

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.

😢 Welcome to CANKing !
KINGDOM
Welcome to CANKing!
What would you like to do?
C Look in the online help
O View important last-minute information about CANKing.
Start using CANKing.
ite, http://www.kvaser.com for information on new and great updates to CAI
🗖 Don't ask me again. 💿 OK 🔹 Quit



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

👻 Warning!		
If you connect this tool to a real CAN system, the system to malfunction or behave in unexp	you may cause ected ways.	
Depending on the CAN system, this might m	CANKing for Windows	×
	Create a New Project Using	ОК
, OK, I know what I'm d	C Project <u>Wi</u> zard	🗙 Cancel
Tell me more	• Template	? Help
Quit	Empty Project	Tip for
Don't show this warning in the future		V New Users
	O Open an Existing Project	The quickest way to start is to use a Template.

Step 3

Select "CAN Kingdom Basics" then press OK.

Templates		×
Standard		
CAN Kingdom Basic CAN Kingdom (2 channels)	Log To File Traffic Generator	CAN bus Monitor with special support for CAN Kingdom



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"

🛢 CAN Controller 📃 🗆 🗙	🗟 CAN Controller 📃 🗆 🗙
Bus Statistics Bus Parameters H/W Filters	Bus Statistics Bus Parameters H/W Filters
Bus Statistics Bus Parameters H/W Filters CAN ⊆hannel: PCIcan #0 (Channel 0) ▼ Exclusive Exclusive Bus Speed: 1000.000 ▼ Sampling Point: 75 % ↓↓↓ SJW: 2 Suggest Driver Mode: Normal ▼	Bus Parameters H/W Hiters Bus Load 0% Total Per Second O Overrun RX messages: 1 0 TX messages: 0 0 Bus Parameters Channel: PCIcan #0 (Channel 0) Settings: 1000.000 kbit/s Bit timing: Q=8, S1=6, S2=2, SP=75.0%, SJW=2 On Bus On Bus
Apply <u>R</u> eset Clock	C Error Passive

- **On Bus** The CAN controller that takes part in the CAN bus traffic is On Bus.
- Error A CAN controller is Error Passive when its Receive Error Counter or its Transmit Error Counter exceeds 128.Passive Bad cabling, poor connections, and improper termination are cause for errors. See CAN Bus note.
- 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 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.



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.

🌔 Ou	ıtput Wind	low											_ 🗆 🗙
Ider	nt Flg	Len	DO.	1.	2	.3	. 4	5.	6.	.D7	Time	Dir	
	129	8	32	49	5	0	8	0	0	0	1174.412	R	
	1793	1	0								1180.156	R	_ _
•													•

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, CAN.X:	checking 0x0000060	ID 1 - 0x40	0x18	0x10	0x00	0x00	0x00	0x00	0x00″		
CAN Envelope:	1 page : \$601 8	_ I ×	1									
Line <u>0</u> \$40 Line <u>1</u> \$18		<u>4</u> 0 5 0										
Line <u>2</u> \$10 Line <u>3</u> 0	Line <u>6</u> Line <u>7</u>	6 P 🖉 Outy 7 0 Ident	Flg La 129	W en DO 3 32	1 49	.23 5 0	4 8	5	6D7 D 0	Time 1174.412	Dir R	
			1793 3 1537 8 1409 8	L 0 3 64 3 79	24 24	16 0 16 0	0 4	0	D 0 D 0	1180.156 1673.924 1673.924	R T R	_
		•										•



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 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.





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.





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: <u>http://www.kvaser.com/download/index.htm</u>. *Please note*: "*Some versions of windows have problems loading the drivers properly*." Try uninstalling and re-installing the drivers then reboot.

KVASER PCIcan Prop	erties ? 🗙	
General Driver Resource		
KVASER PCIcan		
Device type: Manufacturer: Location: Device status This device is working pr If you are having problem start the troubleshooter.	CAN Hardware (KVASER) KVASER AB PCI Slot 5 (PCI bus 2, device 13, function roperly. ns with this device, click Troubleshooter to KVASER PCIcan Properties General Driver Resources KVASER PCIcan C:\WINNT\system32\kcanconf.exe C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.cpl C:\WINNT\system32\kvaser.vcndrvms.dll	? 🗙
Device usage: Use this device (enable)	Driver Provider: KVASEF Driver Date: Not avai Driver Version: 6.5.3608 Digital Signer: Not digit To view details about the driver files lo Copyright: Copyright: Copyright KVASER AB 1992-2003	OK
	Driver Details Uninstall Update Driver OK Cancel	



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.

KVASER PCIcan Pro	perties			? ×
General Driver Resource	ces			
KVASER PCIca	n			
Resource settings:	a			
Hesource type	Setting 1000 - 107F 1080 - 10FF			
Input/Output Range	1440 - 1447			-
Setting based on: Curre	nt configuration			
U 13	e automatic settings	Cł	hange Setting	
Conflicting device list:				
No conflicts.				A F
	[OK	Can	cel

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 "<u>support@kvaser.com</u>" if problem persists.