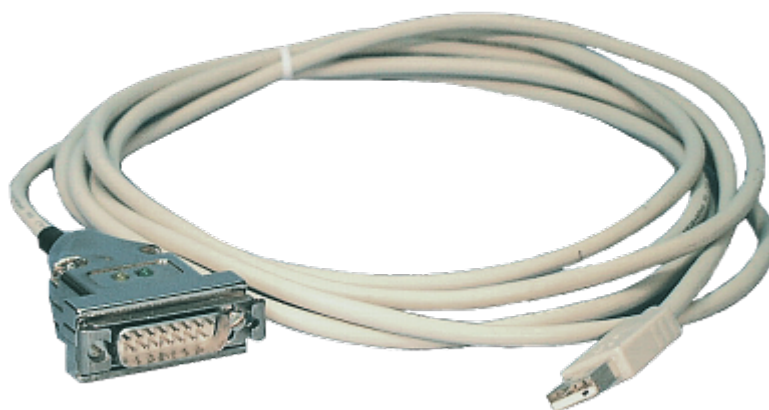


PG-USB user manual



PG-USB-Kabel 3m|Art.Nr. 9359-1

PG-USB-Kabel 5m|Art.Nr. 9359-1.05M



documentation of version XX

1 Description

The PG-USB is an active cable for the connection of a Siemens X4/X5 interface to the PC USB port. The cable does not need any supply from the controller because it is completely supplied from the connected PC. This supply is also be used so that the cable is active towards the controller.

1.1 Basic circuit diagram



2 System requirements

2.1 Operating system(s)

Windows

- 10
- 8
- 7
- Vista
- XP
- ME/NT/2000

2.2 Software

PLC - programming software (eg PG2000, Step©5, S5 for Windows, WinCC)

2.3 Hardware

USB 1.1 - Connection type A

3 Installation

3.1 Hardware

Plug in the programming cable to the X4/X5 interface of the S5-SPS and with the USB-plug into the USB port of your computer. The cables are supplied with voltage from the USB port.

3.1.1 Extension set PG-USB

The PG-USB is active toward his control. An extension is sufficient, in which the following pins are placed 1

by 1: 2-2 / 6-6 / 7-7 / 9-9. Solder on the shield of cables at both ends on the metal case of the Sub-D plug connector.

Cable type: 4 wires, twisted pairs, 0.25mm² (LIYCY 2x2x0.25). Maximum length: 100m.

Order data

PG-USB Extension set: No. 9359-7 USB

3.2 Software

You need a corresponding programming software (eg PG2000, Step@5, S5 for Windows, WinCC) to can work with the PLC.

You also need the PG-USB driver for Windows.

3.2.1 Driver for Windows XP

1. Download the USB-driver for the product of the you known web-site. Extract the file on your harddisc.
2. Connect your USB device to the PC and perform the now starting Windows Setup Wizard in the previously extracted folder.



3. During the installation you were asked if you want to continue this. Confirm this message with "Continue".

4. Once the USB driver is installed, you have on this PC a new virtual com-port. This com-port can be viewed in the Device-Manager of your PC and then select it in your S5-application and use it.

Do you use the original Siemens S5-software, then you still need to download the "S5-patch" and also install it.

3.2.2 Driver for Windows 98

Under Windows 98 in a MSDOS-box can not directly accessed on virtual COM ports like at XP or 2000. Because of that the installation of a driver "S5 VCOM for Win98" is necessary.

Installation:

- 1.) Connect the PG-USB-cable / USB-RS232-converter to an USB port on the computer.
 - 2) If not already done, install the drivers for the PG-USB-cable /USB-RS232-converter (This driver allows WINDOWS programs to access on the S5 control)
 - 3) Test the connection optionally with the S5 controller with a Windows program (eg: PG2000 from this CD)
 - 4.) Then start the SETUP.EXE file on the installation CD for "S5VCOM for Win98"
 - 5.) Select the installation path and click "Next"
 - 6.) Select designation and location for the start menu and click on "Next"
 - 7.) After completion of the installation, the system restarts
- S5 VCOM was registered in the Startup folder and will be launched at every restart.

Uninstall

- 1.) Under "Start ⇒ Settings ⇒ Control Panel " click on software
- 2.) Select "S5 VCOM for Win98" and click "Remove / Change"
- 3.) Respond with "Yes" to the question to remove the software
- 4.) When no longer needed at the same place can be also removed the "FTDI USB ↔ Serial" driver
- 5.) Restart system (recommended)

Settings / Start:

After the installation and followed restarting of the computer, the S5VCOM driver starts automatically. If an error occurs while installing or starting the driver, it will be displayed.

If properly installed, appears at the right bottom of the screen another tray icon.

On this icon you can see if the PG-USB-cable / USB-RS232-converter is recognized or not, and whether the communication is currently running:



PG-USB-cable / USB-RS232-converter is not recognized or not plugged.



PG-USB-cable / USB-RS232-converter is detected, but it is currently not communicated via this interface.



PG-USB-cable / USB-RS232-converter is detected and it is currently communicating.

S = sender (from computer to S5)

E = receiver (from S5 to computer) By clicking this Tray-Icon appears a new dialog:

Under the area "Status" is displayed via which cable is being communicated and whether there is established a connection.



Under the area "Virtual port" on the left side is displayed the COM port that can be used by the Windows software, and on the right side the COM port (IO port) is used by the MSDOS-box. This must be used in the S5 software. Depending which COM - ports are already exists, the next free COM port is used:

existing COM used by S5VCOM NO COM1 [03F8h,IRQ4] COM1 COM2 [02F8h,IRQ3] COM2 COM1 [03F8h,IRQ4] COM1,COM2 COM3 [03E8h,IRQ4] COM1,COM3 COM2 [02F8h,IRQ3] COM2,COM3 COM1 [03F8h,IRQ4] COM1,COM2,COM3 COM4 [02E8h,IRQ3] Under the area "Program" the virtual COM port can

be closed, the language of the program can be changed or the program can be minimized as tray icon.

3.2.3 Uninstallation of the USB driver and installation of a new version

Download the uninstallation tool from the homepage. You can find it on our homepage.

Disconnect the cable from the PC and follow the software and the USB driver and the required entries will be deleted. Then you can download the relevant USB drivers from the download menu at the "Necessary Downloads" and extract this file to your hard disk. Now plug in the cable and follow the hardware installation wizard where you point into the folder where you unzipped the "new" USB driver. Now you can continue to work with the PG-USB or USB-RS232-converter. The possible patch of Step5 software must not be executed!

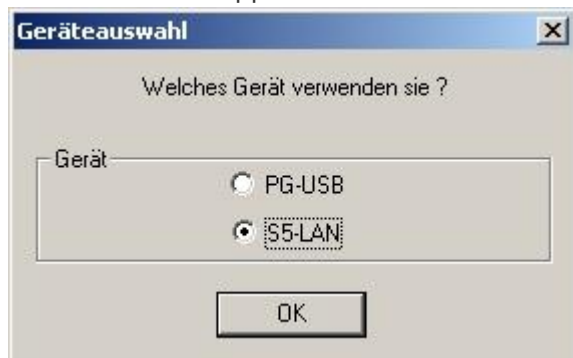
3.2.4 Installation of the Step5 © addition driver for PG-USB/S5-LAN + + / USB-RS232-converter

In order to make the the PLC-VCOM furnished virtual COM interface available for Siemens Step © 5 in the DOS box, must be installed this addition driver.

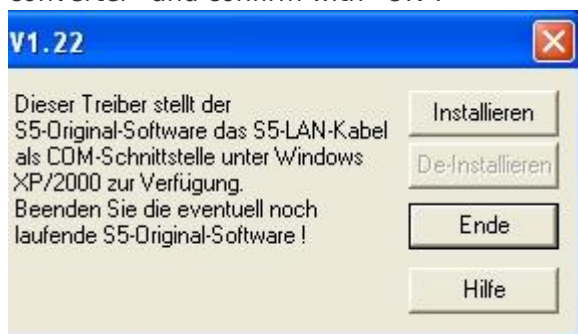
! Important ! PLC-VCOM must be installed before this Step © 5 addition driver. The installation of the PLC-VCOM software is explained in the chapter „[PLC-VCOM installation](#)“ .

Before you start the installation, make sure to stop any possible still running S5 original software, otherwise the driver can not be installed.

1. Please download from the you known web-site the "S5-patch" and extract the file on your PC.
2. Now start the application "S5USB.exe" from the previously extracted folder



3. Device selection Now select the type of device. Select "S5-LAN + + / PG-USB-cable / USB-RS232-converter" and confirm with "OK".



4. In the next dialog, start the installation by clicking on the "Install" button. The installation wizard will now copy the required data. Please wait a moment.

5. Specify the folder where the software S5 is installed. Please wait while the installation routine searches

for the S5 software version.

6. Next, select the COM port and click "OK".
7. Soon as the installation is complete, you press "Finish".
8. When the "Install" button is disabled (gray font), the installation is complete.
9. Now close the wizard with "Finish".

With "Uninstall" you delete the already installed drivers.

If the COM port of the PLC-VCOM is changed afterwards, the Step5 © drivers must be reinstalled!

Attention!

For the Step5 Siemens software the COM port must be are between COM1 and COM4. Check and correct it if necessary.

To do this go into the Control Panel, then into system, select the hardware tab and click the button Device Manager. In the Device Manager under "Ports (COM & LPT)" appears the virtual COM port "USB Serial Port (COMx)".

Right click on the USB Serial Port and then select "Properties" in the context menu. There you click on the tab "Port Settings". In the next dialog you select the button "Advanced" and in the following dialog the COM port can be selected.

4 Control elements

4.1 Status-LEDs



Green LED Off:	No data transmission
Green LED flashes:	Computer receives data from the PLC
Yellow LED Off:	No data transmission
Yellow LED flashes:	Computer sends data to the PLC

5 Implementing

Connect your module as described in the chapter "[Hardware installation](#)" to the PLC and to the programming device or to your computer.

If you want to respond to a PLC via the module you have to comply the requirements as descript in the chapter "[system requirements](#)". In addition, please make sure that the module is properly connected

5.1 Programming software to use with direct access

After you have adjusted and connected the PLC-VCOM or the programming adapter to the COM-port on your computer, you will be able to connect with your programming software to the PLC and work with it.

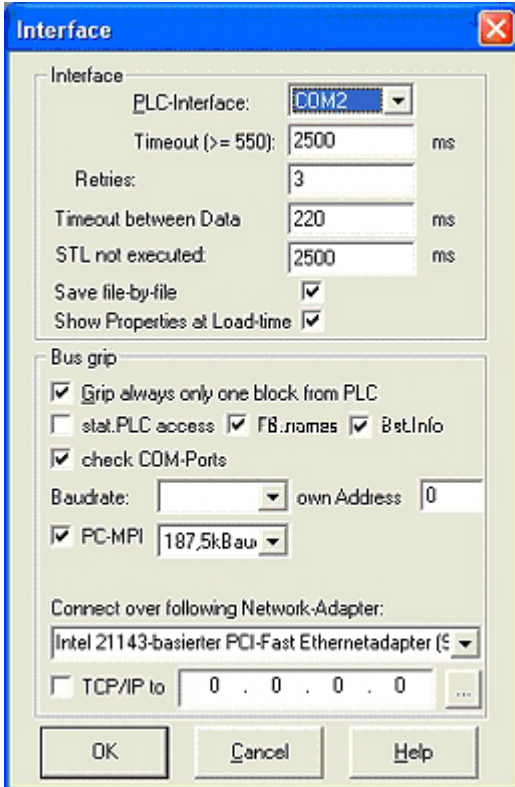
How you have to adjust your programming software is described in the following points:

5.1.1 PG2000 für S5 (V5.10)

1. Start the PG 2000 software by using the desktop link or by using the application entry in the start menu.




2. Choose from menu "View" ⇒ "S5 155U-90 ...". In the menu "Options" click "Interfaces".



3. A dialog appears. In the section "Interface" you can configure the "PLC - Interface" (COM - Port).
4. Set in the section "Bus grip" the tick "Grip allways only one block from PLC", "FB-names", "Bst. Info" and "check "COM-Ports"
5. Save your configuration by pressing "OK".



6. Now the software is ready to establish a connection to the PLC. Click the symbol "Open" and afterwards press "PLC". Alternative you can click "File" - "Open" - "PLC".

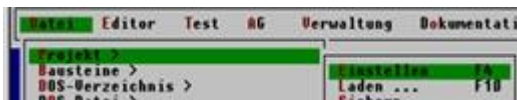


Mark	Baustein	Größe	Adresse	Bib-Ihr	Bausteinname
OB	001	128 W			zyklischer Bau:
SFC	000	90 W			SET_CLK
SFC	001	90 W			READ_CLK
SFC	006	126 W			RD_SINFO
SFC	020	92 W			BLKMOV
SFC	021	92 W			FILL
SFC	022	96 W			CREAT_DB
SFC	023	90 W			DEL_DB
SFC	024	94 W			TEST_DB
SFC	036	96 W			MSK_FLT
SFC	037	96 W			DMSK_FLT
SFC	038	96 W			READ_ERR
SFC	039	92 W			DIS_IRT
SFC	040	92 W			EN_IRT
SFC	041	88 W			DIS_AIRT
SFC	042	88 W			EN_AIRT
SFC	043	86 W			RE_TRIGR
SFC	046	86 W			STP
SFC	047	88 W			WAIT

The connection between PG 2000 and the PLC is now established. A new window appears. Now you can edit the blocks in the PLC.

5.1.2 SIMATIC Step© 5 Manager

1. Start your SIMATIC Step© 5 Manager by using the desktop link or the application entry in the start menu.



2. in the "File" menu , in submenu "project" you can the "Setting" dialog open.

3. In the tab "AG" configure the used PLC interface (example: "AS511"). Below that, you can set the COM port (example: "COM3").

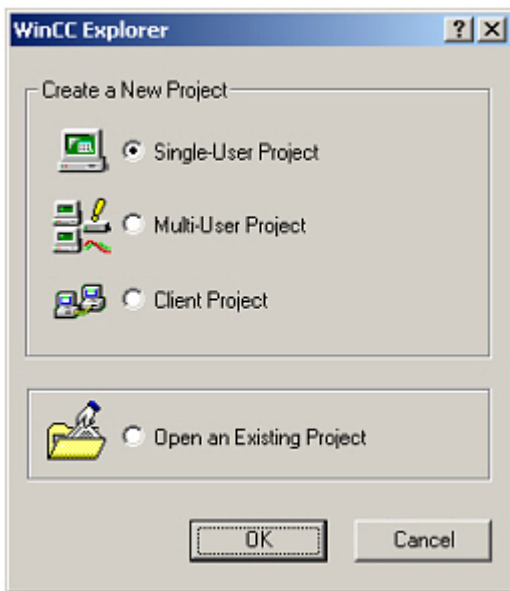




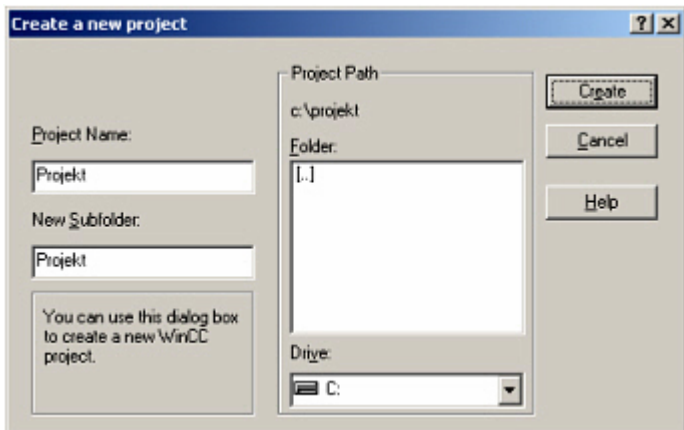
4. with "F3" change, the "operating mode" to "online". The window should display the "AG-type"
5. The connection with the PLC is successfully established when the "operating mode" changes to "Online."

5.1.3 Windows Control Center (WinCC) (v6.0)

1. Start WinCC by using the desktop link or the program entry in the start menu.
2. Choose „New” in the menu „File” or click on the white („letter”) symbol to start a new project.



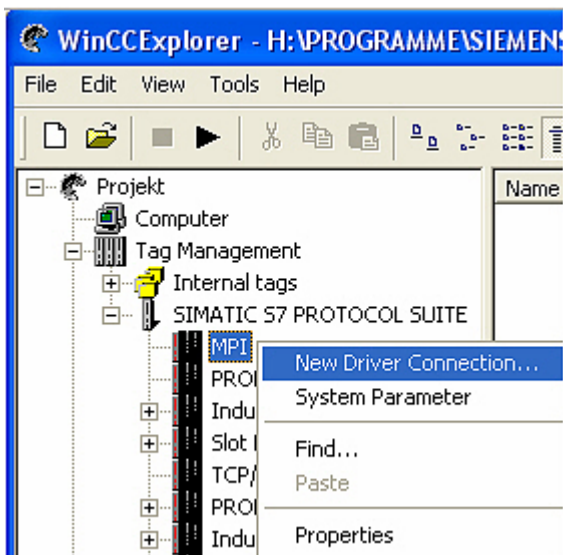
3. The next dialog offers you several project types „Single - User Project“, „Multi - User Project“ and „Client Project“. The next steps are describing the „Single - User Project“.



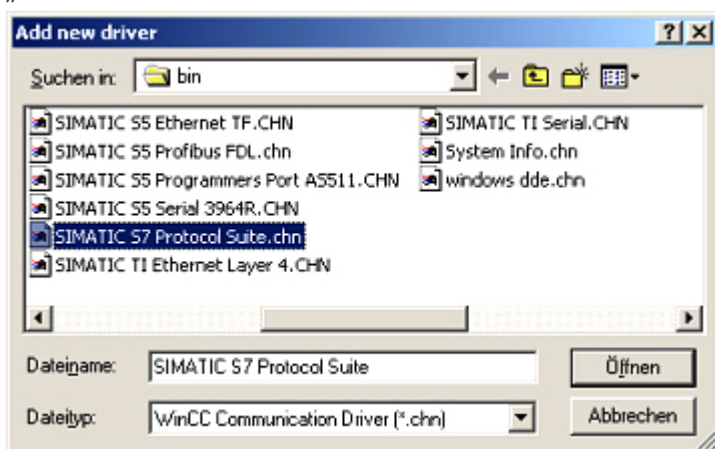
4. OK“ leads you to a new dialog. Type in the „Project Name“ and the „Subfolder“ of the „Project Path“ With „Create“ the chosen configuration is confirmed.

If you want to use one of the other options, please read this further in the manual of the WinCC software.

5. Please wait until the project is created. Afterward the project content is shown in the left part of the main window.

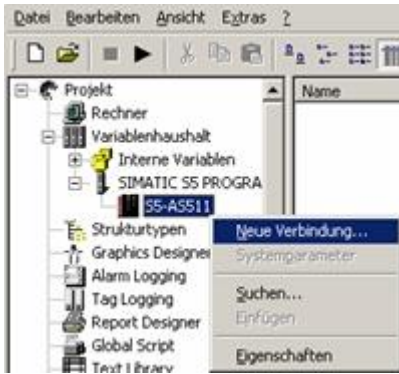


6. For a proper working communication with the PLC there must be defined how the software has to communicate with the PLC Therefore right click on „Tag Management“ to open the context menu. Choose „Add New Driver ...“.



7. In the dialog „Add new driver“ select the driver which fits to your PLC For a S5 PLC, you can choose the file SIMATIC S5 Programmiers Port AS511.chn. If you are using a different PLC please inform yourself which driver fits with your PLC.

It is important that the chosen driver fits with the PLC otherwise the connection cannot be established.



8. In the explorer you should see into the variable manager the branch "SIMATIC S5 PROGRAMMERS PORT".

Expand the branch and the protocols for several connections will appear. Right click on the desired connection „S5-AS511“. A context menu opens. Click on „New Connection...“.

9. Now you are able to type in the name of the connection. With a click on „Configuration“ a new dialog will appear. Set up the station address of the PLC (in this example „3“).

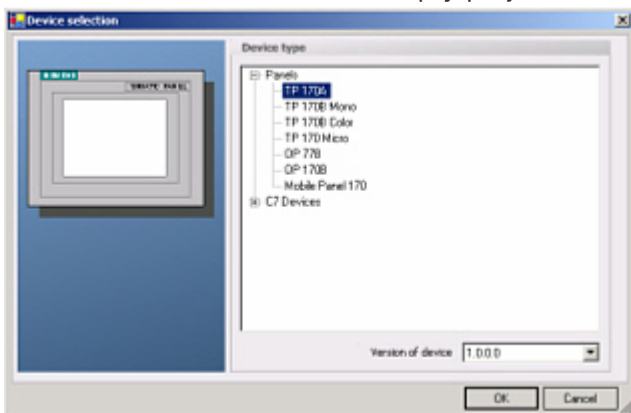
10. Confirm with "OK" until you are back to the main window.

11. Now you can with  start the communication and with  this end it again.

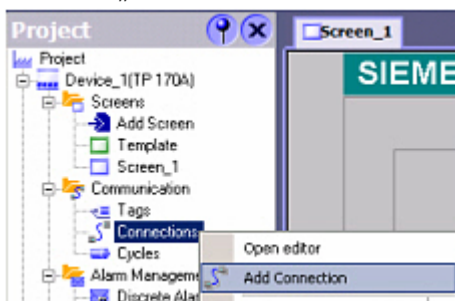
5.1.4 Windows Control Center flexible 2004 (WinCC flexible) (v5.2.0.0)

1. Start the WinCC flexible 2004 software by using the desktop link or the program entry in the start menu.

2. At first click on „Create an empty project“ in the „Start page“.



3. In the „Device selection“ mark the used operator panel (example: „TP 170A“) confirm with „OK“.

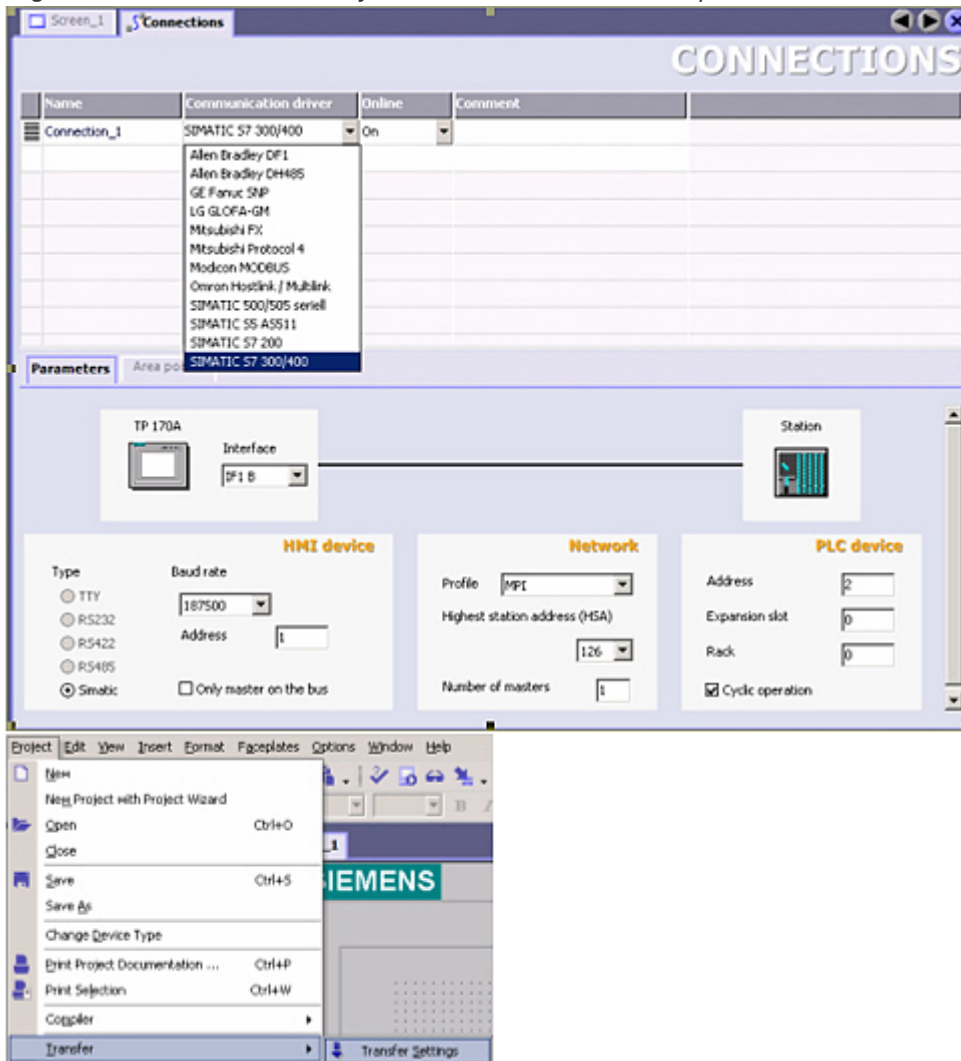


4. After the project has been created right click in the project window on „Connections“ of the sub menu „Communication“. In the context menu click on „Add Connection“.

5. Right in the main window appears the new tab "Connections" where you are different settings options. Important for the connection are: ⇒ the communication driver (set up which PLC you are using (eg: „SIMATIC S5 AS511“)

⇒ select the used "CPU - type" (eg "S5 95U")

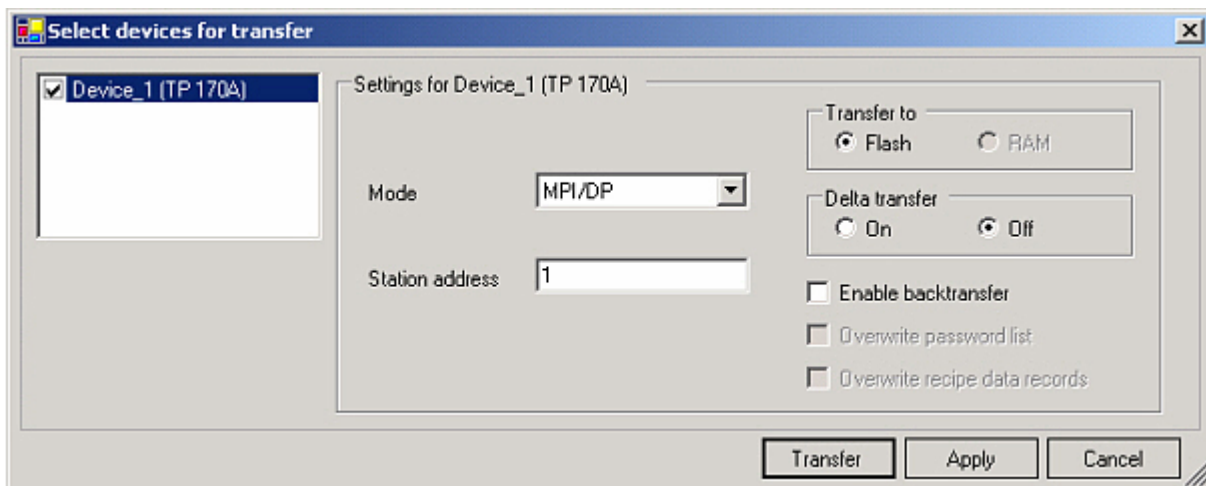
⇒ configure the interface parameters in the section “terminal”
(eg: baud rate „9600“, Parity„even“, Data bits „8“, Stop bits „1“).



6. Now you can start with your work. If you have finished work you can transfer this project to the panel by reading the next steps.

7. Choose „Transfer Settings“ from the sub menu „Transfer“.

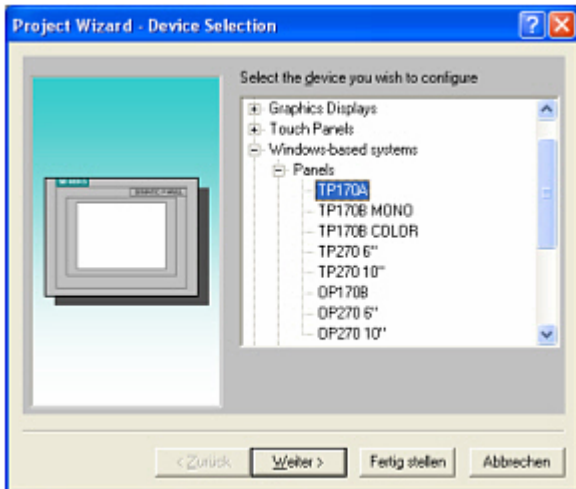
8. In the new dialog change the „Mode“ to „serial“ and set the „Station address“ of the operator panel (e.g. „1“). Please set the baud rate to “19200”. The “Delta transfer” is not supported by the S5-LAN. Turn them so “Off”.



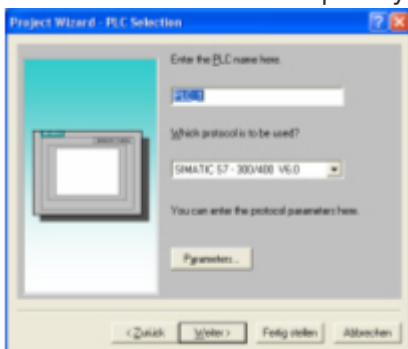
9. Press the button „Transfer“ to start communication with the terminal. Your project is about to be transferred. The communication with the operator terminal is so successfully established .

5.1.5 ProTool/Pro v6.0 SP2

1. Start ProTool/Pro by using the desktop link or program entry in the start menu.
2. Choose from the menu „File“ the sub menu „New“ or click on the right symbol.



3. The next dialog asks you which operator panel you are using. Mark the used panel (e.g. „TP 170A“)
 - ⇒ Control type: „S5“
 - ⇒ Protocol: „AS511“
 - ⇒ Serial interface: Select the COM port for the AG access here
 - ⇒ Baud rate: Select the speed you want to travel on the bus here

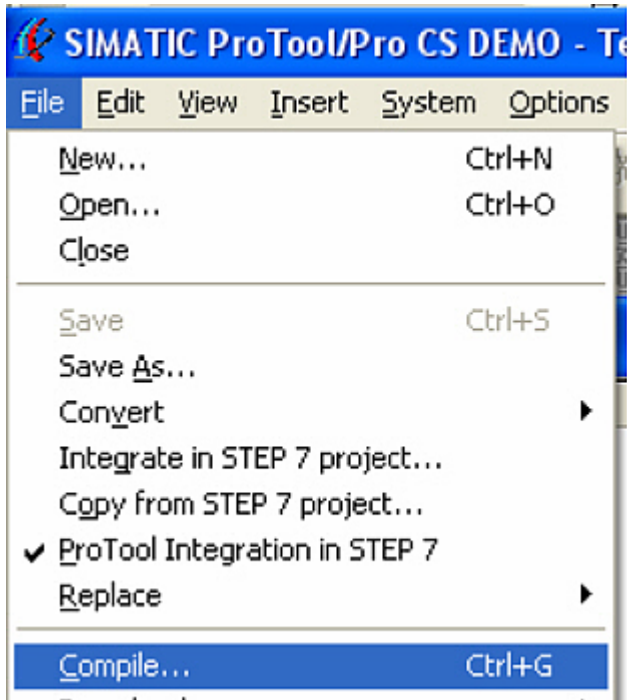


4. „Next“ leads you to a new dialog. Type in the specific fields the name of the PLC device and choose the used PLC in the driver selection (e.g. „SIMATIC S5 – AS511 V6.0“)

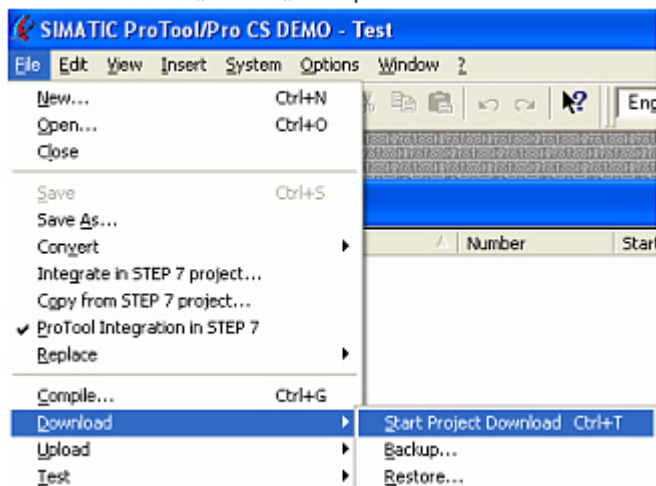



5. Via „Parameter...“ you are calling an configuration dialog from the chosen PLC driver Select the used “CPU type” and the “interface” to which the terminal is connected (eg “IF1 A”).
6. Furthermore you configure the parameters of the interface (“type”, “bits”, “Parity”, “Stop Bits”, “baud rate”).
7. confirm with „OK“ until you got back to the „PLC Selection“.Go on with „Next“.
8. In the main window start the Transfer Settings dialog by clicking on „File“ „Transfer“ „Settings...“. Choose „Serial“ and the COM interface of the operating terminal (e.g.: „COM1“). set the baud rate to “19200”. Confirm with „OK“. and start with your work If you have finished working on this project you can

go on with the next steps.



9. If you want to transfer you project to the panel you have to generate the project first. This can be done with a click on „File“ - „Compile“.

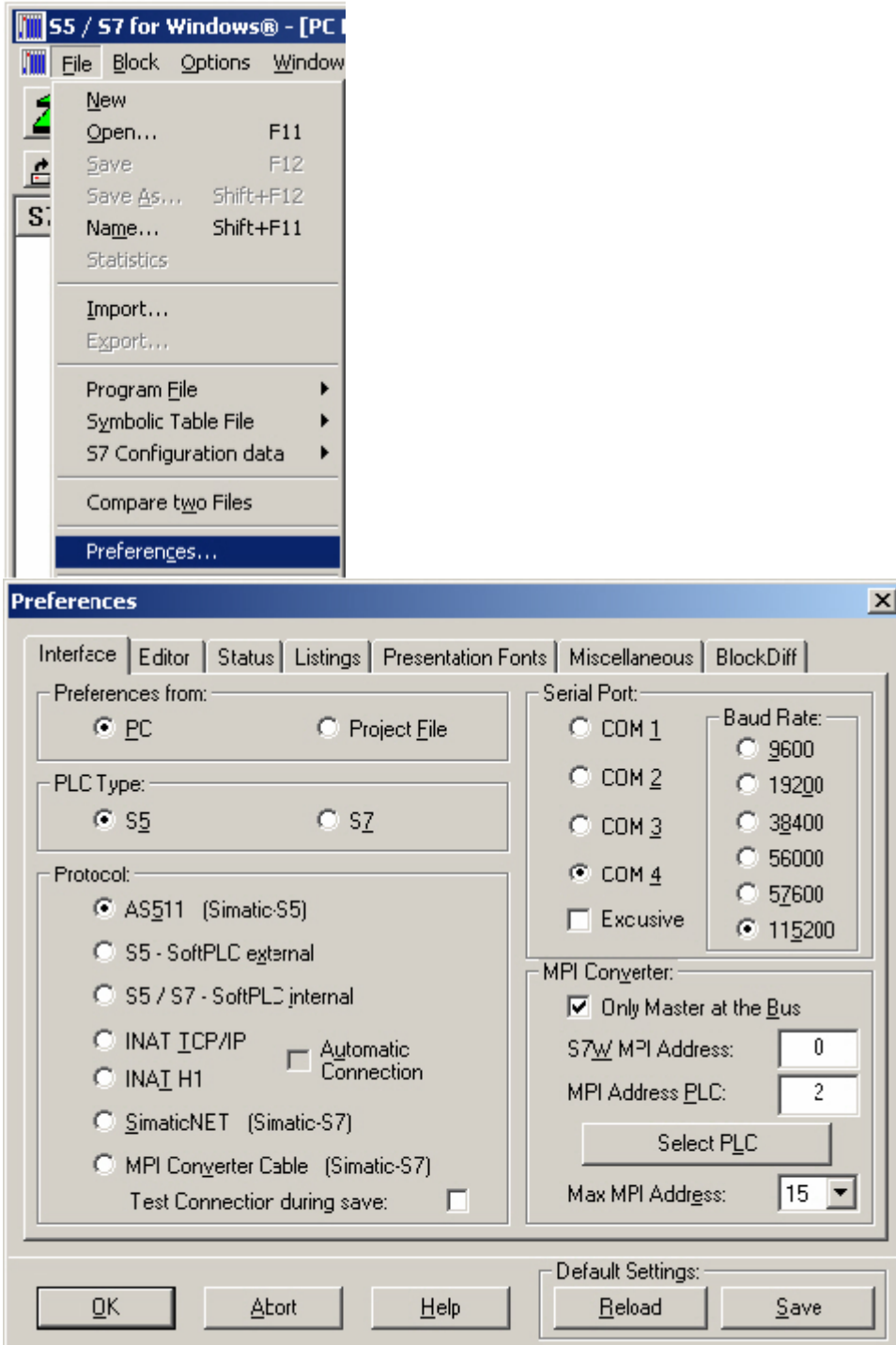


10. To transfer the project just click on „File“ „Download“ „Start Project Download“ or click on the right symbol .

Please wait while the project is transferred. The communication between the operator panel is now established.

5.1.6 S5 for Windows v5.02

1. Start the “S5 for Windows” software by using the link on your desktop or use the link in your start menu (standard is “Programs\S5 for Windows\S5 for Windows”)
2. Choose File - >Preferences... (top left in the menu bar) to configure the communication configuration between the computer and the PLC.
3. A new dialog appears which offers the possibility to set up a lot of configuration data about the communication with your PLC.



4. Choose the first registry card „Interface“ (standard) and set up the configuration data as described below: ⇒ Interface Settings from : „PC“

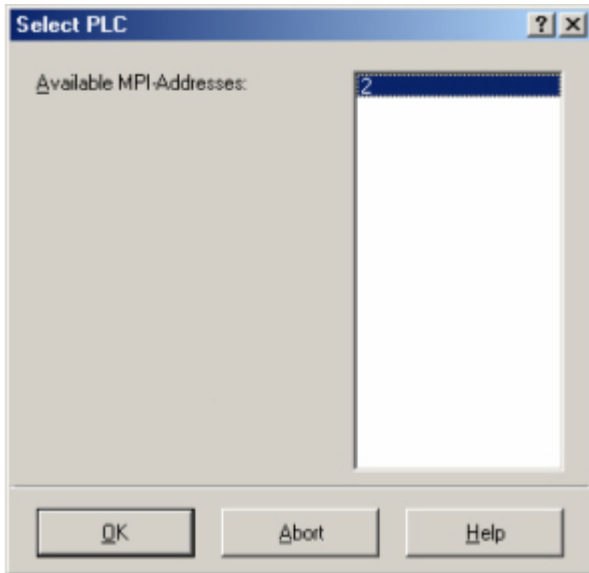
⇒ PLC type: „S5“

⇒ Protocol: „AS511 (Simatic - S5)“

⇒ Serial Port: Select here the COM port for the AG-access

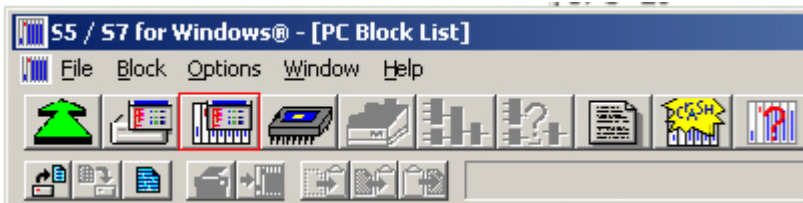
⇒ Baud Rate: Choose the speed you want to use at the bus 4.

5. After the software is configured , click “Select PLC” in the area “MPI Converter“. A new dialog appears where you can select the desired PLC



5. In this dialog you can see all PLC's which are connected to your PC. Choose from the list box (left) the desired station (the PLC) and confirm with "OK". (In the example "2")

6. Close the preferences dialog by pressing the „OK“ button.



7. Back in the main window press the „PC Block List“ button for testing the new established communication configuration.

8. Now (after a small processing time) all the blocks should be listed under the menu bar.

Baustein	Adress
OB 1	-
SFC 0	-
SFC 1	-
SFC 2	-
SFC 3	-
SFC 4	-
SFC 20	-
SFC 21	-
SFC 22	-
SFC 28	-
SFC 29	-
SFC 30	-
SFC 31	-
SFC 32	-
SFC 33	-
SFC 34	-
SFC 36	-
SFC 37	-
SFC 38	-
SFC 39	-
SFC 40	-
SFC 41	-
SFC 42	-
SFC 43	-
SFC 44	-
SFC 46	-
SFC 47	-
SFC 49	-
SFC 50	-
SFC 51	-

The communication between the S5 for Windows and the PLC is now established.

6 Technical data

Supply voltage:	5V/DC Power
consumption:	0,3 watt
Display:	2 status-LEDs for RXT/TXD
Interfaces:	to the PLC: TTY/20mA current loop (PG-USB active, PLC passive) to the PD/PC: USB 1.1 cable type A
Operating temperature:	5 - 55°C
Case:	metal case
Dimensions:	50 x 40 x 17 mm

6.1 Pinning (USB) PC

Pin No.	Short form	Description	Direction (cable - view)
1	Vcc	Power supply (DC)	In
2	D -	Data line -	BiDi
3	D +	Data line +	BiDi
4	GND	Ground	In

Important:

Please do not lengthen this side, this side also supports the 5V/DC power supply (max. cable length are 5 meters)

A longer cable would decrease the quality of the signal on the bus and may cause several errors in the transmission!

6.2 Pin assignment TTY / 20mA current loop

Pin number	Short form	Designation	Direction
1	NC	not used	
2	TTY OUT -	transmit data -	input
3	NC	not used	
4	NC	not used	
5	NC	not used	
6	TTY IN +	receive data +	output
7	TTY IN -	receive data-	input
8	NC	not used	
9	TTY OUT +	trasmit data +	output
10	NC	not used	
11	NC	not used	
12	NC	not used	
13	NC	not used	
14	NC	not used	
15	NC	not used	

7 Troubleshooting

7.1 Troubleshooting

When trying to run the installation appears an error message that this software is not executable under the operating system XP/NT/2000.

The S5VCOM driver is ONLY required for Windows 95/98/Me. The other operating systems like Windows XP/2000 have integrated this driver in the operating system and do not need it.

A message appears that the PG-USB driver is not installed.

The S5VCOM driver is based on the standard Windows drivers for the PG-USB-cable / USB-RS232-cable so that needs to be installed first. Plug in the PG-USB-cable /USB-RS232-converter into a USB port and follow the installation instructions. (The driver is on the CD)

While copying files appears an error message that copying is not possible.

This can have several causes. Possibly you not have enough space left on the hard disk, the program is already installed or the tray icon is still running.

After restarting the computer appears a message that the Settings.ini could not be opened.

In this file in the installation directory of S5VCOM driver settings are saved. This file is missing (It is created at program end), it is write protected or you do not have write permissions for the file.

After restarting the computer appears a message that the driver failed to load and the program ended.

There was no meaningful COM port to be found, so that the driver failed to load. Start a MSDOS box and type in:

```
„debug <ENTER>“
„d 40:0<ENTER> „
```

It appears a hexdump of the BIOS configuration area (where the existing COM ports are displayed)

Then enter “q < ENTER >” to exit the program:

```

c:\Arbeit>debug
-d 40:0
0040:0000 F8 03 F8 02 E8 03 E8 02 BC 03 78 03 78 02 80 9F .....x.x...
0040:0010 23 C8 00 80 02 28 80 20 00 00 2C 00 2C 00 64 20 #...<...d
0040:0020 20 39 34 05 30 0B 3A 34 30 0B 0D 1C 00 00 00 00 94.0:40...
0040:0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 80 .....P.....
0040:0040 D2 00 C3 00 0F DD C5 E0 CA 03 50 00 00 10 00 00 .....P.....
0040:0050 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....>0....q...
0040:0060 0F 0C 00 D4 03 29 30 7F 03 00 C0 00 71 1D 0B 00 .....>0....q...
0040:0070 00 00 00 00 00 00 00 00 00 14 14 14 00 01 01 01 01 .....
-q
c:\Arbeit>
```

In the first 4 * 2 bytes in the system stands the COM ports are known:

```

F8 03 COM1
F8 02 COM2
E8 03 COM3
E8 02 COM4
00 00 Empty entry (here not available)
```

In our case there is simply no more free COM port. When an empty entry is present, then cant be used only the required for this IRQ.

```

COM1 and COM3 uses both the same IRQ4
COM2 and COM4 uses both the same IRQ3
```

S5VCOM uses COM3 in the DOS box, but my S5 software can only use COM1 or COM2 (eg.: S5 V3.02)

Try to integrate in the system the from system existing COM 1/2 interface as a COM 3/4 (possibly by a

jumper).

My Windows software can not access the PG-USB-cable / USB-RS232-converter, although this is set in the control panel correctly and it worked before. It appears the error message that the COM port is already occupied or is not accessible.

The S5VCOM driver opens this COM port to communicate about even if no MSDOS box is open. The Windows program would now like to open the same COM port. This fails.

Quit the S5VCOM program (tray icon), thereafter an access from Windows is possible here, but from a MSDOS box is not. By restarting the program out from the startup folder, then can be worked under MSDOS again. Access under Windows and under MSDOS exclude each other!

It still works not, though the driver is loaded and the tray icon appears.

Double click the tray icon and select from the system menu "Information about ..."



The corresponding dialog is displayed. In this is also the version of the driver. Right click over the image. It appears additional control elements where you click ONLY on the button VCOMLOG! Confirm with "OK". In the installation directory of S5VCOM was generated the file "VCOM.LOG". Send this to us together with the version number and description of the problem.

Table of Contents

1.1 Basic circuit diagram	2
2.1 Operating system(s)	2
2.2 Software	2
2.3 Hardware	2
3.1 Hardware	2
3.1.1 Extension set PG-USB	2
3.2 Software	3
3.2.1 Driver for Windows XP	3
3.2.2 Driver for Windows 98	3
3.2.3 Uninstallation of the USB driver and installation of a new version	5
3.2.4 Installation of the Step5 © addition driver for PG-USB/S5-LAN + + / USB-RS232-converter	5
4.1 Status-LEDs	6
5.1 Programming software to use with direct access	7
5.1.1 PG2000 für S5 (V5.10)	7
5.1.2 SIMATIC Step© 5 Manager	9
5.1.3 Windows Control Center (WinCC) (v6.0)	10
5.1.4 Windows Control Center flexible 2004 (WinCC flexibel) (v5.2.0.0)	12
5.1.5 ProTool/Pro v6.0 SP2	14
5.1.6 S5 for Windows v5.02	15
6.1 Pinning (USB) PC	19
6.2 Pin assignment TTY / 20mA current loop	19
7.1 Troubleshooting	19