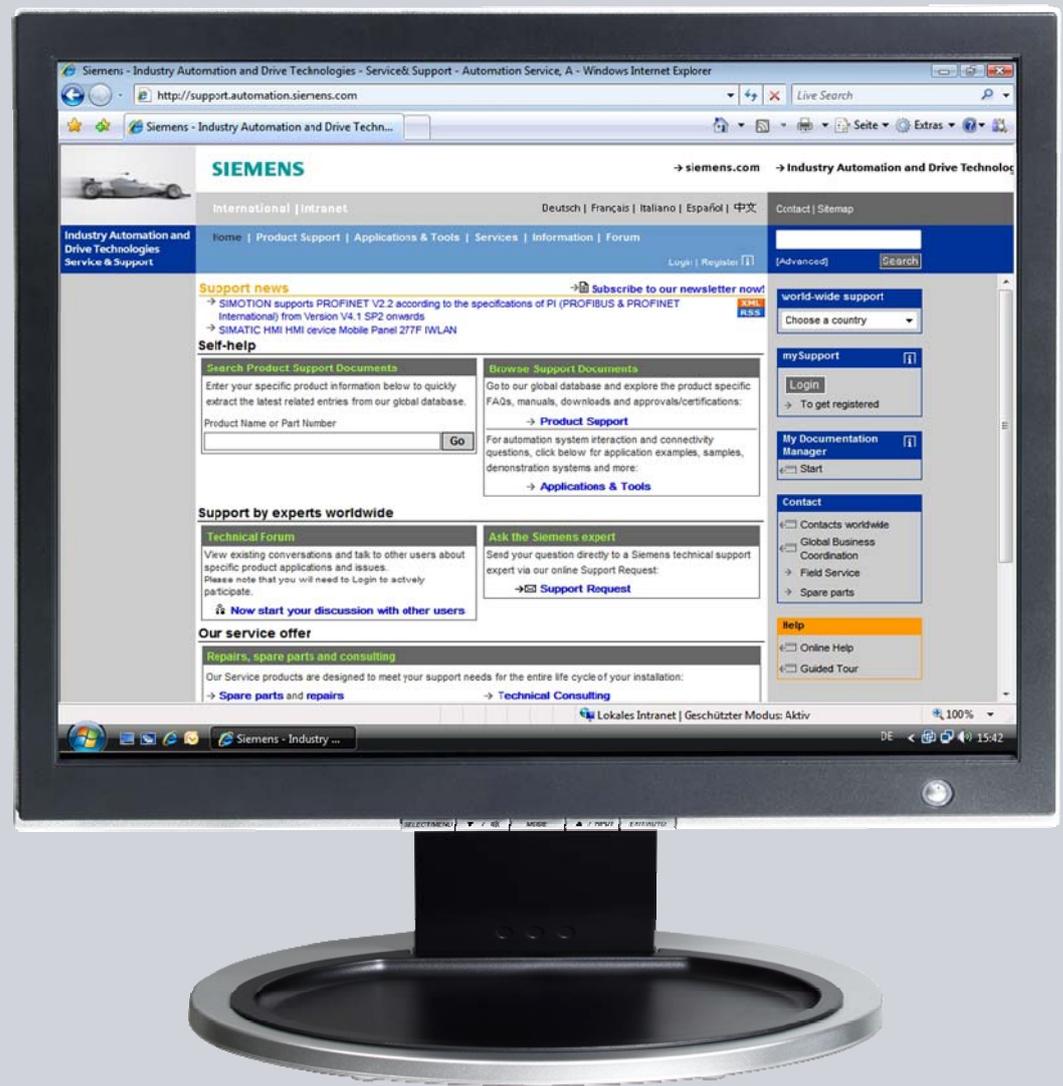


What should you watch out for when setting up a connection between S7-200 and SIMATIC Panels or WinCC flexible PC Runtime and what are the options?

WinCC flexible, SIMATIC Panels and SIMATIC S7-200

FAQ • November 2009



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Question

What should you watch out for when setting up a connection between S7-200 and SIMATIC Panels or WinCC flexible PC Runtime and what are the options?

Answer

Follow the instructions and notes listed in this document for a detailed answer to the above question.

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1 Connection via PROFIBUS

1.1 Configuration in WinCC flexible

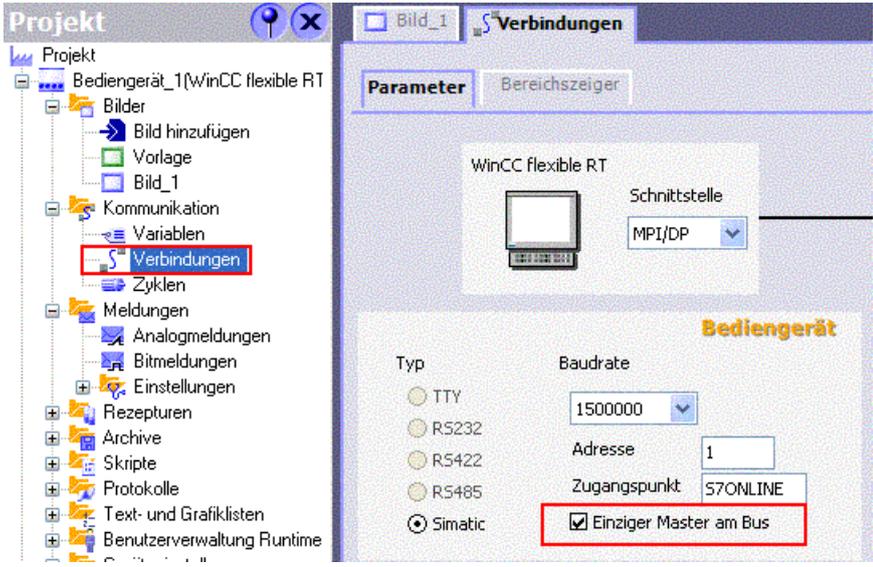
If you want to connect a WinCC flexible operator panel to an S7-200, please make sure that the S7-200 is only operated as a DP slave.

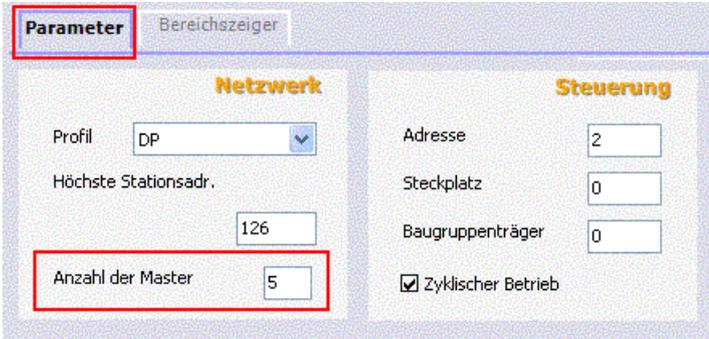
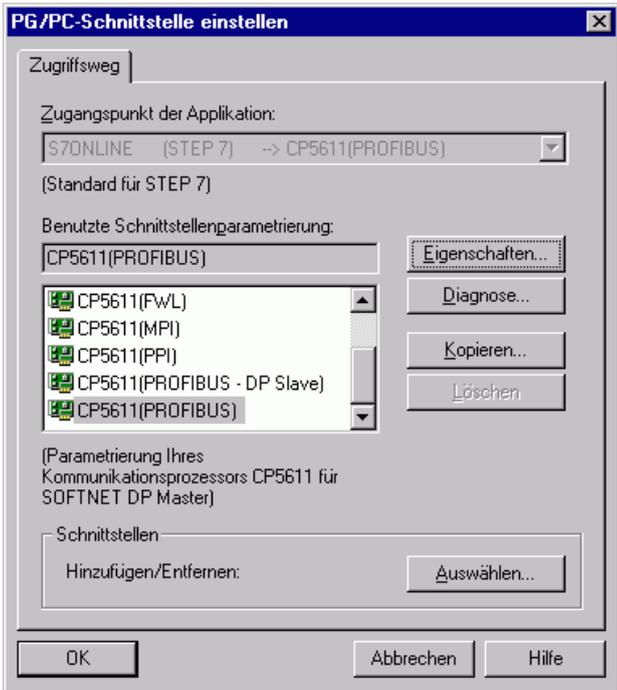
The panel or PC must be used on the PROFIBUS DP network as DP master and the S7-200 as DP slave.

1.1.1 Settings in the configuration

You must make the following settings in the WinCC flexible configuration.

Table 1-1

No.	Procedure
1.	<ul style="list-style-type: none"> In WinCC flexible, you configure a controller connection to the S7-200 under "Project > Communication > Connections". 
2.	<ul style="list-style-type: none"> To set up a communication between the S7-200 as DP slave and the PC as DP master, you check the option "Only master on the bus".  <p>Example:</p>

No.	Procedure
	<p>Five PCs are communicating via WinCC flexible Runtime and PROFIBUS DP with an S7-200. A PC is the DP master, i.e. the "Only master on the bus" option is checked only for this. "Only master on the bus" is not checked for the other PCs.</p> <p>Now, if the master PC fails, the entire communication on the PROFIBUS DP network is interrupted, because there is no master on the bus. As soon as the master PC goes online again (WinCC flexible Runtime is started and controller connection active), the other PC stations can set up a connection again to the S7-200.</p> <p>Recommendation: It is recommended to declare all the PCs as master by checking "Only master on the bus", because then communication does not depend on just one PC.</p>
3.	<p>You enter the other settings and parameters for the PROFIBUS DP connection accordingly.</p>  <p>Note: In the case of a PC, you must also configure the PG/PC interface on "S7ONLINE --> PROFIBUS".</p> 

1.2 Settings in STEP 7 Micro/WIN

With STEP 7 Micro/WIN, you must configure the interface of the S7-200 according to the parameters used in WinCC flexible.

Note

You need a DP interface on the S7-200 for PROFIBUS DP communication at a baud rate > 187.5 Kbaud.

For the S7-22x without integrated DP interface you need an EM277 module for the PROFIBUS DP communication (baud rate > 187.5 Kbaud).

More information on OP communication with S7-200 is available in the entry entitled "S7-200 and HMI Components", Entry ID: [14188898](#).

2 Connection via Ethernet (CP243-1)

2.1 Requirements

2.1.1 Connection between S7-200 and WinCC flexible PC Runtime

Software:

- SIMATIC NET CD 11/2003
- STEP 7 Micro/WIN V4.0
- WinCC flexible Advanced

Hardware:

- CPU 22x:
CPU 222 or 224 release 1.1 or higher, CPU 226 or CPU 226 XM release 1.00 or higher
- CP 243-1: (order number 6GK7 243-1-1EX00-0XE0) or CP 243-1IT (order number 6GK7 243-1GX00-0XE0)
- PC with a standard Ethernet card
- Network cable
- Hub or switch

2.1.2 Connection between S7-200 and Windows-based operator panels

Software:

- STEP 7 Micro/WIN V4.0 or higher
- WinCC flexible standard

Hardware:

- CPU 22x: CPU 222 or 224 release 1.1 or higher, CPU 226 or CPU 226 XM release 1.00 or higher
- CP243-1: (order number: 6GK7 243-1-1EX00-0XE0) or CP 243-1IT (order number 6GK7 243-1GX00-0XE0)
- Network cable
- Hub or switch
- Windows-based operator panel as of 170 series with Ethernet interface

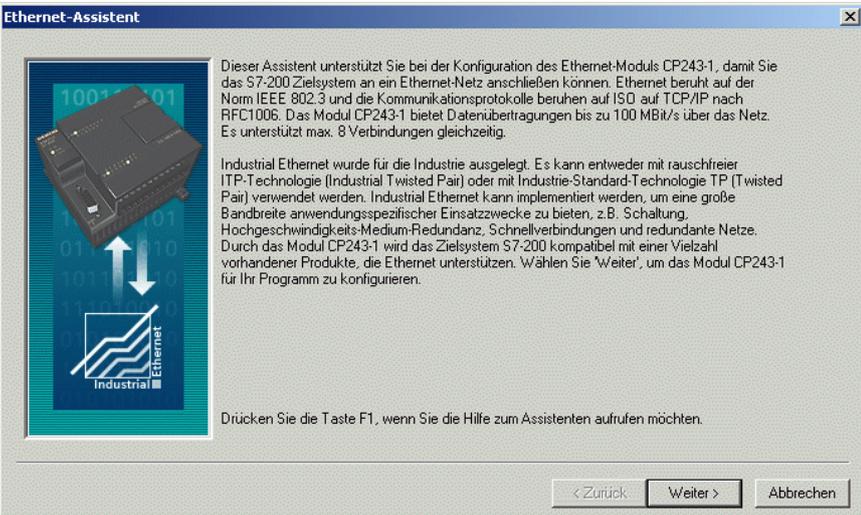
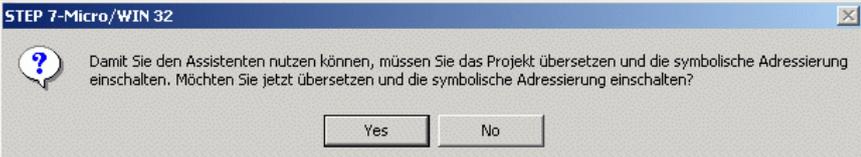
Note

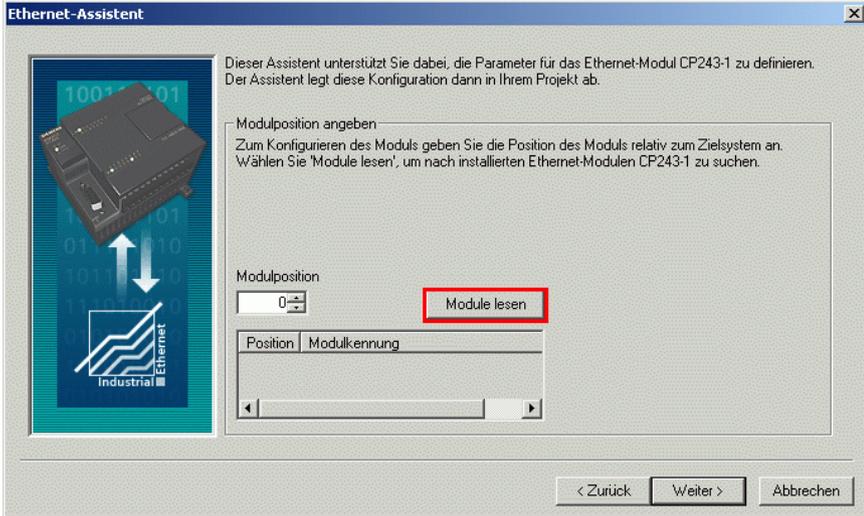
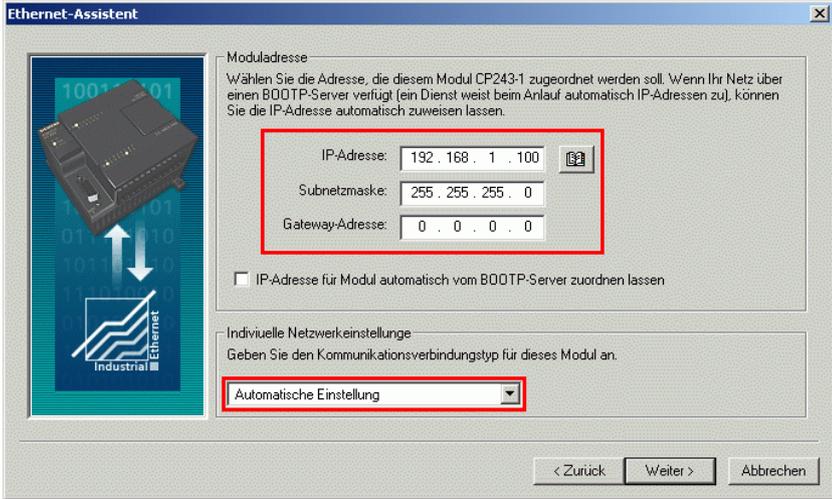
The OP270 and TP270 do not have an on-board Ethernet interface. You can use a CF Ethernet card to extend the OP270 and TP270 by an Ethernet interface.

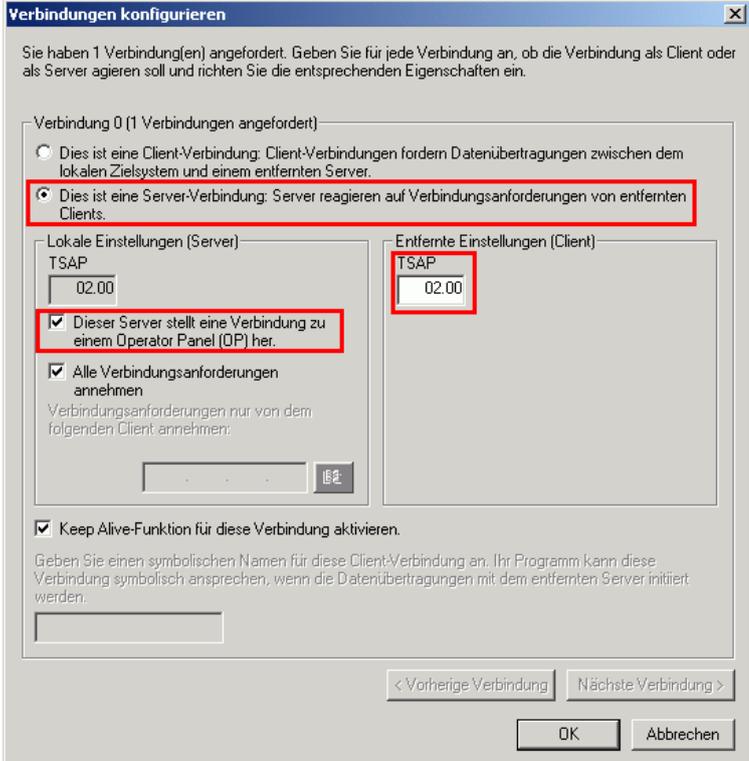
2.2 Configuration of the CP 243-1 with STEP 7 Micro/WIN

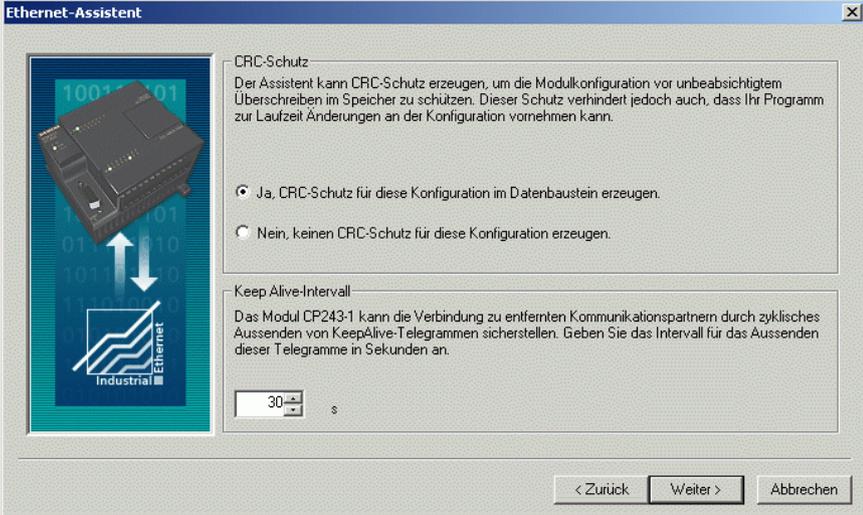
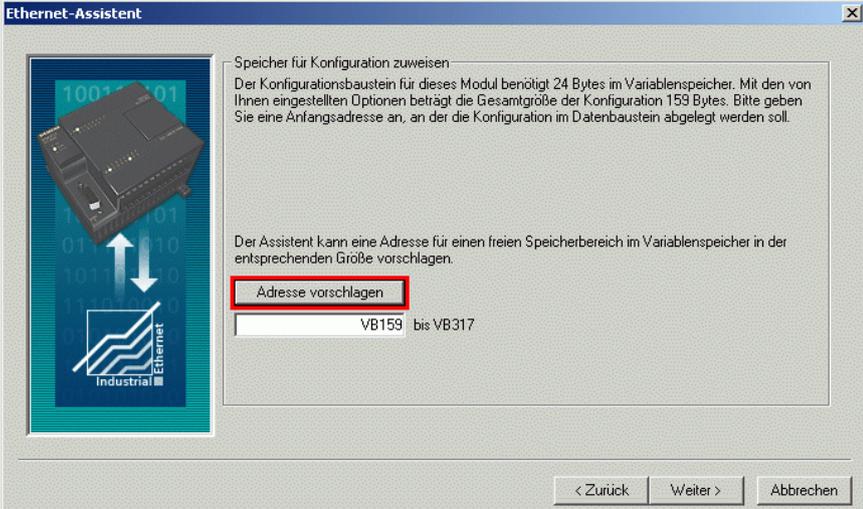
The settings for the CP 243-1 are defined in STEP 7-Micro/Win via the Ethernet Wizard. For assistance with all the information go to STEP 7 Micro/WIN Online Help via F1. Follow the instructions in the table below to configure the CP 243-1 with STEP 7 Micro/WIN.

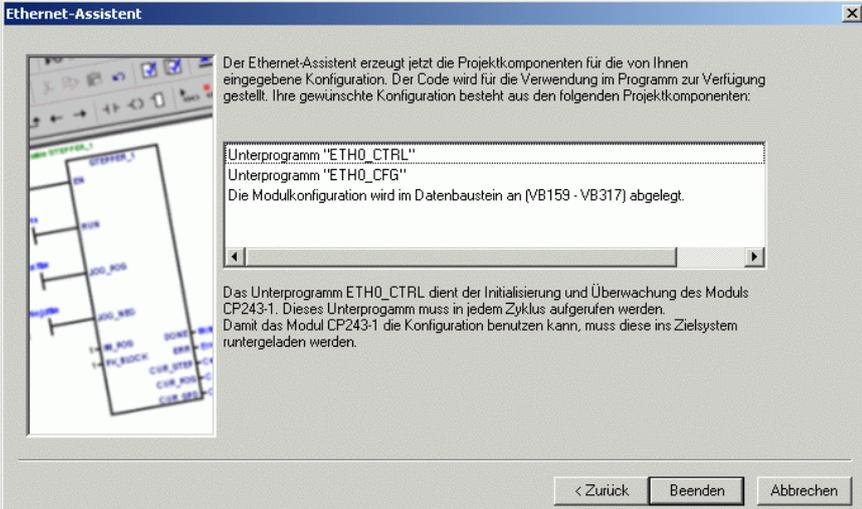
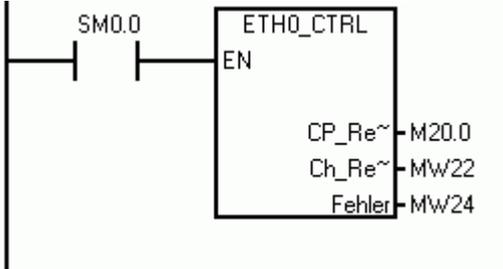
Table 2-1

No.	Procedure
4.	<p>Start the Ethernet Wizard</p> <ul style="list-style-type: none"> • Open STEP 7 Micro/WIN. • Start the Ethernet Wizard via "Tools > Ethernet Wizard...." • Click "Next". 
5.	<p>Confirm message</p> <ul style="list-style-type: none"> • Confirm the message displayed with "YES". <p>Your STEP 7 Micro/WIN configuration is compiled, and the symbolic addressing is activated.</p> 
6.	<p>Define the module position</p> <p>If your PC is connected to the S7-200, click on the "Read modules" button to determine the position of the CP 243-1 module automatically. Otherwise, the module position can also be entered manually.</p> <p>Important:</p> <p>WinCC flexible Runtime or the Windows-based operator panel can only establish a connection with a CP243-1 if the module is configured to "Position 0". The TSAP for the remote station must be set to 02.00.</p>

No.	Procedure
	<ul style="list-style-type: none"> • Check if the CP is connected in the module position "ZERO" and change the module position if necessary. • Identify or enter the module position "ZERO". • Click on "Next". 
7.	<p>Specify the IP address</p> <ul style="list-style-type: none"> • Define an IP address for the CP 243-1. <p>Warning: The IP address for this application may not be taken automatically from a server because the WinCC flexible Runtime or the Windows-based operator panel requires a fixed reference partner (CP 243-1) for the Ethernet communication.</p> <p>Note: The communication connection type for this module can be defined by the "Automatic Setting".</p>  <p>Remark: The BOOTP server is a pared-down DHCP server.</p>

No.	Procedure
8.	<p>Parameterize a PtP connection</p> <ul style="list-style-type: none"> Specify the command byte for the module and the number of point-to-point connections with the CP 243-1. Click on "Next". 
9.	<p>Configure a connection</p> <ul style="list-style-type: none"> The configuration for connecting the CP 243-1 to WinCC flexible Runtime or to a Windows-based operator panel must be defined as in Fig. 06. Click on "OK" to confirm the entries. <p>Warning: The TSAP must always be specified in four-digit format, i.e. with a leading zero (02.00).</p> 

No.	Procedure
10.	<p>Use CRC protection</p> <p>Set the CRC protection whichever way you wish. It is advisable to work without CRC protection first of all. The "Keep Alive Interval" can be specified with the default time.</p> <ul style="list-style-type: none"> • Activate the CRC protection and change the time of the "Keep Alive Interval" if required. • Click on "Next". 
11.	<p>Assign memory</p> <ul style="list-style-type: none"> • Specify a memory area for the configuration of the CP 243-1. <p>Recommended value: If you click on Suggest address, the Wizard can identify a free tag memory area.</p> <ul style="list-style-type: none"> • Click on "Next". 

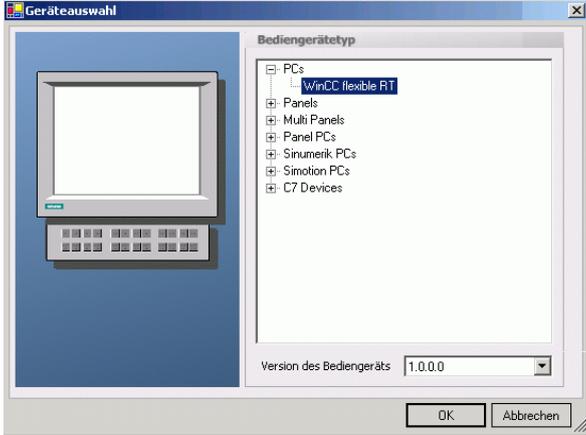
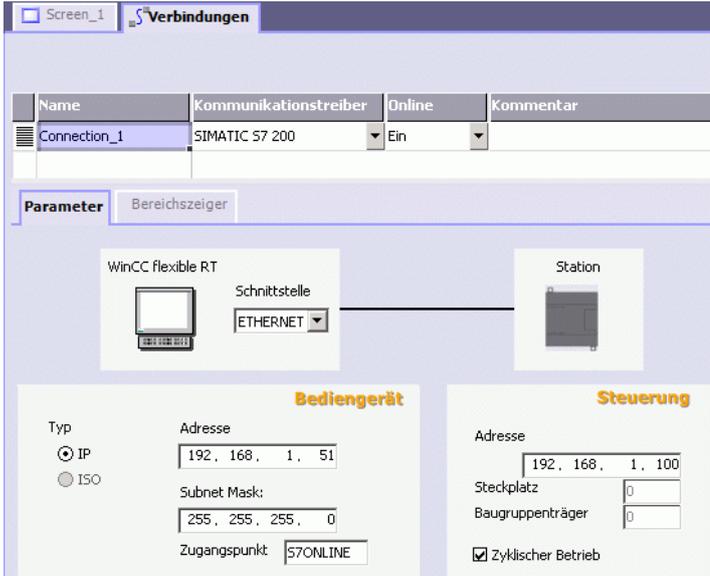
No.	Procedure
12.	<p>Create project components</p> <p>If you click on "Close", the Ethernet Wizard generates the project components for the set configuration. Among other things, subprograms and the tag memory are created in the data block.</p> <ul style="list-style-type: none"> Click the "Close" button. 
13.	<p>Confirm message</p> <ul style="list-style-type: none"> Click "Yes" to confirm the message that appears. 
14.	<p>Call ETH0_CTRL</p> <ul style="list-style-type: none"> In your STEP 7 Micro/WIN program, you must call the ETH0_CTRL subroutine in each cycle. Finally, load the entire configuration into the S7-200. 

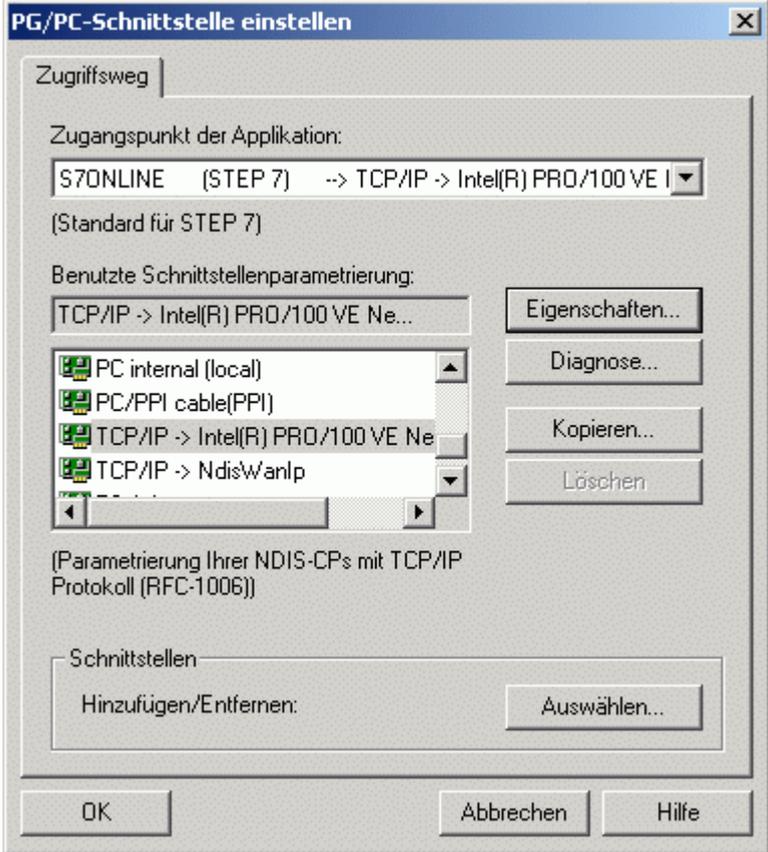
2.3 Configuration

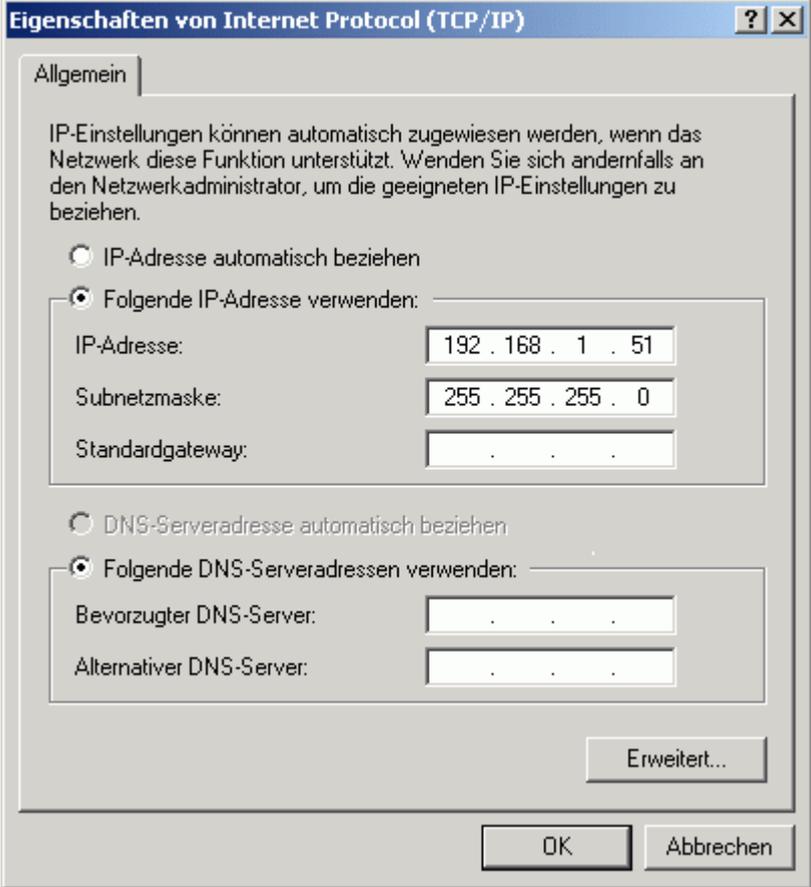
2.3.1 WinCC flexible PC Runtime

Follow the instructions in the table below to configure a WinCC flexible PC Runtime.

Table 2-2

No.	Procedure
1.	<p>Create a PC project</p> <ul style="list-style-type: none"> Start WinCC flexible. Create a project with the device type "PCs > WinCC flexible RT". 
2.	<p>Specify the connection parameters</p> <ul style="list-style-type: none"> Navigate to "Communication > Connections" and create a new connection in the right pane of the project window. Select the communication driver "SIMATIC S7 200". Under interface, select "ETHERNET". Enter the IP address and the subnet mask for the WinCC flexible RT and the S7-200. 

No.	Procedure
3.	<p>Select the access point</p> <ul style="list-style-type: none"> Open the PG/PC interface under "Start > Control panel > Set PG/PC interface" In the PG/PC interface, you must set the access point S7ONLINE to "TCP/IP -> [Used network card]". 
4.	<p>Configure the network card</p> <p>The IP address and subnet mask for the PC, which are defined via the system control, need to match the IP address and subnet mask specified in WinCC flexible.</p> <ul style="list-style-type: none"> Enter the IP address and the subnet mask.

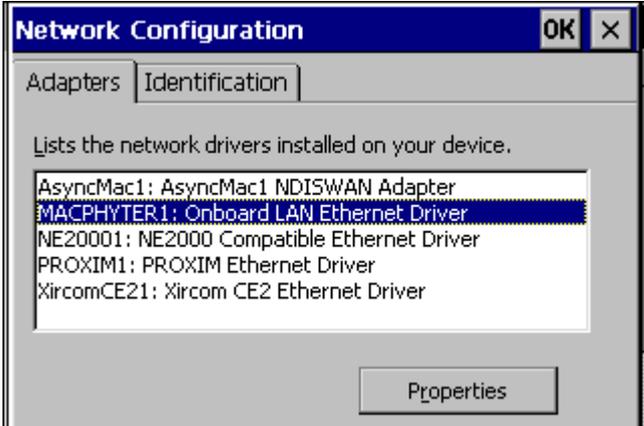
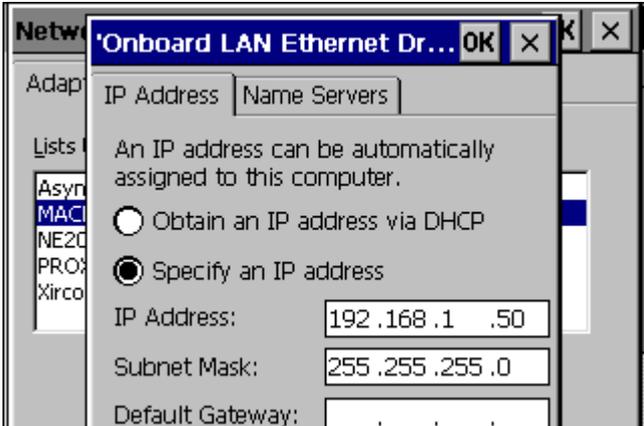
No.	Procedure
	 <p>Eigenschaften von Internet Protocol (TCP/IP)</p> <p>Allgemein</p> <p>IP-Einstellungen können automatisch zugewiesen werden, wenn das Netzwerk diese Funktion unterstützt. Wenden Sie sich andernfalls an den Netzwerkadministrator, um die geeigneten IP-Einstellungen zu beziehen.</p> <p><input type="radio"/> IP-Adresse automatisch beziehen</p> <p><input checked="" type="radio"/> Folgende IP-Adresse verwenden:</p> <p>IP-Adresse: 192 . 168 . 1 . 51</p> <p>Subnetzmaske: 255 . 255 . 255 . 0</p> <p>Standardgateway: . . .</p> <p><input type="radio"/> DNS-Serveradresse automatisch beziehen</p> <p><input checked="" type="radio"/> Folgende DNS-Serveradressen verwenden:</p> <p>Bevorzugter DNS-Server: . . .</p> <p>Alternativer DNS-Server: . . .</p> <p>Erweitert...</p> <p>OK Abbrechen</p>
5.	<p>Start WinCC flexible Runtime</p> <p>Once you have completed the configuration in WinCC flexible, you can start the Runtime.</p>

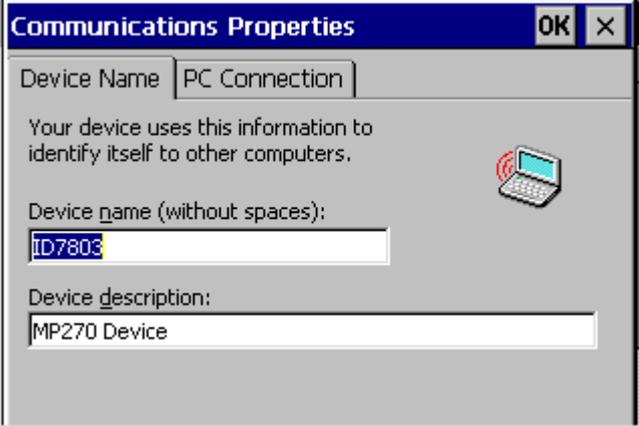
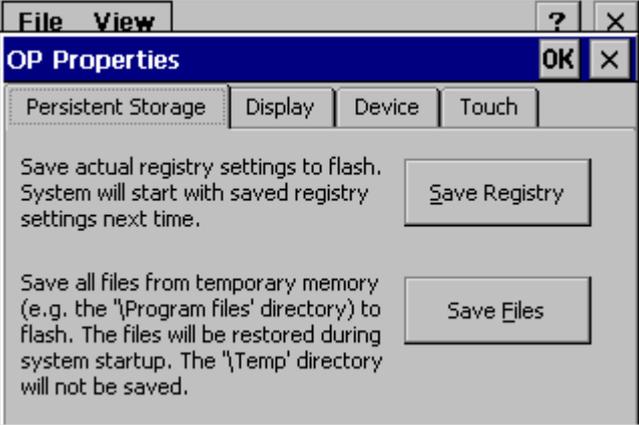
2.3.2 Windows-based operator panel

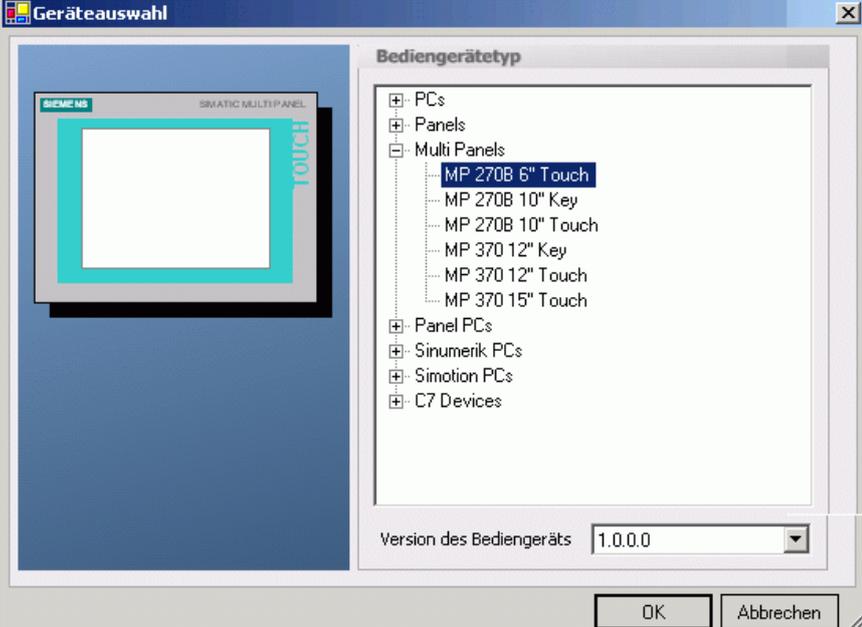
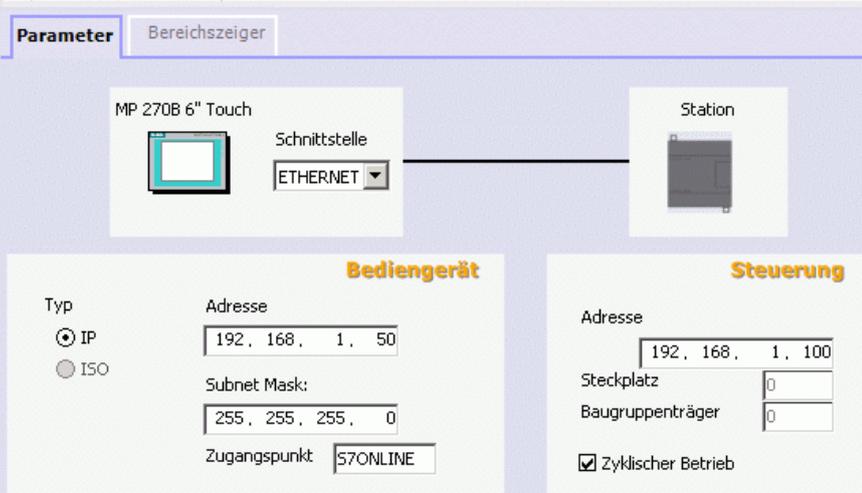
The connection to the S7-200 must be configured in the WinCC flexible project. You must parameterize the configuration of the Ethernet adapter directly in the operator panel.

Follow the instructions in the table below to make the settings on the operator panel and create the WinCC flexible configuration.

Table 2-3

No.	Procedure
1.	<p>Select the Ethernet adapter</p> <ul style="list-style-type: none"> Open the Network menu command in the "Control Panel". Select the driver for the Onboard Ethernet card in the "Adapters" tab and click on "Properties". 
2.	<p>Specify the connection parameters</p> <ul style="list-style-type: none"> Select "Specify an IP address". Set your IP address as 192.168.1.50 and your subnet mask as 255.255.255.0. <p>Note: The IP address and subnet mask must match the IP address and subnet mask specified in WinCC flexible.</p> <ul style="list-style-type: none"> Click on "OK" to close the dialog. 

No.	Procedure
3.	<p>Change the device name</p> <ul style="list-style-type: none"> Click on "OK" to confirm the message that appears. Switch to the "Communication" menu in the "Control Panel". <p>Note: In the "Device Name" tab, the "device name" must be changed (e.g. ID7803) to enable communication to be established.</p> <ul style="list-style-type: none"> Change the device name under "Device Name". Click on "OK" to close the dialog. 
4.	<p>Save the settings</p> <ul style="list-style-type: none"> Open the "OP" menu. Click on the "Save Registry" button in the "Persistent Storage" tab in order to save the tab settings. Reboot the MP270B. 

No.	Procedure								
5.	<p>Select the operator panel</p> <ul style="list-style-type: none"> Start WinCC flexible. Create a project, for example for the device type "MP 270B 6" Touch". 								
6.	<p>Specify the connection parameters</p> <ul style="list-style-type: none"> Navigate to "Communication > Connections" and create a new connection in the right pane of the project window. Select the communication driver "SIMATIC S7 200". Under interface, select "ETHERNET". Enter the IP address and the subnet mask for the MP 270B and the S7-200. <table border="1" data-bbox="502 1265 1364 1377"> <thead> <tr> <th>Name</th> <th>Kommunikationstreiber</th> <th>Online</th> <th>Kommentar</th> </tr> </thead> <tbody> <tr> <td>Connection_1</td> <td>SIMATIC S7 200</td> <td>Ein</td> <td></td> </tr> </tbody> </table> 	Name	Kommunikationstreiber	Online	Kommentar	Connection_1	SIMATIC S7 200	Ein	
Name	Kommunikationstreiber	Online	Kommentar						
Connection_1	SIMATIC S7 200	Ein							
7.	<p>Transfer the configuration</p> <ul style="list-style-type: none"> Once you have completed the configuration in WinCC flexible, you can transmit this to the MP270B. 								

3 Connection via RS232/PPI cable

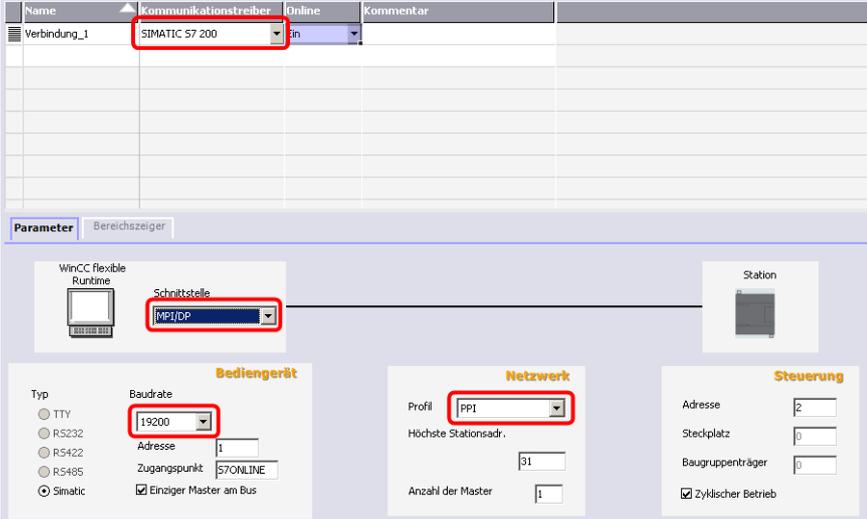
3.1 Connection between WinCC flexible PC Runtime and an S7-200 controller

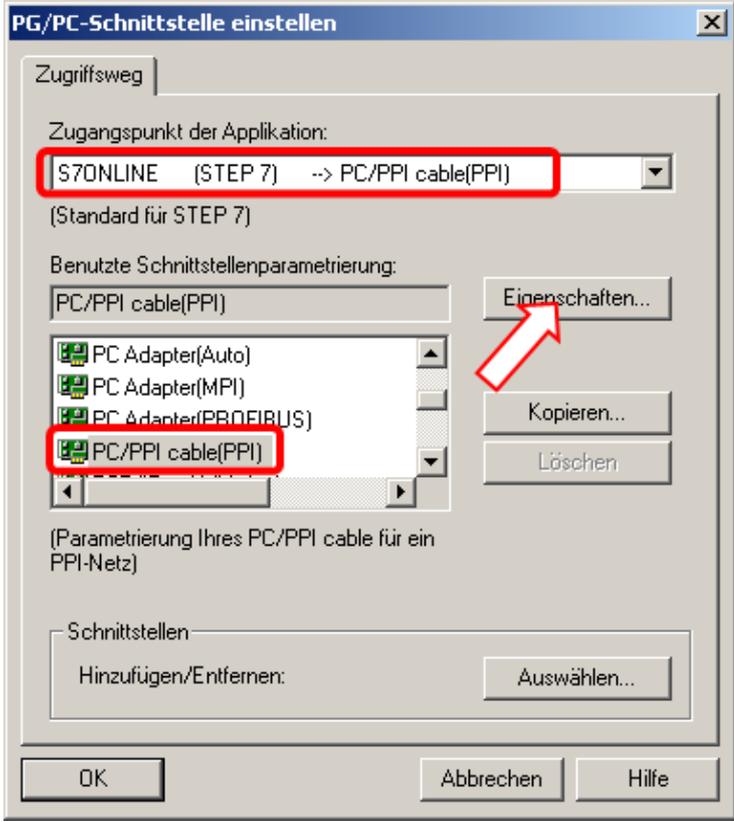
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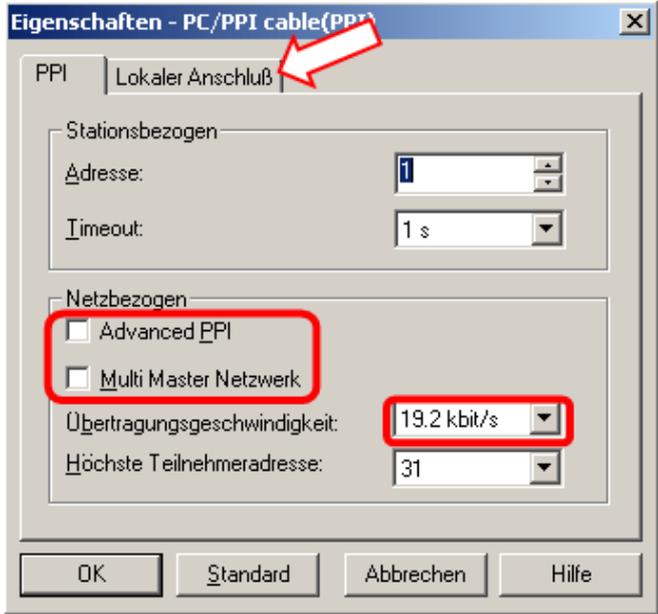
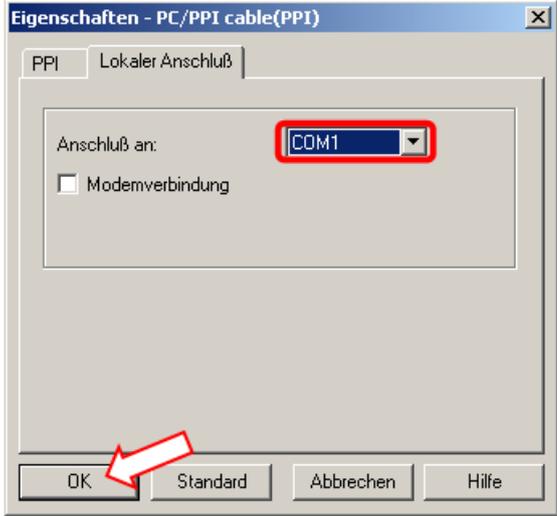
Below is a description of the settings you must make for a connection between WinCC flexible PC Runtime and an S7-200 controller via the serial RS232/PPI cable.

Procedure:

Table 3-1

No.	Procedure
1.	<p>Create a new connection for an S7-200 in the tree under "Connections" in WinCC flexible.</p> <ul style="list-style-type: none"> • Check that the settings for the interface are set to MPI/DP. • Set the baud rate to 19200 (or 9600; the baud rate 187.5k is not supported). • Set the network profile to PPI (MPI is possible, for example, if you have more than one connection). 
2.	<p>In addition to the settings in the project, you must also set the PG/PC interface on the PC with WinCC flexible Runtime. In the Control Panel, you open the "Set PG/PC Interface" dialog.</p>

No.	Procedure
3.	<p>The "Set PG/PC interface" dialog opens.</p>  <p>Check that the following settings are made here:</p> <ul style="list-style-type: none"> • Access point of the application: "S7ONLINE" • Interface parameters used: PC/PPI cable

No.	Procedure
4.	<p>Now click on the Properties button. The "Properties - PC/PPI cable" dialog opens and the "PPI" tab is selected.</p>  <p>Check that the following settings are made here:</p> <ul style="list-style-type: none"> • Advanced PPI is deselected • Multi Master network is deselected • Transfer rate 19.2kbps (must correspond to setting of WinCC flexible) <p>Note: If you use the new PC/PPI cable 6ES7 901-3CB30-0XA0 with WinCC flexible Runtime, switch it to Compatibility mode. Select the Advanced PPI option for this.</p>
5.	<p>Then select the "Local Connection" tab.</p>  <p>Here you set the serial interface you are using for communication.</p>

No.	Procedure
6.	<p>On the RS232/PPI cable, you must also set the DIP switches. A description of this is given in Entry ID 16532946.</p> <p>For the example shown here with the properties set above:</p> <ul style="list-style-type: none">• Baud rate 19200• No Multi Master network• PPI protocol <p>you set all the DIP switches to "0" except DIP switch 3.</p>

4 Connection via TeleService

4.1 Requirements

Configuration Notes:

Taking three examples, we describe the settings required to set up a connection with the TS Adapter II-Modem to nodes on the network, like an S7-200.

In this sample configuration, we will use:

- TS Adapter II-Modem (order number: 6ES7 972-0CB35-0XA0)
- S7-200 / CPU 224
- S7-300 / CPU 315-DP
- TP177B

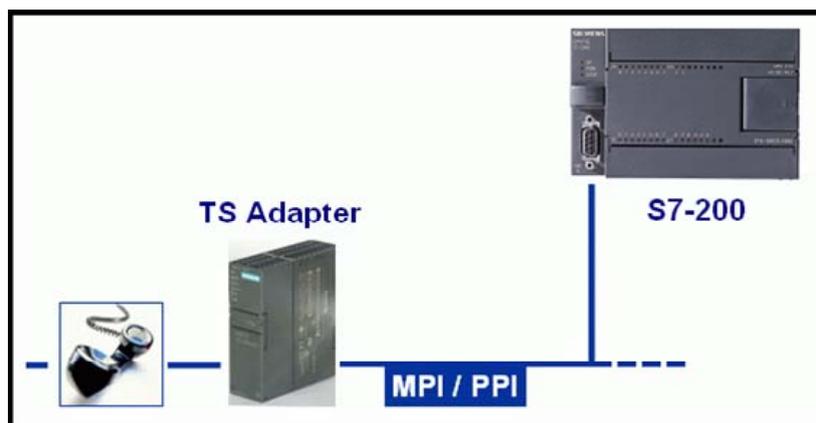
4.2 Direct connection between a TS Adapter II-Modem and an S7-200 controller

TS Adapter II-Modem = TeleService Adapter II with integrated modem

Setting up a connection:

If you connect a TS Adapter II-Modem directly to the interface of the S7-200 (e.g. CPU224) **without** any other active nodes on the network, e.g. a panel, then online communication with STEP 7 - Micro/WIN only works if the TS Adapter II-Modem is configured for the **MPI** or **Advanced PPI** network type. All other settings such as Auto and PROFIBUS lead to the display of "BUSF" on the TS Adapter.

Figure 4-1



Note

If you configure the MPI network type on the TS Adapter II-Modem, "PG/PC is the only master on the network" must be **enabled** on the TS Adapter.

Advanced PPI is to be set on the TS Adapter II when there are multiple CPU2xx on the MPI/PPI network and one or multiple CPU interfaces being operated in Master mode.

4.3 Direct connection between a TS Adapter II-Modem and an S7-200 controller and a panel via MPI

TS Adapter II-Modem = TeleService Adapter II with integrated modem

Setting up a connection:

If you connect a TS Adapter II-Modem directly to the interface of the S7-200 (e.g. CPU224) **and** there are other active nodes on the network, e.g. a panel, then online communication with STEP 7 - Micro/WIN only works if the TS Adapter II-Modem is configured for the **MPI** network type.

With this setting, it is possible to download a project to the panel with WinCC flexible. Furthermore, with this setting you can set up an online connection to the controller with Micro/WIN.

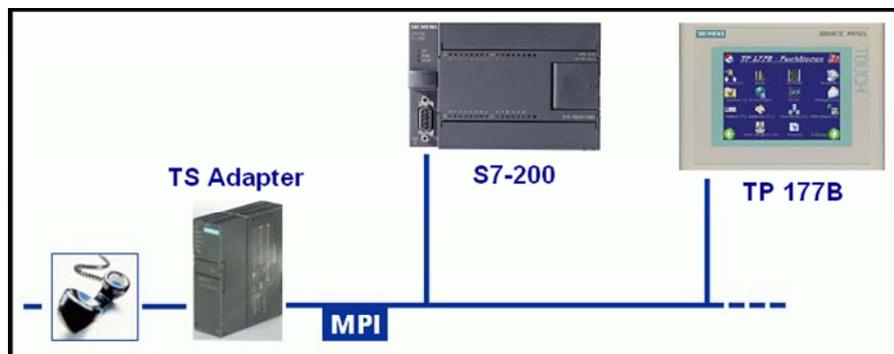
Note

In some cases, it might happen that the panel changes to Transfer mode when the communication interface is updated in MicroWIN (MicroWIN > Communication > "Double-click for update").

Settings on the panel:

On the panel you must enable "MPI Transfer" and "Remote Control" for Transfer settings (Start menu > Control Panel > Transfer).

Figure 4-2



4.4 Direct connection between a TS Adapter II-Modem and an S7-200 controller, an S7-300 controller and a panel via MPI

TS Adapter II-Modem = TeleService Adapter II with integrated modem

Setting up a connection:

If you connect a TS Adapter II-Modem directly to the interface of the S7-200 (e.g. CPU224) and there are other active nodes on the network, e.g. a panel, then online communication with STEP 7 - Micro/WIN only works if the TS Adapter II-Modem is configured for the MPI network type. With this setting, it is possible to download a project to the panel with WinCC flexible. Furthermore, with this setting you can set up an online connection to the controller with Micro/WIN.

Note In some cases it might happen that the panel changes to Transfer mode when the communication interface is updated in MicroWIN (MicroWIN > Communication > "Double-click for update").

Settings on the panel:

On the panel you must enable "MPI Transfer" and "Remote Control" for Transfer settings (Start menu > Control Panel > Transfer).

Figure 4-3

