Installation Guide

for

Windows 95 / 98 / NT4 / 2000 / XP

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Content

1 Preparation

1.1 Using these Installation Instructions

This Installation Guide describes the driver installation and function test for CANpari. Use this version of the guide to install version 2.6 or higher of the CANpari driver. The following describes the installation from a CD.

CANpari can be used with several software applications. The following applications are available:

- CANalyzer
- CANoe
- CANape
- ProCANopen
- CANsetter
- Customer specific applications

The installation of the hardware must be performed before the installation of the application.

On our internet web site are installation instructions for other CAN hardware cards available (address: http://www.vector-informatik.de, Support Section).

1.2 Versions of CANpari

CANpari must be licensed in order to work with your application. Current licenses can be found on the sticker on the backside of the device or from the hardware information in the configuration program for the CANpari driver (see chapter 5). The following versions of CANpari are available:

CANpari (no license)	for library applications, ProCANopen, CANsetter
CANpari /ANA	for CANalyzer
CANpari /CYJ	for CANalyzer Junior
CANpari /COE	for CANoe PRO
CANpari /COR	for CANoe RUN
CANpari /COP	for CANoe PEX
CANpari /CNP	for CANape Standard
CANpari /CNG	for CANape Graph
CANpari /CNS	for CANape Server

Combinations of licenses are possible. Using an application with unlicensed cards will lead to an error message when the application starts.

1.3 Transceiver Options

CANpari is equipped with CAN drivers for the CAN High-Speed Bus (Driver: Philips 82C251) and for the Body Bus (Driver: Philips 82C252). At the factory the driver for CAN High-Speed Bus is activated. If you need the Body Bus driver, you must first activate it. This is described in the CANpari manual.

1.4 Hardware and Software Requirements

- IBM-compatible PC.
- Pentium 100 processor or higher.
- 32MB RAM or higher.
- One parallel port interface.
- MS-Windows NT, MS-Windows 2000/XP or MS-Windows 95/98.

1.5 Technical Background

CANpari communicates with your computer via the parallel port. To do this, CANpari utilizes the resources of the parallel port (I/O range and interrupt channel). Consequently, CANpari does not need its own resources.

1.6 Power Managers

Nearly all notebook computers and many desktop PC's have power managers. Power managers disable the CPU for a certain amount of time. This impairs time management accuracy in time critical applications. If you have stringent requirements for time management in your application (time-driven transmission of messages, time-driven evaluations), you must deactivate these power managers. Options for power management may be included in:

- The BIOS setup,
- the file CONFIG.SYS (e.g. POWER.EXE),
- the file SYSTEM.INI (e.g. VPOWERD.386) and
- the Windows 95/98 Control Panel (e.g. Power object).

Deactivation of power managers is not discussed any further in this document.

2 Hardware Installation for Windows 95/98

This chapter will give you some comments and tips for the first installation of CANpari driver V2.6 as well as for updating already installed drivers for Windows 95/98. All required files can be found on the installation CD.

2.1 Connecting CANpari

By default CANpari operates on the first parallel port (LPT1). If your computer has more than one parallel port, it is also possible to use one of the other parallel ports.

On the PC side these parallel ports have a 25-pin socket (female). Connect CANpari with your PC by plugging its 25-pin connector (male) into this socket (female) on the PC. The 25-pin connector (male) at the PC is a serial port; this must **not** be used for CANpari.

You can connect a device, e.g. a printer, to CANpari's 25-pin socket (female).

The CAN bus is brought out of CANpari via a 9-pin DSUB connector.

Please perform the following steps:

1. Shut down your computer
2. Connect CANpari to a parallel port.
3. Plug the CANpari keyboard connector into the PC's keyboard port. If you are using an external keyboard for your computer, you can plug its connector into the CANpari keyboard socket.
4. Reboot your PC.

CANpari must always be installed before booting the computer.

2.2 Configuration of the Parallel Port

On nearly all modern PCs the parallel port can be operated in different modes. To achieve optimal data throughput the parallel port should be operated in EPP or ECP mode. You can query the mode set on your computer as follows:

1. Start the program Start/Settings/Control Panel/CAN Hardware.
2. In the CAN Driver Configuration dialog choose the tab for the Diagnostic page.
3. If you find the entry CANpari EPP mode enabled, the parallel port is being operated in EPP or ECP mode. If you find the entry CANpari EPP mode not enabled, the parallel port is set to a mode other than EPP or ECP.

If necessary, switch the parallel port over to EPP or ECP mode. You can do this in the BIOS Setup.
Check for a successful installation as described in chapter 2.6 in more details.

2.3 First Installation of the CANpari Driver

This procedure must be done when performing a first installation of the CANpari driver on your computer. Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD.

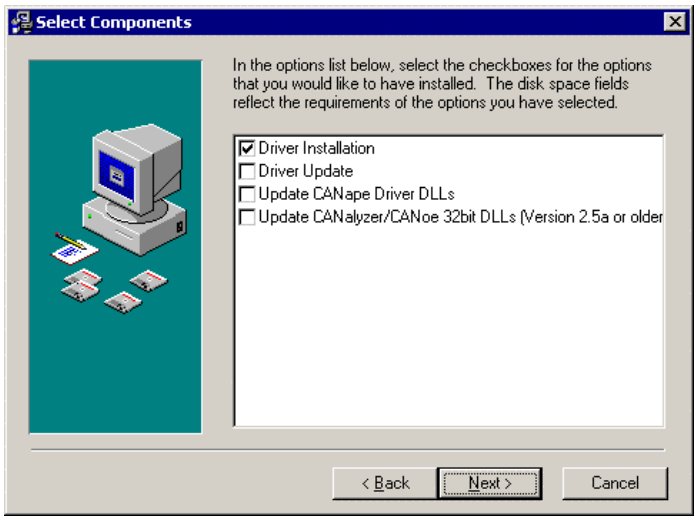

Figure 1: Select components of the driver installation

Follow the instructions of the installation program.

2.4 Configuration of the Driver

You should perform this step **only** if you are operating CANpari at the parallel port LPT2, LPT3 or LPT4 (not LPT1).

1. Start the Device Manager (Start/Settings/Control Panel/System/Device Manager).
2. Double click the parallel port you are using for CANpari.
3. Choose the Resources page. Determine the start address for the I/O range (e.g. 0x278 is the default start address for the I/O range of LPT2).
4. Start the program „CAN Hardware“ (Start/Settings/Control Panel). Mark the entry CANpari and select the „Configure“ button. Deactivate the checkbox for Automatic port detection and specify the resources determined above.
5. Reboot your computer.

2.5 Updating an Existing CANpari Driver Installation

A driver update must be done if an older version of CANpari driver has already been installed on the computer.

The driver update consists of two parts:

- Updating the CANpari device driver in the system directory of Windows

- Updating the hardware DLL in the program directory (CANalyzer, CANoe, CANape, ProCANopen and CANsetter). Only required for CANalyzer Version 2.5 and older, CANoe Version 2.5 and older and CANape Version 3.0 and older.

Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD.

Select the needed components for the driver update from the list. For ProCANopen and CANsetter, choose also „Update CANoe, CANalyzer 32 bit DLLs“.

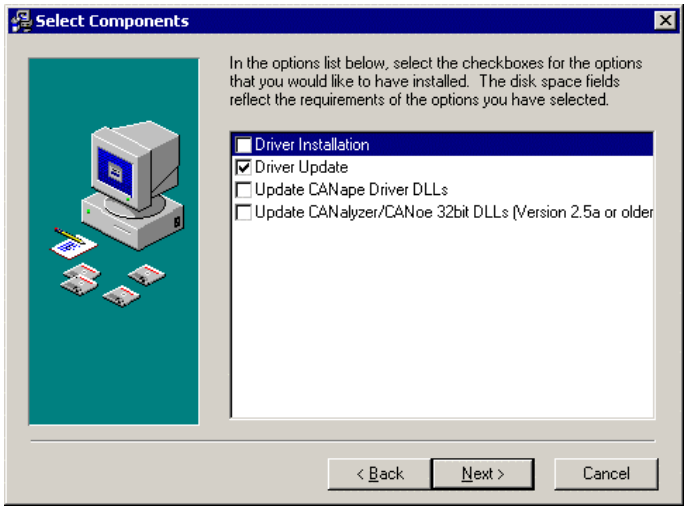

Figure 2: Settings in the Setup Menu of the CANpari Driver

Now enter the program directory of the application to update the hardware DLL (only CANalyzer, CANoe, CANape, ProCANopen and CANsetter).

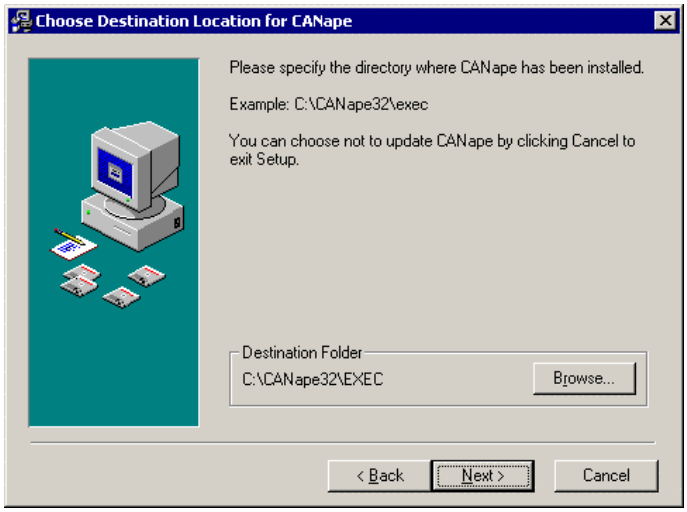

Figure 3: Entering the path in the CANpari Driver Setup Menu

Now follow the instructions of the setup program, then restart the computer.

If more than one of the programs CANalyzer, CANoe, CANape, ProCANopen or CANsetter is installed on your computer, the hardware-DLL update must be done for all.

2.6 Checking the Driver Installation

Start the CAN Driver Configuration Tool (*Start/Settings/Control Panel/CAN Hardware*). Check the CANpari entry.

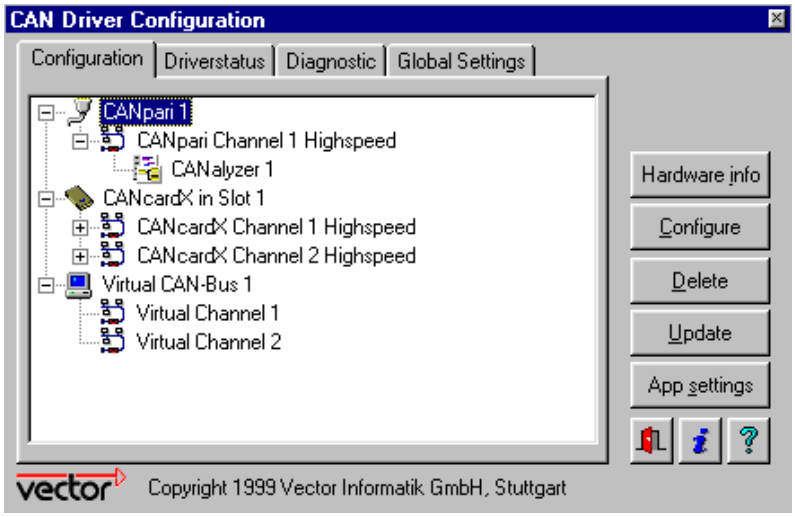

Figure 4: CAN Driver Configuration

Select the CANpari entry and choose Hardware info. After correct installation, the serial number and license information are shown. In case of problems, additional, more detailed information is displayed in folder Diagnostic.

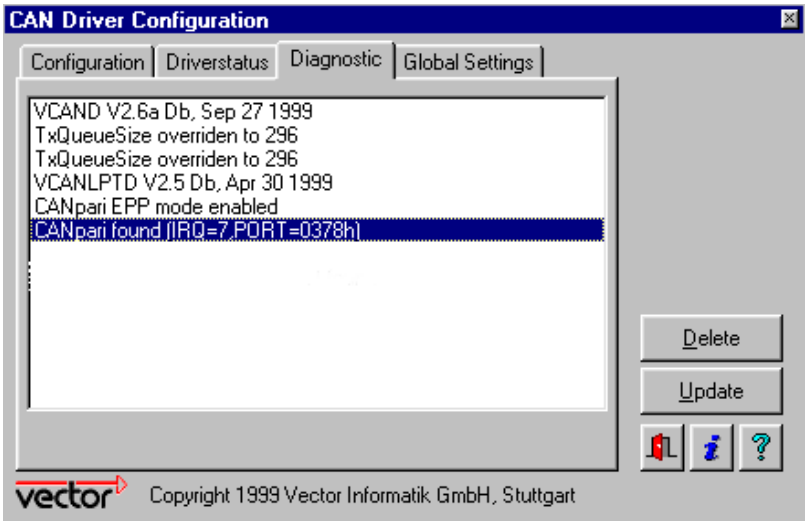

Figure 5: CAN Driver Diagnostic

More detailed comments and tips about devices causing conflicts can be found in chapter 7. You can now conduct a function test for the hardware as described in chapter 6.

3 Hardware Installation for Windows NT

This chapter will give you some tips for the first installation of CANpari driver V2.7 or higher as well as for updating already installed drivers for Windows NT. All required files can be found on the installation CD.

It is strongly recommended to use Windows NT with Service Pack 5 or higher.

3.1 Connecting CANpari

By default CANpari operates on the first parallel port (LPT1). If your computer has more than one parallel port, it is also possible to use one of the other parallel ports.

On the PC side these parallel ports have a 25-pin socket (female). Connect CANpari with your PC by plugging its 25-pin connector (male) into this socket (female) on the PC. The 25-pin connector (male) at the PC is a serial port; this must **not** be used for CANpari.

You can connect a device, e.g. a printer, to CANpari's 25-pin socket (female). The CAN bus is brought out of CANpari via a 9-pin DSUB connector.

Please perform the following steps:

1. Shut down your computer.
2. Connect CANpari to a parallel port.
3. Plug the CANpari keyboard connector into the PC's keyboard port. If you are using an external keyboard for your computer, you can plug its connector into the CANpari keyboard socket.
4. Reboot your PC.

CANpari must always be installed before booting the computer.

3.2 First Installation of the CANpari Driver

This procedure must be done when performing a first installation of the CANpari driver on your computer. Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD.

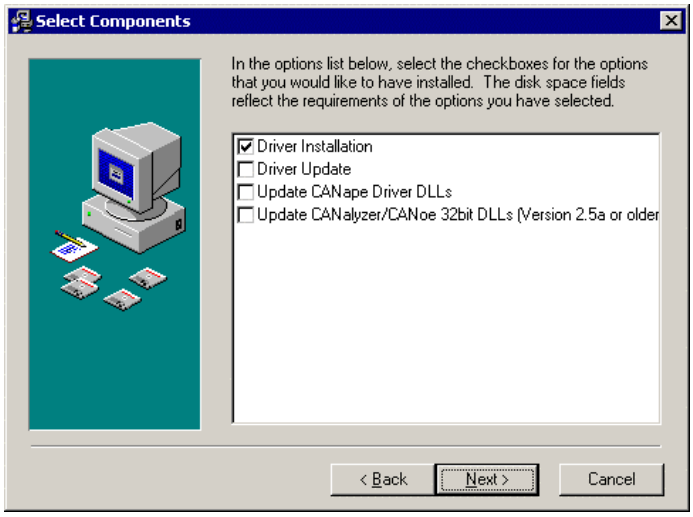

Figure 6: Select components of the driver installation

Follow the instructions of the installation program.

3.3 Configuration of the Parallel Port

The parallel port can be operated in different modes. To achieve optimal data throughput the parallel port should be operated in a bi-directional mode (e.g. EPP, ECP or BIDIRECTIONAL mode). If the parallel port isn't in a bi-directional mode, you will find the warning

"WARNING: CANpari in nibble mode"

in the diagnostic's page of the CAN Hardware Configuration tool (see chapter 5 "CAN Driver Configuration Tool"). If this warning is displayed, switch the parallel port to a bi-directional mode if a bi-directional mode is supported. The parallel port's mode can be set in the BIOS setup.

Check for a successful installation as described in chapter 3.5 "Checking the Driver Installation".

3.4 Updating an existing CANpari Driver Installation

A driver update must be done if an older version of CANpari driver has already been installed on the computer.

The driver update consists of two parts:

- Updating the CANpari device driver in the system directory of Windows.
- Updating the hardware DLL in the program directory (CANalyzer, CANoe, CANape, ProCANopen and CANsetter). Only required for CANalyzer Version 2.5 and older, CANoe Version 2.5 and older and CANape Version 3.0 and older.

Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD.

Select the needed components for the driver update from the list. For ProCANopen and CANsetter, choose also „Update CANoe, CANalyzer 32 bit DLLs“.

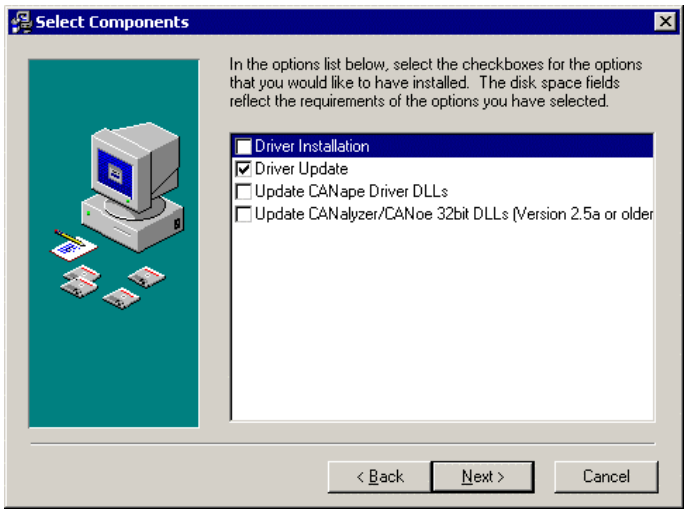

Figure 7: Settings in the Setup Menu of the CANpari Driver

Now enter the program directory of the application to update the hardware DLL (only CANalyzer, CANoe, CANape, ProCANopen and CANsetter).

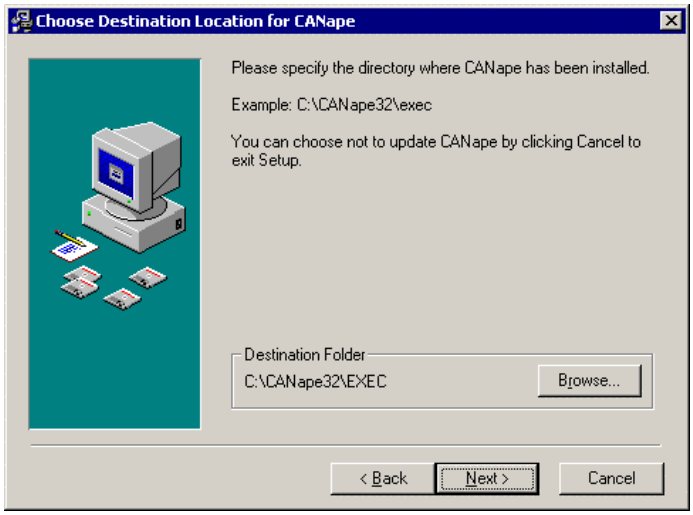

Figure 8: Entering the path in the CANpari Driver Setup Menu

Now follow the instructions of the setup program, then restart the computer.

If more than one of the programs CANalyzer, CANoe, CANape, ProCANopen or CANsetter is installed on your computer, the DLL update must be done for all applications separately.

3.5 Checking the Driver Installation

After starting Windows you will find the driver in *Start/Settings/Control Panel/Devices* under the name Vector *CAN Driver for Windows NT.* The driver is automatically started each time Windows is started.

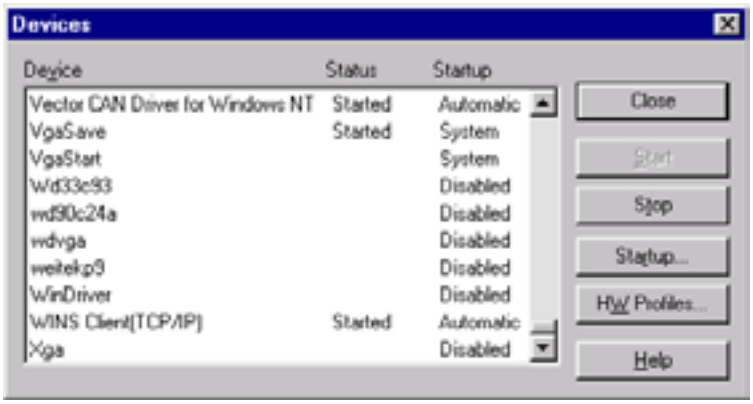

Figure 9: CANpari Driver under Devices

In case this entry does not exist, you will find more information in Chapter 8.

4 Hardware Installation for Windows 2000 / XP

This chapter will give you some tips for the first installation of CANpari driver V2.7 for Windows 2000 and Windows XP as well as for updating already installed drivers. All required files can be found on the installation CD.

It is strongly recommended to use Windows 2000 with Service Pack 1 or higher.

General Annotations on Windows XP:

Depending on the chosen view the Windows XP Device Manager can be started as following:

1. Category View: Start/Control Panel/Performance and Maintenance/System/Hardware/Device Manager
2. Classic View: Start/Control Panel/System/Hardware/Device Manager

Please choose the Classiv View for these steps.

4.1 Connecting CANpari

By default CANpari operates on the first parallel port (LPT1). If your computer has more than one parallel port, it is also possible to use one of the other parallel ports.

On the PC side these parallel ports have a 25-pin socket (female). Connect CANpari with your PC by plugging its 25-pin connector (male) into this socket (female) on the PC. The 25-pin connector (male) at the PC is a serial port; this must **not** be used for CANpari.

You can connect a device, e.g. a printer, to CANpari's 25-pin socket (female).

The CAN bus is brought out of CANpari via a 9-pin DSUB connector.

Please perform the following steps:

1. Shut down your computer.
2. Connect CANpari to a parallel port.
3. Plug the CANpari keyboard connector into the PC's keyboard port. If you are using an external keyboard for your computer, you can plug its connector into the CANpari keyboard socket.
4. Boot your PC.

CANpari must always be installed before booting the computer.

4.2 First Installation of the CANpari Driver

This procedure must be done when performing a first installation of the CANpari driver on your computer. Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD and follow the instructions of the installation program.

In the “Select Components” dialog choose “Driver Installation”.

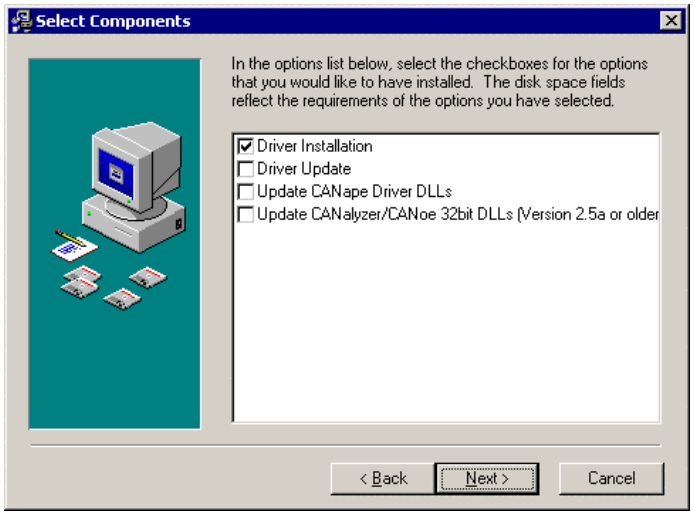

Figure 11: Selecting Components

Check for a successful installation as described in chapter 4.5.

4.3 Configuration of the Parallel Port

4.3.1 Enabling the Hardware Interrupts

Enable the hardware interrupts of your parallel port. This can be done by selecting “Use any interrupt assigned to the port” in the port setting register tab of the parallel ports properties dialog (Start/Settings/Control Panel/System/Hardware/Device Manager/Ports/Parallel Port/Properties).

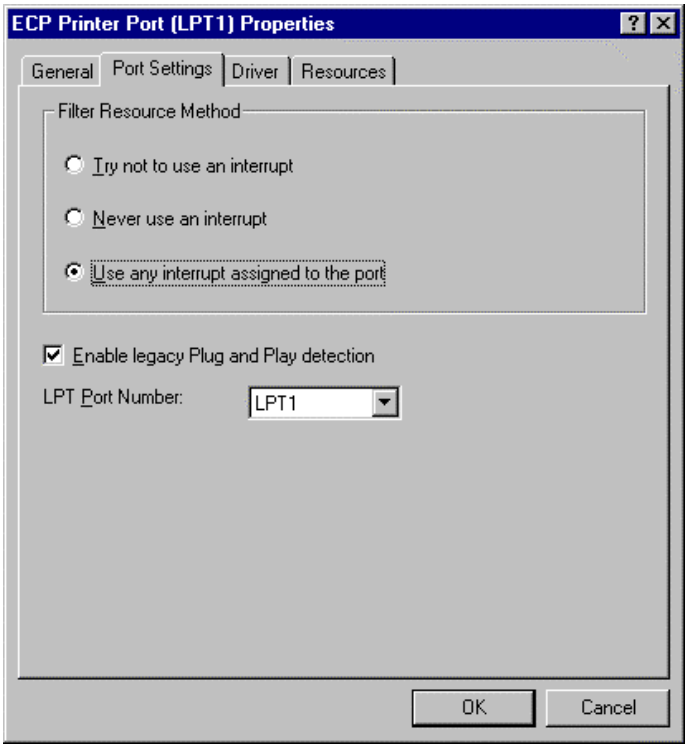

Figure 10: Enabling the hardware interrupt of the parallel port

4.3.2 Setting the Parallel Port Mode

The parallel port can be operated in different modes. To achieve optimal data throughput the parallel port should be operated in a bi-directional mode (e.g. EPP, ECP or BIDIRECTIONAL mode). If the parallel port isn't in a bi-directional mode, you will find the warning

"WARNING: CANpari in nibble mode"

in the diagnostic's page of the CAN Hardware Configuration tool (see chapter 5 "CAN Driver Configuration Tool"). If this warning is displayed, switch the parallel port to a bi-directional mode if a bi-directional mode is supported. The parallel port's mode can be set in the BIOS setup.

Check for a successful installation as described in chapter 4.5 "Checking the Driver Installation".

4.4 Updating an existing CANpari Driver Installation

A driver update must be done if an older version of CANpari driver has already been installed on the computer.

The driver update consists of two parts:

- Updating the CANpari device driver in the system directory of Windows.

- Updating the hardware DLL in the program directory (CANalyzer, CANoe, CANape, ProCANopen and CANsetter). This is only required for CANalyzer Version 2.5 and older, CANoe Version 2.5 and older and CANape Version 3.0 and older.

Start SETUP.EXE in the directory CD:\Drivers\CANpari on the installation CD.

Select the needed components for the driver update from the list. For ProCANopen and CANsetter, choose also „Update CANoe, CANalyzer 32 bit DLLs“.

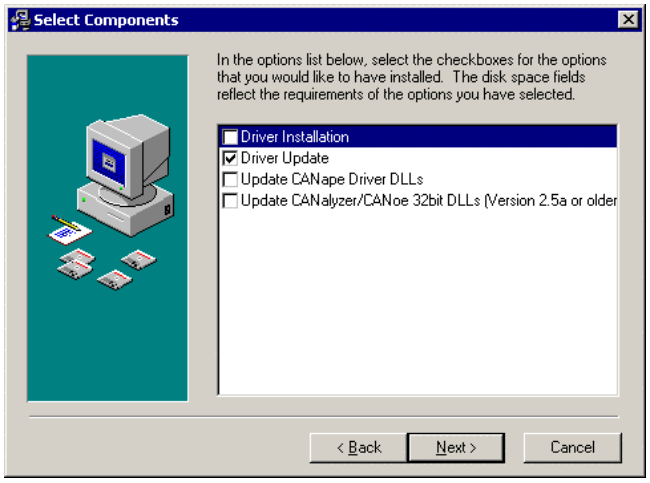

Figure 12: Settings in the Setup Menu of the CANpari Driver

If you’ve choosen to do an update of the DLL, you now have to specify the path of the application (only CANalyzer, CANoe, CANape, ProCANopen and CANsetter).

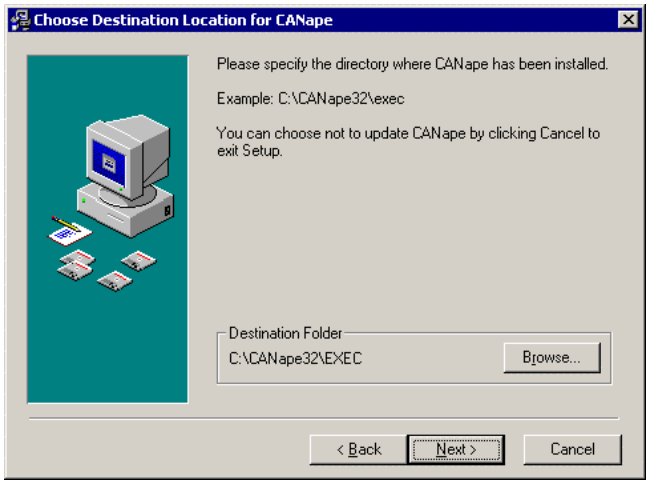

Figure 13: Entering the path in the CANpari Driver Setup Menu

Now follow the instructions of the setup program, then restart the computer.

If more than one of the programs CANalyzer, CANoe, CANape, ProCANopen or CANsetter is installed on your computer, the DLL update must be done for all applications separately.

4.5 Checking the Driver Installation

After starting Windows you will find the CANpari driver as “Vector CANdriver” in the Device Manager (Start/Settings/Control Panel/System/Hardware/Device Manager) under “Non Plug and Play Drivers” (If this entry isn’t displayed, go to “View” and select “Show hidden devices”.).

The status of the driver should be “Started”.

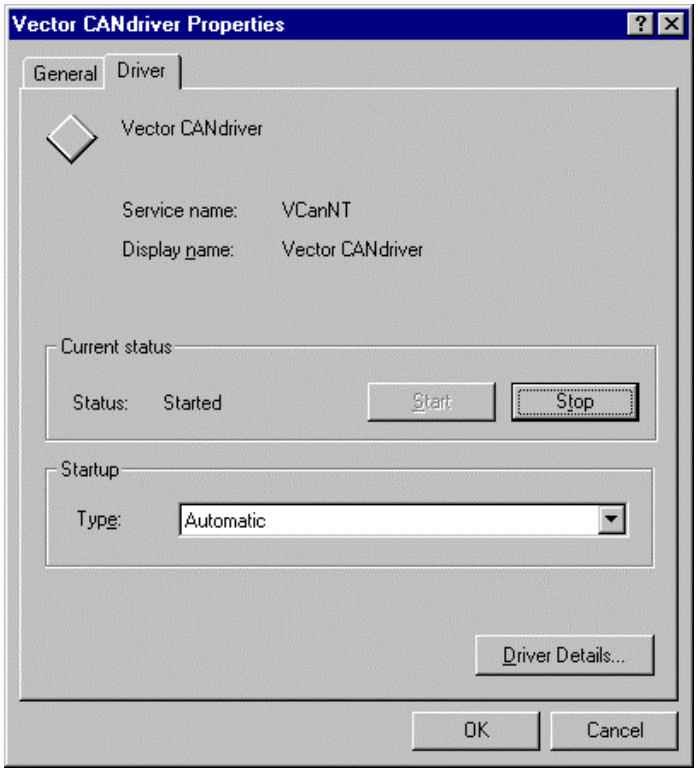

Figure 14: CANpari Driver under Device manager

In case this entry does not exist or the status is not set to “Started”, you will find more information in chapter 8.

5 CAN Driver Configuration Tool

After installing the driver successfully, you will find the icon “CAN-Hardware” located in the control panel (Start/Programs/Settings). This will show the CAN driver configuration dialog. Here you find the current configuration of the driver, other installed CAN-Hardware and assigned application channels.

Figure 15: CAN Driver Configuration

Dialog “Configuration”

This window shows all recognized CAN-Hardware components. Additional details about available CAN-channels and assigned application channels are shown in a tree structure similar to the Explorer. In this dialog, internal information about CAN Hardware and CAN channels can be displayed as described below.

Assign application channels to CAN channels:

Mark the desired CAN channel to assign new application channels. Start the context menu using the right mouse button and select the desired application channel. Please note that for some customer-specific applications entering an application channel is not necessary.

Configuration of resources:

The resources used for many CAN-Hardware components are configurable by using the “Configure” button.

Prompting for details on hardware information:
Select the corresponding CAN-Hardware and click the button “Hardware info”.

Figure 16: CAN driver configuration

This will display serial number, firmware version and licensed applications.

Dialog “Driver Status”

This dialog shows some general information about driver status and the status of available CAN channels.

Dialog “Diagnostics”

The index tab “Diagnostics” is used to show status messages and error messages of the driver. All messages appearing since the last time the screen was cleared are shown (screen is cleared on start). This information can be very helpful when analyzing hardware installations.

Dialog “Global Settings”

The index tab “Global Settings” allows to activate or deactivate the CAN Hardware Synchronization.

CAN Hardware Synchronization must be activated when CAN Channels from more than one hardware are used, e.g. one CANpari channel, Virtual CAN Bus Channels and channels of CANcardX.

6 Checking the Operation of the Hardware

A test to check the correct operation of the driver and hardware may be performed as described below. This test is identical for Windows 95/98 and Windows NT/2000/XP and is application independent. Verification of hardware operation may also be conducted through the application.

To perform this test, you must switch CANpari in the self test mode:

- Open the CAN driver configuration tool (see chapter 5).
- Mark the CANpari entry, press the right mouse button and select “configure”.
- Activate SJA 1000 self test mode.

Important: Deactivate the self test mode after performing this test.

Test for hardware and driver

Start the test program btest32, which can be found in the driver directory of the installation CD (CD:\Drivers\CANpari), with command “BTEST32.EXE 250000”. This test program will send CAN messages.

After a successful card access, the screen will look like this:

```
CAN-Driver Test Application, Sep 28 1998
Vector Informatik GmbH

Usage:
  BTEST32 <BaudRate> <ApplicationName>
Press h for help

Baudrate = 250000
ncdOpenDriver()
ncdDriverConfig()
 3 channels found
Driver Configuration:
  ChannelCount=3
  Channel 0 (0001): Virtual Channel 1, (0,1,0), isOnBus=0
  Channel 1 (0002): Virtual Channel 2, (0,1,1), isOnBus=0
  Channel 2 (0004): CANpari Channel 1, (0,3,0), isOnBus=0
ncdOpenPort(channelMask=0007,initMask=0007)
 portHandle=0
 permissionMask=0007
ncdCheckLicense(code=0001/CANalyzer)
ncdSetChannelParams(0007)
  baudrate=1000000,tseg1=4,tseg2=3,sjw=1,sam=1
ncdSetChannelAcceptance(mask=00000000,code=00000000)
ncdSetChannelAcceptance(mask=80000000,code=80000000)
ncdActivateChannel(0007)
```

Press key ‘3’ to activate CANpari channel 1 (or press two times key ‘c’). To send CAN messages to CANpari, press key ‘t’.

To leave the test program, press ESC.

Note: This test program has more features than sending messages. Press key ‘h’ (help) for information about additional functionalities.

If the test has not been successful, please find more information in chapter 7 and chapter 8.

7 Troubleshooting Windows 95/98 Installations

7.1 Verify the correct Installation of the CANpari Driver

Check the driver state as described in chapter 2.6.

7.2 Verify Settings of the Parallel Port

1. Start the device manager (Start/Settings/Control Panel/System/Device Manager).
2. Select the parallel port (e.g. LPT1) entry and choose “Properties”.
3. Select the Resources tab. Check the I/O address of the parallel port.
4. Start the CAN driver configuration tool (Start/Settings/Control Panel/CAN Hardware).
5. Mark the entry CANpari, press the right mouse button and select “configure”.
6. Select “automatic port detection”. Here you can compare the I/O address with the settings found in the device manager. When there are different values, modify the settings in CAN hardware to the values found in the device manager.
7. Reboot your system after modifications.

Hints:

- Diagnostic information of the driver can be found in the CAN driver configuration tool under tab “diagnostic”.
- When you are using parallel port cables to connect CANpari, make sure that all pins are connected in the cable.
- Verify that no other driver or application has access to the parallel port when you communicate with CANpari.

8 Troubleshooting Windows NT/2000/XP Installations

Check the driver state as described in chapter 3.5 (Windows NT) or 4.5 (Windows 2000/XP).

General hints:

- Diagnostic information concerning the driver can be found in the CAN driver configuration tool under tab “diagnostic” (see below).
- When you are using parallel port cables to connect CANpari, make sure that all pins are connected in the cable.
- Verify that no other driver or application has access to the parallel port when you communicate with CANpari.

Warning or error messages in the diagnostics page of the CAN Hardware Configuration Tool (see chapter 5 CAN Driver Configuration Tool):

- “ERROR: Failed to hook IRQ”

  Windows 2000 / XP: Make sure that the paralell ports hardware interrupt is enabled as described in chapter 4.3.1 “Enabling the Hardware Interrupts”.

- “WARNING: CANpari in nibble mode”

  To improve the performance of CANpari, switch the parallel port to a bidirectional mode as described in chapter 3.3 “Configuration of the Parallel Port” (Windows NT) resp. chapter 4.3.2 “Setting the Parallel Port Mode” (Windows 2000 / XP).