CAN Bus Monitor for *Kvaser*

Introduction

CAN card manufactures provide a wide range of tools for performing CAN analysis. The CAN Monitor is the simplest form of software tool, usually packaged free with the CAN Card, that can be used to perform several simple CAN bus tests. The CAN Monitor can be used to test for proper installation of the CAN card and its drivers, will verify that messages can be transmitted and received over the network, and can even be used to monitor bus traffic.

CAN Monitor

Kvaser CAN King

This section describes the use of the Kvaser CAN King CAN Monitor program to test for messages transmitted by the Copley CANopen amplifier over the CAN bus.

Kvaser Driver Verification

This note also describes how to verify proper installation of the Kvaser CAN Card drivers.

Kvaser CAN King

The Kvaser “CANKing” is free monitoring software that can be downloaded from the web:

http://www.kvaser.com/download/index.htm

Locate:

Software Tools

Software tools, CAN bus monitors, etc:

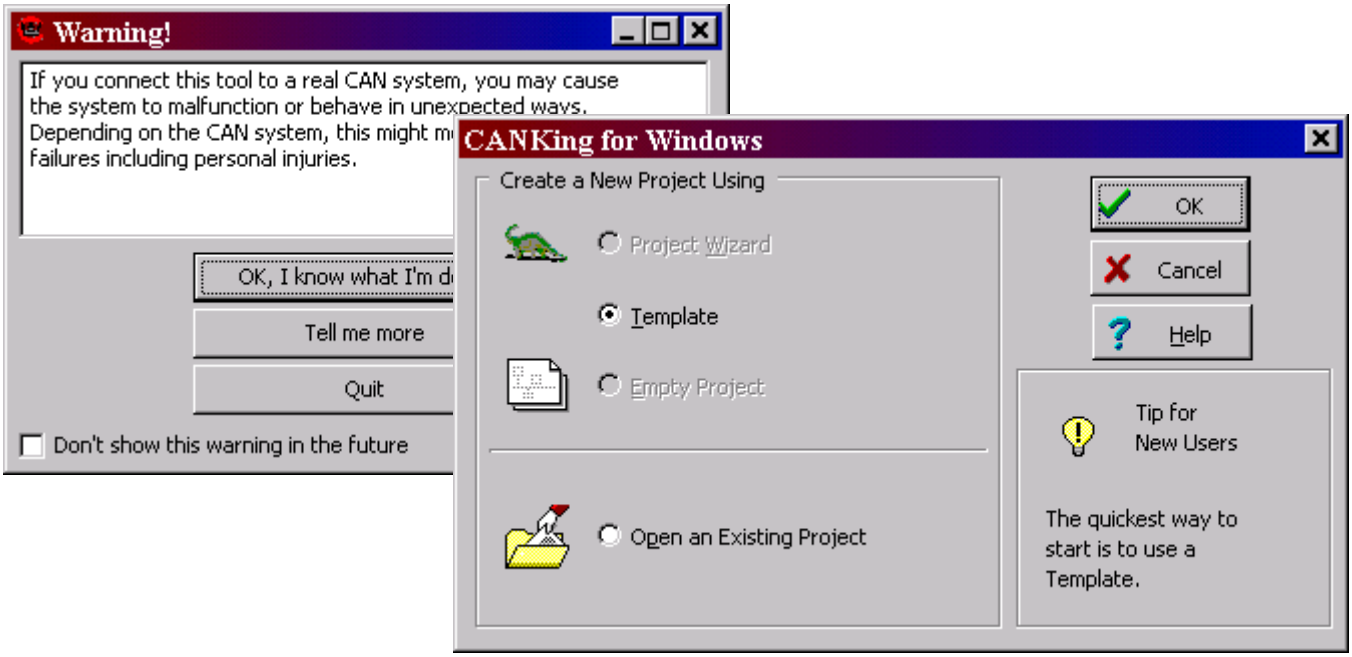
CANKing V4.0.5.60
A free or charge, general-purpose CAN bus monitor. Works with all CAN interfaces from KVASER under Windows 98/NT/2000/XP (and Windows 95), with LAPcan/LAPcan II, PCIcan and PCcan.

Step 1

Select “**Start using CANking**” then press **OK**.

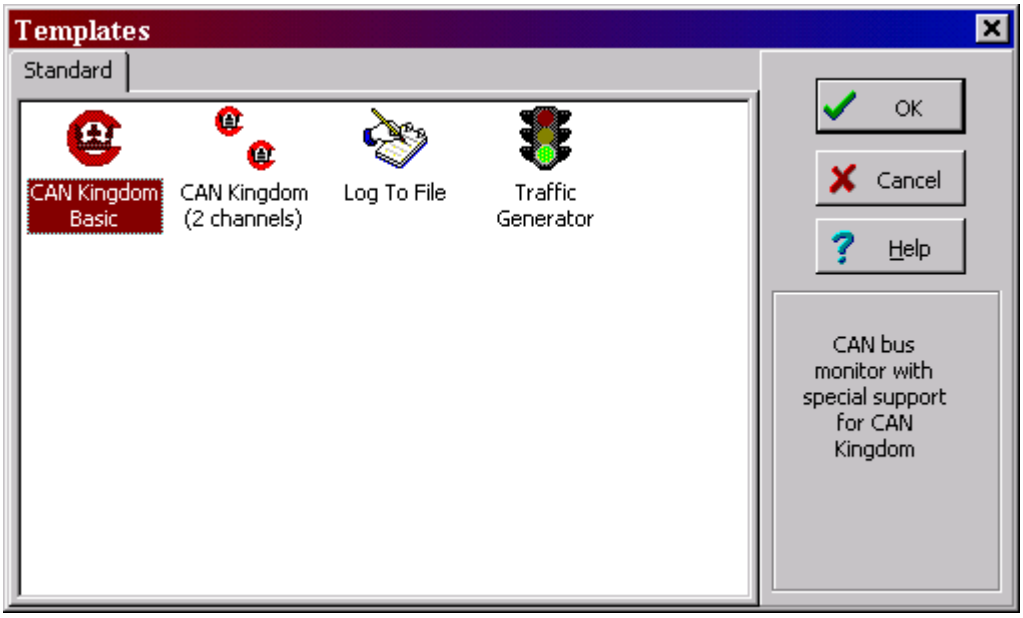
Step 2

Select "**OK, I know what I'm doing**". Select "**Template**" then press **OK**.



Step 3

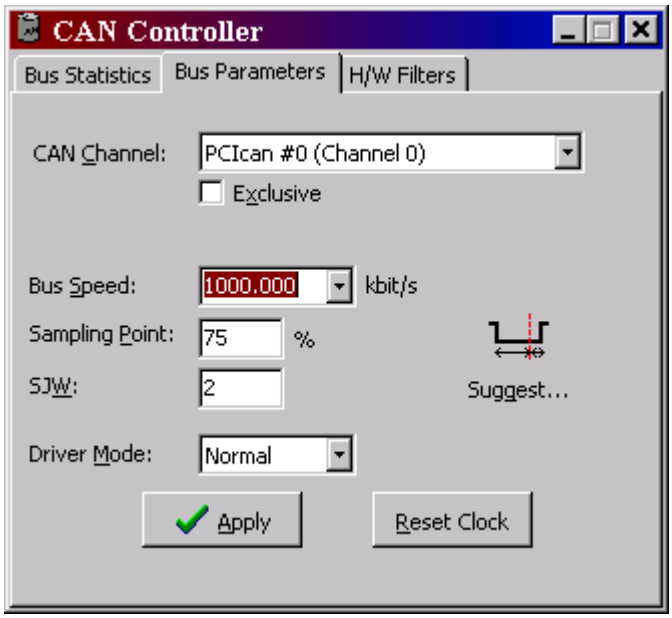
Select "**CAN Kingdom Basics**" then press **OK**.

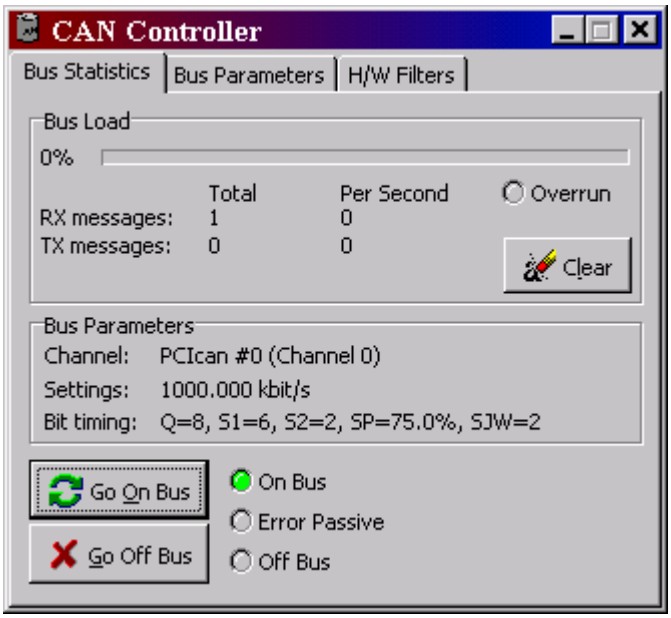


Step 4

On the CAN Controller screen select the "**Bus Parameters** tab". Select the correct **CAN Channel** (Depending on what card and drivers are properly installed and what port the bus is connected to, PCIcan #0 (Channel 0) is typical.) **Uncheck Exclusive**, Select the correct **Baud Speed** (same bit rate as set for all nodes) and then press **Apply**.

On the **Bus Statistics** tab Select "**Go On Bus**"





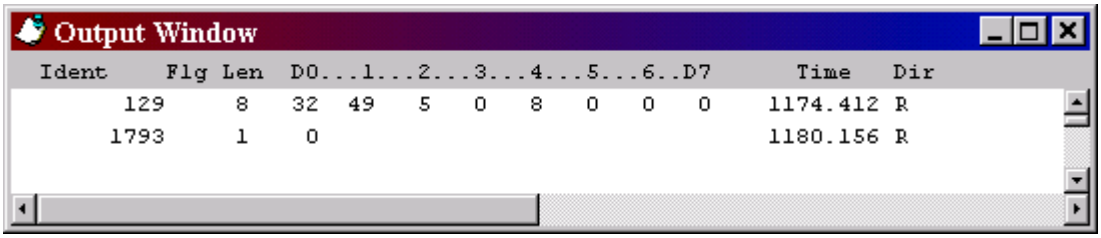
On Bus	The CAN controller that takes part in the CAN bus traffic is On Bus.
Error Passive	A CAN controller is Error Passive when its Receive Error Counter or its Transmit Error Counter exceeds 128. Bad cabling, poor connections, and improper termination are cause for errors. See CAN Bus note.
Off Bus	A CAN controller that does not take part in the CAN bus traffic in any way (neither send nor receive) is said to be Off Bus. A CAN controller goes Off Bus automatically when its Transmit Error Counter exceeds 255. Bad cabling, poor connections, and improper termination are cause for errors. See CAN Bus note.

Step 5

In the Output Window, cycle the amplifier power and look for messages:

Powering On the amplifier produced the Identifier 1793 seen below.

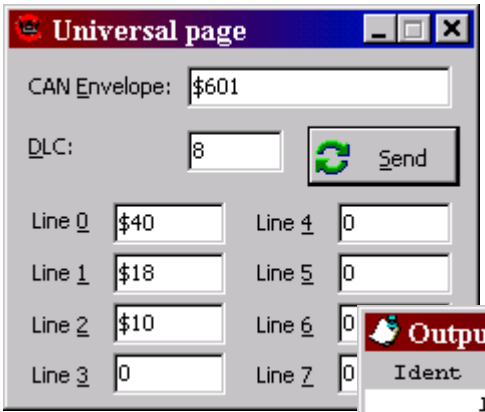
Powering Off the amplifier produced Identifier 129 seen below.

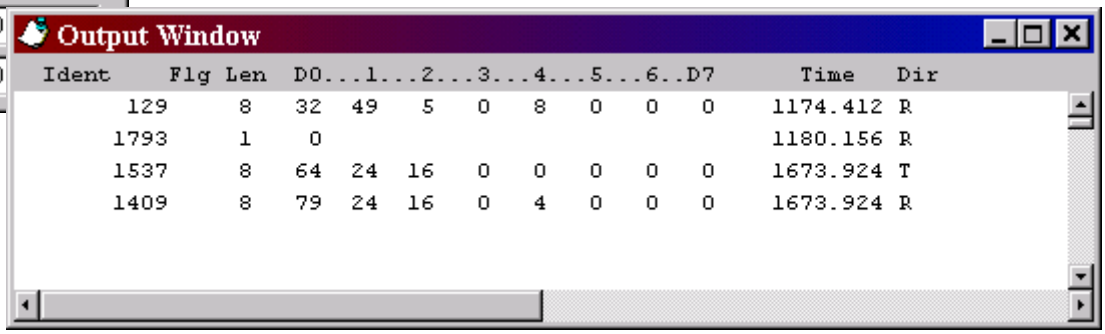


If CAN software has been used to configure the amplifier to transmit on other events then more messages may be seen.

The “Universal page” screen can be used to send a CAN message. Located on the Menu bar under: Messages\ Universal\ Universal. The message below can be entered into the Universal page screen to get node 1 amplifier to reply.

```
cml.log:    “Amp 1, checking ID
             CAN.X: 0x00000601 - 0x40 0x18 0x10 0x00 0x00 0x00 0x00 0x00”
```





Note:

Example message: 0x00000601 40 94 21 00 00 00 00 00

0x00000601 – 0x600 SDO Transfer Master(Client) to node (Server)0x601 Node 1
 40 – Initiate SDO Upload Protocol (see DS301 for details)
 94 – Object 0x2194 Lo byte
 21 - Object 0x2194 Hi byte
 00 – No Sub index
 00 – 1st DATA byte
 00 – 2nd DATA byte
 00 – 3rd DATA byte
 00 – 4th DATA byte

Setting Outputs Examples:
Transmit: 40 94 21 00 00 00 00 00 Request output Active/Inactive state
Receive: 4B 94 21 00 00 00 00 00 All outputs seen as Inactive.

If the first three outputs are activated, such as when using CME2 software to activate outputs, the "data 0x07" should be seen.

Transmit: 40 94 21 00 00 00 00 00 Request output Active/Inactive state
Receive: 4B 94 21 00 07 00 00 00 All outputs seen as Active.

To set the outputs in manual mode:
Transmit: 22 93 21 01 02 00 00 00 Set Output 1 in manual mode. bit 2 set in array element (sub index) number 1
Transmit: 22 93 21 02 02 00 00 00 Set Output 2 in manual mode. bit 2 set in array element (sub index) number 2
Transmit: 22 93 21 03 02 00 00 00 Set Output 3 in manual mode. bit 2 set in array element (sub index) number 3

To set and verify the outputs active:
Transmit: 22 94 21 00 07 00 00 00 Sets Output 1,2, and 3 Active.

Transmit: 40 94 21 00 00 00 00 00 Request output Active/Inactive state
Receive: 4B 94 21 00 07 00 00 00 "data 0x07" all seen as Active.

To set and verify the outputs inactive:
Transmit: 22 94 21 00 00 00 00 00 Sets Output 1,2, and 3 Inactive.

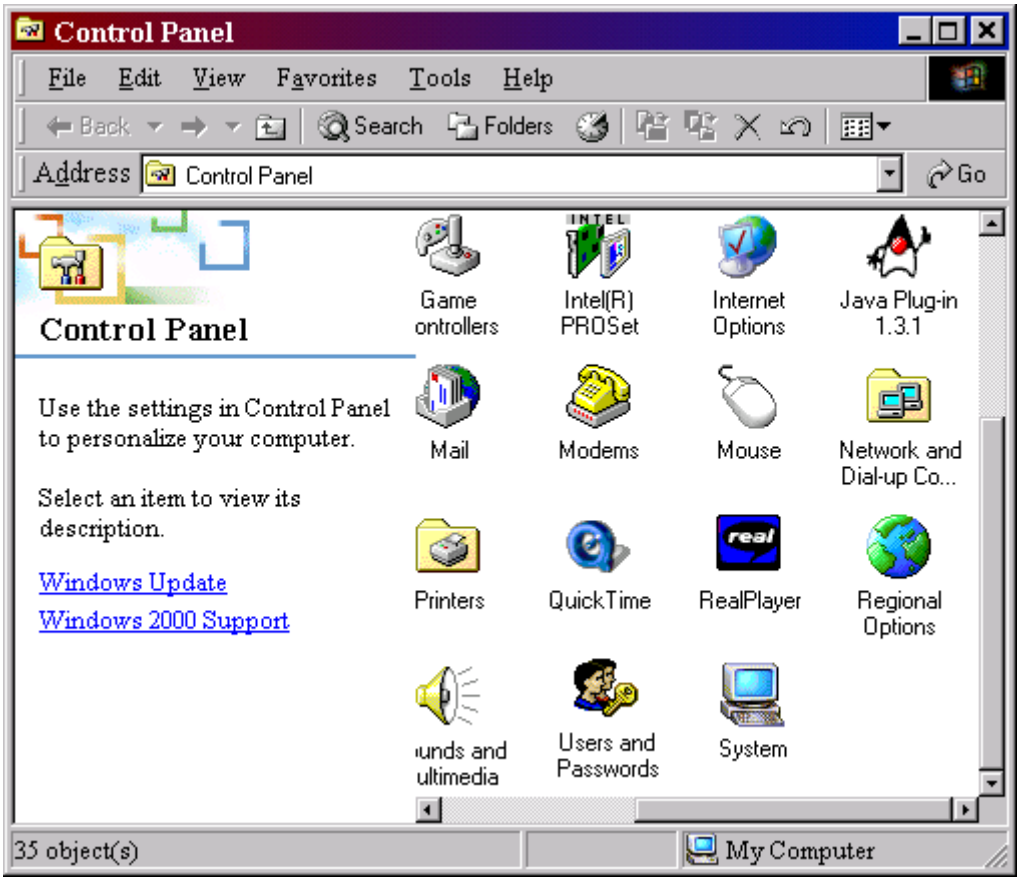
Transmit: 40 94 21 00 00 00 00 00 Request output Active/Inactive state
Receive: 4B 94 21 00 07 00 00 00 "data 0x00" all seen as Inactive.

Kvaser Driver Verification

If the Kvaser supplied CAN Card drivers are not installed properly then strange behaviors may occur. Strange behavior includes problems booting or the card lockup after a few hours.

Step 1

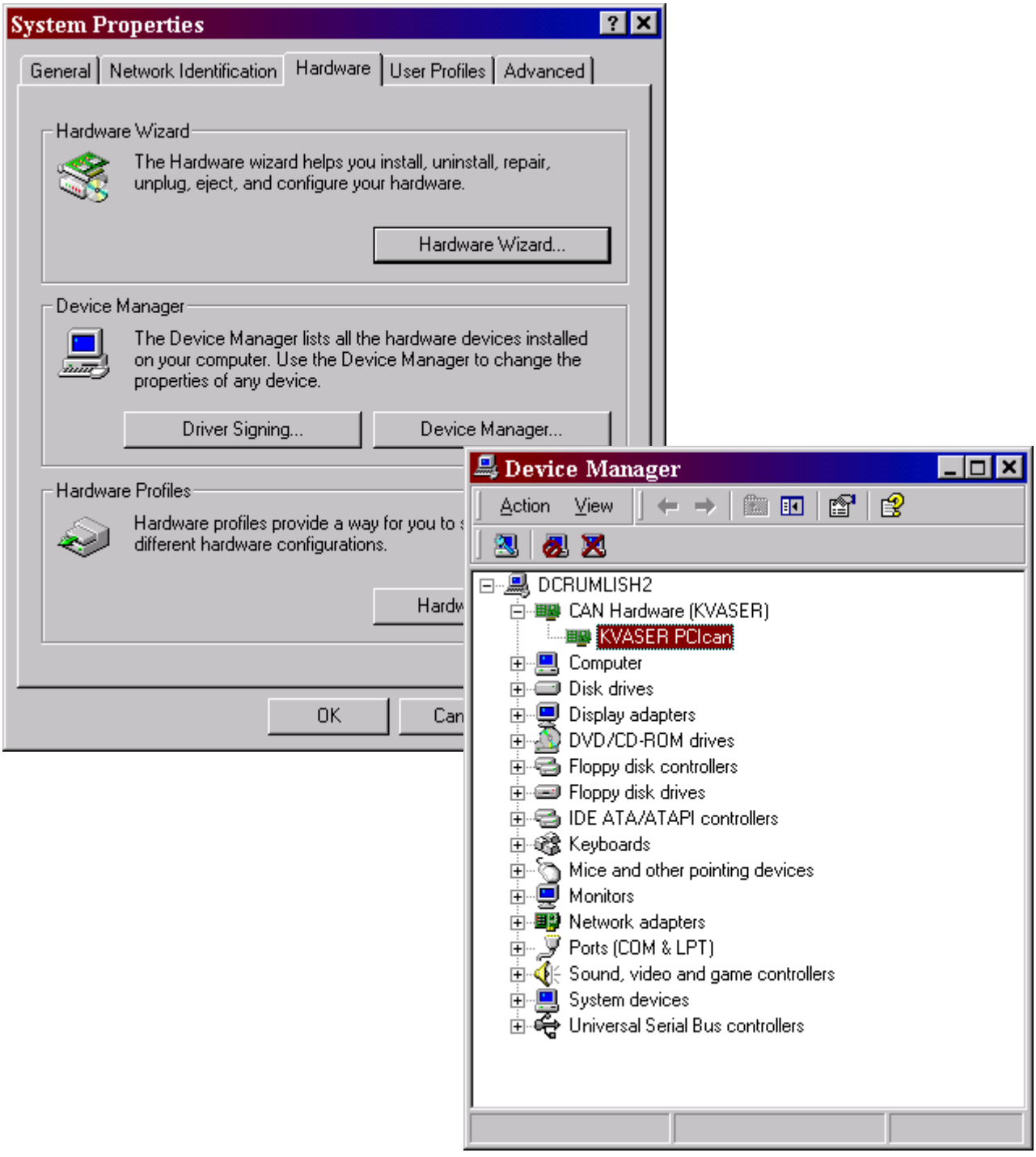
Open the "**Control Panel**" and Locate and click the "**System**" Icon.



Step 2

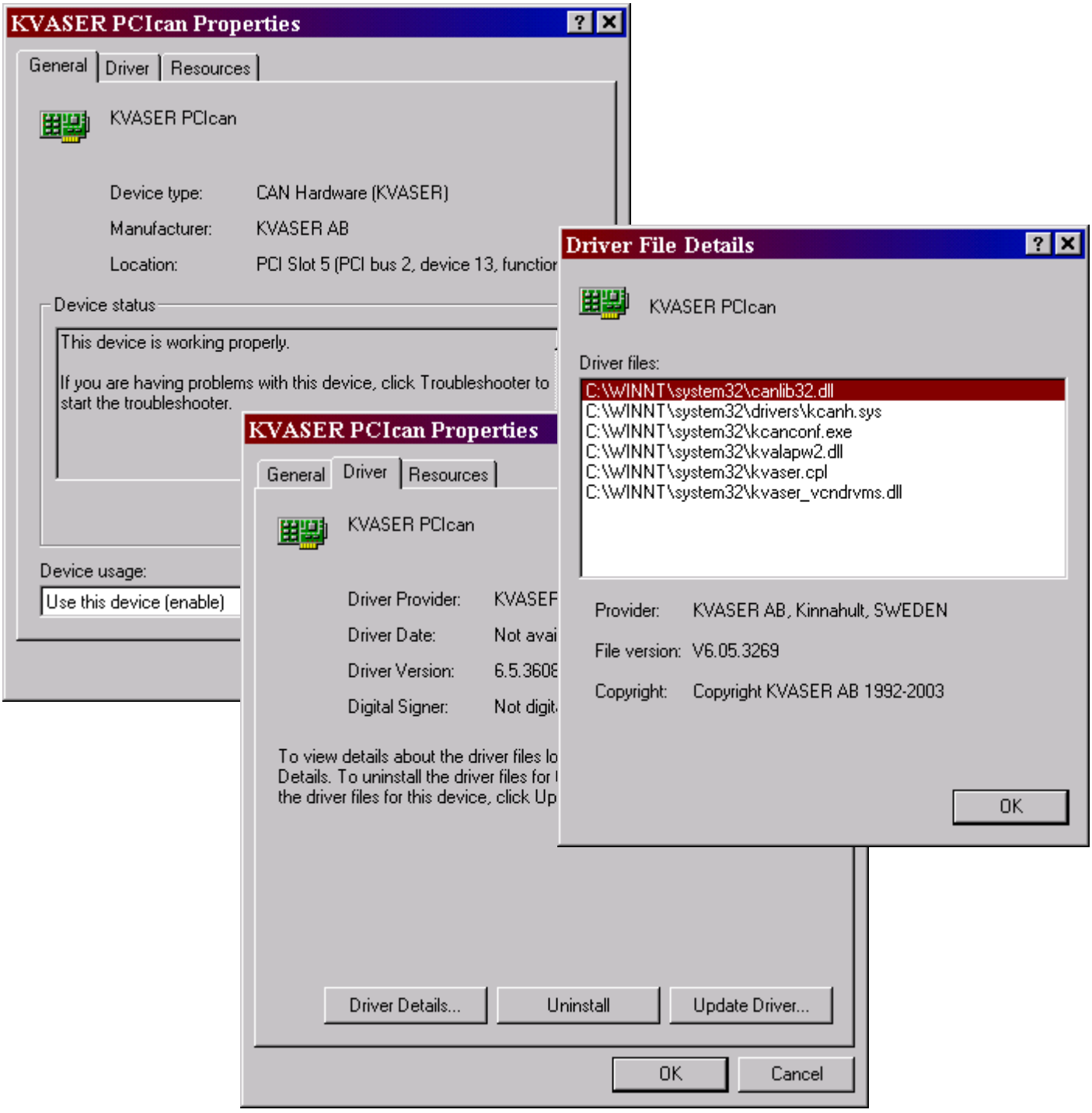
Select the “**Hardware**” tab and press the “**Device Manager**” button.

Expand the "**CAN Hardware**" icon (click the "+" sign) and then click "Kvaser PCIcan" with the **RIGHT mouse button** and then click **"Properties"** in the menu that pops up.



Step 3

On the **General** tab, verify the device is indicating "**enabled**" and "**working properly**". On the **Driver** tab, verify the Drivers and details. Make sure you have downloaded the latest version of the drivers from the web: http://www.kvaser.com/download/index.htm . *Please note*: "*Some versions of windows have problems loading the drivers properly.*" Try uninstalling and re-installing the drivers then reboot.

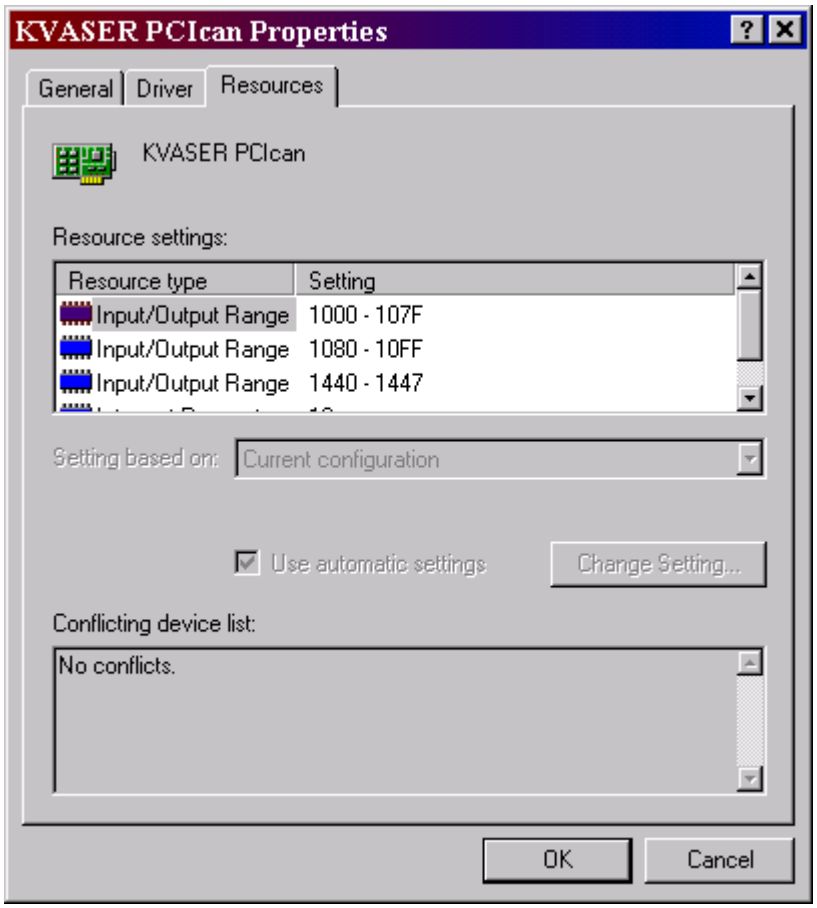


Step 5

On the **Resources** tab, verify “No conflicts” are reported.

If the Card is plug and play (such as LapCAN) then deselect automatic settings and select a resource type “Input/Output Range” to change settings.

If changing I/O Range values, make sure that there are no visible conflicts. The textbox should say "No devices are conflicting". *Please note: Even if it says "No devices are conflicting" and it doesn't work, please try another setting (can be invisible conflicts).* Click "OK" when done and reboot.



If the problem persists then try re-seating the card, re-installing the drivers, and or installing the card in a new slot. A defective card from the factory would be a rare case indeed. Contact "support@kvaser.com" if problem persists.