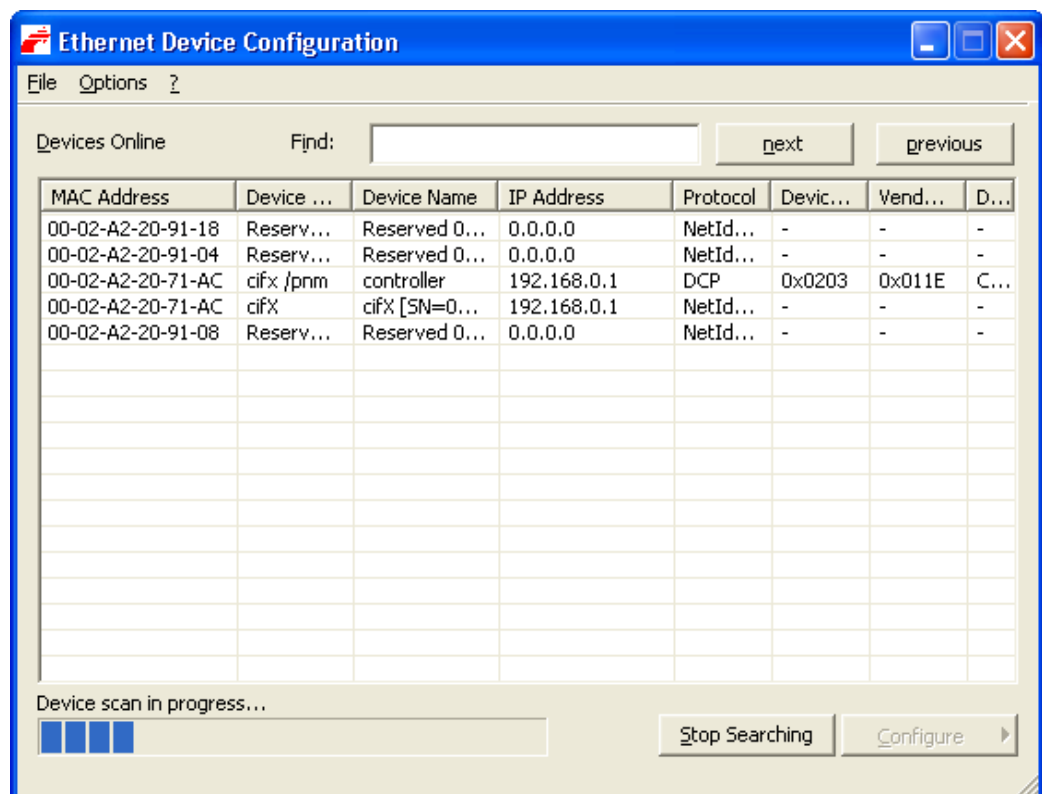


Operating Instruction Manual

Ethernet Device Configuration

Address Setting for Ethernet capable Hilscher Devices



Hilscher Gesellschaft für Systemautomation mbH

www.hilscher.com

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1 Introduction

1.1 About this Manual

This manual describes the program **Ethernet Device Configuration**, by the use of which the IP address as well as a device name (or station name) at Ethernet-capable devices can be adjusted using an Ethernet connection.

These adjustments are necessary to configure a device using the configuration software SYCON.net via the Ethernet connection of the device. For further information refer to section *About Ethernet Device Configuration* on page 9.

1.1.1 Online Help

Ethernet Device Configuration contains an integrated online help.

➤ In order to open the online help, click **Help** or press the **F1** key.

1.1.2 List of Revisions

Index	Date	Version	Component	Chapter	Revisions
8	17-01-25	V1.9.x.x	ENDevCfgApp.exe	1.4, 2, 3.1, 4.1, 6.2	Section <i>Requirements</i> updated, chapter <i>Safety</i> added, section <i>How the setup is delivered?</i> revised, . section <i>Starting Ethernet Device Configuration</i> revised, section <i>Adjust IP Address by NetIdent Protocol</i> updated.

Table 1: List of Revisions

1.1.3 Conventions in this Manual

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

Notes



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



Note: <general note>



<note, where to find further information>

Operation Instructions

1. <instruction>
2. <instruction>

or

➤ <instruction>

Results

↪ <result>

Positions in Figures

The *Positions* ①, ②, ③ ... or a, b, c ... or A, B, C ... refer to the figure used in that section. If the numbers reference to a section outside the current section then a cross reference to that section and figure is indicated.

1.2 Legal Notes

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- for the design, construction, maintenance or operation of nuclear facilities;
- in air traffic control systems, air traffic or air traffic communication systems;
- in life support systems;
- in systems in which failures in the software could lead to personal injury or injuries leading to death.

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1.2.5 Export Regulations

The delivered product (including the technical data) is subject to export or import laws as well as the associated regulations of different countries, in particular those of Germany and the USA. The software may not be exported to countries where this is prohibited by the United States Export Administration Act and its additional provisions. You are obligated to comply with the regulations at your personal responsibility. We wish to inform you that you may require permission from state authorities to export, re-export or import the product.

1.2.6 Registered Trademarks

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PROFINET® is a registered trademark of PROFIBUS International, Karlsruhe.

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

1.3 About Ethernet Device Configuration

Using **Ethernet Device Configuration** the IP address or the device name (or station name) at Ethernet-capable Hilscher devices can be adjusted. The identification of devices is done via the *NetIdent protocol* or the *DCP protocol*.



Note:

The *NetIdent protocol* is only supported by Hilscher devices. It is used to identify TCP/IP devices and to set IP addresses. *NetIdentV2* is an upgrade of *NetIdent*.

The *DCP protocol* is supported by PROFINET compatible devices. It is used to identify PROFINET compatible devices and to set the station name and the IP address of these devices.

1.4 Requirements

System Requirements

- Windows® XP SP3, Windows® Vista (32-Bit) SP2, Windows® 7 (32-Bit and 64-Bit) SP1, Windows® 8 (32-Bit and 64-Bit), Windows® 8.1 (32-Bit and 64-Bit), Windows® 10 (32-Bit and 64-Bit)
- DVD ROM drive
- Free memory on hard disk: 2 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse

Prerequisite for the used Devices

The used Ethernet device must support the Hilscher *NetIdent* protocol, the Hilscher *NetIdentV2* protocol or the *DCP* protocol and it must be connected to the PC network.

Note the specifics for devices that operate as a DHCP server as described in section *Configuration Modes* on page 32.

2 Safety

2.1 General Note

The documentation in the form of a user manual, an operating instruction manual or other manual types, as well as the accompanying texts have been created for the use of the products by educated personnel. When using the products, all Safety Messages, Safety Messages, Property Damage Messages and all valid legal regulations have to be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

2.2 Intended Use

The Ethernet Device Configuration program is used to set the IP address for Ethernet-enabled devices via an Ethernet connection, as well as a device name (or station name).

2.3 Personnel Qualification

Personnel responsible for the application of the network system shall be aware of the system behavior and shall be trained in using the system.

2.4 Property Damage

To avoid property damage respectively device destruction and damage to your system or to your equipment, you necessarily must read, understand and follow all safety instructions and safety messages in this manual about danger causing property damage, before you configure your system.

2.4.1 Loss of Device Parameters

The station name and IP address or subnet mask and default gateway set using Ethernet Device Configuration via the NetIdent protocol are stored only volatile (temporarily) in the device.

Ensure that the data of your project configuration is stored non-volatile (permanent) using a configuration software in order to prevent loss of configuration data. If device parameters are lost, error incidents may occur on your system or plant.

2.4.2 Assignment of wrong IP Addresses

As a device operates as a DHCP server, this device must not be inserted via a switch or hub directly into a corporate network with other devices. Otherwise, this may lead to wrong assignment of IP addresses and malfunction. A device with an integrated DHCP server itself assigns IP addresses to other devices. Use devices that work as a DHCP server exclusively with a laptop or a PC with a separate network card.

3 Installation

3.1 How the setup is delivered?

Ethernet Device Configuration is supplied and installed as part of the setup of the SYCON.net configuration software.

For other products (e. g. netANALYZER Scope), a separate setup is provided on the installation DVD (file *EnDevConfigTool.msi*), which can be selected in the installation dialog of the DVD as component "Ethernet Device Configuration Tool".

Only if you want to install the setup manually, you must proceed as described in the following section.

3.2 Ethernet Device Configuration Tool Setup

Ethernet Device Configuration can be installed separately using the Ethernet Device Configuration Tool Setup (Version 1.9.x.x).

This section describes the installation procedure of the Ethernet Device Configuration program if the setup is started manually.

- Double click on the *EnDevConfigTool.msi* setup file.
- The Ethernet Device Configuration Setup Wizard is started and the window is displayed: **Welcome to the Ethernet Device Configuration Setup Wizard - The Setup Wizard will install the Ethernet Device Configuration on your computer.**



Figure 1: Ethernet Device Configuration will be installed on your computer.

- Click to **Next**.
- The window **End-User License Agreement** is displayed:

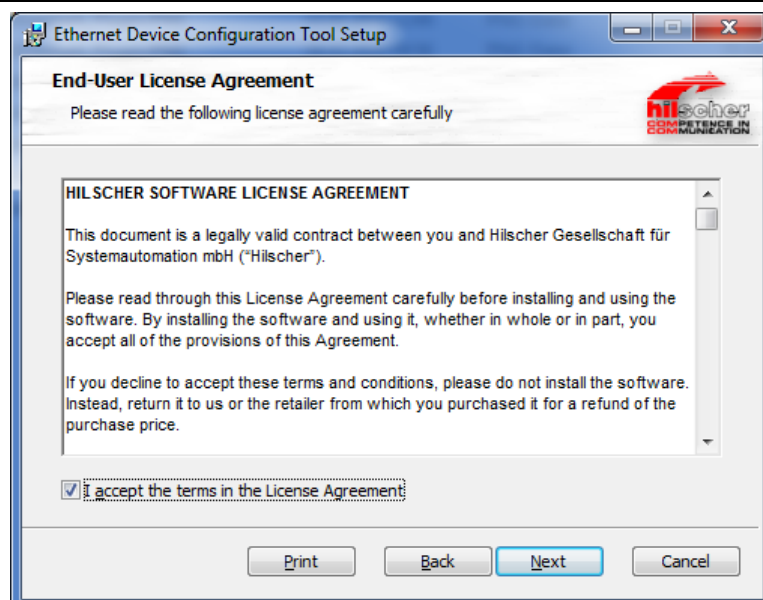


Figure 2: Hilscher Software License Agreement

- Check **I accept the terms in the License Agreement**.
- The window **Ready to install Ethernet Device Configuration Tool** is displayed:

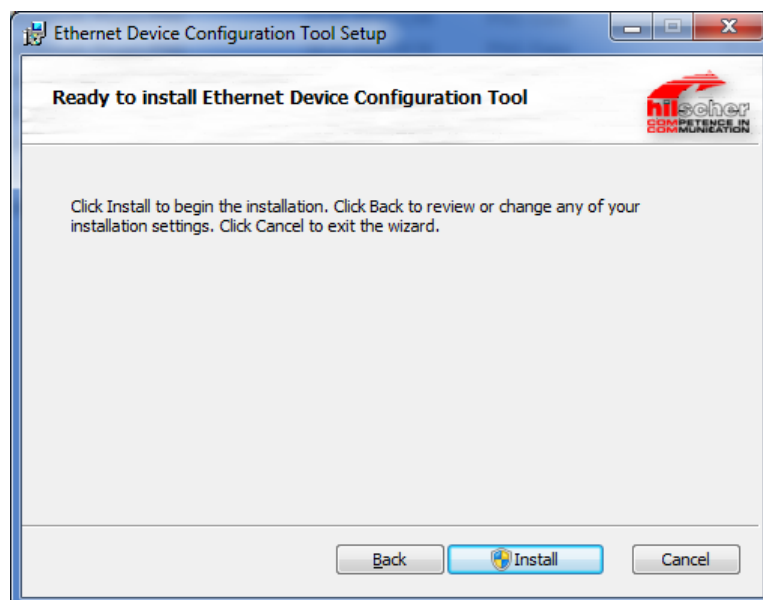


Figure 3: Starting the Ethernet Device Configuration Installation

- The window **Installing Ethernet Device Configuration Tool** is displayed:

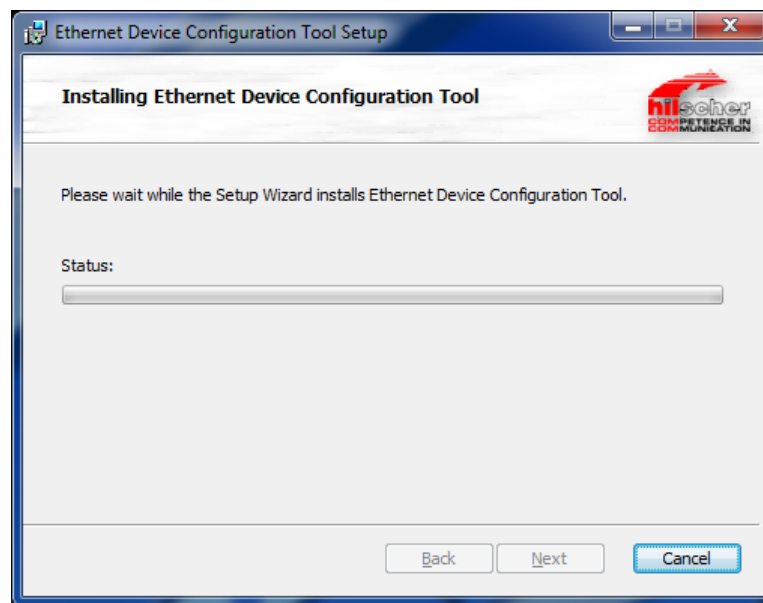


Figure 4: Ethernet Device Configuration Installation

- The window **Complete the Ethernet Device Configuration Setup Wizard** is displayed:

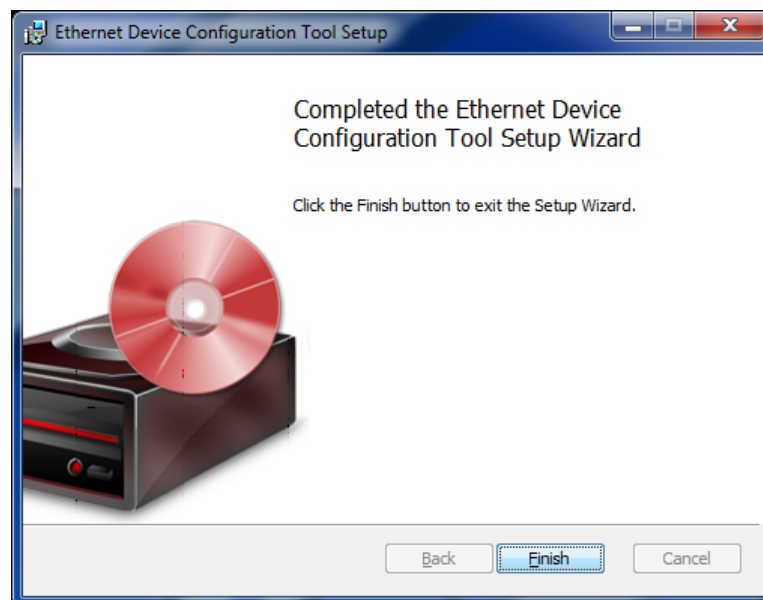


Figure 5: Finish Ethernet Device Configuration Installation

- Close the Ethernet Device Configuration installation via **Finish**.
- The Ethernet Device Configuration installation is complete.

4.2 Settings



Note: The settings which you adjust for the **Language**, the **Protocols** and the **DCP Configuration** will also be valid when invoking the program again.

4.2.1 Select Language

You can select the language **English** or **German** for the graphical user interface. Select the language as follows:

1. Select under **Options > Language**.



Figure 7: Language Selection

⇒ The current language is marked with a hook (see position ① in the figure above).

2. To change the language, select the alternative language entry ②.

4.2.2 Select Protocol

Select the protocols to be used for searching for Ethernet-capable devices and for configuring those devices.

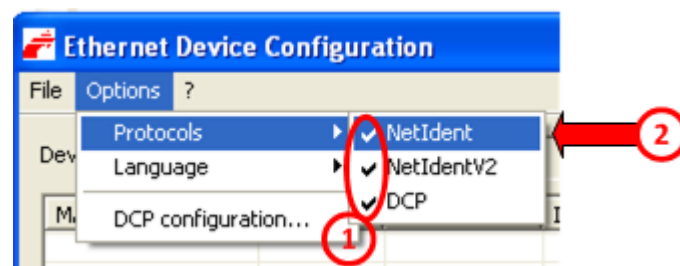


Figure 8: Protocol Selection

⇒ The activated protocol is marked with a hook.

⇒ In the figure above both protocol types are activated ①.

- Select under **Options > Protocols > [Protocol name]** ②.



Note: If you do not know, to which protocol the devices will react, simply select all protocols.

4.2.3 Select Network Devices for Scan



Note: Using the *DCP protocol* to scan for devices, the network devices to be used for the scan must be selected manually. When using the *NetIdent protocol*, by default all network devices in the PC are used to scan for devices.

Here you can adjust for the *DCP protocol* which network devices of the PC shall be used for the Scan.

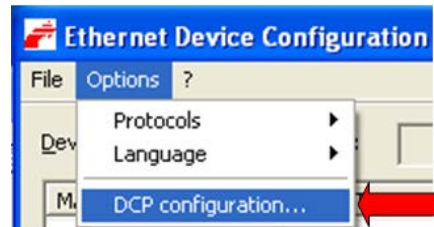


Figure 9: Open DCP Configuration

3. Select **Options > DCP configuration....**

⇒ The following dialog window opens:

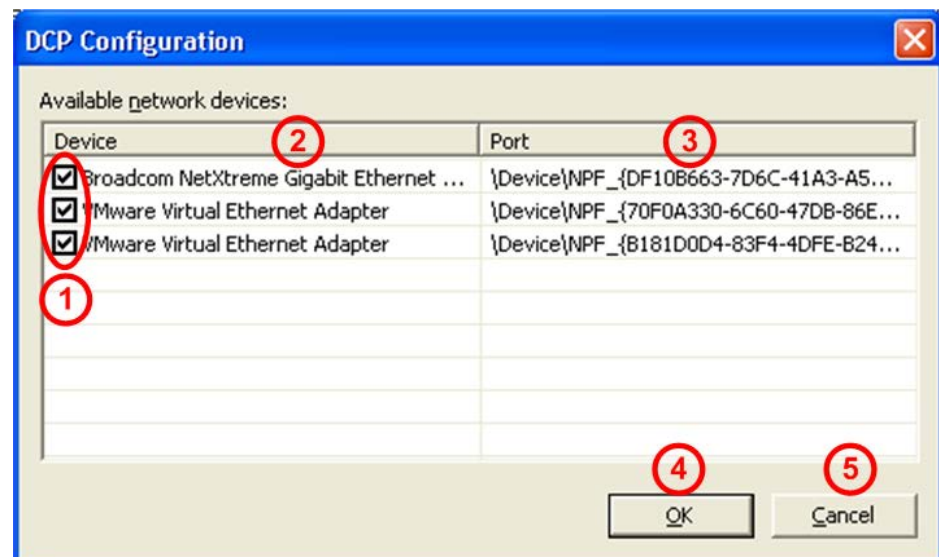


Figure 10: DCP Configuration, Selection of Ethernet Connection (Network Device)

In the dialog **DCP Configuration**:

4. Under **Device** ① check the network devices to be used with the *DCP protocol* at the scan.
- ⇒ Under **Device** ② the *name* and under **Port** ③ the *port number* of the network devices of your PC are displayed.
5. Leave the dialog via **OK** ④ with taking over of all settings you made.
6. Or leave the dialog with **Abort** ⑤ without taking over any settings you made.

5 Searching Devices

- In order to search for devices, click at **Search Devices** (see position 12 in the following figure) in the initial screen **Ethernet Device Configuration**.
- The Ethernet network connected to the PC is searched for devices reacting to the *DCP protocol* or to the *NetIdent protocol*. If devices are found, they are listed in the following manner.

Stop Searching stops the search.

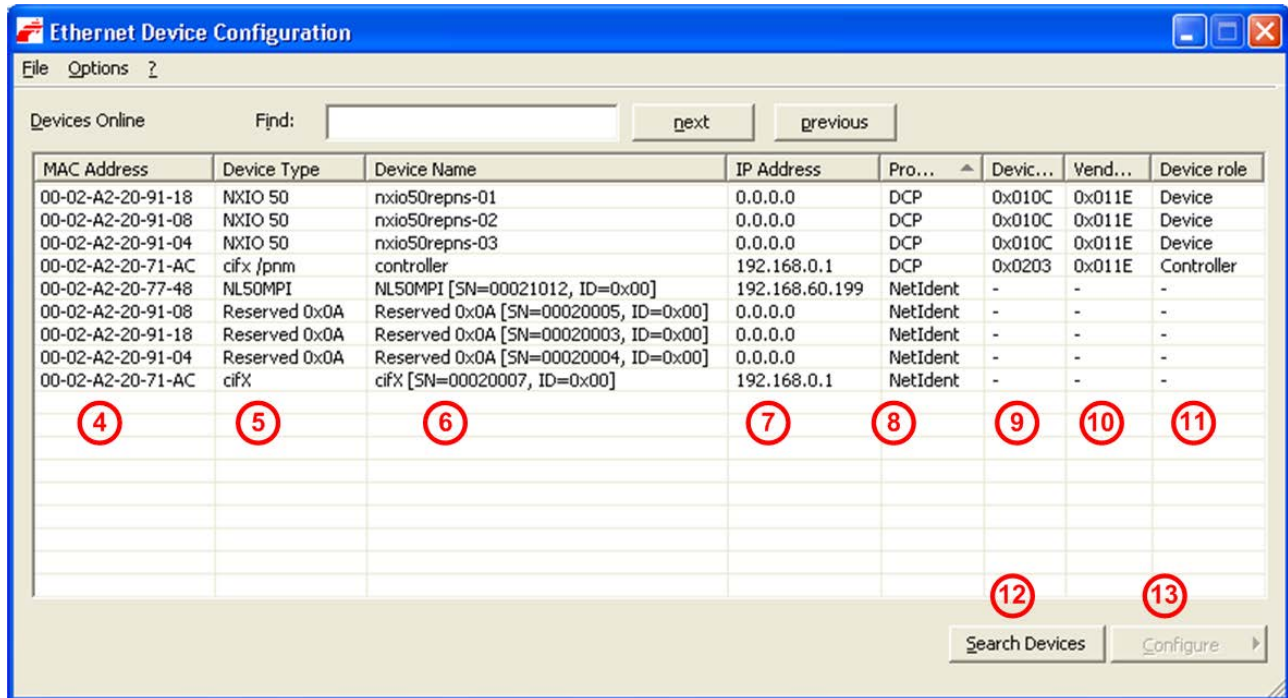


Figure 11: Found Devices

In the table in the figure above you can find the following information:

Item	Position	Meaning	Display DCP	Display NetIdent	Value / Range of Value
MAC Address	4	The MAC Address (=MAC-ID) is on delivery the unique (physical) Ethernet address of the device fixed by the manufacturer of the device.	MAC Address	MAC Address	
Device type	5	Name for the device that is stored non-volatile on the device.	Device type	Device type	
Device name	6	Device name that can be set via Configure 13 . The device name must match to the PROFINET specification [1] for the "Name of Station".	Device name (=station name)	Device name, serial number, or ID	Character string, 1 ... 240 characters

Item	Position	Meaning	Display DCP	Display NetIdent	Value / Range of Value
IP-Address	⑦	IP-Address of the device that can be set via Configure ⑬ . The IP address must be unique and must fit to the used network. The IP address 0.0.0.0 indicates that no IP address has been adjusted yet.	<i>IP-Address</i>	<i>IP-Address</i>	valid IP-Address
Protocol	⑧	Protocol by which the device has been found.	<i>DCP</i>	<i>NetIdent</i>	DCP, NetIdent, NetIdentV2
Device ID	⑨	Identification number of the device, is fixed by the manufacturer for every device.	<i>Device ID</i>	-	0x00000000 ... 0xFFFFFFFF (hex)
Vendor ID	⑩	Identification number of the vendor, assigned by PROFIBUS Nutzerorganisation e. V.	<i>Vendor ID</i>	-	0x00000000 ... 0xFFFFFFFF (hex)
Device Role	⑪	Textual description on the function the device has on the network.			"Device", "Controller", "Multidevice", "Supervisor"

Table 2: Parameters of found Devices

First select a line. Then via **Configure ⑬** you get to the configuration dialog.

5.1 Search Device within Table

In order to search the device, proceed as follows:

- Put in the string to be searched at **Find** ①.

If the table is large, you can search within the table for any sequence of characters appearing within one single column.

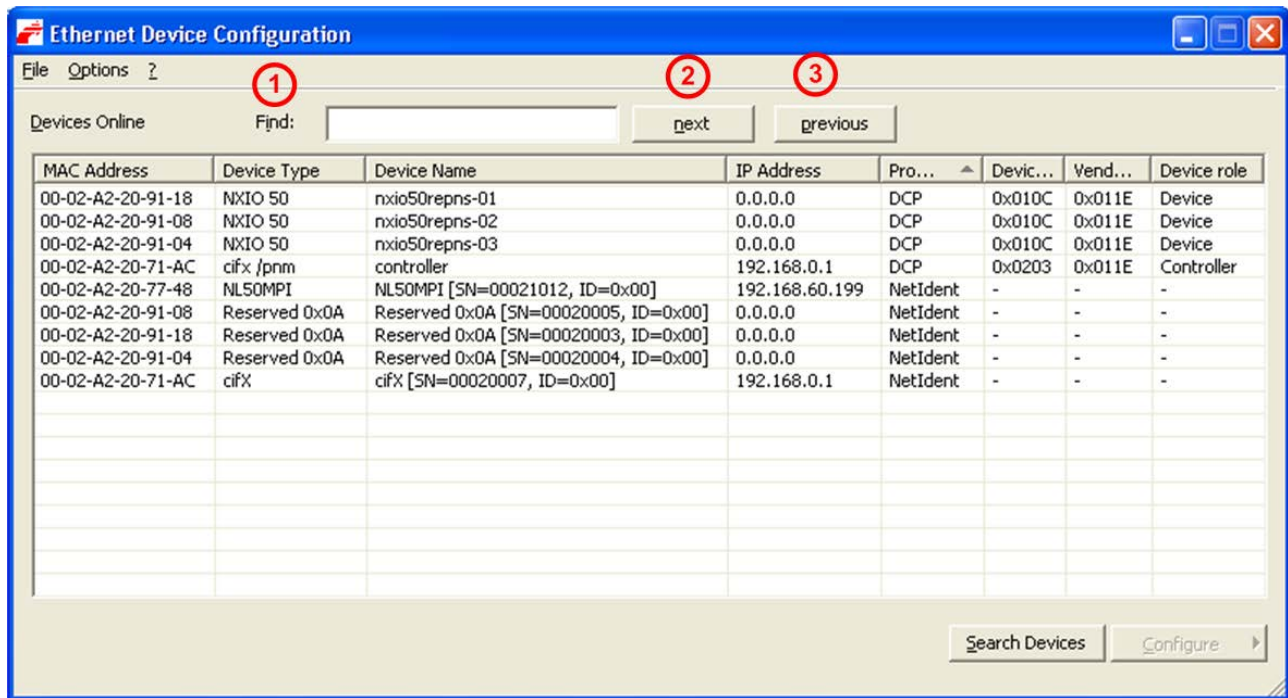


Figure 12: Found Devices

- Using **next** ② you can find the next entry in the table matching the search string (Direction of search: downwards).
- Using **previous** ③ you can find the next entry in the table matching the search criteria (Direction of search: upwards).

Sorting the Table

By a mouse click at a field at the head line of the table, you can force sorting the lines in alphanumerically ascending or descending order according to the entries of the selected column .

- To sort the entries within a column, click on the respective column header.

6 Adjusting Addresses

6.1 Adjust Device Name (Station Name) and IP Address by DCP Protocol



Note: The *DCP protocol* is supported by PROFINET compatible devices. It is used to identify PROFINET compatible devices and to read out or to change the station name and the IP address of these devices.

Using the *DCP protocol* you can newly assign the **IP Address** or the **Station Name** of a device or you can change an already configured IP address or station name. Therefore:

1. Open the initial screen as described in section *Starting Ethernet Device Configuration* on page 14.
2. Select **Options > Protocols** and check **DCP**.
3. Click on **Search Devices** in the initial screen.
4. Select for the concerned device within the table **Devices Online** a line with the entry "*DCP*" in the **Protocol** column **8**.

MAC Address	Device Type	Device Name	IP Address	Protocol	Device ID	Vendor ID	Device role
00-02-A2-20-91-18	NXIO 50	nxio50repns-01	0.0.0.0	DCP	0x010C	0x011E	Device
00-02-A2-20-91-08	NXIO 50	nxio50repns-02	0.0.0.0	DCP	0x010C	0x011E	Device
00-02-A2-20-91-04	NXIO 50	nxio50repns-03	0.0.0.0	DCP	0x010C	0x011E	Device
00-02-A2-20-91-18	Reserved 0x0A	Reserved 0x0A [SN=00020003, ID=0x00]	0.0.0.0	NetIdent	-	-	-
00-02-A2-20-91-04	Reserved 0x0A	Reserved 0x0A [SN=00020004, ID=0x00]	0.0.0.0	NetIdent	-	-	-
00-02-A2-20-71-AC	cifX	cifX [SN=00020007, ID=0x00]	192.168.0.1	NetIdent	-	-	-
00-02-A2-20-91-08	Reserved 0x0A	Reserved 0x0A [SN=00020005, ID=0x00]	0.0.0.0	NetIdent	-	-	-
00-02-A2-20-71-AC	cifX /pnm	controller	192.168.0.1	DCP	0x0203	0x011E	Controller
00-02-A2-20-77-48	NL50MPI	NL50MPI [SN=00021012, ID=0x00]	192.168.60.199	NetIdent	-	-	-

Figure 13: Found Devices, DCP protocol

5. Open the configuration dialog:

- Click **Configure** ⑬.
- Or open the context menu via right click on the table line of the found device.
- You have the following **DCP configuration possibilities**:

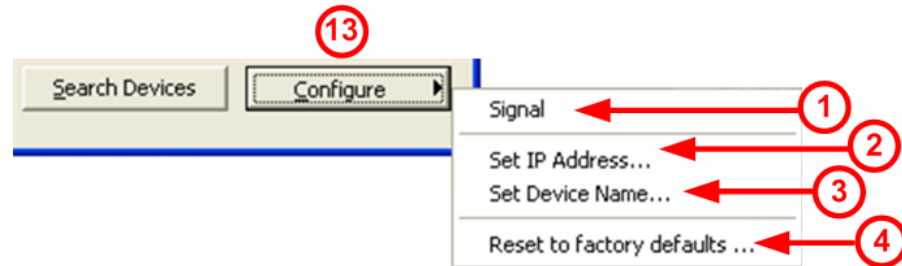


Figure 14: DCP Configuration Possibilities

- **Signal** ①

- The LED at the Ethernet connector of the selected device blinks for a view seconds. Thus, the device can be identified from a number of devices.

- **Set IP Address...** ②

- The dialog window **IP Configuration for ...** is displayed, see section *Set IP Address* on page 24.

- **Set Device Name...** (=station name) ③

- The dialog window **Name Configuration for...** is displayed, see section *Set Device Name (Station Name)* on page 22.

- **Reset to factory defaults...** ④

- Adjustments made at the device are reset to the factory defaults.

6.1.1 Set Device Name (Station Name)



Note: The station name must comply with the PROFINET specification [1]. Forbidden signs (e. g. blanks) must not be used in the name.

To set the device name for a device via the *DCP protocol* either for the first time or to change an already present name, proceed as described hereafter:

1. Click **Configure > Set Device Name...** (see figure *DCP Configuration Possibilities* on page 21).

➤ The following dialog window will open:



Figure 15: DCP Set Device Name

2. Under **Name of station** ① you can specify the device name according to the PROFINET specification [1].
3. Check **Store settings temporary** ② if the station name should only be stored temporarily (if the used device supports that functionality).
4.
 - Click **OK** ③, to transmit the settings into the device and to close the **Name Configuration for...** dialog window.
 - Or click **Cancel** ④ to close the **Name Configuration for...** dialog window without transmitting any settings into the device.



Note: For PROFINET IO Controller devices a change of the device name can be rejected. Then an error message is displayed.



Figure 16: Error when setting Name of Station

6.1.1.1 Device Name according to PROFINET „Name of Station“ Specification

The device name must comply with the coding rules following excerpt from the PROFINET specification [1] for the „Name of Station“.

A Name of Station:

- has a **length** of 1 ... 240 *characters*.
- may consist of one or more **labels**, which are 1 ... 63 *characters* long and which are separated by dots.

The point is the separator between labels).

- must contain only **valid characters**:

a – z *lower case letters,*

0 – 9 *digits,*

- *Minus sign,*

. *Point.*

The *point* is the separator between labels.

The *minus sign* must not be used as the start or end character.

The *minus sign* must not be used before or after a dot.

The *Name of Station* must not begin or end with a point.

Invalid characters are, for example, capital letters and spaces.

Source [1] (see section *References* on page 38): *PNO document 2722*, section 4.3.1.4.15.1, on page 10073f.

6.1.2 Set IP Address

Usually the IP address is statically during the configuration. Later on, the PROFINET IO Controller will assign an IP address via the station name. If the used device supports the IP address assignment via a DHCP server, you can choose between static IP address assignment and taking over the IP address from a DHCP server.

- Click **Configure > Set IP Address...** (see figure *DCP Configuration Possibilities* on page 21).

➤ The following dialog window is displayed:

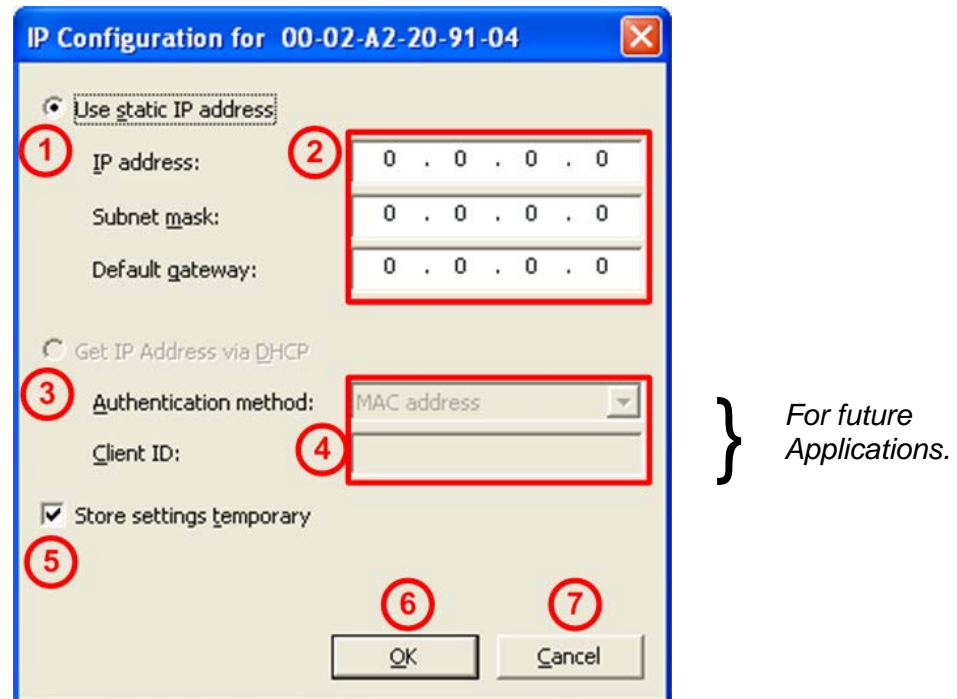


Figure 17: IP Configuration for ...

6.1.2.1 Use static IP address

1. Select **Use static IP address** ①, to adjust the static IP address (see figure *IP Configuration for ...* on page 24).

For the selected device set under ②:

- Under **IP address** set the IP address.
- Under **Subnet mask** set the Subnet mask.
- Under **Default gateway** set the Default gateway.

2.

- Check **Store settings temporary** ⑤ to specify whether these settings should be applied to the device temporarily.



Note: If the IP address, subnet mask and gateway address are set "only temporarily", after a device reset the settings are no longer stored in the device.

- Or uncheck **Store settings temporary** ⑤ to specify whether these settings should be applied to the device permanently (if the used device supports this).



Note: The PROFINET IO-Controller can assign a new IP address to the PROFINET IO-Device during the start of the PROFINET network.

3.

- Click **OK** ⑥, to load the settings into the device and to close the **IP Configuration for...** dialog.



Note: Depending on the device the transfer of the IP address may take some time. During this time the dialog **IP Configuration for...** remains open. Canceling an active transmission via **Cancel** does not guarantee the new IP address setting is being discarded by the device.

- Or Click **Cancel** ⑦ to close the **IP Configuration for...** dialog window without loading any settings into the device.



Note: For PROFINET IO Controller devices a change of the IP address can be rejected. Then an error message is displayed.



Figure 18: Error when setting IP Address

6.1.2.2 Get IP Address via DHCP (for future Applications)

1. Select **Get IP Address via DHCP** ③ (see figure *IP Configuration for ...* on page 24).
 - The area to specify the static IP address is grayed out.
2. Under ④ select how to identify the device, via **MAC Address**, **Device Name** or by **Client ID**.
3.
 - Check **Store settings temporary** ⑤ to specify whether these settings should be applied to the device temporarily.
 - Or uncheck **Store settings temporary** ⑤ to specify whether these settings should be applied to the device permanently (if the used device supports this).



Note: The PROFINET IO-Controller can assign a new IP address to the PROFINET IO-Device during the start of the PROFINET network.

4.
 - Click **OK** ⑥, to load the settings into the device and to close the **IP Configuration for...** dialog.



Note: Depending on the device the transfer of the IP address may take some time. During this time the dialog **IP Configuration for...** remains open. Canceling an active transmission via **Cancel** does not guarantee the new IP address setting is being discarded by the device.


- Or click **Cancel** ⑦ to close the **IP Configuration for...** dialog window without loading any settings into the device.

6.2 Adjust IP Address by NetIdent Protocol



Note: The *NetIdent* protocol is only supported by Hilscher devices. It is used to identify TCP/IP devices and to set IP addresses.

Using the *NetIdent protocol* you can read out the **IP address** from a device or change the IP address. Therefore proceed as follows:

1. Open the initial screen as described in section *Starting Ethernet Device Configuration* on page 14.
2. Select **Options > Protocols** and check **NetIdent**.
3. Click on **Search Devices** in the initial screen.
4. Select for the concerned device within the table **Devices Online** the line with the entry “*NetIdent*” in the **Protocol** column .

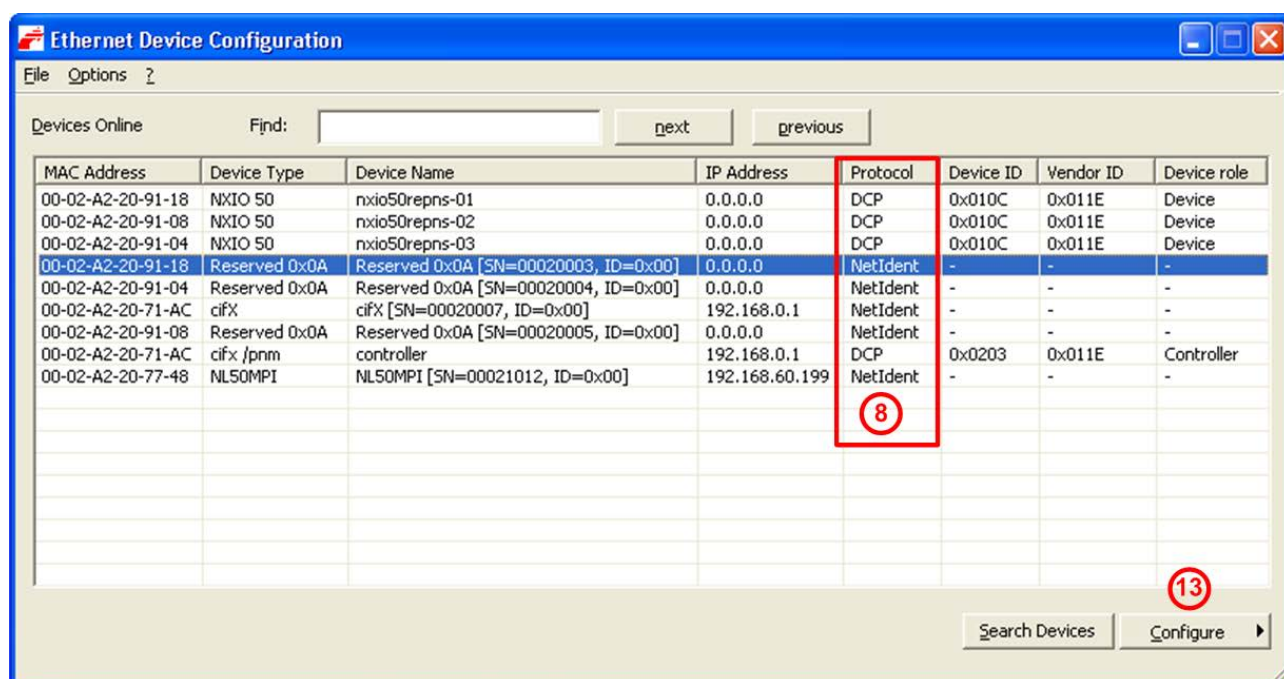


Figure 19: Found Devices, using NetIdent Protocol

5. Click **Configure** **13** > **Set IP address**

➤ The following dialog window is displayed:

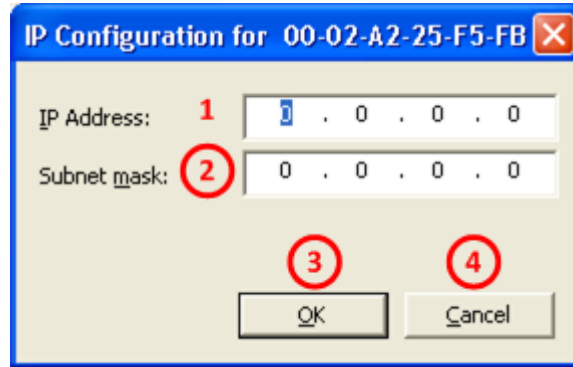


Figure 20: Set NetIdent IP Address and Subnet mask.

6. Specify the **IP Address** ① to be assigned to the device.
7. Specify the **Subnet mask** ② for the device.
8. Click at **OK** ③.

➤ The IP address and the subnet mask are transferred to the device.



Important! The IP address is only temporarily adjusted. To save the IP address permanently a configuration must be downloaded. For further information to the configuration download refer to the *SYCONnet_netDevice_OI XX EN.pdf* user manual.

9. Alternatively, you can leave the dialog by clicking at **Cancel** ④ without any transfer of the data.



Note: Depending on the device the transfer of the IP address can take up to 40 seconds. During this time the dialog remains open. Canceling an active transmission via **Cancel** does not guarantee the new IP address setting is being discarded by the device.

6.3 Device Configuration for NetIdentV2 Protocol



Note: The *NetIdentV2* protocol represents an extension of the *NetIdent* protocol. The *NetIdentV2* protocol is only supported by Hilscher devices. It is used to identify TCP/IP devices, to set IP addresses and to perform further steps for the device configuration.

Using the *NetIdentV2 protocol* you can newly assign the **IP Address** or the **Device Name** of a device or you can change an already configured IP address or device name.

6.3.1 Selecting Protocol, Opening Configuration Dialog

Therefore:

1. Open the initial screen **Ethernet Device Configuration** as described in section *Starting Ethernet Device Configuration* on page 14.
2. Select **Options > Protocols** and check **NetIdentV2**.
3. Click on **Search Devices** in the initial screen.
4. Select for the concerned device within the table **Devices Online** the line with the entry "*NetIdentV2*" in the **Protocol** column **8**.

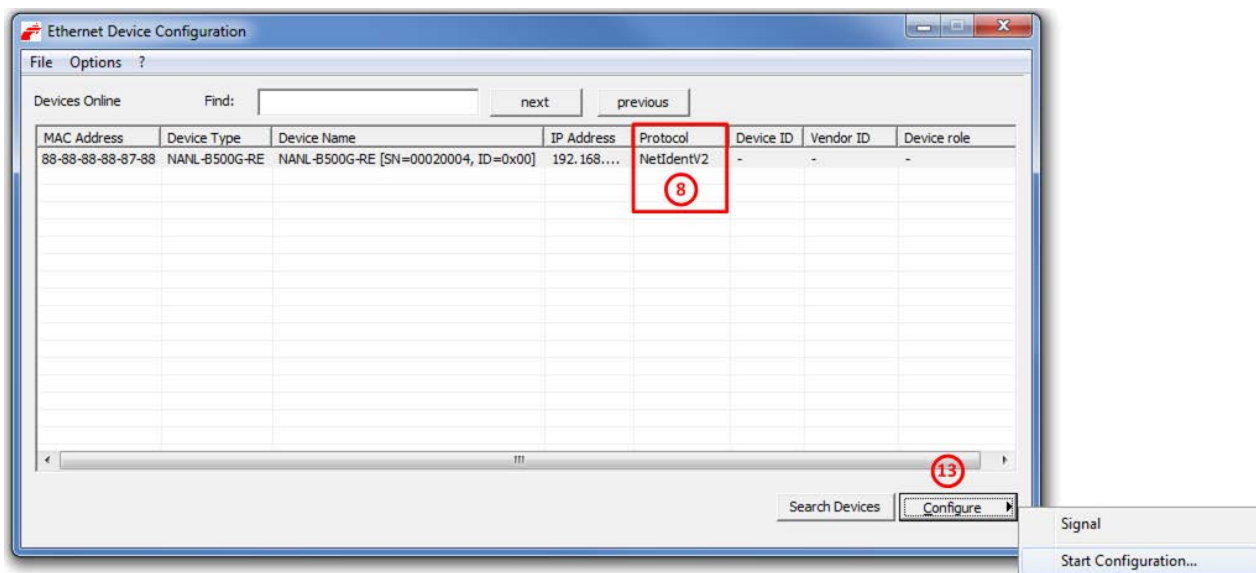


Figure 21: Found Devices, NetIdentV2 Protocol

5. Open the configuration dialog:

- Click **Configure** ¹³.
- Or open the context menu via right click on the table line of the found device.
- You have the following **NetIdentV2 configuration possibilities**:



Figure 22: NetIdentV2 Configuration Possibilities

- **Signal** ¹

➤ The LED at the Ethernet connector of the selected device blinks for a view seconds. Thus, the device can be identified from a number of devices.

- **Start Configuration...** ²

➤ The dialog window **Property Configuration ...** is displayed:

For more see section *Property Configuration (NetIdentV2)* on page 30.

6.3.2 Property Configuration (NetIdentV2)

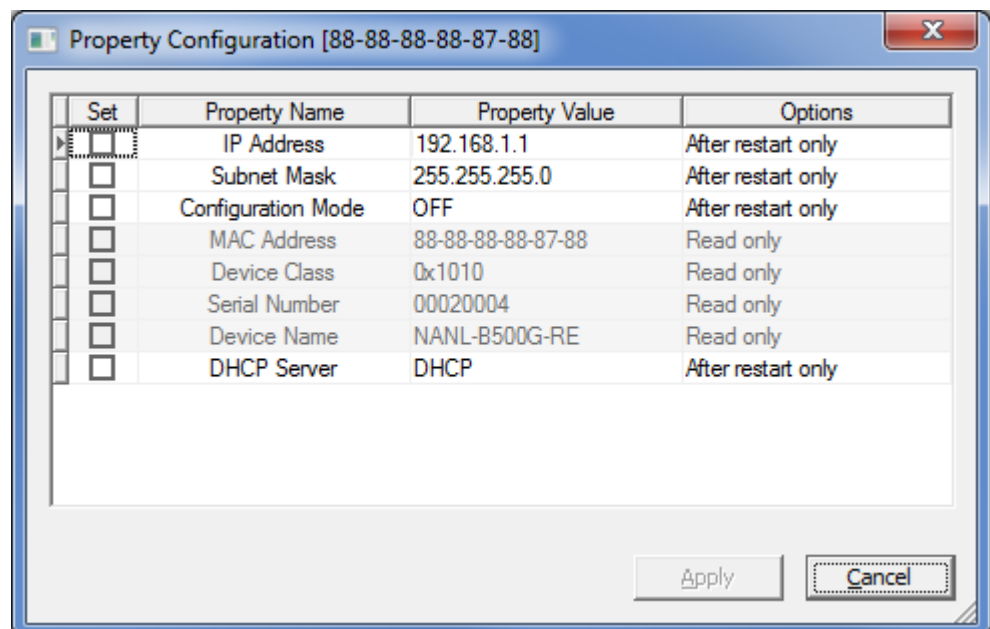


Figure 23: Property Configuration (NetIdentV2) – Example DHCP Server



Note: Depending on your device's scope of functionality the **Property Configuration** window displays the properties reported by your device. Also the selection lists for **Configuration Mode** or **DHCP Server** may contain different numbers of entries or the **Device Name** is editable or 'read only'.

In the **Property Configuration** pane you can make the following settings:

Property Name	Description	Property Value	Options
IP Address	Editable IP address of the device. The IP address must be unique and must match the used network. The IP address 0.0.0.0 indicates that the IP address has been set not yet.	valid IP address	Temporary, After restart only, Permanent with immediate effect
Subnet Mask	Editable subnet mask of the device.	Valid network mask	
Gateway*	Editable gateway address of the device . For example, 192.168.10.10	Valid gateway address	
Configuration Mode	For the device editable configuration mode. For 'OFF' the IP address must be manually entered. To obtain an IP address automatically 'DHCP' or 'BOOTP' must be selected.	OFF, DHCP, BOOTP	
Reference ID*	Not modifiable reference ID of the device	(read only)	(read only)
MAC Address	MAC address (= MAC-ID) of the device. It corresponds to the in case of delivery by the manufacturer assigned unique (physical) Ethernet address of the device.		
Device Class	Device class to which the machine counts.		
Serial Number	Serial number of the device as specified by the manufacturer.		
Device Name	Editable device name. Depending on the device type, the device name is fixed and can not be edited.	String, 1 ... 240 characters	Temporary, After restart only, Permanent with immediate effect
DHCP Server	As a DHCP server, the device itself assigns IP addresses to other devices.	OFF, DHCP, BOOTP, DHCP & BOOTP	

Table 3: Property-Konfiguration (NetIdentV2) – Parameter und Eigenschaften

* Not displayed in the example in figure *Property Configuration (NetIdentV2) – Example DHCP Server* on page 30

Options	Description
Temporary	The configuration is stored temporary and must be re-set after a restart of the device.
After restart only (Permanent, but only takes effect after restart)	The configuration is stored permanently. But it will not take effect until after a reboot of the device.
Permanent with immediate effect	The configuration is stored permanently. It takes effect immediately.

Table 4: Property-Konfiguration (NetIdentV2) – Options

6.3.2.1 Configuration Modes

When using the NetIdentV2 protocol, you can choose from the following configuration modes for your device:

- **Static IP Address** (*manual assignment*)
A fixed IP address is assigned to the device. The user must manually assign the IP address designated.
- **DHCP Client Mode** (*external DHCP Server required*)
The IP address is assigned to the device. Using the DHCP protocol the device gets automatically an IP address from the external DHCP server.
- **BOOTP Client Mode** (*external BOOTP Server required*)
The IP address is assigned to the device. Using the BOOTP protocol the device gets automatically an IP address from the external BOOTP server.
- **DHCP Server Operation** (*device operates as DHCP server*)
As a DHCP server, the device assigns itself IP addresses to other devices. The IP address for the device with integrated DHCP server must be set manually.



Important: As a device operates as a DHCP server, this device must not be inserted via a switch or hub directly into a corporate network with other devices. Otherwise, this may lead to wrong assignment of IP addresses and malfunction. A device with an integrated DHCP server itself assigns IP addresses to other devices. Use devices that work as a DHCP server exclusively with a laptop or a PC with a separate network card.



Note: For the DHCP server operation mode you must set your LAN connection to (IP V4) **Automatically obtain IP address**.

6.3.2.2 Settings in the Property Configuration Pane

In the Property Configuration pane configure the IP address and the subnet mask (or, optionally, the gateway address) depending on the mode or whether your device shall act as a DHCP server:

- Mode **Statistic IP-Address** (*manual assignment*)
 - **Configuration Mode:** ,OFF'
 - **DHCP Server:** ,OFF', ,DHCP', ,BOOTP' or ,DHCP & BOOTP'.
- Mode **DHCP Client Mode** (*external DHCP Server required*)
 - **Configuration Mode:** ,DHCP'
 - **DHCP Server:** ,OFF'
- Mode **BOOTP Client Mode** (*external BOOTP Server required*)
 - **Configuration Mode:** ,BOOTP'
 - **DHCP Server:** ,OFF'
- Mode **DHCP Server Operation** (*device operates as DHCP server*)
 - **Configuration Mode:** ,BOOTP'
 - **DHCP Server:** ,DHCP', ,BOOTP' or ,DHCP & BOOTP'.
- Under **Set** hook the properties to be applied.

6.3.3 Proceeding in the Example

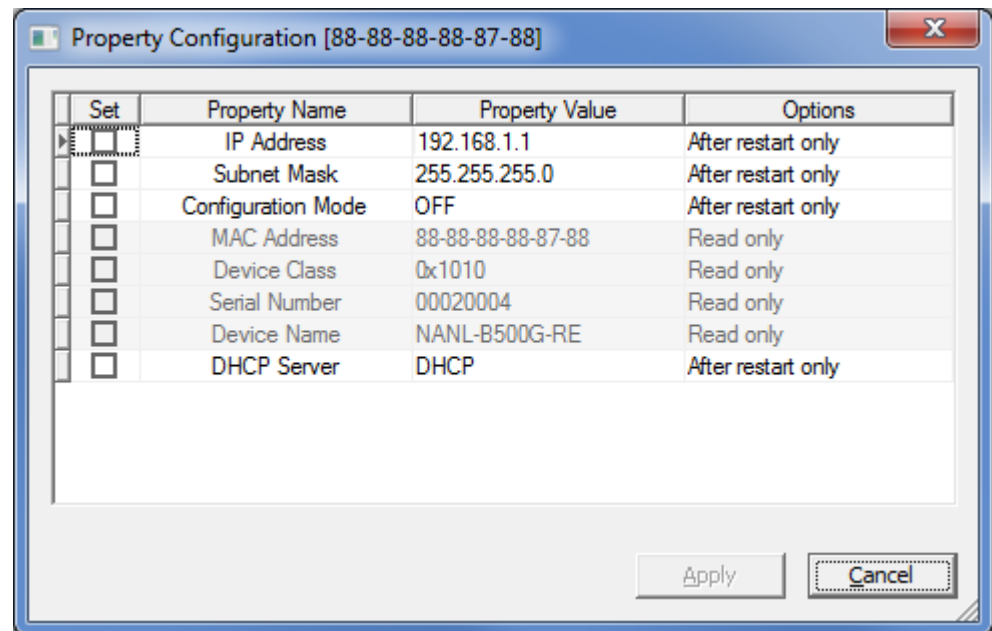


Figure 24: Property Configuration (NetIdentV2) – Example DHCP Server

In the example in figure *Property Configuration (NetIdentV2) – Example DHCP Server* on page 33 the settings (properties) of a device are shown which operates by default as a DHCP server. If for this device, the IP address shall be *set manually* (case A) or *assigned by an external DHCP server* (case B) proceed as described in the following sections.

6.3.3.1 Case A: Setting the IP Address manually

1. Setting the IP Address manually:
 - In the line **IP Address** in the column **Property Value** set the IP address *manually*.

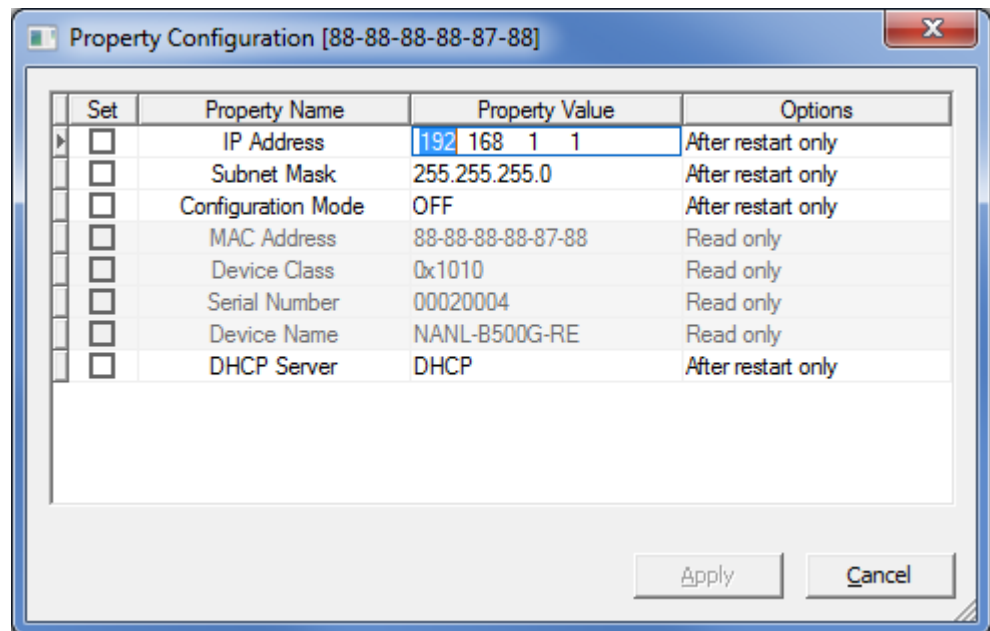


Figure 25: Property Configuration (NetIdentV2) – Example DHCP Server

- In the column **Set** check the line **IP Address**.

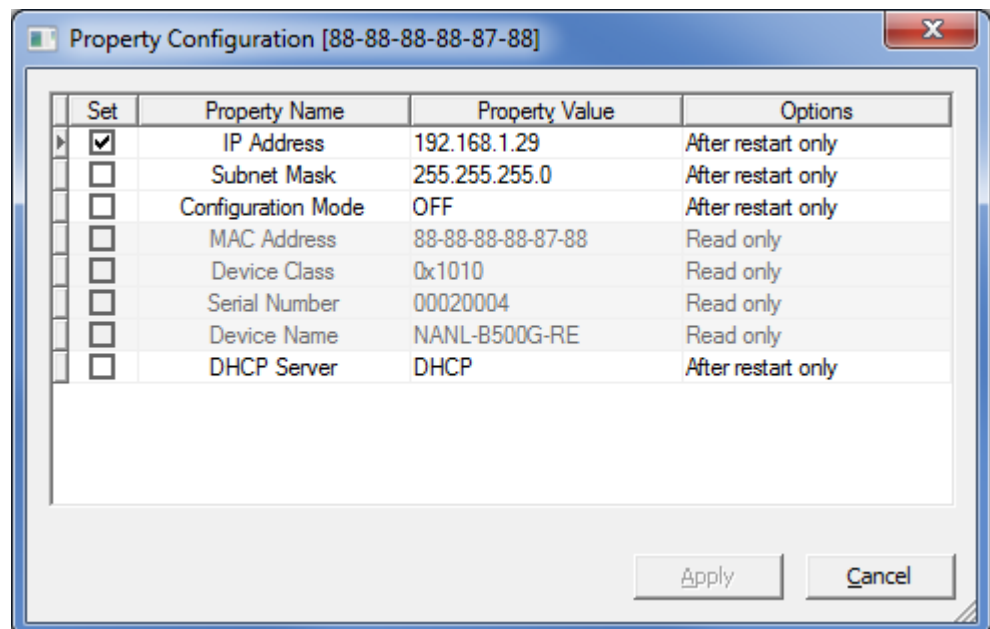


Figure 26: Property Configuration (NetIdentV2) – Example DHCP Server

- In the line **Subnet Mask** in the column **Property Value** respectively *manually* set the subnet mask.

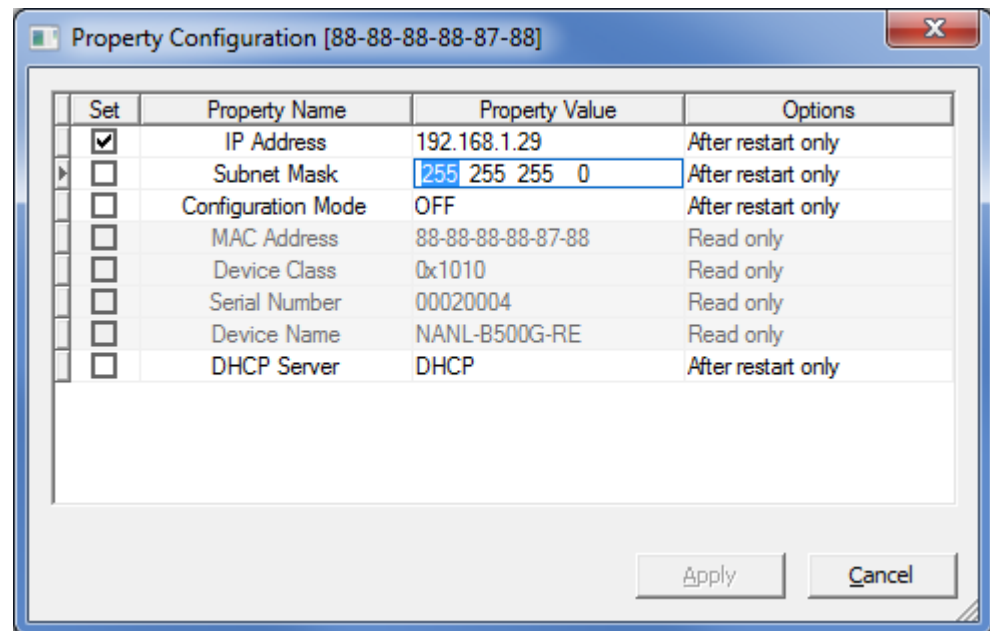


Figure 27: Property Configuration (NetIdentV2) – Example DHCP Server

- In the column **Set** check the line **Subnet Mask**.

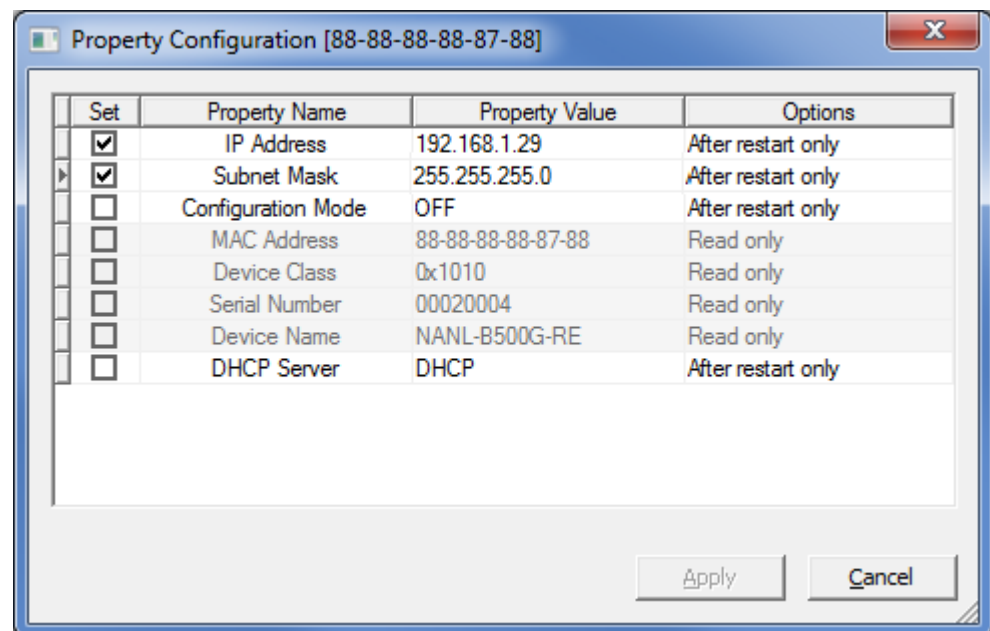


Figure 28: Property Configuration (NetIdentV2) – Example DHCP Server

2. Deactivating the DHCP Server
 - In the line **DHCP Server** in the column **Property Value** select **OFF**.
 - In the column **Set** check the line **DHCP Server**.
3. Click **Apply**, to apply the IP address, the subnet mask and the settings for the DHCP server.
- The changed configuration is applied to the device. A message appears stating that the configuration has been set successfully.

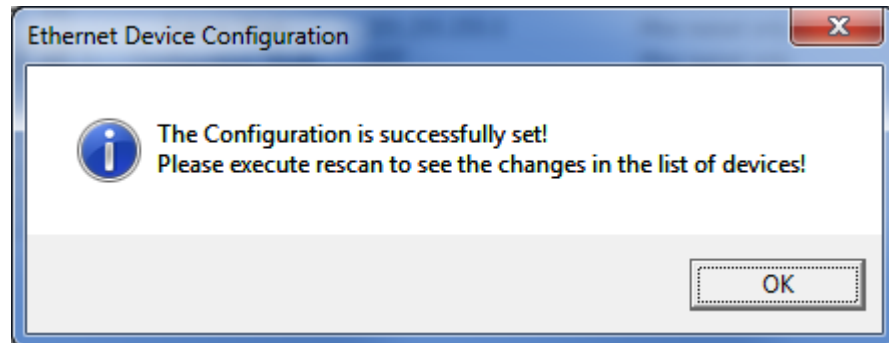


Figure 29: Message – Configuration has been set successfully

- Click **OK** and in the initial screen click **Search devices**.
- The changes are displayed in the device list.

6.3.3.2 Case B: Getting IP Address from an external DHCP Server

1. Set Configuration Mode
 - In the line **Configuration Mode** in the column **Property Value** select **DHCP**.
 - In the column **Set** check the line **Configuration Mode**.
2. Activating the DHCP Server
 - In the line **DHCP Server** in the column **Property Value** select **DHCP**.
 - In the column **Set** check the line **DHCP Server**.

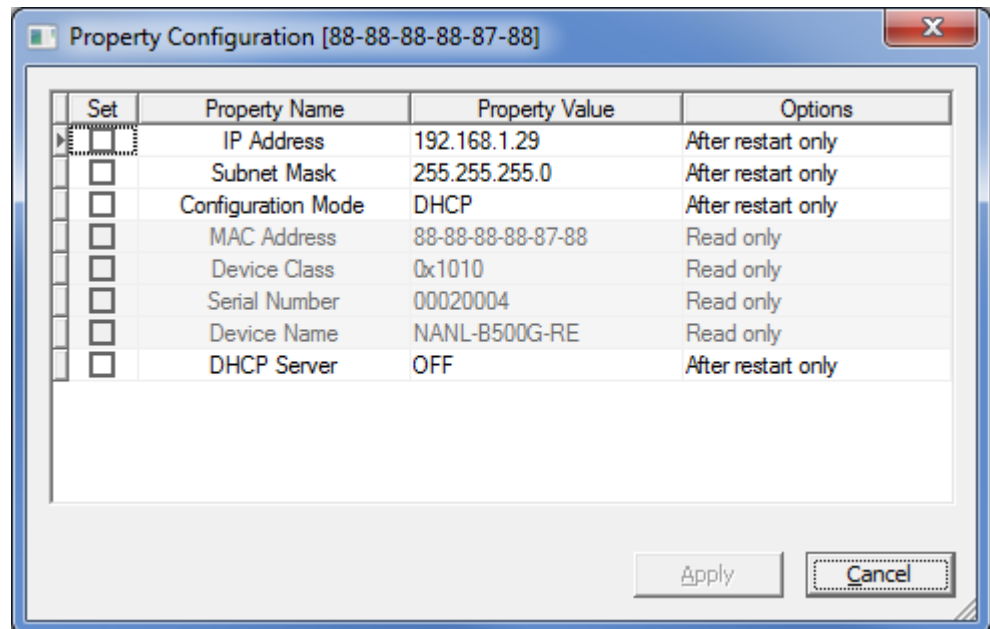


Figure 30: Property Configuration (NetIdentV2) – Example DHCP Server

3. Click **Apply**, to apply the configuration.
 - The changed configuration is applied to the device. A message appears stating that the configuration has been set successfully.

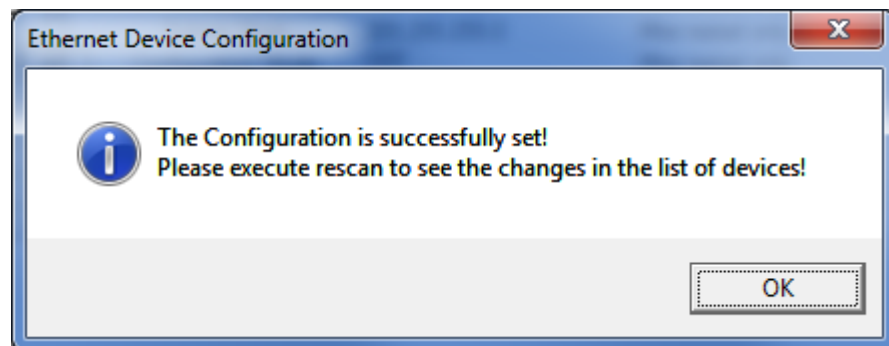


Figure 31: Message – Configuration has been set successfully

- Click **OK** and in the initial screen click **Search devices**.
- The changes are displayed in the device list.

7 Appendix

7.1 References

- [1] Application Layer protocol for decentralized periphery and distributed automation, Technical Specification for PROFINET, Version 2.3, October 2010, Order No: 2.722, PROFIBUS Nutzerorganisation e.V., Karlsruhe

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7.4 Glossary of Terms

DCP

Discovery and basic Configuration Protocol

The Discovery and basic Configuration Protocol (DCP) is a protocol for identifying and configuring devices which is defined within the PROFINET specification.

DHCP

Dynamic Host Configuration Protocol

This is a protocol simplifying the configuration of IP networks by automatically assigning IP addresses.

Ethernet

A networking technology used both for office and industrial communication via electrical or optical connections. It has been developed and specified by the Intel, DEC and XEROX. It provides data transmission with collision control and allows various protocols. As Ethernet is not necessarily capable for real-time application, various real-time extensions have been developed (Industrial Ethernet, Real-Time Ethernet).

IP

Internet Protocol.

IP belongs to the TCP/IP family of protocols and is defined in RFC791. It is based on layer 3 of the ISO/OSI 7 layer model of networking.

It is a connectionless protocol, i.e. you do not need to open a connection to a computer before sending an IP data packet to it. Therefore IP is not able to guarantee that the IP data packets really arrive at the recipient. On IP level neither the correctness of data nor the consistence and completeness are checked.

IP defines special addressing mechanisms, see IP Address.

IP Address

An IP address is an address identifying a device or a computer within a network using the IP protocol. IP addresses are defined as a 32 bit number. Usually, for ease of notation the IP address is divided into four 8 bit numbers which are represented in decimal notation and separated by points:

a.b.c.d

where a.b.c.d are each integer values between 0 and 255.

Example: 192.168.30.15

However, not all combinations are allowed, some are reserved for special purposes.

The IP address 0.0.0.0 is defined as invalid.

MAC-ID

MAC = Media Access Control

A MAC-ID is on delivery a unique (physical) Ethernet address of the device.

MAC-IDs are defined as a 48 bit number. Usually, for ease of notation the MAC-ID address is divided into six 8 bit numbers which are represented in hexadecimal notation and separated by “minus”-signs (-):

A-B-C-D-E-F

where A-B-C-D-E-F are each integer values between 0 and 255.

Example: 00-02-A2-20-91-18

NetIdent

A protocol for identifying and configuring devices which has been developed by Hilscher and used in several Hilscher products.

NetIdentV2

NetIdentV2 provides an upgrading of NetIdent.

PROFINET

A communication system for Industrial Ethernet designed and developed by PROFIBUS International. It uses some mechanisms similar to those of the PROFIBUS field bus.

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