as a free download from the SIEMENS Industry Online Support portal:

- <https://support.industry.siemens.com/cs/ww/en/view/67460624> (see [12](#))

This manual refers to version 3.6.

#### System Requirements

PRONETA Basic runs on any contemporary PC, PG or laptop with Windows 7, Windows Embedded Compact 7, Windows 8 and Windows 10, each either in the 32 or 64-bit version, or Windows 11 in the 64-bit version.

Connection with PROFINET is established via an Industrial Ethernet cable.

The following additional software components are also required:

- [.NET Framework v4.8](#)  
If .NET is missing on your PC, the installer will guide you to a download location.
- [Microsoft Visual C++ Redistributable](#)
- An API ("Application Programming Interface") for capturing network traffic, such as Npcap. Npcap is part of the PRONETA Basic distribution and will be installed at the first start of PRONETA if there is no Windows Packet Capture Library & Driver on the target PC.

#### NOTE

- Depending on the distribution, the .NET Framework and Npcap drivers may not be included in the standard installation for Windows Embedded and may therefore require manual installation.
- The 32-bit version of Microsoft Visual C++ must be used even with 64-bit versions of Windows.

#### Supported SIMATIC Software

PRONETA Basic allows the loading of reference projects created with STEP 7, Versions 5.4, 5.5, or 5.6. It is also possible to import AML ("Automation Markup Language") files created with the TIA Portal.



### Port information for firewall for scanning

PRONETA uses port 161 for SNMP (Simple Network Management Protocol) and port 34964 for DCE/RPC (Distributed Computing Environment/Remote Procedure Call).

### Limitations

- The maximum size of a network for which network scans will be reliably performed is 500 devices. For larger networks, devices may go undetected, or PRONETA Basic may crash. (See also [Online Mode](#))
- In the IO Test, signal changes of less than 128 ms duration may not be reliably observed. (See also [IO Test](#))

## 2.3 Supported Devices and Modules

PRONETA Basic supports all PROFINET-conform devices irrespective of their manufacturer. The supported range of functions depends on the individual device.

The IO Test supports the following devices and modules:

- Most current SIMATIC ET 200 modules, including ET 200AL, ET 200iSP, ET 200SP, ET 200SP HA, ET 200M, ET 200MP, and ET 200ecoPN
- SIMATIC IO-Link modules (Master/Device)
- SIMATIC Compact Field Units (CFU)
- SIRIUS Motor Starters with Firmware Versions 1.1 or greater
- SIPLUS Heating Control Systems HCS4200/4300
- Most SIMATIC S7-1500 CPUs, including S7-1500 Advanced Controllers, and Drive Controller CPUs 1504D TF and 1507D TF.

### Reference List

A continuously updated list of supported modules for PRONETA Basic can be found on the [PRONETA Basic download page](#) (see also [12](#))

### Updating the PRONETA Basic GSDML database

Modules can subsequently be supported by importing their GSDML file from the SIEMENS [Industry Online Support Portal](#) web pages, provided they do not require any new functionality. See the [GSDML Manager](#) section for more details.

## 2.4 Setting up and Running PRONETA Basic

### Setup

Extract the PRONETA Basic file archive into a folder on your PC and connect your PC by means of an Industrial Ethernet cable with your plant.

No further installation is required for PRONETA Basic.

#### NOTE

- The extraction path for PRONETA Basic must not contain either of the special characters "#" or ";".
- To perform IO Tests (see [IO Test, 3.3](#)), PRONETA must be placed in a directory where it will have writing privileges during execution.

## Starting PRONETA Basic

After setup, you can start PRONETA Basic by a double-click on the program icon in the extraction folder.

Figure 2-1



### NOTE

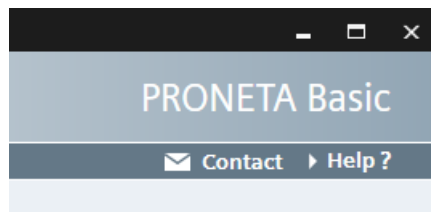
When running PRONETA Basic for the first time, you will be asked to acknowledge the license conditions before you can proceed.

You may also create a shortcut link to PRONETA Basic on your desktop and start the program from there.

## Quitting PRONETA Basic

To quit PRONETA Basic, click on the "Close" icon of the program's window.

Figure 2-2



## Removing PRONETA Basic from your system

If you do not plan to use PRONETA Basic any further, perform the two following steps:

1. Delete the folder to which you extracted PRONETA Basic,
2. Open Device Manager, navigate to "Network adapters". Right-click the Npcap Loopback Adapter Driver and select Uninstall device.

## 3 PRONETA Basic User Guide

### 3.1 Fundamentals of PRONETA Basic

#### 3.1.1 Overview

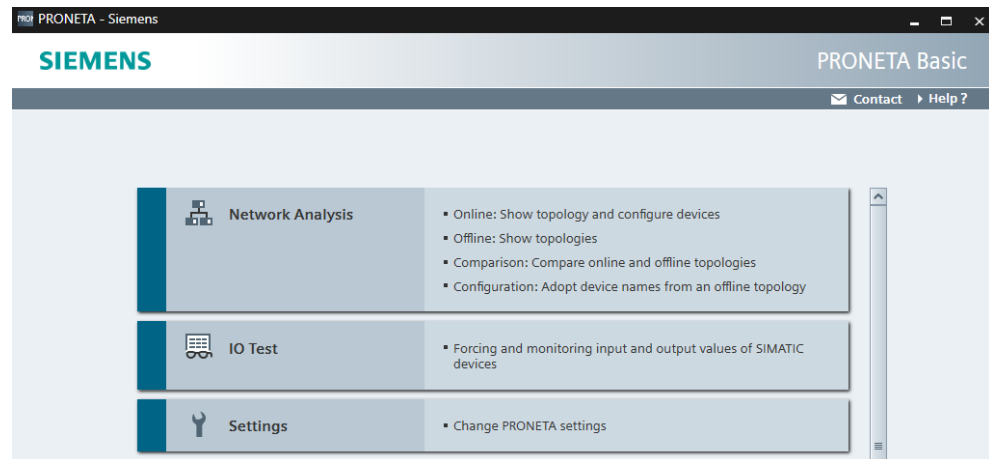
**NOTE**

Within the scope of this documentation, the term "device" is used as a synonym for "network participant", "node", or "component". Any piece of equipment which takes part in the PROFINET communication with a designated IP address is considered a "device".

PRONETA Basic is designed to allow you to accomplish one of several "tasks". These tasks are currently:

- [Network Analysis](#)
- [IO Test](#)
- Adjusting the software [Settings](#)

Figure 3-1

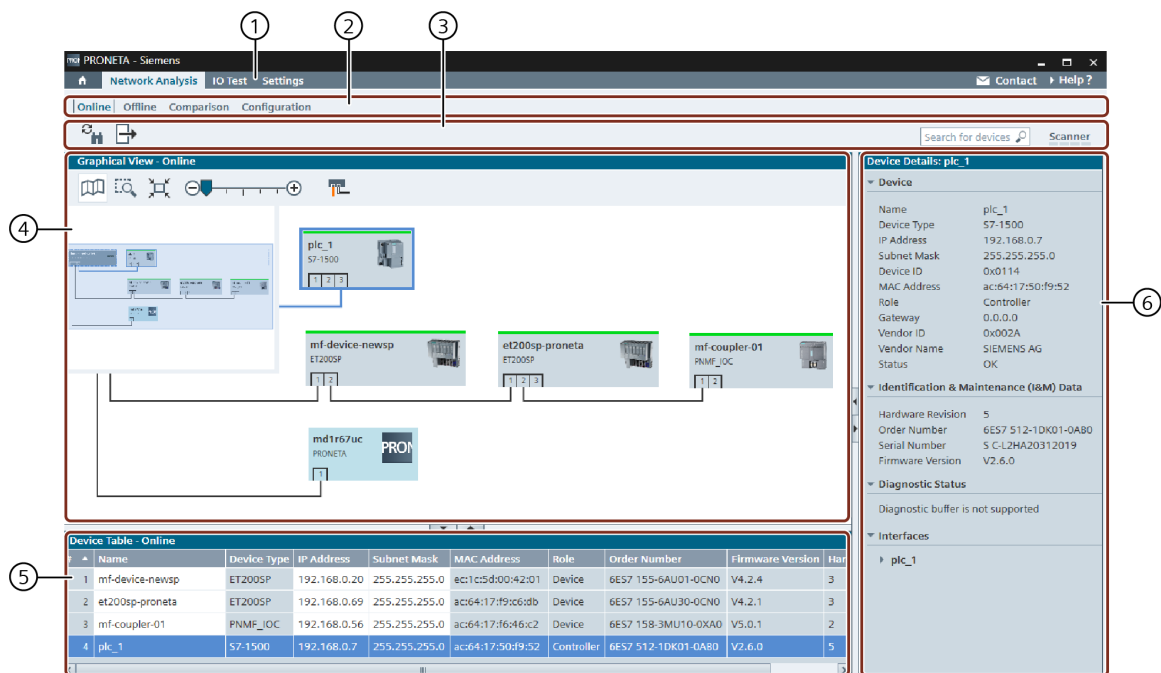


## Screen Layout

In general, the PRONETA Basic window is split in several sections:

- A navigation bar (1) on the top
- A mode bar (2) which allows you to change between "modes", or individual steps of the task in hand
- A Function Bar (3) which offers particular functions for the current mode
- The Graphical View (4) contains a toolbar that allows the execution of certain operations depending on the selected mode and a topology overview for easier orientation in complex networks
- The Device Table (5) or one or more topology detail views
- The Device Details window (6) which shows the parameters of a particular device

Figure 3-2



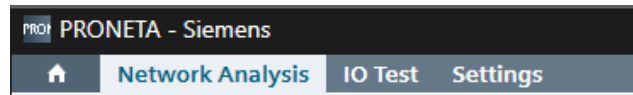
Depending on the task and mode chosen, the function bars and the context menus of the Graphical Views and the Device Tables offer differing functionalities. Details can be found in the respective sections of Chapter 3 of the [PRONETA Basic User Guide](#).

The relative size of the views can be changed by dragging the border between the panes in the corresponding direction. Use the arrow symbols "►", "◄", "▲" or "▼", on the view divider bars to expand or collapse panes.

## Navigation Bar

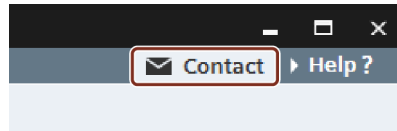
The navigation bar, which is always visible while PRONETA Basic is running, contains the tabs for the tasks "Network Analysis", "IO Test" and "Settings". The house icon on the left takes you back to the start page.

Figure 3-3



There are two buttons at the right end of the navigation bar: the "Contact" button and the "Help?" button.

Figure 3-4



Via "Contact" button you can easily get in touch with the PRONETA support team and let them know your ideas for improvement or requests for new features.

PRONETA will create and attach diagnostic dump of its current state and prepare an e-mail to be sent to the PRONETA support team with that dump attached.

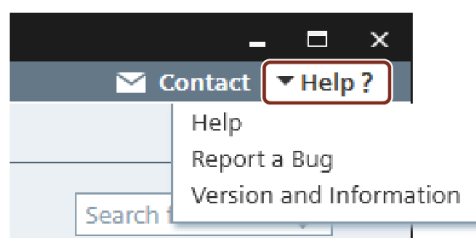
(Creating the dump will take a few moments.)

The dump file contains:

- Log files
- Setting of PRONETA
- Capture files of few last scans and IO Test
- Statistical data of usage of PRONETA features

The "Help?" button contains a menu with three entries:

Figure 3-5



- "Help?" opens or closes a frame on the right-hand side of the window which brings up context-specific help. (Pressing the "F1" function key at any time offers the same functionality.) For more details, see [Help View](#).
- "Report a Bug" collects information about the current state of PRONETA Basic and prompts you to submit an error report to the support team to improve PRONETA Basic performance in the future. You can add further information to this message before sending it, like the exact problems and circumstances of the error, and contact details for possible questions.
- "Version and Information" opens a small popup window with information about the PRONETA Basic version you are running. You can also manually check here for new updates of PRONETA Basic.

### 3.1.2 Help View





The PRONETA Basic Online Help is toggled by selecting the "Help" entry from the "Help?" drop-down menu at the right end of the navigation bar, or by pressing "F1" at any time. A Help View is opened on the right side of the PRONETA Basic window, where you can browse through the help topics by scrolling, following the links, or selecting entries from the table of contents. The view size can be changed by dragging the pane border to the left or the right.

The Help provides the same information as this manual.

#### Function Bar

The Help View header consists of a Function Bar with four functions:

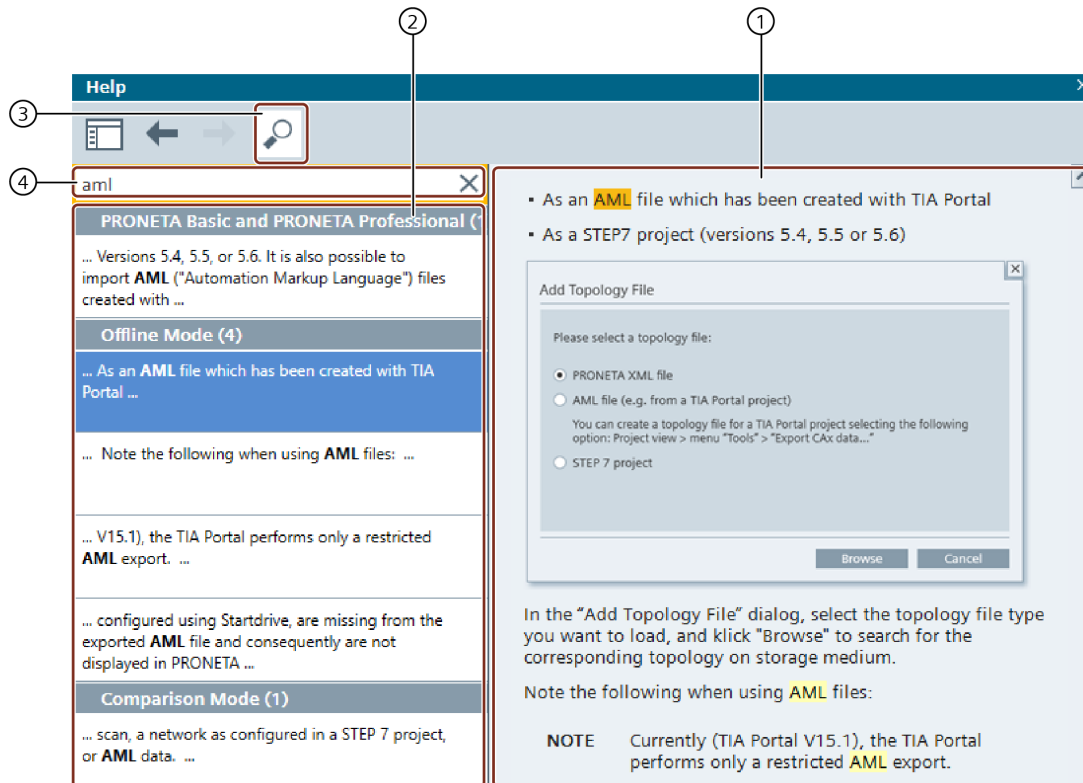
Table 3-1

Icon	Name	Function
	Show Table of Contents	Toggles a view of the table of contents
	Show Previous Topic	Goes to the previous topic in the browsing history
	Show Next Topic	Goes to the next topic in the browsing history
	Search in Help	Toggles a Search View inside the Help View

## Help View Contents

The Help View consists of one or two elements arranged left to right. Beside the main help topic (1), there is an optional second pane (2) to the left which displays either the table of contents or the search view.

Figure 3-6



### Search

Clicking on the "Search in Help" icon (3) in the navigation bar will turn the search view on and off.

When a search term is entered in the search field (4), PRONETA Basic will perform a full text search across the complete help contents, displaying a results list below the search field. Click on one of the result entries to jump to the corresponding topic in the main help topic window, where the search term found will be highlighted.

The search function is case-insensitive and does not allow for wildcards or regular expressions. A search for "opolo" will find both "topology" and "TOPOLOGIES", for example.

Clicking on the "x" symbol at the right end of the search field (4) clears the search term and all search results.



## Table of Contents

Clicking on any topic in the table of contents will jump to the corresponding help topic.

## Help Topics

A view of the currently selected help topic. Use the scroll bar on the right side to navigate up and down in the help topic.

To close the Help View, do one of the following:

- Click on the "x" symbol in the top right corner of the view's title bar.
- Hit "F1".
- Select "Help" from the "Help?" menu in the top right corner of the PRONETA Basic window.

## 3.2 Network Analysis

PRONETA Basic's Network Analysis gives you a quick overview about which devices are installed in your PROFINET network, and how they are connected with each other. The Network Analysis also lets you view and change various network parameters of the devices, like IP addresses, device names etc.

Different networks can be compared with each other, and the devices can be configured automatically or manually.

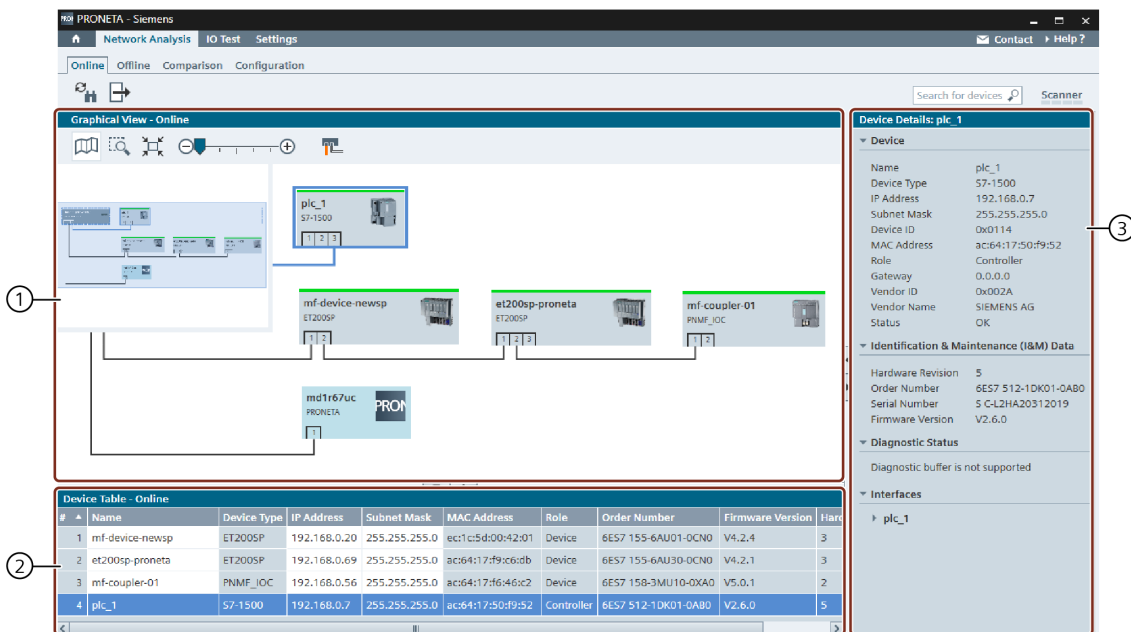
### 3.2.1 Online Mode

In Online mode, PRONETA Basic will scan the PROFINET network for present devices, in either a single sweep or continuously. The main screen is divided in three sections:

- A [Graphical View](#) (1)
- A [Device Table](#) (2) of accessible devices
- The [Device Details](#) (3) showing the parameters of a particular device

Display of the Device Table and Device Details can be toggled by clicking on the triangles on the separator bands in the PRONETA Basic window.

Figure 3-7





**NOTE**

If the network size exceeds 500 devices, not all devices may be reliably detected during a scan. PRONETA Basic may crash in this case.

## Function Bar

The following functions are available in the Function Bar:

Table 3-2

Icon	Name	Function
	Refresh	Performs an immediate update of the network scan.
	Export Topology	Performs a Topology Export to disk.

## Topology Export

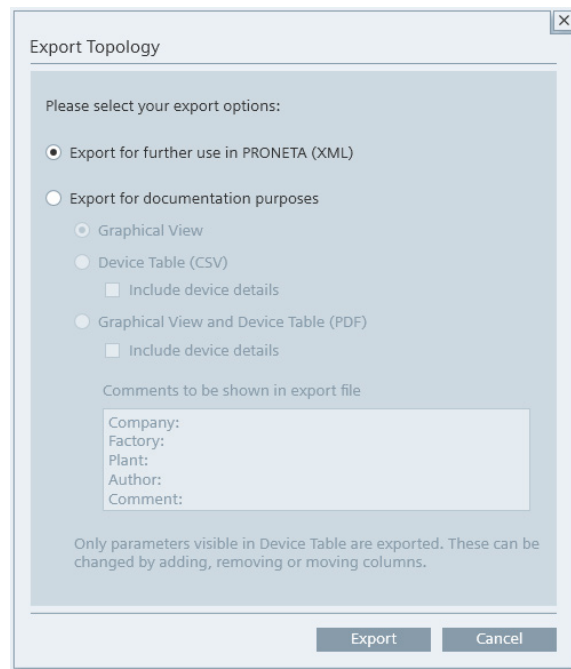
A topology export can be performed in several different formats:

- As an XML file, for later use as a reference [Topology File](#) when working in [Offline Mode](#), [Comparison Mode](#) or [Configuration Mode](#), for example to quickly and conveniently duplicate a configuration.
- For documentation purposes to create reference files documenting the state of the network:
  - As a graphic of the network configuration (PNG (preferred), BMP, or XPS).
  - As a CSV file with information from the Device Table for further processing with a spreadsheet application, such as Microsoft Excel.
  - As a PDF with a combination of topology graphic and Device Table, for documentation and archiving of the configuration.

This is useful to:

- Quickly establish the required hardware when a network configuration is to be duplicated, and to
- Document and easily reference information about all plugged devices and modules employed in a certain installation, including detailed information like order number, Firmware version and serial number.

Figure 3-8



The "Include device details" option will add information about port configurations and modules to the resulting file.

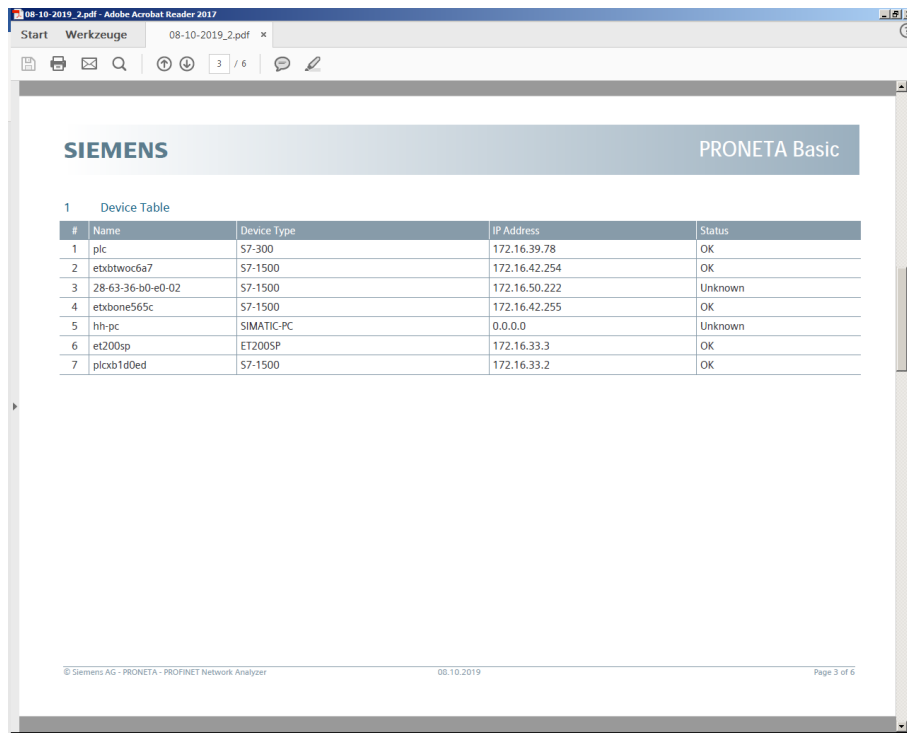
The data fields contained in an exported configuration are the same as the fields currently visible in the corresponding [Device Table](#).

Figure 3-9

#	Name	Device Type	IP Address	Firmware	Hardware	Status	#	Name	IP Address	#	Port ID	Port Descr	Partner P	Partner D	Power Bu	#	Mc	
1	plc	S7-300	172.16.39	V3.2.6		OK	1	plc	172.16.39		1 port-001	Siemens S	port-001					
2	comfort 1	SIMATIC-F	172.16.34	V15.0.0		OK	1	comfort 1	172.16.34		1 port-001	SOC1 Port 1						
3	et_two	S7-1500	172.16.42	R28.29.29		OK	10011	et_two	172.16.42		1 port-001	Siemens, SIMATIC S7, Ethernet Port, X1 P1R						
4	kalliope-i	S7-PC	172.16.1.50			Unknown												
5	28-63-36-i	S7-1500	172.16.50	V2.1.0		Unknown	3	28-63-36-i	172.16.50		1 port-001	Siemens, port-002						
6	et_one	S7-1500	172.16.42	V2.5.2		OK	3	et_one	172.16.42		1 port-001	Siemens, SIMATIC S7, Ethernet Port, X1 P1R						
7	hh-pc	SIMATIC-F	172.16.34.2			OK	1	hh-pc	172.16.34		1 port-001	Berichtet	port-002					
8	et200sp	ET200SP	172.16.33	V3.3.0		OK	5	et200sp	172.16.33		1 port-001	Siemens, port-003					0 IM	
											2 port-002	Siemens, SIMATIC S7, Ethernet Port, X1 P					1 Di	
																		2 Di
																		3 Di
																		4 DC
																		5 AC

When including the Graphical View, the network topology representation will be distributed over several pages in the PDF for larger networks.

Figure 3-10



Depending on the selected mode, only some of the export options will be available:

Table 3-3

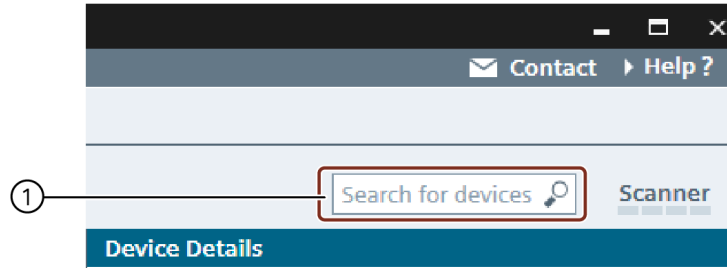
	Online	Offline	Comparison	Configuration
XML	X	-	-	-
Graphical View	X	X	X	-
Device Table (CSV)	X	X	X	-
Graphical View + Device Table (PDF)	X	X	-	-

### Device Search

On the right of the Function Bar, there is an input box (1) which allows you to search for particular devices. The search term you enter will be matched against all information fields (e.g. device names, types, network parameters, ...).

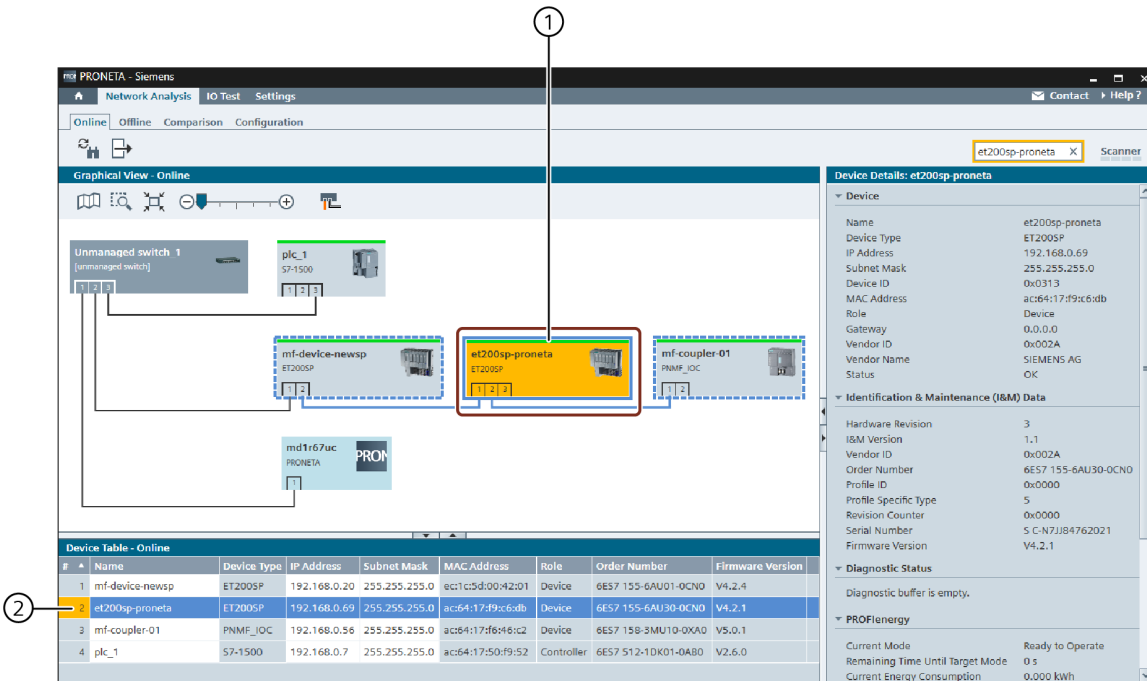
Search is case-insensitive and does not allow for wildcards or regular expressions.

Figure 3-11



Your search matches are highlighted in the [Graphical View](#) (1) and the [Device Table](#) (2) in orange.

Figure 3-12



### Scanner Status Indicator

On the far right of the Function Bar, there is a scanner status indicator (1) which displays the status of the current network scanning cycle.

Each network scanning cycle is divided into four phases, represented by the segments of the scanner status indicator. A network scan is complete when the indicator has gone through all four segments.

A right-click on the status indicator brings up a context menu with a single item, Stop Scanner:

Figure 3-13

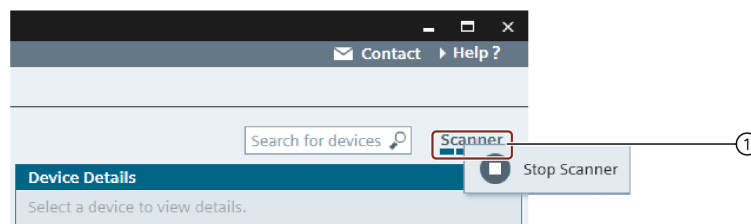


Table 3-4

Icon	Name	Function
	Start Scanner	Toggles the network scan: If it is currently running, it will be stopped, and vice versa.
	Stop Scanner	

While the scanner is stopped, no network load is generated, and no changes to the topology are acquired. In the [General Settings](#) dialog you can control whether PRONETA Basic will scan the network only once or continuously when it is started.

### Graphical View

The Graphical View is a graphical display of the PROFINET network, its devices and their connections to each other either during a current network scan or from a previously stored reference network. The Graphical View occupies the top left of the PRONETA Basic window.

Click on an empty space, keep the mouse button pressed and subsequently drag to shift the visible network segment. Hovering the mouse pointer over a device will change the open hand symbol to an arrow and bring up a [Device Tooltip](#) with basic information about that device.

## Device Display






The device status is indicated by different colors of the device symbol and its borders:

- Field colors:
  - Gray with a green bar on top: Regular network device
  - Light gray with a green bar on top: Device connected to different subnet
  - Dark gray: Network device with limited functionality, such as:
    - Device without a valid IP address or device name
    - Device from which not all data can be read
  - Light blue: PC with active PRONETA Basic or STEP 7
  - Yellow: Device matching the [Device Search](#)
- Borders
  - Orange: Device parametrization conflict (duplicate IP address or device name)
  - Dark blue: Selected device and corresponding connections

## Tool Bar

In the top section of the view, there is a tool bar with a number of function icons:

Table 3-5

Icon	Name	Function
	Show Overview of Topology	Toggles a Topology Overview within the Online View. (See Topology Overview)
	Zoom Selection	Lets you draw a rectangle inside the Graphical View. Once you release the mouse button, the view will zoom to display the rectangle area.
	Zoom to Fit Screen	Zooms the view back so that all network devices fit inside the view.
	Zoom Bar	Zoom into the network or back by dragging the handle to the right or the left, respectively, or clicking on "-" or "+". (You can also zoom into and out of the Graphical View by placing the mouse over the view and using the scroll wheel.)
	Show Physical Connection Types	Indicates the different transmission mediums used in different colors. (See <a href="#">Device Connection Types</a> )



## Topology Overview

The Topology Overview is a view in the top left segment of the Graphical View which helps with the examination of large networks. It shows a schematic of all devices found during the current network scan, regardless of the zoom factor selected for the Online View.

The network segment currently visible in the Online View is indicated by a light blue partly transparent rectangle. Drag the rectangle across the Topology Overview to move the visible network segment into the Online View.

Drag the right or bottom border of the Topology Overview to change the size of the view.

## Device Connection Types

If the "Show Physical Connection Types" option from the tool bar has been selected, connections between devices appear color-coded as follows:

- Black: Copper Ethernet wiring
- Orange: Fiber optical connection

Two parallel lines indicate a ring topology.

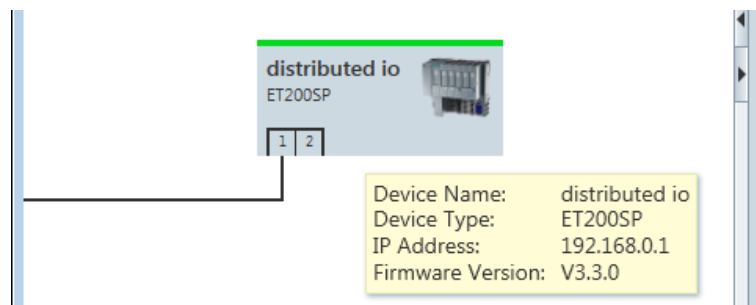
For devices which are displayed without any connection to other devices, the required information could not be gathered.

## Device Tooltips

Hovering the mouse pointer over a device will bring up a tooltip which displays:

- Device name
- Device type
- IP address
- Firmware Version (where applicable)

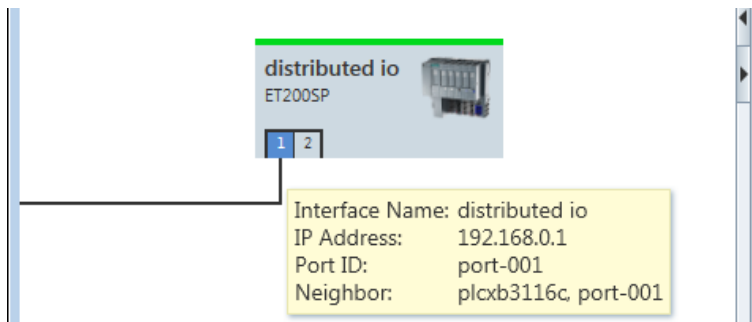
Figure 3-14



Hovering the mouse pointer over a device port displays:

- Interface name
- IP address
- Port ID (for wired connections only)
- Name of the neighboring device

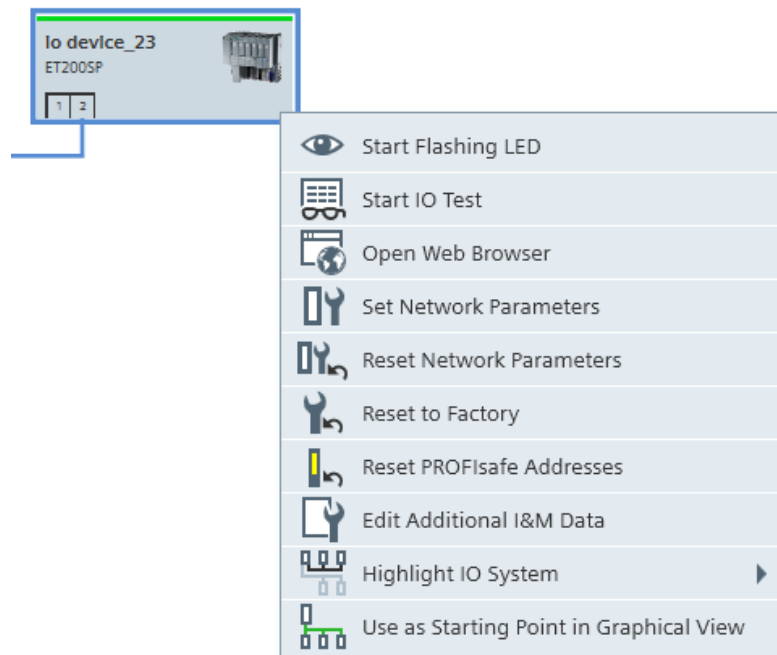
Figure 3-15



### Device Context Menu

By right-clicking on any device in a Graphical View or in the corresponding Device Table, you can bring up a context menu with various functions.











Figure 3-16



Not all menu items are available for all devices and can also depend on the status of the respective device.

When scanning more than one subnet in PRONETA, only three menu items are available for the devices of the additional subnets: "Open Web Browser", "Edit Additional I&M Data, and "Use as Starting Point in Graphical View".

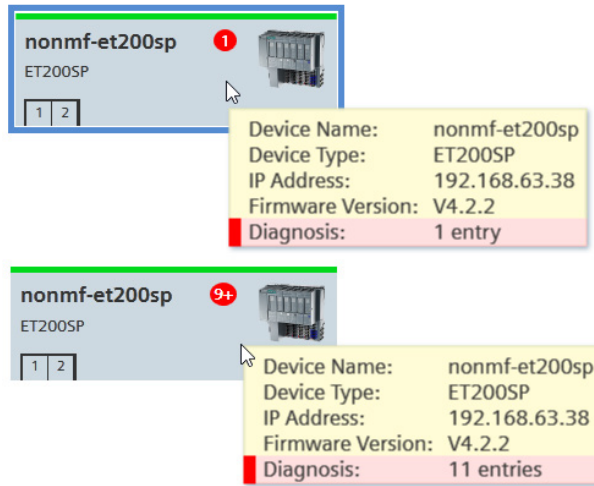
Table 3-6

Icon	Name	Function
	Start Flashing LED	Sets the LEDs on the physical device to flashing for easy identification.
	Start IO Test	Immediately launches an <a href="#">IO Test</a> for the selected device.
	Open Web Browser	Opens your PC's web browser and establishes a connection to the device's web server.
	Set Network Parameters	Opens a popup window which allows you to set various networking parameters for the selected device. For details, see <a href="#">Set Network Parameters</a> .
	Reset Network Parameters	Allows you to reset various networking parameters: device name, IP address and network mask for the selected device.
	Reset to Factory	Resets the device configuration to factory settings. If the command is selected from the <a href="#">Device Table</a> , it is possible to reset multiple selected devices at the same time.
	Reset PROFIsafe Addresses	Resets PROFIsafe addresses of all failsafe IO modules in the selected device. The addresses can then no longer be restored in PRONETA. Resetting can take a few seconds.
	Edit Additional I&M Data	Opens a popup window which lets you enter identification and maintenance ("I&M") data for the device, like location and date of the installation.
	Highlight IO System	Enables the recognizability of IO systems in the Graphical View. All devices belonging to this IO system are highlighted.
	Use as Starting Point in Graphical View	Redraws the Graphical View with the chosen device in the upper left corner.

### Diagnostic Information

If you have enabled the additional provision of "Diagnostic information for all devices in the network overview" in [General Settings](#) and the diagnostic buffer is not empty, the device in the "Graphical View" is marked by a number of failures (1, 2, ..., 9+). The tooltip shows the actual number of entries (1, 2, ...n).

Figure 3-17



The device in the Device Table is marked by a red stripe. The tooltip shows information about where to find details for the entries in the diagnostics buffer.

Figure 3-18

#	Name	Device Type
1	nonmf-et200sp	ET200SP

There is 1 entry in the diagnostic buffer. For details, click on the device and go to the "Diagnostic Status" section in the device details.

#	Name	Device Type
1	nonmf-et200sp	ET200SP

There are 11 entries in the diagnostic buffer. For details, click on the device and go to the "Diagnostic Status" section in the device details.

The device property "Interfaces" shows port-specific information including the statistics for sent and received frames:

Figure 3-19

Interfaces	
nonmf-et200sp	
port-001	
Port ID	port-001
Port Description	Siemens, SIMATIC S7, Ethernet Port, X1 P1 R
State	Up
Partner Port ID	port-001
Partner MAC Address	18:0f:76:fa:d3:a7
Partner Device Name	PC
Cable Delay [ns]	0
Frames (In)	131750
Frames (Out)	29994
Rejected Frames (In)	0
Rejected Frames (Out)	0
Error Frames (In)	0
Error Frames (Out)	0
MAU Type	100Base-TX-FD
Medium Type	Copper Cable

For PROFINET devices which provide an Asset Management Record (AMR), data from the AMR is displayed in the Device Details, too.

### Device Table

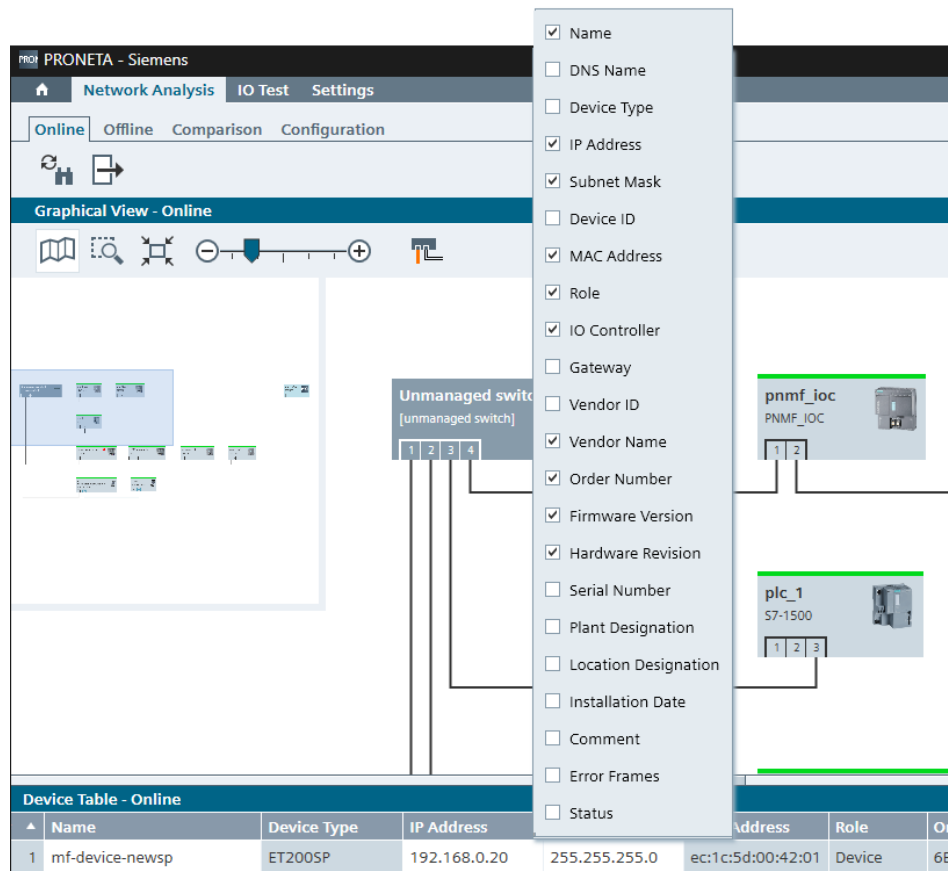
This table lists the devices found either during your current network scan (Online mode only), or in a stored reference network. It is displayed below the Graphical View of the PRONETA Basic window.

Figure 3-20

Device Table - Online							
#	Name	Device Type	IP Address	Subnet Mask	MAC Address	Role	Firmware Version
1	mf-device-newsp	ET200SP	192.168.0.20	255.255.255.0	ec:1c:5d:00:42:01	Device	6ES7 155-6AU01-0CNO V4.2.4
2	et200sp-r	ET200SP	192.168.0.4	255.255.255.0	ec:1c:5d:00:42:10	Device	6ES7 155-6AU01-0CNO V4.2.4
3	et200sp-proneta	ET200SP	192.168.0.69	255.255.255.0	ac:64:17:f9:c6:db	Device	6ES7 155-6AU30-0CNO V4.2.1
4	mf-coupler-01	PNMF_IOC	192.168.0.56	255.255.255.0	ac:64:17:f6:46:c2	Device	6ES7 158-3MU10-0XA0 V5.0.1
5	pnmf_ioc1	PNMF_IOC	192.168.0.59	255.255.255.0	ac:64:17:f6:45:69	Device	6ES7 158-3MU10-0XA0 V5.0.1
6	pnmf_ioc	PNMF_IOC	192.168.0.2	255.255.255.0	ac:64:17:f6:45:6c	Device	6ES7 158-3MU10-0XA0 V5.0.1
9	plc_1	S7-1500	192.168.0.7	255.255.255.0	ac:64:17:50:f9:52	Controller	6ES7 512-1DK01-0AB0 V2.6.0
7	[2 Schnittstellen verbunden]	SCALANCE W-700				Device	6GK5 788-1FC00-0AA0 V6.4.1
8	client	SCALANCE W-700	192.168.0.72	255.255.255.0	d4:f5:27:cb:26:30	Device	6GK5 722-1FC00-0AA0 V6.4.1

The table can display a large amount of different device data. Right-click anywhere in the table header fields to bring up a menu from which you can select the information fields you wish to display.

Figure 3-21



Orange borders around table cells indicate duplicate device names or IP addresses.

Figure 3-22

Device Table - Online				
#	Name	Device type	IP address ▲	Status
7	es10	SIMATIC-PC	172.16.32.1	Unknown
1	et200sp	ET200SP	172.16.33.2	Double IP
5	plc_1	S7-1500	172.16.33.2	Double IP
9	hh-pc	SIMATIC-PC	172.16.34.2	Unknown
6	plc_2	S7-1500	172.16.34.35	Unknown

You can enter information in the white cells inside the table. The new values will be written to the respective device immediately when the cell loses focus. (This is an alternative to using the context menu entry "[Set network parameters](#)").

A left click on a column header will sort the table according to the data in this column in ascending order, another click reverses the order. Small triangles "▲" or "▼" in the column header indicate the sorting criterion.

Dragging a column header with the mouse rearranges the table columns accordingly.

Right-clicking on any table entry brings up the context menu for the current device.

## Device Details

A Device Details view is displayed on the right of the PRONETA Basic window.

This view shows additional device information for a device which was previously selected in the [Device Table](#).

Branches of the tree with device properties can be opened and collapsed by clicking the triangular symbol of the corresponding branch.

Figure 3-23

The screenshot shows a window titled "Device Details: et200sp" with a tree view on the left and a details pane on the right. The details pane is expanded to show the following information:

Device	
Name	et200sp
Device Type	ET200SP
IP Address	172.16.33.3
Subnet Mask	255.255.255.0
Device ID	0x0313
MAC Address	28:63:36:30:7b:22
Role	Device
Gateway	0.0.0.0
Vendor ID	0x002A
Vendor Name	SIEMENS AG
Status	OK

Identification & Maintenance (I&M) Data	
Hardware Revision	5
I&M Version	1.1
Vendor ID	0x002A
Order Number	6ES7 155-6AU00-0BNO
Profile ID	0x0000
Profile Specific Type	5
Revision Counter	0x0000
Serial Number	S C-F5VD11782015
Firmware Version	V3.3.0

Diagnostic Status

Diagnostic buffer is empty.

Interfaces

- et200sp

Modules

- Slot 0 - IM 155-6 PN ST V3.3
 

Module Description	Interface module with PROFINET interface V2.3 (RT/I RT) with cycle time starting at 250 µs, PN connection method selectable via BusAdapter, 32 I/O modules including F modules; media redundancy (MRP); configuration control via PLC; module replacement during operation; start with gaps; supports PROFinergy; shared device with up to 2 PROFINET controllers; supports MSI/MSO; station extension via ET-Connection; user data up to max. 256 bytes per I/O module; supports module distribution; firmware V3.3
Vendor ID	0x002A
Vendor Name	SIEMENS AG
Order Number	6ES7 155-6AU00-0BNO
Serial Number	S C-F5VD11782015

The port status of IO-Link devices is also displayed in the Device Tables.

Figure 3-24

<b>Slot 2 - CM 4xIO-Link V2.2 32I/32O</b>	
Module Description	IO-Link master CM 4xIO-Link, 4 Ports; degree of protection IP20; width 15mm; for connecting IO-Link devices; configurable diagnostics; supports PROFIenergy; Port parameter assignment performed with GSD file or port configuration tool (S7-PCT)
Vendor ID	0x002A
Vendor Name	SIEMENS AG
Order Number	6ES7 137-6BD00-0BA0
Serial Number	S C-D6VK64452013
Firmware Version	R22.0.8
Hardware Revision	1
<b>IO Link port 1</b>	
Device ID	0x800082
Vendor ID	0x001A
Vendor Name	SICK AG
Description	Photoelectric retro-reflex sensor
Order number	1061063
Firmware Version	1.07
Hardware Revision	1.00
Serial Number	14150026
<b>IO Link port 2</b>	
Device ID	0x0000
Vendor ID	0x0000
Vendor Name	-
<b>IO Link port 3</b>	
Device ID	0x0000
Vendor ID	0x0000
Vendor Name	-
<b>IO Link port 4</b>	
Device ID	0x0000
Vendor ID	0x0000
Vendor Name	-

Devices that support PROFIenergy have their specific status data displayed here as well.

Figure 3-25

<b>PROFIenergy</b>	
Current Mode	Ready to Operate
Remaining Time until Target Mode	0 ms
Current Energy Consumption	2,000 kWh
Supported Functionality	Standby Management
PROFIenergy Version	1.1
Supported Modes	Energy Saving: Mode 1 Ready to Operate



### Set Network Parameters

This popup window allows the direct input of the following parameters for an individual device:

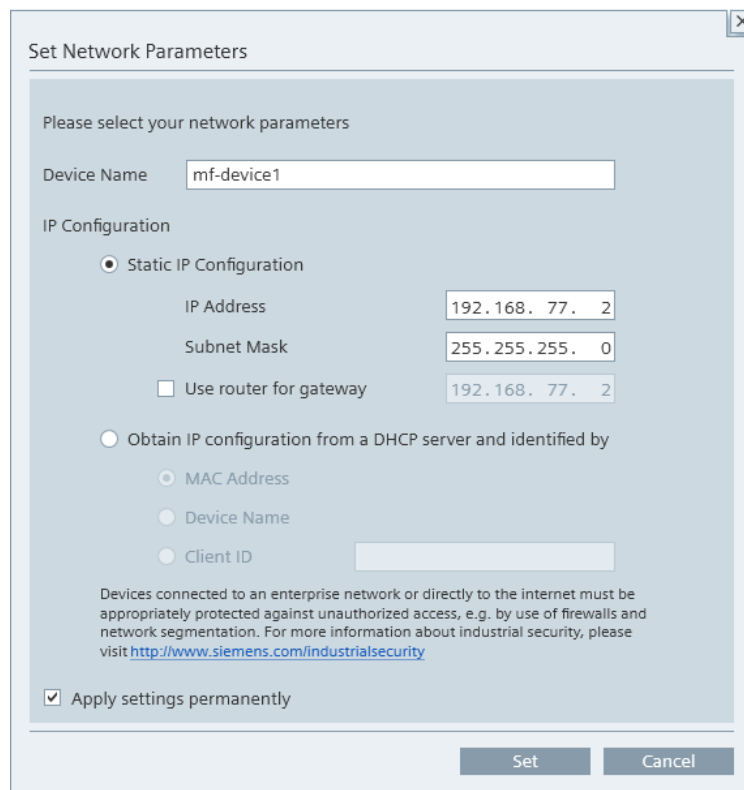
- Device name
- Static or DHCP IP configuration

Plus, where applicable:

- IP Address
- Network Mask
- Address of the gateway router

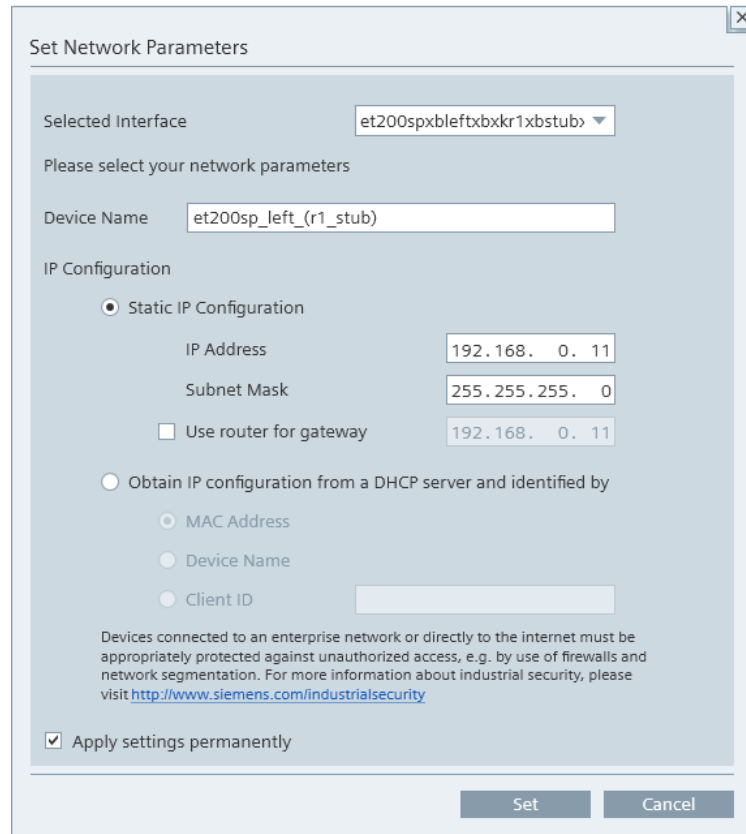
Checking the box "Apply settings permanently" will ensure that the new parameters are retained across a power-off of the device.

Figure 3-26



You can also display and set the selected interface parameter:

Figure 3-27



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### Reset network parameters

This function allows reset of the following parameters for the selected device:

- Device name
- Static or DHCP IP configuration

Plus, where applicable:

- IP Address
- Network Mask
- Address of the gateway router

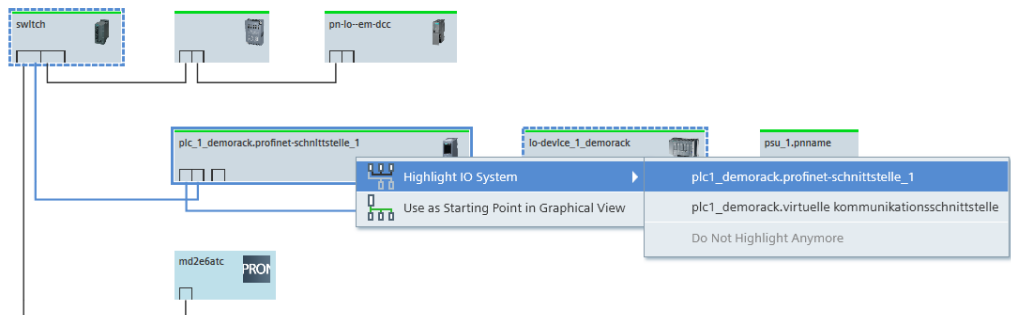
### Highlighting of existing IO systems

In the graphical view, existing IO systems can be highlighted. Devices that have at least one AR (Application Relation) connection in an IO system have the menu entry "Highlight IO System" in their context menus. If a controller has several IO systems, you can select in the menu entry which IO system should be highlighted. All devices belonging to this IO system will then continue to be displayed in the Graphical View as usual. All other devices are grayed out.

To no longer highlight an IO system, select the corresponding function in the menu item.

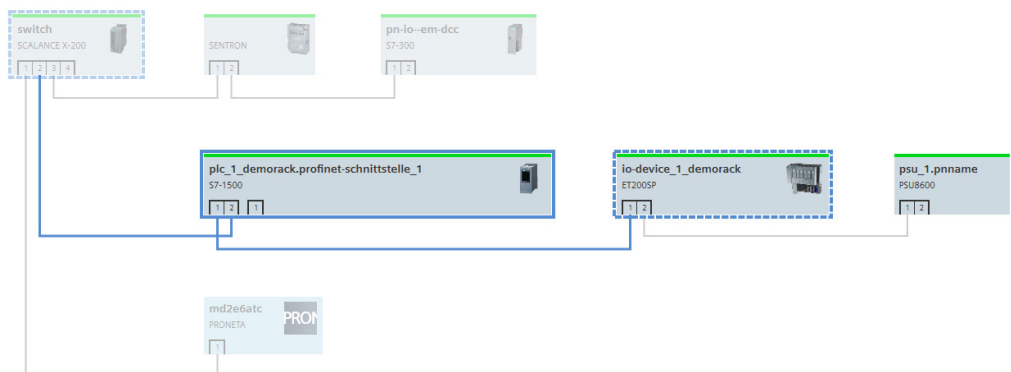
This feature is available in network analysis in Online and Offline Modes.

Figure 3-28



The IO system is highlighted in the Graphical View:

Figure 3-29



The context menu of the devices displays the corresponding IO systems.

Since PRONETA cannot read the information about the IO systems from the controllers, all IO systems in the network are displayed in this case.

If a device is assigned to an IO controller, you can see it in the device table in the "IO Controller" column. Display this column via the context menu of the table header. Right-clicking anywhere in the table header opens a menu where you can select the desired information fields.

Figure 3-30

#	Name	Role	Hardware Revision	IO Controller
1	switch	Device	1	-
2	psu_1.pnname	Device	1	plc_1_demorack.profinet-schnittstelle_1, pn-io--em-dcc
3		Device	1	-
4	io-device_1_demorack	Device	2	plc_1_demorack.profinet-schnittstelle_1
5	plc_1_demorack.profinet-schnittstelle_1	Controller	3	-
6	pn-io--em-dcc	Controller	4	-

The same information can be found in Device Details:

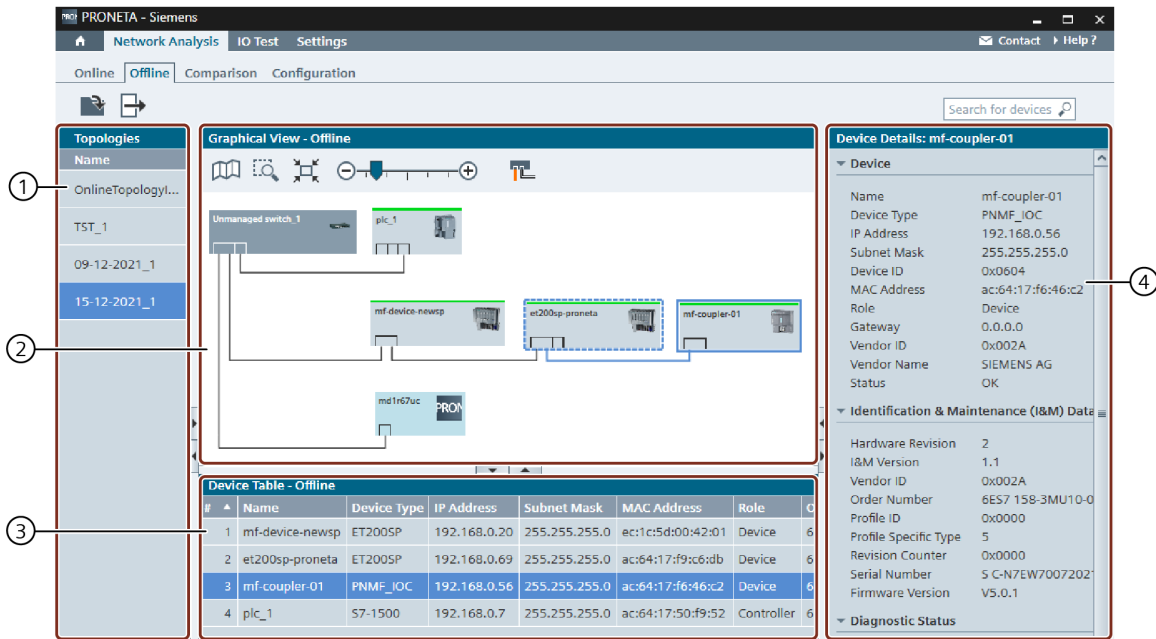
Figure 3-31

Device Details: psu_1.pnname	
▼ Device	
Name	psu_1.pnname
Device Type	PSU8600
IP Address	192.168.0.51
Subnet Mask	255.255.255.0
Device ID	0x1201
MAC Address	78:9f:87:02:d0:58
Role	Device
IO Controller	plc_1_demorack.profinet-schnittstelle_1 pn-io--em-dcc
Gateway	192.168.0.51
Vendor ID	0x002A
Vendor Name	SIEMENS AG
Status	OK

### 3.2.2 Offline Mode

Offline mode allows you to examine a reference network which was previously stored to disk, in much the same manner as in Online mode. The Offline mode is strictly limited to reading operations and will never write to your devices, however.

Figure 3-32



The main screen is divided in:

- A [Topologies List](#) (1) of previously stored reference networks
- A [Graphical View](#) (2), and
- A [Device Table](#) (3) and [Device Details](#) (4) similar to the ones used in [Online Mode](#) which provide information about devices stored in the selected topology.

The relative size of the views can be changed by dragging the border between the panes in the corresponding direction. Use the arrow symbols "►", "◄", "▲" or "▼", on the view divider bars to expand or collapse the panes.

#### Function Bar

The following functions are available in the Function Bar:

Table 3-7

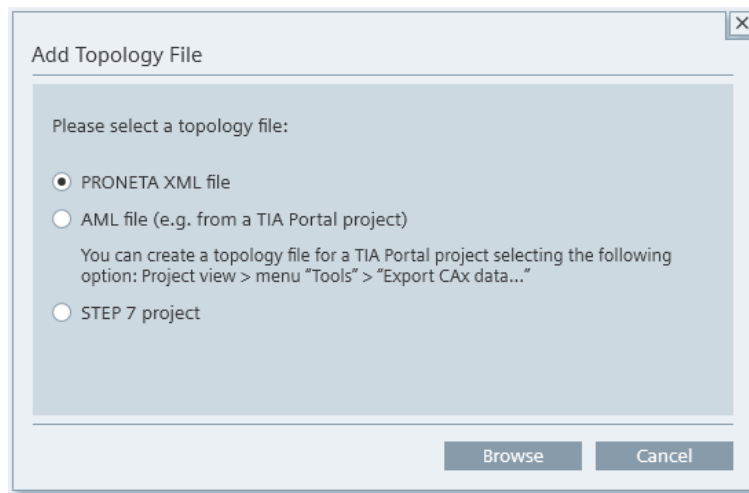
Icon	Name	Function
	Add Topology File	Adds a <a href="#">previously stored topology</a> to the Topologies List.
	Export Topology	Performs a Topology Export to disk.

## Topology Import

Topologies can be loaded from a storage medium into PRONETA Basic in one of three formats:

- As an XML file which has previously been stored by PRONETA Basic
- As an AML file which has been created with the TIA Portal
- As a STEP 7 project (versions 5.4, 5.5, 5.6 or 5.7)

Figure 3-33



In the "Add Topology File" dialog, select the topology file type you want to load, and click "Browse" to search for the corresponding topology on a storage medium.

Note the following when using AML files:

### NOTE

Currently, the TIA Portal performs only a restricted AML export.

- HMI devices, SINAMICS S and SINAMICS G drives which were configured using Startdrive, are missing from the exported AML file and consequently are not displayed in PRONETA Basic topologies.
- Devices which were configured in the TIA Portal with GSDML files will be displayed in PRONETA Basic topologies, but they cannot be compared correctly to devices from an online scan in Comparison Mode.

For all other devices, the topology is displayed correctly and the comparison functions properly.

## Topologies List

A list of stored network topologies is displayed in this window. More topologies can be added using the commands in the Function Bar.

To remove an entry, right-click in the list and apply the "Remove File" command.

Selecting an entry from the list will display this topology in the Graphical View.

## Graphical View






The Graphical View is a graphical display of the PROFINET network. For details on its operation, see [Graphical View](#) in the Online Mode.

A right-click on a device in the Graphical View or in the Device Table will bring up the [Device Context Menu](#).

## Tool Bar

In the top section of the Graphical View, there is a tool bar with a variety of function icons:

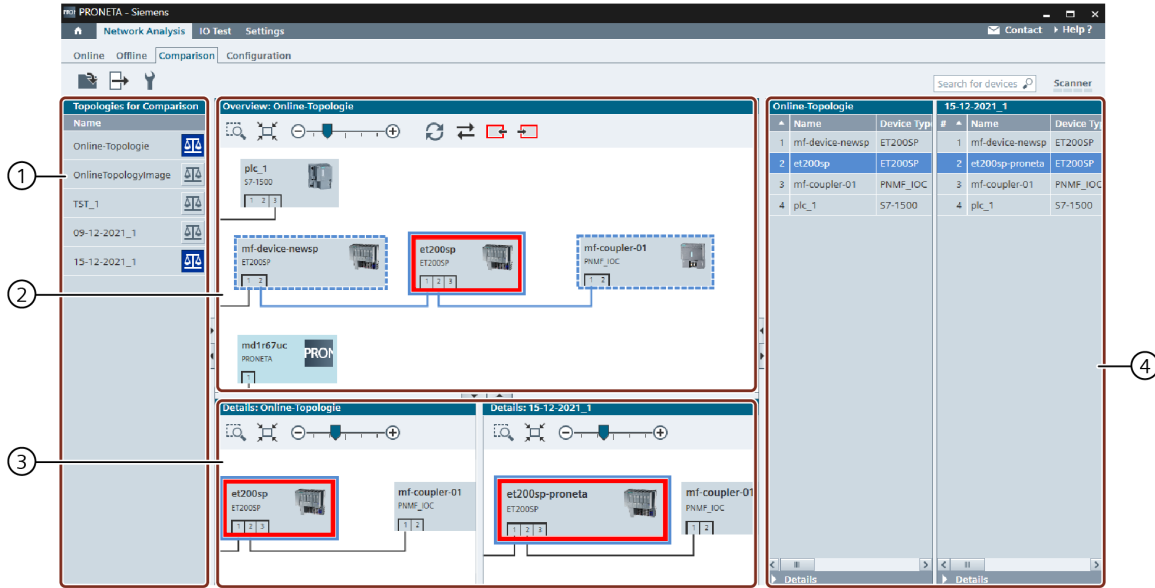
Table 3-8

Icon	Name	Function
	Show Overview of Topology	Toggles a Topology Overview within the Online View. (See Topology Overview)
	Zoom Selection	Lets you draw a rectangle inside the Graphical View. Once you release the mouse button, the view will zoom to display the rectangle area.
	Zoom Fit to Screen	Zooms the view back so that all network devices fit inside the view.
	Zoom Bar	Zoom into the network or back by dragging the handle to the right or the left, respectively, or clicking on "-" or "+". (You can also zoom into and out of the Graphical View by placing the mouse over the view and using the scroll wheel.)
	Show Physical Connection Types	Indicates the different transmission mediums used in different colors. (See <a href="#">Device Connection Types</a> )

### 3.2.3 Comparison Mode

Comparison Mode serves to compare two networks with each other – usually one will be a physical network detected during a current network scan, and the other one will be a reference network. The reference network in turn can be a saved topology file of a network scan, a network as configured in a STEP 7 project, or an AML file.

Figure 3-34



The main screen is separated into:

- A [Topologies List](#) (1) of "Topologies for Comparison"
- One major (2) and two smaller (3) Graphical Views
- Two [Device Tables](#) (4) with the devices stored in the selected topologies

The relative size of the views can be changed by dragging the border between the panes in the corresponding direction. Use the arrow symbols "►", "◄", "▲" or "▼", on the view divider bars to expand or collapse the panes.

#### Function Bar

The following functions are available in the Function Bar:

Table 3-9

Icon	Name	Function
	Add Topology File	Adds a <a href="#">previously stored topology</a> to the Topologies List.
	Export Topologies	Performs a Topology Export to disk.
	Set Comparison Criteria	Selects filter setting for the device comparison.

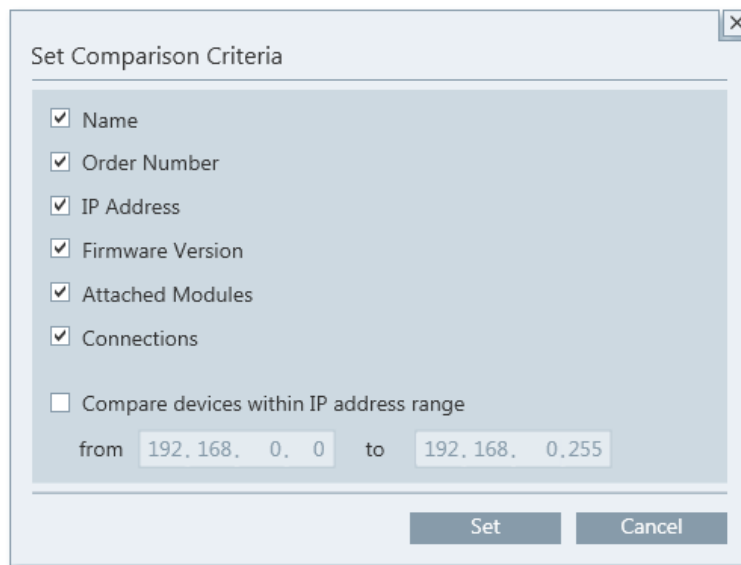
On the far right of the Function Bar, there are the [Device Search](#) and the [Scanner Status Indicator](#).



## Set Comparison Criteria

The comparison criteria determine which device parameters are used in establishing differences between topologies or devices. Any two devices are only considered "counterparts" to each other if they have the same values for all the parameters checked in this dialog, and if they fall within the IP address range chosen, if one is defined.

Figure 3-35



## Topologies List

This window displays the current Online Topology and a list of stored network topologies for comparison. More topologies can be added using the commands in the Function Bar.

To remove an entry, right-click in the list, and apply the "Remove File" command.

To compare two of the topologies from the list with each other, select both balance icons to the right of the respective topology names. The top entry of the pair will be displayed in the Graphical View and compared to the bottom entry.

The list of topologies displayed here is retained between PRONETA Basic sessions.

## Graphical View

The Graphical View is a graphical display of the PROFINET network. For details on its operation, see [Graphical View](#) in the Online Mode.

## Display of Devices without a Counterpart

Devices for which no equivalent counterpart was found in the other topology are displayed with a red border. Equivalency is determined by the parameters configured through [Set Comparison Criteria](#).

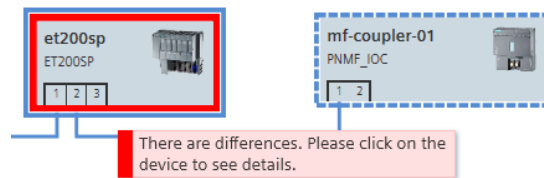
### Graphical Views "Overview" and "Details"

The larger view shows an Overview of the top network selected in the Topologies List.

Below the Overview are two topology Detail Views which highlight any device selected in the Overview or the Device Tables. The left Details View shows the device in the first topology, the right Details Views shows the corresponding topology configuration in the second one (if any).

A red border around a device symbol indicates that differences between the devices in the first and the second network exist.

Figure 3-36



Hovering the mouse pointer over such a symbol in either of the detail views brings up a tooltip with more details about the differences.

Figure 3-37

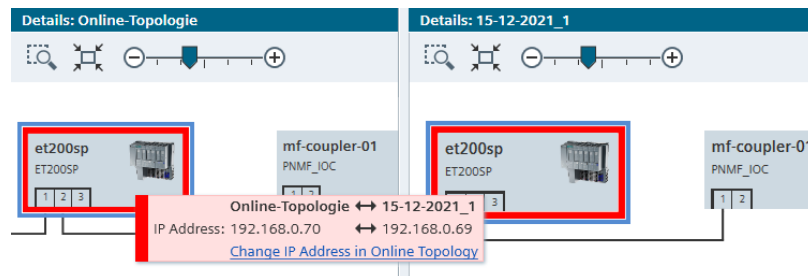


Figure 3-38

Online Topology: mf-device-newsp		15-12-2021_1: mf-device-newsp	
1	Name: DI 8x24VDC HF V2.0 Order Number: 6ES7 131-6BF00-0CA0 Firmware Version: V2.0.3	1	Name: DI 8x24VDC HF V2.0 Order Number: 6ES7 131-6BF00-0CA0 Firmware Version: V2.0.3
2	No module plugged	2	Name: DQ 8x24VDC/0.5A HF V2.0 Order Number: 6ES7 132-6BF00-0CA0 Firmware Version: V2.0.3
3	No module plugged	3	Name: Server module V1.1 (0 bytes) Order Number: 6ES7 193-6PA00-0AA0 Firmware Version: V1.1.2

Differences may be found in the network configuration, module status etc., as configured through [Set Comparison Criteria](#).

### Tool Bar

In the top section of the view, there is a tool bar with a number of function icons:

Table 3-10



Icon	Name	Function
	Zoom Selection	Lets you draw a rectangle inside the Graphical View. Once you release the mouse button, the view will zoom to display the rectangle area.
	Zoom Fit to Screen	Zooms the view back so that all network devices fit inside the view.
	Zoom Bar	Zoom into the network or back by dragging the handle to the right or the left, respectively, or clicking on "-" or "+". (You can also zoom into and out of the Graphical View by placing the mouse over the view and using the scroll wheel.)
	Refresh Comparison	Starts a new scanner cycle of the network. (As opposed to the Online Mode, in Comparison Mode the Graphical View is <i>not</i> constantly updated.)
	Change Topology Displayed in Overview	Toggles which of the two selected topologies is displayed in the overview.
	Go to Previous Difference	Selects the previous conflict in a comparison (if there is one).
	Go to Next Difference	Selects the subsequent conflict in a comparison (if there is one).

## Device Context Menu

By right-clicking on any device in a Graphical View or in the corresponding Device Table, you can bring up a context menu with various functions.

Not all menu entries are available for all devices with the actual entries depending on the state of the device and the device type.

Table 3-11

Icon	Name	Function
	Start Flashing LED	Sets the LEDs on the physical device to flashing for easy identification.
	Use as Starting Point in Graphical View	Redraws the Graphical View with the chosen device in the upper left corner.

## Device Tables

On the right side of the Comparison Mode window there are two side-by-side device tables. The table on the left lists the devices found in the first network, while the table on the right lists the devices of the second network.

Clicking on an entry in either table will focus the corresponding network in the Graphical Views on this device.

### 3.2.4 Configuration Mode

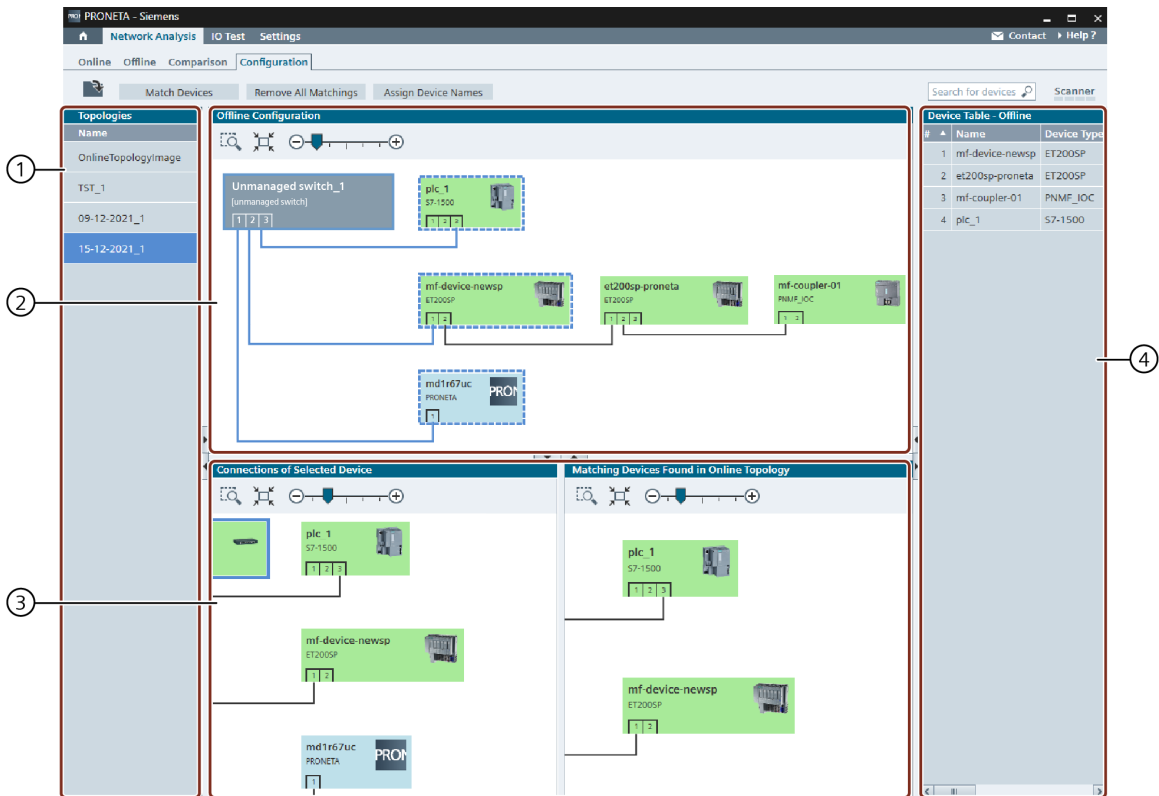
The Configuration Mode provides a semi-automatic mechanism to assign device names from a reference network to all or single devices in a physical network.

This provides a quick and reliable method to configure a large number of identical installations, such as a series of switching cabinets. The results can then be checked in the [Comparison Mode](#).

The main screen is divided into:

- A [Topologies List](#) (1)
- One major (2) and two smaller (3) [Graphical Views](#)<sup>1</sup>
- A [Device Table](#) (4) with the devices stored in the selected topology

Figure 3-39



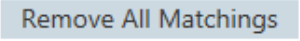
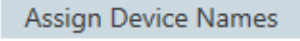


<sup>1</sup> The smaller Graphical View is automatically opened when you click on one of the devices in the main Graphical View or the device tables. You can open it manually by clicking on the arrow symbols on the edge of the window.

## Function Bar

The following functions are available in the Function Bar:

Table 3-12

Icon	Name	Function
	Add Topology File	Adds a previously stored topology to the Topologies List.
	Match Devices	Tries to find matches between devices in the reference network and in the physical network according to the Matching Criteria in Configuration Mode; found matches are highlighted green.
	Remove All Matchings	Discards results from the last matching operation.
	Assign Device Names	Writes the device names from all devices in the reference network, for which a match was found, to the corresponding devices in the physical network.

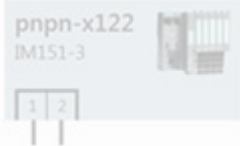


The last two commands have counterparts in the Device Context Menus. There they do not operate on all network devices, but only on the selected device.

## Graphical View

The Graphical View is a graphical display of the PROFINET network. For details on its operation, see the [Graphical View](#) in the Online Mode.

Device coloring indicates the device's availability for configuration:

Table 3-13




Icon	Color	Meaning
	Grayed out	No match was found for this reference network device in the physical network.
	Gray	Matching has not yet been performed, or no unique match for this device was found for the reference network device in the physical network.
	Green	This device from the reference network has successfully been matched to a device in the physical network, or you have manually matched devices.

Hovering the mouse pointer over a device will bring up [Device Tooltips](#) with basic information about that device.

## Tool Bar

In the top section of the view, there is a tool bar with a number of function icons:

Table 3-14


Icon	Name	Function
	Zoom Selection	Allows you to draw a rectangle inside the Graphical View. Once you release the mouse button, the view zooms to display the rectangle area.
	Zoom Fit to Screen	Zooms the view back so that all network devices fit inside the view.
	Zoom Bar	Zoom into the network or back by dragging the handle to the right or the left, respectively, or clicking on "-" or "+". (You can also zoom into and out of the Graphical View by placing the mouse over the view and using the scroll wheel.)

## Device Context Menu

By right-clicking on any device in a Graphical View or in the corresponding Device Table, you can bring up a context menu with various functions.

Not all menu entries are available for all devices with the actual entries depending on the state of the device and the device type.

Table 3-15

Icon	Name	Function
	Assign Device Name	Copies the name of the device from the reference topology to its match in the physical network.
	Remove Matching	Discards the results of the matching from the Graphical View.
	Use as Starting Point in Graphical View	Redraws the Graphical View with the chosen device in the upper left corner.

## Device Table

This table lists the devices existing in the selected reference network. Handling is similar to the [Device Table](#) in Online Mode, but all write operations are disabled.

## Finding Matching Devices in Configuration Mode

In this mode, matching between devices is determined based on:

- Device ID
- Vendor ID
- Connections between devices

Note that these processes fixed and differs from how characteristics are determined in Comparison Mode – see [Set Comparison Criteria](#).



### 3.3 IO Test

The IO Test task serves to check the wiring of an IO device even without a programmed CPU, and to protocol the test results in a quick, error-free and simple manner.

**NOTE** In this chapter all components with testable IO connections are referred to as "modules." This includes CPUs as well.

**NOTE** Due to the limitations of Microsoft Windows, PRONETA Basic uses a cycle time of 128 ms for communication during the IO Test. This means that, if your installation introduces faster signal changes, these may go unobserved and may be missing in the [IO Event Log](#), or will only show up intermittently.

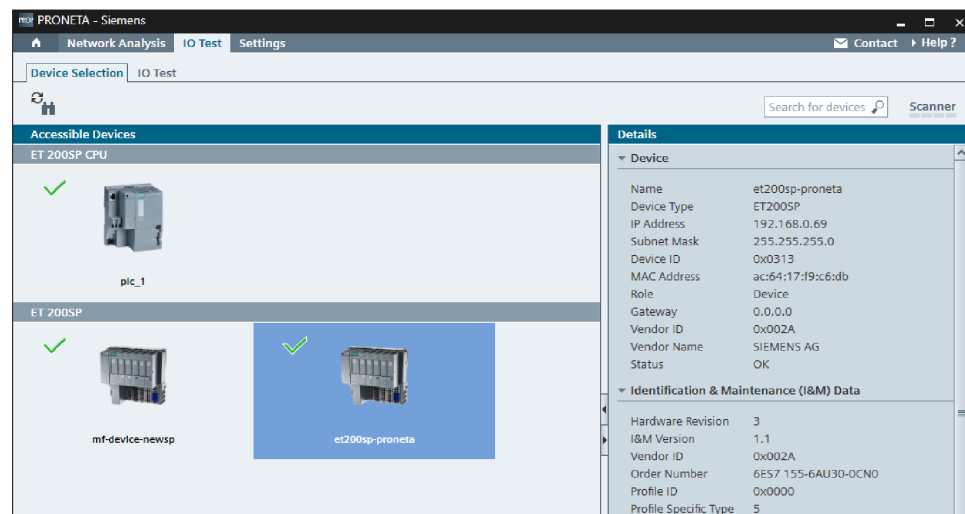
**NOTE** For Motor Starter units, the IO Test is only supported for firmware versions V1.1 and higher.

Prior to the actual test, a device must be selected in Device Selection Mode.

#### 3.3.1 Device Selection Mode

In Device Selection Mode, PRONETA Basic shows a symbolic display of all supported devices which were found during the current network scan.

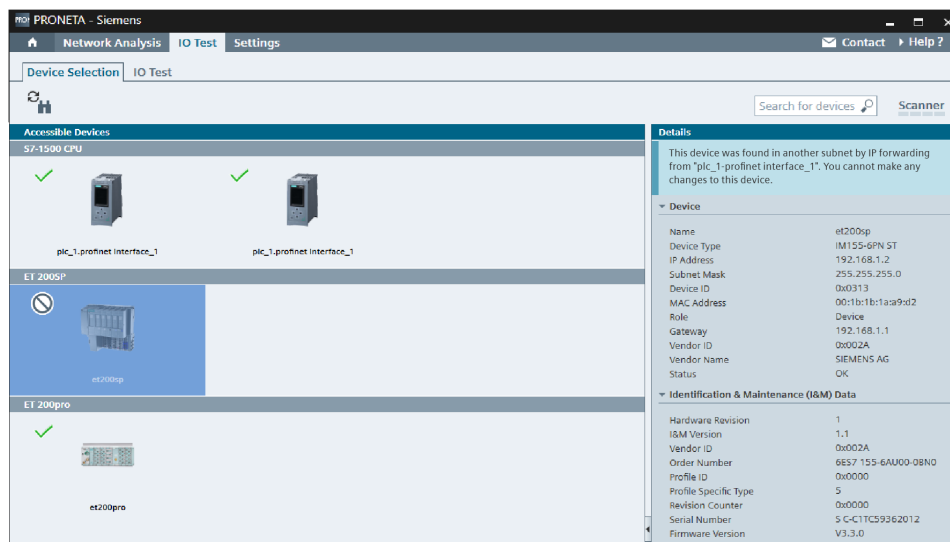
Figure 3-40



A green checkmark indicates that this device is available for IO Test, i.e. it has a valid IP address and device name. Select the device you want to test by clicking on it. On the right of the screen, a table with device details (type, network configuration, port and module configuration data, ...) is displayed upon selection, and the selected device is displayed with a blue background.

The crossed-out circle indicates devices that are not available, for example, because they are part of another subnet.

Figure 3-41



To proceed to the IO Test after selecting a device for testing, double-click on the device, or select the "IO Test" tab in the mode bar.

### Function Bar

The following function is available in the Function Bar:

Table 3-16

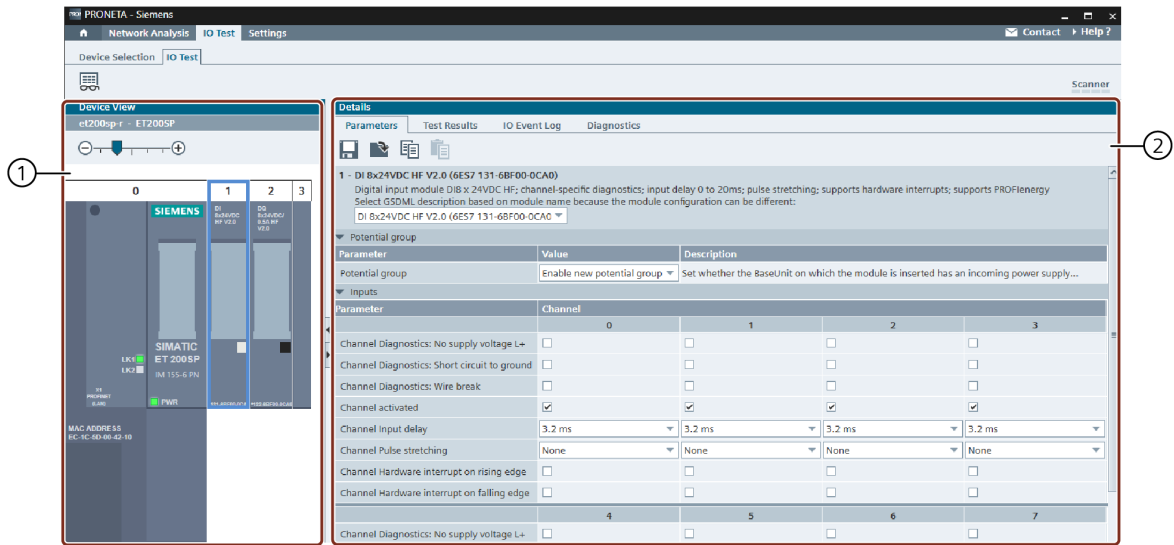
Icon	Name	Function
	Refresh	Performs an immediate update of the network scan.

### 3.3.2 IO Test Mode

In IO Test mode, the screen consists of two main views:

- "Device View" (1), a graphical representation of the tested device
- The "Details" table (2) which shows you additional information about the tested device and the test in general. The parameters are loaded from GSDML file.

Figure 3-42




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### Function Bar

The following function is available in the Function Bar:

Table 3-17

Icon	Name	Function
	Force and Monitor Values	Activates and deactivates control of the device through PRONETA Basic for the IO Test.



**WARNING**

**Manipulating the interfaces on control components can result in sudden movement of the machinery and the electrification of equipment.**

Physical injury and electrical shock to personnel are consequently possible.

Make sure the machinery is in a safe state with no unauthorized personnel within range, before activating the IO Test.

**NOTICE** Loss of F-destination addresses

After performing an IO test with PRONETA Basic on a device, the attached F-IO modules will have their F-destination addresses deleted, leading to the module entering a safe state. Therefore, testing of F-IO modules is disabled by default.

In this case, assign the F-destination addresses once again to the F-modules ("Safety modules") concerned using the respective engineering tool.

**NOTE**

To perform an IO Test on SIMATIC IO modules, PRONETA Basic establishes a PROFINET application relation (AR) with the target device. Make sure that no other PROFINET controller occupies this connection.

The state of the IO Test is indicated by the color of the "Device View" and "Details" table header bars:

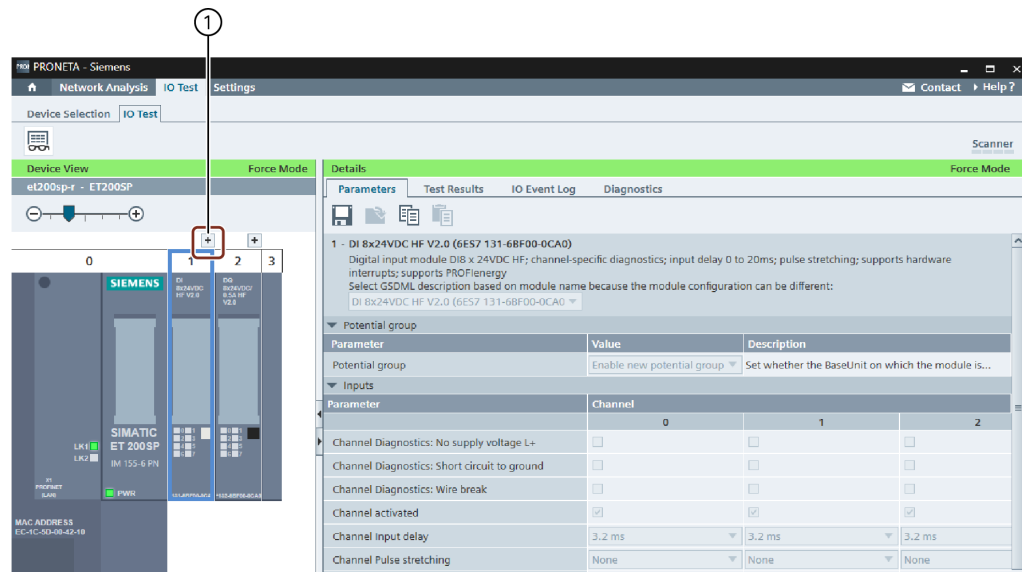
- Light green indicates the IO Test is active. In addition, the words "Force Mode" appear at the right of the bars.
- Dark petrol indicates the IO Test is inactive.

**Device View**

**Usage**

The Device View shows a symbolic representation of the device you selected for the IO Test Mode. The status and IO LEDs are updated in real time to reflect the actual state of the physical device.

Figure 3-43



To get a larger view of any module click the "+" symbol (1) above the module. A small [Popup Window](#) will appear.

Clicking on any of the modules here will show the module's parameter table in the "Details" view, or highlight the corresponding section, depending on the tab chosen.

Modules with information in their diagnostics buffer are displayed with a red header.

#### **Digital IO**

Click on any LED symbol of an output module to toggle the status of the corresponding output. Likewise, voltage applied to any input will light up the corresponding input module LED.

To force digital values, you can also use the "Test Results" tab in the [Details View](#).

#### **Analog IO**

Read analog values from input and output modules in the same fashion.

To force analog values, use either the [Popup Window](#) or the "Test Results" tab in the [Details View](#).

#### **NOTE**

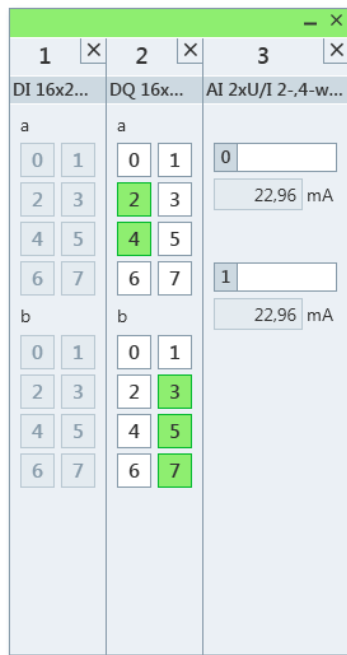
Optional plugged connection terminals (3DI/LC modules) of Motor Starter units will only be shown after Force Mode has been activated.

## Popup Window (IO Test)

### Usage

Above each device module in the [Device View](#), a "+" symbol allows you to open a popup window with a larger symbolic view of the module's inputs and outputs. If you open multiple modules, their popups will be arranged in a row within a single window.

Figure 3-44



Click the close icon "x" in the top right of the popup window segment, or the "-" symbol above the module in the Device View, to close the popup for this module again. To close the whole window, click the close icon "x" at the top right of the window. To rearrange the modules within the popup window, click the table header of the module in question and drag it to the desired position.

### Digital IO

Digital inputs and outputs can be monitored and forced, by displaying or checking and unchecking the fields corresponding to their connections. Green fields indicate active lines.

### Analog IO

For analog modules, symbolic channel names can be entered in the fields next to the channel numbers displayed. These will automatically be copied into the test protocol.

Analog output values can be forced by either entering the numeric value in the corresponding field, or by dragging the slider across the slider bar below. Clicking the symbol next to the field will reset the output to the default value.

### Details Table

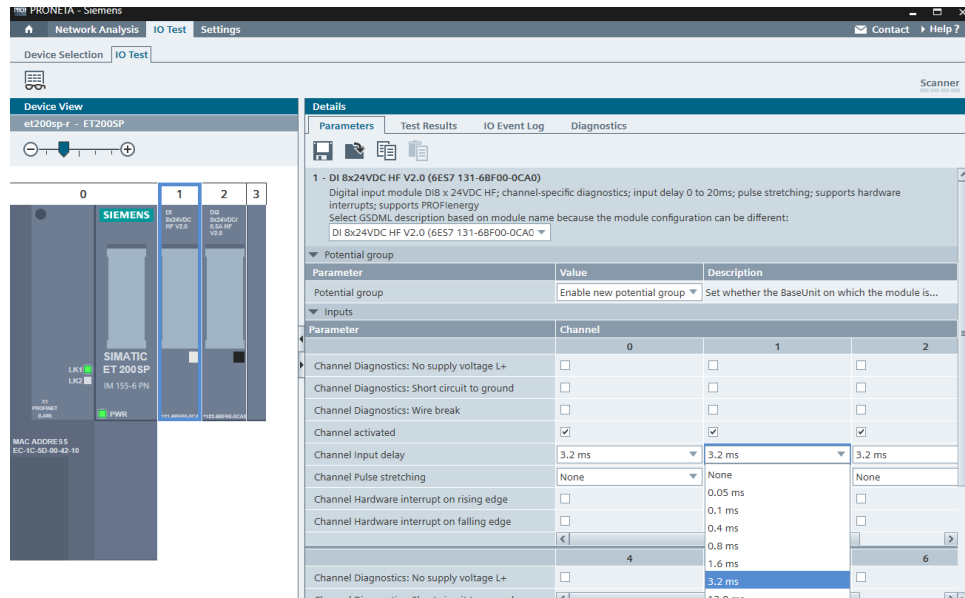
The Details Table consists of four tabs, each with its own Function Bar:

- [Parameters](#) to set the module parameters
- [Test Results](#) to perform and protocol the wiring test for the device
- [IO Event Log](#) to monitor regular events like changing module input and output values
- [Diagnostics](#) to record irregular system events like the plugging and unplugging of modules

### Parameters

This tab gives an overview of the parameter set of the module selected in the Device View. Parameters can be only edited while "Force and Monitor Values" is not in operation (see [IO Test Mode](#), "Function Bar" section).

Figure 3-45







The parameter set can be stored to a file on disk, loaded from a file, and copied and pasted from the Windows clipboard to transfer the parameters to a different module.

## Function Bar

The following functions are available in the Function Bar:

Table 3-18

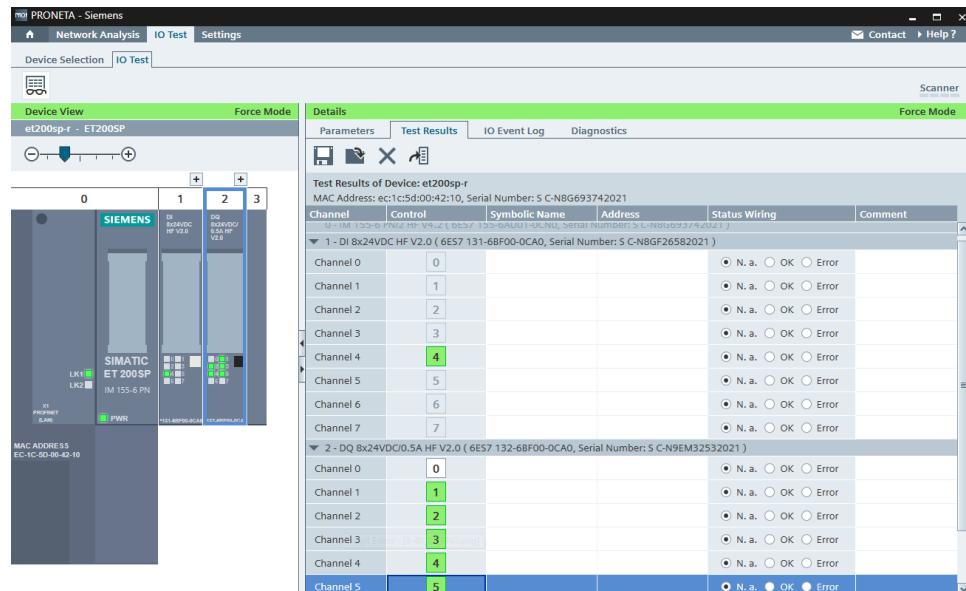
Icon	Name	Function
	Save Parameters	Saves the current parameter set of the whole device to disk.
	Load Parameters	Loads a previously saved parameter set from disk and assigns it to the current device.
	Copy Parameters	Copies the parameter set of the currently selected module to the Windows clipboard.
	Paste Parameters	Pastes a previously copied module parameter set from the Windows clipboard to the currently selected module. The icon is grayed if the parameter set in the clipboard does not fit the selected module.

The commands "Save Parameters" and "Load Parameters" transfer parameter sets between devices and are useful to configure a number of identical devices. In contrast, "Copy Parameters" and "Paste Parameters" are used predominantly to "clone" module configurations within one device.

## Test Results

This tab offers the functionality for the actual IO Test of the currently selected device.

Figure 3-46



The test table is vertically divided into sections according to the IO modules present. Each section can be collapsed and expanded again by clicking on the triangle symbol "▼" in the section header.

The test table consists of the following columns:



- "Channel": The name of the IO channel as determined by the device.
- "Control": Forcing status of the selected output.  
Click on the icons to toggle the status of digital outputs or drag or enter manually the value for analog outputs. Values entered will be immediately forwarded to the hardware. (For inputs, this field is grayed out and read-only.) Alternatively, you can also change values by clicking on the LED representations of the Device View, or by manipulating them in the popup window. This column is only visible while the Force Mode is active.
- "Symbolic Name": Arbitrary name, assigned by the tester to the channel. (See note below.)
- "Address": Arbitrary memory address to which the IO is mapped. (See note below.)
- "Status Wiring": The actual results as established by the IO Test are entered here by the tester. Select one of:
  - "N. a.": "Not applicable", not tested yet (default)
  - "OK": Test result OK, wiring in order
  - "Error": Test result not OK, faulty wiring
- "Comment": Any additional information you want to add to the test.

#### NOTE

The values for "Symbolic Name" and "Address" serve only as memory aids for the tester.





The IO Test can be suspended and resumed at a later point in time by saving and loading the protocol.

After completion of the test, the protocol can be stored in order to document the proper wiring of the device. (See [Function Bar](#) below for details.)

### Function Bar

The following functions are available in the Function Bar:

Table 3-19

Icon	Name	Function
	Save Protocol	Stores the results of the current IO Test to disk (format: CSV), either when the test is completed, or when the test is interrupted.
	Load Protocol	Loads test results of an earlier IO Test from disk to proceed with testing.
	Reset Test Protocol	Discards the results of the current test and allows you to start over again. All results will be deleted from PRONETA Basic.
	Import Symbolic Names from an AML file	Imports symbolic names for device I/Os from an AML file (see <a href="#">Using an AML File as Reference.</a> )

### Using an AML File as Reference

An AML file can be used to provide symbolic names for IOs.

The following features of the device to be tested must match the name of the device in the AML file:

- Device name
- Module types
- Module positions

If this is the case and the AML file contains symbolic names for the IOs, then the names from the AML file will be used for the IOs in the tested device and shown in the column "Symbolic Name".

#### NOTE

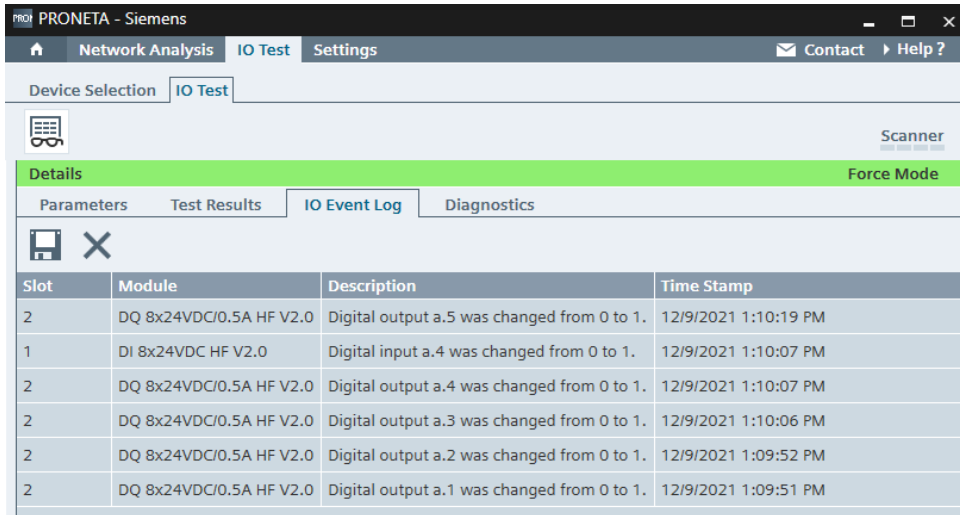
This feature is currently not available for integrated IOs of CPUs.

### IO Event Log

This tab records a log of all regular events (like changes of the values of inputs and outputs) which occurred while the IO Test was active.

Clicking on a column header will sort the table accordingly.

Figure 3-47



### Function Bar

The following functions are available in the Function Bar:

Table 3-20

Icon	Name	Function
	Save IO Event Log	Stores the event log to disc (format: CSV).
	Reset IO Event Log	Clears all entries from the current event log.

### Diagnostics

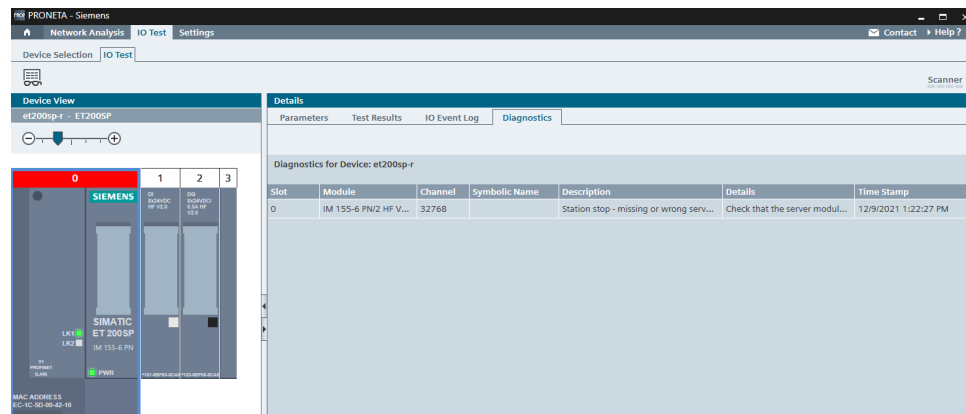
The table in this tab shows a record of all irregular events which occurred to the device while the IO Test was active, like the unplugging of modules or a signal wire break.

If the diagnostics buffer contains events pertaining to a module, the corresponding module header in the Device Table will be displayed red.

Clicking on a column header of the table will sort the table accordingly.

Selecting a table entry will highlight the corresponding module in the Device View. Similarly, selecting a module in the Device View will highlight the first entry concerning the module in the table.

Figure 3-48



The table consists of the following columns:

- "Slot"
- "Module"
- "Channel"
- "Symbolic Name" (as entered in the "Test Results" tab)
- "Description"
- "Details"
- "Time Stamp"

## 3.4 Settings

In the "Settings" window, there are three different tabs available:

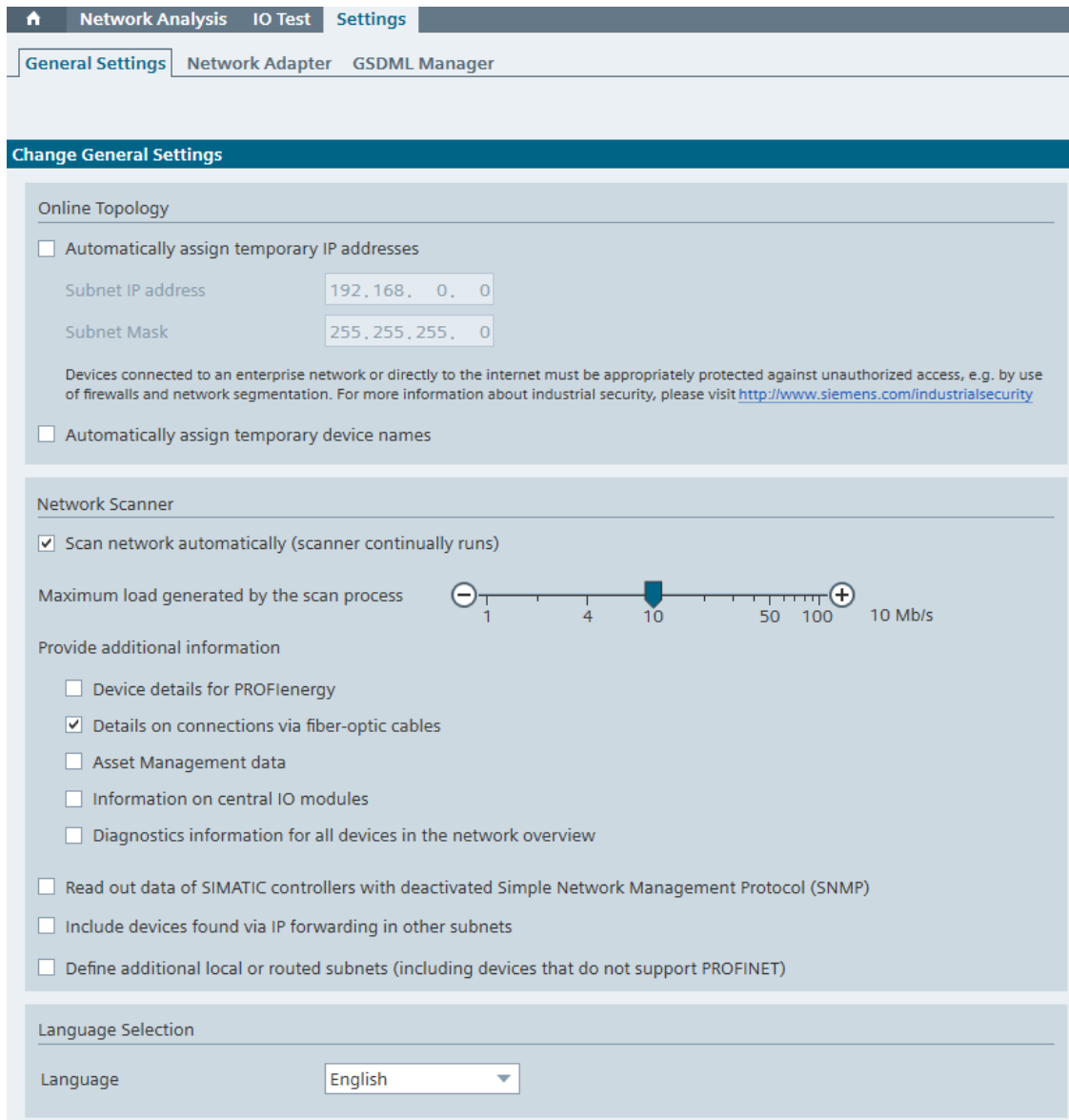
- [General Settings](#)
- [Network Adapter](#)
- [GSDML Manager](#)

These modes are used to adjust the operational details of PRONETA Basic.

### 3.4.1 General Settings

You can set various parameters in connection with the network scan and visualization here.

Figure 3-49



#### "Online Topology"

- "Automatically assign temporary IP addresses",
- "Automatically assign temporary device names":  
Checking either option will ensure that all devices found during a network scan will automatically have valid IP addresses and/or device names assigned to them. The IP addresses are taken from the subnet defined by "Subnet network IP address", and the devices will receive the subnet mask from the respective area.  
IP addresses and device names are lost when the respective device is powered off.

#### "Network Scanner"

- "Scan network automatically (scanner continually runs)":  
If this option is checked, the scanner will be permanently active, unless specifically stopped. This will result in a constantly up-to-date representation of the physical network but will also create higher traffic loads and may lead to problems with time-critical communications in the network.  
To stop the scanner, use the [Scanner Status Indicator](#) context menu.
- "Maximum load generated by the scan process": This slider lets you set an upper limit for the bandwidth used by the PRONETA Basic network scan. High traffic loads may have a negative impact on general communication but will also lead to shorter update cycles.  
Reduce this value if you experience general communication problems in your network due to PRONETA Basic scans.
- "Provide additional information": This function influences which data is read from each device in each scan cycle. The selected information can be found in the online mode in the device details or in the graphical view. The additional information is also contained in a topology export as an XML file.
  - "Device details for PROFlenergy": Basic information on PROFlenergy is read from all devices.
  - "Details on connections via fiber-optic cables": The interface and port information for fiber optic connections is read out by all devices.
  - "Asset Management data": This data is read out for PROFINET devices that provide an Asset Management Record (AMR).
  - "Information on central IO modules": Enables identification of modules connected to CPUs. The "PG/PC interface" driver must be installed. The installer is part of the PRONETA Basic delivery and can be found in the "Misc" folder.
  - "Diagnostics information for all devices in the network overview":  
This option provides a good, quick diagnostics overview. The entries from the diagnostic buffer are displayed in the Online Mode, as described in the [Diagnostic Information](#) section.
- "Read out data from SIMATIC controllers with deactivated Simple Network Management Protocol (SNMP)":  
This option makes it possible to read data from SIMATIC controllers using an alternative data protocol. Normally, PRONETA uses the Simple Network Management Protocol (SNMP).  
However, it is disabled by default for the following controllers:

- S7-1200 with firmware version 4.6 or higher
- S7-1500 with firmware version 3.0 or higher

If SNMP is disabled, there are two prerequisites for using the alternative data protocol:

- The "PG/PC Interface" driver must be installed. The installer is part of the PRONETA Basic delivery. It can be installed immediately with administrator rights. If you select this option, the installation status will be checked and, if necessary, you will be offered to install the driver.
- You have at least read access to the controller. Otherwise, you might have to temporarily remove the password protection using the TIA Portal.
- "Include devices found via IP forwarding in other subnets":  
It is possible to detect all devices connected to the PRONETA PC via PROFINET, not only those which are part of the subnet the PRONETA PC is connected to, but also devices which are part of a subnet connected to another PROFINET interface. Detection of cascading subnets is not supported.
- "Define additional local or routed subnets (including devices that do not support PROFINET)": This option enables devices that do not support PROFINET to be found in the local network. It is also possible to find other devices in routed subnets. If this option is activated, subnets to be scanned can be added.

Figure 3-50

<input checked="" type="checkbox"/> Define additional local or routed subnets (including devices that do not support PROFINET)					
<input type="button" value="Add Subnet"/>					
#	Active	IP Address	Subnet Mask	Gateway	
1	<input checked="" type="checkbox"/>	192.168.0.1	255.255.255.0	0.0.0.0	
2	<input checked="" type="checkbox"/>	192.168.0.0	255.255.255.0	0.0.0.0	

**"Language Selection"**

The drop-down menu allows you to change between English, German and Simplified Chinese as the language for the PRONETA Basic user interface.

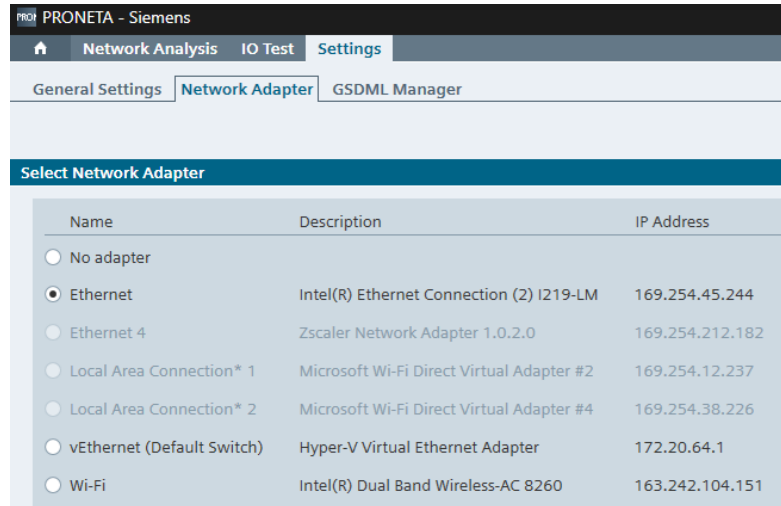
**NOTE**

Changes introduced here will take effect immediately. You will not be prompted to confirm beforehand.

### 3.4.2 Network Adapter

You can change the network adapter used for PRONETA Basic here.

Figure 3-51



A list of Ethernet adapters found on your PC is displayed, from which you can choose an appropriate adapter.

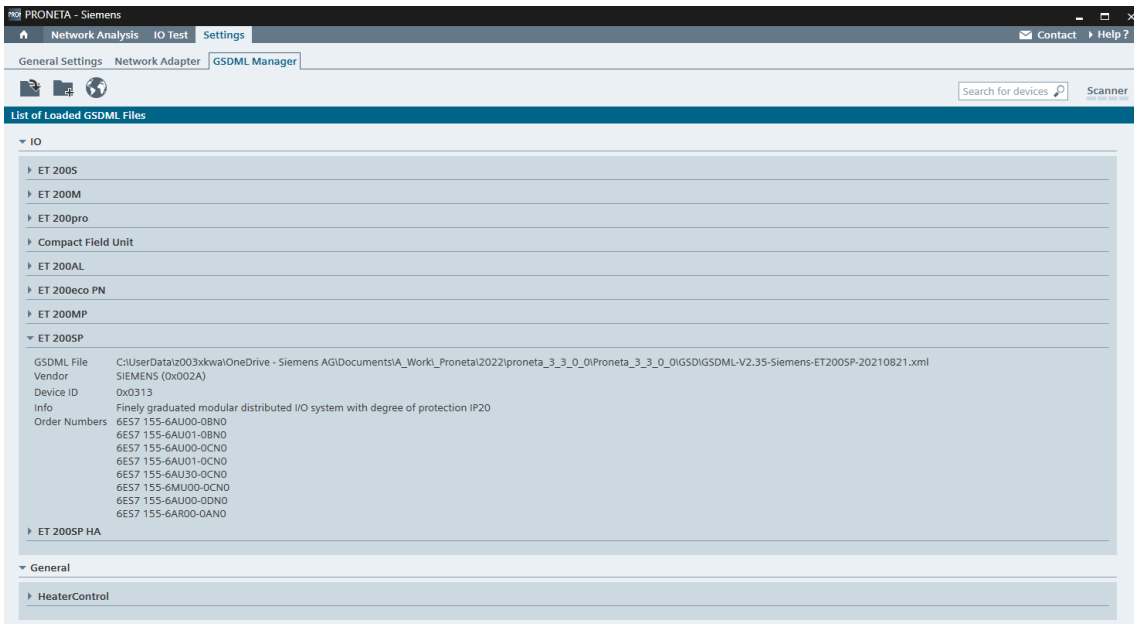
Select the appropriate adapter from this list. If "No adapter" is selected, only offline functionality with PRONETA Basic is available ([Offline Mode](#) and [Comparison Mode](#) for comparing two offline topologies).



### 3.4.3 GSDML Manager

GSDML files ("General Station Description Markup Language") contain information about the features and capabilities of PROFINET IO devices, such as the number of interfaces or supported baud rates. PRONETA Basic already comes with a large number of GSDML files preinstalled. With the GSDML manager you can include support for further devices, and for devices which were only released after the latest PRONETA Basic version.

Figure 3-52



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### Function Bar

On the top of the screen, the following functions are available from the Function Bar:

Table 3-21

Icon	Name	Function
	Add GSDML File	Lets you add a single GSD file from disk. Clicking on the icon opens a file browsing dialog.
	Add GSDML Folder	Lets you add multiple GSD files in one action, simply by designating a folder where the individual GSD files are stored. Clicking on the icon opens a file browsing dialog.
	Download GSDML Files for SIEMENS Devices	Launches a web browser and establishes a connection to the SIEMENS Industry Online support portal where you can download additional GSD files, for new devices, for example.

## 4 Working with PRONETA Basic

This chapter gives you a short introduction to different use cases for PRONETA Basic and then leads you through the individual steps to complete your configuration tasks successfully.

The main use cases for PRONETA Basic are:

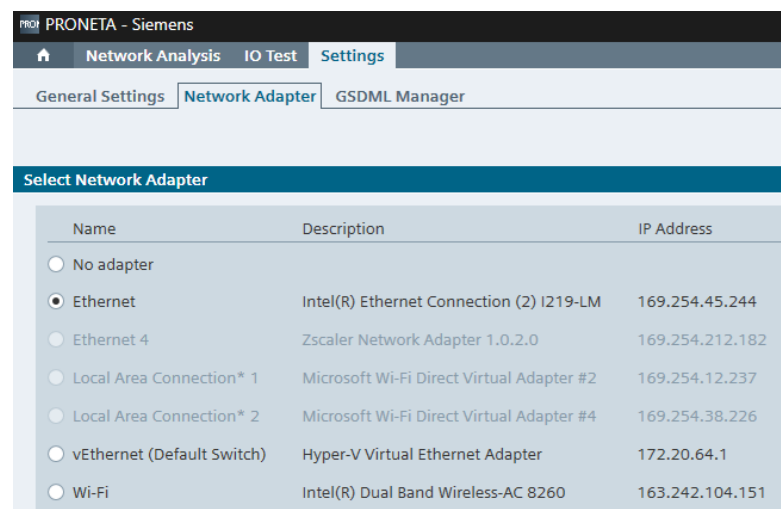
Table 4-1

Use Case	Chapter
Give an overview of all PROFINET devices, their configuration and connections in a network.	<a href="#">4.2, Displaying the Devices and Topology of a PROFINET Network</a>
Compare a previously configured topology and the actual physical topology with each other.	<a href="#">4.3, Comparing and Configuring Different Topologies</a>
Configure devices, and transfer data from a previously saved topology or a STEP 7 project file automatically or manually to a different network.	<a href="#">4.4, Configuration of the PROFINET Devices</a>
Automatically collect information about all devices and components installed in a network, and write a comprehensive report of all relevant data to disk.	<a href="#">4.5, Creating an Inventory of the Network</a>
Control the IO for correct wiring and log the test results to document the plant status.	<a href="#">4.6, Testing the Correct Wiring of the Distributed IO</a>

### 4.1 Selection of the PRONETA Basic Network Adapter

Before you can work with PRONETA Basic, the network adapter which connects you to the PRONETA Basic network should be selected using the command [Network Adapter](#) from the [Settings](#) task.

Figure 4-1



If you do not select any particular adapter, PRONETA Basic will try to reconnect to the adapter used in the previous PRONETA Basic session.

If no network adapter is available, PRONETA Basic provides offline functionality only (i.e. [Offline Mode](#) and [Comparison Mode](#) in the Network Analysis).

## 4.2 Displaying the Devices and Topology of a PROFINET Network

### Task

All devices of a physical PROFINET network are to be detected.

There is also an option for detecting all devices connected to the PRONETA PC via PROFINET, not only those which are part of the subnet the PRONETA PC is connected to, but also devices which are part of a subnet connected to another PROFINET interface. These devices are scanned via IP forwarding and provide information only ("read only") and support less functionality. Cascading subnets are not supported.

The relevant information – IP addresses, device names, port connections etc. – are displayed in "Device Details".

If may be necessary to adapt the network configuration.

The current topology is saved on the computer for further use.

### Implementation

1. Start PRONETA Basic and select the [Network Analysis \(3.2\)](#).
2. Select the [Online Mode \(3.2.1\)](#) to get a display of all connected and active devices.

#### NOTE

Wait until the online scan has found all network devices. This takes a full cycle of the [Scanner Status Indicator](#) display.

Depending on the network topology, utilization and size, this can take between a few seconds and some minutes.

3. Select a device by a single mouse-click on the device icon in the [Graphical View \(1\)](#), or on the corresponding entry in the [Device Table \(2\)](#) below it.

Figure 4-2

The screenshot shows the PRONETA Siemens software interface. At the top, there are tabs for 'Network Analysis', 'IO Test', and 'Settings'. Below this, there are sub-tabs for 'Online', 'Offline', 'Comparison', and 'Configuration'. The main area is titled 'Graphical View - Online' and displays a network topology diagram. The diagram includes an 'Unmanaged switch\_1', a 'plc\_1' (S7-1500), an 'mf-device-newsp' (ET200SP), an 'et200sp' (ET200SP), an 'mf-coupler-01' (PNMF\_IOC), and an 'md1r67uc' (PRONETA). A red circle '1' is placed over the 'mf-device-newsp' device in the diagram. Below the diagram is a 'Device Table - Online' table. A red circle '2' is placed over the first row of the table, which corresponds to the 'mf-device-newsp' device.

#	Name	Device Type	IP Address	Subnet Mask	MAC Address	Role	Order Number	Firmware Version
1	mf-device-newsp	ET200SP	192.168.0.20	255.255.255.0	ec:1c:5d:00:42:01	Device	6ES7 155-6AU01-0CNO	V4.2.4
2	et200sp	ET200SP	192.168.0.70	255.255.255.0	ac:64:17:f9:c6:db	Device	6ES7 155-6AU30-0CNO	V4.2.1
3	mf-coupler-01	PNMF_IOC	192.168.0.56	255.255.255.0	ac:64:17:f6:46:c2	Device	6ES7 158-3MU10-0XA0	V5.0.1
4	plc_1	S7-1500	192.168.0.7	255.255.255.0	ac:64:17:50:f9:52	Controller	6ES7 512-1DK01-0A80	V2.6.0

The Device Details View in the right part of the window displays information about the device configuration.

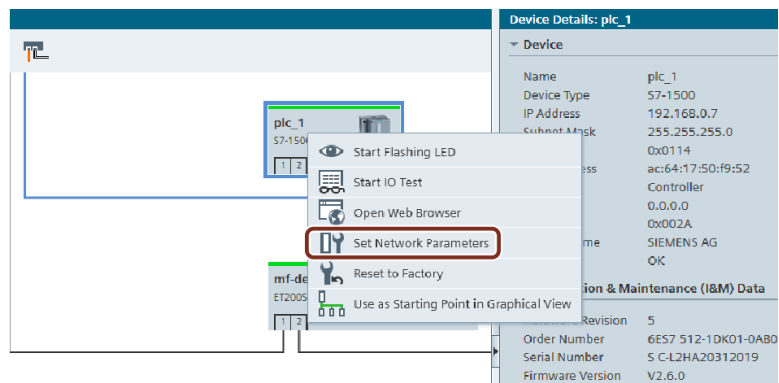
Figure 4-3

The screenshot shows the PRONETA Siemens software interface with the 'Device Details' view for the 'mf-device-newsp' device. The right-hand pane displays the following information:

- Device:**
  - Name: mf-device-ne
  - Device Type: ET200SP
  - IP Address: 192.168.0.20
  - Subnet Mask: 255.255.255
  - Device ID: 0x0313
  - MAC Address: ec:1c:5d:00:42:01
  - Role: Device
  - Gateway: 0.0.0.0
  - Vendor ID: 0x002A
  - Vendor Name: SIEMENS AG
  - Status: OK
- Identification & Maintenance (I&M) Data:**
  - Hardware Revision: 3
  - I&M Version: 1.1
  - Vendor ID: 0x002A
  - Order Number: 6ES7 155-6A
  - Profile ID: 0x0000
  - Profile Specific Type: 5
  - Revision Counter: 0x0000
  - Serial Number: S C-N8G6933
  - Firmware Version: V4.2.4
- Diagnostic Status:**
  - Slot 0 - IM 155-6 PN/2 HF V4.2
  - Error: Station stop - missing or wrong server modu
  - Help: Check that the server module is installed cor

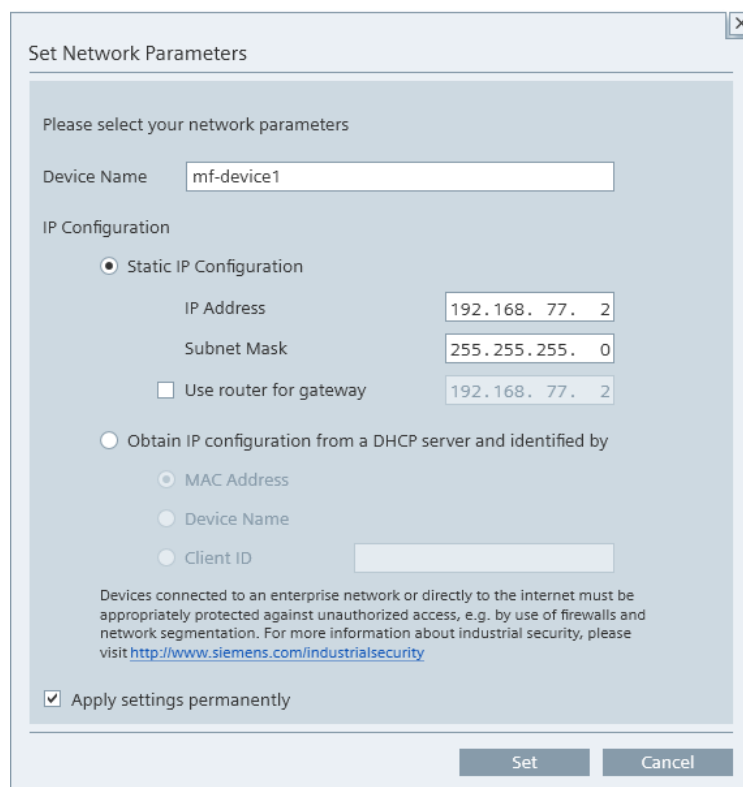
- If necessary, change the network configuration (IP address, device name) in the [Device Context Menu](#), or with a double-click on the device in the Graphical View.

Figure 4-4



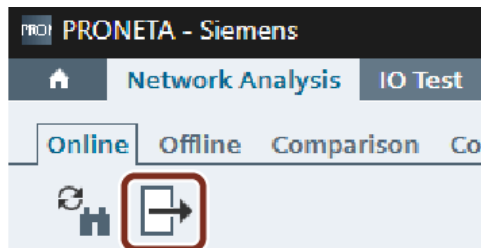
**NOTE** It is not possible to change any network parameters of devices connected to the second subnet (scanned via IP forwarding).

Figure 4-5



5. To save the current topology so you can compare it in the future with other network configurations, use the "Export Topology" icon in the Function Bar.

Figure 4-6



For more details, see [Topology Export](#).

### 4.3 Comparing and Configuring Different Topologies

#### Task

It is to be checked whether the physical layout of a PROFINET network matches the specified reference project.

This is particularly useful if a number of identical machines or control cabinets are to be commissioned, for example.

#### NOTE

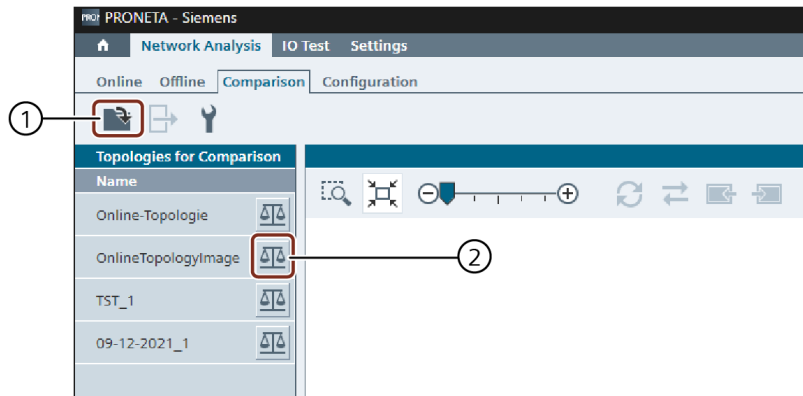
This use case covers the network configuration, i.e. topology, devices, modules, and IP parameters.

To check the wiring of the IO modules, refer to [Testing the Correct Wiring of the Distributed IO \(4.6\)](#)

#### Comparing Networks

1. Start PRONETA Basic and select the [Network Analysis \(3.2\)](#).
2. Select the [Comparison Mode \(3.2.3\)](#).
3. In addition to the automatically generated Online Topology, load a single or multiple reference files (see [Topology Import](#)) from disk (1). The reference files may have been previously created with PRONETA Basic (see [Online Mode \(3.2.1\)](#)), TIA Portal, or STEP 7.

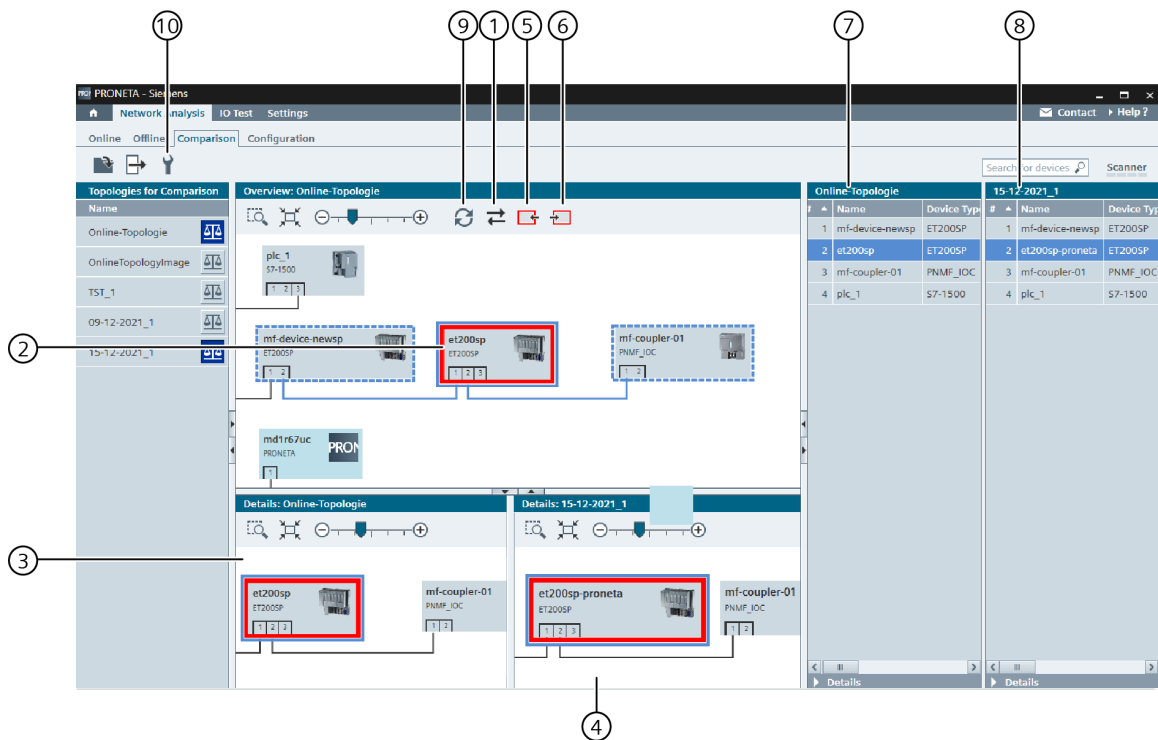
Figure 4-7



4. By clicking on their respective balance symbols (2), select the two entries from the "Topologies for Comparison" table which you would like to compare with each other.

The selected topology with the higher position in the topology list – usually the physical network or "Online Topology" – will be displayed in the [Graphical View "Overview"](#), and compared against the second chosen topology. If you select more than two topologies, the "oldest" selected entry will be dropped from the comparison.

Figure 4-8



To toggle which of the two selected topologies is displayed in the overview, click the "Change Topology Displayed in Overview" icon in the tool bar (1). Any devices in the network which are "mismatched", i.e., which do not match their counterpart

in the other network (or which have no counterpart at all), will be displayed with a red border (2).

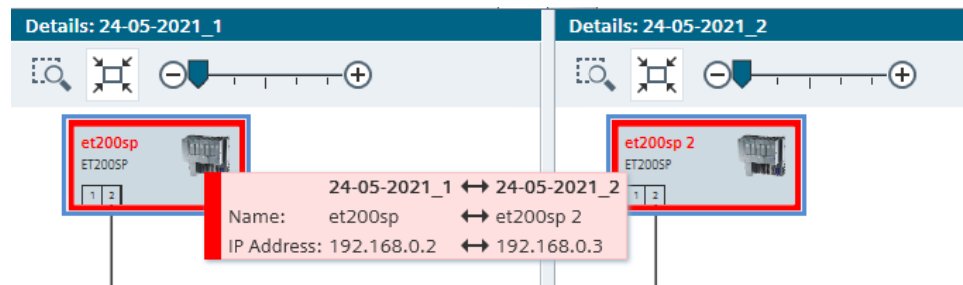
Clicking on any device brings up two smaller Graphical Views at the bottom of the screen, with the left view (3) displaying the configuration and neighbors for the respective device in the first topology, and the right one (4) displaying the corresponding device (if there is one) from the second network. Use the "Go to Previous Difference" (5) and "Go to Next Difference" (6) icons from the tool bar to systematically proceed through all conflicts found.

In the right section of the screen, two Device Tables are presented for the first (7) and second selected network (8). Click the "Refresh Comparison" icon (9) to update the Graphical View.

To define which differences are sufficient to constitute a mismatch between two devices, [Set Comparison Criteria](#) with the corresponding icon (10).

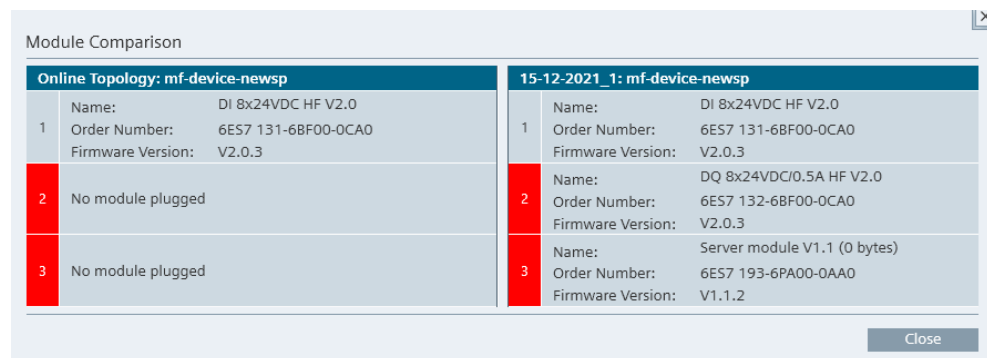
In the bottom Details Views, hovering over a mismatched device will bring up a tooltip with a summary of the differences:

Figure 4-9



Click on the tooltip to open a window with more in-depth information.

Figure 4-10



To assign changes to the network devices in the Online Topology, proceed with [4.4, Configuration of the PROFINET Devices](#).

**NOTE**

No changes can be made for devices detected via IP forwarding.



## 4.4 Configuration of the PROFINET Devices

### Task

Various basic configuration tasks are to be performed on the PROFINET devices, without using any other engineering software like STEP 7 or the TIA Portal, however.

The following table shows which device parameters are to be set with each of the various tasks, and other details:

Table 4-2

	<a href="#">4.4.1 Automatic PROFINET Device Configuration</a>	<a href="#">4.4.2 Manual Configuration of a Single Device</a>	<a href="#">4.4.3 Transfer of the Device Name for a Single Device</a>	<a href="#">4.4.4 Transfer of Device Names for a Whole Network</a>
<b>Parameters</b>	IP address, name	IP address, name	Name	Name
<b>Scope</b>	All devices	Single device	Single device	All devices
<b>Lifetime</b>	Temporary	Temporary/Permanent	Permanent	Permanent
<b>Mode</b>	Automatic	Manual	Manual	Automatic

### 4.4.1 Automatic PROFINET Device Configuration

#### Task

All devices of the PROFINET network are to be "named", i.e. given a temporary IP address and/or a temporary device name.

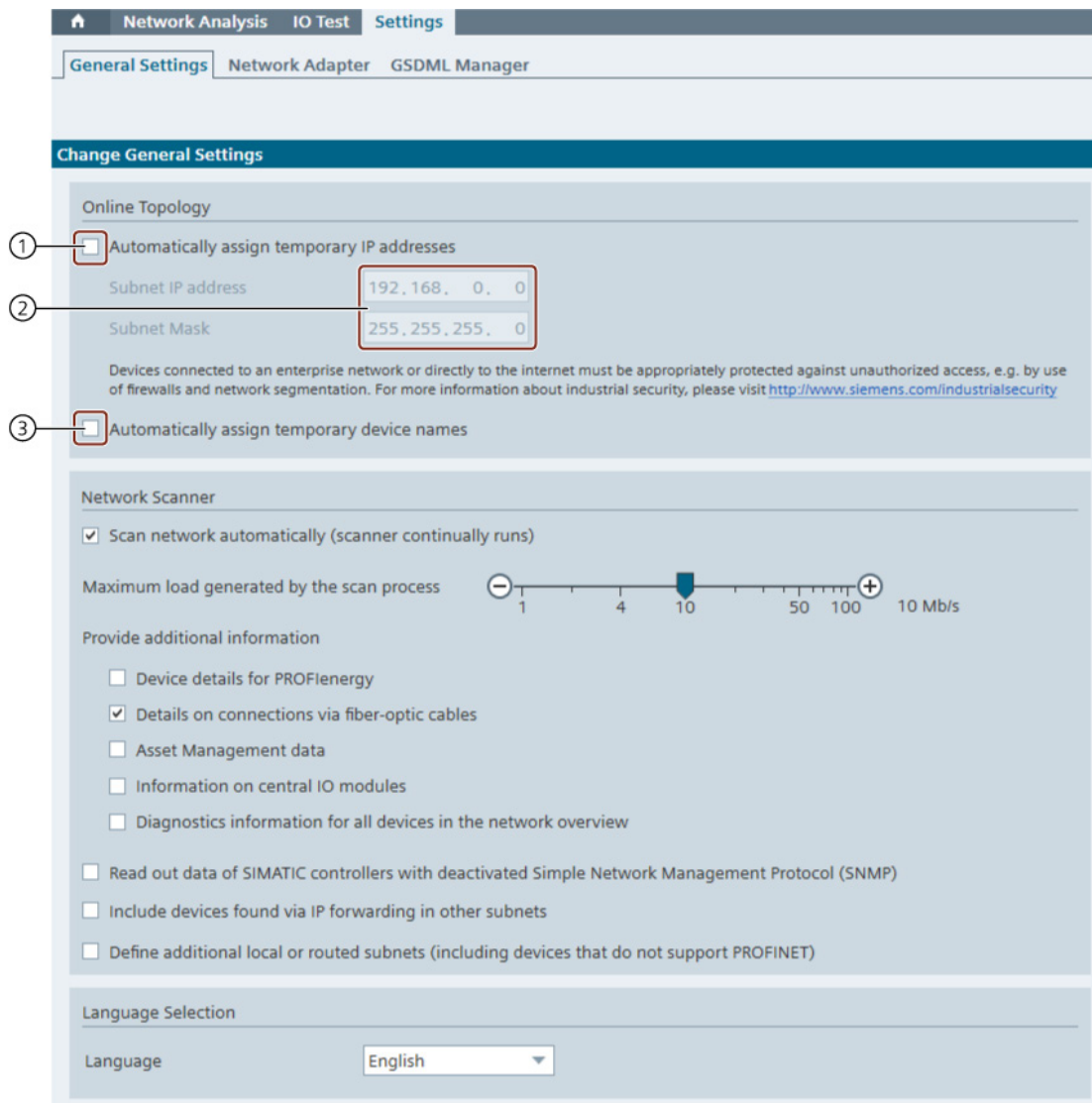
This is particularly useful if a number of devices with factory settings have been added to the network for first-time use.

#### Implementation

For all unconfigured devices found, PRONETA Basic can generate missing IP addresses or device names and assign them automatically to the devices.

1. Select [Settings \(3.4\)](#) in the start screen, and switch to the [General Settings \(3.4.1\)](#) tab.
2. In the following screen:
  - To assign automatically generated IP addresses to all accessible "unnamed" devices, put a check-mark next to "Automatically assign temporary IP addresses" (1). IP addresses generated in this way are from the subnet range given below (2).
  - To assign automatically generated device names to all accessible "unnamed" devices, put a check-mark next to "Automatically assign temporary device names" (3).

Figure 4-11



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**NOTICE** If you set the respective check marks, the naming of the device is carried out automatically and immediately for all accessible unconfigured devices as soon as you leave the view.

You will not be prompted to confirm beforehand.

The temporary IP addresses/device names that have been assigned this way remain valid until the devices have run through a reset or have been disconnected from the voltage supply.

**NOTE**

The use of temporary device configurations is convenient when using PRONETA Basic to prepare a network before a CPU is installed, which will later assign permanent device configurations to the individual devices.

### 4.4.2 Manual Configuration of a Single Device

**Task**

A set of temporary or permanent network parameters is to be written to a single PROFINET device manually.

**Implementation**

To assign arbitrary configuration values to a single device, proceed as follows:

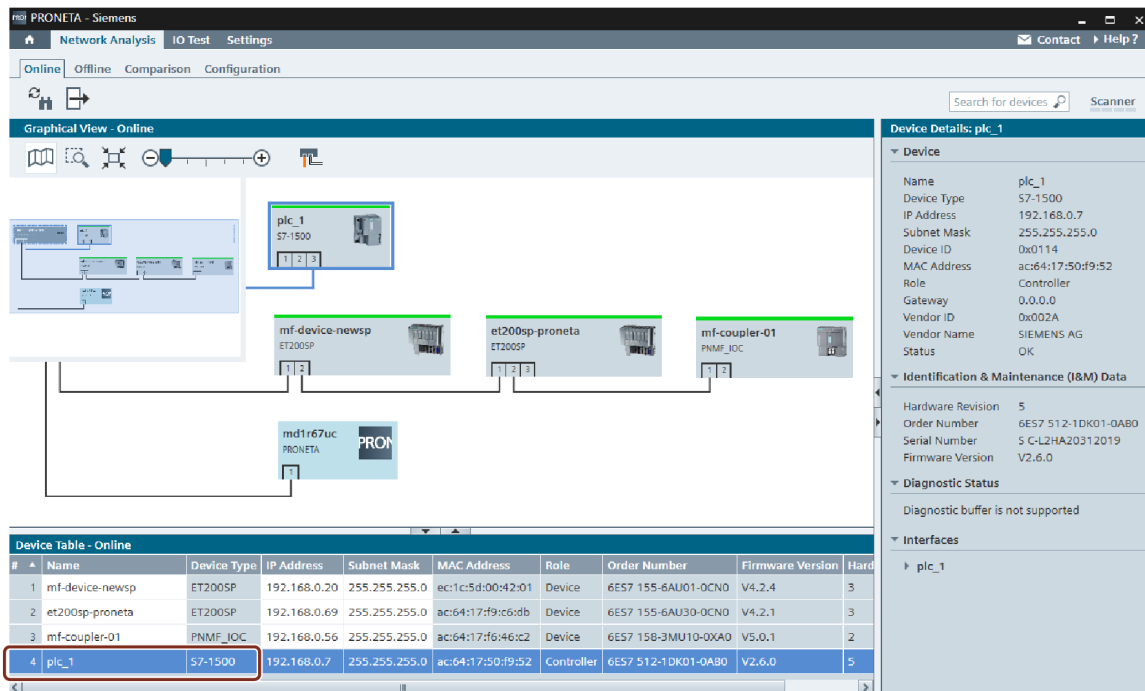
1. In the [Network Analysis \(3.2\)](#), select the [Online Mode \(3.2.1\)](#).
2. Highlight the device in the [Graphical View](#), or the [Device Table](#), and open the [Device Context Menu](#) with the right mouse button.
3. Select the command "[Set Network Parameters](#)".
4. Set the desired device parameters in the [Set Network Parameters](#) dialog that appears.

The new values can be temporary or permanent, depending on the settings in the parameters dialog.

Or alternatively:

1. In the [Network Analysis \(3.2\)](#), select the [Online Mode \(3.2.1\)](#).
2. Enter the new values directly in the [Device Table](#). All editable fields are distinguished by a white background.

Figure 4-12



### 4.4.3 Transfer of the Device Name for a Single Device

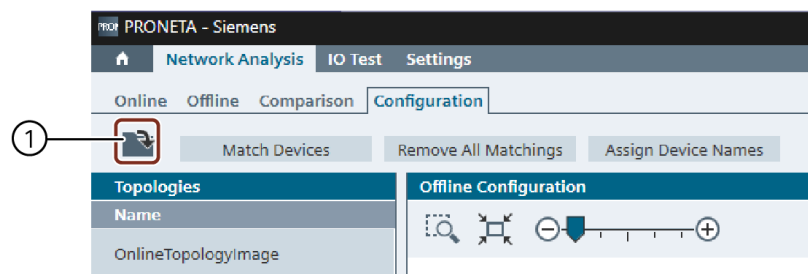
#### Task

The device name of a single network device from a reference network is to be copied to one particular device found in the physical network.

#### Implementation

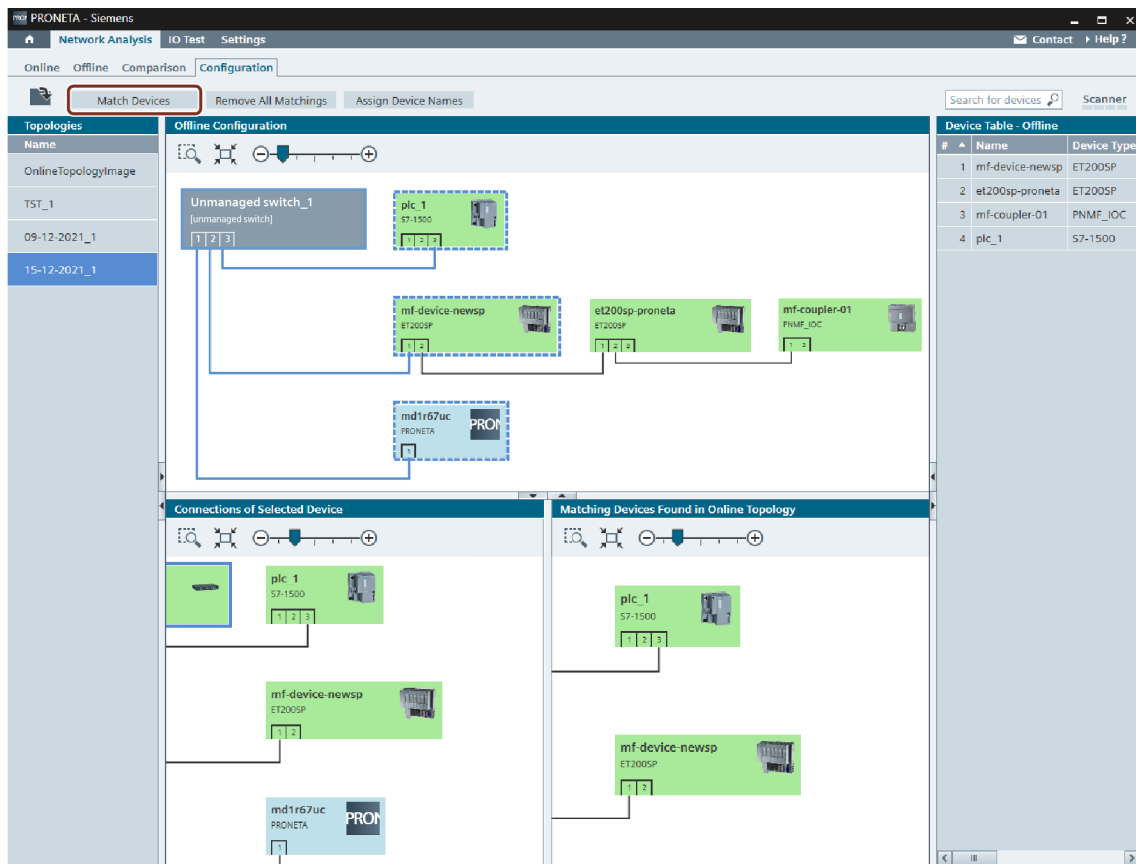
1. In the [Network Analysis \(3.2\)](#), select the [Configuration Mode \(3.2.4\)](#).
2. Open a reference topology with the "Add Topology File" icon from the Function Bar (1). You may load topology files you created and saved earlier with PRONETA Basic, TIA Portal or STEP 7.

Figure 4-13



3. Use the "Match Devices" button to see whether there is a match in the physical network for devices if the reference network.

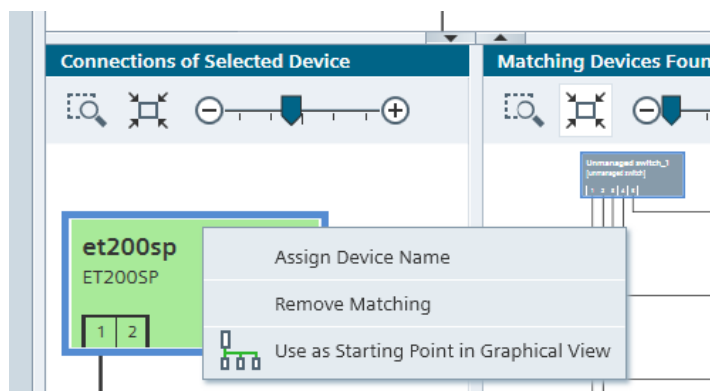
Figure 4-14



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4. If a match between the reference configuration and the physical network is found, highlight the corresponding device in the top or the bottom left Graphical View, open the [Device Context Menu](#) and execute the command "Assign Device Name".

Figure 4-15



A device name from the reference network will be permanently assigned to the device.

### NOTE

After the manual device configuration, the refreshed parameters are not immediately displayed in the Graphical View, but only during the next scan cycle. This can take between a few seconds and a few minutes. To refresh the table immediately, carry out a manual refresh.

### 4.4.4 Transfer of Device Names for a Whole Network

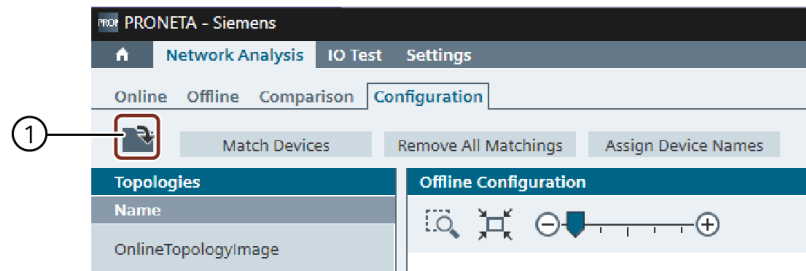
#### Task

Device names from an existing topology file or STEP 7 project are to be assigned to all devices on the physical network for which matches were found.

#### Implementation

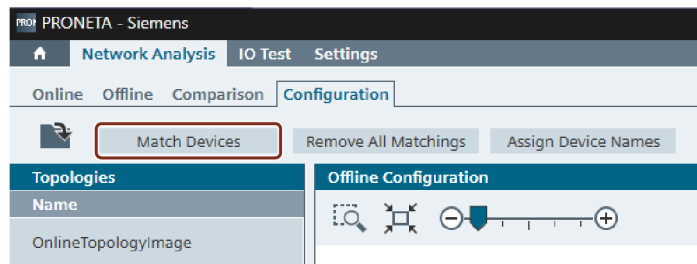
1. In the [Network Analysis \(3.2\)](#), select the [Configuration Mode \(3.2.4\)](#).
2. Open a reference topology with "Add Topology File" icon (1) from the Function Bar. You may load:
  - a. A topology file you created and saved earlier with PRONETA Basic, or
  - b. The topology information extracted from a project created with STEP 7.

Figure 4-16



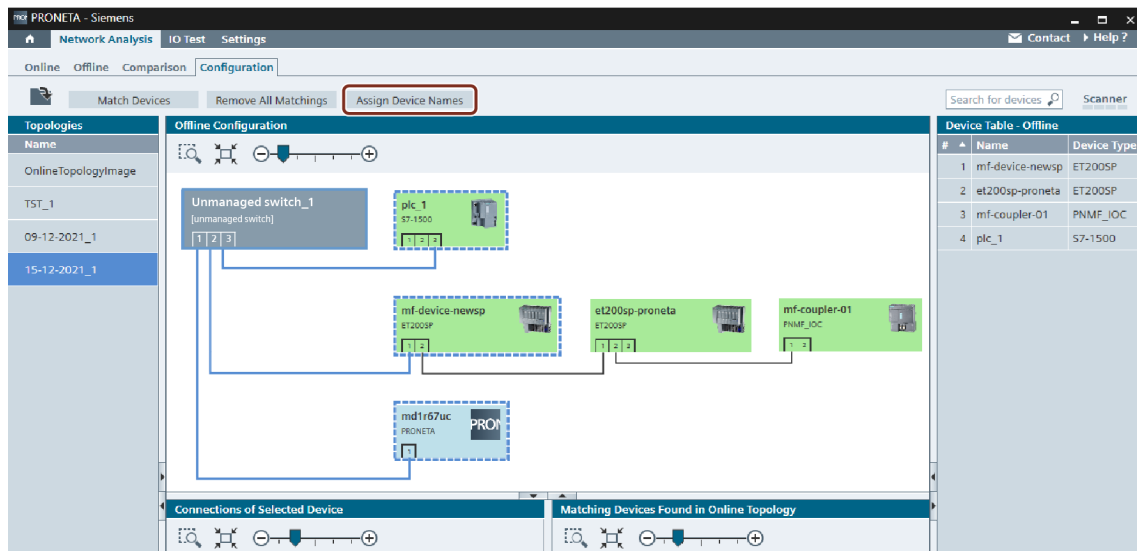
3. In the Graphical View of the offline configuration, use the "Match Devices" button to see for which devices of the reference network unique matches in the physical network exist. Devices for which no, or more than one potentially matching units were found in the physical network are displayed in light gray. Only devices in the physical network with a valid IP address will be considered. See [Finding Matching Devices in Configuration Mode](#) for precise criteria on how matches are established.

Figure 4-17



4. All devices for which matches were found, or for which matching was manually performed, are displayed green. To carry out the naming for all these devices automatically, click the "Assign Device Names" button.

Figure 4-18



## 4.5 Creating an Inventory of the Network

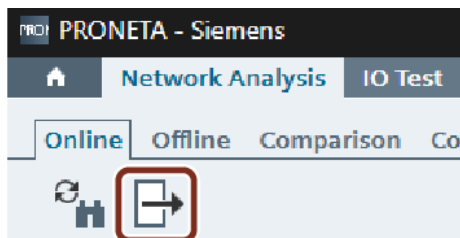
### Task

A detailed inventory of all network devices used in a physical network is to be created.

### Implementation

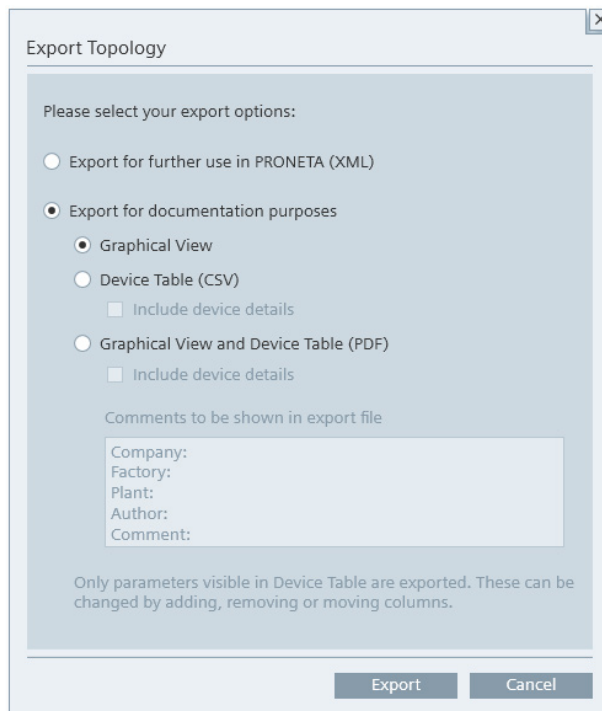
1. In the [Network Analysis \(3.2\)](#), select the [Online Mode \(3.2.1\)](#).
2. Wait until a complete network scan cycle has been completed as shown by the [Scanner Status Indicator](#).
3. Click the "Export Topology" icon from the Function Bar to create a network inventory.

Figure 4-19



4. In the popup window which appears, select the file format and contents you want to save. See [Topology Export](#) for details.

Figure 4-20





If you select "Include device details", information about port configuration and connection partners on the ports will be included. Module information comprises I&M data for all IO modules installed.

The categories of information saved in the [Topology Export](#) are the same as those currently displayed in the [Device Table](#). To filter the inventory data, activate or deactivate individual columns in the Devices Table by right-clicking on the column header in the table and selecting the relevant parameters.

This ensures that not only device type, module structure and IP addresses are saved in the device list, but also information such as the version of the installed firmware, serial numbers etc.

Figure 4-21

#	Name	Device Type	IP Address	Firmware	Hardware	Status	#	Name	IP Address	Port ID	Port Descr	Partner P	Partner D	Power Bu	#	Mc
1	plc	S7-300	172.16.39	V3.2.6	1	OK	1	plc	172.16.39	1 port-001	Siemens S	port-001	comfort 12"			
										2 port-002	Siemens SIMATIC S7, Ethernet Port 2, no link, autonegc					
2	comfort 1	SIMATIC-F	172.16.34	V15.0.0	0	OK	1	comfort 1	172.16.34	1 port-001	SOC1 Port 1					
										2 port-002	SOC1 Port port-001	28-63-36-b0-e0-02				
3	et_two	S7-1500	172.16.42	R28.29.29	10011	OK	1	et_two	172.16.42	1 port-001	Siemens, SIMATIC S7, Ethernet Port, X1 P1R					
										2 port-002	Siemens, SIMATIC S7, Ethernet Port, X1 P2R					
										3 port-003	Siemens, port-001	plc_1				
4	kalliope-i	S7-PC	172.16.1.50			Unknown										
5	28-63-36-t	S7-1500	172.16.50	V2.1.0	3	Unknown	1	28-63-36-t	172.16.50	1 port-001	Siemens, port-002	comfort 12"				
										2 port-002	Siemens, SIMATIC S7, Ethernet Port, X1 P2R					
										3 port-001	Siemens, SIMATIC S7, Ethernet Port, X2 P1					
6	et_one	S7-1500	172.16.42	V2.5.2	3	OK	1	et_one	172.16.42	1 port-001	Siemens, SIMATIC S7, Ethernet Port, X1 P1R					
										2 port-002	Siemens, SIMATIC S7, Ethernet Port, X1 P2R					
										3 port-003	Siemens, port-001	plc_1				
7	hh-pc	SIMATIC-F	172.16.34.2			OK	1	hh-pc	172.16.34	1 port-001	Berichtet	port-002	comfort 12"			
8	et200sp	ET200SP	172.16.33	V3.3.0	5	OK	1	et200sp	172.16.33	1 port-001	Siemens, port-003	et_one			0 IM	
										2 port-002	Siemens, SIMATIC S7, Ethernet Port, X1 P:				1 DI	
															2 DI	
															3 DI	
															4 DC	
															5 AC	

This information is important in the context of a device recall or any necessary firmware updates. With a simple search in the inventory file (e.g. with Microsoft Excel or any other spreadsheet software), devices requiring maintenance can be identified quickly and reliably.

## 4.6 Testing the Correct Wiring of the Distributed IO

### Task

The hardware in the network is to be analyzed, and sensors and actuators in the network are to be controlled and/or checked for correct wiring, before integrating a PLC.

The results of these tests are logged to document the correctness of the configuration.

### 4.6.1 Checking the Station Configuration

#### Task

The configuration of the modular periphery ET 200SP/S/MP/M/PRO/AL connected to your devices (IO modules etc.) is to be checked.

#### Implementation

You can view the actual module installation of a device at any time in two different ways:

1.
  - a. In the [Network Analysis \(3.2\)](#), select the [Online Mode \(3.2.1\)](#).
  - b. Highlight the respective device in the [Graphical View](#), or the [Device Table](#).
  - c. In the detail view, open the "Modules" branch by clicking the triangle.
  - d. The module configuration of the selected station is displayed. For details, you can open the branches of the individual slots.

Figure 4-22

The screenshot displays the PRONETA - Siemens software interface. The main window is titled "PRONETA - Siemens" and has tabs for "Network Analysis", "IO Test", and "Settings". The "Network Analysis" tab is active, showing a graphical view of a network topology. A device labeled "et200sp ET200SP" is highlighted in the graphical view. Below the graphical view is a "Device Table - Online" table with the following data:

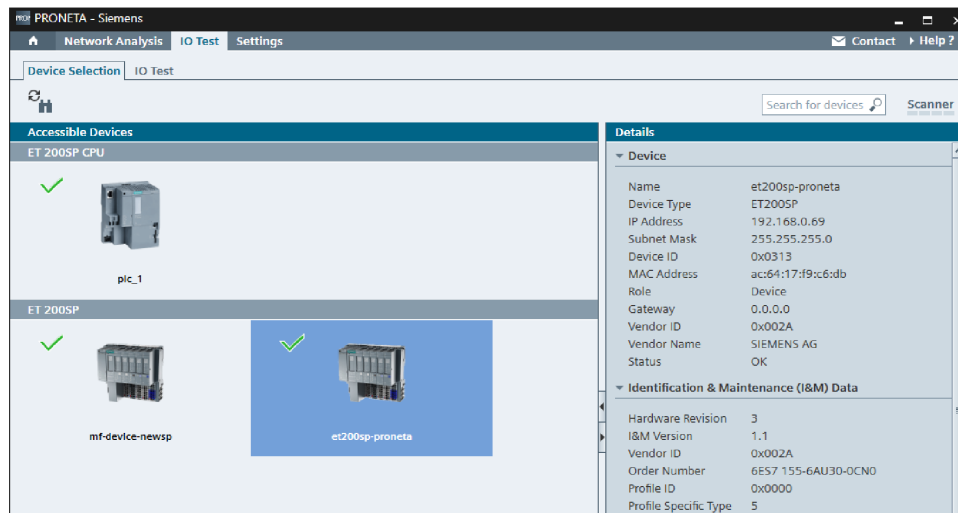
#	Name	Device Type	IP Address	Firmware Version	Hardware Revision
4	plc_1	S7-1500	172.16.33.2	V1.8.1	2
1	et200sp	ET200SP	172.16.33.3	V3.3.0	5
7	hh-pc	SIMATIC-PC	172.16.34.2		
8	hmi_1	TP1200 Comfort	172.16.34.210	V15.1.0	0
2	plc	S7-300	172.16.39.78	V3.2.6	1
3	et_two	S7-1500	172.16.42.254	R28.29.29	10011
6	et_one	S7-1500	172.16.42.255	V2.5.2	3
5	28-63-36-b0-e0-02	S7-1500	172.16.50.222	V2.1.0	3

On the right side of the interface, the "Device Details: et200sp" panel is open. It shows various fields for the selected device, including Name, Device Type, IP Address, Subnet Mask, Device ID, MAC Address, Role, Gateway, Vendor ID, Vendor Name, and Status. Below this, there are sections for "Identification & Maintenance (I&M) Data", "Diagnostic Status", and "Interfaces". The "Interfaces" section is expanded to show "et200sp" and "Modules". The "Modules" section is further expanded to show a list of modules installed in the device slots:

- Slot 0 - IM 155-6 PN ST V3.3
- Slot 1 - DI 8x24VDC ST V1.1
- Slot 3 - DI 8xNAMUR HF V1.0, QI
- Slot 4 - DI 8x24VDC/0.5A ST V1.1
- Slot 5 - AQ 4xUI ST V1.1
- Slot 6 - AI EnergyMeter ST V2.0 (32I/12O)
- Slot 7 - Server module V1.1 (IM 155-6 PN ST V1.0)

2. You can find the same information by switching to the [IO Test \(3.3\)](#) and highlighting the respective device in the [Device Selection Mode \(3.3.1\)](#), module details are displayed in the section on the right of the screen.

Figure 4-23



### 4.6.2 Checking the Signal Wiring: "IO Test"

#### Task


With the IO Test, the wiring of the inputs and outputs of the IOs used are checked to determine whether all devices have been connected correctly.

The test results are logged and saved to document the state of the system.

#### Preparations

**NOTE** For the IO Test, PRONETA Basic must have been extracted to a directory where it has writing privileges while running.

1. In the start screen, select the [IO Test \(3.3\)](#).
2. The device to be checked must have a valid IP address and device name. Make sure that this is the case by checking "Automatically assign temporary IP addresses" and "Automatically assign temporary device names" in the [General Settings](#) dialog ([3.4.1](#)).
3. In [Device Selection Mode \(3.3.1\)](#), click on the module to be tested. In the right-hand part of the window, a table appears with details of the selected device.
4. To proceed to the IO Test, select the [IO Test Mode \(3.3.2\)](#) tab, or double-click on the device icon.



**WARNING**

**Manipulating the interfaces on control components can result in sudden movement of the machinery and the electrification of equipment.**

Physical injury and electrical shock to personnel are consequently possible.

Make sure the machinery is in a safe state with no unauthorized personnel within range, before activating the IO Test.

**NOTICE**    **Loss of F-destination addresses**

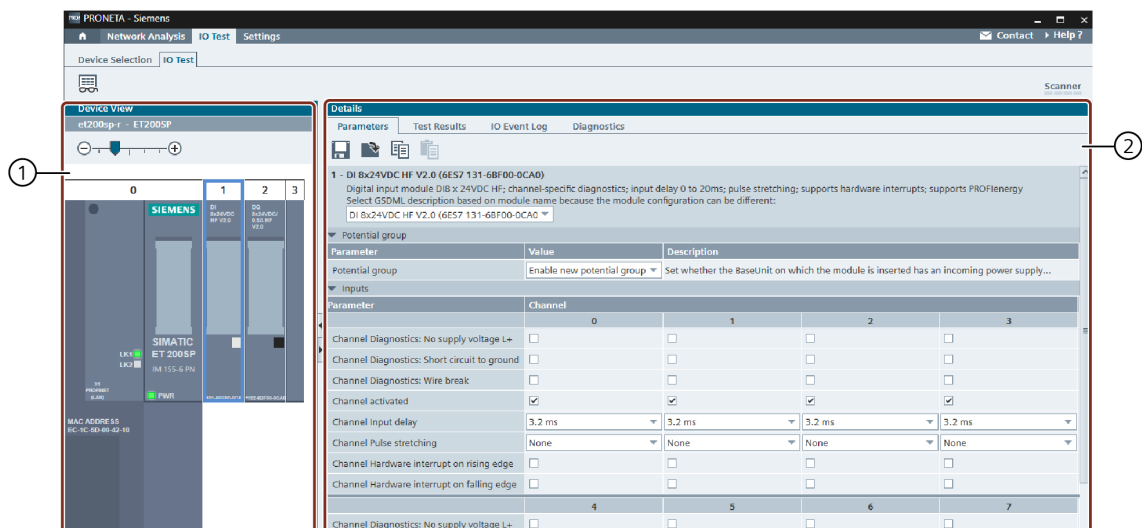
After performing an IO test with PRONETA Basic on a device, the attached F-IO modules will have their F-destination addresses deleted, resulting in the module entering a safe state.

In this case, assign the F-destination addresses once again to the F modules concerned using the respective engineering tool.

Testing of F-IO modules is disabled by default.

The IO Test Mode window consists of two segments: A [Device View](#) (1) on the left, and a [Details Table](#) (2) on the right. You can adjust the size of the segments by dragging the dividing bar between the panes to the left or the right.

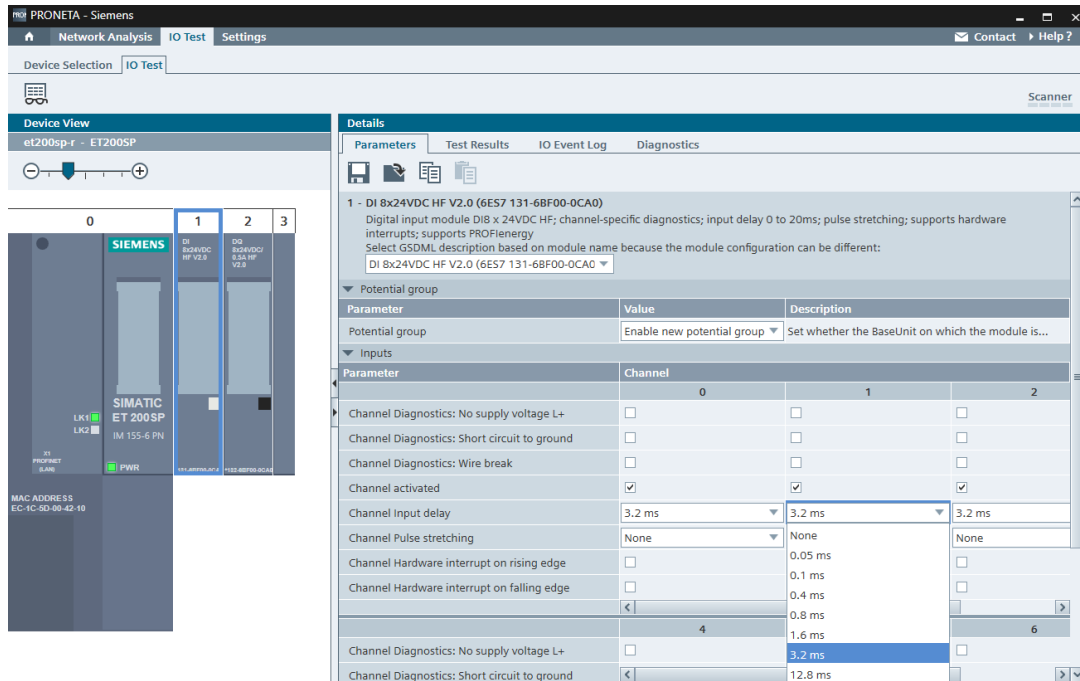
Figure 4-24



The Device View (1) gives you a graphical overview of the device you currently want to test, while the tables on the right provide you with information about the test progress.

5. Select a module and click on the "Parameters" tab in the Details window (2) to adjust the parameters of the IO modules to your actual configuration. For example, you can enter the channel input delay for signals in the respective field of the table. If you leave a field unchanged, its default value will be used. Repeat this step for all modules you want to check before turning to the actual test procedure.

Figure 4-25



6. Click the "Force and Monitor Values" icon in the Function Bar. This will establish a PROFINET application relation to the device. You can now start with the IO Test for the device.

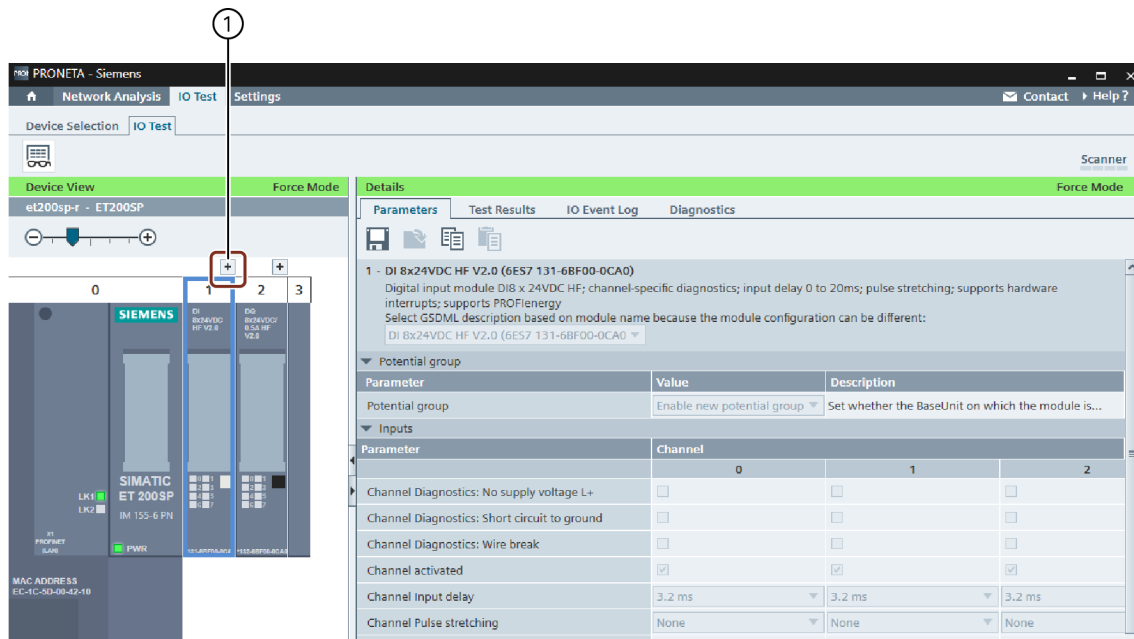
**NOTE**

At any given time, only one PROFINET application relation (AR) can be established for one device. Make sure that no other PROFINET controller occupies this connection.

## Monitoring the Installation

When Force Mode is established, the header bars of both the device and the Details View will turn light green.

Figure 4-26



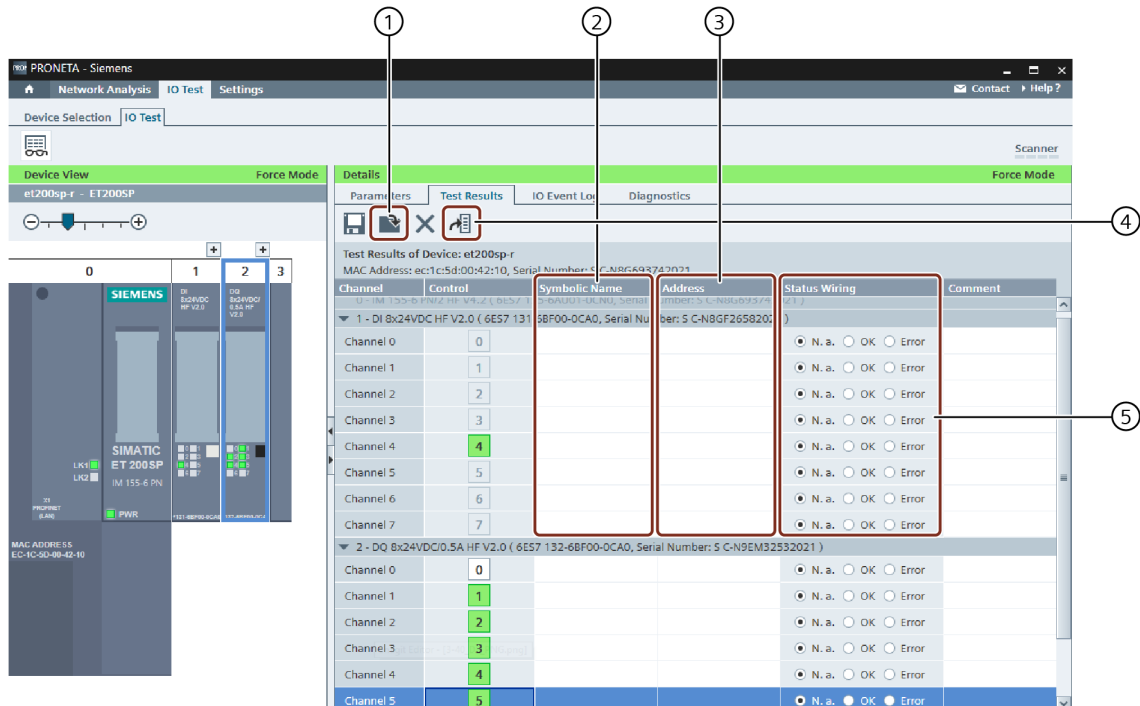
You can now monitor the status of digital inputs with the LED representations in the Device View of the respective module, while for analog inputs the current value is displayed. Digital outputs can be monitored and forced by watching and clicking on the LED representations.

Use the [Popup Window](#) for a larger display of the modules by clicking on the "+" symbol (1) above the corresponding module in the Device View.

### Performing and Documenting the Tests

1. Go to the "Test Results" tab in the Details View.
2. If you want to continue with a previous or incomplete test of a configuration, use the "Load Test Results" (1) icon from the Function Bar, to pick up your work from where you left. Otherwise, simply begin with the test procedure.

Figure 4-27



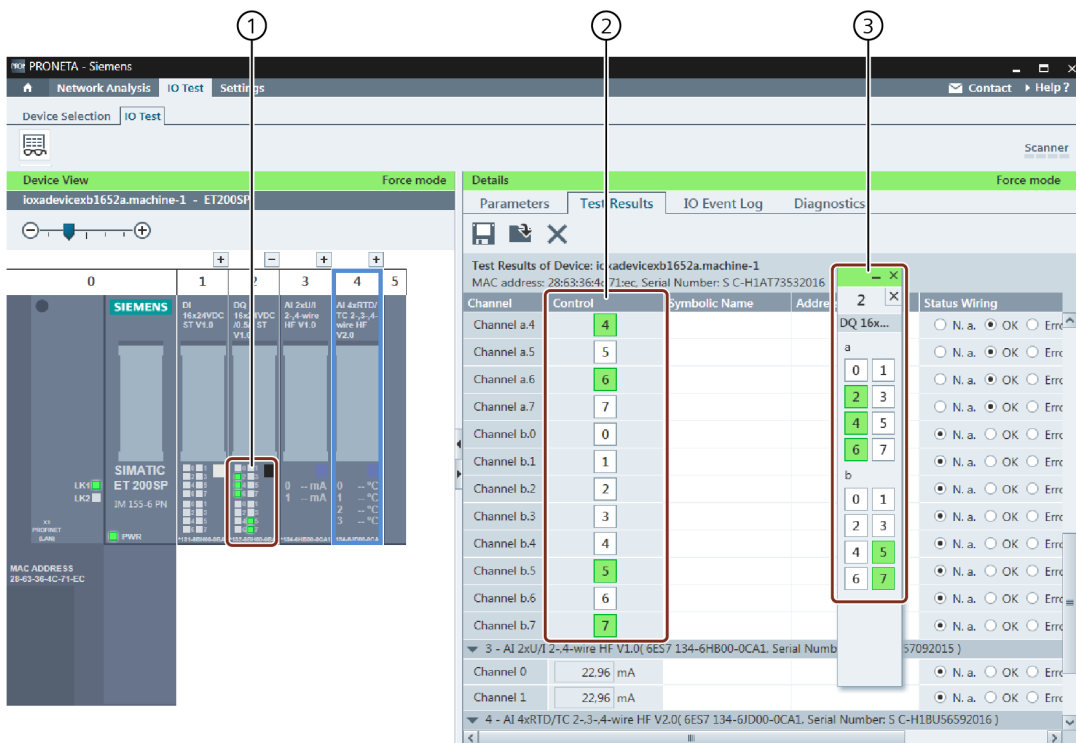
In the "Test Results" tab, you can assign names for the individual connections in the "Symbolic Name" column (2) and enter the address of the memory image in the "Address" column (3). These are intended only as memory aids for the tester and have no effect on the actual configuration. Symbolic names can also be imported from AML files (see [Using an AML File as Reference](#) for details). To do so, click the corresponding icon (4).

The "Comment" column gives you space for additional comments.

3. Check your wiring by applying different signals to your inputs and setting the outputs and monitoring the effects in your installation.  
In "Status Wiring" (5), enter the respective test result for all connections. By default, all tests are marked "N. a." ("Not applicable", untested). Change this to "OK" if everything goes according to plan, or to "Error" if you found any faults.

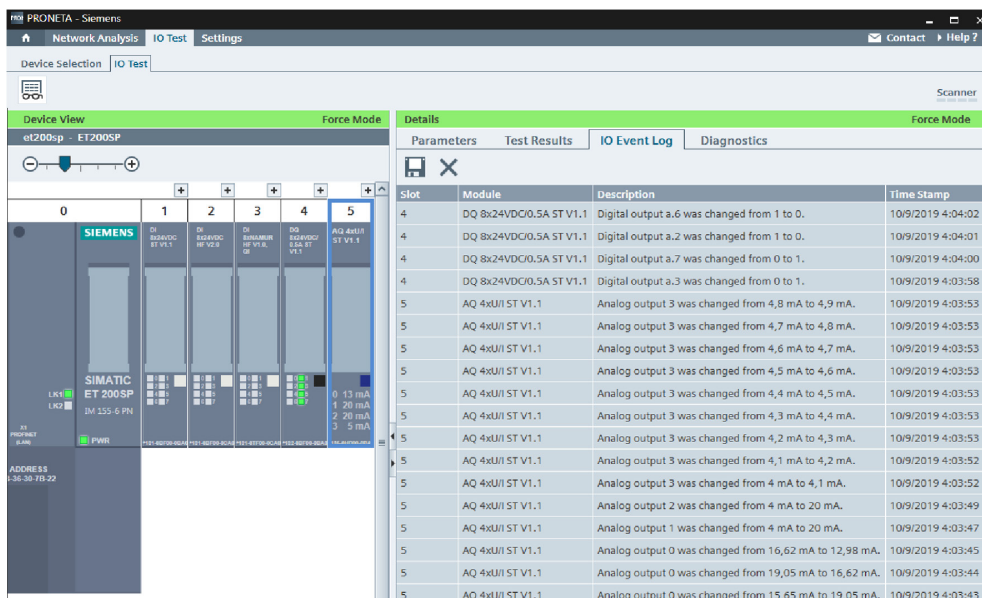
Note that reading and writing information to a module interface is possible in several different places. In the image below, the boxed areas (1) – (3) all control the same module. Use the popup window to get a magnified representation of the interface values.

Figure 4-28



4. Also check which reactions your interventions provoked in the "IO Event Log" and "Diagnostics" tabs of the [Details Table](#).

Figure 4-29



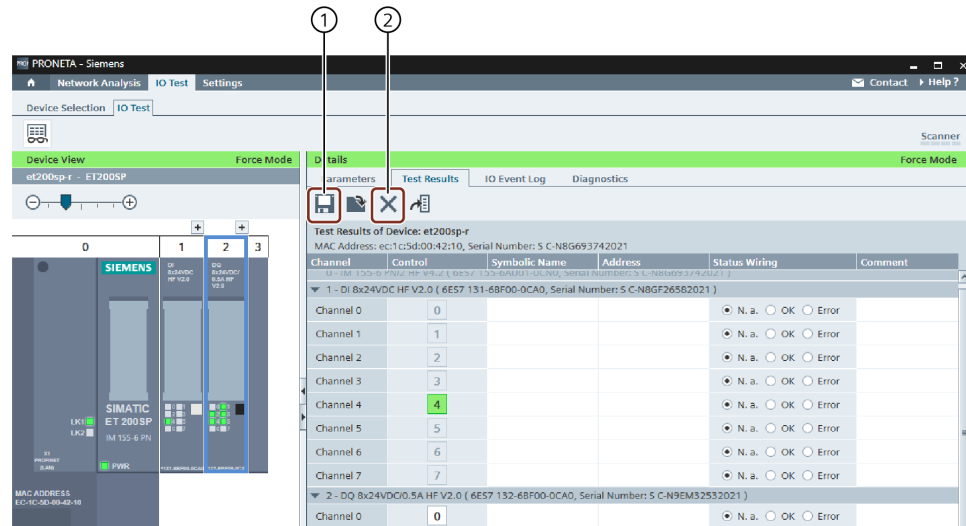
The "IO Event Log" tab (above) records all changes applied to the inputs and outputs of the connected modules. The "Diagnostics" tab reflects the state of the device's diagnostics buffer, which contains error messages such as the unplugging of a module.



When you have completed your installation check, or if you want to interrupt your work to proceed at a later time, you can save your results at any time with "Save IO Event Log" (1) in the "Test Results" Function Bar.

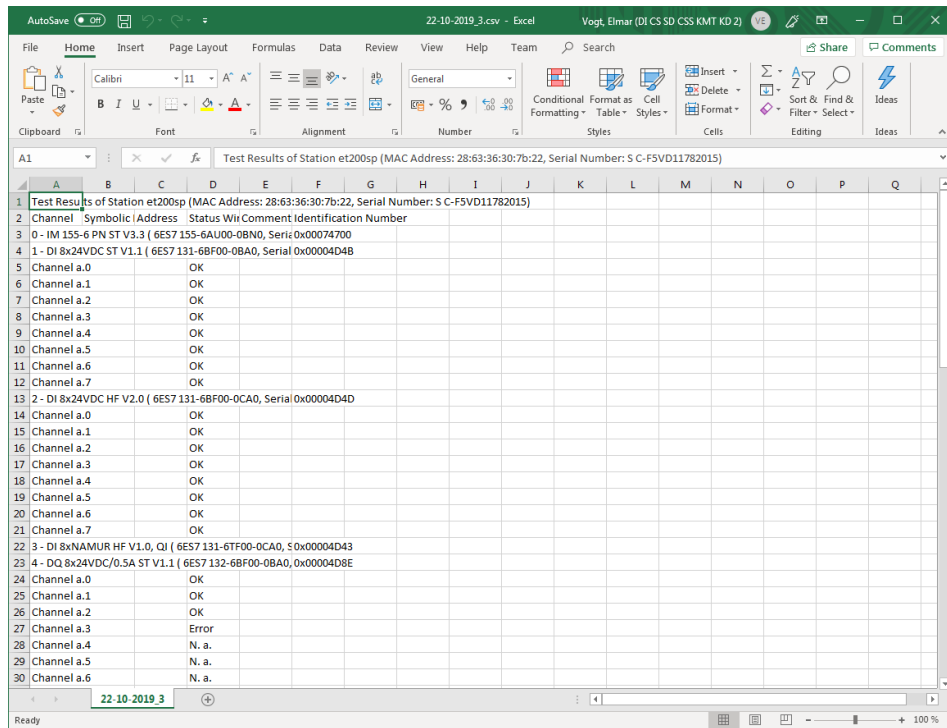
To delete the results entered so far and start over from scratch, use "Reset Test Results" (2).

Figure 4-30



5. Repeat the previous steps for all modules to be checked.
6. When you are done, save your test results to document the correct state of your installation. (See [Topology Export](#) for file formats and contents.)

Figure 4-31



The protocol containing the test results can be opened for further processing with any spreadsheet software, for example Microsoft Excel.

This provides you with a simple and reliable method to test and document your installation wiring. Note that, besides the PC running PRONETA Basic and your PROFINET devices, you do not require any additional hardware or configuration software to perform these tests.

## 5 Related Literature

Table 5-1

	Topic	Title / Link
\1\	Siemens Industry Online Support	<a href="https://support.industry.siemens.com/cs/start?lc=en-US">https://support.industry.siemens.com/cs/start?lc=en-US</a>
\2\	Download page of this entry	<a href="https://support.industry.siemens.com/cs/ww/en/view/67460624">https://support.industry.siemens.com/cs/ww/en/view/67460624</a>
\3\	PRONETA product page	<a href="https://new.siemens.com/global/en/products/automation/industrial-communication/profinet/portfolio/proneta.html">https://new.siemens.com/global/en/products/automation/industrial-communication/profinet/portfolio/proneta.html</a>
\4\	PRONETA Professional (SIEMENS Mall)	<a href="https://mall.industry.siemens.com/mall/en/WW/Catalog/Product/6ES7853-2BE01-0YAO">https://mall.industry.siemens.com/mall/en/WW/Catalog/Product/6ES7853-2BE01-0YAO</a>

## 6 History

Table 6-1

Version	Date	Modifications
V1.0	02/2013	First version
V2.0	10/2013	Adapted to PRONETA 2.0.8.4
V2.3	12/2015	Complete rewrite, adaptation to PRONETA 2.3
V2.4	03/2017	Adapted to PRONETA 2.4
V2.4.1	10/2017	Minor corrections
V2.5	03/2018	Adapted to PRONETA 2.5
V2.6	03/2019	Adapted to PRONETA 2.6
V3.0	09/2019	Adapted to PRONETA 3.0
V3.1	06/2020	Adapted to PRONETA Basic 3.1
V3.2	05/2021	Adapted to PRONETA Basic 3.2
V3.3	12/2021	Adapted to PRONETA Basic 3.3
V3.3 SP1	05/2022	Adapted to PRONETA Basic 3.3 SP1
V3.4	09/2022	Adapted to PRONETA Basic 3.4
V3.5	01/2023	Adapted to PRONETA Basic 3.5
V3.6	10/2023	Adapted to PRONETA Basic 3.6