EZTURN for CANopen
User manual

CANopen

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Preface

The graphical user interface of Ezturn was developed with the intention to be self-explanatory as far as possible. However there are few situations which need to be described in order to support users understanding for this tool.
Also the user should show provide certain level of CANopen knowledge in order to be able to configure an encoder and to use Ezturn. Such a knowledge is represented by the respective specifications. They are listed at the end of this document in chapter "References".

Version of document

Version No	Date	Modifications
1.0	18.02.2010	Final CANopen version
1.1	14.05.2010	References to new setup added
1.2	01.10.2010	Revised revision
1.3	14.10.2010	Working version for Win7

Abbreviations

GUI	Graphical User Interface
FW	Firmware
SW	Software
NMT	Network Management

System requirements

Operating System:	WinXP SP 3, Win7
CPU:	min 1GHz
RAM:	min 512MB
Free Disk space:	500MB (mainly .NET 3.5 environment if not installed yet)

For installation of Ezturn and CANopen driver, administrator rights are required. If you do not have administrator rights, please contact your system administrator.

Installation

Please close all applications before you start the setup program for Ezturn. A reboot is required after installation.

Insert CD into CD drive. The setup starts automatically. If it does not, double click on CDStart.exe. A setup screen appears as depicted in figure 1 below.

The recommended sequence of program installation is:

- In the left upper window of the setup screen, see figure 1, select the option "Installation of Ezturn for CANopen"
- Press button "View Ezturn installation manual for CANopen" in order to get more information about the installation procedure (this document).
- Install CANopen driver and do not reboot after driver installation
- Install Ezturn for CANopen
- Close setup and reboot

There is one situation where setup reboots the PC without user interaction. This is automatically detected and applies for all PCs where setup needs to install .NET environment first. .NET environment is a prerequisite for Ezturn. Please leave the installation CD in the CDROM drive in this situation.

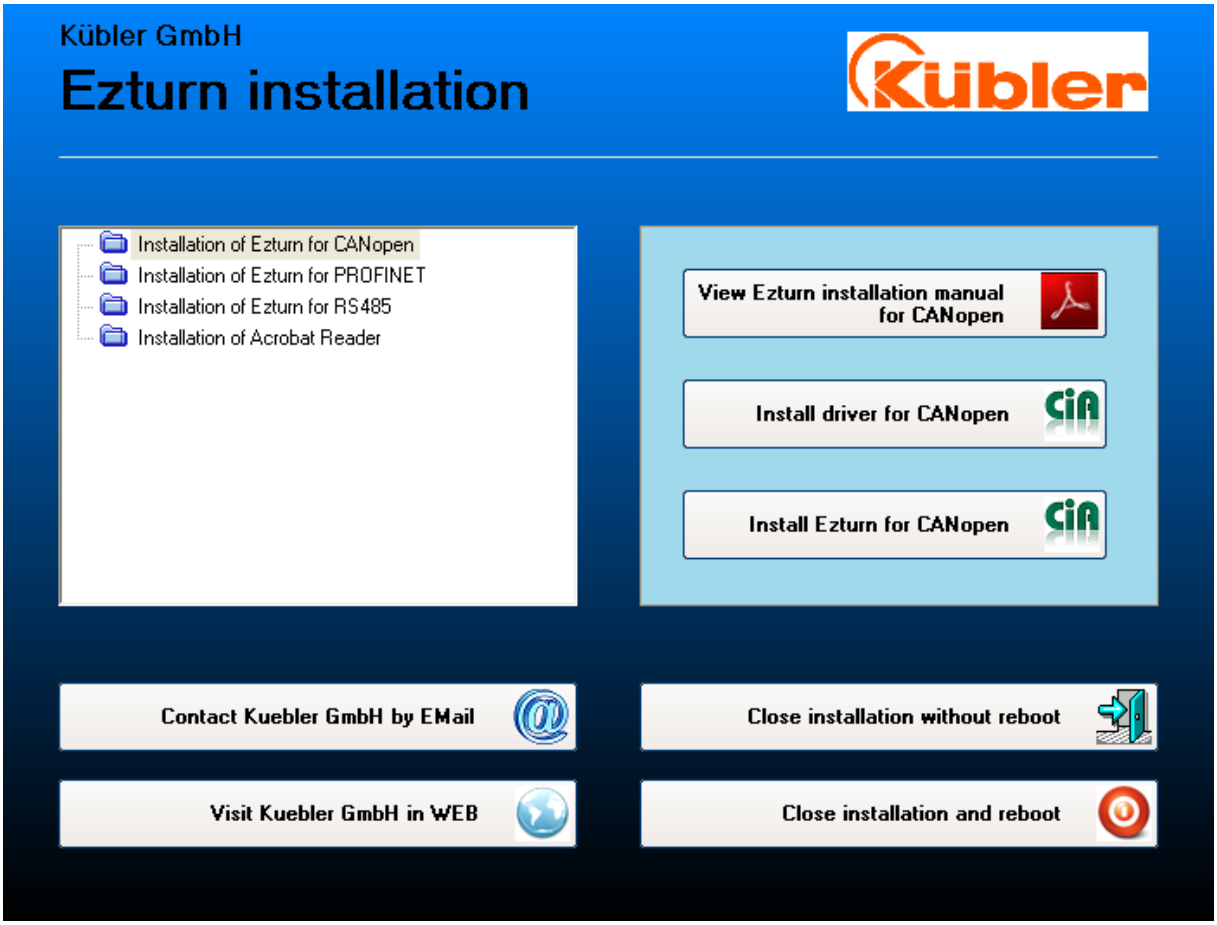

Figure 1

CANopen driver installation

Click on button “Install driver for CANopen” which leads to a screen according to figure 2. Press button “Next”, make a decision regarding restore point and accept the license agreement according to figure 3.

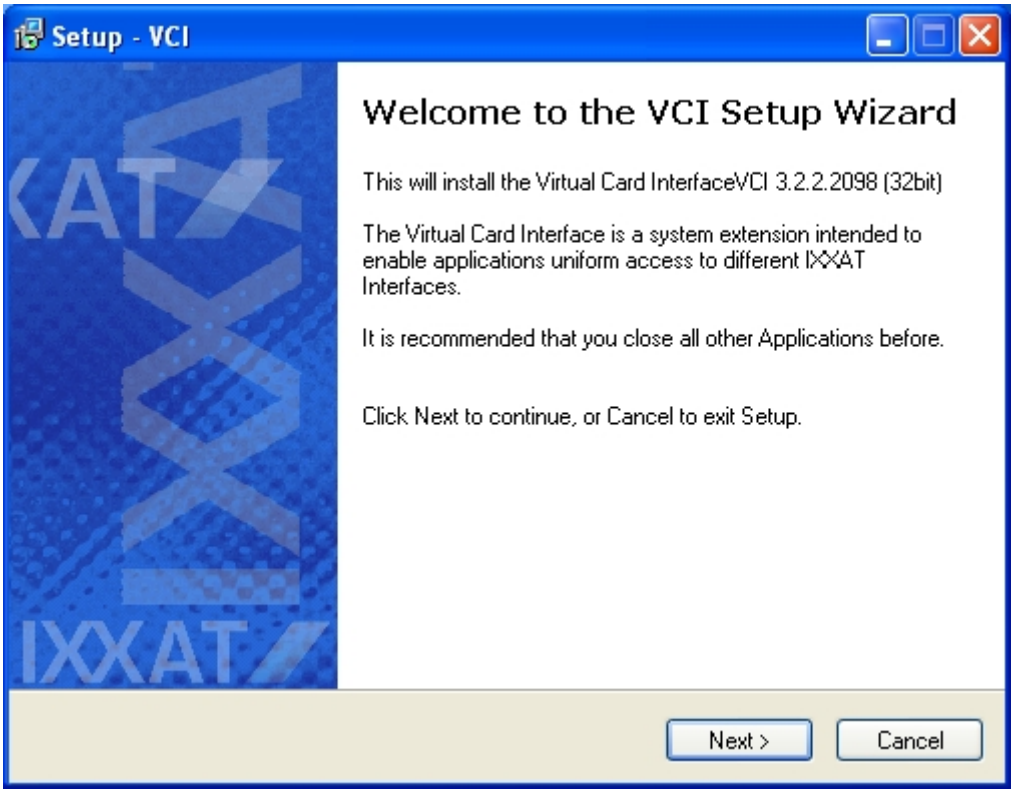
Setup - VCI
Welcome to the VCI Setup Wizard
This will install the Virtual Card InterfaceVCI 3.2.2.2098 (32bit)
The Virtual Card Interface is a system extension intended to enable applications uniform access to different IXXAT Interfaces.
It is recommended that you close all other Applications before.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

Figure 2

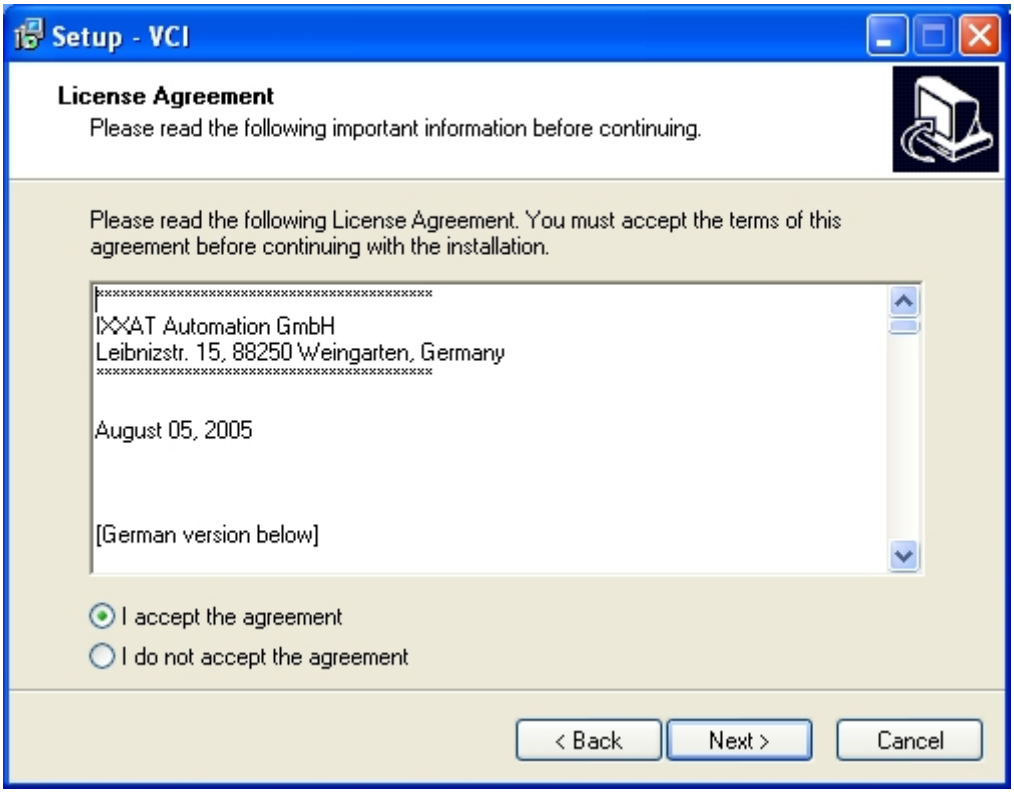

Figure 3

Select installation location according to figure 4 and press “Next” button.

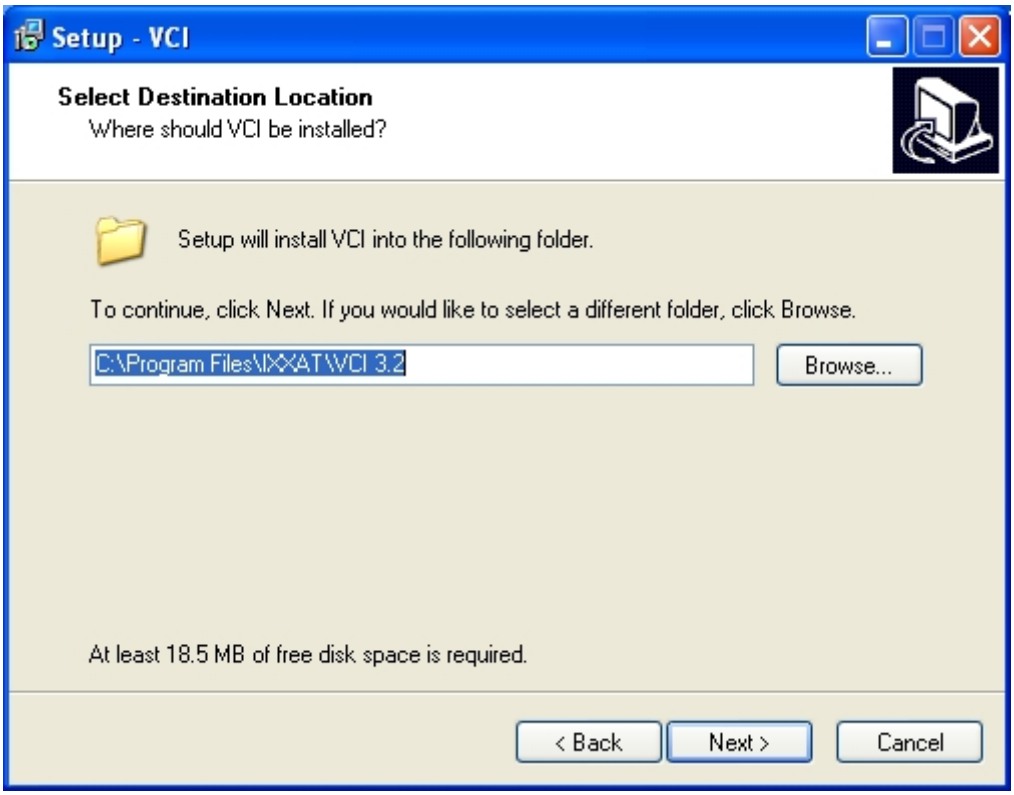

Figure 4

Select the start menu name according to figure 5.

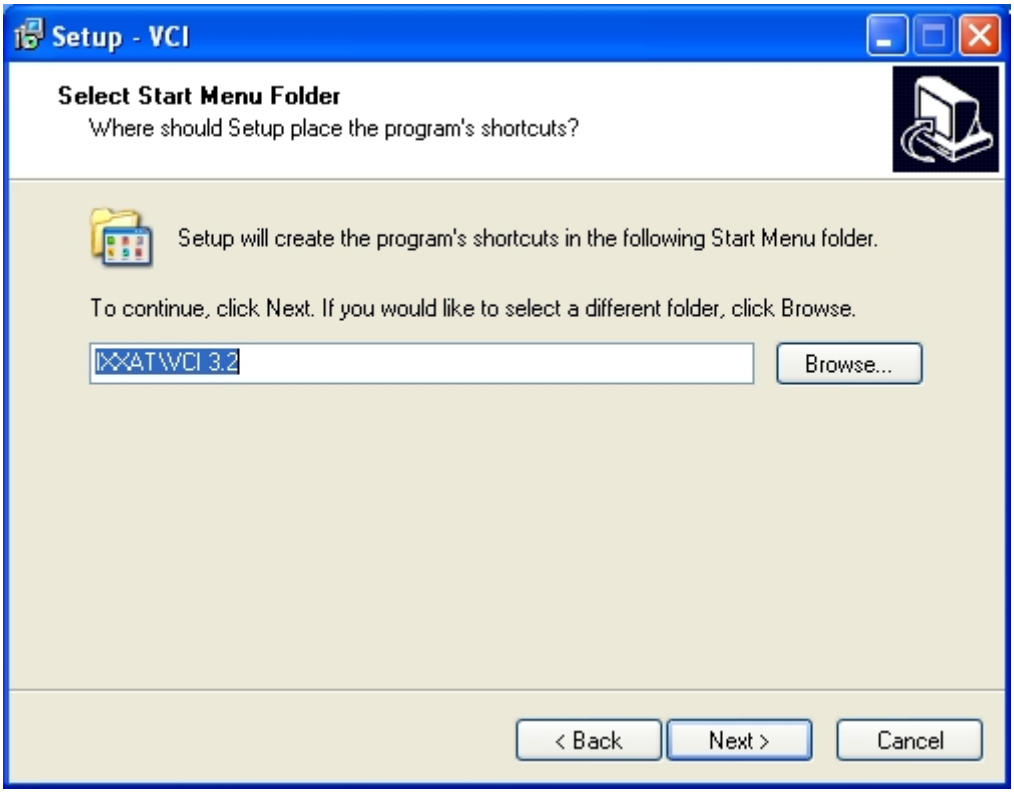

Figure 5

Since Ezturn finds the CANopen driver automatically it is recommended to create neither a desktop nor a quick launch icon. This situation is represented by figure 6 where none of the check boxes and radio buttons are checked.

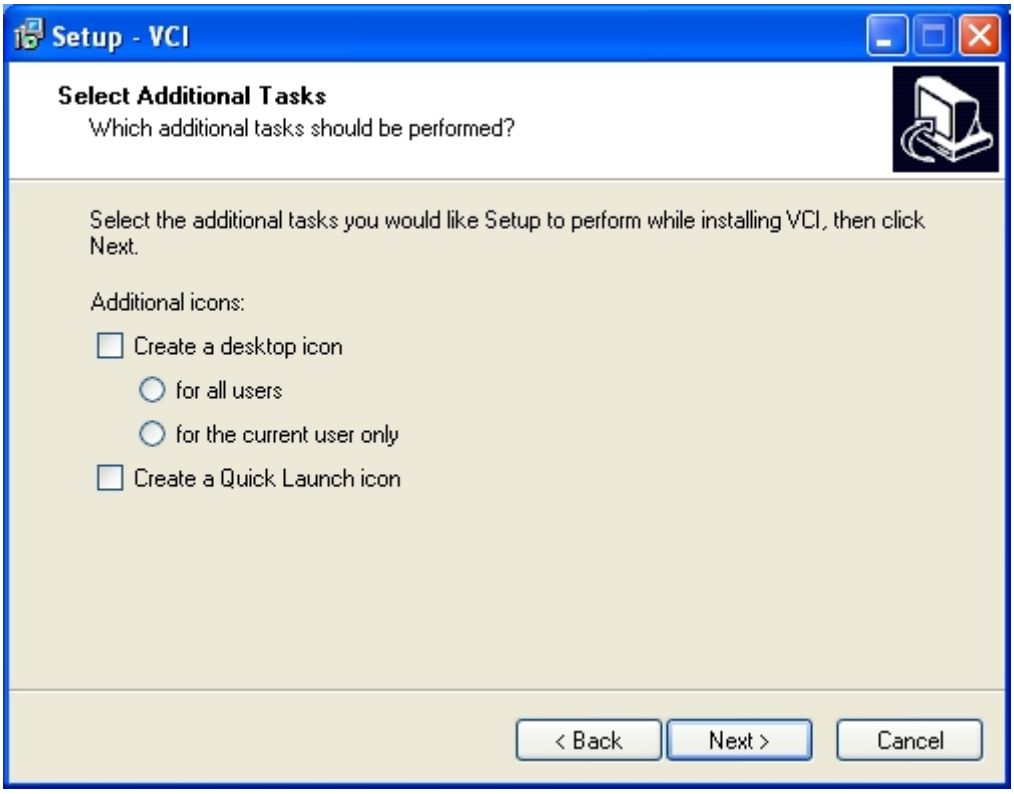

Figure 6

If all decisions are made and entries according to figure 7 are correct, press button “Install” to install the CANopen driver.

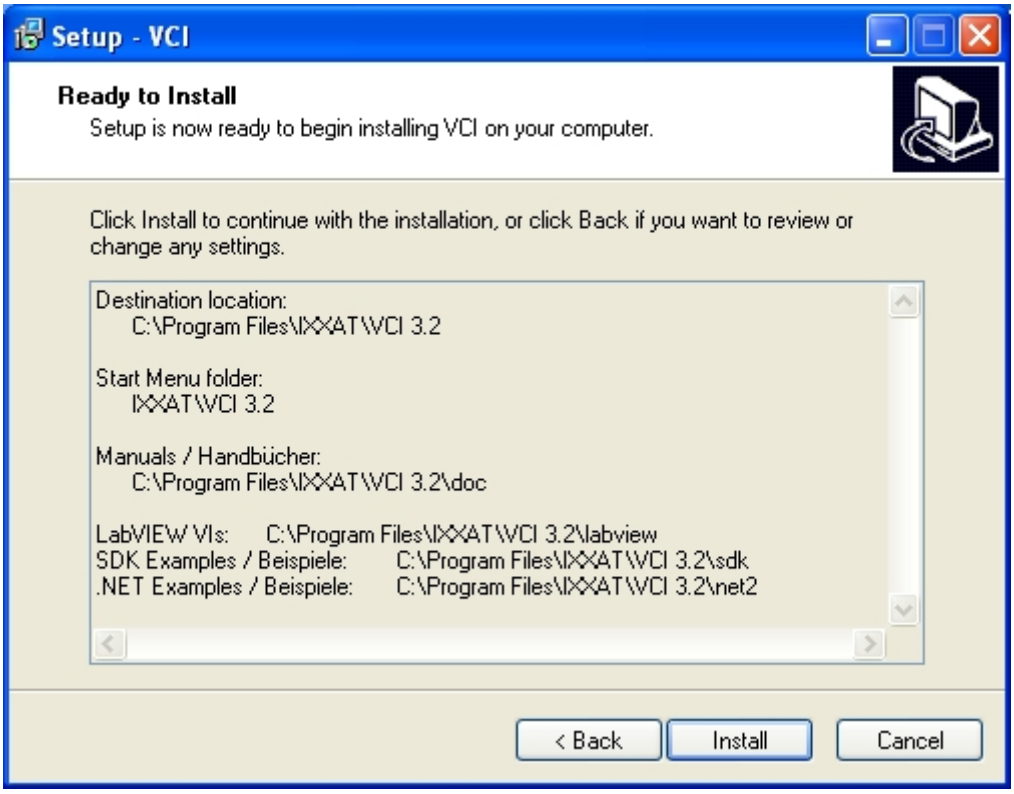

Figure 7

Before pressing the „Finish“ button as depicted in figure 8, select one of both radio buttons, making a decision about when to restart the computer. If the next step is to install Ezturn then select not to reboot now.

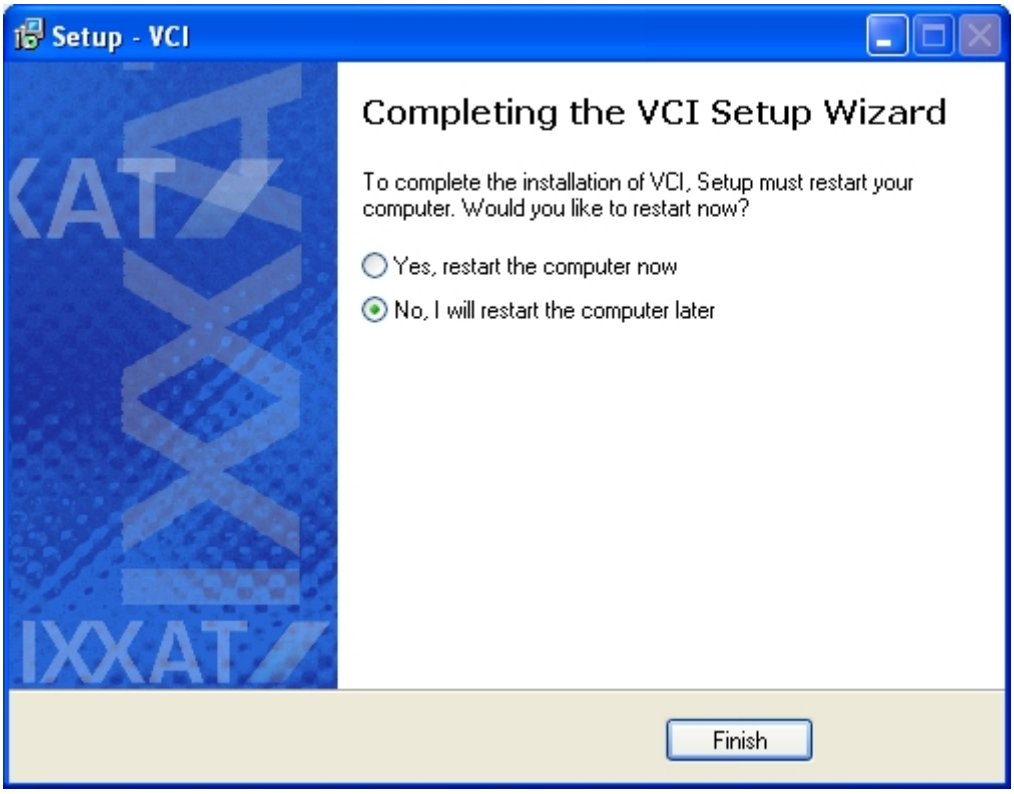
Setup - VCI
Completing the VCI Setup Wizard
To complete the installation of VCI, Setup must restart your computer. Would you like to restart now?
Yes, restart the computer now
No, I will restart the computer later
Finish

Figure 8

Ezturn installation

As shown in figure 1 press the button “Install Ezturn for CANopen” to install the Ezturn program. The installation wizard starts as depicted in figure 9 below and guides you through the installation

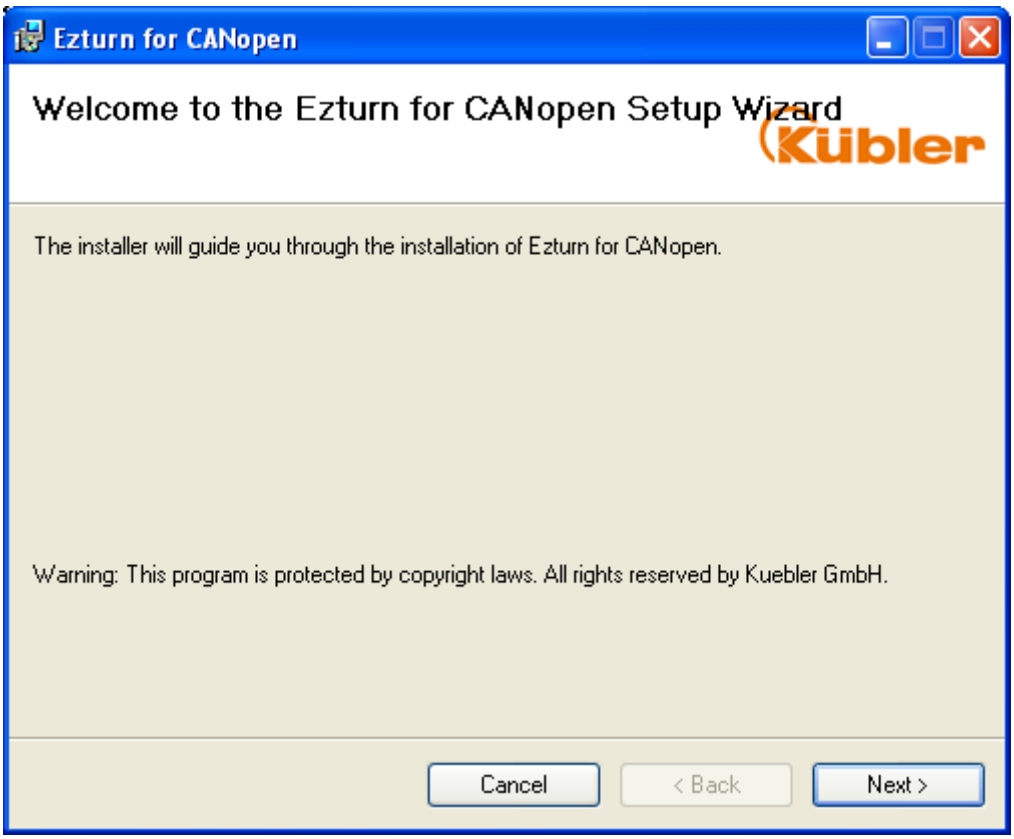

Figure 9

If you agree with license, check radio button “I Agree” as shown in figure 10 and press the button “Next”.

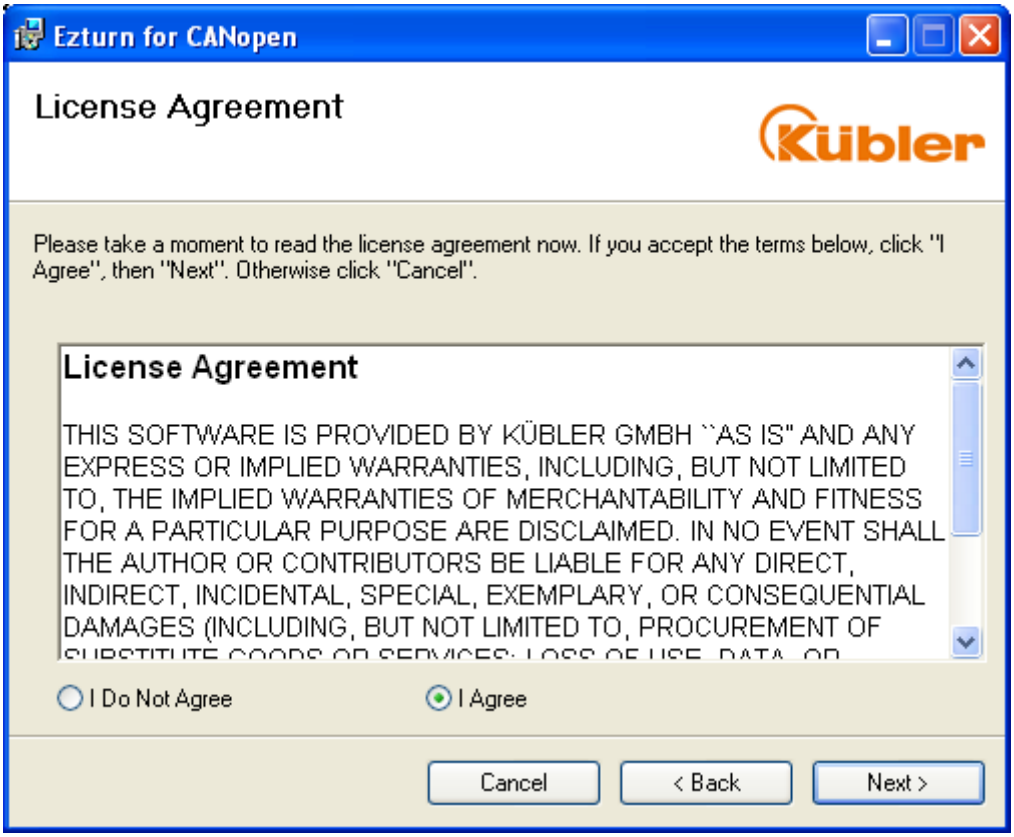

Figure 10

Change the installation folder name in the next screen or simply keep it as suggested by the installation wizard. If you want to allow all users who have an account on the PC to use Ezturn software then select radio button “Everyone” otherwise “Just me”.
Then press button “Next” to continue.

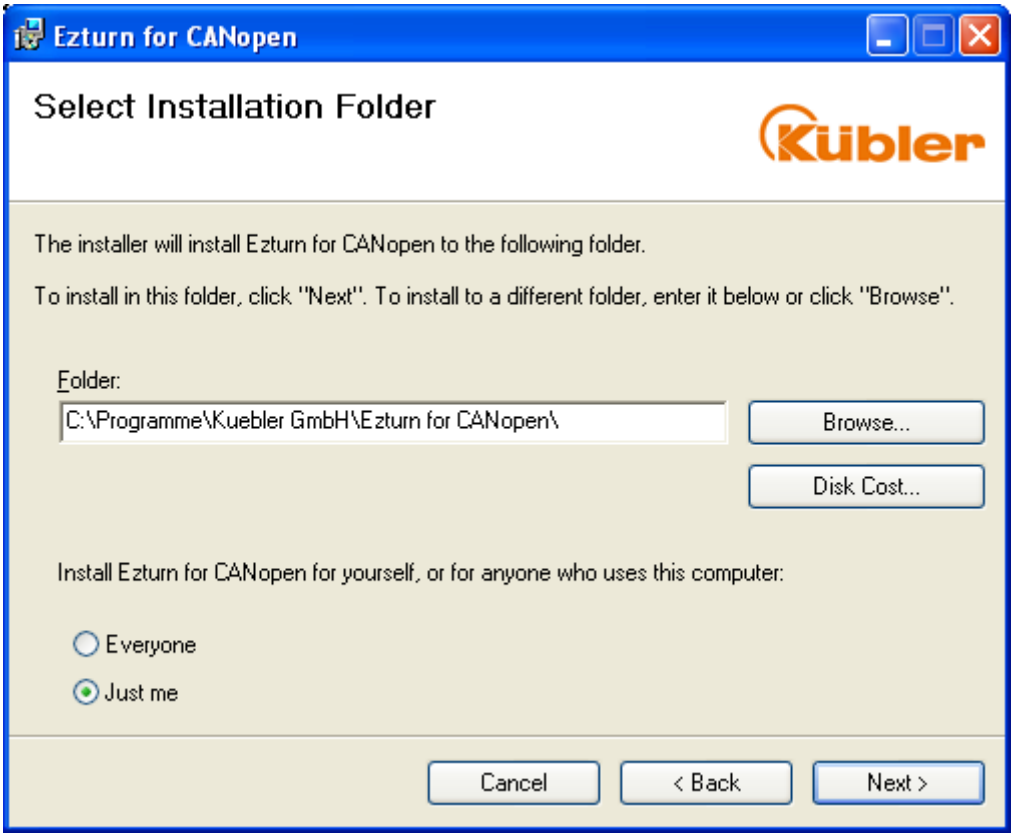

Figure 11

The installer is ready to install Ezturn software now. If you press button “Next” according to figure 12 the installer starts to install displaying installation progress according to figure 13.

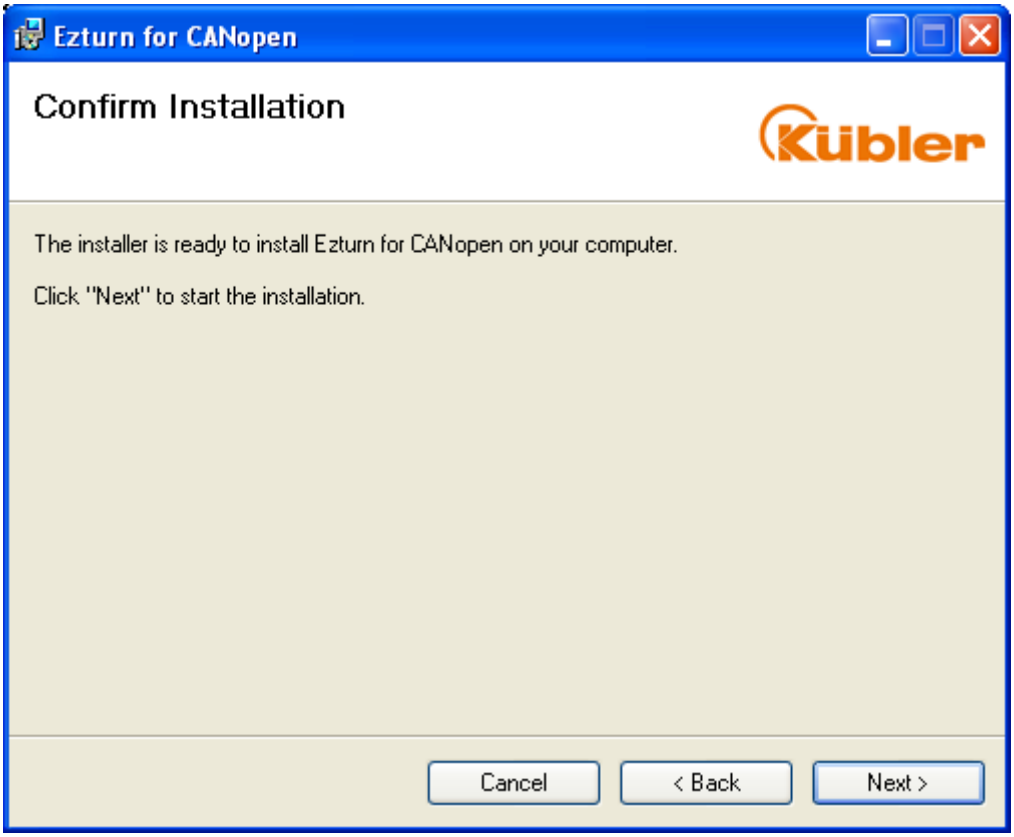
Ezturn for CANopen
Confirm Installation
Kübler
The installer is ready to install Ezturn for CANopen on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Figure 12

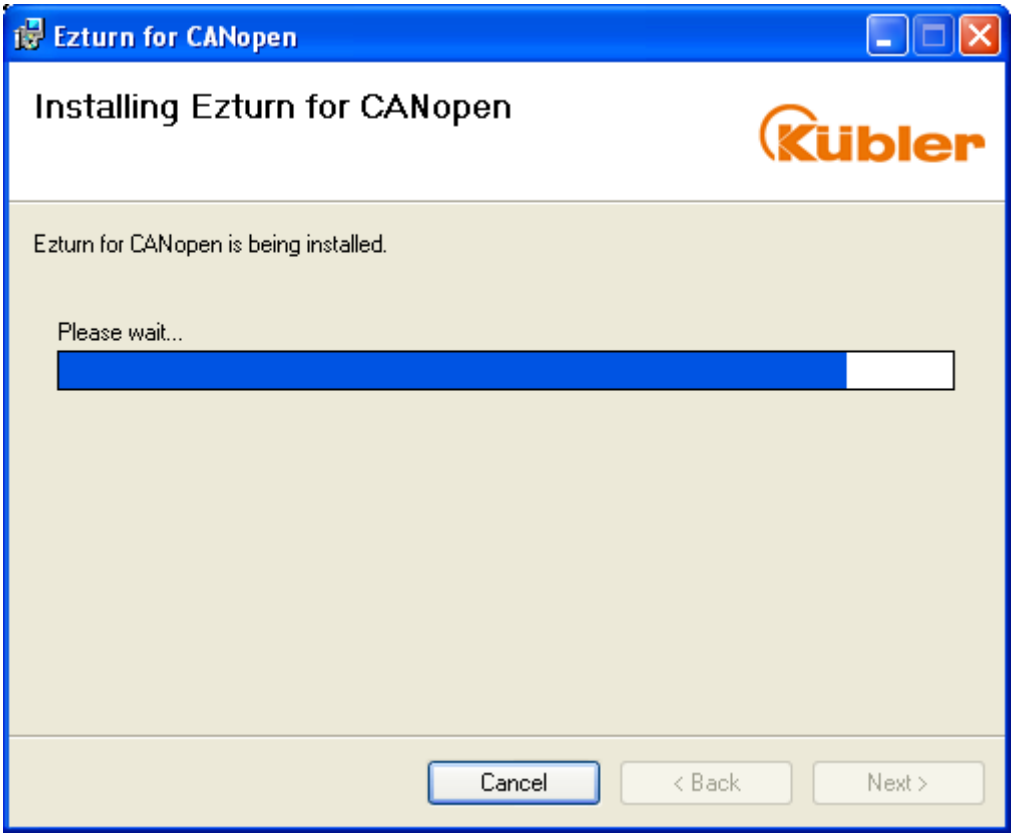

Figure 13

Figure 14 shows the last installation screen. Click button “Close” in order to finalize the installation.

The installer also installs this user manual which can be started from program menu by clicking the appropriate icon.

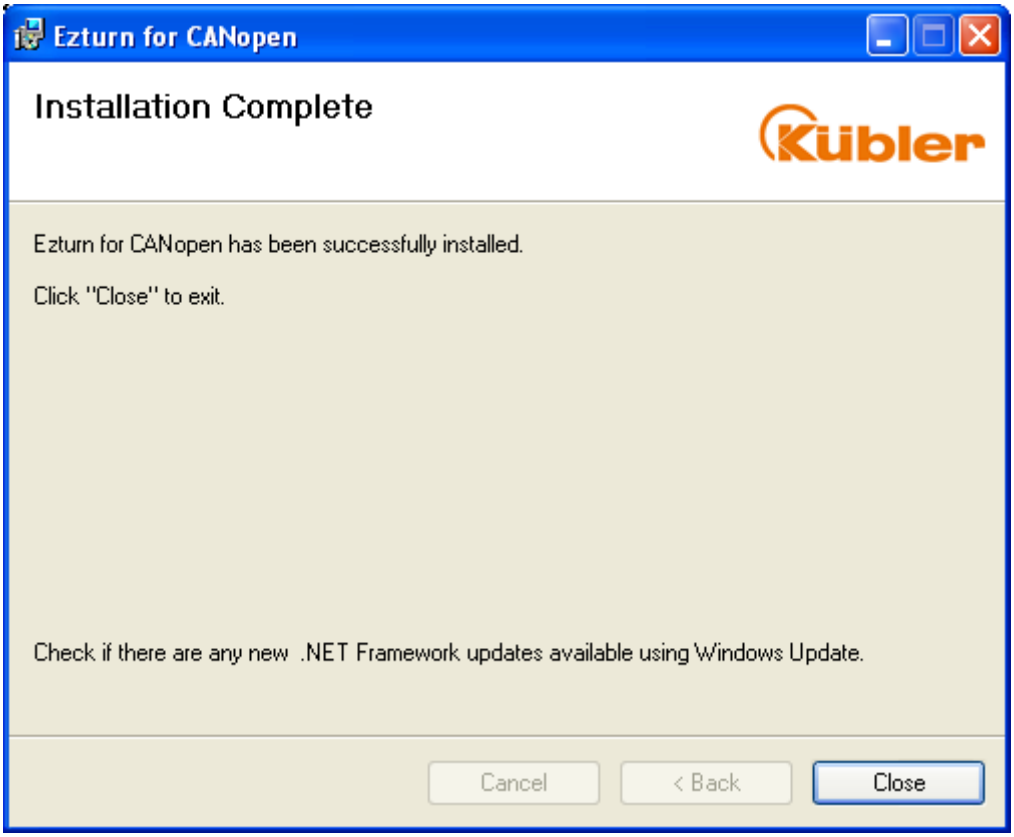
Ezturn for CANopen
Installation Complete
Kübler
Ezturn for CANopen has been successfully installed.
Click "Close" to exit.
Check if there are any new .NET Framework updates available using Windows Update.
Cancel
< Back
Close

Figure 14

CANopen GUI

Start Ezturn for CANopen from program menu.

The first message box notifies you of the status required on encoder side in order to successfully connect to encoder. See figure 15.

Figure 15

Tab "Device info and NMT"

The first tab shown by Ezturn after startup is the “Device info and NMT” tab (figure 16). In the list box “Baud rate” the user is able to select the required baud rate. In the text box “Node number” the user is able to type in the CAN bus address of the encoder. Both, baud rate and node address are mandatory parameters which can be provided manually or simply auto-detected by clicking button “Start auto-detection of baud rate and node number”.

IMPORTANT !
For autodetection the encoder must exclusively be connected to Ezturn. Do not start any controller application or CANAlayzer on bus in parallel.

As soon as Ezturn successfully autodetects baudrate and node address, it automatically reads information from encoder in the form of seven parameters and displays them in the group box “Device information” starting with parameter “Device type” and finishing with parameter “Serial number”.
All seven parameters can be read out at any time by clicking button “Read info from encoder”.
The encoder can be reset by button “Reset encoder” which is located in the right bottom part of this tab.
Finally the CAN bus status and connectivity setup progress are continually displayed in the in the left bottom corner of the status bar.

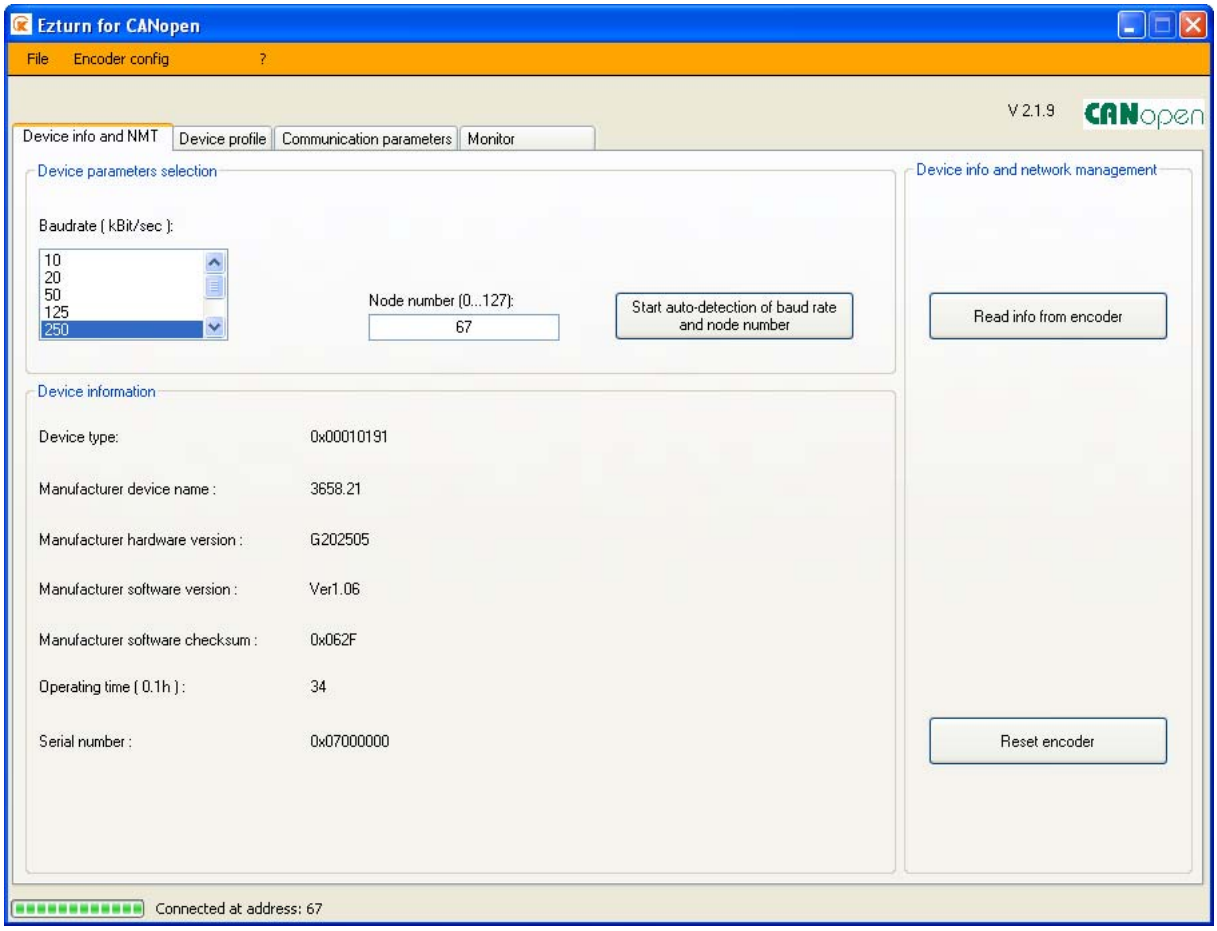

Figure 16

Since tab "Device info and NMT" allows for selection of baud rate and node number, it must be used as the first tab after starting Ezturn for CANopen.

Tab “Device profile”

This tab represents a couple of basic encoder parameters which are partially manufacturer specific. These parameters are represented by:

Object 6000:
- Code sequence
- Speed unit
- Scaling function control
- Operating mode after reset

Note "Operating mode after reset" can only be tested along with a controller application or a bus analyzer. It is not possible to test it with Ezturn !

Object 6001: measuring units per revolution.
Object 6002: total measuring range in measuring units.
Object 6003: preset value.
Object 6401: work area low limit for channel one and two.
Object 6402: work area high limit for channel one and two.

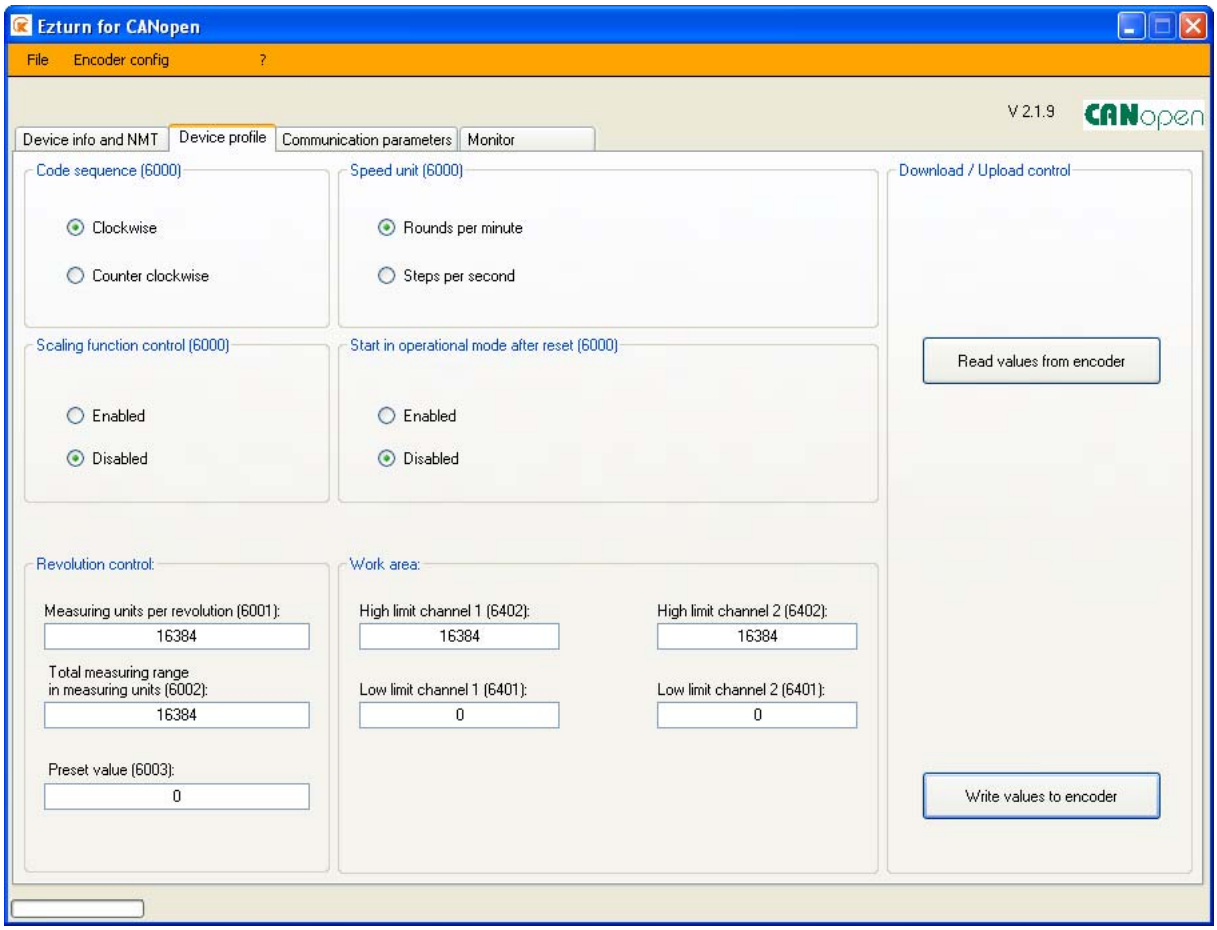

Figure 17

All of these parameters can be read out out of encoder by clicking button “Read values from encoder” or written to encoder after modification by clicking button “Write values to encoder”.

Tab “Communication parameters”

This tab allows for adjustment and reading of values according to tree view on the left side of figure 18. Some parameters have supplementary parameters which become visible by expanding the tree in the corresponding tree place. This applies particularly for PDO communication and PDO mapping parameters.

Buttons “Write all parameters to encoder except bus parameters (1010)” and “Write all 3 bus parameters to encoder (2105)” are disabled as long as user did not read all parameters from encoder first. This is to prevent user from writing parameters to encoder which are not reasonable. Both buttons are enabled only if user either clicks button “Read all parameters from encoder” or clicks on any entry within the parameter tree view. Both actions lead to an automatic read of parameters from encoder and enable both write buttons.

By clicking button "Read all parameters from encoder" all tree view parameters are being read out out of encoder.
Now the user can visualize each of them in the text box "Current value" (which is read only) just by clicking on the corresponding name in the tree view. In order to reread a highlighted value from encoder or to write a modified value in the tree view to encoder, the user just clicks button "Read value from encoder" or modifies the value in text box "New value" following by a click on button "Write new value to encoder".

It is important to know that button “Write all parameters to encoder except bus parameters (1010)” does not write bus parameters. This functionality can be activated exclusively and only by button “Write all 3 bus parameters to encoder (2105)”. Bus parameters are baud rate, node address and CAN bus termination status. In the tree view of figure 18 these are the last three parameters.

Clicking button “Restore all default parameters ‘Factory settings’” restores all parameters from ROM with the exception of bus parameters. In other words, there are no factory settings for bus parameters. A subsequent automatic reset done by Ezturn lets the encoder return with unchanged bus parameters.

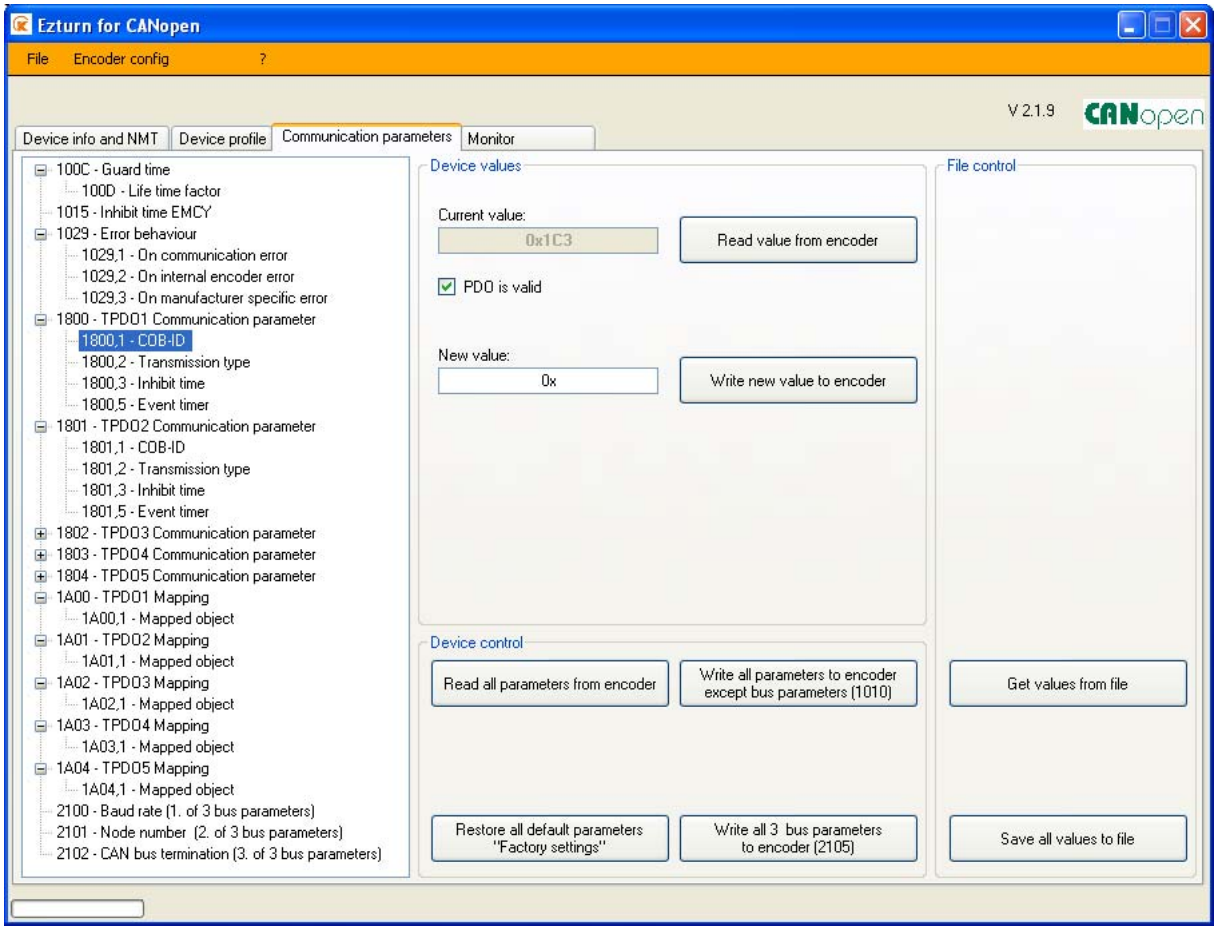

Figure 18

Having read out all values from the encoder the user can now store them in a file for a subsequent encoder configuration. By pressing button "Save all values to file" a file saving dialog is opened by Ezturn according to figure 19. The file extension needs to be of type XML and is maintained by Ezturn automatically.

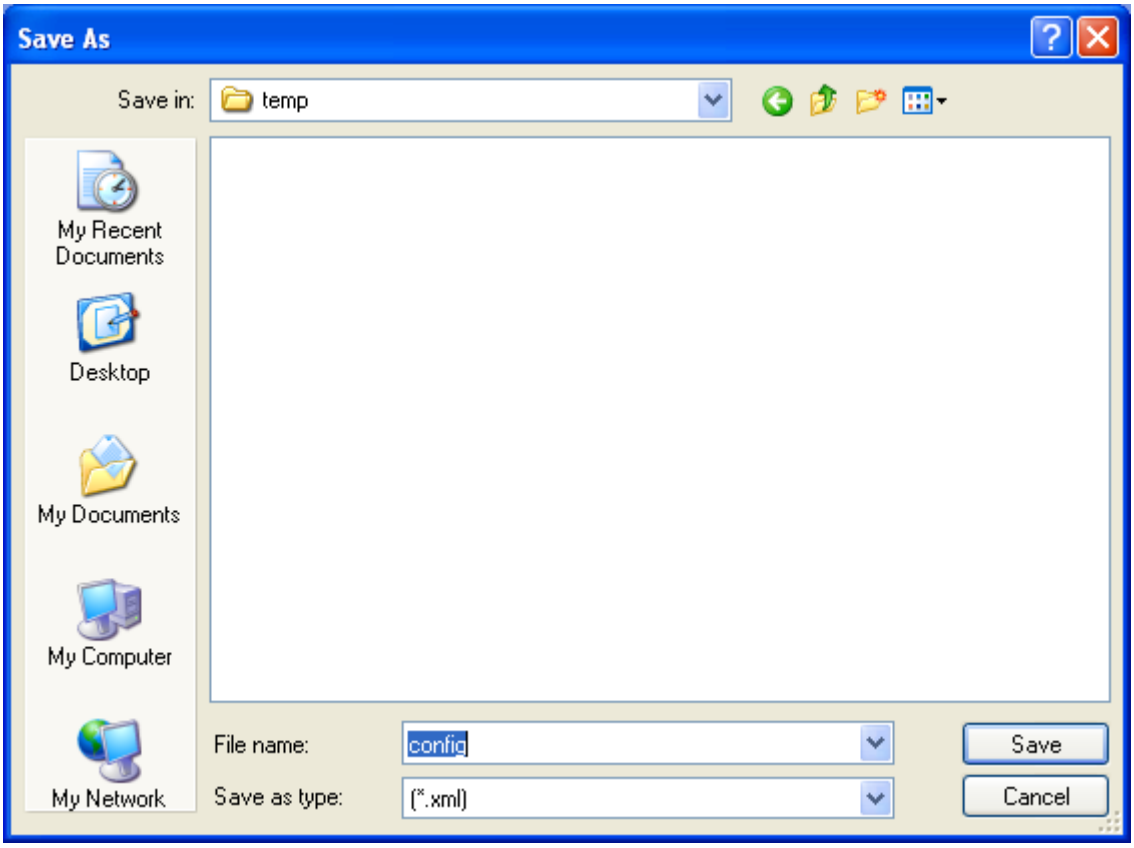

Figure 19

The configuration stored in such an XML file might be important in the case where configuration of a particular encoder has to be duplicated on multiple encoders. In this case the user simply presses button "Get values from file", a file open dialog is opened according to figure 20 and the user selects the right file.
Ezturn automatically distributes the configuration data among its different tabs. The user can now select a parameter just by pressing the corresponding name in the tree view or by switching to the tab which incorporates the desired parameter.

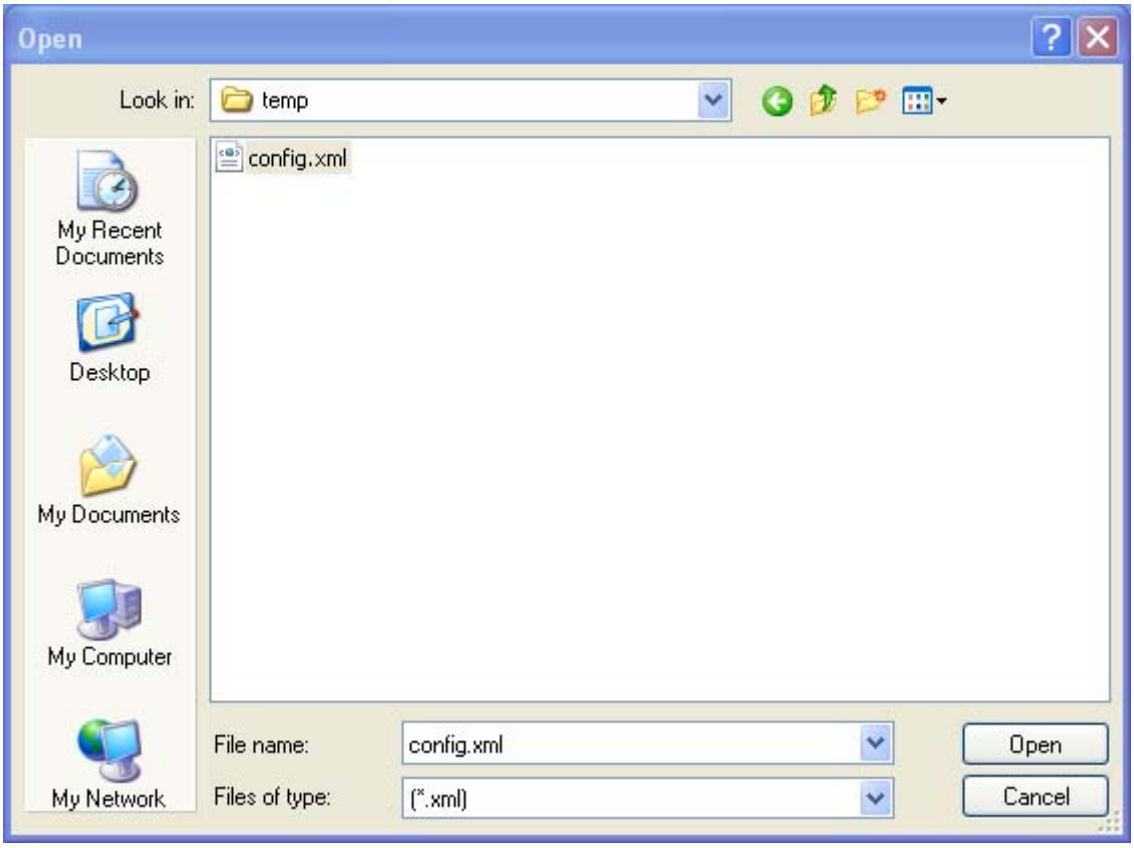
Open
Look in:
temp
config.xml
My Recent Documents
Desktop
My Documents
My Computer
My Network
File name:
config.xml
Files of type:
(*.xml)
Open
Cancel

Figure 20

Tab "Monitor"

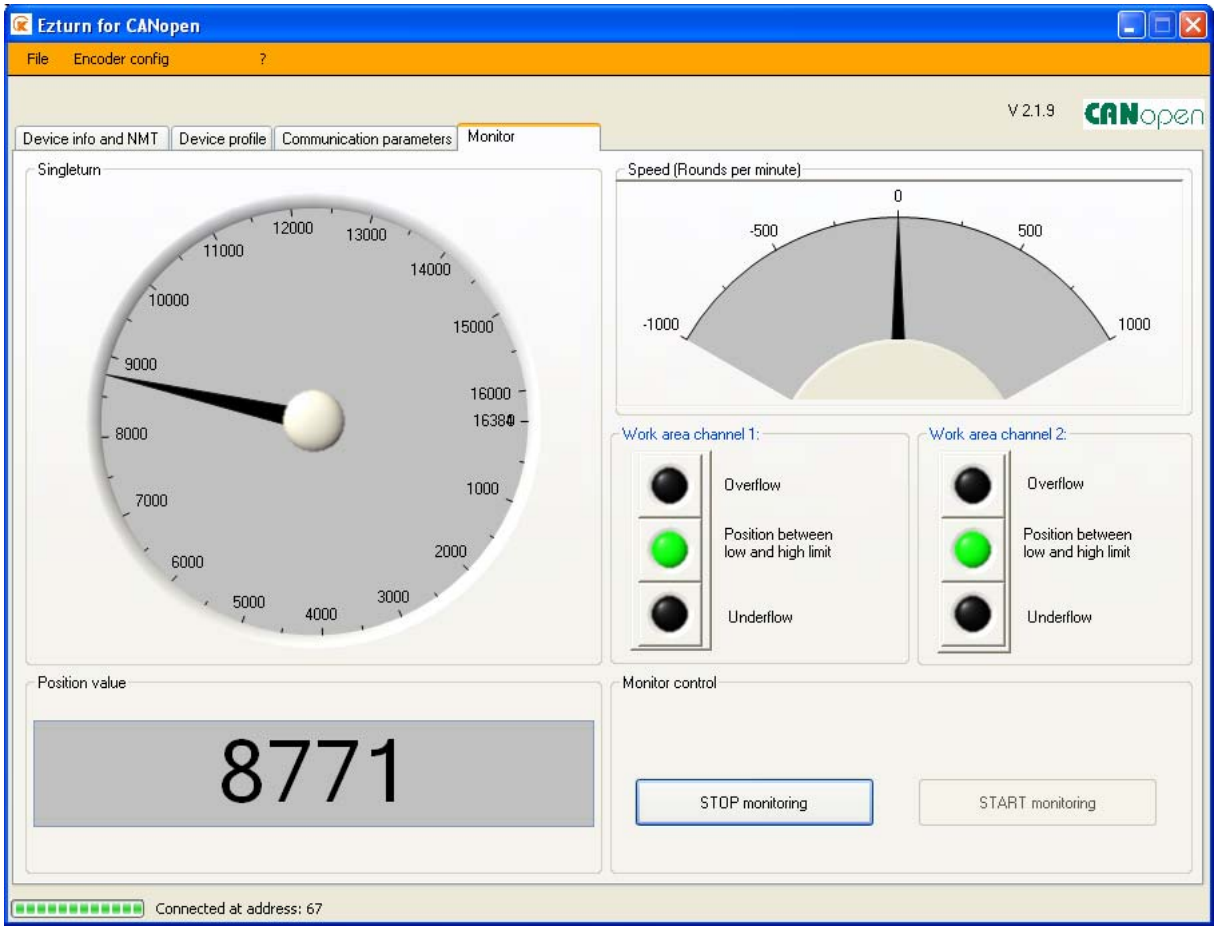

Figure 21

The monitor tab mainly visualizes operational data in terms of PDOs.
This is: Singleturn value in the singleturn gauge. Speed value in the speed gauge and work area values of both channels in the corresponding stop lights.

The encoder is automatically switched to operational mode when the "Start monitoring" button is pressed. It is automatically switched to pre-operational mode by clicking the button "Stop monitoring" or by clicking any button within Ezturn with the exception of button "Start monitoring".

Important:
Ezturn automatically replaces user values for event timer and transmission type on start of monitoring and stores them temporarily on PC side. These values are 100ms for event timer and 255 (cyclic mode) for transmission type. PDO1 is automatically configured for sending of position data. PDO2 is automatically configured for sending of speed values.
When monitoring is stopped, the origin values are written back to the encoder.

Troubleshooting CANopen installation

If Ezturn reports an error on initialisation of a CANopen socket, please make sure that the USB-to-CAN adapter is directly connected to a PC – USB connector. In other words, do not use USB-hubs in between.

References

- CANopen Application Layer and Communication Profile" CiA Draft Standard 301 version 4.02

- CANopen device profile for encoders" CiA Draft Standard 406 version 3.2.