How can you transfer a WinCC flexible project via Ethernet to a Windows-based panel?

WinCC flexible

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Caution

The functions and solutions described in this article confine themselves predominantly to the realization of the automation task. Furthermore, please take into account that corresponding protective measures have to be taken in the context of Industrial Security when connecting your equipment to other parts of the plant, the enterprise network or the internet. Further information can be found in Entry ID: !50203404!.

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Question

How can you transfer a WinCC flexible project via Ethernet to a Windows-based panel?

Answer

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

Contents

1 Instructions

For transfer of a WinCC flexible configuration via Ethernet you must make settings on the operator panel and on the configuration PC.
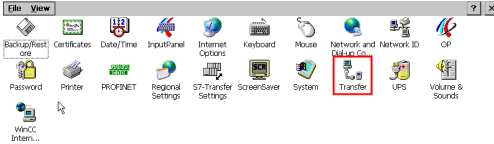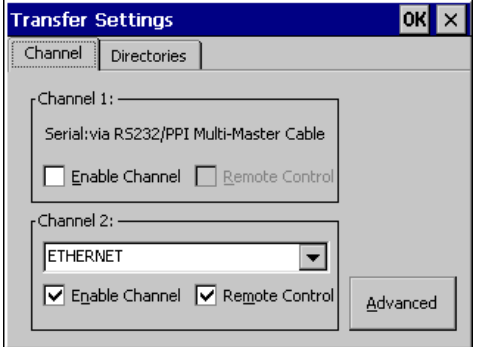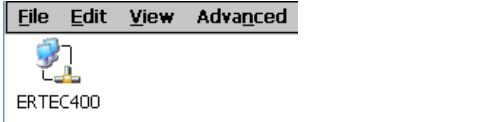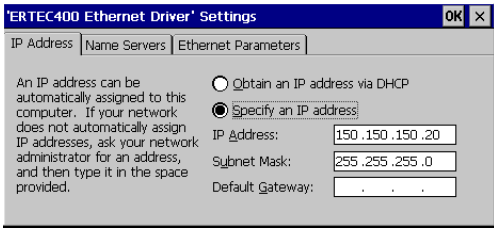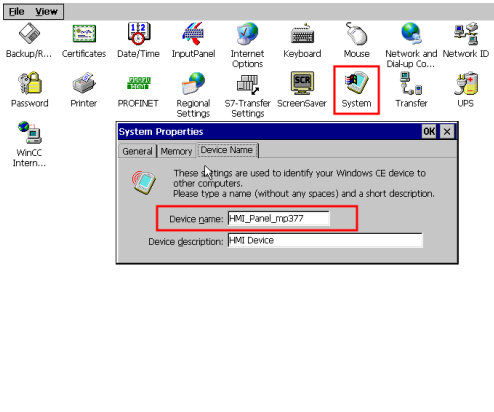
Notes

- It is not possible to transfer a project to a Micro Panel, because the Micro Panel does not have an Ethernet interface.
- Transfer via Ethernet is possible with an OP270 / TP270. Since these two devices have no onboard Ethernet interface you need an NE2000-compatible CF card with Ethernet interface.
- Information about which panels support Ethernet transfer is available in the relevant manual of each operator panel or in the entry entitled "What transfer options are available in the various operator panels?", Entry ID: 19109408
- If you wish to integrate your configuration computer into an existing Ethernet network, you must transfer the parameters of the existing Ethernet network. Please note that the IP address of the PC on the Ethernet network must be unique.
- In the case of a direct connection without any other active components such as hub, switch or router you need a crossover patch cable.
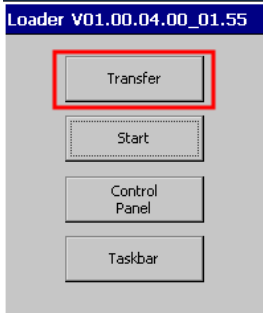
2 Settings on the Operator Panel

The illustrations below are from MP 377 and might differ from operator panel to operator panel, because not all the functions are available for each operator panel.

Table 2-1

No.	Action	Screen
1.	Open the "Transfer" dialog in the "Control Panel".	
2.	Transfer via Ethernet is enabled under Channel 2. Select "Ethernet" for Channel 2. For Channel 2 you also set a check mark for "Enable Channel" and if you wish, "Remote Control". **Notes** The "Remote Control" option permits automatic termination of Runtime on the panel when transfer is triggered via the development environment of WinCC flexible. The panel then automatically switches to Transfer mode.	
3.	Open the advanced settings by clicking the "Advanced" button.	
4.	Double-click the "Ethernet driver".	
5.	If you do not take the IP address from a DHCP server, select "Specify an IP address" and specify the IP address and the subnet mask of the panel. **Note** The IP address **must** be unique, in other words, it must **not** be used by any other node in the network.	
6.	Close the dialog box with "OK".	
7.	Click the "System" icon to open the "System Properties" dialog window. Change the name of the operator panel ("HMI_Panel_mp377", for example). **Note** If you are using multiple panels in one Ethernet network, you should always change the name of the panel. Note that the device name must be unique, in other words, it must not already be used by another device.	

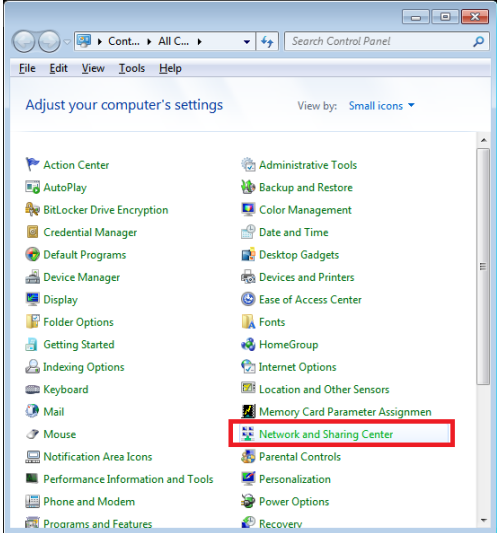| No.	Action	Screen
8.	Close the dialog box with "OK".	
9.	Close the "Control Panel" as well.	
10.	Select the "Transfer" button in the "Runtime Loader".	

3   Settings on the Configuration Computer

Depending on your operating system you select either "Settings in Windows 7" or "Settings in Windows XP".
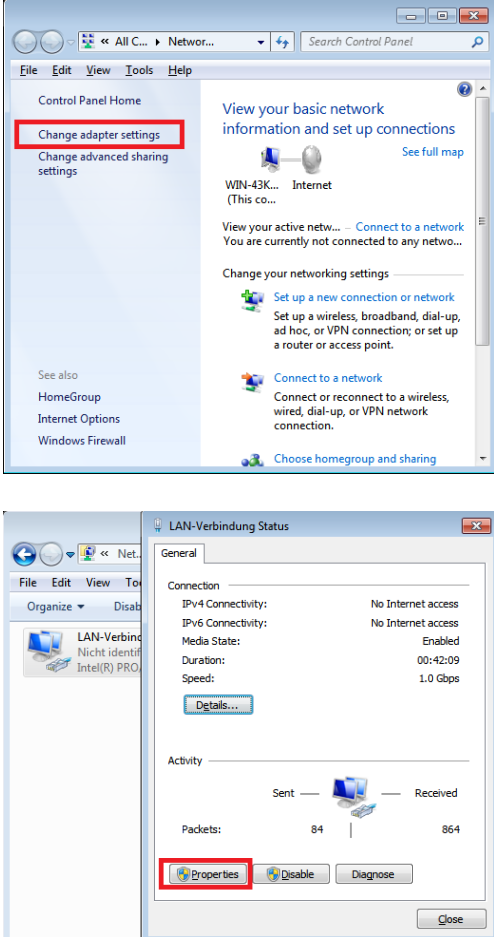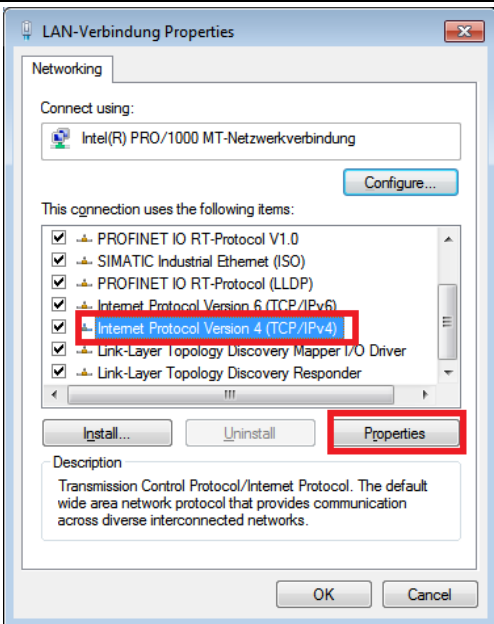
3.1   Settings in Windows 7

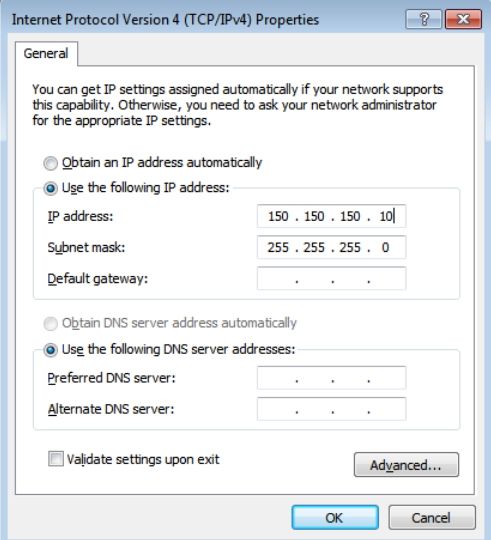The required settings on the configuration computer are described below.

3.1.1   Non-integrated Project

Table 3-1

No.	Action	Screen
1.	Open the "Network and Sharing Center" menu in the Control Panel of your configuration computer.	

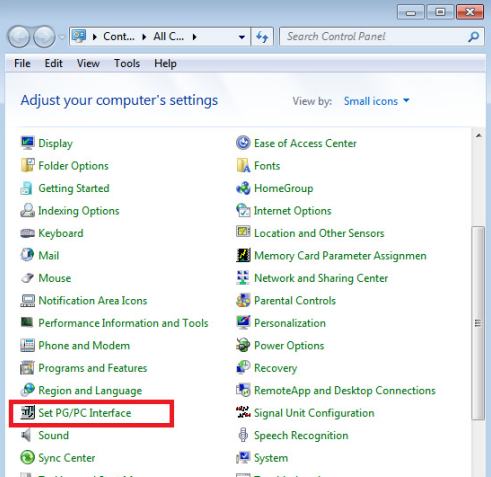| No.	Action	Screen
2.	In the "Network and Sharing Center" you click "Change adapter settings". Double-click the relevant "Network" and then click the "Properties" button to open the Properties window of that network.	
3.	Mark "Internet Protocol Version 4 (TCP/IPv4)" and then click the "Properties" button.	

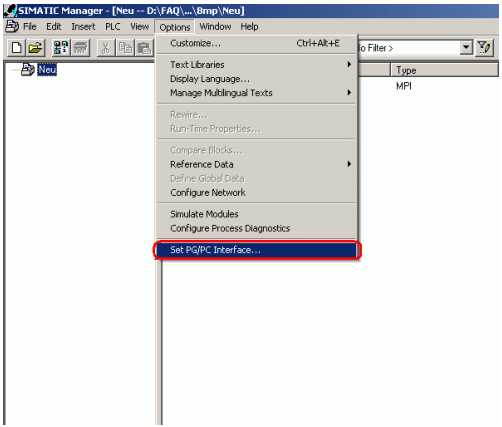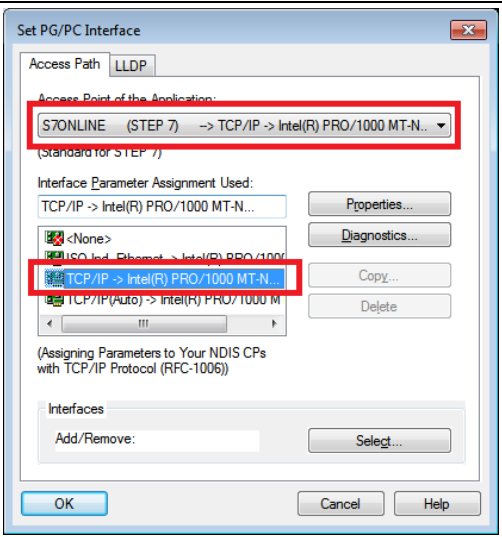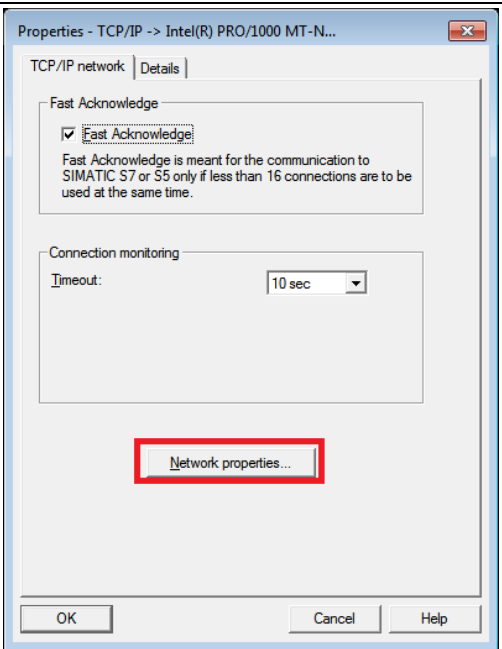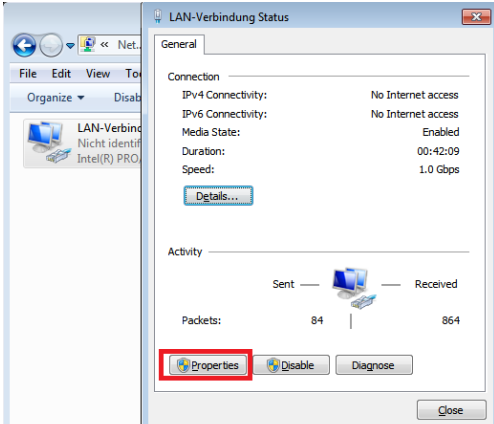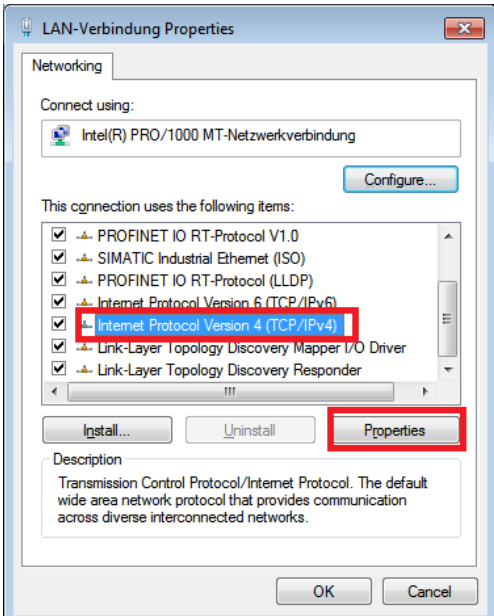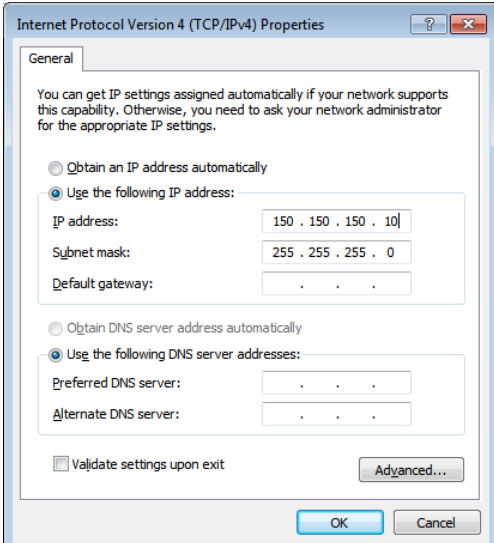| No.	Action	Screen
4.	Assign a valid IP address and subnet mask. **Note** The IP address **must** be unique. In other words, it must **not** be used by another node (socket) in the network.	
5.	Close the Properties dialog and all other dialogs with "OK".	

3.1.2 Integrated Project

Table 3-2

No.	Action	Screen
1.	Open the "Set PG/PC Interface" menu in the Control Panel of your configuration computer.	

No.	Action	Screen
2.	Alternatively you can also open the PG/PC interface through the SIMATIC Manager.	
3.	If you have an internal Ethernet interface, you can select the TCP/IP adapter without CP. You can use any NDIS Ethernet card for transfer via Ethernet. **Note:** If none of the interfaces listed above is shown, you can install them manually by clicking the "Select..." button in the "Interfaces" "Add/Remove:" field. Click the "Properties" button.	
4.	Enable "Fast Acknowledge" if you are communicating with an S5 or S7 and are operating less than 16 connections simultaneously. Click the "Network properties..." button.	

No.	Action	Screen
5.	Double-click the relevant "Network" and then click the "Properties" button to open the Properties window of that network.	
6.	Mark "Internet Protocol Version 4 (TCP/IPv4)" and then click the "Properties" button.	
7.	Assign a valid IP address and subnet mask. **Note** The IP address **must** be unique. In other words, it must **not** be used by another node (socket) in the network.	
8.	Close the Properties dialog and all other dialogs with "OK".	

3.2 Settings in Windows XP

The required settings on the configuration computer are described below.

3.2.1 Non-integrated Project
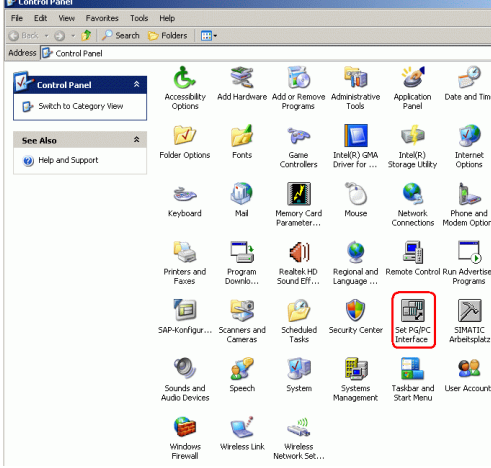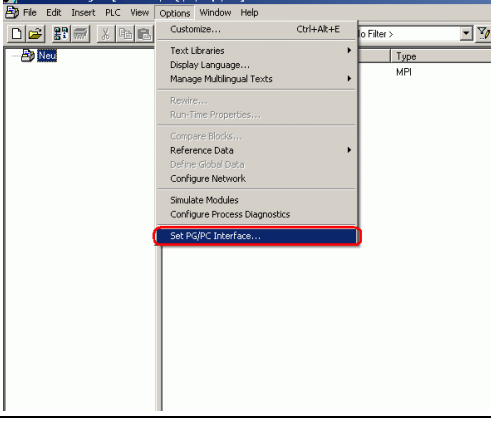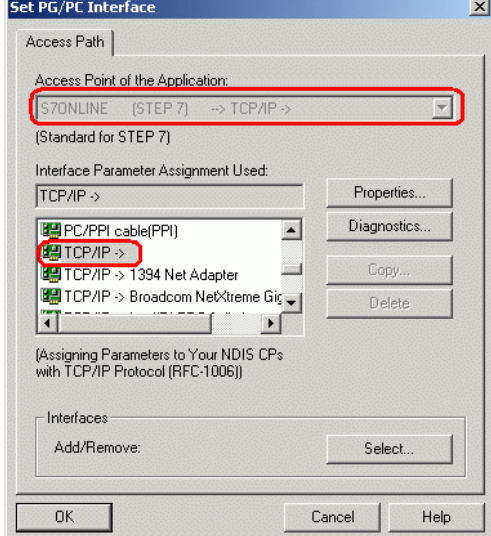
Table 3-3
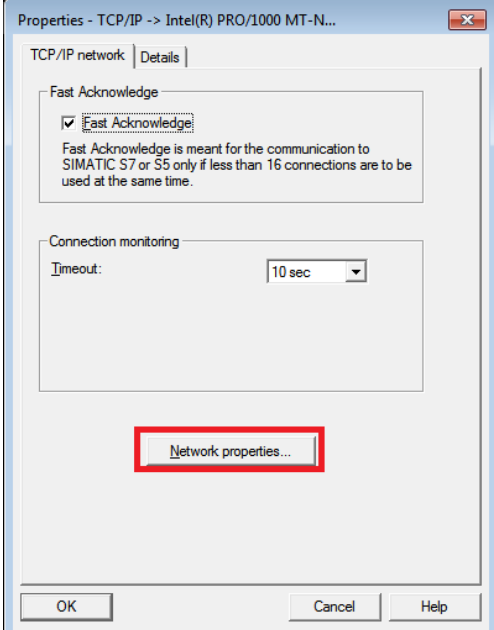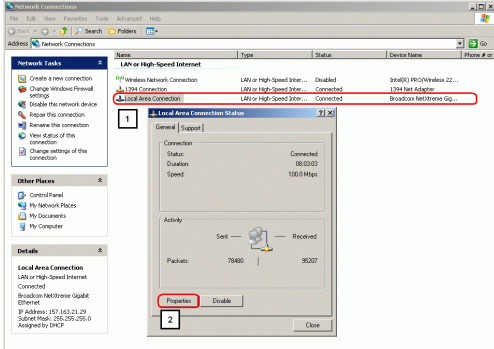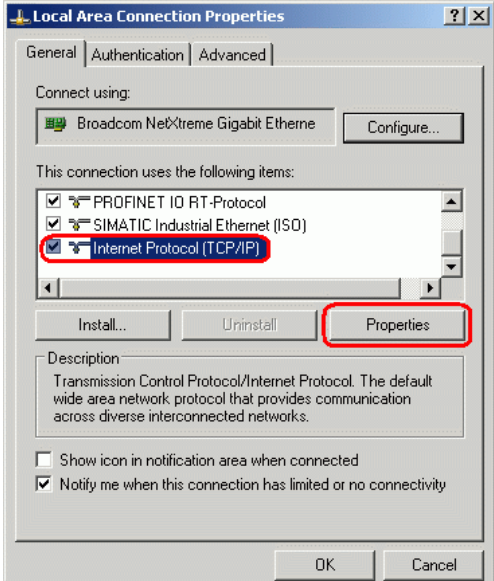
No.	Action	Screen
1.	Open the "Network Connections" menu in the Control Panel of your configuration computer.	
2.	Right-click on the relevant Ethernet network adapter (1) to open the adapter dialog window. Open the Ethernet adapter's Properties window by clicking the "Properties" (2) button.	
3.	Mark "Internet Protocol (TCP/IP)" and click the "Properties" button.	

No.	Action	Screen
4.	Assign a valid IP address and subnet mask. **Note** The IP address **must** be unique, in other words, it must **not** be used by any other node in the network.	
5.	Close the Properties dialog and all other dialogs with "OK".	

3.2.2 Integrated Project

Table 3-4

No.	Action	Screen
1.	Open the "Set PG/PC Interface" menu in the Control Panel of your configuration computer.	
2.	Alternatively you can also open the PG/PC interface through the SIMATIC Manager.	
3.	If you have an internal Ethernet interface, you can select the TCP/IP adapter without CP. You can use any NDIS Ethernet card for transfer via Ethernet. **Note:** If none of the interfaces listed above is shown, you can install them manually by clicking the "Select..." button in the "Interfaces" "Add/Remove:" field. Click the "Properties" button.	

No.	Action	Screen
4.	Enable "Fast Acknowledge" if you are communicating with an S5 or S7 and are operating less than 16 connections simultaneously. Click the "Network properties..." button.	
5.	Right-click on the relevant Ethernet network adapter (1) to open the adapter dialog window. Open the Ethernet adapter's Properties window by clicking the "Properties" (2) button.	
6.	Mark "Internet Protocol (TCP/IP)" and click the "Properties" button.	
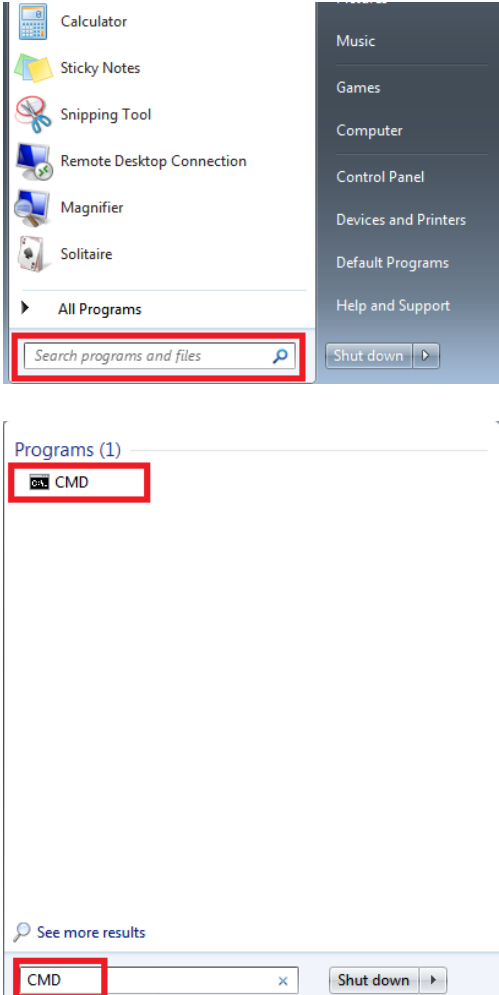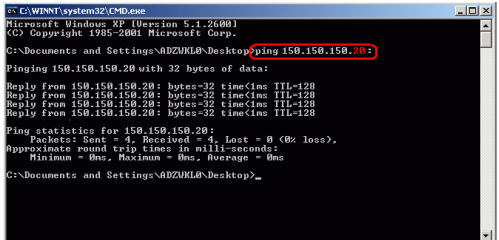
No.	Action	Screen
7.	Assign a valid IP address and subnet mask. **Note** The IP address **must** be unique, in other words, it must **not** be used by any other node in the network.	
8.	Close the Properties dialog and all other dialogs with "OK".	

3.3 Checking the Ethernet Connection

3.3.1 Check the Connection to the Panel

Table 3-5

No.	Action	Screen
1.	Enter "CMD" in the Windows 7 dialog field "Search programs and files". Click the result found.	
2.	Enter the "ping" command and the IP address of the panel, "150.150.150.20", for example. Confirm with "Enter". You can see the assigned IP addresses in Table 2.5. **Note** If you have already integrated the PLC into the network, you should also verify this via the "ping" command.	

No.	Action	Screen
3.	If the time is exceeded (no reply from node), then check the following points: • Check and if necessary, replace the Ethernet cable (uncrossed patch cable, when using a hub or switch, for example). • Check the IP address and subnet mask on the panel and on the configuration PC. • Select and enable the correct Ethernet adapter. • Check the Transfer settings in "Control Panel > Transfer Settings". • If necessary, check the firewall settings on the configuration PC.	
4.	If the time is not exceeded, the connection configuration at operating system level is OK and you can close the Windows command console.	

Table 3-6

IP address	Subnet mask	Node
150.150.150.10	255.255.255.0	Configuration computer
150.150.150.20	255.255.255.0	HMI operator panel
150.150.150.30	255.255.255.0	SIMATIC station (CPU, for example)

3.3.2 Check the Settings on the Operator Panel

You can also test the Ethernet connection from the operator panel. Proceed as follows.

Table 3-7

No.	Action	Screen
1.	In Windows CE you open the panel's on-screen keyboard via "Start > Programs > Soft keyboard". Then start the Windows CE command console via "Start > Programs > Command Prompt".	
2.	Enter the "ping" command and the IP address of the panel, "150.150.150.10", for example. Confirm with the Enter key. **Note** If you have already integrated the PLC into the network, you should also verify this via the "ping" command.	
3.	If the time is exceeded (no reply from node), then check the following points:	

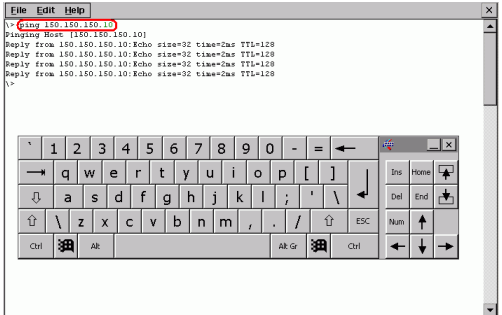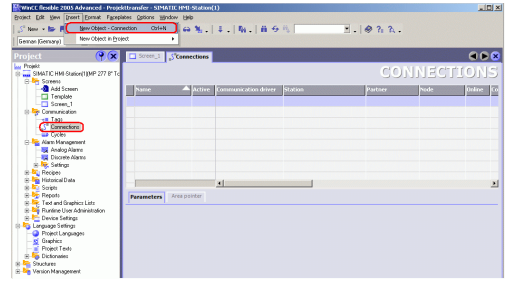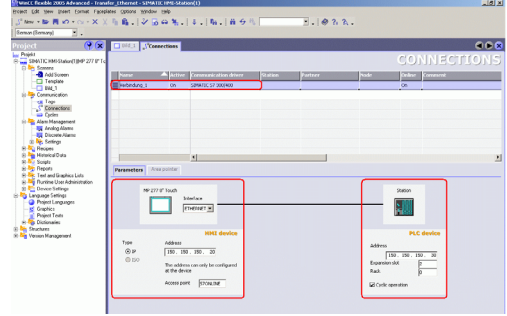| No.	Action	Screen
	• Check and if necessary, replace the Ethernet cable (uncrossed patch cable, when using a hub or switch, for example). • Check the IP address and subnet mask on the panel and on the configuration PC. • Select and enable the correct Ethernet adapter. • Check the Transfer settings in "Control Panel > Transfer Settings". • If necessary, check the firewall settings on the configuration PC.	
4.	If the time is not exceeded, the connection configuration at operating system level is OK and you can close the Windows CE command console.	

4   Settings in WinCC flexible

As an option you can also integrate the WinCC flexible project into a STEP 7 project.

4.1.1   Non-integrated Project
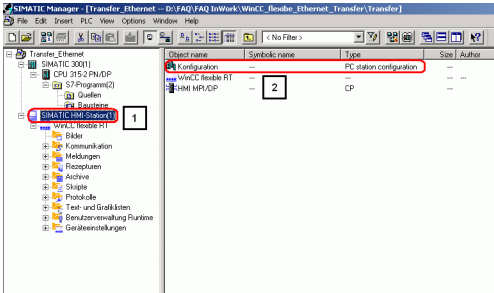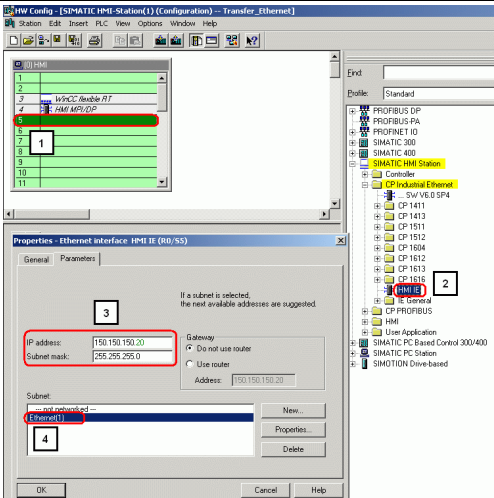
Table 4-1
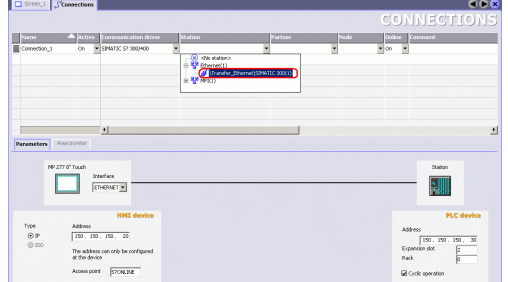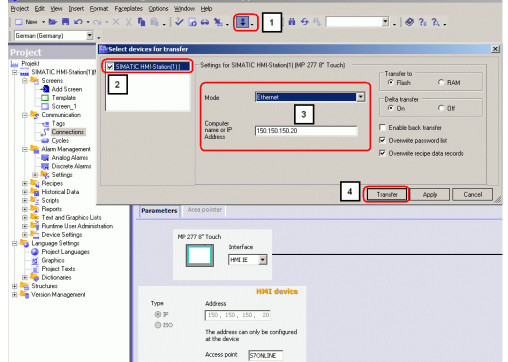
No.	Action	Screen
1.	In the project tree structure under "Communication" you select the "Connections" tab. In WinCC flexible you insert a new connection in the menu under "Insert > New Object - Connection". Alternatively you can double-click an empty field in the table in the "Connections" tab and create a new connection.	
2.	Define the relevant parameters that you have already specified in the panel and in the PG/PC interface. For communication via Ethernet you must change the interface in WinCC flexible to "Ethernet" or "HMI IE". **Note** Also make sure that the expansion slot and rack are also correctly specified for SIMATIC stations and that the access point is correct.	
3.	**Note** If you do not implement an S7-300/400 CPU as communications partner, then change the communication driver. The following communication drivers that support the Ethernet protocol are available. • Modicon MODBUS TCP/IP • OPC • SIMATIC HMI http Protocol • SIMATIC S7200 • SIMATIC S7 300/400 • SIMOTION	

No.	Action	Screen
4.	Open the dialog window under "Project > Transfer > Transfer Settings...". Alternatively you can also open the transfer settings via the toolbar (1).	
5.	In the "Transfer Settings" dialog you select the relevant operator panel (2) - only necessary in the case of multiple operator panels.	
6.	Select Ethernet as the Transfer mode (3) and enter the IP address or the computer name/operator panel name. **Note** If you specify the device name of a Windows CE panel, a DNS server is required, because Windows CE does not directly support the name resolution. The configuration computer can also be used as DNS server. More information is available in the entry entitled > How do you integrate an HMI operator panel into a local network? **Note** For the possible transfer options please refer to the relevant operator panel manual or the entry entitled >-What transfer options are available in the various operator panels?	
7.	With the "Transfer" button (4) you can now transfer your configuration to the panel. **Note** If you do not want to transfer yet, you can save the settings with "Apply". With the first transfer of the project to an operator panel you should disable the "Delta transfer" option and enable the "Overwrite password list" option (if necessary, also the "Overwrite recipe data records" option). **Note** After transfer the panel applies the parameters set in the "Connections" tab.	

4.1.2   Integrated Project

Table 4-2

No.	Action	Screen
1.	If you have not already inserted the project in the SIMATIC Manager, you can insert the project from WinCC flexible into any STEP 7 project with the menu "Project > Integrate in STEP 7...".	
2.	For this in the SIMATIC Manager you open the Hardware Configuration of the S7. Here you mark the appropriate SIMATIC HMI Station (1) and double-click "Configuration" (2).	
3.	Click and mark the fifth slot (1) of the panel.	
4.	Insert the Ethernet module (2) under "SIMATIC HMI Station > CP Industrial Ethernet > HMI IE".	
5.	Double-click the Ethernet module inserted in the subrack to open the Properties window. Enter the IP address and subnet mask (3) that you have already specified in the panel.	
6.	Link the HMI IE module with the existing Ethernet network (4). **Note** You can use the "New..." button to add more subnets. Note here that the HMI station and associated SIMATIC station must be in the same subnet. Project transfer via Ethernet with S7 Routing is not supported.	
7.	Close the dialog window with "OK".	
8.	Save and compile your configuration via the "Station > Save and compile..." menu.	

No.	Action	Screen
9.	Via the corresponding subnet you select the station with which the operator panel is to communicate.	
10.	Open the dialog window under "Project > Transfer > Transfer Settings...". Alternatively you can also open the transfer settings via the toolbar (1).	
11.	In the "Transfer Settings" dialog you select the relevant operator panel (2) - only necessary in the case of multiple operator panels.	
12.	Select Ethernet as the Transfer mode (3) and enter the IP address or the computer name/operator panel name. **Note** If you specify the device name of a Windows CE panel, a DNS server is required, because Windows CE does not directly support the name resolution. The configuration computer can also be used as DNS server. More information is available in the entry entitled "How do you integrate an HMI operator panel into a local network?" in Entry ID: 13336639 **Note** For the possible transfer options please refer to the relevant operator panel manual or the entry entitled "What transfer options are available in the various operator panels?" in Entry ID: 19109408.	

No.	Action	Screen
13.	With the "Transfer" button (4) you can now transfer your configuration to the panel. **Note** If you do not want to transfer yet, you can save the settings with "Apply". With the first transfer of the project to an operator panel you should disable the "Delta transfer" option and enable the "Overwrite password list" option (if necessary, also the "Overwrite recipe data records" option). **Note** After transfer the panel applies the parameters set in the "Connections" tab.	