SIEMENS

SIMATIC

Windows Automation Center WinAC Pro

Overview

This manual is part of the documentation package with the order number:

6ES7673-6CC00-8BA0

05/99

C79000-G7076-C221

Release 02

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:

Danger

indicates that death, severe personal injury, or substantial property damage **will** result if proper precautions are not taken.

Warning

indicates that death, severe personal injury, or substantial property damage **can** result if proper precautions are not taken.

Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken.

Qualified Personnel

The device/system may only be set up and operated in conjunction with this manual.

Only **qualified personnel** should be allowed to install and work on this equipment. Qualified persons are defined as persons who are authorized to commission, to ground, and to tag circuits, equipment, and systems in accordance with established safety practices and standards.

Correct Usage

Note the following:

Warning

This device and its components may only be used for the applications described in the catalog or the technical description, and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens.

This product can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.

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Siemens AG

Bereich Automatisierungs- und Antriebstechnik

Geschaeftsgebiet Industrie-Automatisierungssysteme

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Disclaimer of Liability

We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

Siemens Aktiengesellschaft

C79000-G7076-C221

Preface

Purpose

The soft and hardware components of **Win**dows **A**utomation **C**enter (WinAC) enables you to combine data processing, controlling, visualization, and communication on your PC (PC–based Control). The WinAC product is available in three different forms:

- **WinAC Basis with SoftPLC**
- **WinAC Pro with SlotPLC**-Modules CPU 416-2 DP ISA

This manual provides you with an overview of the individual components of the WinAC products.

Audience

This manual is intended for engineers, programmers, and maintenance personnel who have a general knowledge of programmable logic controllers.

Scope and Usage of the Manual

An overview is provided of the features and the operation of version 3.0 of the WinAC Pro software. This includes:

- An overview of the components of the WinAC Pro standard package
- Instructions for installing the WinAC Pro software

Other Manuals

For additional information, refer to the following manuals:

Title	Contents
WinAC Controlling with CPU 416–2 DP ISA	This manual describes the operations, functions, and technical data for the CPU 416-2 DP ISA.
WinAC Computing User Manual	This manual provides basic information about the performance characteristics and operation of the WinAC software.

You can also find information about the components of the WinAC Pro in the online help for the software.

Validity

The manual contains information on WinAC Pro, as valid at the time of publication. We reserve the right to enclose additional information in the form of a Product Information leaflet.

Additional Assistance

If you have any questions not answered in this or one of the other STEP 7 manuals, if you need information on ordering additional documentation or equipment, or if you need information on training, please contact your Siemens distributor or sales office.

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Nuremberg **SIMATIC BASIC Hotline**	**Johnson City** **SIMATIC BASIC Hotline**	**Singapore** **SIMATIC BASIC Hotline**
Local time: Mo.-Fr. 7:00 to 17:00	Local time: Mo.-Fr. 8:00 to 17:00	Local time: Mo.-Fr. 8:30 to 17:30
Phone: +49 (911) 895-7000	Phone: +1 423 461-2522	Phone: +65 740-7000
Fax: +49 (911) 895-7002	Fax: +1 423 461-2231	Fax: +65 740-7001
E-Mail: simatic.support@ nbgm.siemens.de	E-Mail: simatic.hotline@ sea.siemens.com	E-Mail: simatic@ singnet.com.sg
GMT: +1:00	GMT: –5:00	GMT: +8:00
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Fax: +49 (911) 895-7202	Phone: +49 (911) 895-7777	
E-Mail: authorization@ nbgm.siemens.de	Fax: +49 (911) 895-7001	
GMT: +01:00	GMT: +01:00	
The languages spoken by the Simatic Hotlines are generally German and English. In addition, the authorization hotline speaks French, Italian and Spanish.		

SIMATIC Customer Support Online Services

The SIMATIC Customer Support team offers you substantial additional information about SIMATIC products via its online services:

- General current information can be obtained:
  - on the **Internet** under http://www.ad.siemens.de/simatic-cs
- Current product information leaflets and downloads which you may find useful are available:
  - on the **Internet** under http://www.ad.siemens.de/support/html_00/
  - via the **Bulletin Board System** (BBS) in Nuremberg (*SIMATIC Customer Support Mailbox)* under the number +49 (911) 895-7100.

    To access the mailbox, use a modem with up to V.34 (28.8 Kbps) with parameters set as follows: 8, N, 1, ANSI; or dial in via ISDN (x.75, 64 Kbps).

Contents

Product Overview and Installation 1

Overview

The WinAC Pro package consists of the following components:

- The SLOT PLC **"CPU 416-2 DP ISA"**, the most powerful S7-400 CPU, for the **WinAC Controlling** components.
- The **router** for the communication of the CPU 416-2 DP ISA over a SIMATIC NET CP (Industrial-Ethernet or PROFIBUS) or a network card.
- An **operator panel** for the CPU 416-2 DP ISA, displayed on a monitor.
- The **WinAC Computing** software provides ActiveX controls, which you can customize for the visualization of your process. WinAC Computing lets you use any mix of S7 and third-party ActiveX controls not only to view, but also to modify, process data.
- The **WinAC Tool Manager** can be used with your applications. It is a toolbar in which you can arrange all the applications that you want to use while working with your process data.

  For instance, if you plan to use Visual Basic with WinAC, or want to put process data into an Microsoft Excel spreadsheet, you can insert shortcuts to those items on the Tool Manager. The Tool Manager is especially convenient for users who do not have a computer mouse, since all of its functions can be accessed by keystrokes from one central location.

Chapter Overview

1.1 Communications Possibilities CPU 416-2 DP ISA

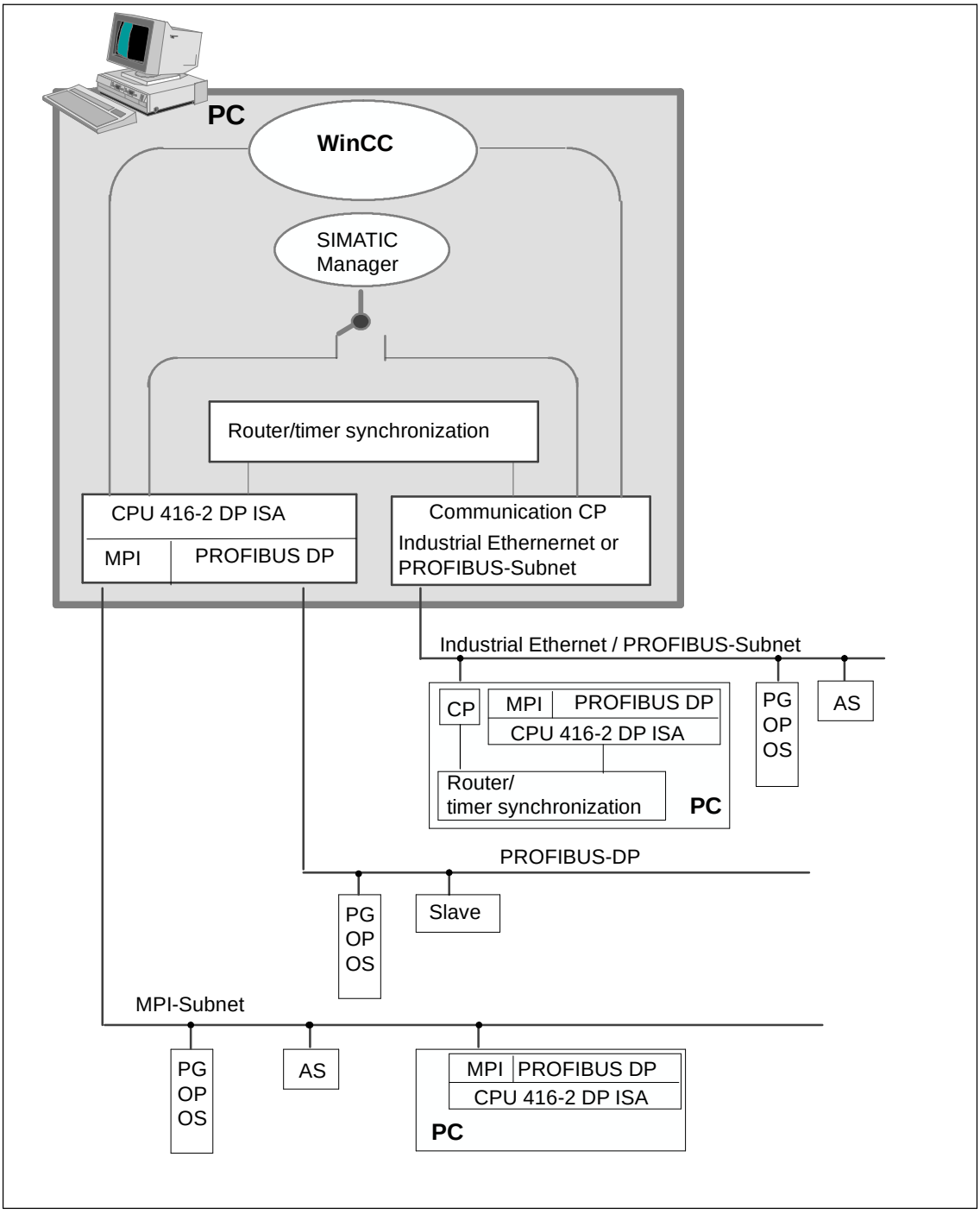

Figure 1-1 Communication possibilities with the CPU 416C2 DP ISA

Figure 1-1 shows which communication possibilities you have with the CPU 416-2. The CPU 416-2 DP ISA has an integrated MPI and PROFIBUS-DP interface.

If you wish to communicate with an industrial ethernet or PROFIBUS subnet, an additional communications module (CP) must be installed in your PC.

The possible communications between stations are:

1. From the available CPU 416-2 DP ISA stations
   - all PLCs on local MPI subnets
   - all slaves on local PROFIBUS DP
   - all PLCs on Industrial Ethernet PROFIBUS Subnets
2. Stations available to the CPU 416-2 DP ISA:
   - all programming devices / OS / OP on all subnets
   - local WinCC
   - local STEP 7
3. Stations available to WinCC or STEP 7:
   - local CPU 416-2 DP ISA
   - all PLCs on Industrial Ethernet/PROFIBUS Subnets

Note

If the SIMATIC Manager (STEP 7) is installed on the same PC as the CPU 416-2 DP ISA, it is **not** possible to use the CPU 416-2 DP ISA and Industrial Eithernet / PROFIBUS subnet connected CPUs at the same time.

With "setprogramming device / PC interface" you must parameterize the corres-ponding S7ONLINE (STEP 7) access point.

1.2 Controlling Your Process with CPU 416-2 DP ISA

CPU 416-2 DP ISA offers an effective hardware solution for your automation projects (see Figure 1-2). The **CPU 416-2 DP ISA** connects a PC-based controller to the distributed (remote) I/O via a PROFIBUS DP network.

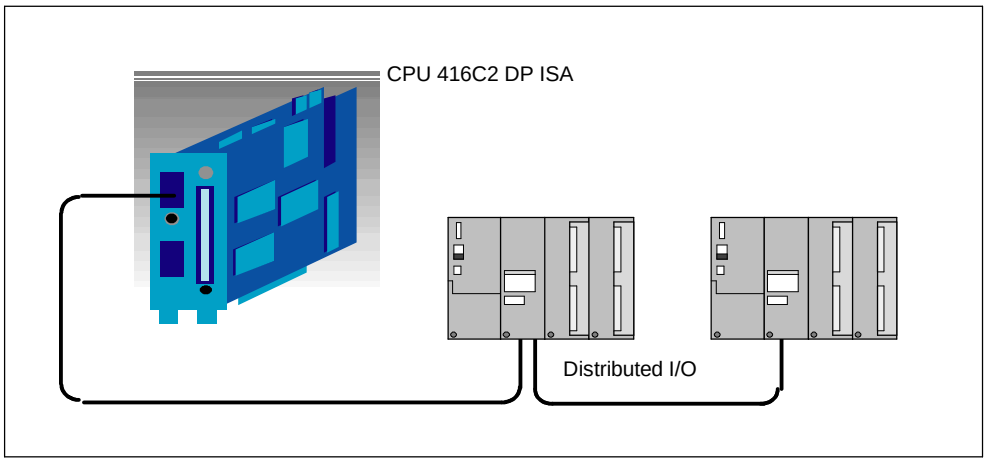

Figure 1-2 Using the CPU 416-2 DP ISA in WinAC Pro

As shown in Figure 1-3, you can use the WinAC Computing software to provide access to the process data. You can also use the standard SIMATIC products with the CPU 416-2 DP ISA, such as STEP 7 and WinCC.

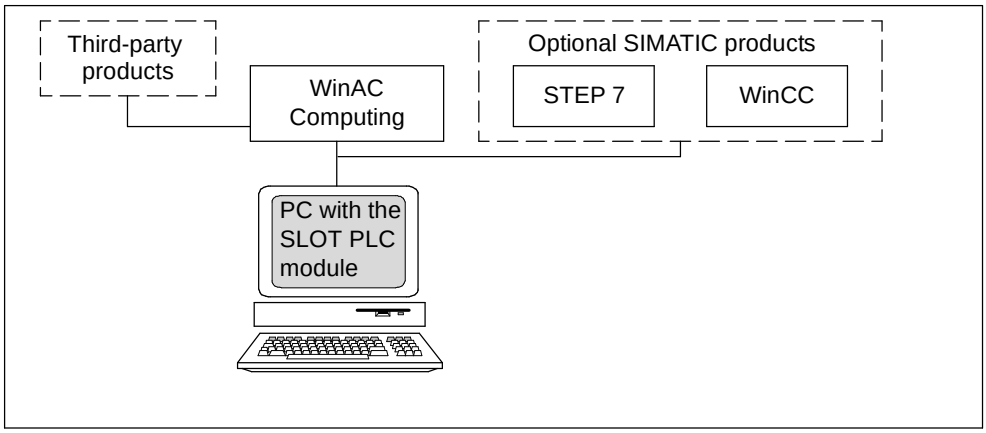

Figure 1-3 Components of WinAC Pro

1.3 WinAC Computing Provides Access to the Process Data

As shown in Figure 1-4, the WinAC Computing software allows you to access the SLOT PLC in order to monitor and modify the process data.

WinAC Computing provides several methods for accessing the process data:

- Via standard ActiveX controls (OCX) that access the process data
- Via an OPC server (OLE for Process Control) server that allows any OPC client application to access data in the control device

Note

The OPC server is based on the OLE/COM technology from Microsoft. For more information about OPC, refer to the OPC specification: *OLE for Process Control Data Access Standard, version 1.0A* from the OPC Foundation (http://www.opcfoundation.org/).

WinAC Computing does not provide the OPC client application.

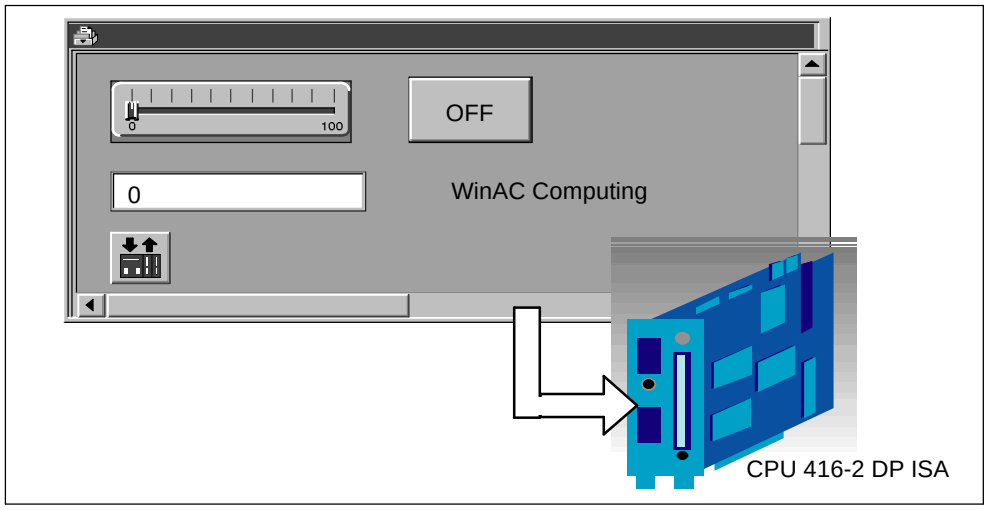

Figure 1-4 Accessing the Process Data with WinAC Computing

1.4 Tool Manager Provides Shortcuts to Your Programs

The WinAC Tool Manager provides quick access to the programs that you use with the WinAC products. Figure 1-5 shows the Tool Manager and its shortcut icon. You can configure the Tool Manager yourself: you can insert a shortcut icon for any of your programs into the tray. You can then access that program from the Tool Manager.

You can change the size of the Tool Manager. As shown in Figure 1-6, you can use a menu to configure the Tool Manager. You can also choose to display the Tool Manager either horizontally or vertically.

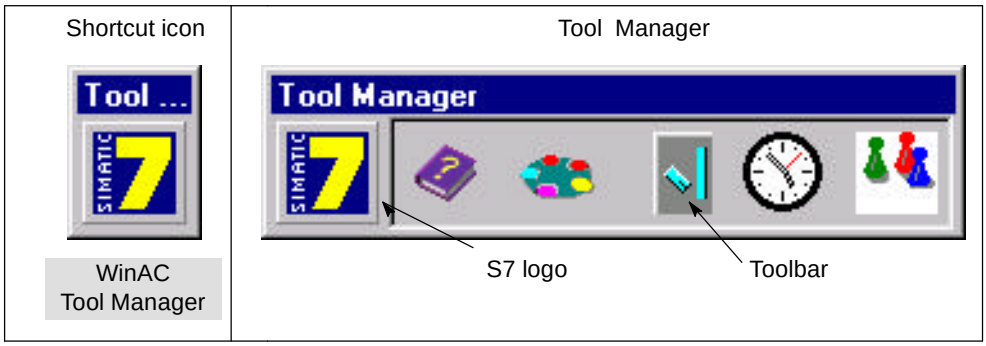

Figure 1-5 WinAC Tool Manager

Using the Tool Manager without a Mouse

You can also use the Tool Manager without a mouse:

- If the Tool Manager is running, pressing the ALT + Tab keys displays the Tool Manager.
- Pressing the F1 key displays the online help for the Tool Manager.
- Pressing the Tab key changes the focus between the S7 logo and the shortcut icons.
- Pressing the Return key when a shortcut icon is highlighted starts the associated program.

Refer to the online help for more information about using the keyboard with the Tool Manager.

Inserting Icons into the Tool Manager

Use the following procedure to insert icons into the Tool Manager:

1. Display the Tool Manager by double-clicking the shortcut icon for the Tool Manager.
2. Display the menu options for the Tool Manager by clicking the right button of the mouse. See Figure 1-6.
3. Select the **Insert** command from the menu to display a browser for selecting shortcut icons.
4. Select the icons from the browser and confirm.

You can also drag and drop shortcut icons into the Tool Manager using the mouse. Refer to the online help for more information about using the Tool Manager.

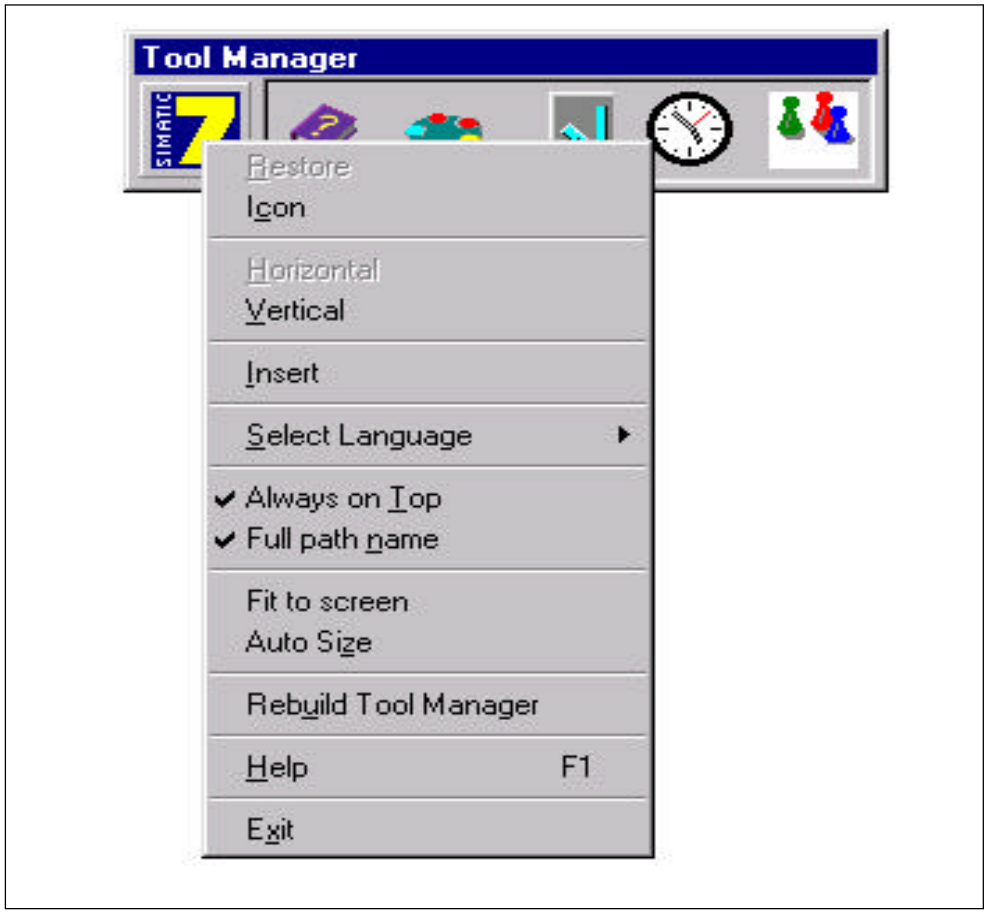

Figure 1-6 Inserting Icons into the WinAC Tool Manager

Customizing the Display Options for the Tool Manager

You can use the mouse to adjust the size of the Tool Manager. You can also use the options menu (shown in Figure 1-6) to further customize the Tool Manager:

- With the menu command **Restore** the Toolbar with icons is displayed.
- With the menu command **Icon** only the S7 Tool Manager logo is displayed.
- By selecting either the **Horizontal** or **Vertical** menu command, you can choose the orientation for the Tool Manager.
- With the menu command **Select Language** you set the installed language for the Tool Manager. To change the software language settings, you have to restart the program.
- By selecting the **Always On Top** menu command, you can choose to have the Tool Manager always displayed (on top of the application, instead of being hidden behind).
- By selecting the **Full Path Name** menu command, you can display the path.
- name for the shortcut icons.
- Select the menu command **Fit to screen**, to automatically adjust the size of the Tool Manager to the width and height of the screen.
- By selecting the **Auto Size** menu command, you can automatically size the Tool Manager to the width (or height) of the screen.
- With the menu command **Rebuild Tool Manager** the Toolbar is displayed in the optimal height or width.
- Pressing the F1 key or selecting the **Help** menu command displays the online help for the Tool Manager.
- With the menu command **Exit** you close the program.

1.5 Time Synchronization

The CPU 416-2 DP ISA can, together with other stations (e.g. S7 Components), be synchronized by a central time sender.

The time synchronization service in the PC periodically supplies the CPU with the current date and time. The time sender sets the time in cyclical periods and provides it to the Industrial Ethernet/PROFIBUS (IE/PB). For Industrial Ethernet only ISO Protocol is supported. This synchronizes the CP in the PC.

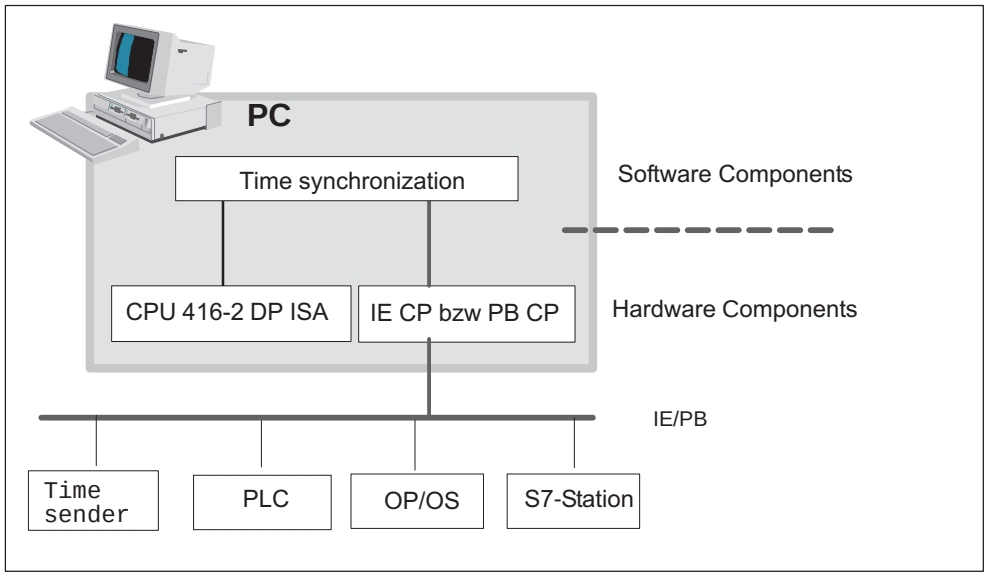

Figure 1-7 Time Synchronization

Note

The timer synchronization is only designed for specific communication modules (CPs). More informtion is available in the product information.

1.6 Router for CPU 416-2 DP ISA Communication

So that stations (such as programming devices, OP, OS, S7 automation systems) connected to a SIMATIC NET (Industrial Ethernet/PROFIBUS (IE/PB)) can communicate with the CPU 416-2 DP ISA, a router must be installed in the programming device / PC and the access points have to be configured. Data transfer is possible in both directions. For Industrial Eithernet the protocol ISO and TCP/IP is supported.

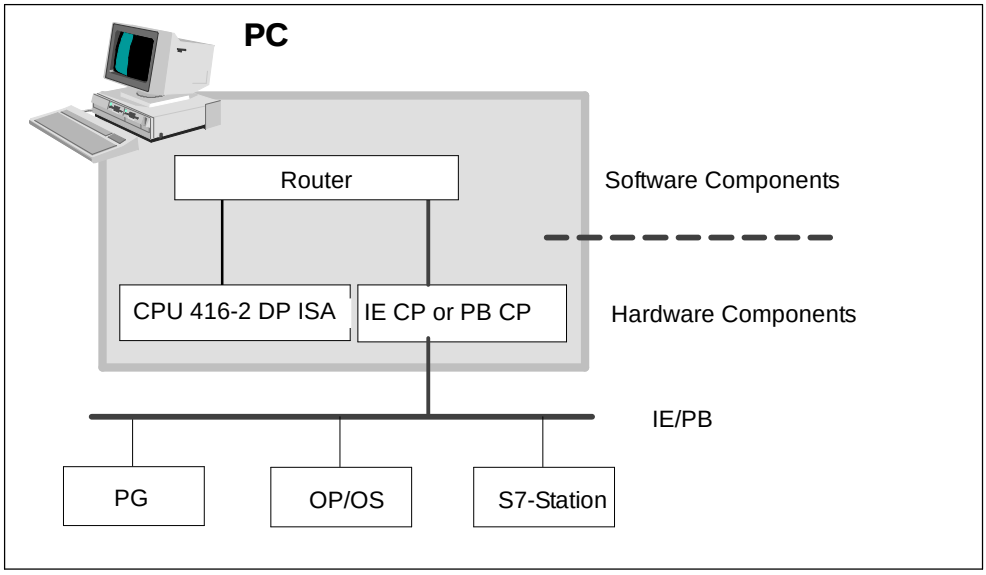

Figure 1-8 Communication via the Router

1.7 Installation Overview

The WinAC software provides a setup program that installs the CPU 416-2 DP ISA, along with the other software components (operator panel, WinAC Computing, Tool Manager, Router, and Time Synchronization).

System Requirements

To run the components of WinAC Pro, it is recommended that your computer meet the following criteria:

- A personal computer (PC) with the following:
  - Pentium processor running at 166 MHz or faster
  - 32 Mbytes RAM
  - Microsoft Windows NT version 4.0, since Servicepack 3
- A color monitor, keyboard, and mouse (or other pointing device) that are supported by Microsoft Windows NT
- A hard drive with 50 Mbytes of free space
- At least 25 Mbyte free memory capacity on drive C for the Setup program (Setup files are deleted when the installation is complete.)
- 2 ISA slots for 3/4 length cards at standard intervals.

Installing the Components of WinAC

Section 1.8 describes how to install the WinAC software.

Figure 1-9 shows the dialog box in which you can choose which components to install. Select the components that you want to install. All the components are installed in the same directory.

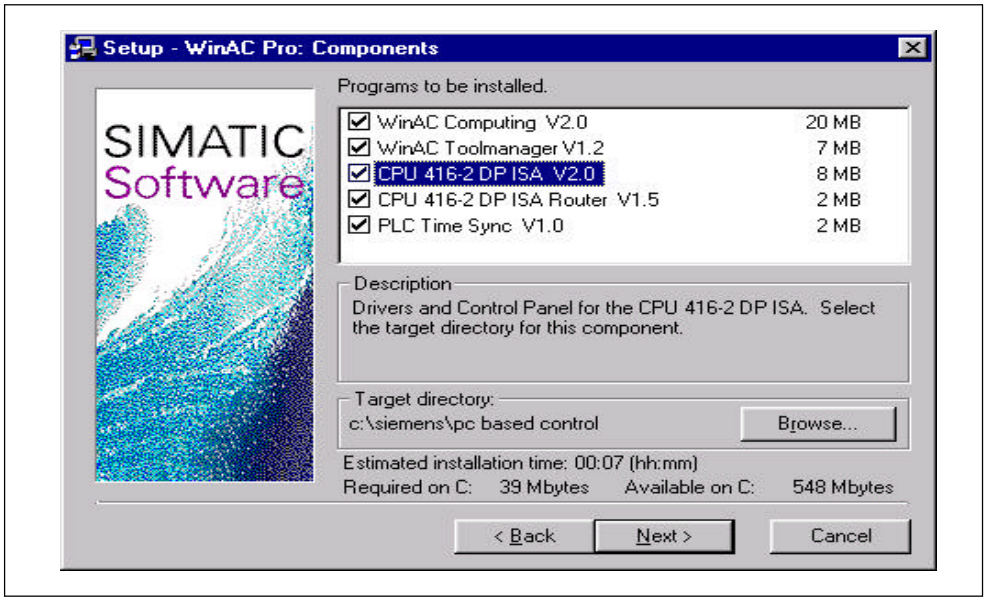

Figure 1-9 Installing the Components of WinAC Pro

Note

If the components CPU 416-2 DP ISA Router or PLC Time Sync are installed, the component WinAC Computing must be installed as well.

1.8 Installing and Uninstalling the WinAC Pro Software

The WinAC Pro software includes a Setup program which carries out the installation automatically. The screen prompts guide you step by step through the installation procedure.

Starting the Installation Program

The Setup program guides you step by step through the installation process. You can switch to the next step or to the previous step from any position. To start the installation program, proceed as follows:

1. Start the dialog box for installing software under Windows NT by double-clicking the "Add/Remove Programs" icon in the Control Panel.
2. Click "Install..."
3. Insert the CD-ROM and click "Next." Windows NT searches automatically for the installation program Setup.exe.
4. Follow step by step the instructions displayed by the installation program.

Once the installation has been completed successfully, a message to that effect is displayed on the screen.

If a Version of WinAC Basis/WinAC Pro Has Already Been Installed

Your software will be better organized if you uninstall any older versions before installing the new version. Overwriting an old version with a new version has the disadvantage that if you then uninstall, any remaining components of the old version are not removed.

Note

WinAC Pro and WinAC Basis use the same software components for WinAC Computing and the Tool Manager.

These sections may be updated if, for example, you have already installed WinAC Basis.

Other information can be found in the current Readme files for the relevant software components.

Errors During Installation

The following errors may cause the installation to fail:

- **Initialization error** immediately after starting Setup: The Setup.exe program was probably not started under Windows NT.
- **Not enough memory:** You need at least 50 Mbytes of free space on your hard disk.
- **Bad CD-ROM:** Verify that the CD-ROM is bad, then call your local Siemens representative.
- **Operator error:** Start the installation again and read the instructions carefully.

Uninstalling the WinACPro components

Proceed as follows to remove the WinAC Computing software from your computer:

1. Double-click the "Add/Remove Programs" icon in the Control Panel.
2. Select one of the components of WinAC Pro to be uninstalled from the list of the software installed. To uninstalled the software, click the "Remove" button.
3. If the "Remove Enable File" dialog boxes appear, click the "No" button if you are unsure how to respond.

Note

Follow the information in the Readme files of the corresponding SW components.

Getting Started

2

Chapter Overview

About This Getting Started Manual

In this manual, you will get to know the basics of WinAC Pro. We will show you the most important screen dialog boxes and the procedures to follow using practical exercises, which are structured so that you can start with almost any chapter.

Previous experience of working with the mouse, window handling, pull-down menus, etc. would be useful, and you should preferably be familiar with the basic principles of programmable logic control.

The STEP 7 training courses provide you with in-depth knowledge above and beyond the contents of this Getting Started manual, teaching you how entire automation solutions can be created with STEP 7.

Requirements for Working with the Getting Started Manual

In order to carry out the practical exercises for STEP 7 in this Getting Started manual, you require the following:

- A Siemens programming device or a PC
- The STEP 7 software package and the authorization diskette
- A SIMATIC S7-400 programmable controller

Have fun and good luck!

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2.1 Application Example: Communication via the Router

In the example a PC workstation with WinAC Pro is to be connected with a SIMATIC S7 400 station via Industrial Ethernet (IE).

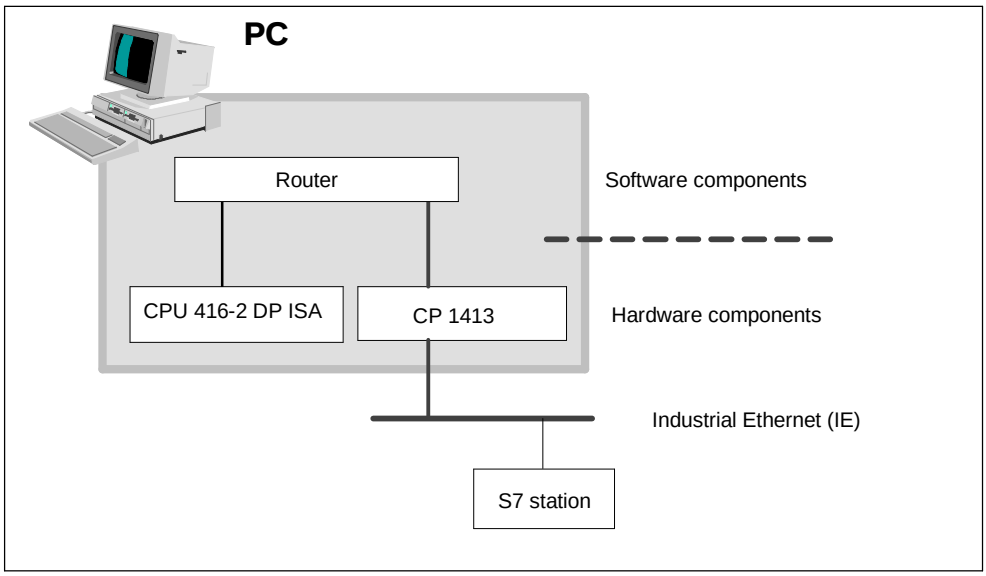

Figure 2-1 Communication via the Router

2.1.1 Creating a Project

Procedure:

1. Create a project called "Router".
2. Insert 2 SIMATIC 400 stations by using
   Insert > Station > SIMATIC 400 and call the PC station **FI25** and the SIMATIC S7-400 station **S7-400**.

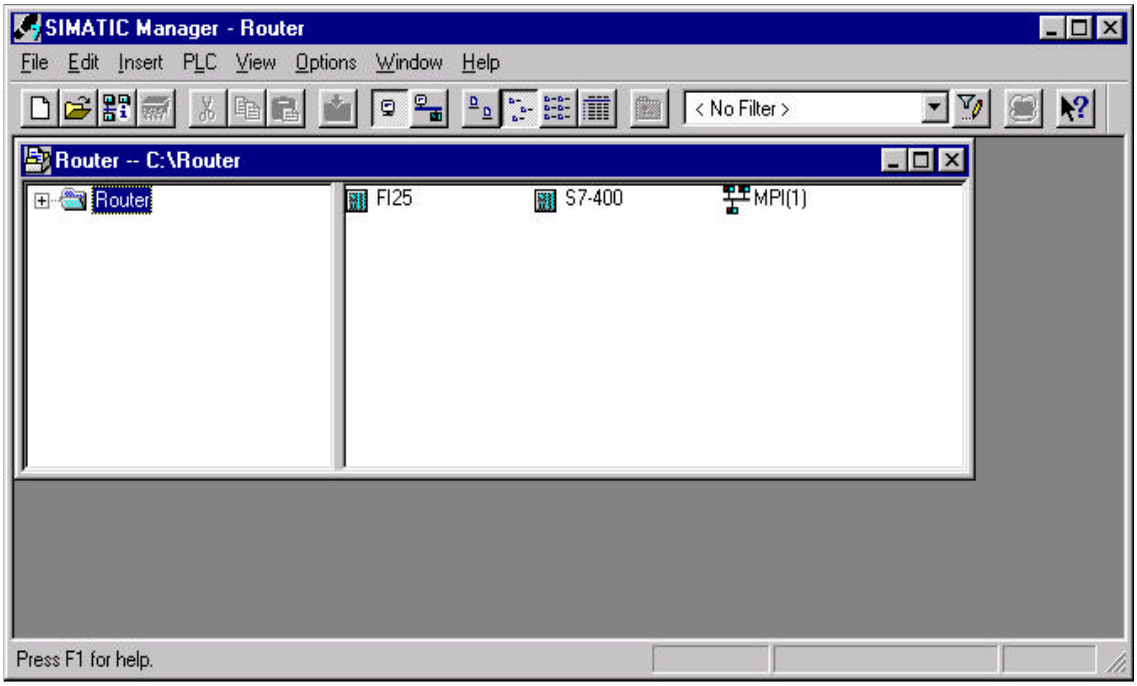

Figure 2-2 Creating a Project

Hardware Configuration of the PC Workstation FI25

Selecting the Rack

1. Select the station FI25.
2. Open the "HW-Config" function by double-clicking on "Hardware".
3. Open the catalog and then select the directory "SIMATIC PC Based Control".
4. Double-click to select "WinAC CPU 416-2 DP ISA". The rack is included in the configuration table.
5. Do not network the subnet for the DP master.

Note

During the selection take the current MLFB number into consideration.

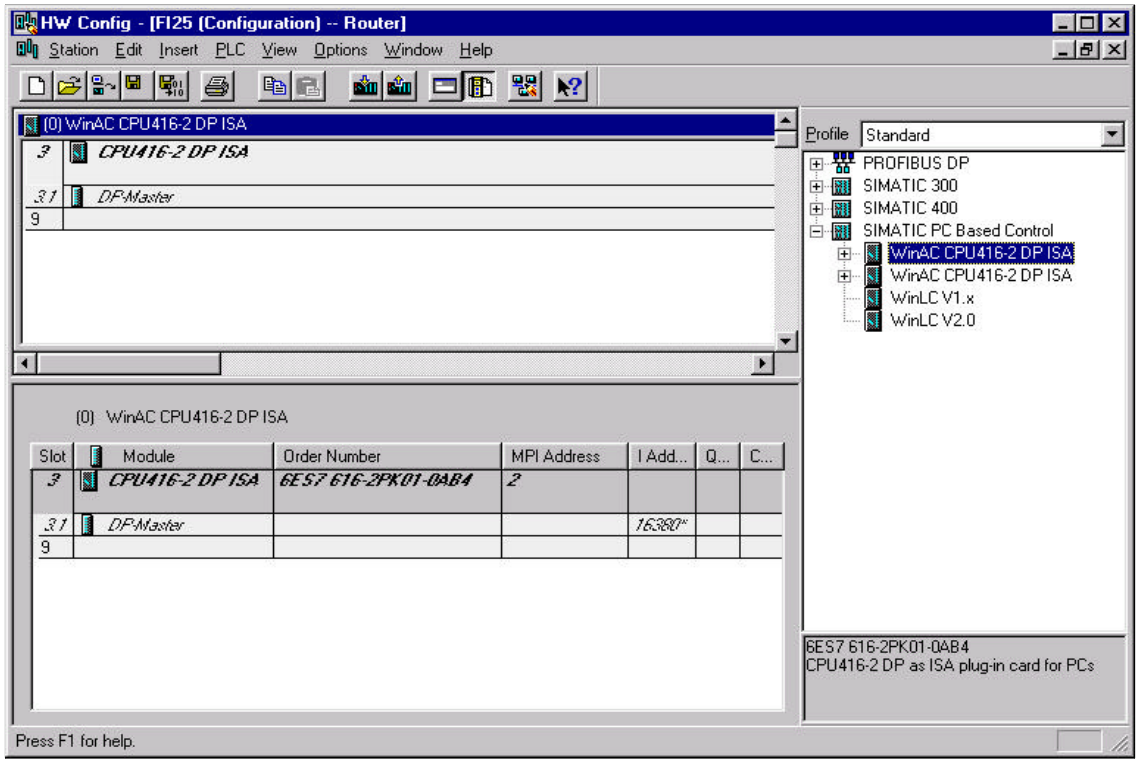

Figure 2-3 Selecting the Rack

Assigning the CP

1. Double-click to select the "Industrial Ethernet Connection". Slot 9 is assigned to the Profibus connection.
2. Save the setting.

PC Link corresponds to the CP in the station (PC/FI25) which connects the CPU 416-2 DP ISA to the network.

Note

During the selection take the current MLFB number into consideration.

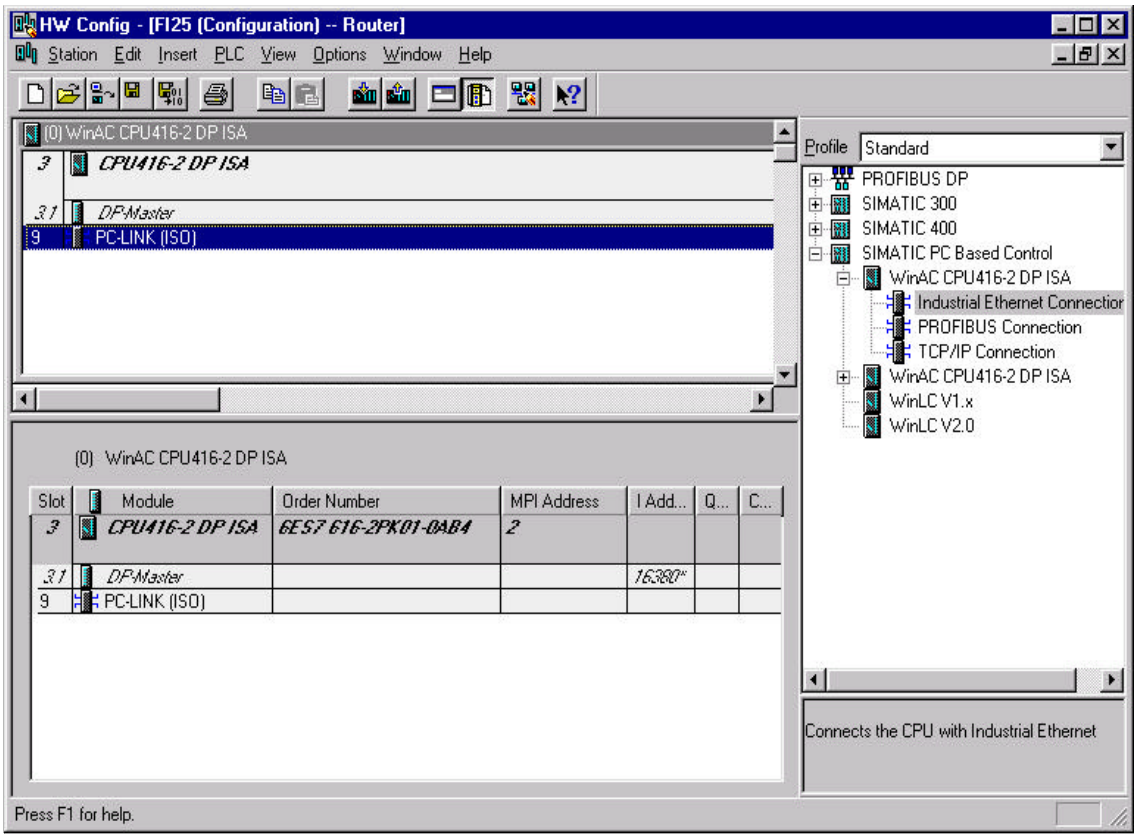

Figure 2-4 Assigning a CP

Hardware Configuration of the S7-400 Station

1. Select the components listed below and configure them as shown in Figure 2-5
   Rack
   Power supply
   CPU 416-1
   CP 443-1
2. Do not network the subnet for the CP 443-1.
3. Close by selecting "Save"

Note

During the selection take the current MLFB number into consideration.

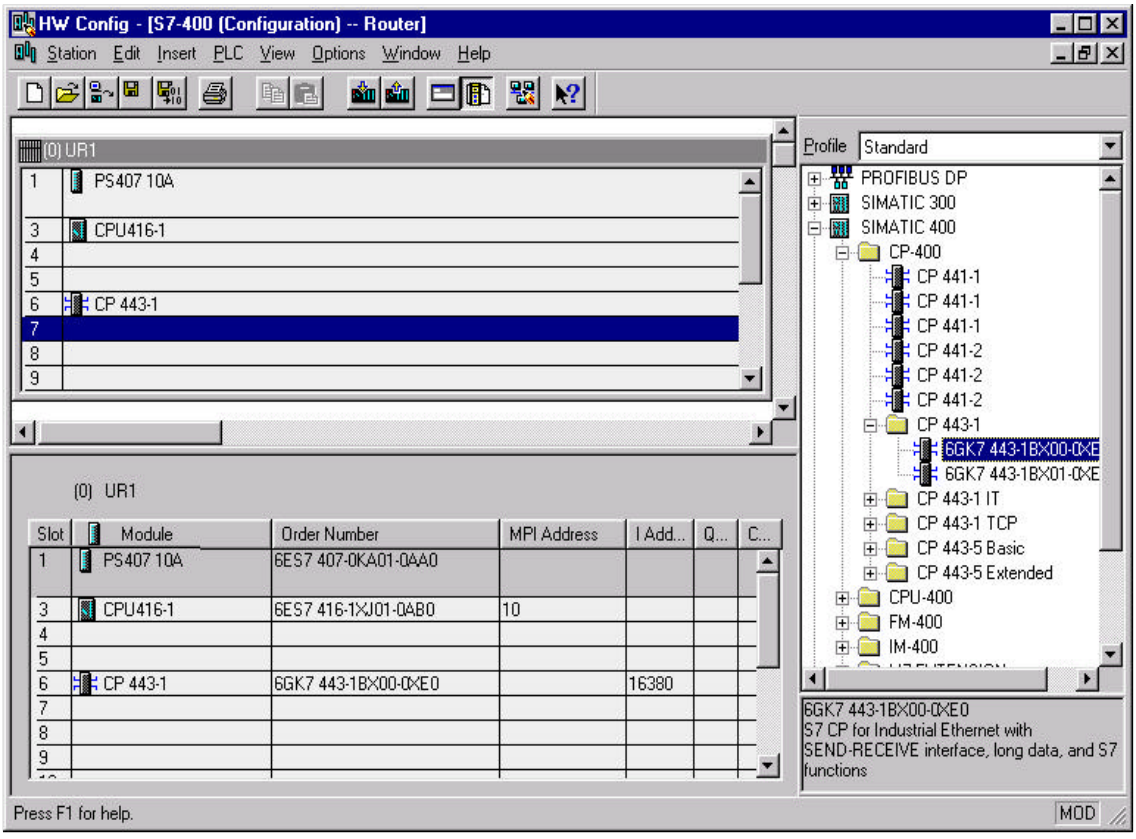

Figure 2-5 Hardware Assignment of the S7-400 Station

Creating the Connection

MPI Connection

1. Select the "Router" project.
2. Double-click to open MPI(1).
3. Double-click to select the CPU 416-2.
4. Open the properties dialog box and change the network name from "MPI (0)" to "MPI Network" and set the address to 2.
5. Double-click to select the CPU 416-1.
6. Open the properties dialog box and select the MPI network.
7. Set the address to 10.

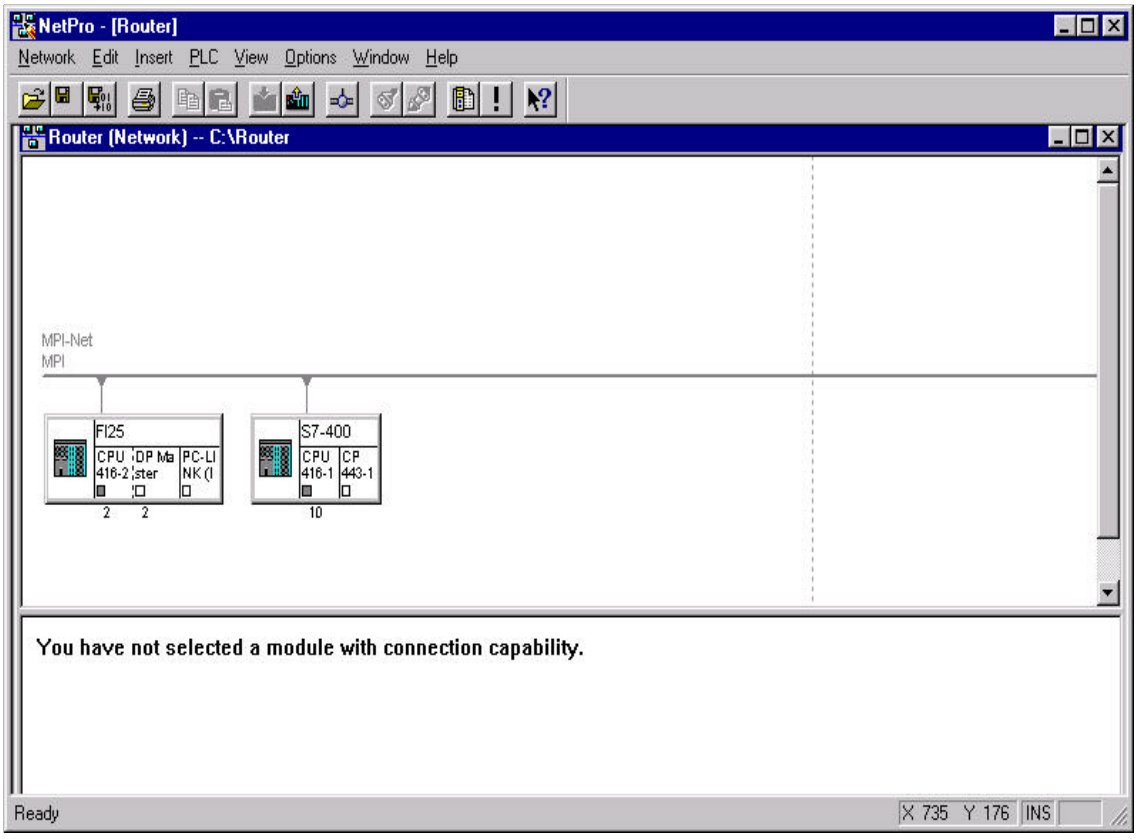

Figure 2-6 MPI Connection

Industrial Ethernet Connection

1. Select the "Router" project.
2. Insert the Profibus subnet by selecting

   Insert > Subnet > Industrial Ethernet and rename the Ethernet (1) to IE-Net.
3. Double-click to open the IE-Net.
4. Double-click to select the PC Link.
5. Open the properties dialog box and select the IE-Net.
6. Assign the address 0800060002.
7. Double-click to select the CP 443-1.
8. Open the properties dialog box and select the IE-Net.
9. Assign the address 0800060001.
10. Double-click to select the DP master.
11. Open the properties dialog box and select a new network. Assign the name PB-CPU 416-2 and the address 2.

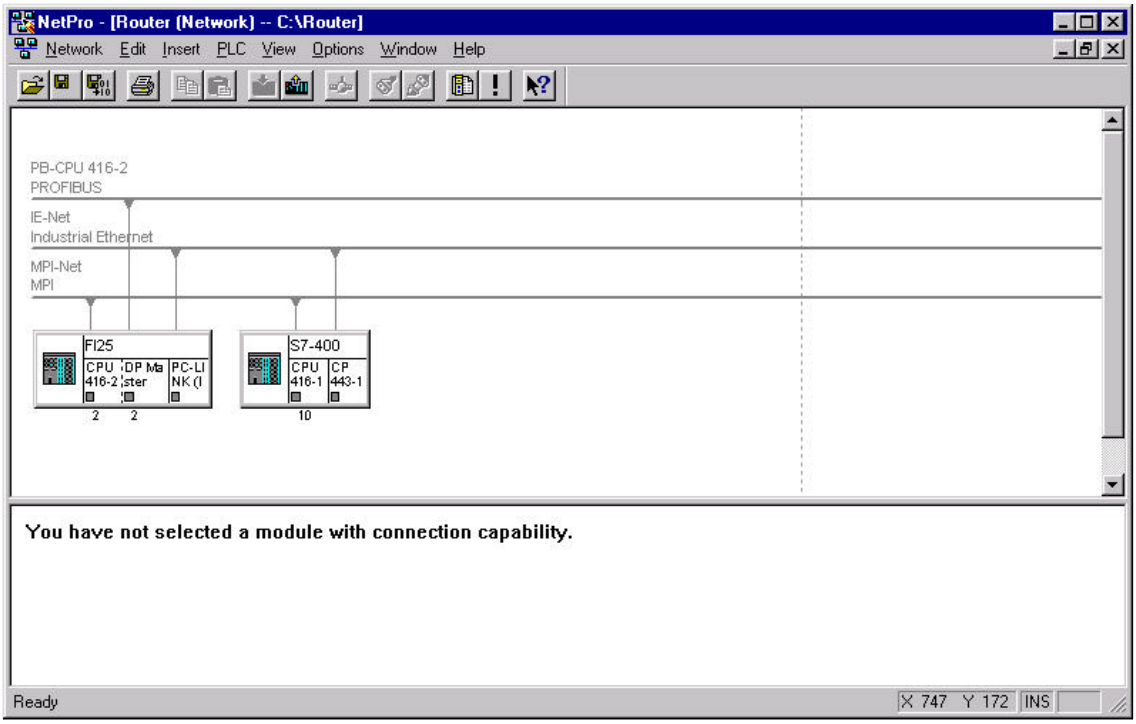

Figure 2-7 Bus Connection

Configuring the Connection

A connection defines the communication relation between two users. The following points are specified here:

- The two communication participants
- The type of connection (in this case the S7 connection)
- Special properties which depend on the type of connection (for example whether the connection is to remain established permanently or whether it is to be connected and disconnected dynamically).

Proceed as follows in order to enter a connection:

1. Select the module CPU 416-2 DP ISA (connection table is visible).
2. Double-click in an empty line of the connection table or select the menu command **Insert > Connection...** Result: The "New Connection" dialog box is opened.

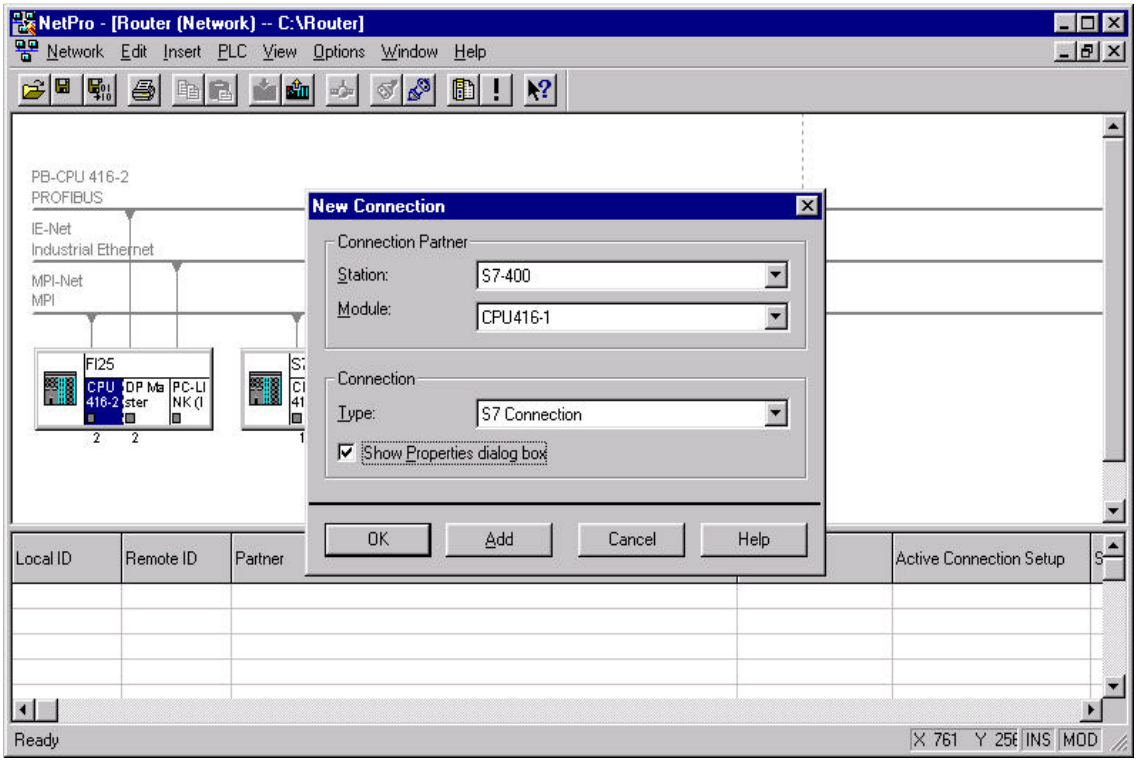

Figure 2-8 Creating a Connection

3. In the fields "Station" and "Module" select the programmable module to which the connection is to be made (called connection partner or also remote user).
4. Select the connection type (only S7 connection) in the "Type" Field.
5. Activate the "Show Properties Dialog Box" check box.
6. Confirm by clicking on "OK". The "Properties Connection" dialog box is opened, Figure 2-9.

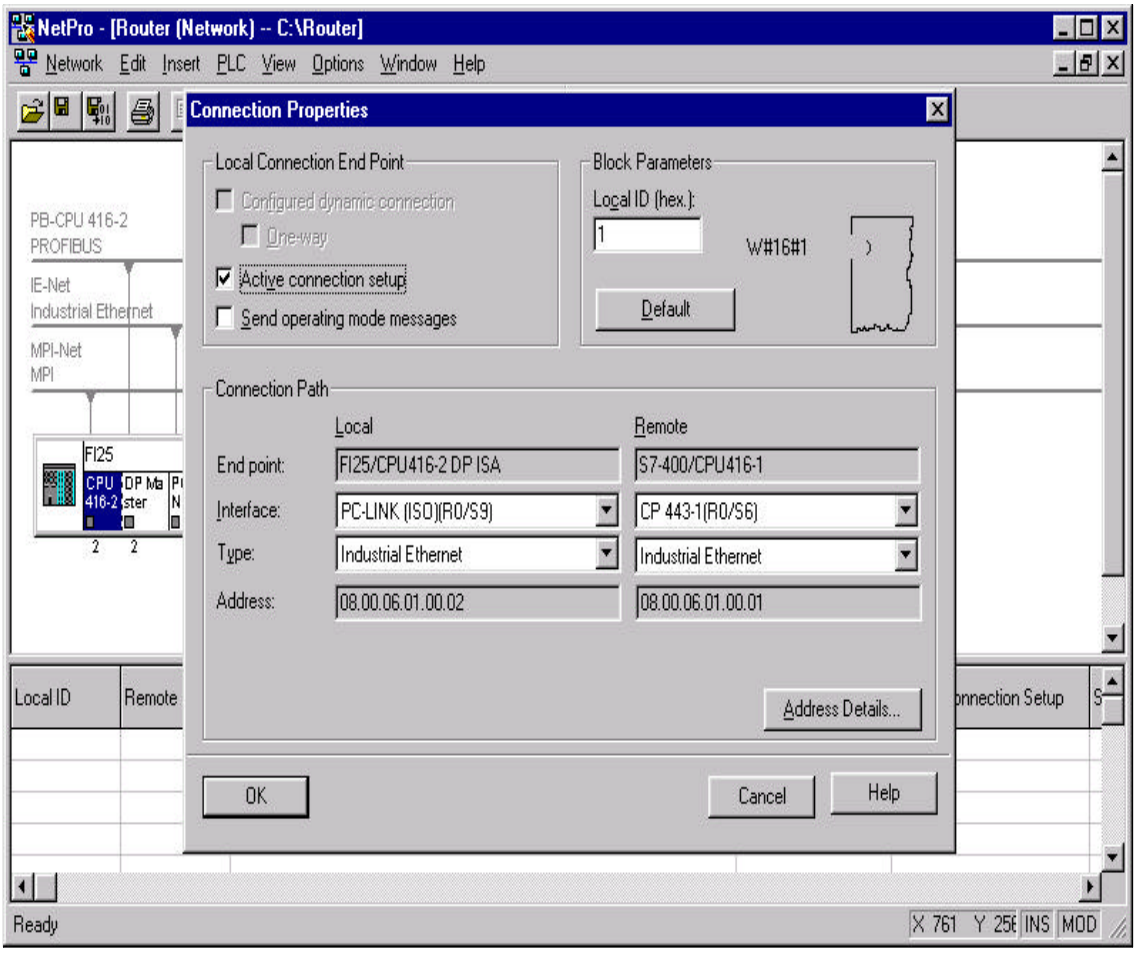

Figure 2-9 Connection Properties

7. Check the settings (interface and type) in Figure 2-9.
8. Confirm your entries by clicking on the "OK" command button.

The first connection has now been created. The second connection is established by the same procedure. Start at Point 1 with the CPU 416-1.

STEP 7 enters the connection in the connection table of the local user and assigns the local ID and, if appropriate the partner ID, for this connection which you require to program the communication function block (value for the block parameter "ID").

The configuration process in the "Router" project is completed with the specified settings. Download the data to the respective station.

2.1.2 Configuring the Access Points

1. Open the Router control panel in the system bar as follows:
   Start > SIMATIC > PC Based Control > CPU 416-2 DP ISA Router Configuration.
2. Click on the "Set PG/PC Interface" command button in the "Assign" tab card.

Procedure for setting the access points:

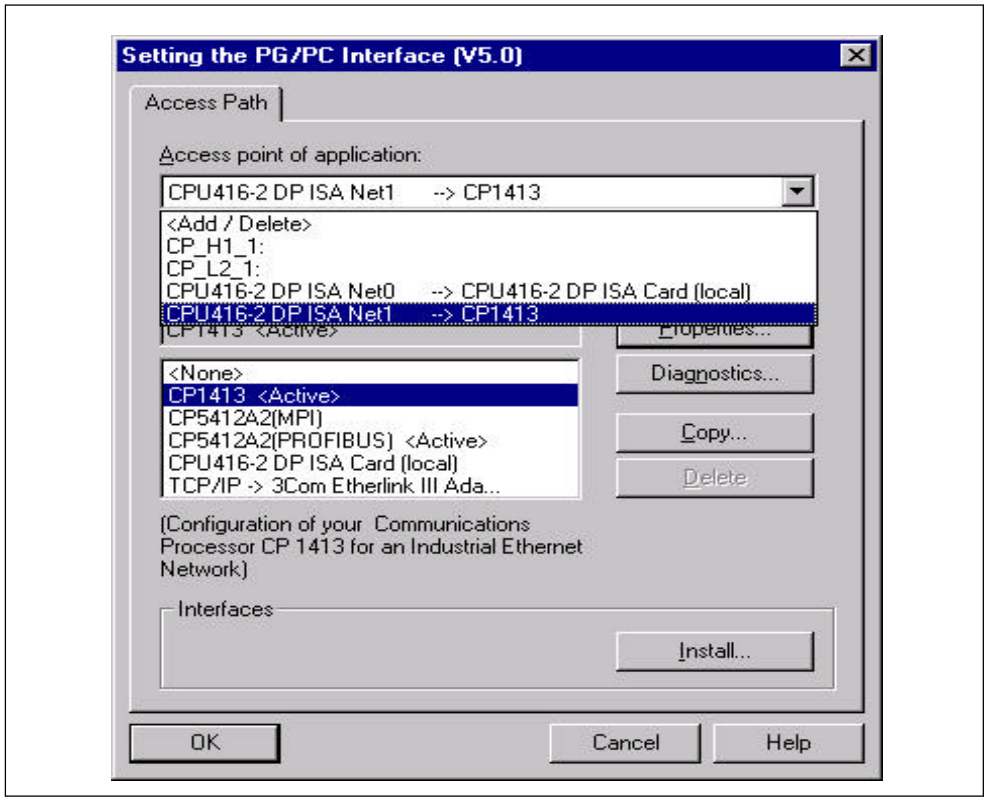

Figure 2-10 Setting the Programming Device/Personal Computer Interface

1. In the "Application access point" field select the element "CPU416-2 DP ISA Net0".
2. In the "Used interface configuration" field select the CPU "CPU416-2 DP ISA Card (local)".

Use the following steps to select the communication partner:

3. In the "Application access point" field select the element "CPU416-2 DP ISA Net1".
4. In the "Used interface configuration" field select the CP "CP1413".
5. Under "Properties" carry out the settings for the corresponding user CP as shown in Figure 2-11.

Note

the station addresses and the network-specific settings must be identical with the settings in the S7 project.

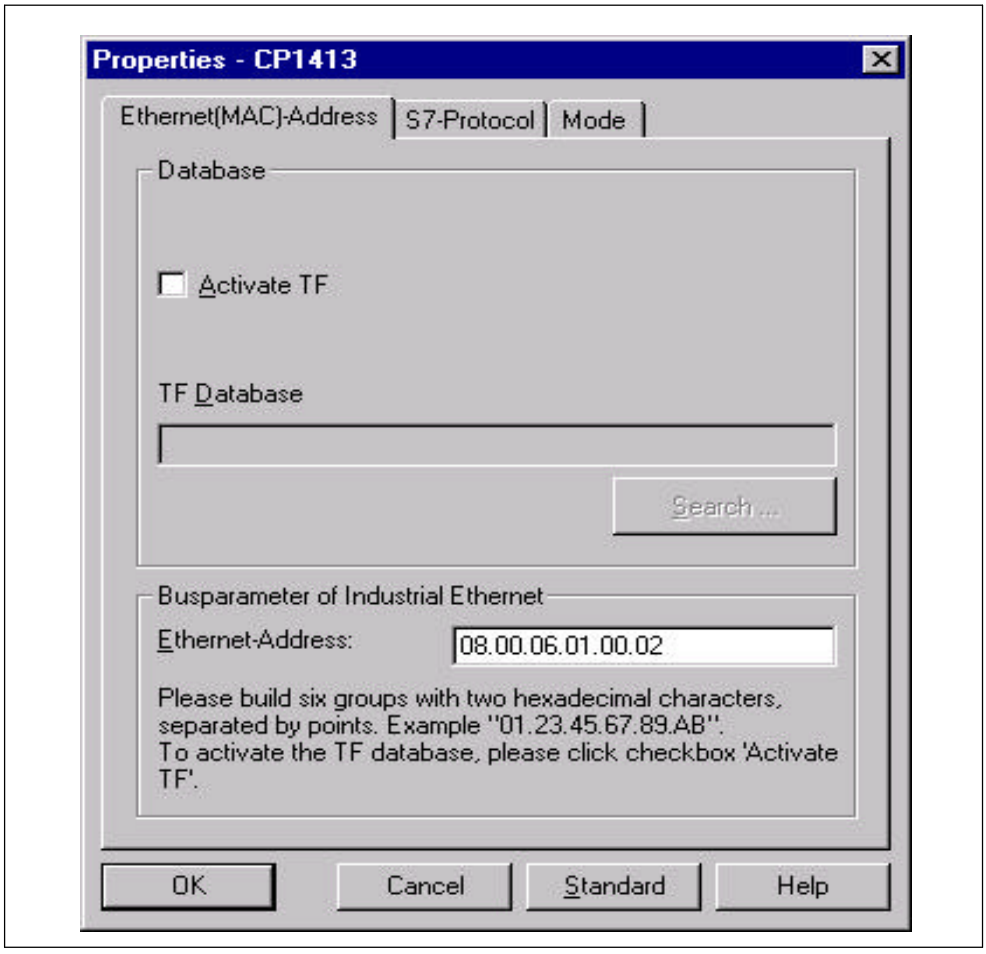

Figure 2-11 Setting the CP Properties

6. Cancel the Program "Set PG/PC Interface".

2.1.3 Starting the Router

A data exchange can be carried out with the router after you have configured the hardware, set the connection for the project and configured the access points.

1. Change to the tab "General"
2. Start the router by clicking on "Start".

The set connections are now displayed in the "Connections" router tab card.

2.1.4 Communication

Include the corresponding communication blocks (for example Put/Get) into your application program.

Siemens AG
A&D AS E 81

Oestliche Rheinbrueckenstr. 50
D-76181 Karlsruhe
Federal Republic of Germany

From:
Your Name: _
Your Title: _
Company Name: _
Street: _
City, ZipCode _
Country: _
Phone: _

Please check any industry that applies to you:

- ❒ Automotive
- ❒ Chemical
- ❒ Electrical Machinery
- ❒ Food
- ❒ Instrument and Control
- ❒ Nonelectrical Machinery
- ❒ Petrochemical
- ❒ Pharmaceutical
- ❒ Plastic
- ❒ Pulp and Paper
- ❒ Textiles
- ❒ Transportation
- ❒ Other _ _ _ _ _ _ _ _ _ _ _

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