

SIEMENS

SIMATIC NET

Primary Setup Tool

Configuration Manual

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
NOTICE
indicates that an unintended result or situation can occur if the corresponding information is not taken into account.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

1.1 Content of the documentation

Installation and operation

This document describes the installation and operation of the SIMATIC NET Primary Setup Tool. It also covers the installation of the DLC protocol that the Primary Setup Tool uses for communication with the modules.

Validity of the documentation

This manual applies to the Primary Setup Tool as of version 4.0.

Description

2.1 Availability and operating systems supported

Primary Setup Tool on the Internet and on CD

The Primary Setup Tool is available from Siemens Automation and Drives Service & Support on the Internet at the following URL:

<http://support.automation.siemens.com/WW/view/en/19440762>

With some devices, the Primary Setup Tool is included on the accompanying CD as part of the product.

Supported operating systems

The Primary Setup Tool can be installed and executed under the following operating systems:

- Windows Vista Business / Enterprise / Ultimate
- Windows XP Professional SP2 and SP3

DCP protocol and DLC protocol

The Primary Setup Tool uses the protocols DCP (**D**iscovery and basic **C**onfiguration **P**rotocol) and DLC (**D**ata **L**ink **C**ontrol) for communication with the modules. The DLC protocol is necessary for devices with older firmware versions. Depending of the operating system you are using, remember the following if you want to use the DLC protocol:

- Windows Vista Business / Enterprise / Ultimate
The DLC protocol is not supplied with Windows Vista but it can be installed and enabled during installation of the PST Tool.
Hardware requirements: Clock frequency 1 GHz / 1 GB RAM / screen resolution 1024 x 768 / color quality 16 bit
- Windows XP Professional
The DLC protocol is not supplied with Windows XP but it can be installed and enabled during installation of the PST Tool.
Hardware requirements: Clock frequency 600 MHz / 512 MB RAM / screen resolution 1024 x 768 / color quality 16 bit

Software installation

3.1 Installing the Primary Setup Tool

Unzip the archive file

The files for installing the Primary Setup Tool are located in the self-extracting ZIP archive. Follow the steps below to unzip the files of this archive:

1. In Windows Explorer, double click on the file name *PST_Vx.y.exe* or start the program from the Windows menu *Start > Run*.
2. In the dialog box of the extraction program, select the directory to which the files should be unzipped and then click on the *Extract* button.

Installation

Follow the steps below to install the Primary Setup Tool on your computer:

1. In Windows Explorer, double click on the file name *setup.exe* in the *PST_Vx.y* directory, or start the program from the Windows *Start > Run* menu.
2. In the *SIMATIC NET - PST Setup* dialog box, select the language in which you want to run the installation and click on the *Next >* button.
The *User Information* dialog opens.
3. Enter the *user name* and *organization* and click on the *Next >* button.
The *Programs* dialog opens.
4. Accept the default destination directory or select the destination directory you want to use with the *Browse...* button.
5. Start the installation by clicking on the *Next* button.
6. If the DLC protocol is not yet installed on the computer, information to this effect is displayed.
If you confirm this dialog, the DLC protocol is installed on your computer.
This makes it unnecessary to install the DLC protocol manually.
7. The final dialog box informs you of successful installation. Click on the *Exit* button to close the dialog box.
8. After installing *PST Vx.y*, start the tool under *Start\SIMATIC\Primary Setup Tool*.

Installing the DLC protocol

Note

If you did not install the DLC protocol when you installed the Primary Setup Tool and want to install it now, double-click on the entry "DLC protocol not installed" in the status bar and follow the instructions.

Functions

4.1 User interface and menu commands

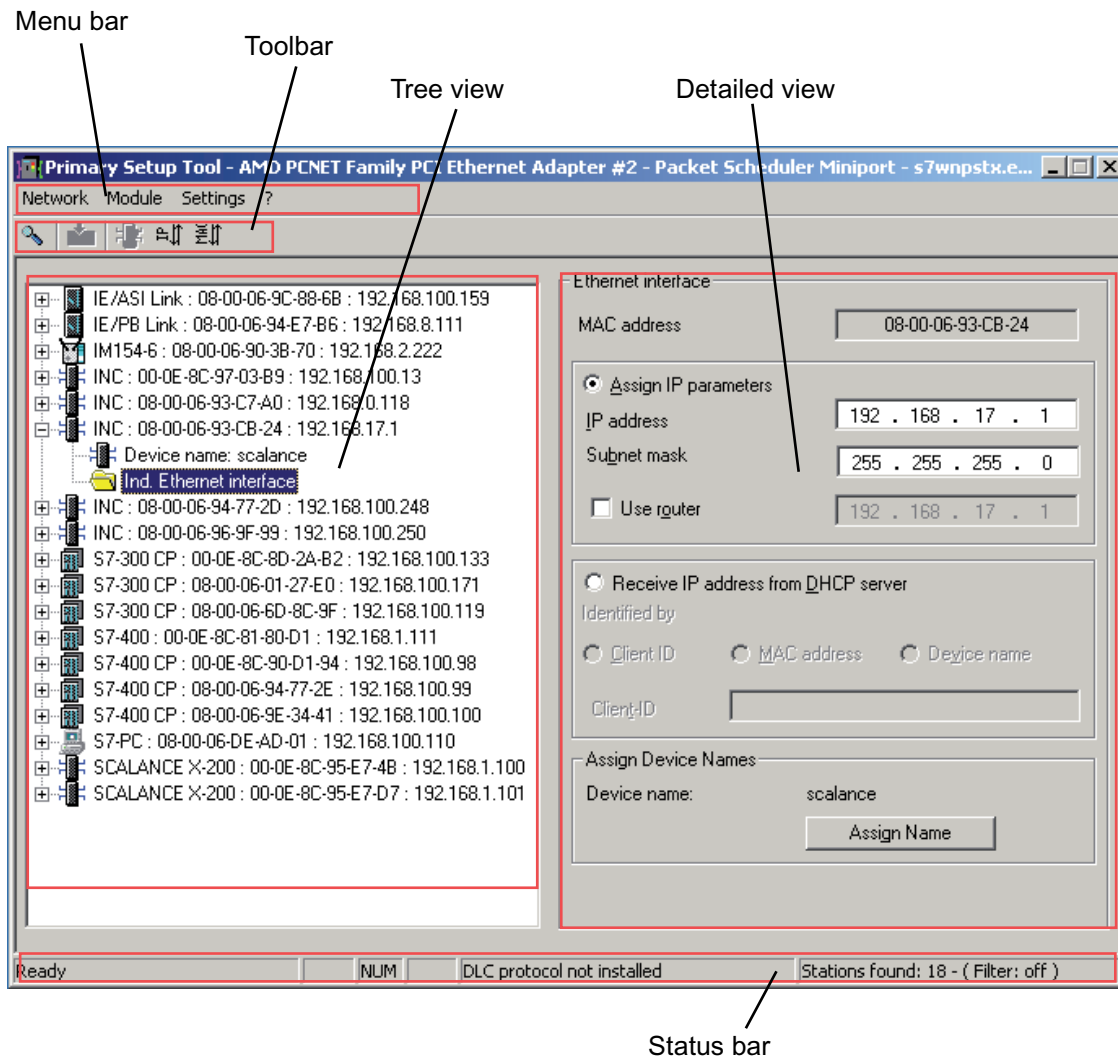


Figure 4-1 User interface

If you select an object in the tree view, the detailed view displays further information on this object

Menu bar

Below you will find an overview of the available menu commands and their meaning.

Menu command	Meaning / remark	Shortcut
Network ►...		
Browse	Browses the network for stations	F5
Exit		
Module ►...		
Download	Downloads the configuration data to the module	
Start INC Browser	Starts Web Based Management of a selected module	
Remove module	Removes a device from the tree view	
Assign Device Names	Assigns/changes the name of a module (assuming that the selected device supports this function)	
Flash	Makes the port LEDs of a selected module flash (to localize the module)	
Reset	Resets a selected device to the factory settings	
Settings ►...		
Network Adapter	Selects the network adapter for access	
Language	Selects the user interface language of the Primary Setup Tool (this requires the Primary Setup Tool to be restarted)	
Select Filter...	Selects a filter for displaying the stations found	
? ►...		
About...	Information on the Primary Setup Tool	
Tips...	Opens the "Readme" of the Primary Setup Tool	
Manual	Opens the manual (PDF file)	

4.2 Settings for the Primary Setup Tool

Selecting the language

After you start the Primary Setup Tool for the first time, a dialog box appears in which you can make the language settings for the program. You can, however, also set the language later in the *Settings > Languages* menu.

Selecting the network adapter

If you have installed more than one network adapter in your computer, you can open the *Settings > Network Adapter* menu and select the adapter that will be used by the Primary Setup Tool to access the network. This menu displays a maximum of 10 network adapters.

4.3 Working with the Primary Setup Tool

Browsing the network

Before you assign an IP address or a device name with the Primary Setup Tool, you first identify the configurable devices in the network. Follow the steps below to start browsing:

- Select the *Network > Browse* menu command.
- Press the *F5* key.
- Click on the magnifier button in the toolbar below the menu bar.

While the Primary Setup Tool browses the network, the *Browse network* dialog appears with a progress bar. When it has completed browsing, the Primary Setup Tools displays a list of all the devices it has found in the left-hand window.

Configuring a module

If you click on an entry in the list, the Primary Setup Tool displays information about the selected device in detailed view.

Follow the steps below to configure a device:

1. Click on the plus sign beside a device icon and select the device or double-click on a device icon to display all the interfaces of the device.
2. Click on the interface you want to configure. In the right-hand half of its program window, the Primary Setup Tool opens the dialog in which you set the configuration data. Text boxes or check boxes may be disabled depending on the selections you make. The *MAC address* box is always disabled, because this address cannot be changed by the Primary Setup Tool.

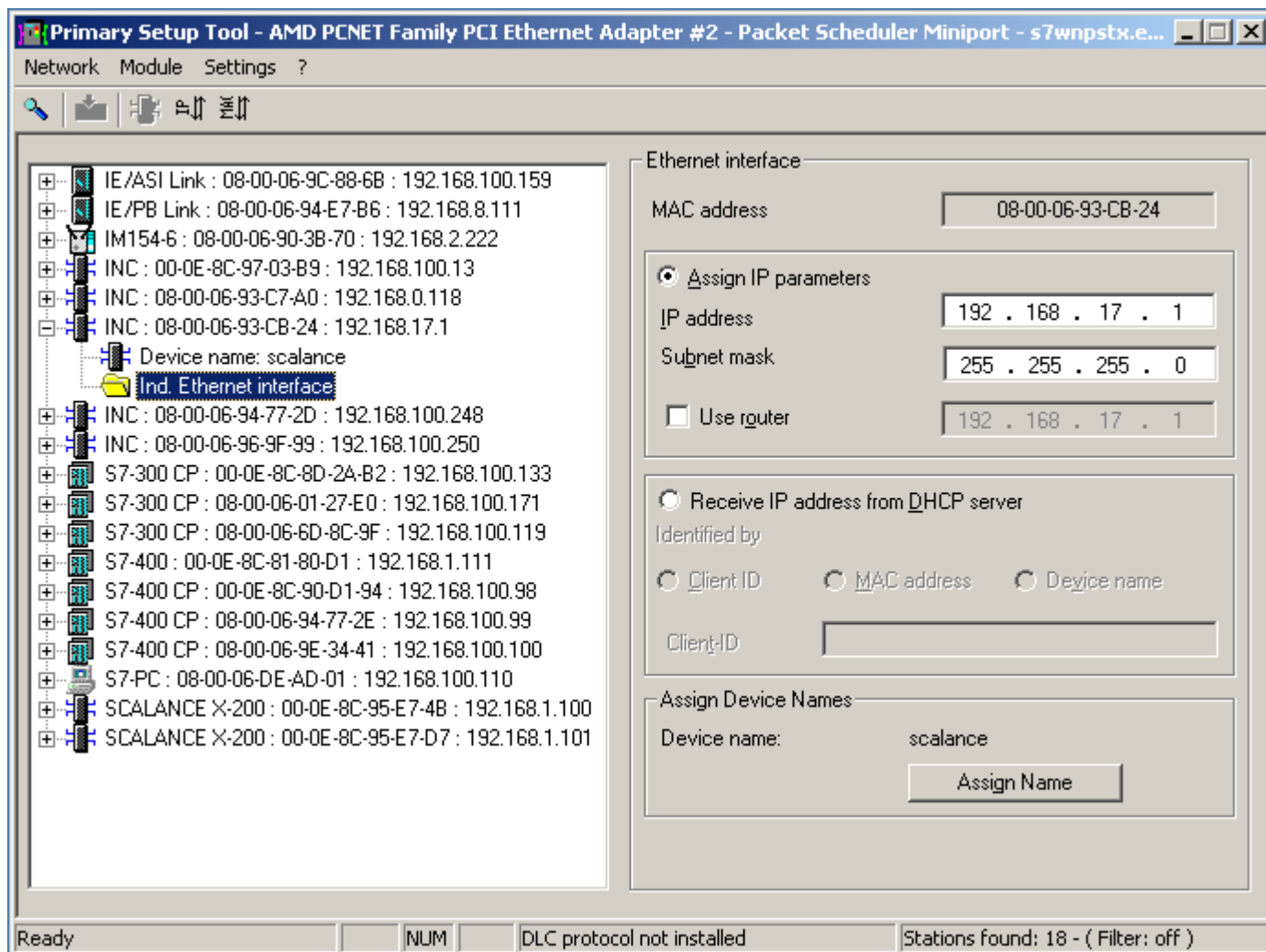


Figure 4-2 The Primary Setup Tool user interface

3. Decide how the device will obtain its IP address:
 - Dynamically from a DHCP server:
Select the *Obtain IP address from DHCP server* option button.
 - Manual assignment by the user:
Select the *Assign IP parameters* option button.

4. Make the remaining settings depending on how the IP address is assigned:

IP address from a DHCP server

- Specify how the device will be identified by selecting one of the option buttons: MAC address, Device name or Client ID.
- If you have selected a device name, you can assign or change the device name of a PROFINET device. You can open the relevant dialog box by clicking on the *Assign Name* button. The button is disabled for all the other devices and no change is possible.

Manual assignment of the IP address

- Enter a valid IP address for the device in the *IP address* box.
- Enter a valid subnet mask in the *Subnet mask* box.
- If necessary, put a check mark in the *Use router* box and enter the IP address for the router the module will use in the input box beside it.

Downloading configuration data to the module

To transfer the configuration data to the device, follow the steps below:

1. Select the module to which you want to download the configuration in the tree view.
If an interface is selected and the input screen for the configuration data is displayed, it is not possible to download the configuration data.
2. To start the download, follow the steps below:
 - Select the *Module > Download* menu command.
 - Click the highlighted button in the toolbar.

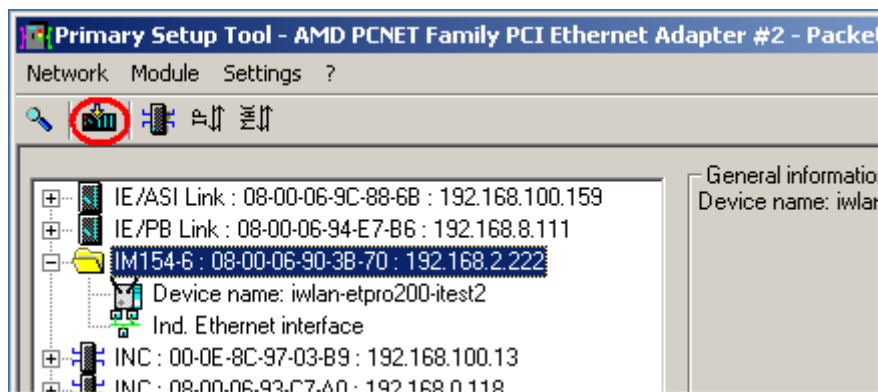


Figure 4-3 Button for downloading the configuration data to the module

Launching Web Based Management

INC (Industrial Network Component) devices, such as a SCALANCE W7xx, use Web Based Management. Select the device you want to configure with Web Based Management and follow the steps below to launch Web Based Management:

- Select the *Module > Start INC Browser* menu command.
- Click the highlighted button in the toolbar (module with four blue wires).

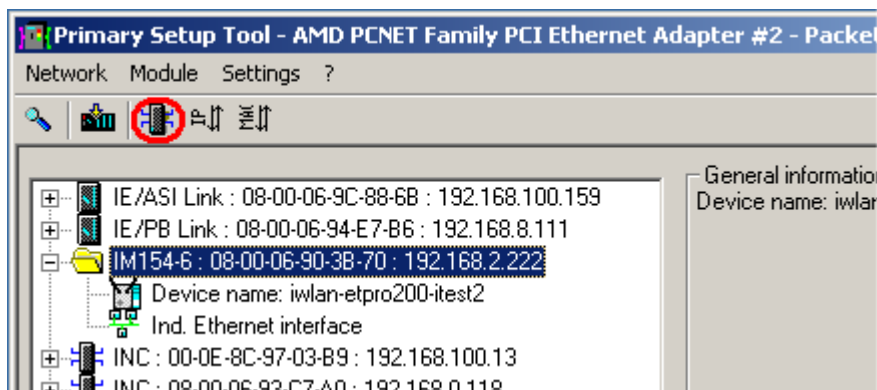


Figure 4-4 Button for starting Web Based Management

If the *Module > Start INC Browser* menu and the module button are disabled, there is no Web Based Management for the selected module.

Removing a module

You can remove a module from the list in the left part of the program window by selecting the *Module > Remove Module* menu command. This command has no effect on the existence of a module in the network. The next time you browse the network, all the modules will be shown again.

Changing a device name

If the device supports this function, you can assign a new name to the device with the *Module > Assign Device Name* menu command. The new name is subject to the following constraints:

- The device name must meet the requirements of the Domain Name System (DNS)
- Maximum length 240 characters (letters, numbers, hyphen, or period).
- A section within the device name, in other words, a string between two periods, must not exceed 63 characters.
- The device name must not start or end with a hyphen.
- The device name must not have the format *n.n.n.n* (*n* = 0 to 999).
- The device name must not begin with the string *port-xyz-* (*x,y,z* = 0 to 9).

Identifying the location of the device

With the *Module > Buzz* menu command, you can make the port LEDs of the relevant device flash. After selecting this menu command, a dialog opens in which you can start and stop signaling.

The flashing of the LEDs allows you identify the device assigned to a particular entry in the list in the program window.

Resetting to the factory settings

If the device supports this function, you can reset the device to its factory defaults using the *Module > Reset* menu command. Refer to the documentation of the module in question to find out what effect this will have.

Error displays

Errors are indicated in the PST tool as follows:

- "DLC protocol not installed" in the status bar.
This appears if the DLC protocol is not installed.

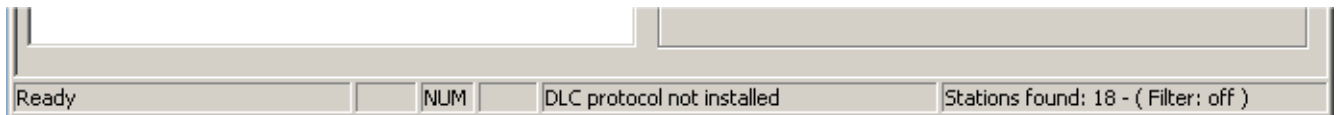


Figure 4-5 DLC protocol not installed

- Yellow question mark in the device list.
Appears if no icon is stored for this device.

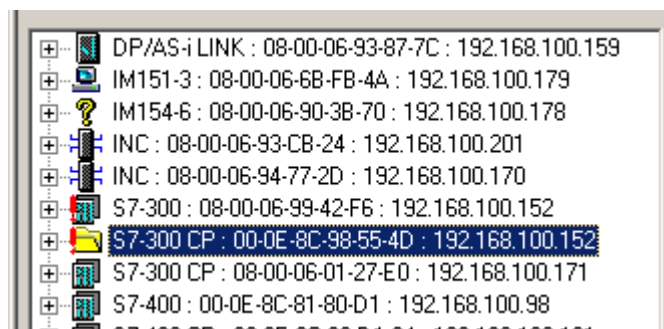


Figure 4-6 Missing device icon and duplicate IP address

- Red exclamation point over the device icon.
Appears if an IP address is assigned twice. Both devices are marked in the same way.

4.4 Working with filters

To keep a clearer overview, you can restrict the list of modules found using filters.

You can open the *Select Filter* dialog with the menu command *Settings > Filter*.

You can set the filter type and one or more filters in the *Select Filter* dialog box.

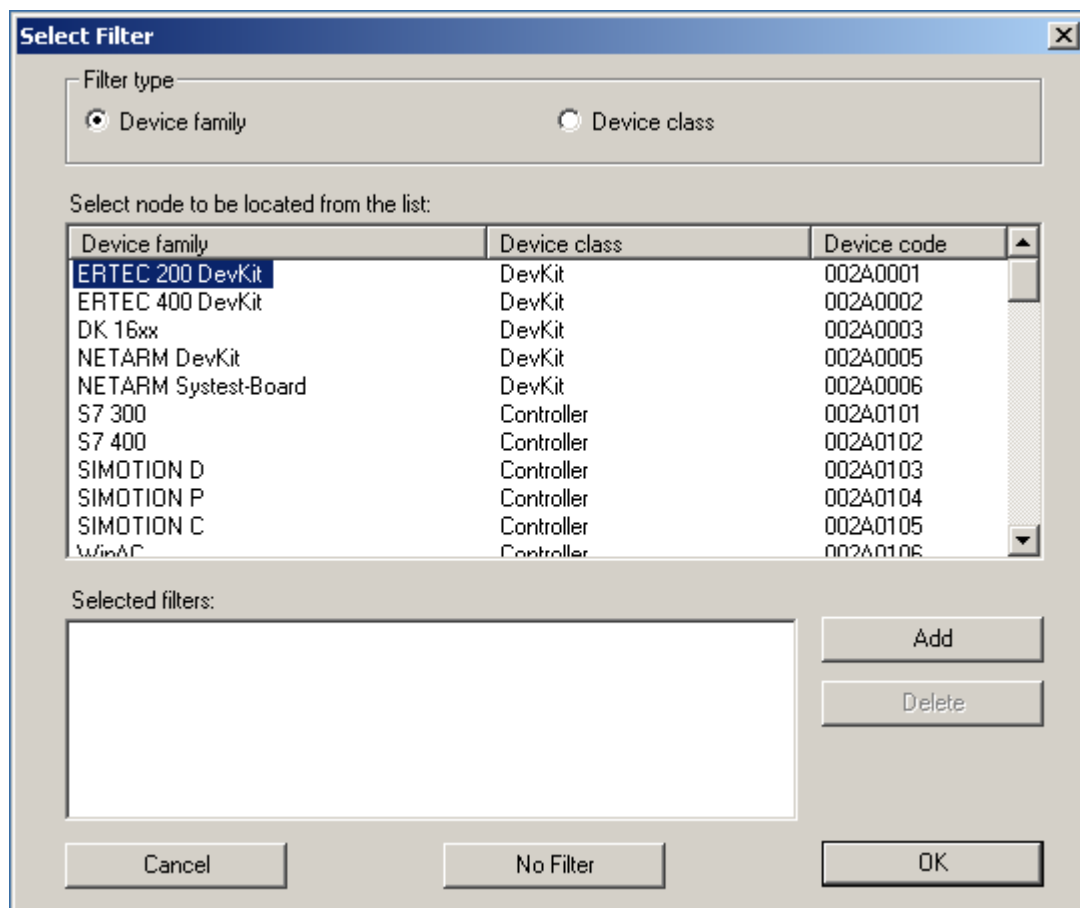


Figure 4-7 Filter selection

The filtered list is sorted alphanumerically and the order can be reversed by clicking on one of the column headers.

Procedure

1. Select the required check boxes in the *Filter type* group box.
2. Select the required entry in the list and click the *Add* button.
The selected filter is included in the filter list.
You can select further filters and enter them in the filter in the same way.
Example: S7-400
3. Click the *OK* button.

The filter(s) is/are now active and the list of "stations found" is displayed according to the filters you selected (check the display in the status bar).

4.5 Primary Setup Tool using the command line

Syntax

You can also use the Primary Setup Tool over the command line of a DOS command prompt. The following syntax applies (optional parameters are shown in square brackets):

```
s7wnpstx MAC-Address -DHCP[=client-ID]
s7wnpstx MAC address -RESET
s7wnpstx MAC address IP address [subnet mask router address]
s7wnpstx MAC address -NAME = station name [Index network
adapter] [INC]
```

Note

Please note that entries in the command line are case-sensitive.

Table 4- 1 Command line parameters for the Primary Setup Tool

Parameter	Description	Comment
MAC address	The MAC address of the module. The individual parts of the MAC address are separated either by a colon or a hyphen.	
-DHCP	Specifies that the IP address should be obtained from a DHCP server.	
client-ID	A unique identifier for the device. If this parameter is not specified, the Primary Setup Tool uses the MAC address as the ID.	Optional
-RESET	Resets the IP address to 0.0.0.0.	
IP address	The new IP address of the module being configured.	
Subnet mask	The new subnet mask of the module being configured.	
Router address	The new IP address of the default router.	Optional
-NAME	Parameter for setting a station name.	
Station name	The station name that is assigned to the module. Maximum length 255 characters (letters, numbers, slash, hyphen and underscore).	

Parameter	Description	Comment
Index network adapter	The index of the network adapter. The default value is "0".	Optional
INC	Identifier for a network component.	Optional

Example 1

```
s7wnpstx 08-00-06-af-e1-43 192.200.100.55 255.255.255.0  
192.200.100.02
```

The module with MAC address *08-00-06-af-e1-43* is assigned IP address *192.200.100.55*.
The subnet mask is *255.255.255.0*, the IP address of the router *192.200.100.02*.

Example 2

```
s7wnpstx 08-00-06-af-e1-43 -DHCP=Device1
```

The module with MAC address *08-00-06-af-e1-43* obtains the IP address from a DHCP server. The module is also given the client ID *Device1*.

Glossary

CIDR

Classless Inter-Domain Routing (CIDR) describes a procedure for more efficient use of the existing 32-bit IP address space (IPv4). This was introduced in 1993 (RFC 1518, RFC 1519) to reduce the size of routing tables and to make better use of the available address ranges.

With CIDR, there is no longer a fixed assignment of an IP address to a network class or subnetting into further networks or supernetting of several networks of a class. There is now only one network mask that separates the IP address into the network and the host part.

With CIDR, a new notation known as suffixes was introduced. The suffix specifies the number of 1 bits in the network mask. This notation is much shorter than the dotted decimal notation and is also unambiguous.

DHCP

DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol), like BOOTP a procedure for the automatic assignment of IP addresses. However, with DHCP, addresses can also be assigned while the device is running.

DLC protocol

The DLC protocol (**D**ata **L**ink **C**ontrol) allows communication among the network components without using IP addresses. The DLC protocol does not allow routing.

IP address

The IP address consists of 4 bytes. Each byte is represented in decimal, with a dot separating it from the previous one. This results in the following structure, where XXX represents a number between 0 and 255 (dotted decimal notation): XXX.XXX.XXX.XXX

The IP address is made up of two parts, the network address and the host or end device address. This allows different subnets to be created. Depending on which bytes of the IP address are used as the network address and which as the host address, an IP address can be assigned to a specific address class:

Address class	Address class identification	Network address and host address
A	Byte 1 (possible value 1 - 126) (Byte 1 is the byte located furthest to the left.)	Byte 2 to byte 4 Possible value in each case 0 - 255. 0.0.0 must not be assigned, 255.255.255 is the broadcast address.
B	Byte 1 (possible value 128 - 191) Byte 2 (possible value 0 - 255)	Byte 3 and byte 4 Possible value in each case 0 - 255. 0.0 must not be assigned, 255.255 is the broadcast address.
C	Byte 1 (possible value 192 - 223) Byte 2 and byte 3 (possible value in each case 0 - 255)	Byte 4 Possible value 1 - 254. 0 must not be assigned, 255 is the broadcast address.
D	Byte 1 (possible value 224 - 239) Multicast addresses	Byte 2 to byte 4 Possible value in each case 0 - 255 0.0.0 must not be assigned. There are a few multicast addresses with special meanings, for example, 224.0.0.1 All systems of the subnet 224.0.0.2 All routers of the subnet

Router

A device that allows data exchange between networks. A router is not capable of converting one protocol into another, however, there are routers that can work with several protocols.

Subnet mask

A subnet is defined by the subnet mask. The structure of the subnet mask corresponds to that of an IP address. If, in the subnet mask, a "1" is used at a bit position, the bit belongs to the corresponding position in the IP address of the subnet address, otherwise to the address of the computer.

Example:

The standard subnet mask for class B networks is 255.255.0.0, therefore the third and the fourth bytes are available for specifying the subnets and hosts. If 16 subnets are to be defined, the third byte of the subnet address must be set at 11110000 (binary). In this case this results in the subnet mask 255.255.240.0.

To determine whether two IP addresses belong to the same subnet, the IP addresses are both ANDed bit-by-bit. If both logic operations have the same result, both IP addresses belong to the same subnet, for example, 141.120.246.210 and 141.120.252.108.

Outside of the local area network the division of the address as described above has no significance, here, the entire IP address is used for packet switching.

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