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From Components to Systems

CAN-PCI- / CAN-PCI-Express-Interface
Installation instruction

Windows XP
Windows 7 (32/64-Bit)
Windows 10 (32/64-Bit)

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Remarks concerning this manual:

Despite the utmost care, print and other errors cannot be excluded.
If you have any suggestions for improvements and hints as regards errors, don't hesitate to contact us.

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Last Updated: 12/04/2018

Table of contents

Introduction

In the CAN-CNC controller, a CAN interface connects the control core with the outside world. In relation to the CAN hardware interface, we have the following solutions for you:
- CAN dongle on the parallel port
- Single-channel CAN-PCI card or CAN-PCI-Express card
- Dual-channel CAN-PCI card or CAN-PCI-Express card

Even though the CAN interfaces are different, the controller software always stays the same. The so-called driver software ensures this. It is a piece of software (Windows terminology: WDM driver) that sits at the lowest level of Windows, controls the hardware, encapsulates it outwards and ensures that all CAN hardware interfaces always behave the same. Each CAN hardware interface has its own driver software. Note that the PCI and PCI Express variants are absolutely identical from a software point of view. Even with the WDM driver, there is also no difference. Therefore, the express variant is no longer mentioned separately. In this manual, we describe how you can install or update this driver software for the two CAN-PCI interfaces. The CAN dongle on the parallel port is an old interface that we no longer support. Please note that here it has nothing to do with the installation of the controller software. You must install the controller software and the start-up software separately.

The contents of this manual are also offered as online help. To open the online help, it is better that the online help is on a local hard disk rather than on a network hard drive. If the contents page remains empty when accessing help topics via the table of contents, there is a access problem to the help file. In this case, select the help file with the right mouse button. Selecting "Properties" displays the dialog box "... Properties". The button "Unblock" on the tab "General" should be clicked.

Installing the single-channel card iCC 10 / iCCE 10
Hardware installation

The single-channel card has only one CAN connection, as shown in the image.

iCC 10   iCCE 10

Turn off your computer and insert the PCI card into a free PCI slot in your computer. The PCI express card needs a free PCI express slot. In the BIOS, you can allocate the PCI slot a free interrupt. In general, one automatic allocation is sufficient. Make sure that there are no conflicts with the interrupt of other devices. Otherwise there is a danger that the computer will freeze or crash.

Software installation
Windows XP (32 Bit)
Installation of the driver software

After the hardware installation, you can re-start the computer. Log on as the administrator. On start-up, the computer responds with the following assistant.

Select the option "No, not this time" and click "Next". The following dialogue box appears

Select the option "Install from a list or specific location (Advanced)" and click "Next". The following dialogue box appears
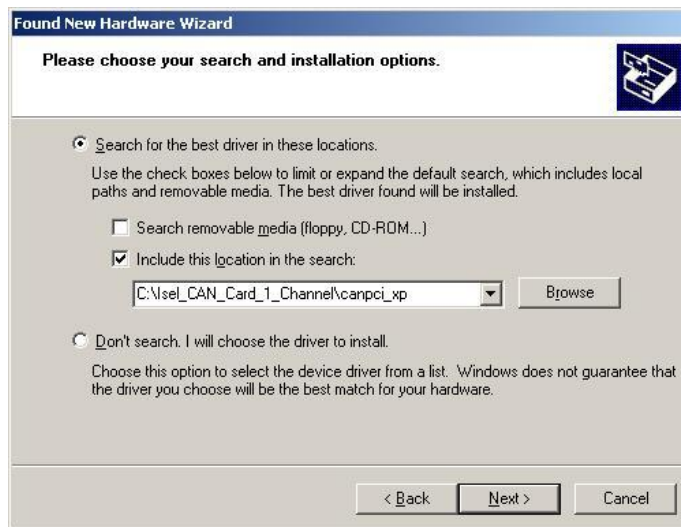
Select then the option "Include this location in the search:" as shown in the dialogue above.
Select with "Browse" the directory "...\Can_Card_1_Channel\canpci_xp" for the CAN-PCI card on your installation data carrier. Click on "Next".
The following dialogue box appears

Click on "Continue Anyway". The following dialogue box appears

Click on "Finish" to complete the installation.
Before you re-start the computer, you still have to adapt your computer's power savings plan. Please read the section "Adapting the power savings plan" on page 7.

Updating the driver software

If the PCI card and the driver software are already installed and you wish to change only to a newer version of the driver software, follow the steps below.

- Start the device manager via "Start→Control Panel→System→Hardware→Device Manager".
- Select "Devices by type" via "View".
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Update driver ...".
- Select the option "No, not this time" and click "Next".
- Select the option "Install from a list or specific location (Advanced)" and click "Next".
- Using "Browse" select the file supplied "...\Can_Card_1_Channel\canpci_xp\canpci1.inf" and then "Next".
- Using "Next", you allow the installation of the new driver software.
- If there is a warning in the hardware installation, select "Continue Anyway".
- Use "Finish" to complete the update process.
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Properties".
- On the page "Driver", you can re-check the current version of the driver software.
- Re-start the PC.
- If you want, you can use the programme CANSet at any time to re-check the version of the current software.
  - Start the programme CANSet.
  - In the menu "CANSet→Configure CNC control→CAN→Hardware→CAN-Hardware", select "PCI card / PCI express card".
 - In the menu "CANSet→Extras→Software Version", you can then check the software versions.

Adapting the power savings plan

Depending on the selected power savings options, Windows will shut down the computer after a certain time to save power. It leads to the CAN-CPI card no longer working properly. Therefore you must adapt the power savings plan of the computer. The power savings plan is adapted both in the BIOS of the computer and directly in the Windows operating system. The settings in the BIOS cannot be discussed in more detail here, unfortunately, because the BIOS may vary depending on the main board used. Here you must use the manuals of the particular main board to be able to do the settings.
Carry out the following steps to adapt your computer's power savings plan.
- Call up the power options (Start→Control Panel→Power Options→Power Schemes). The dialogue box "Power Options Properties" appears.
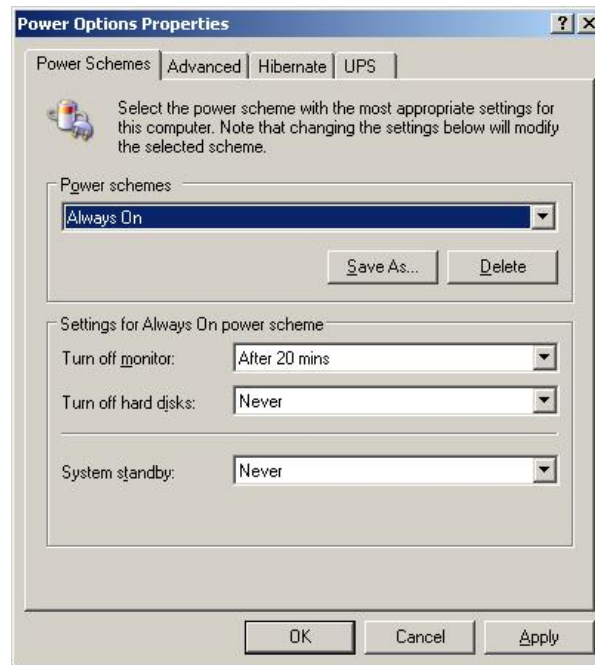
- Select the page "Power Schemes"
- Select for the list box "Power Schemes" the list item "Always On".
- Select for the list box "Turn off hard disks" the list item "never".
- Select for the list box "System standby" the list item "never".
- Click on the button "Apply", to secure your setting.
- Select in the dialogue "Power Options Properties" the page "Hibernate" The following dialogue box appears
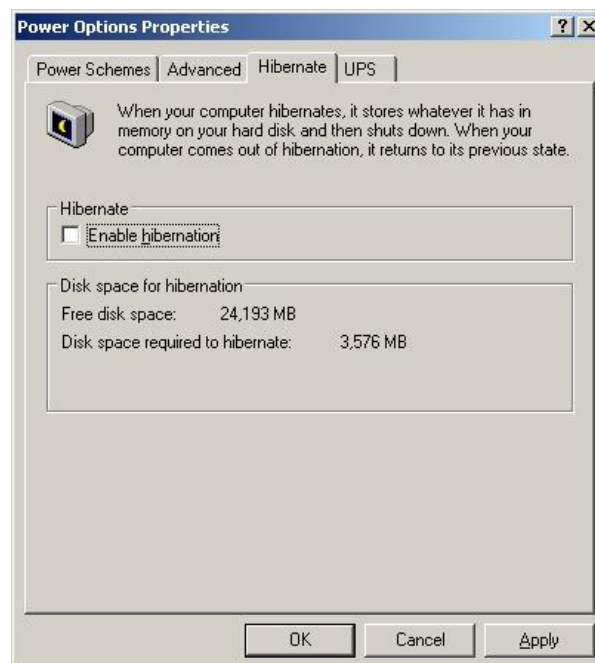
- Make sure the box "Enable hibernation" is not checked. Otherwise you have to remove the check mark.
- Click on the button "OK" to accept your settings and end the dialogue box "Power Options Properties".

- Re-start your computer.

Windows 7 (32 Bit)
Installation of the driver software

After the hardware installation, you can re-start the computer. Log on as the administrator. On start-up, the computer responds with the following assistant.
Often you see the following message when starting up the PC.

Clicking on the message brings up the following dialogue box.
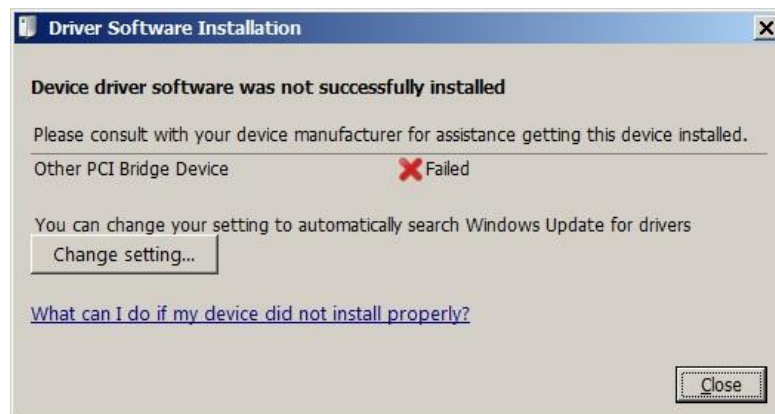
If another PCI card with the same PCI-Controller is already installed in the computer, you may, instead of the above message, receive the following message:

and then the message

In both cases, our drive software is not yet installed. To do so, proceed as below.
Call up the device manager (Start→Control Panel→System and Safety→System→Device Manager). The following dialogue box appears
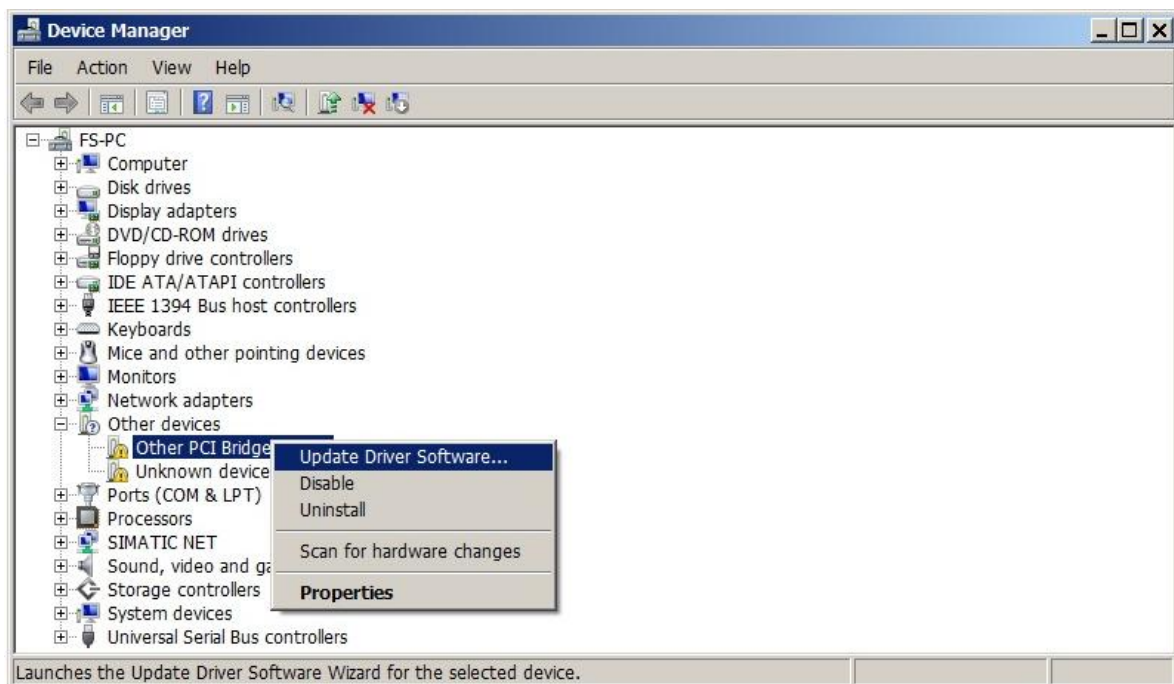
Go to "Other PCI bridge device". Right click the mouse and execute the command "Update driver software...". The following dialogue box appears
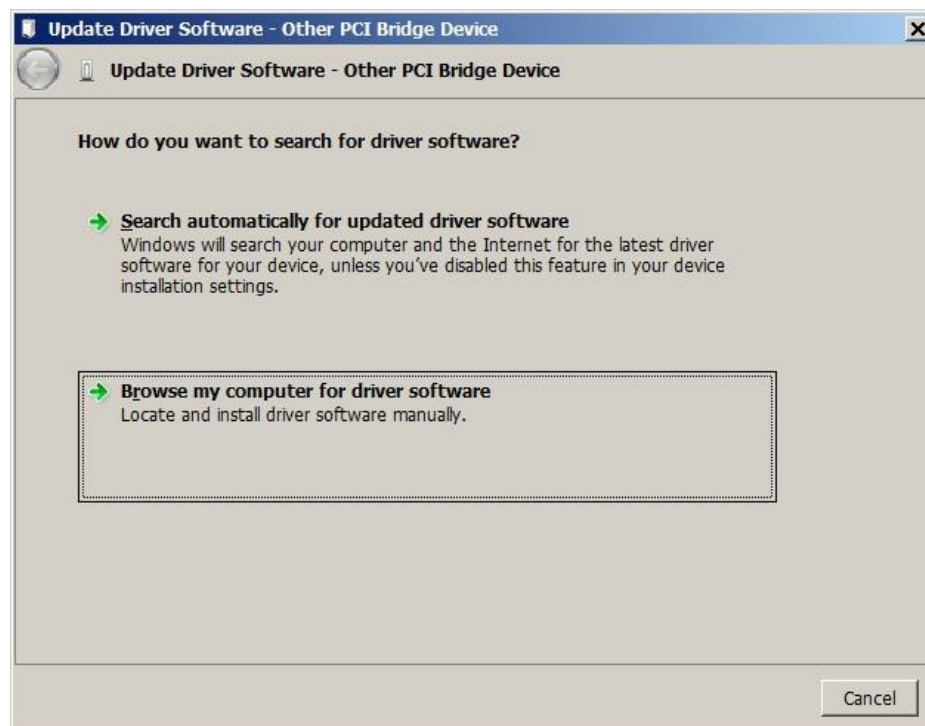
Select "Browse my computer for driver software". The following dialogue box appears
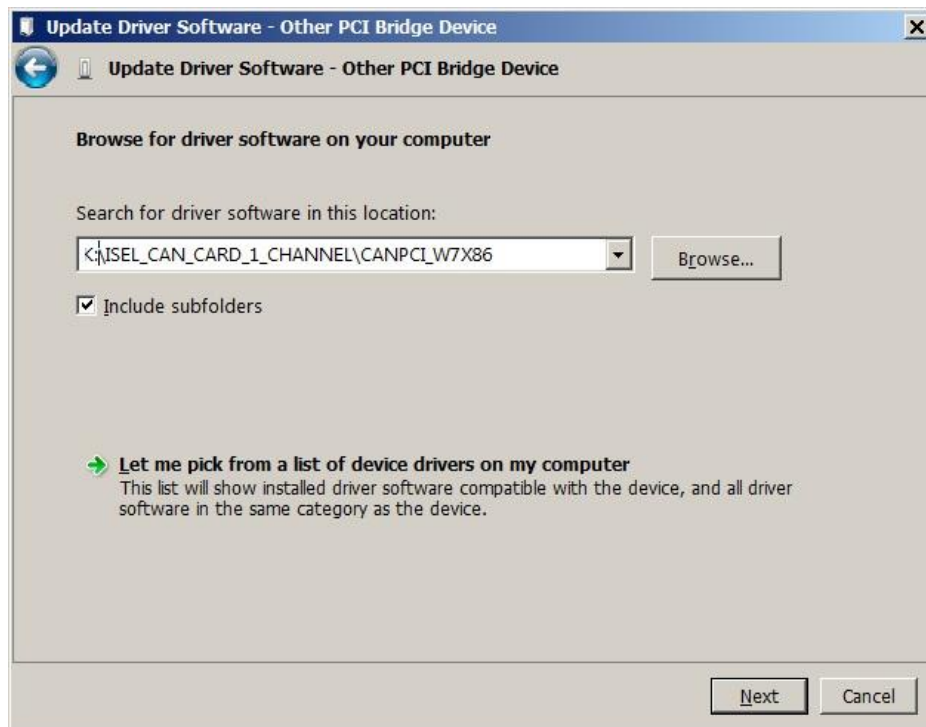
Select with "Browse" the directory "...\Can_Card_1_Channel\canpci_w7x86" for the CAN-PCI card on your installation data carrier. "Next" brings you to the next dialogue box.

Click on the button "Install". The following dialogue box appears

Click on the button "Close" to complete the installation.
Before you re-start the computer, you still have to adapt your computer's power savings plan. Please read the section "Adapting the power savings plan" on page 13.

Updating the driver software

If the PCI card and the driver software are already installed and you wish to change only to a newer version of the driver software, follow the steps below.
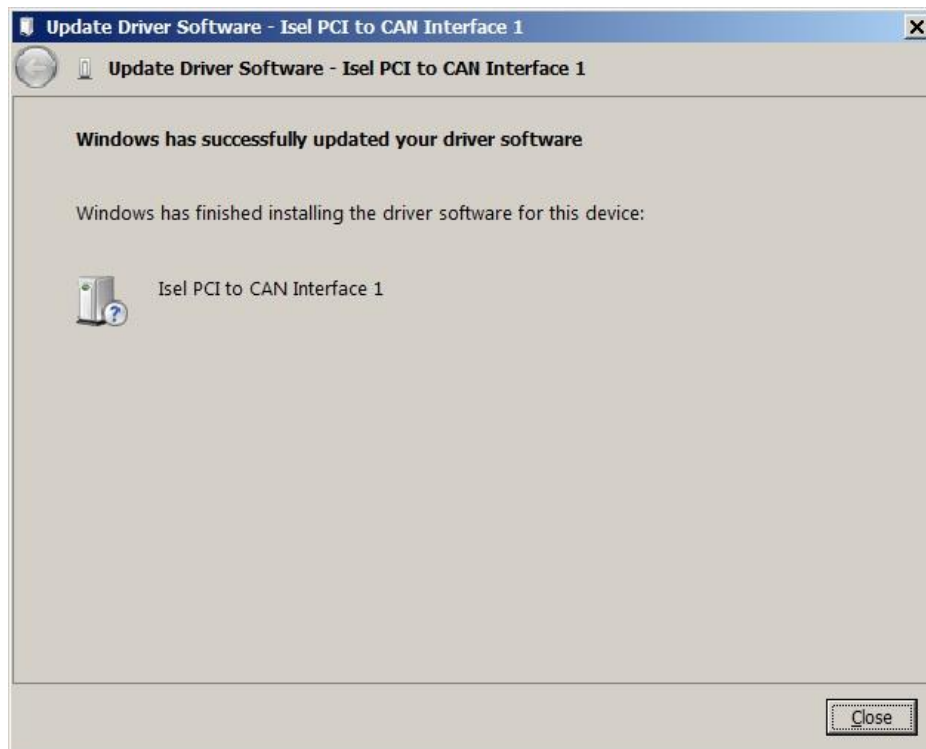
- Start the device manager using
    "Start→Control Panel→System and Safety→System→Device Manager".
- Select "Devices by type" via "View".
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Update driver software ...".
- Select "Browse my computer for driver software".
- Using "Browse" Select the folder "...\Can_Card_1_Channel\canpci_w7x86" on your data carrier and then "OK".
- "Next" brings you to the next dialogue box.
- If there is a demand for Windows security, select "Install".
- Using "Close", you end the update process.
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Properties".
- On the page "Driver", you can re-check the current version of the driver software.
- Re-start the PC.
- If you want, you can use the programme CANSet at any time to re-check the version of the current software.
    - Start the programme CANSet.
    - In the menu "CANSet→Configure CNC Control→CAN→Hardware→CAN-Hardware", select "PCI card / PCI express card".

- In the menu "CANSet→Extras→Software Version", you can then check the software versions.

Adapting the power savings plan

Depending on the selected power savings options, Windows will shut down the computer after a certain time to save power. It leads to the CAN-CPI card no longer working properly. Therefore you must adapt the power savings plan of the computer. The power savings plan is adapted both in the BIOS of the computer and directly in the Windows operating system. The settings in the BIOS cannot be discussed in more detail here, unfortunately, because the BIOS may vary depending on the main board used. Here you must use the manuals of the particular main board to be able to do the settings.
Carry out the following steps to adapt your computer's power savings plan.

- Call up the power options (Start→Control Panel→System and Safety→Power Options).
- Select the option box "Balanced (recommended)" and click on the related text box "Change plan settings".
- Then select on the dialogue box appearing for the list box "Put the computer to sleep:" the list item "Never"
- If you are using the PCI Express card, click on the text box "Change advanced power settings". The dialogue box "Power Options" appears.


- For the PCI Express card, select the setting "Off" and click on the button "OK" to accept the extended settings and end the dialogue box.
- Click on the button "Save changes", to secure your settings.
- Please note that the power savings plan "Balanced (recommended)" remains selected.
- End the system controller and re-start the computer.

Windows 7 (64 Bit)
Installation of the driver software

After the hardware installation, you can re-start the computer. Log on as the administrator. On start-up, you get to see the following message.
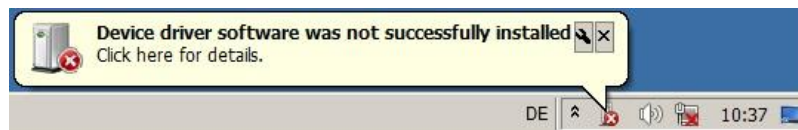
Clicking on the message brings up the following dialogue box.
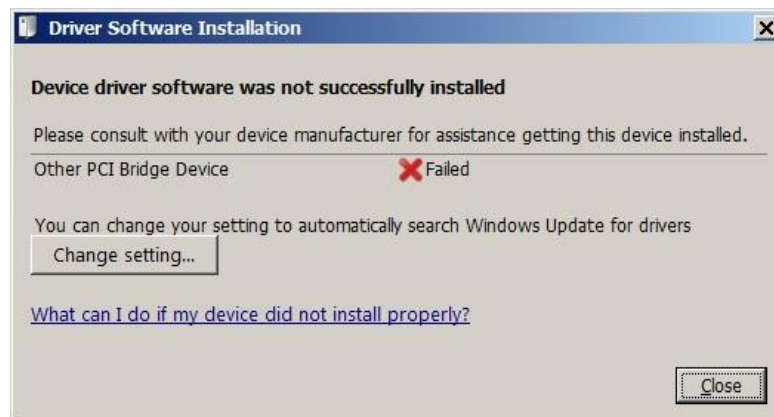
Call up the device manager (Start→Control Panel→System and Safety→System→Device Manager). The following dialogue box appears
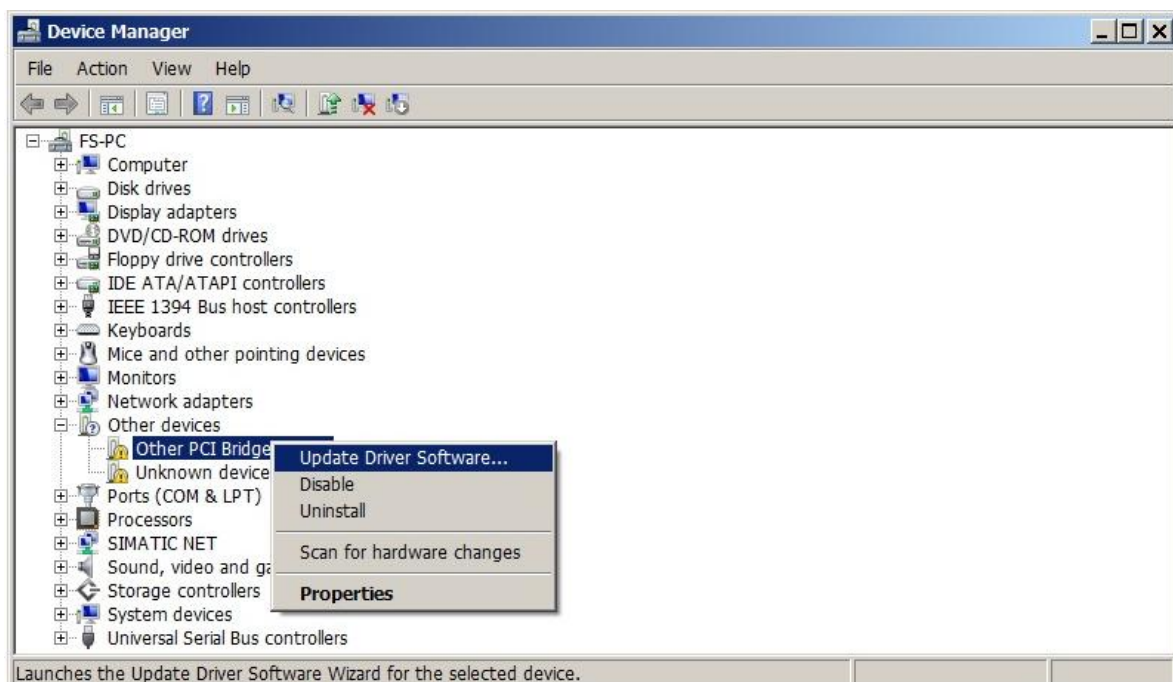
Go to "Other PCI bridge device". Right click the mouse and execute the command "Update Driver Software...". The following dialogue box appears
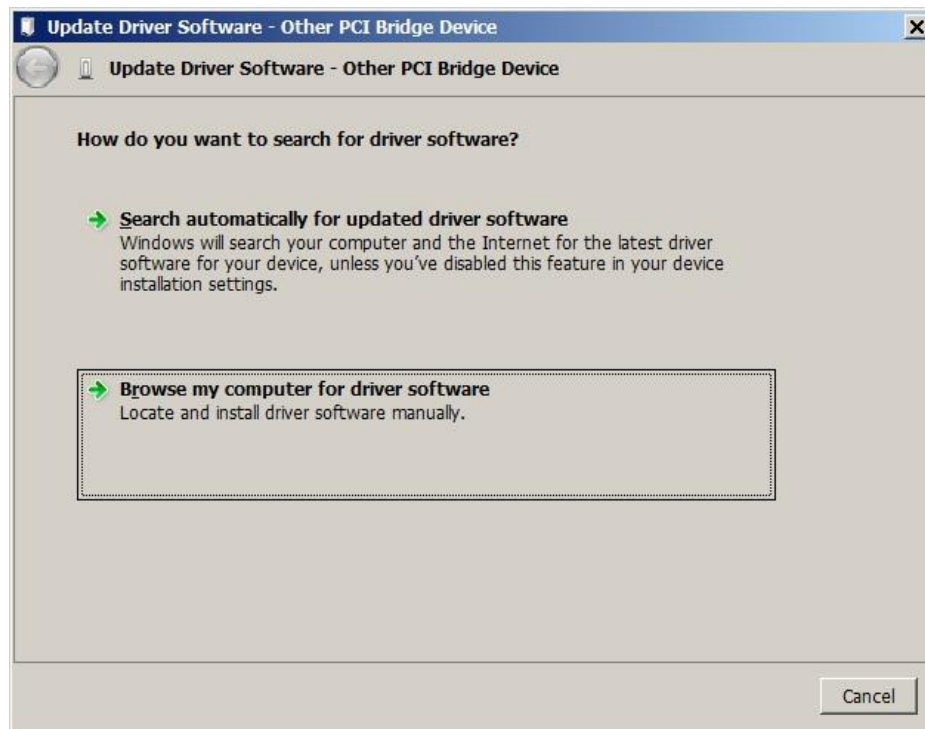
Select "Browse my computer for driver software". The following dialogue box appears

Select with "Browse" the directory "...\Can_Card_1_Channel\canpci_w7x64" for the CAN-PCI card on your installation data carrier. "Next" brings you to the next dialogue box.

Select "Install". The following dialogue box appears
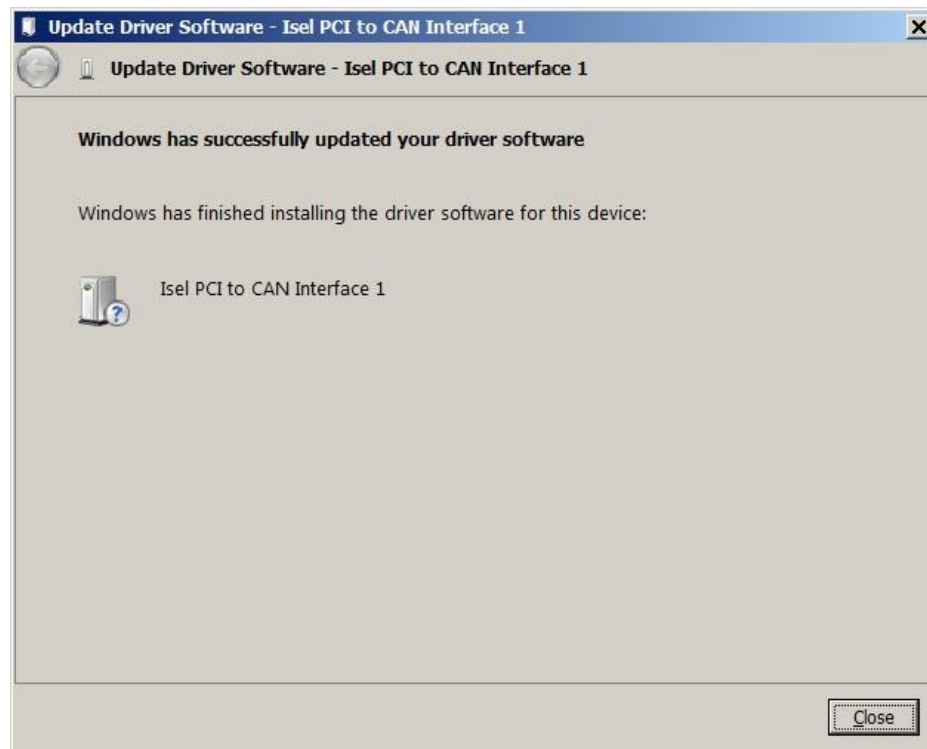
Click "Close" to complete the installation.
Before you re-start the computer, you still have to adapt your computer's power savings plan. Please read the section "Adapting the power savings plan" on page 17.

Updating the driver software

If the PCI card and the driver software are already installed and you wish to change only to a newer version of the driver software, follow the steps below.

- Start the device manager using
  "Start→Control Panel→System and Safety→System→Device Manager".
- Select "Devices by type" via "View".
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Update Driver Software ...".
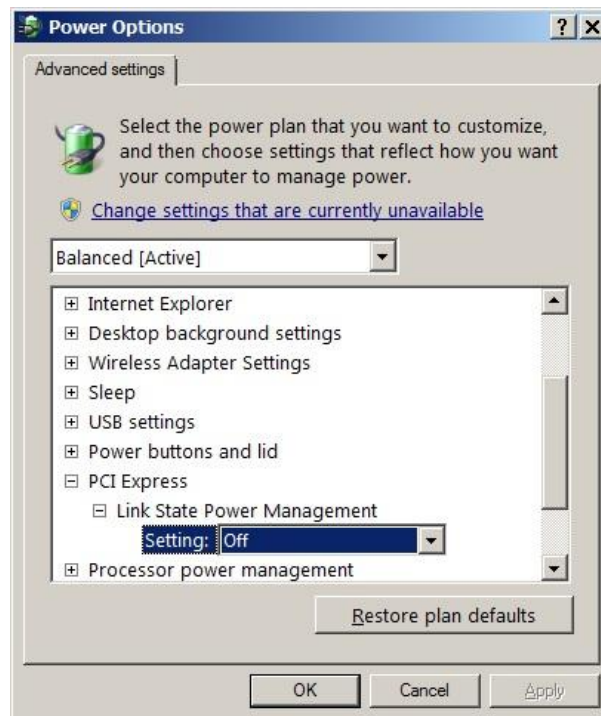- Select "Browse my computer for driver software".

- Using "Browse" Select the folder "...\Can_Card_1_Channel\canpci_w7x64" on your data carrier and then "OK".
- "Next" brings you to the next dialogue box.
- If there is a demand for Windows security, select "Install".
- Using "Close", you end the update process.
- Click the right mouse on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Properties".
- On the page "Driver", you can re-check the current version of the driver software.
- Re-start the PC.
- If you want, you can use the programme CANSet at any time to re-check the version of the current software.
    - Start the programme CANSet.
    - In the menu "CANSet→Configure CNC Control→CAN→Hardware→CAN-Hardware", select "PCI card / PCI express card".
    - In the menu "CANSet→Extras→Software Version", you can then check the software versions.

Adapting the power savings plan

Depending on the selected power savings options, Windows will shut down the computer after a certain time to save power. It leads to the CAN-CPI card no longer working properly. Therefore you must adapt the power savings plan of the computer. The power savings plan is adapted both in the BIOS of the computer and directly in the Windows operating system. The settings in the BIOS cannot be discussed in more detail here, unfortunately, because the BIOS may vary depending on the main board used. Here you must use the manuals of the particular main board to be able to do the settings.
Carry out the following steps to adapt your computer's power savings plan.
- Call up the power options (Start→Control Panel→System and Safety→Power Options).
- Select the option box "Balanced (recommended)" and click on the related text box "Change plan settings".
- Then select on the dialogue box appearing for the list box "Put the computer to sleep:" the list item "Never"
- If you are using the PCI Express card, click on the text box "Change advanced power settings". The dialogue box "Power Options" appears.

- For the PCI Express card, select the setting "Off" and click on the button "OK" to accept the extended settings and end the dialogue box.
- Click on the button "Save changes", to secure your settings.
- Please note that the power savings plan "Balanced (recommended)" remains selected.
- End the system controller and re-start the computer.

Windows 10 (32/64 Bit)
Installation of the driver software

On the 32-bit version and on the 64-bit version of Windows 10 the installation of the driver software is largely identical. After the hardware installation, you can restart the computer (see Section "Hardware installation" on Page 4). Log on as the administrator.

Right click on the Windows Start button and then call up the Device Manager.
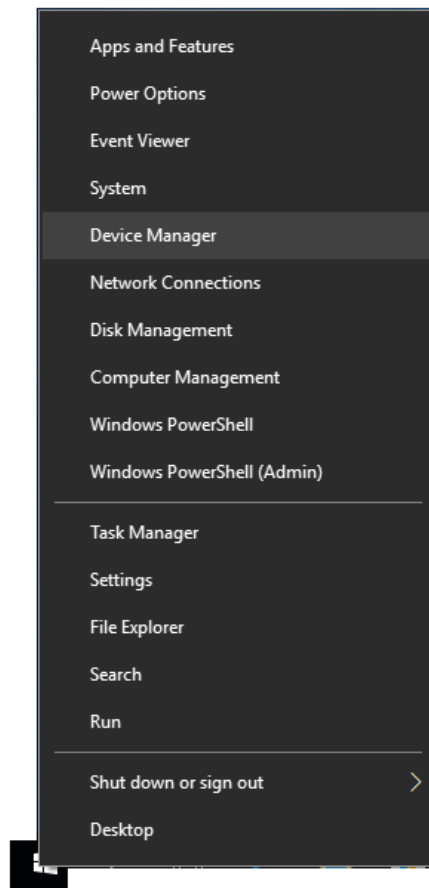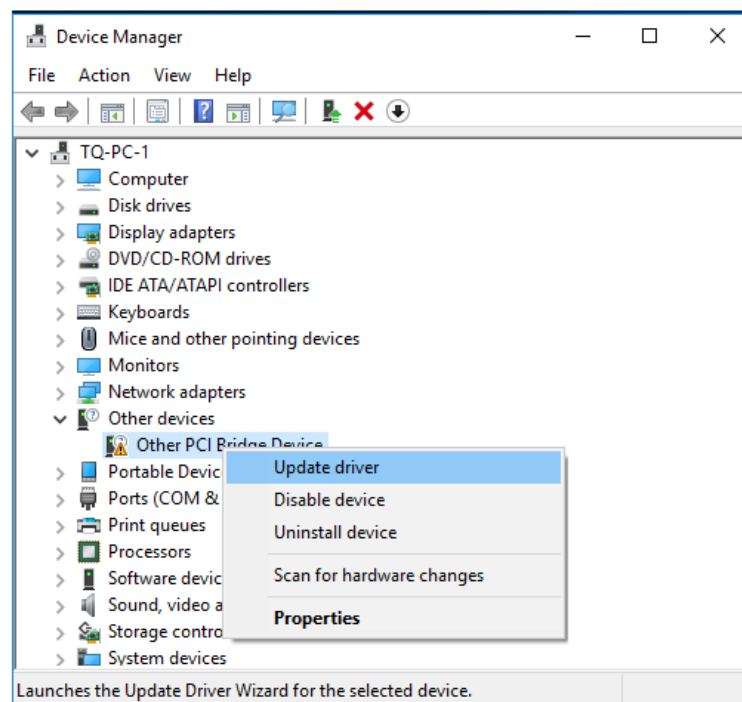

The following dialogue box appears

If the entry "Other PCI bridge device" is not visible, you have to move the mouse up on the PC name (in the picture: TQ-PC-1). Click the right mouse button then the left mouse button to scan for new hardware. After that the entry "Other PCI bridge device" appears
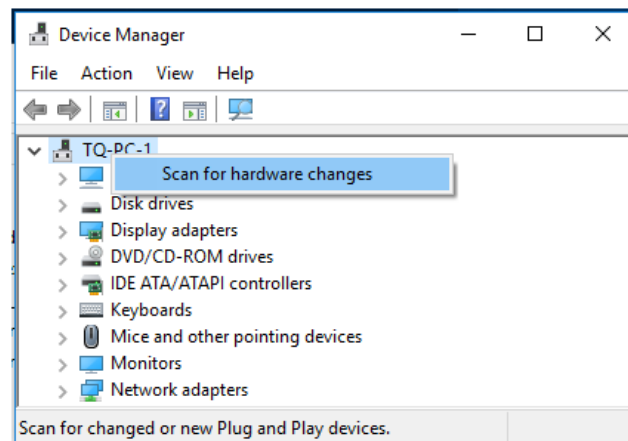
Go to "Other PCI bridge device". Right click the mouse and execute the command "Update driver". The following dialogue box appears
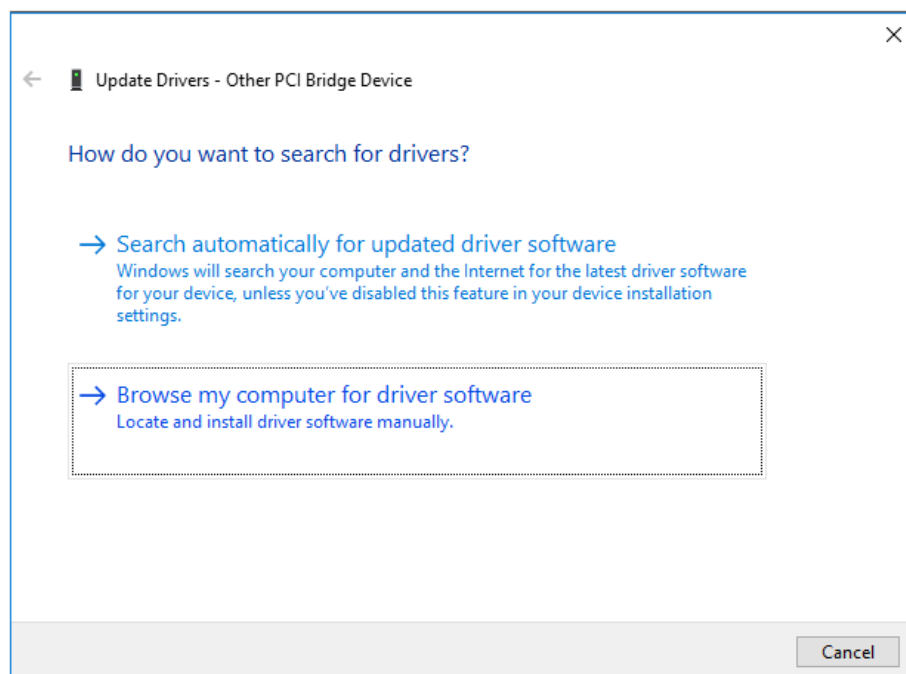
Select "Browse my computer for driver software". The next dialogue box appears
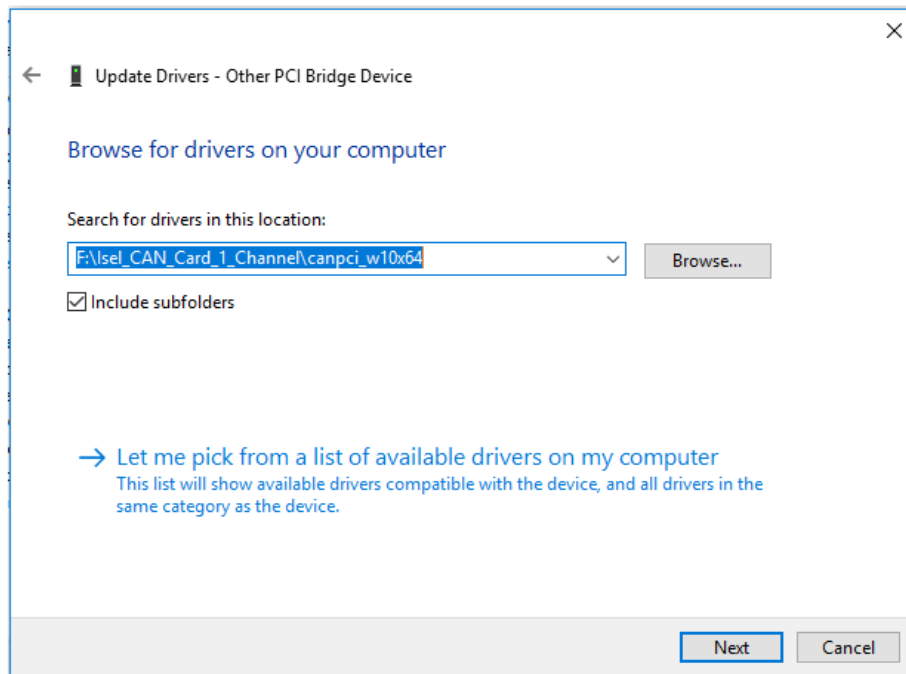
- In the 32-Bit-version of Windows 10, select with "Browse..." the directory "...\Can_Card_1_Channel\canpci_w10x32" on your installation data carrier.
- In the 64-Bit-version of Windows 10, select with "Browse..." the directory "...\Can_Card_1_Channel\canpci_w10x64" on your installation data carrier.

Click on the button "Next". If you are asked if you want to install the driver software of "Isel Germany AG" or not, click on the button "Install". The driver software will then be installed. The following dialogue box then appears
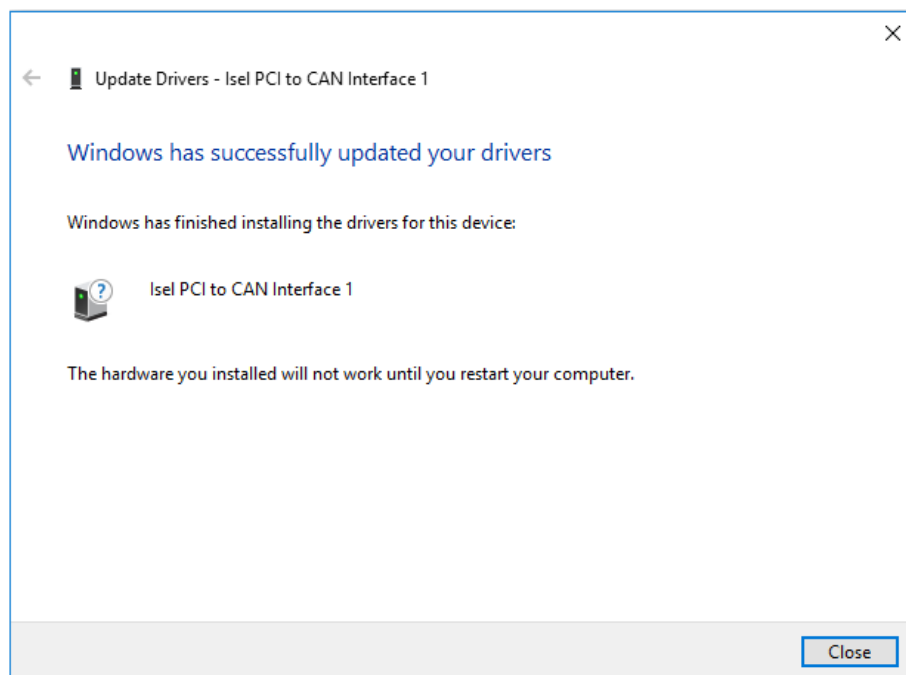
Click on the button "Close" to complete the installation.

Before you re-start the computer, you still have to adapt your computer's power saving plan. Please read the section "Adapting the power savings plan" on Page 22.

Updating the driver software

If the PCI card and the driver software are already installed and you wish to change only to a newer version of the driver software, follow the steps below.

- Start the Device Manager (see "Installation of the driver software" on Page 18).
- Right click on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Update driver".
- Select "Browse my computer for driver software".
- Via "Browse...", select on your data carrier
  - the folder "...\Can_Card_1_Channel\canpci_w10x32" for the 32-Bit version
  - the folder "...\Can_Card_1_Channel\canpci_w10x64" for the 64-Bit version
- "Next" brings you to the next dialogue box.
- If there is a demand for Windows security, select "install".
- Using "Close", you end the update process.
- Right click on "isel PCI to CAN Interface 1" in the category "Other devices".
- Select "Properties".
- On the page "Driver", you can re-check the current version of the driver software.
- Re-start the PC.
- If you want, you can use the programme CANSet at any time to re-check the version of the current software.
  - Start the programme CANSet.
  - In the menu "CANSet→Configure CNC Control→CAN→Hardware→CAN-Hardware", select "PCI card / PCI express card".
  - In the menu " CANSet→Extras→Software Version", you can then check the software versions.

Adapting the power savings plan

Depending on the selected power savings options, Windows will shut down the computer after a certain time to save energy. It leads to the CAN-CPI card no longer working properly. Therefore you must adapt the power savings plan of the computer. The power savings plan is adapted both in the BIOS of the computer and directly in the Windows operating system. The settings in the BIOS cannot be discussed in more detail here, unfortunately, because the BIOS may vary depending on the main board used. Here you must use the manuals of the particular main board to be able to do the settings.

With the "Turn on fast startup" option enabled, Windows 10 makes a memory map for each hardware component during shut-down. When booting, the memory maps are copied back in order to achieve a fast start. For hardware components added later, such as our PCI card, the memory map unfortunately does not work because these components get their virtual memory addresses dynamically reassigned at each start. Therefore you have to deactivate the option "Turn on fast start". Note that it can happen that a Windows update automatically re-enables the "Turn on fast start " option. You may have to deactivate this option again.

Below you will learn how to customise the power options and how to disable the "turn on fast startup" option.

- Right-click on the windows start button and then call up the system setting.
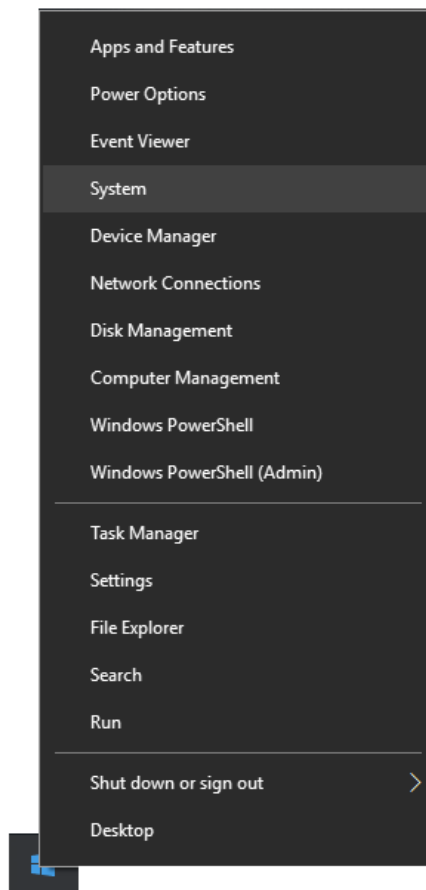
- Turn off sleep mode by selecting "Never" in the sleep list box of the group "Power & sleep ".
  Then click "Additional power settings" at the right to access the "Power Options".
- Select the option "Balanced (recommended)" and click on the related text box "change plan settings".
- Then select on the dialogue box appearing for the list box "Put the computer to sleep" the list item "Never"
- If you are using the PCI express card, click on the text box "change advanced power settings". The dialogue box "power options" appears.
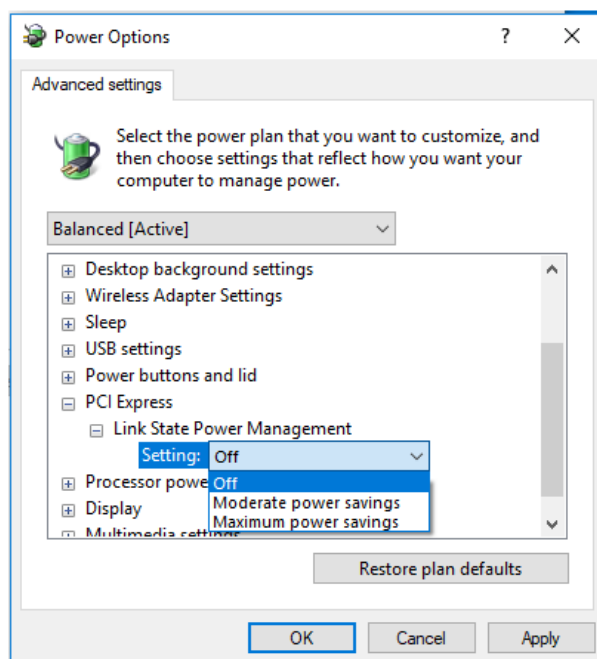
- For the PCI Express card, select the setting "Off" and click on the button "OK" to accept the advanced settings and end the dialogue box.
- Click on the button "Save changes", to secure your settings.
- Click on the back arrows in the upper left corner to return to "Power Options".
- Please note that the power options "Balanced (recommended) remains selected.
- Select the "Choose what the power button does" group to go to the "System Settings".
- Click on the "Change settings that are currently unavailable".
- Then disable the "Turn on fast startup (recommended)" option.
- Click on the button "Save changes", to secure your settings.
- End the "Power Options" and "Settings" and re-start the computer.

Installing the dual-channel card iCC 20 / iCCE 20
Hardware installation

The PCI card has two Can connections "channel 1" and "channel 2" as shown in the image.

The two CAN channels work independently of each other. I.e., you can operate two independent systems with the two channels. Logically, all CAN modules of one system must be connected to the same CAN bus line.
Turn off your computer and insert the CAN-PCI card into a free PCI slot in your computer. The PCI express card needs a free PCI express slot. Allocate a free interrupt to the PCI slot in the BIOS In

general, one automatic allocation is sufficient. Make sure that there are no conflicts with the interrupt of other devices. Otherwise there is a danger that the computer will freeze or crash. Restart the computer and log on as a user with administrative privileges to install the driver software

Software installation

The two CAN channels need separate driver software that you need to install separately. But you must note that the driver software of the second channel uses certain functionalities of the driver software of the first channel. This means that you need to install the driver software for both channels, if you want to use the second channel. This is not the case however the other way round. I.e., if you only use the first channel, you do not need to install the driver software for the second channel.
To install the driver software, you should log on as a user with administrator privileges

Windows XP (32 Bit)
Installing/Updating the driver software for the first channel

The first channel uses the same driver software as that of the single channel on the single-channel CAN PCI card. To install or update the software for the first channel, please proceed as described in section "Windows XP (32 Bit)" on page 5.

Installing the driver software for the second channel

The installation of the second channel is only successful if the driver software for the first channel is already installed.
The installation consists of the transfer of the supplied registry entries as well as the driver software onto your computer.

Transferring the registry entries

The transfer is done on the whole, with the help of the "regedit.exe" programme - a standard Windows application. It is sometimes very cumbersome due to the various Windows security levels. It is easier with a deployment tool like with the software "Registrar Registry Manager" from the company "Resplendence"
The folder "IselCanCnc_WdmDrivers\Can_Card_2_Channel\RegEntry" in the software supplied by us has the two registry entries root_canpci2.reg and services_canpci2.reg. You must import these two entries in the registry of your PC.
Follow the following steps to import the two registry entries into the registry of your PC.
1. From the Start menu, select the sub-menu "Run..." Then type the programme name "regedit" in the field "Open" and start the programme "regedit" from here.
2. Via the menu "File\Import..." of the registry editor, you can import the registry entry root_canpci2.reg. After a successful import, the entry root_canpci2.reg is in the entry "HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Enum→Root→LEGACY_CANPCI2"
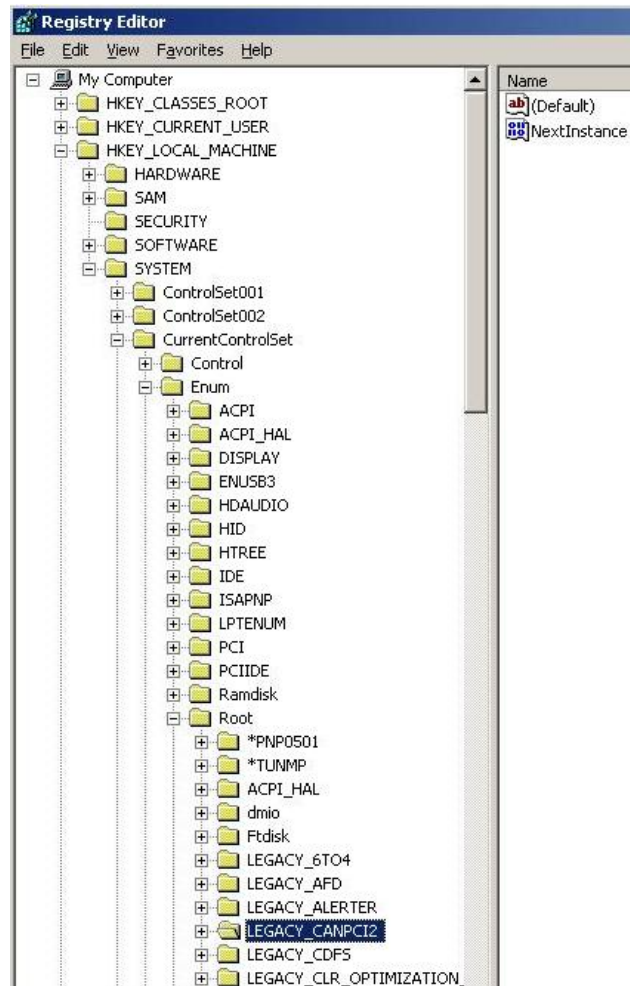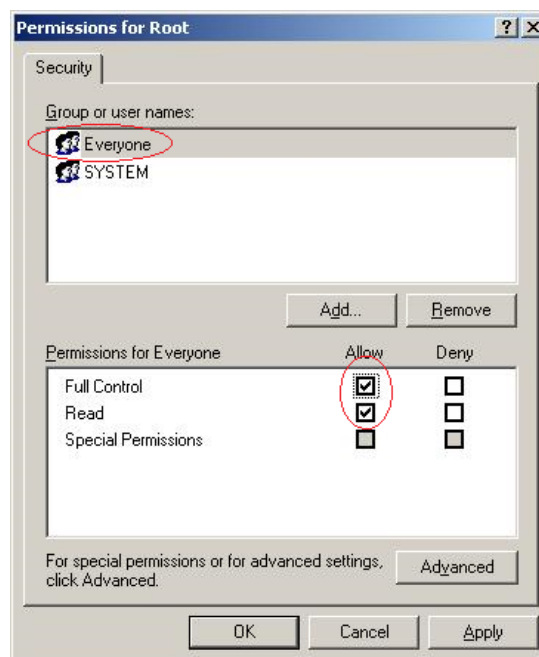
If the import is not successful, you receive an error message. In this case, continue with step 3

3. Right-click the mouse button on the entry "Root" in the directory tree
    „HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Enum→Root"
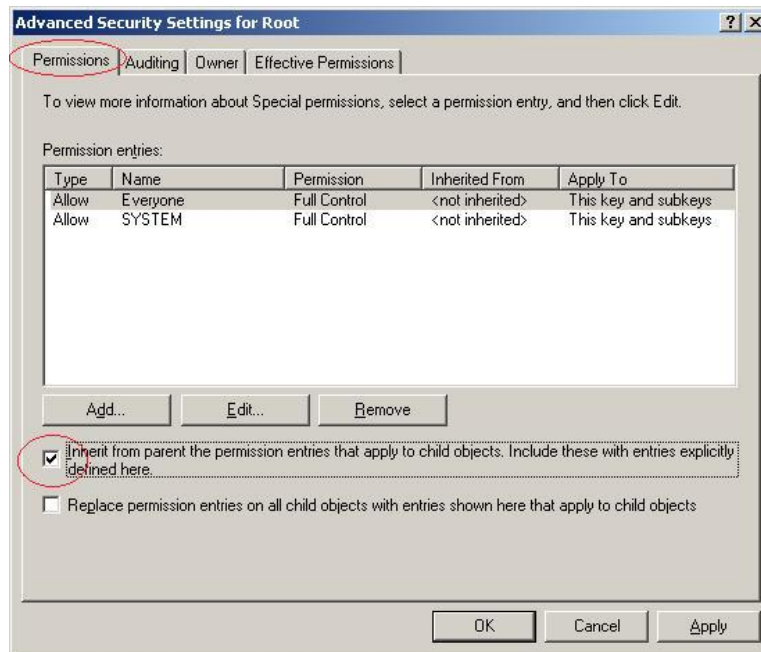   and select the sub-menu "Permissions..."
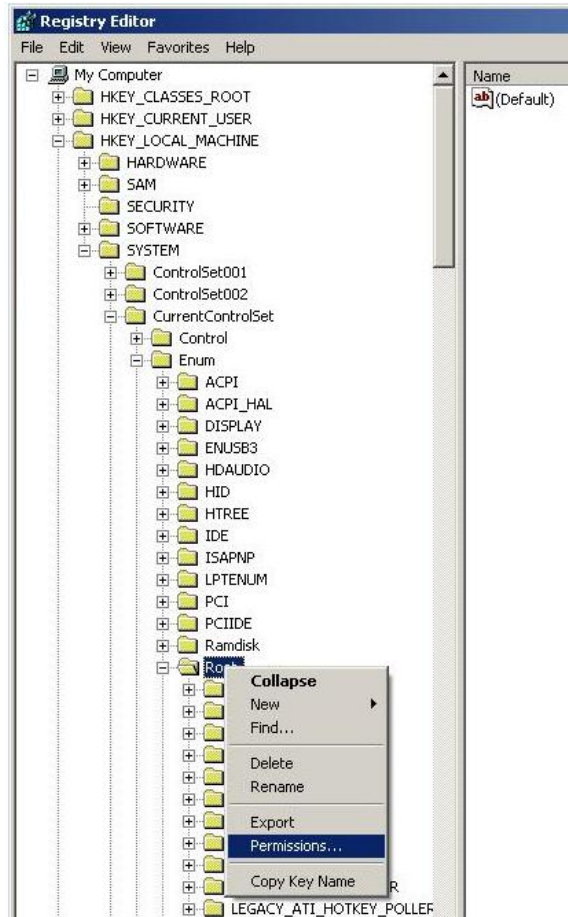
Then the dialogue window "Permissions for Root" appears.

Select and accept the settings shown here. Then return to step 2
If the box "Group or user names:" is empty, please select the button "Advanced" and this will take you to the dialogue window

The settings displayed here must be selected and accepted. After exiting this dialogue box, you return to the penultimate window "Permissions for root". Then you can accept the settings displayed here and continue with step 2.

4. Via the menu "File→Import..." import the registry entry services_canpci2.reg into the registry of your PC. After a successful import, the entry services_canpci2.reg is in the entry "HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services→CanPci2 "

If the import is not successful and you receive an error message, continue with step 5.

5. Right-click the mouse button on the entry "services" in the directory tree

"HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services"
and select the sub-menu "Permissions…".

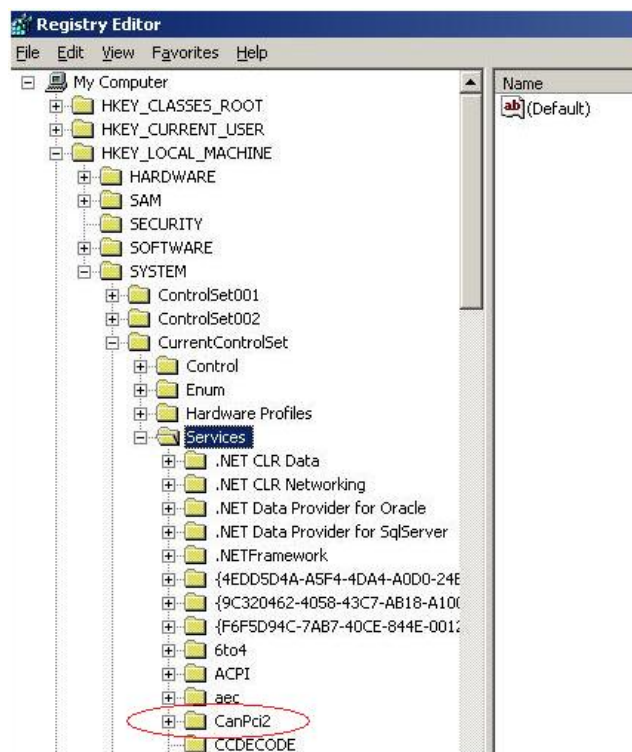Then the dialogue window "Permissions for Services" appears.
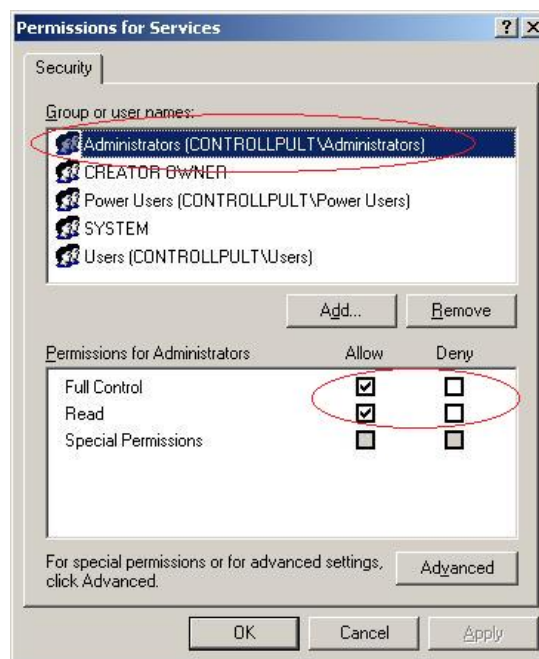
Select and accept the settings shown here. Then return to step 4
If the box "Group or user names:" is empty, please select the button "Advanced" and this will take you
to the dialogue window

The settings displayed here must be selected and accepted. After exiting this dialogue box, you return to the penultimate window "Permissions for Services". Then you can accept the settings displayed here and continue with step 4.
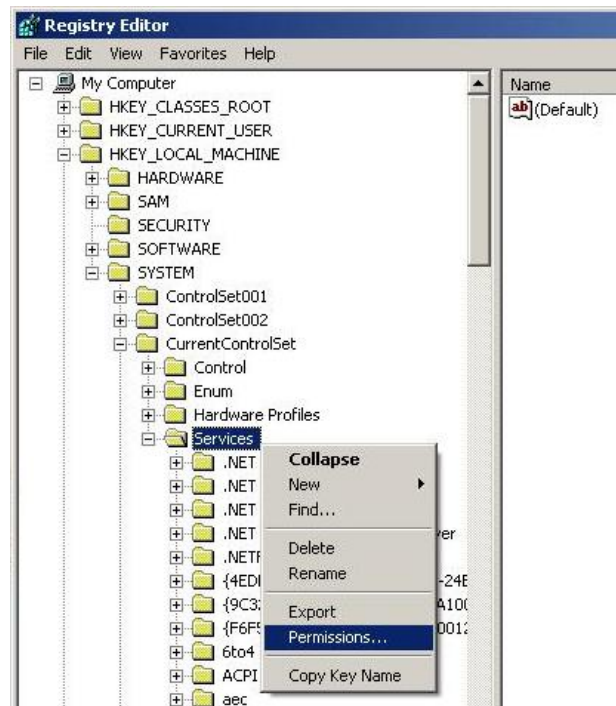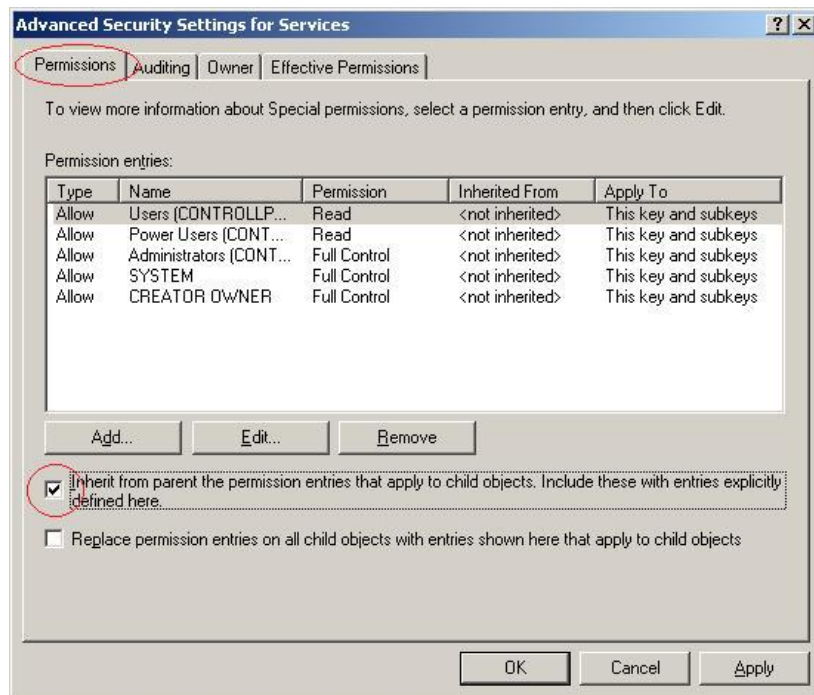
Transferring the driver software canpci2.sys

Alongside the two registry entries, you also receive from us the driver software canpci2.sys for Windows XP in the folder "IselCanCnc_WdmDrivers\Can_Card_2_Channel\canpci_xp". After the two registry entries are successfully imported, copy the driver software canpci2.sys into the folder "…\Windows-folder\System32\drivers". Where „…\Windows-folder\" is the place on the hard disk where the Windows operating system is installed on your PC.

You can check at any time if the copied driver software is correct or not. Right-click on the file canpci2.sys in the folder „…\Windows-folder\System32\drivers" and then select the sub-menu "Properties". Then the following dialogue box appears
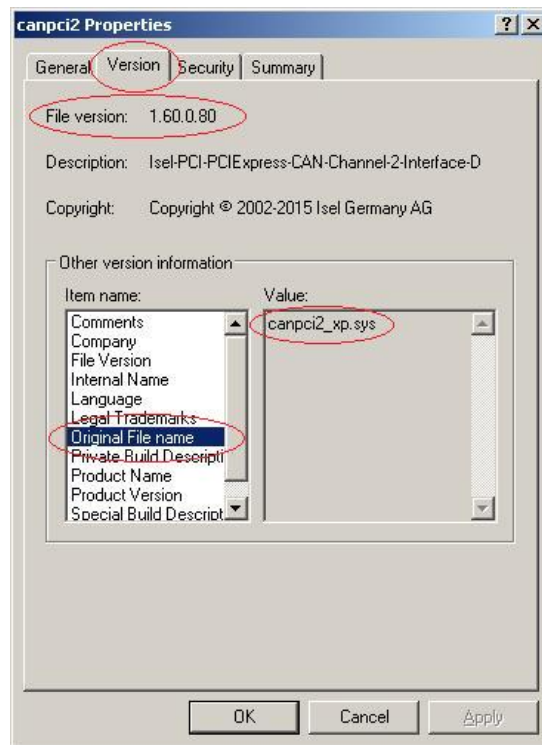
Select the page "Version" The item "Original file name" must contain the name "canpci2_xp.sys". In the box "File version", you can also view the software version

Is the installation correct?

Once you have successfully transferred the registry entries and the driver software canpci2.sys, you need to restart your PC to activate the driver software. You can check at any time if the installation is correct or not. Do as shown below.
Call up the device manager (Start→Control Panel→System and Safety→System→Device Manager). The following dialogue box appears

Select the sub-menu "View→Show hidden devices".
Click the entry "Non-Plug and Play Drivers" in the directory tree. Here you can see the entry for the driver software CanPci2.sys. Right-click the entry and select the sub-menu "Properties".

Then the dialogue box appears

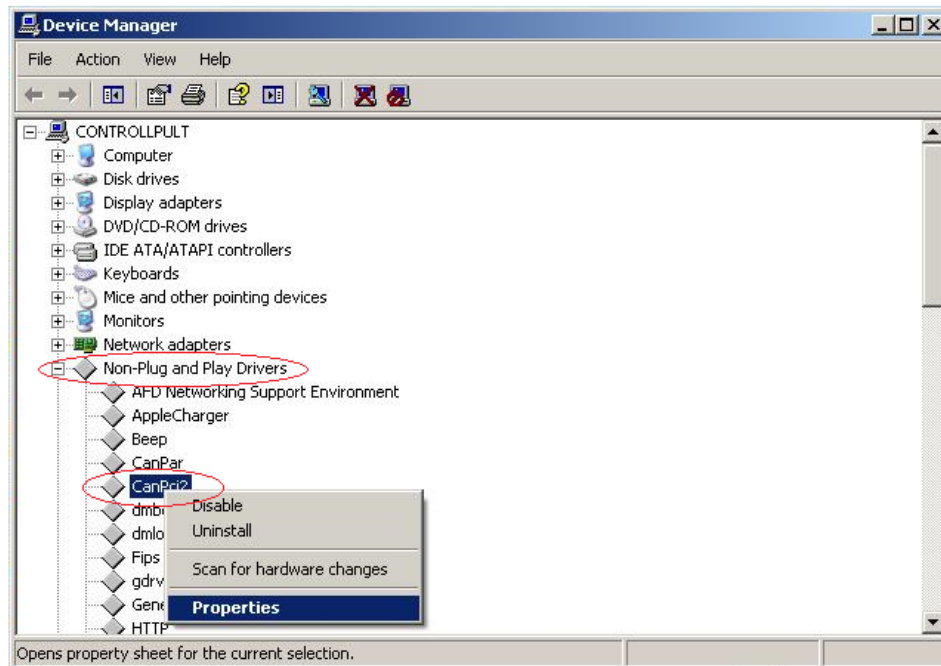Your installation is successful only if you can see on the page "General" in the "Device status" box that the device is ready for operation. Otherwise you must repeat the installation. Remember to install the driver softwarecanpci1.sys for the first channel beforehand. Otherwise you get an error message
To get more information about the installed driver software, select on the "Drivers" page the button "Driver Details ...". The dialogue box appearing then shows further information about the driver software.
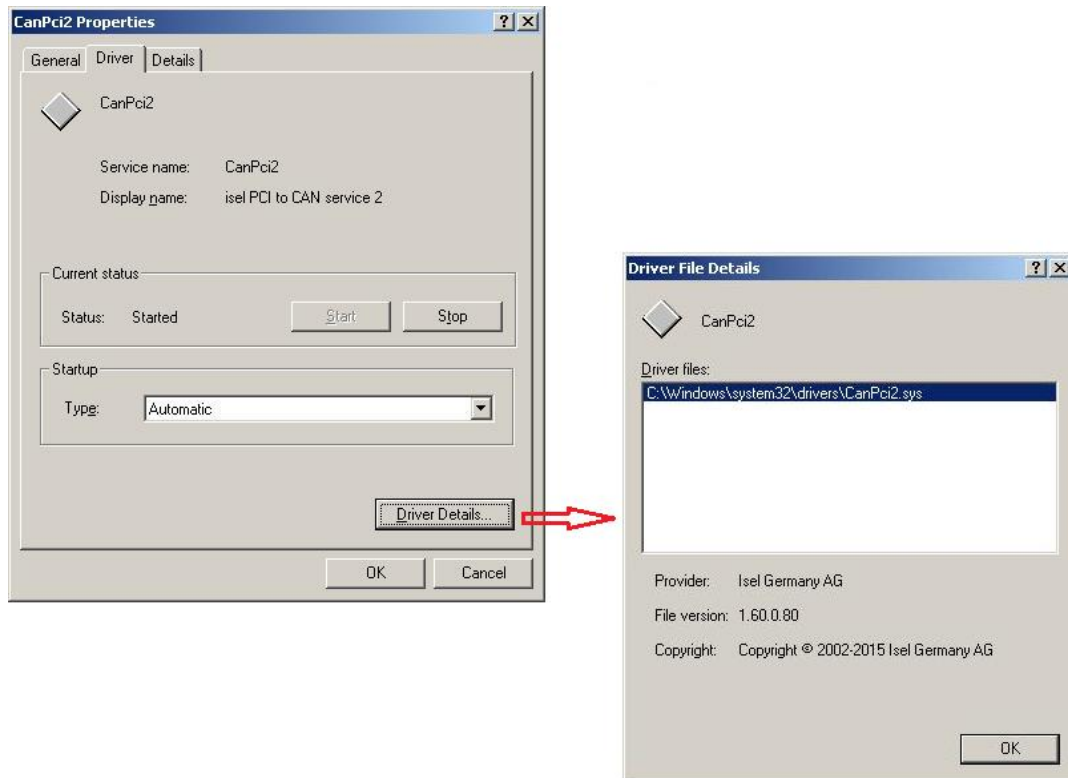
Updating the driver software for the second channel

The software update for the second channel is quite simple. The driver software canpci2.sys is in the folder „…\Windows-Ordner\System32\drivers". Where „…\Windows-folder\" is the place on the hard disk where the Windows operating system is installed on your PC. Delete the old file canpci2.sys and copy the newer version in here. Make sure you copy the right version of the driver software canpci2.sys for the operating system used. In section "Is the installation correct?" on page 31, there is an explanation of how you can check it.

Windows 7 (32/64 Bit)

The installation steps for the two versions (32 Bit / 64 Bit) are by and large identical. So it is summarised here.

Installing/Updating the driver software for the first channel

The first channel uses the same driver software as that of the single channel on the single-channel CAN PCI card. To install or update the software for the first channel, please proceed as described in section "Windows 7 (32 Bit)" on page 9 and in section "Windows 7 (64 Bit)" on page 14.

### Installing the driver software for the second channel

The installation of the second channel is only successful if the driver software for the first channel is already installed (see section "Installing/Updating the driver software for the first channel" on page 25) The installation consists of the transfer of the supplied registry entries as well as the driver software onto your computer.

Transferring the registry entries

The transfer is done on the whole, with the help of the programme "regedit.exe" - a standard Windows application. It is sometimes very cumbersome due to the various Windows security levels. It is easier with a deployment tool like with the software "Registrar Registry Manager" from the company "Resplendence" The folder "IselCanCnc_WdmDrivers\Can_Card_2_Channel\RegEntry" in the software supplied by us has the two registry entries root_canpci2.reg and services_canpci2.reg. You must import these two entries in the registry of your PC.
Follow the following steps to import the two registry entries into the registry of your PC.
1. From the start menu, enter the programme name "regedit" in the input field "Search program and files". In the start menu, the programme name appears automatically on top. You can start the registry editor from here.
2. Right-click the mouse button on the entry "Root" in the directory tree „HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Enum→Root" and select the sub-menu "Permissions…".
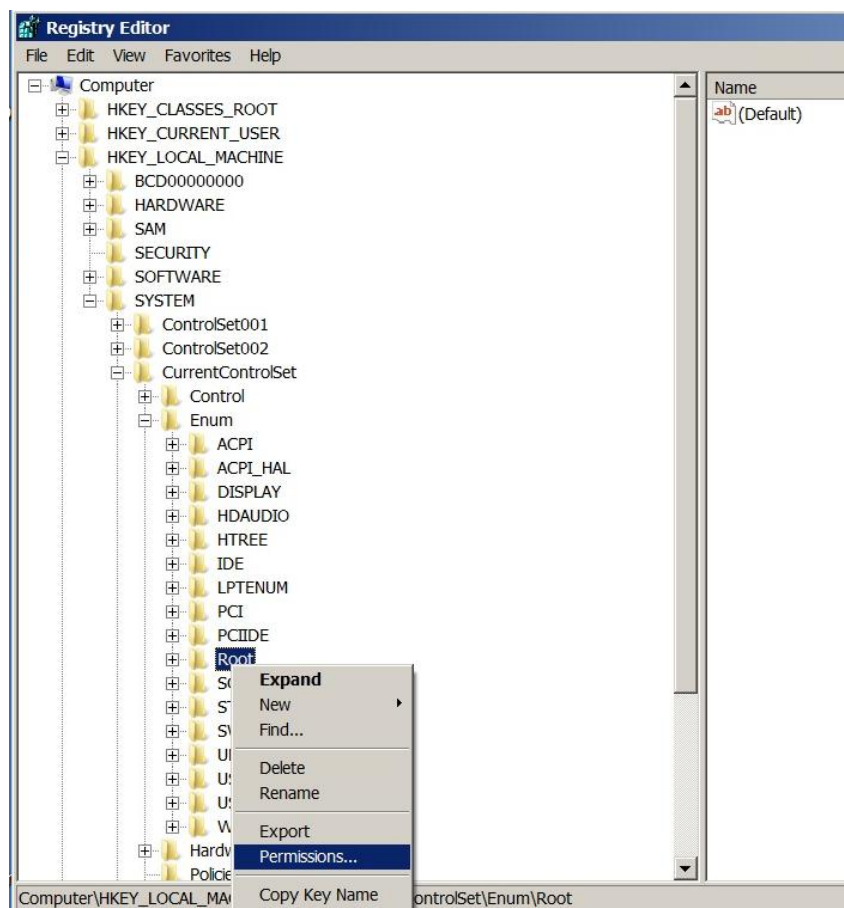
Then the dialogue window "Permissions for Root" appears.
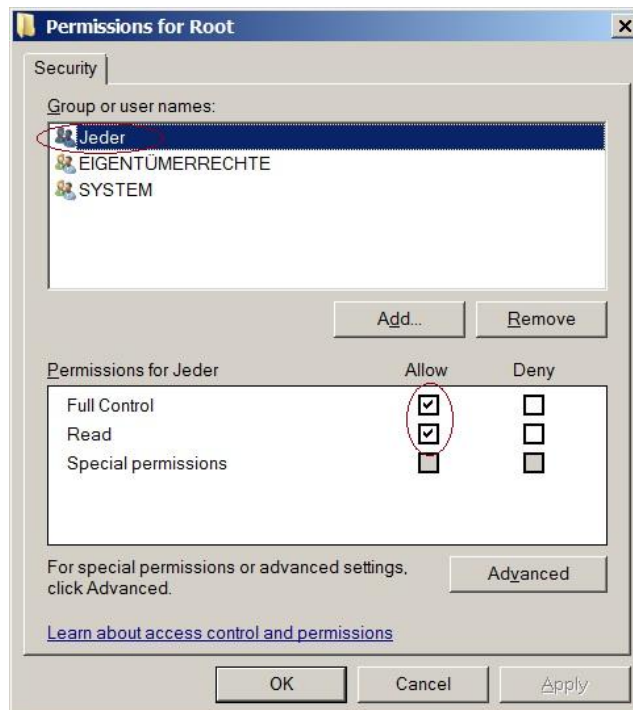
Select and accept the settings shown here.
If the accepting is not successful, please select the button "Advanced" and this will take you to the dialogue box
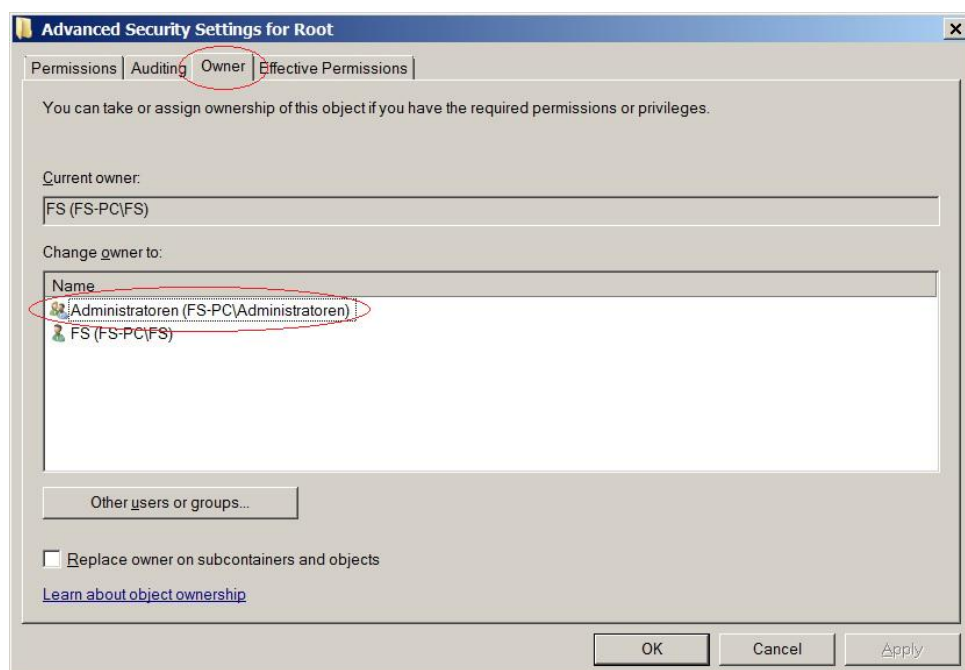
Select the "Owner" page, and replace the current owner with another owner. All owners are listed in the box „"Change owner to:". Here in the image, select the new owner "Administratoren (FS-PC\Administratoren)" for the current owner "FS (FS-PC\FS". Accept the setting and return to the penultimate dialogue box "Permissions for Root". Now it must be possible to accept the settings displayed here.

35

3. Via the menu "File→Import" of the registry editor, you can import the registry entry root_canpci2.reg. After a successful import, the entry root_canpci2.reg is in the entry "HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Enum→Root→LEGACY_CANPCI2"

4. Via the menu "File→Import" you take over the registry entry services_canpci2.reg into the registry of your PC. After a successful import, the entry services_canpci2.reg is in the entry "HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services→CanPci2 "

If the import is not successful and you receive an error message, continue with step 5.

5. Right-click the mouse button on the entry "services" in the directory tree
    "HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services"
   and select the sub-menu "Permissions…".

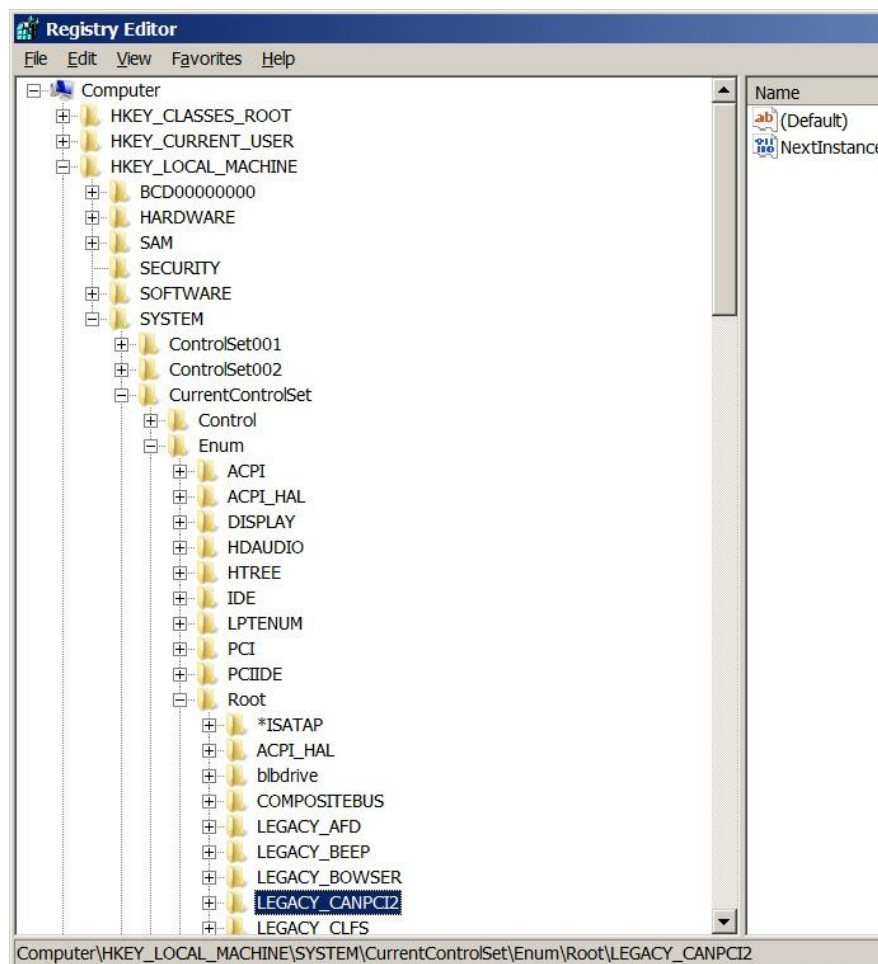Then the dialogue window "Permissions for services" appears.
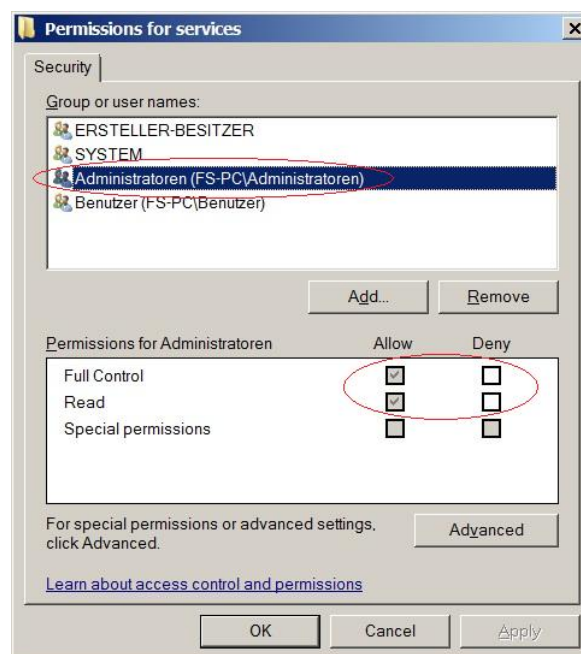
Select and accept the settings shown here. The return to step 4
If the box "Group or user names:" is empty, please select the button "Advanced" and this will take you to the dialogue window

The settings displayed here must be selected and accepted. After exiting this dialogue box, you return to the penultimate window "Permissions for services". Then you can accept the settings displayed here and continue with step 4.

Transferring the driver software canpci2.sys

Alongside the two registry entries, you also receive from us the driver software
- canpci2.sys for Windows 7 (32 Bit) in the folder
  "IselCanCnc_WdmDrivers\Can_Card_2_Channel\canpci_w7x32" and
- canpci2.sys for Windows 7 (64 Bit) in the folder
  "IselCanCnc_WdmDrivers\Can_Card_2_Channel\canpci_w7x64".

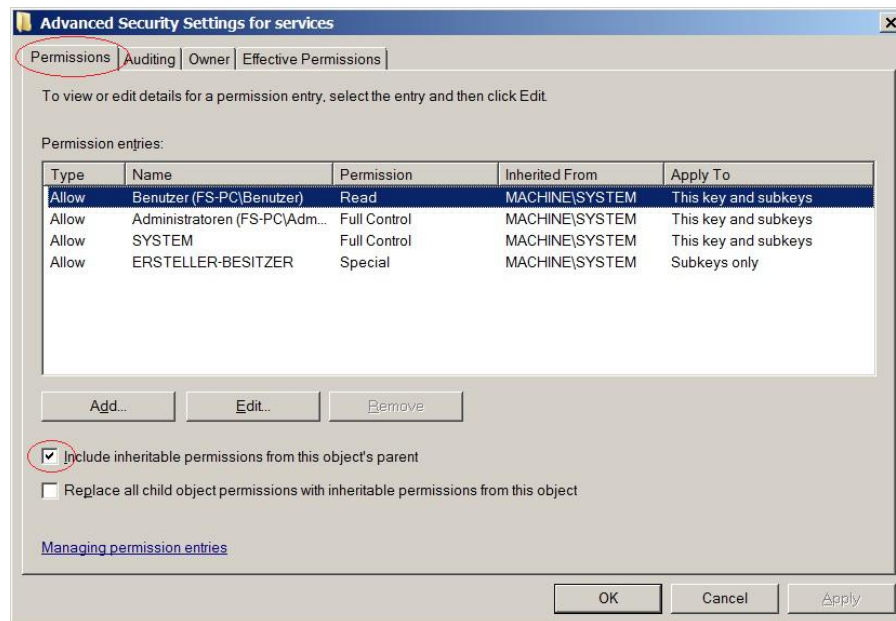After the two registry entries are successfully imported, copy the driver software canpci2.sys into the folder "…\Windows-folder\System32\drivers". Where „…\Windows-folder\" is the place on the hard disk where the Windows operating system is installed on your PC. Make sure you copy the right version (32 Bit or 64 Bit) of the driver software canpci2.sys.
You can check at any time if the copied driver software is correct or not. Right-click on the file canpci2.sys in the folder „…\Windows-folder\System32\drivers" and then select the sub-menu "Properties". Then the following dialogue box appears
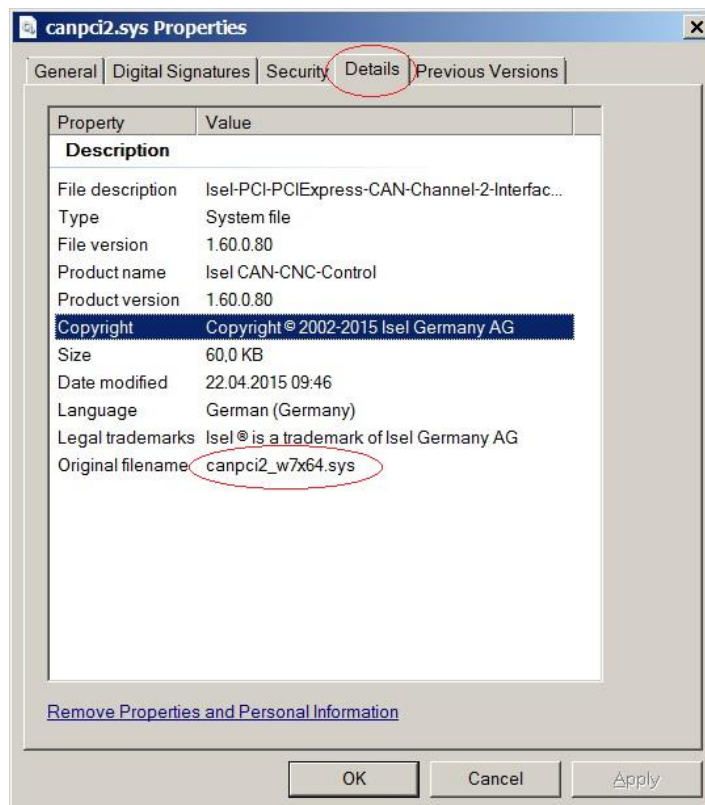
The original file name canpci2_w7x86.sys stands for the 32-Bit operating system and the original file name canpci2_w7x64.sys for the 64-Bit operating system.

Is the installation correct?

Once you have successfully transferred the registry entries and the driver software canpci2.sys, you need to restart your PC to activate the driver software. You can check at any time if the installation is correct or not. Do as shown below.
Call up the device manager (Start→Control Panel→System and Safety→System→Device Manager). The following dialogue box appears

Select the sub-menu "View→Show hidden devices".
Click the entry "Non-Plug and Play Drivers" in the directory tree. Here you can see the entry for the driver software canpci2.sys. Right-click the entry and select the sub-menu "Properties".

Then the dialogue box appears

Your installation is successful only if you can see on the page "General" in the "Device status" box that the device is ready for operation. Otherwise you must repeat the installation. Remember to install the driver softwarecanpci1.sys for the first channel beforehand. Otherwise you get an error message
To get more information about the installed driver software, select on the page "Drivers" the button "Driver Details ...". The dialogue box appearing then shows further information about the driver software.

Updating the driver software for the second channel

The software update for the second channel is quite simple. The driver software canpci2.sys is in the folder „…\Windows-Ordner\System32\drivers". Where „…\Windows-folder\" is the place on the hard disk

where the Windows operating system is installed on your PC. Delete the old file canpci2.sys and copy the newer version in here. Make sure you copy the right version (32 Bit or 64 Bit) of the driver software canpci2.sys for the operating system used. In section "Transferring the driver software canpci2.sys" on page 39, there is an explanation of how you can check it. If you still want to view the software version, you can read in the section "Is the installation correct?" on page 40.

Windows 10 (32/64 Bit)

The installation steps for the two versions (32 Bit / 64 Bit) are by and large identical. So it is summarised here.

Installing/Updating the driver software for the first channel

The first channel uses the same driver software as that of the single channel on the single-channel CAN PCI card. To install or update the software for the first channel, proceed as described in "Installation of the driver software" on page 18 or in "Updating the driver software" on page 22.

Installing the driver software for the second channel

The installation of the second channel is only successful if the driver software for the first channel is already installed or updated.
For Windows XP and 7 the installation of canpci2.sys consists of the transfer of the registry entries provided as well as the driver software itself. For Windows 10 the installation is done with the help of an INF-file.
Log on as the administrator. Right-click on the Windows start button and then call the device manager (see "Installation of the driver software" on page 18.)
Select the "Other devices" field in the tree view of "Device Manager". In the menu "Action", click the sub-menu "Add legacy hardware".
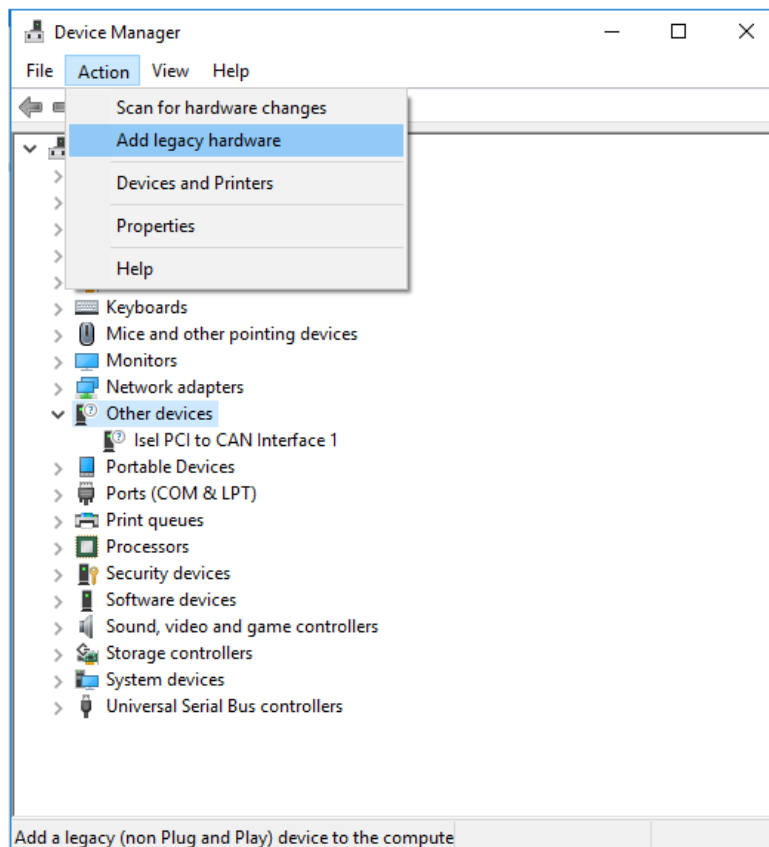
The "Welcome" dialogue box that appears will be skipped with the "Next" button and the next dialogue box will appear.
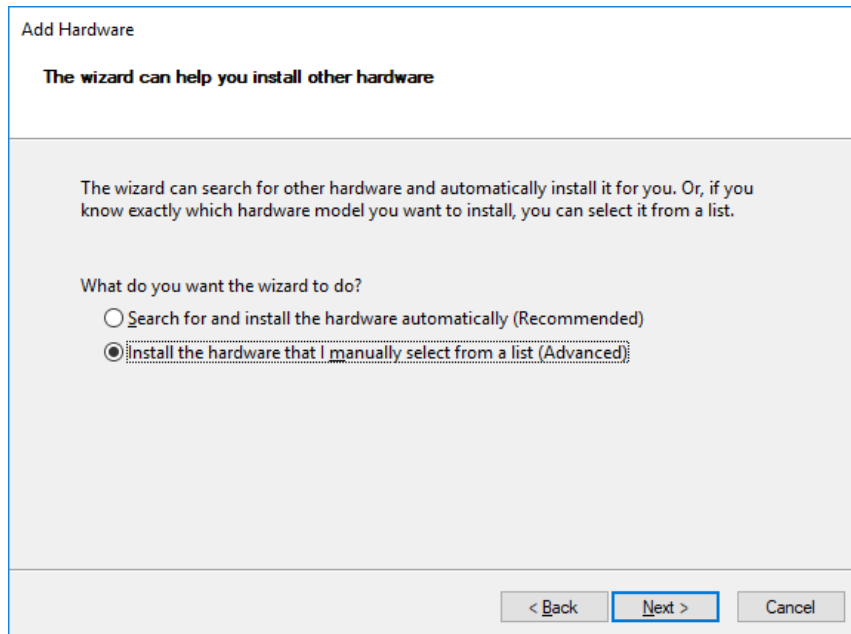
Select the option "Install the hardware that I manually select from a list (Advanced)" and click the 'Next' button.
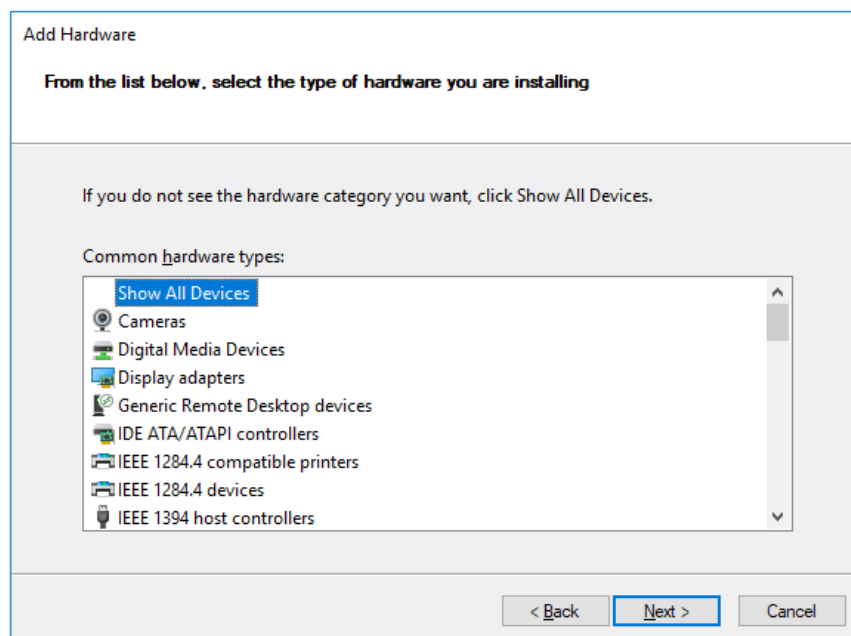
With the "Show all devices" group selected, go to the next dialogue box.
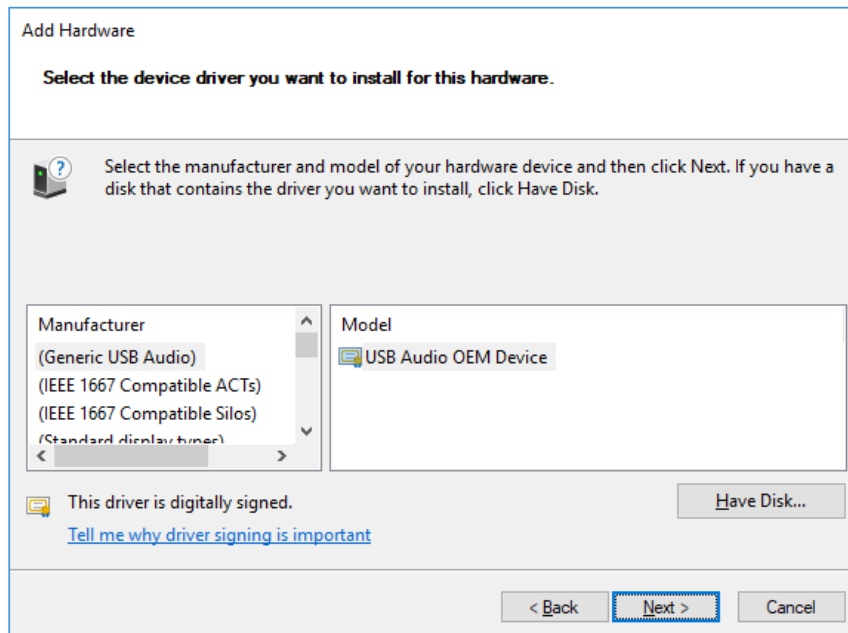
Click the button "Have Disk..." and select the appropriate INF-file:

- In the 32-Bit-version of Windows 10, select with "Browse" button the INF-file
  "„…\Can_Card_2_Channel\canpci_w10x32\ canpci2_x32.inf" on your installation data carrier.
- In the 64-Bit-version of Windows 10, select with "Browse" button the INF-file
  "...\Can_Card_2_Channel\canpci_w10x64\ canpci2_x64.inf" on your installation data carrier.

Please be sure to select the correct 32-bit or 64-bit driver version for Windows running on your PC.
The next dialogue box will then display the selected driver software for the second channel.
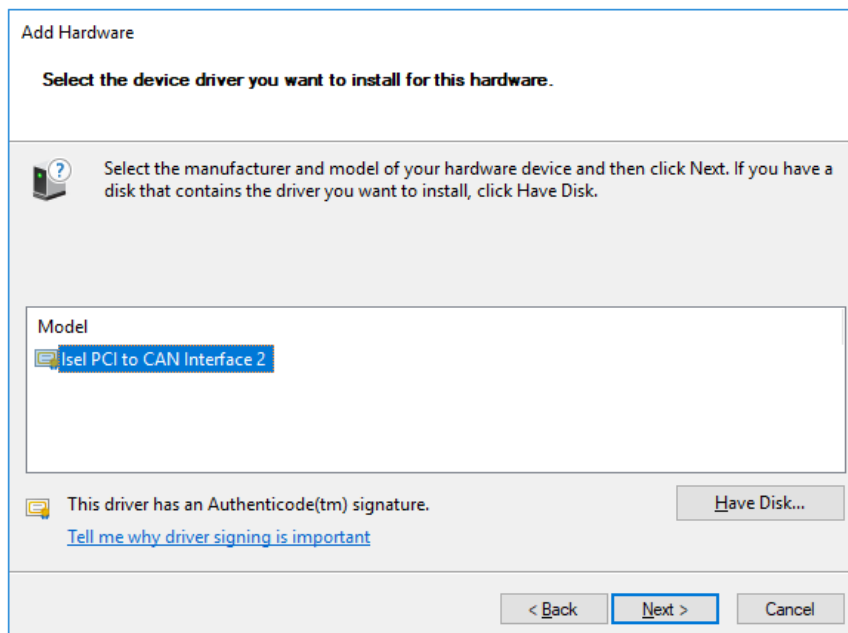
Select the driver software and click the "Next" button to go to the next dialogue box.

Add Hardware

The wizard is ready to install your hardware

Hardware to install:

Isel PCI to CAN Interface 2

To start installing your new hardware, click Next.

< Back   Next >   Cancel
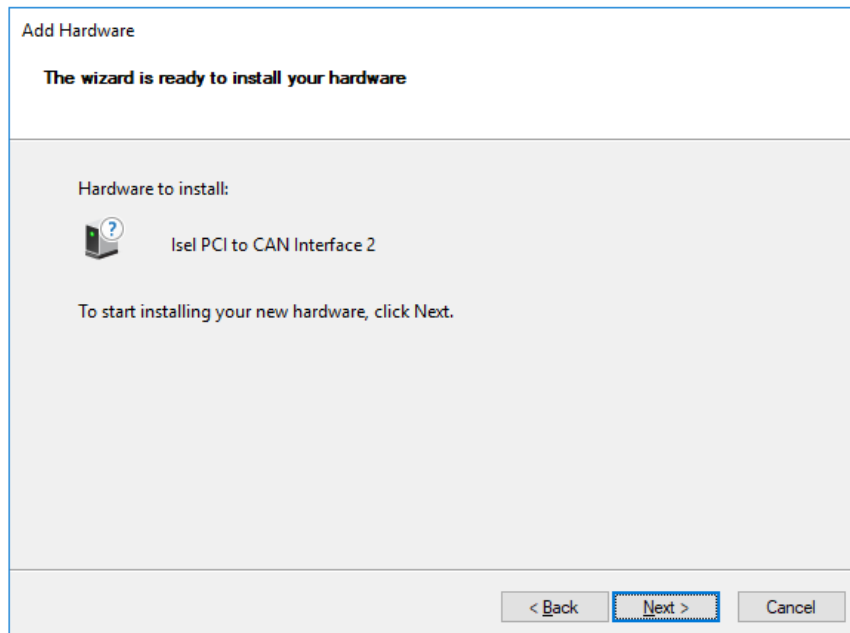
Click on the button "Next" to start the installation.

Click "Finish" on the next dialogue to end the installation process. In the "Other Devices" category of the Device Manager tree view, you will then see the driver software for the second channel directly below the software for the first channel.

Device Manager

File   Action   View   Help

DESKTOP-VNV5243
> Audio inputs and outputs
> Computer
> Disk drives
> Display adapters
> IDE ATA/ATAPI controllers
> Keyboards
> Mice and other pointing devices
> Monitors
> Network adapters
∨ Other devices
    Isel PCI to CAN Interface 1
    Isel PCI to CAN Interface 2
> Portable Devices
> Ports (COM & LPT)
> Print queues
> Processors
> Security devices
> Software devices
> Sound, video and game controllers
> Storage controllers
> System devices
> Universal Serial Bus controllers

Updating the driver software for the second channel

If the PCI card and the driver software are already installed and you wish to change only to a newer version of the driver software, follow the steps below.

- Start the Device Manager (see "Installation of the driver software" on Page 18).
- Right click on "isel PCI to CAN Interface 2" in the category "Other devices".
- Select "Update driver".
- Select "Browse my computer for driver software".
- Via "Browse", select on your data carrier
  - the folder "...\Can_Card_2_Channel\canpci_w10x32" for the 32-Bit version
  - the folder "...\Can_Card_2_Channel\canpci_w10x64" for the 64-Bit version
- Using "Next", you update the driver software.
- Using "Close", you end the update process.
- Re-start the PC
- Start the Device Manager again.
- Right click on "isel PCI to CAN Interface 2" in the category "Other devices".
- Select "Properties".
- On the page "Driver", you can re-check the current version of the driver software.
- On the page "General", you can check, if the driver software works properly or not
- If you want, you can use the programme CANSet at any time to re-check the version of the current software.
  - Start the programme CANSet.
  - In the menu "CANSet→Configure CNC Control→CAN→Hardware" select
    - "PCI-card / PCI-Express card" for "CAN-Hardware" and
    - "CAN-Bus 2" for „CAN-Bus Connection".
  - In the menu "CANSet→Extras→Software Version" you can then check the driver versions.

Integration of the two CAN channels into the control software

The use and the integration of the first CAN channel into the control software are absolutely identical to the single-channel CAN card. You can use the first channel without having to activate the second channel. In the second channel, you can also use all the functionalities of the controller software that are available to the first channel. Just before use, you must inform the controller software that you want to use the second channel. The notification is done via the initialisation file that you can create with the programme CANSet. In the Page "Hardware" (CANSet→Configure CNC Control→CAN→Hardware) select in the field "CAN-Bus Connection" the item "CAN-Bus 2".
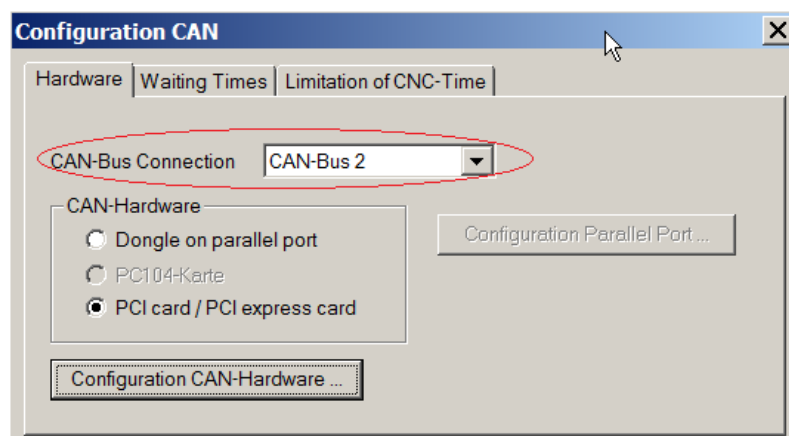
With the CANAPI-function mctl_Initialize(), whose transfer parameter is the initialisation file, you tell the controller that you want to use the second channel. After the initialisation, you can then use all the control

functions with the second channel. As long as only the second channel is in use, you do not need to consider anything else. Please remember, even if you only use the second channel, the driver software canpci1.sys must be installed for the first channel, because the driver software canpci2.sys uses some functions of canpci1.sys for the second channel during the run time.

The purpose of the two-channel CAN board is to operate two plants simultaneously. Otherwise we would only have developed the single-channel CAN card. With the simultaneous use of the two channels, the following points should be noted.

- Before the version 01.60.00.90 of the controller software, both CAN channels must be initialized with the same sampling times. From this version, this condition will be removed. That the two channels can operate with different sampling times. All other parameters of the initialisation files generated with CANSet for both channels may differ. I.e. if you want, you can operate for example both CAN channels with different baud rates.
- From the version 01.60.00.90 of the controller software, if you save the machine state when the mctl_Diagnosis () function is called, the diagnostics information of the two channels is saved separately, into the files can_cnc_status_1.log and cnc_control_status_2.log. These two files are always in the folder "... \ Diagnosis".
- Both CAN channels, which are operated by one application
  The controller is activated via the functions of CANAPI.DLL. To activate the second channel, you must create a copy of CANAPI.DLL and give it another name, e.g. CANAPI2.DLL. During the initialisation of the second channel with the function mctl_Initialize () of CANAPI2.DLL, a second instance of the controller in the computer is generated. This second control unit works with the second CAN channel and is completely independent of the control unit that is initialised with CANAPI.DLL for the first channel.
- Both CAN channels, which are operated by different applications
  Here you do not need to do anything else. For CANAPI.DLL, you do not need to create a copy and not to give another name. The use of two CAN channels is absolutely identical to the single-channel CAN card.
- Each channel is operated by several applications.
  It may be useful for several applications to simultaneously access one CAN channel. Before use, each application must initialise itself once with the function mctl_Initialize (). But only one controller unit is created for each CAN channel. I.e., all of these applications jointly operate a controller core. Therefore, several important parameters are checked in each application during the initialisation phase, and must be identical in all the applications of a controller core. Here it is recommended that all applications always use the same initialisation file in order to avoid an initialisation error.

Closing remarks

Problem with digital signature of the driver software

Since the beginning of 2015 all Windows drivers are certified with the SHA-256 hash function. A successful installation of our driver software on a PC with Windows 7 (32/64-Bit) is therefore only possible if security updates KB3035131 and KB3033929 are already installed. Otherwise the driver will not be accepted or you will get the error message that the digital signature of the driver is not verifiable. Normally, when the auto-update is turned on, these two updates are automatically installed. For PCs running Windows 10 (32/64-bit), you don't have this problem.

For newer computers with UEFI bios, you might get an error message with the digital signature when installing the driver software. In this case, you need to turn off the option "Secure Boot" in the BIOS.

Using the cards iCCE10 / 20 with a laptop

If you want to use our PCI express cards iCCE10/20 with a laptop, you need the USB-C interface on your laptop, through which an extension case for the PCI Express can be connected to the laptop. With the iCCE10/20 cards in the extension case, you can use our CAN control on your laptop.
There are many extension cases from different vendors. We have good experiences with the combination of Dell laptop and case "Akitio Node Lite."