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S7 PG Router

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Proper use

Hardware, software, operating systems and drivers must only be used for the applications specified and only in conjunction with the components recommended by Micro Innovation AG.

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1 GENERAL

The «S7 PG Router» is an independent software package and is **not** part of the standard GALILEO package.

The product must be purchased once and can be installed on any device for permanent use.

Permanent use:

The product can be used simultaneously with the **G**ALILEO **R**untime **S**ystem (GRS) without any runtime limitation.

➔ At least 80 additional license points must be available on the device!

Temporary use:

The product cannot be used simultaneously with the GRS, or when GRS is started with limited runtime.

1.1 SCOPE OF DELIVERY

Description
«S7 PG Router» software incl. electronic documentation - License product LIC-OPT-2ND_LEVEL

Note:
If you have any questions on license products, please contact your local MICRO PANEL sales distributor.

1.2 SYSTEM REQUIREMENTS

1.2.1 PROGRAMMING PC

Programming PC	Operating system
- HMI programming software GALILEO from version 5.2.4	Windows 2000, Windows NT, Windows XP

1.2.2 TARGET SYSTEM

Target system	Operating system (OS)
- MICRO PANEL	Windows CE Image Release ≥ 2.12.0 (x)

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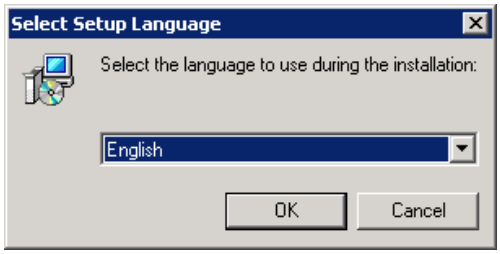
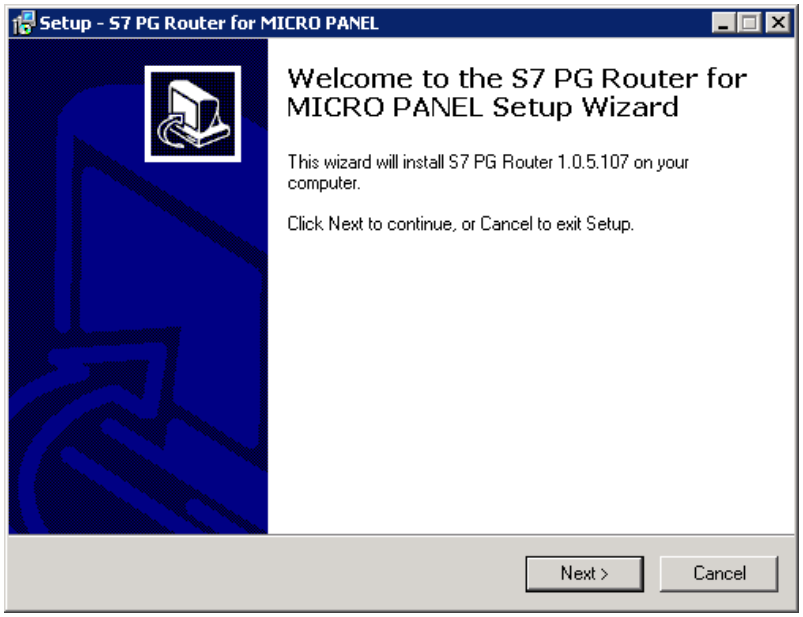
1.3 INSTALLATION ON THE PROGRAMMING PC

The «S7 PG Router» Setup Wizard will be launched automatically once the installation CD is inserted in the CD drive. If the Setup Wizard does not launch automatically, run the file “S7PGRouter.exe” on the installation CD.

Select the desired language from the drop-down menu.
Click [OK].



Confirm the subsequent dialog by clicking [Next >].



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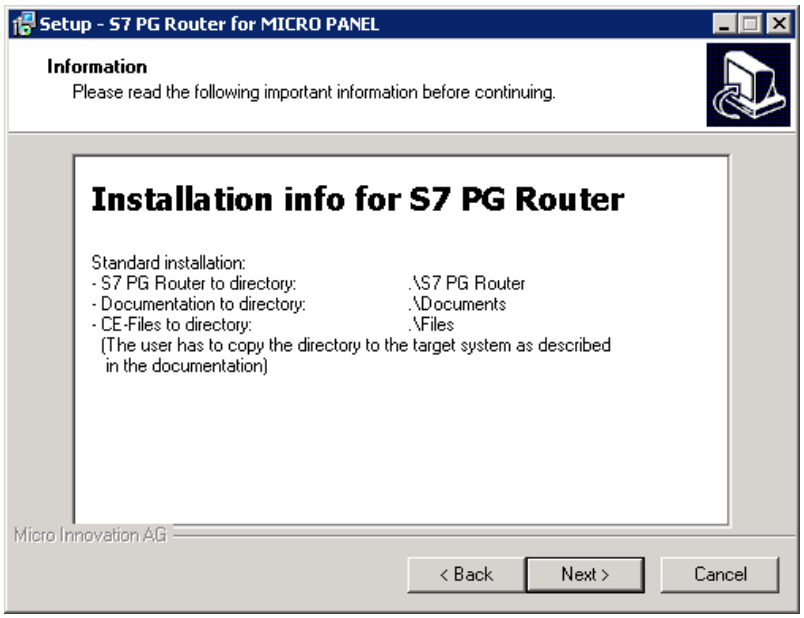
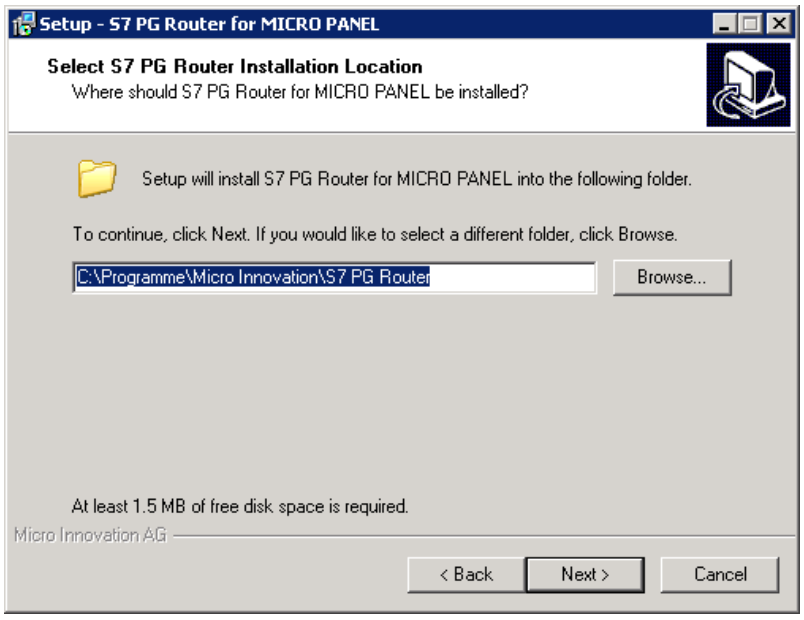
Important installation information appears.
Confirm the subsequent dialog by clicking [Next >].



The following dialog will ask you to select an installation directory. The selected directory must contain a Galileo installation.
Confirm the dialog by clicking [Next >].



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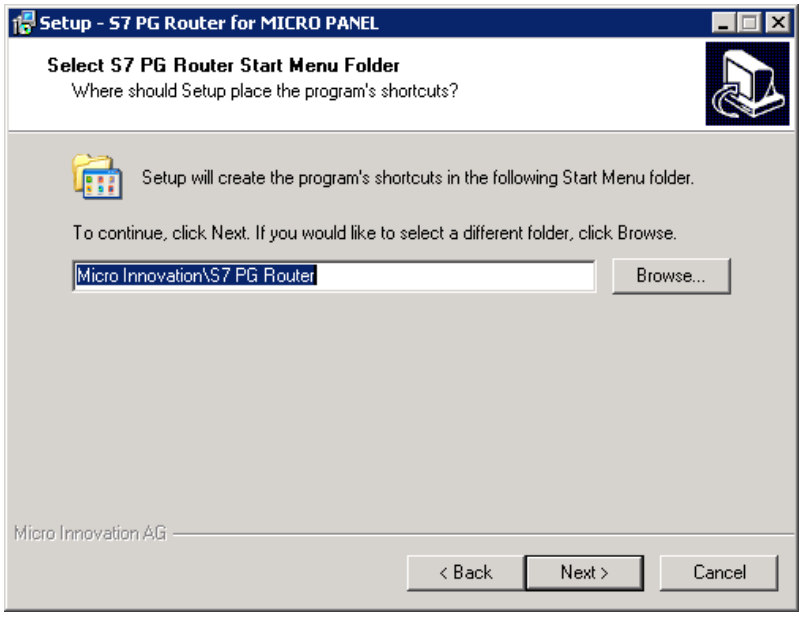
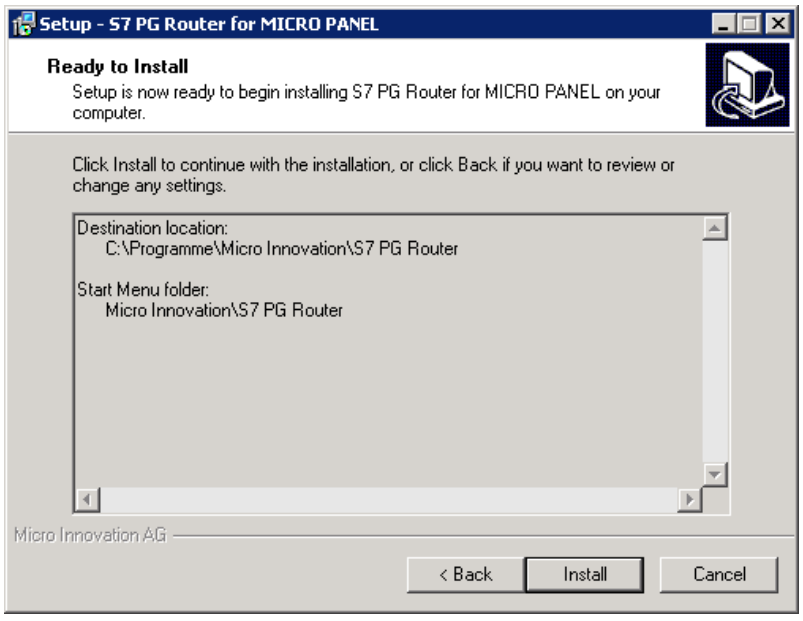
Select the directory in which the program shortcut will be created.
Confirm the dialog by clicking [Next >].



Confirm the subsequent dialog by clicking [Install].



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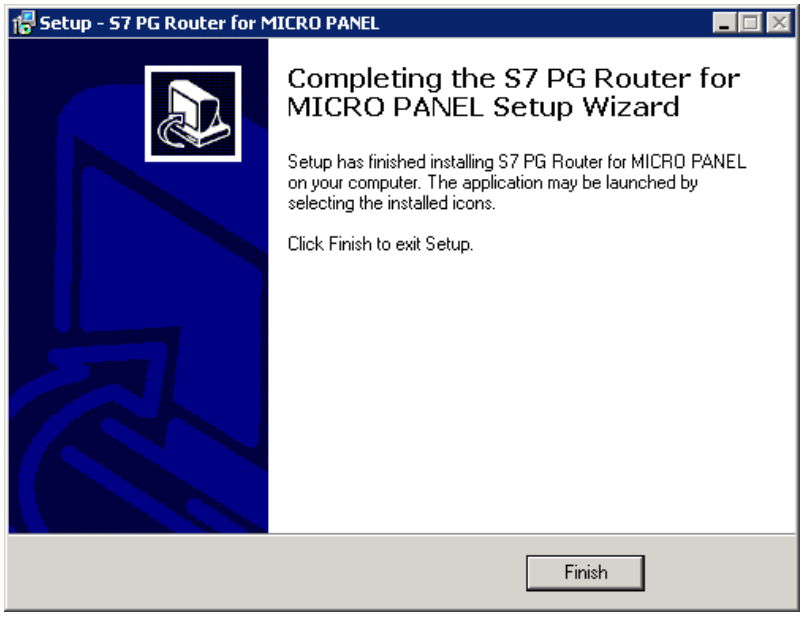
The next dialog indicates that the installation was successfully completed.
Confirm by clicking [Finish].



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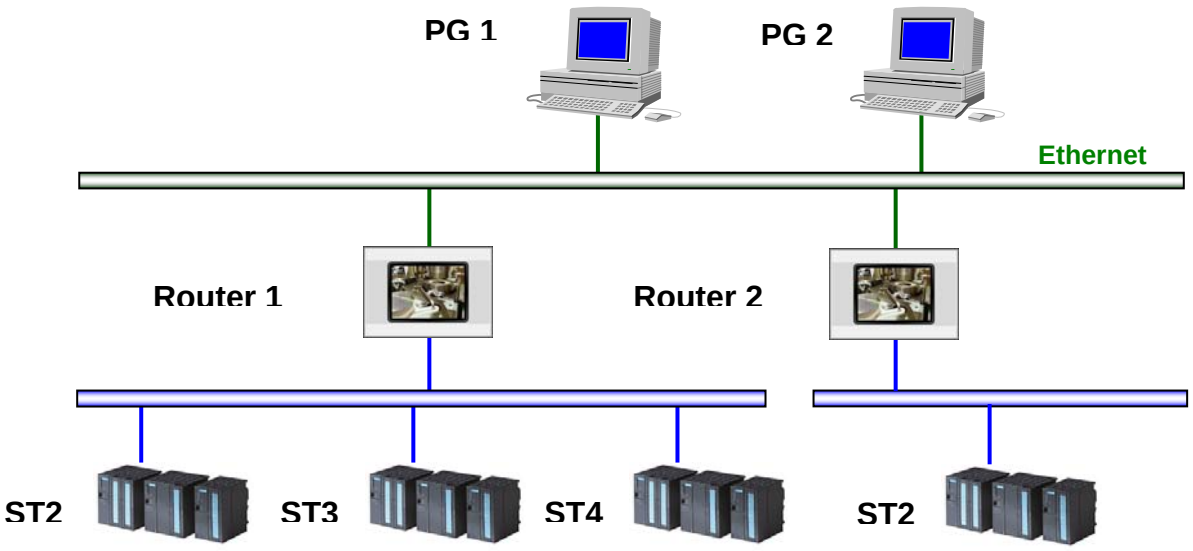
2 OPERATING PRINCIPLE

MICRO PANELs with an "onboard" MPI and Ethernet interface support the S7 PG Routing function.
This function allows S7 controllers connected to the MICRO PANEL to be programmed via the MICRO PANEL's Ethernet interface.



As shown in the figure, several controllers connected to a MICRO PANEL can be programmed. It is also possible to route more than one PG connection via a MICRO PANEL.

The S7 Routing function can also be used if a started GALILEO project is communicating with the controller at the same time.

Note:
The S7 Routing function is only supported by MICRO PANELs with an onboard MPI interface and a WinCE operating system from version 2.12 or higher.

Refer to your MICRO PANEL device description for further information on connection, commissioning and operating the MPI and Ethernet interface.

Further additional documentation:

- "Windows CE operating system" Doc. No. M000173
- "Networks in brief" Doc. No. M000191

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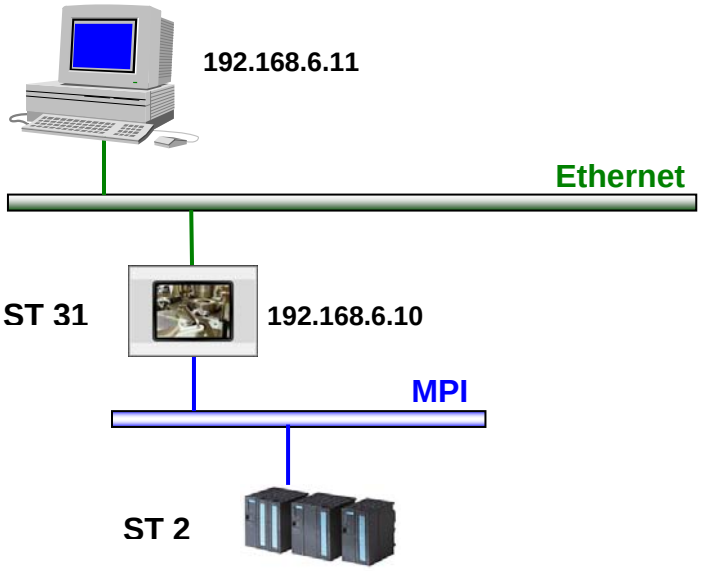
3 CREATING A NETWORK

You should create a small network as shown in the following diagram in order to ensure that commissioning can be completed without any problems:



Note:
The IP and MPI addresses shown are only given as examples! It is essential that every device has a unique and unambiguous IP and MPI address.

The following software should already be installed and users should be familiar with their operation:

- Siemens Step 7 PLC programming software
- GALILEO HMI programming software

The following documentation provides more useful information on creating networks:

- "Networks in brief" Doc. No. M000191
- "General wiring instructions" Doc. No. M000193

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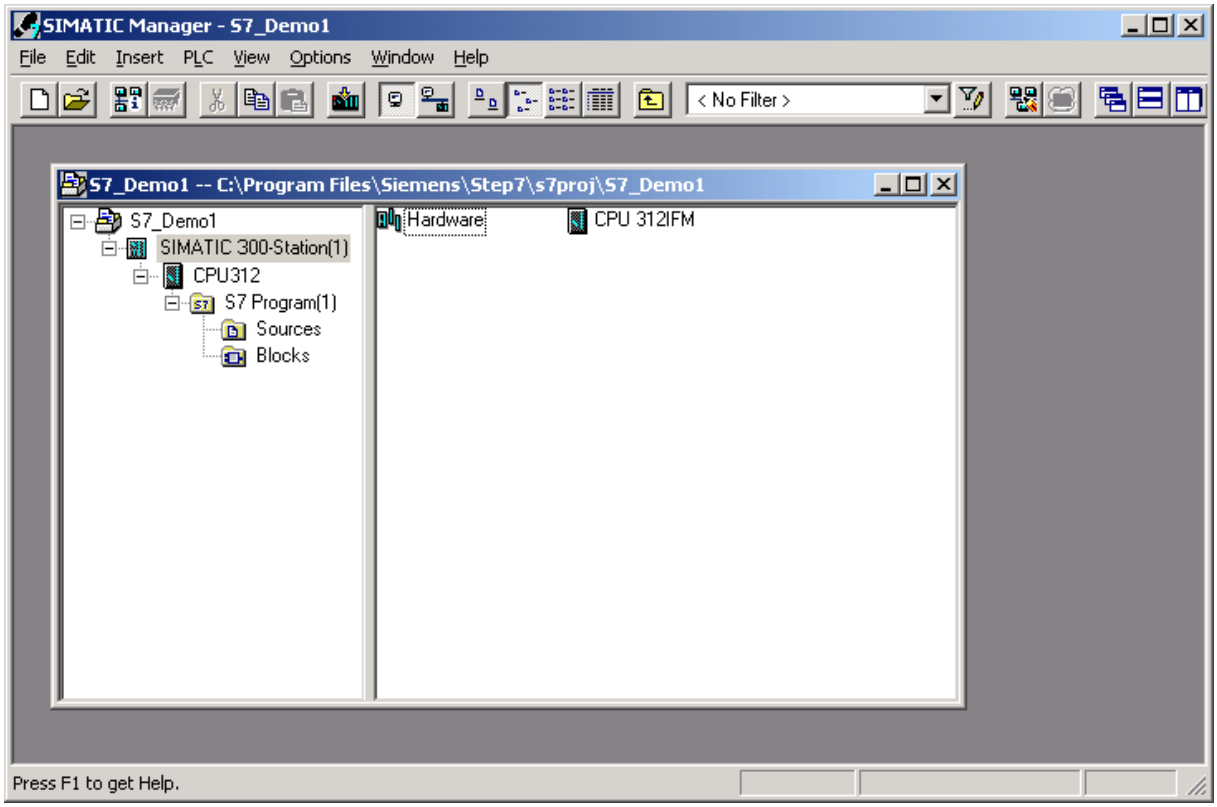
4 SIMATIC MANAGER SETTINGS

At least one of the following versions of the SIMATIC Manager is required in order to use the «S7 PG Router» software:

a) **Step7 V5.2 + Net driver**
b) **Step7 V5.3**

Note:
All the following screenshots shown and the instructions given apply to Step7 V5.3.

First load the S7 project in the SIMATIC Manager. In our example this is a project for an S7-312IFM.



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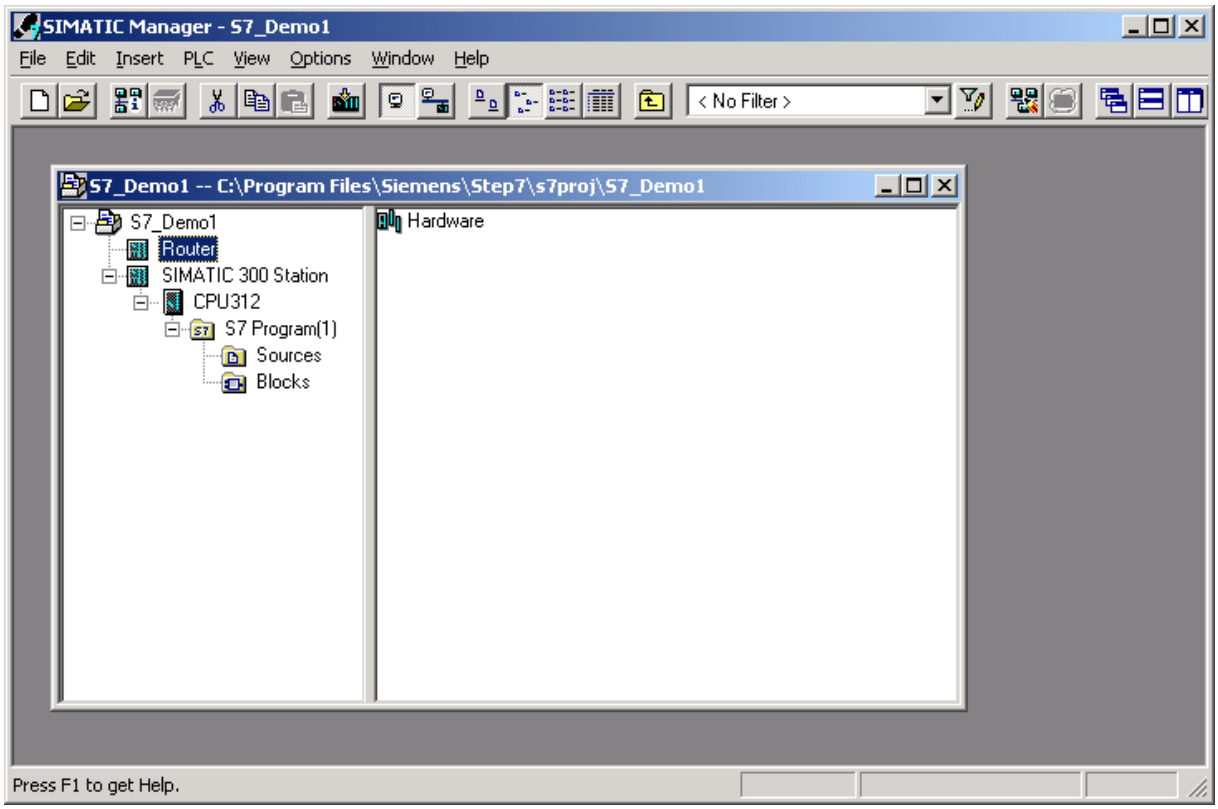
4.1 ADDING A ROUTER

Now add another S7-300 station to the project and call it the "Router".
In this case, this S7 station is simply a representative of the MICRO PANEL in the Step7 project.



Specify the "Router" further by selecting any S7 CPU type with an integrated Ethernet interface. In our example this is a CPU 317-2 PN/DP.

Note:
The S7 Routing function of the MICRO PANEL is similar to the Routing function of S7 controllers.
Refer to the SIMATIC Manager documentation for further information on routing in conjunction with Step7.

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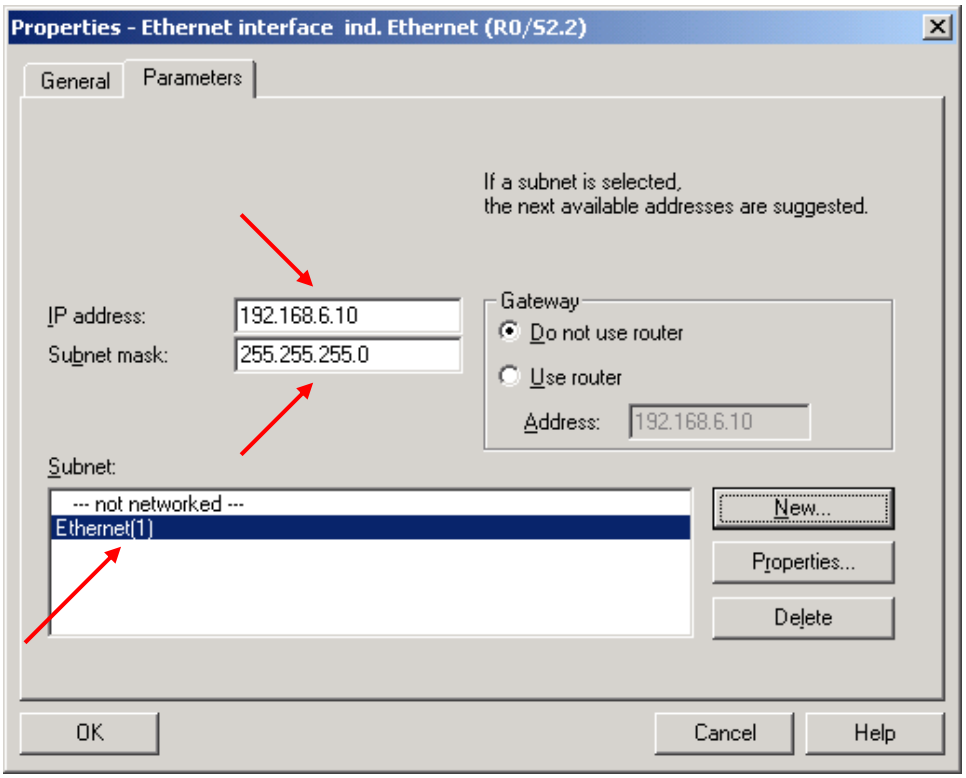
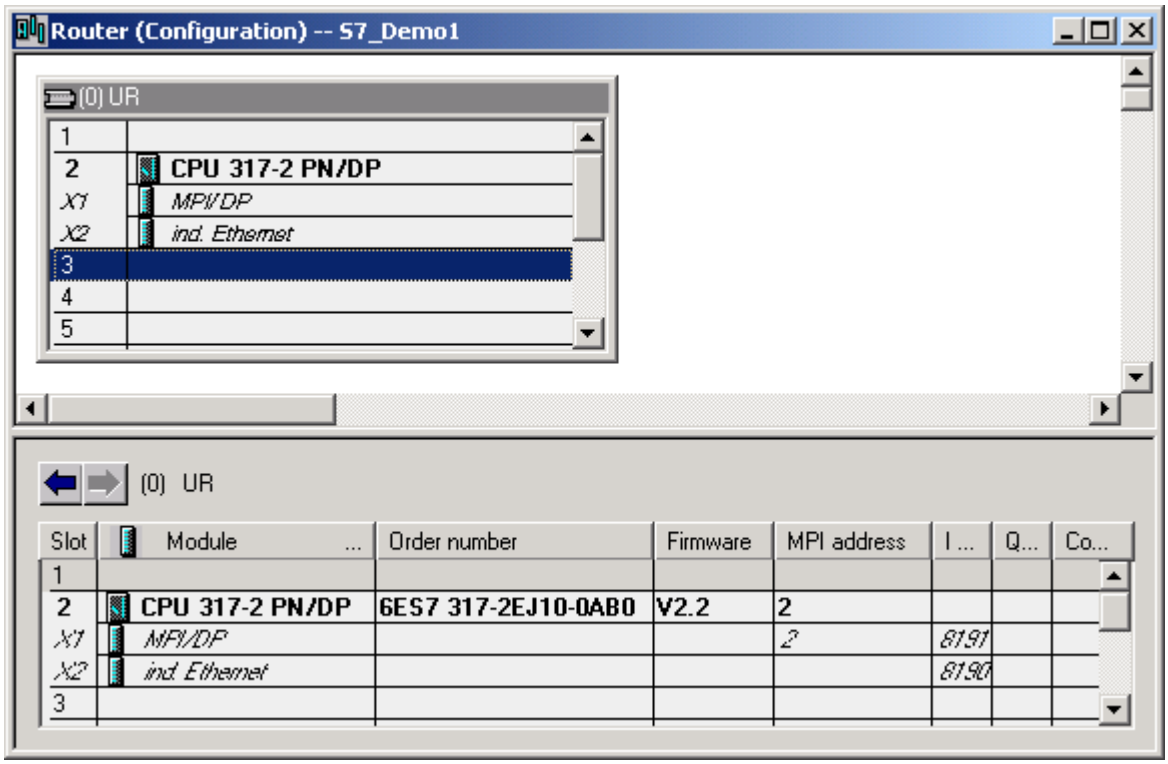
Now move to the hardware settings tab of the "Router" and add an S7 CPU with an Ethernet interface.



In the Properties dialog, enter the IP address set on the MICRO PANEL ("Router"). Connect the CPU with the Ethernet subnet.



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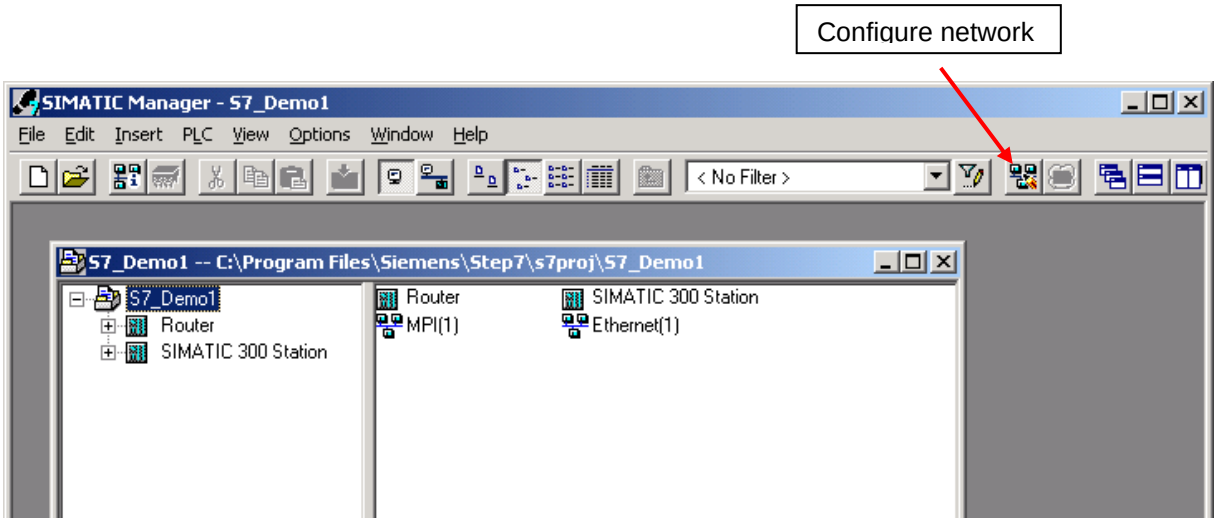
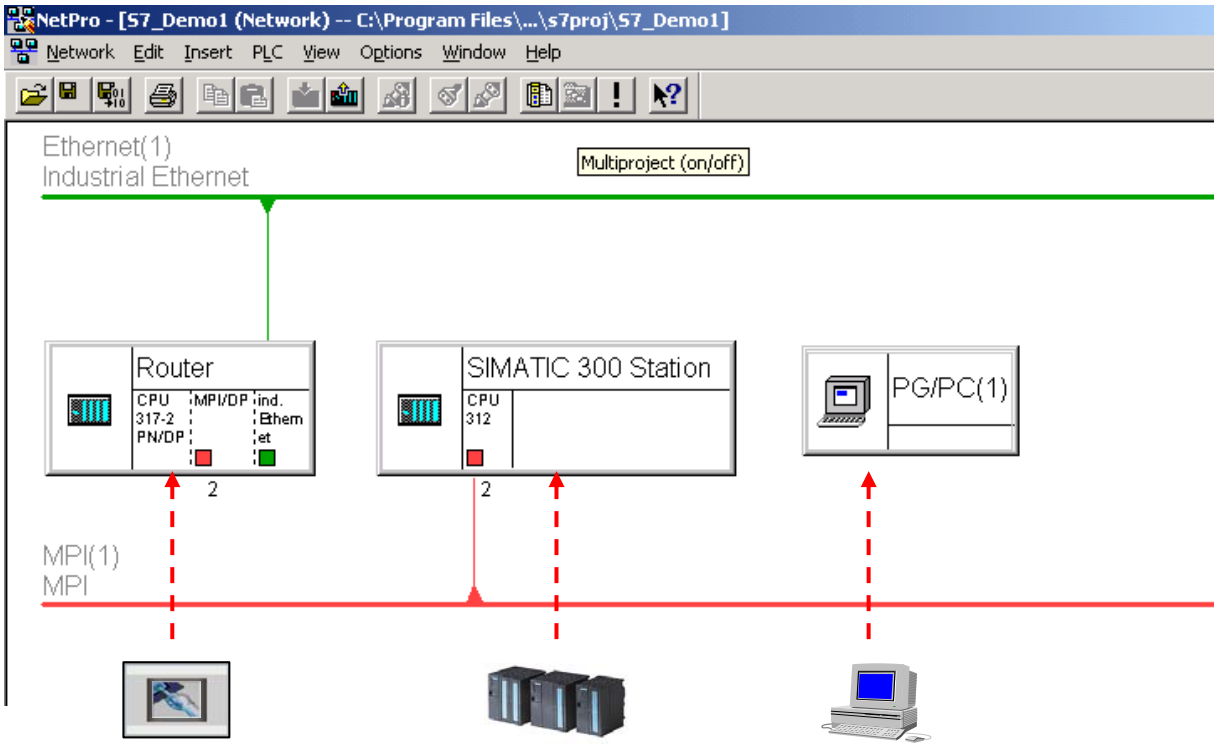
4.2 CONFIGURING THE NETWORK

Save the new hardware configuration once you have added the "Router", and then move to the Network Configuration screen.



The network configuration will now show you the "Router" (MICRO PANEL represented by an S7 station) next to the actual S7 station.

Add an additional network object of the type "PG/PC".



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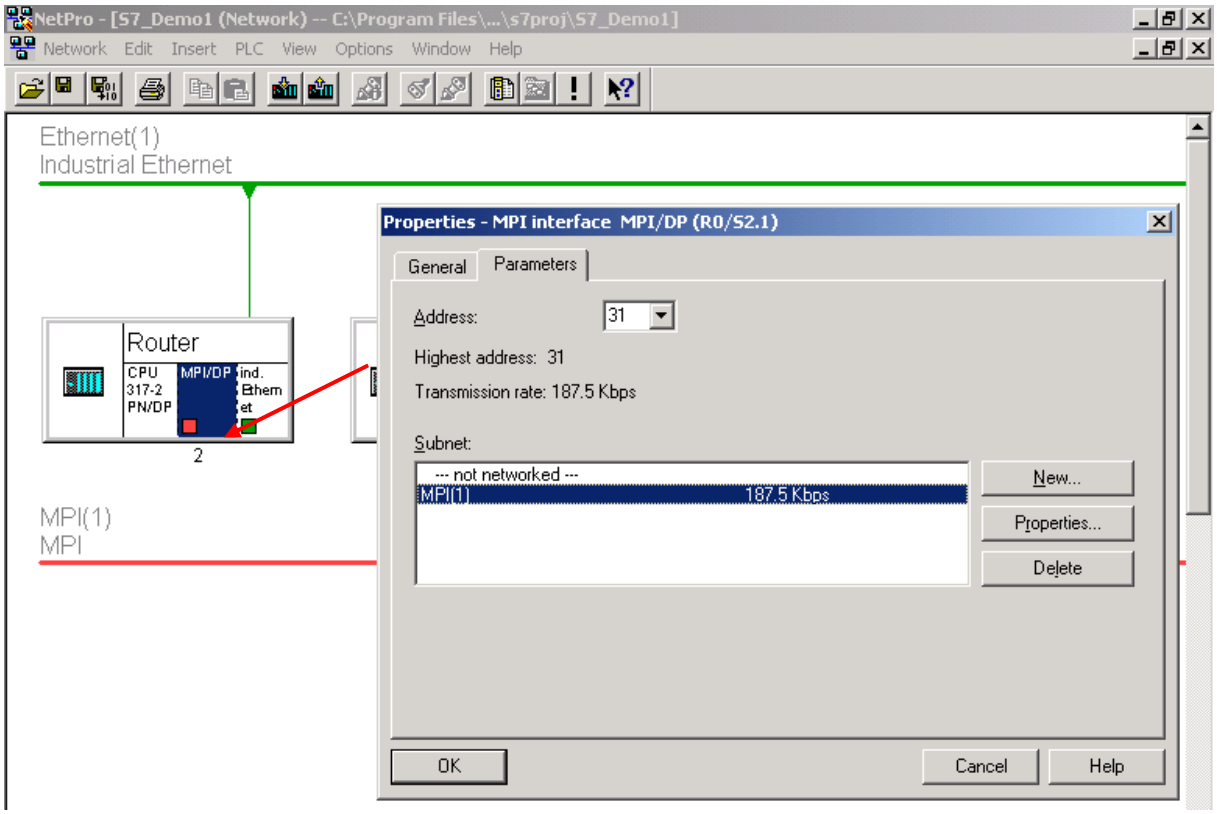
Now define a free MPI address for the "Router" and select the MPI subnet.



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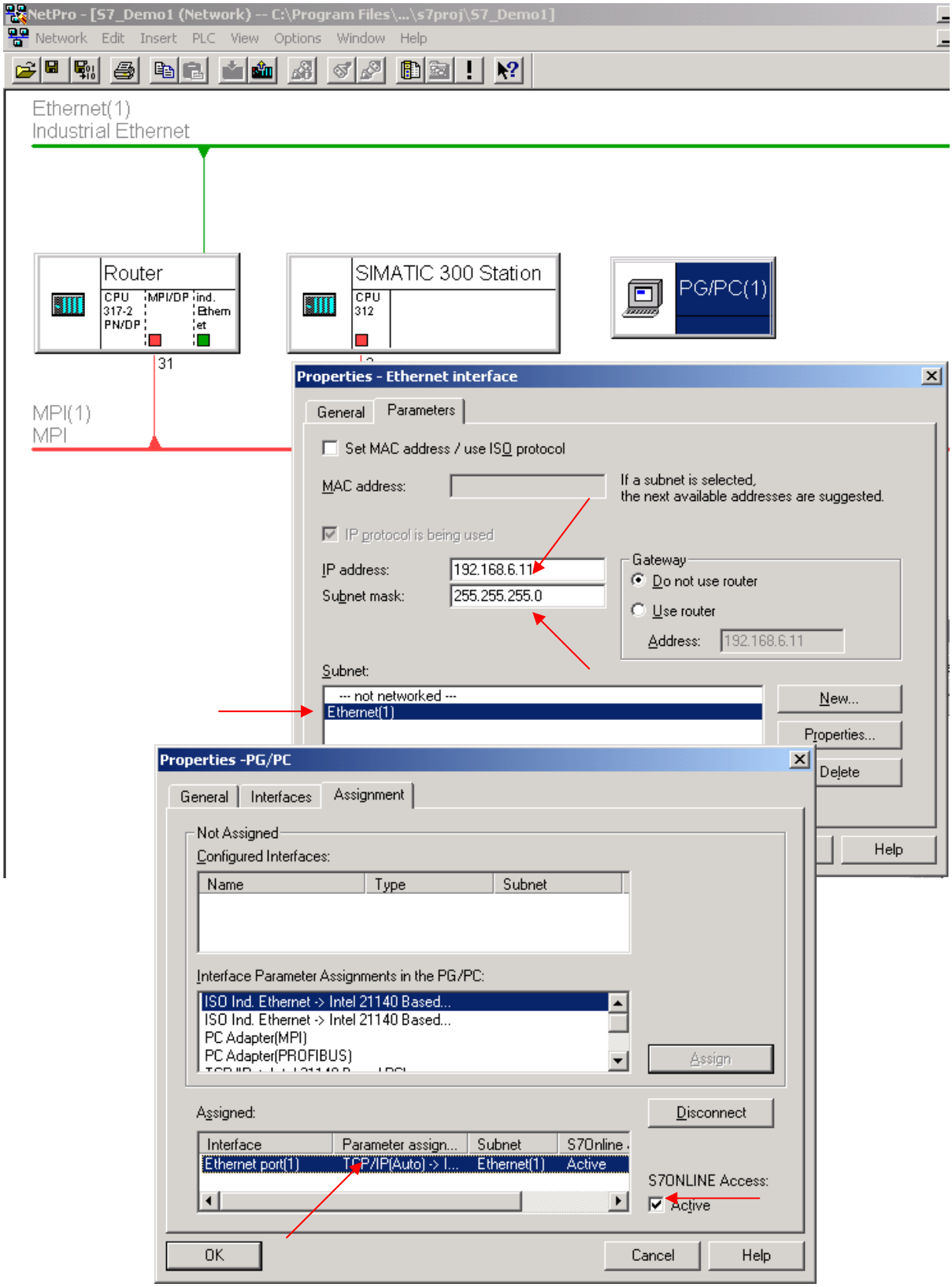
For the PG/PC connection enter the IP address of the PC on which SIMATIC Manager is running, and select under Subnet the already configured Ethernet connection.

Under Assigned on the Assignment tab, select "TCP/IP(Auto) ->...." and activate S7ONLINE Access.



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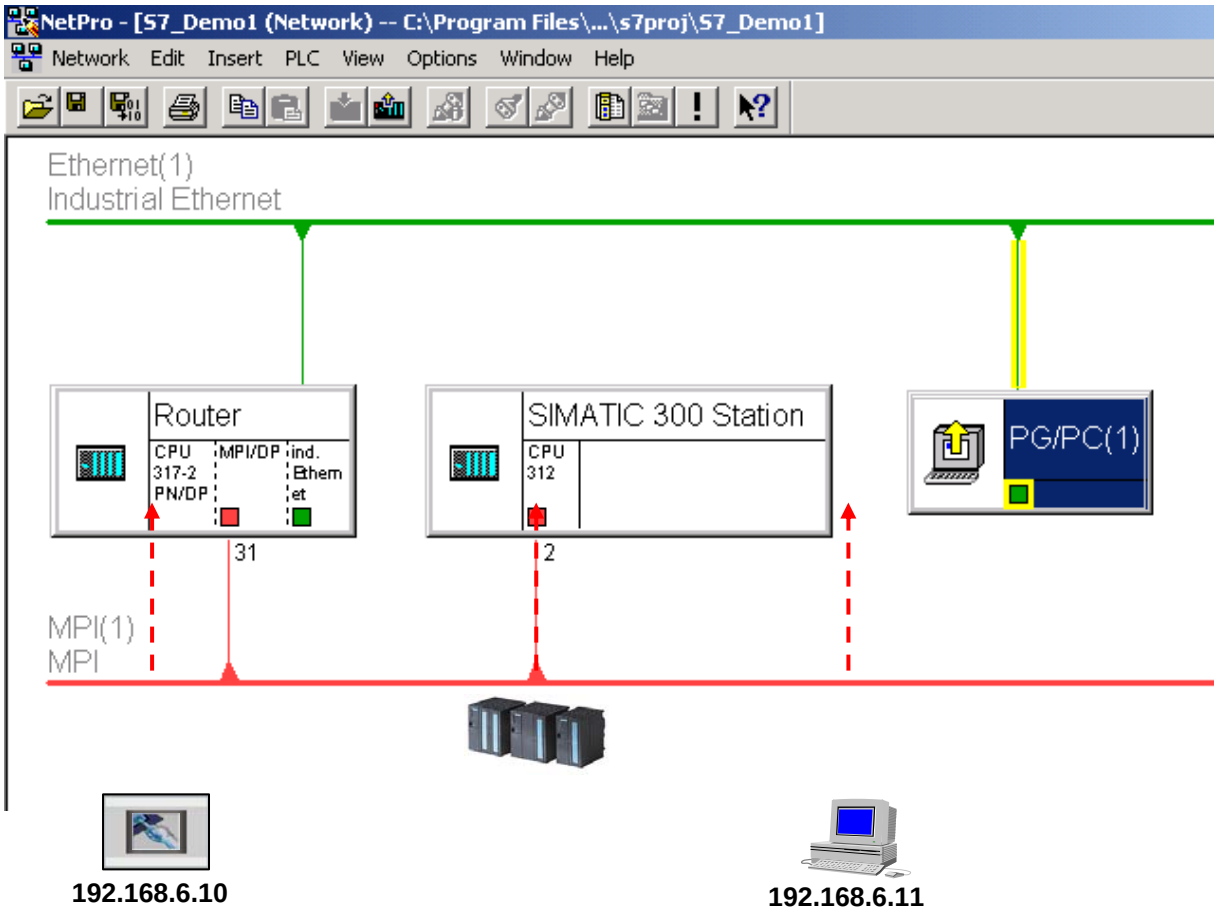
The Ethernet connection on the PG/PC highlighted in yellow indicates that the Routing function is active.



In our example, the S7 station (MPI address 2) can now be programmed via the MICRO PANEL (MPI address 31).

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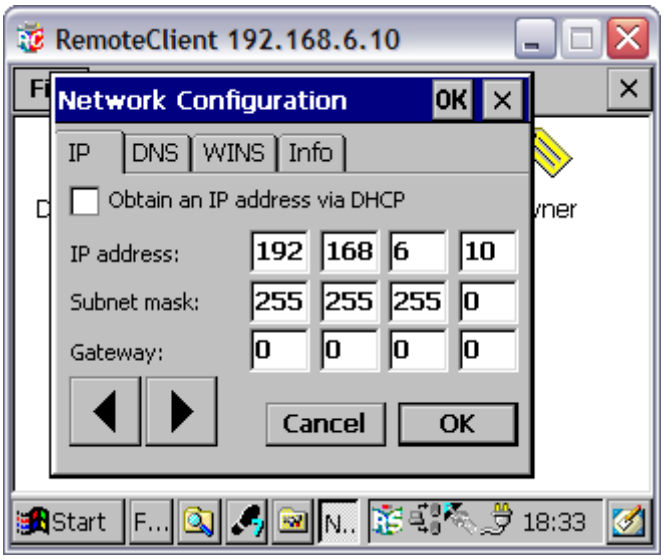
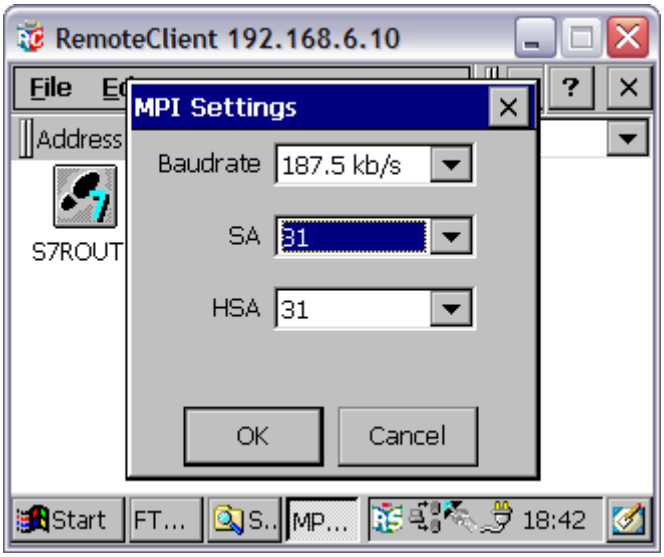
5 MICRO PANEL SETTINGS

Check beforehand that the IP address of the MICRO PANEL is the same as the address of the "Router" station in the Step7 project. In our example, this is 192.168.6.10.



Now start the «S7 PG Router» software (S7ROUTE.EXE) on the MICRO PANEL.

Note:
Refer to the "Windows CE operating system documentation" for further information on IP address setting, transferring and starting programs.



Modify the "Baud rate", "SA" (MPI address of MICRO PANEL) and "HSA" parameters according to the settings you have predefined for the "Router" station in the SIMATIC Manager and confirm with "OK".

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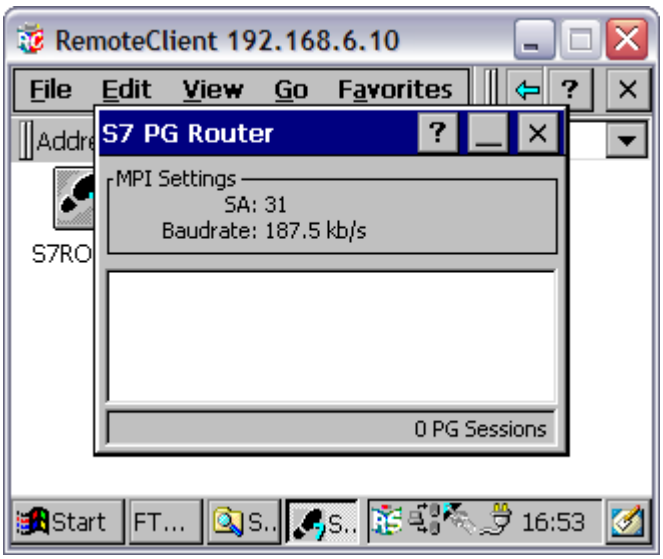
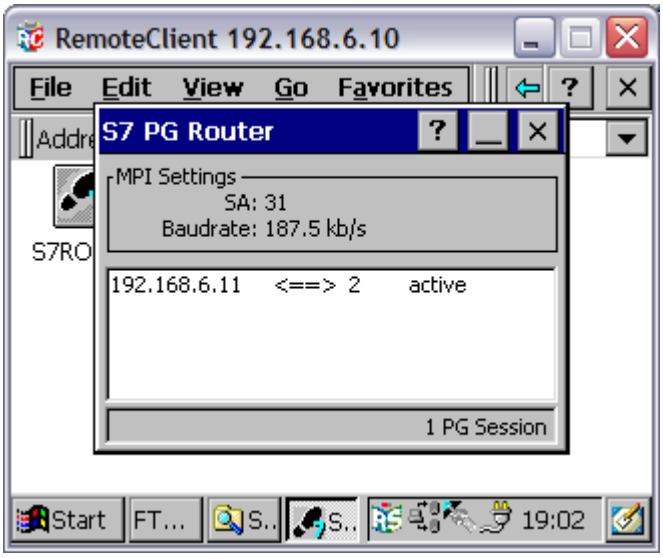
You can also provide these settings as command-line parameters as described in chapter 9.



The router connection is now fully configured and you can now access the connected S7 controller.



When the PG connection is active, this is indicated by the «S7 PG Router», as shown in the figure.

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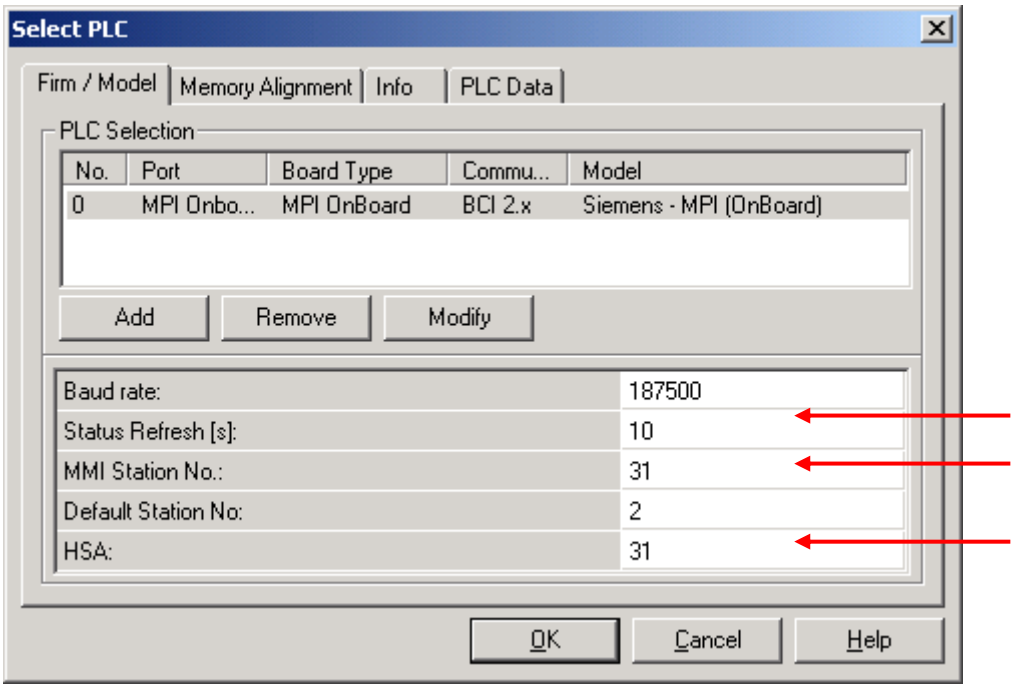
6 GALILEO SETTINGS

As mentioned at the start, the MPI interface can also be used by GALILEO and the **G**ALILEO **R**untime **S**ystem (GRS) for data communication at the same time as the S7 Routing function is active.



Ensure that the MPI parameters marked with the arrow match those of the "Router".

Note:
Refer to the online documentation in GALILEO for further information on GALILEO and GRS.

6.1 PRIORITY OF THE MPI PARAMETERS

The MPI interface can be used by several applications at the same time. The following basic principles must be observed in order to prevent conflicts when the interface is initialised:

➔ **If the interface is already initialised, the existing initialisation has priority.**

The MPI interface is initialised when the «S7 PG Router» is started or when GRS is started.

If the «S7 PG Router» is started from the GRS; parameter setting is skipped and the settings from GALILEO apply. However, the settings of «S7 PG Router» are active if it was started before GRS.

Note:
Ensure that the settings on the "Router" are the same as those set in GALILEO (see also "Error Messages").

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7 SPECIAL FEATURES

7.1 RESTRICTIONS

The following PG functions are not supported by the "Router":

➔ "Who is Online" poll of all active MPI stations

7.2 LIMITATIONS

The general limitations of the S7 CPU with regard to the number of simultaneous MPI and PG connections apply.

«S7 PG Router» has no limitations regarding the number of connections that can be routed simultaneously.

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8 ERROR MESSAGES

SIMATIC Manager:

If the SIMATIC Manager cannot set up a connection to the S7 CPU via the "Router", use the following check list to check the installation:

Error	Cause
MPI address conflict	The same MPI address was used on the "Router" (MICRO PANEL) as was set on the S7 CPU.
MPI address range	The HSA setting (Highest Station Address) on the "Router" is incorrect. Use the same HSA for all MPI stations.
MPI baud rate	The wrong baud rate (187.5 Kbit or 1500 Kbit) was set on the "Router".
PG conflict	A PG connection via MPI to the S7 CPU already exists.

GRS:

Apart from the general errors relating to communication with S7 controllers, the following conflict may also occur:

Error	Cause
MPI address definition	The "Router" was started before GRS and the station number of the MICRO PANEL does not match the one configured in GALILEO. The GRS will in this case generate an error message on startup. An active communication with the S7 CPU will be established anyway.

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9 Command Line Reference

```
s7route.exe [-BR br -SA sa -HSA hsa] [-close]
```

9.1 Parameters

Parameter	Meaning	Values
br	Baud rate	187500, 1500000
sa	Station address	0 to *hsa*
hsa	Highest station address	15, 31, 63, 126
close	Closes an already running «S7 PG Router»	

9.2 Examples

s7route.exe

…will start «S7 PG Router» and ask the user for the actual MPI parameters.

s7route.exe –BR 187500 –sa 31 –hsa 31

…will start «S7 PG Router» with MPI 187.5 kBit as station 31 where the highest station address is also 31.

s7route.exe –close

…will close an already running «S7 PG Router».

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10 CHANGE LIST

Revision	Date / Signed	Modification
01	28.10.2004 /AI	Initial Version
02	17.02.2005	Added Command Line Reference
03	26.10.2009 / MH	Additional installation in connection with GALILEO 7.1.0

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