Softing CAN Interface Manager

User Manual

Version 2.69
April 2012

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Softing CAN Interface Manager – User manual

The Softing CAN Interface Manager (SCIM) is a tool which allows the installation, configuration and maintenance of Softing CAN interfaces installed in a system. It is realized as a Windows control panel application. The hardware driver setup program installs the SCIM to the Windows System32 directory (e.g. \Windows\System32\Cancpl.cpl).

The SCIM is started from the start menu (All programs – Softing CAN – Runtime System Configuration – Softing CAN Interface Manager).

It is used for

- User information about the status of a device. It reports errors and problems with the device and provides information about installed product licenses.

- Definition of a channel name, which can be used to open the channel by the Softing's APIs. (Currently this feature is provided with the CAN Layer 2 API V5.x and the DeviceNet API V2.0)

- Definition of default parameters for each channel. Application programs may use these parameters instead of defining them inside the application program.

- Assignment of applications to CAN channels.

- Installation of non plug an play hardware like CAN-AC PC/104 devices.

1   Overview

The user interface of the SCIM behaves like a standard Windows application. It consists of the *CAN Interfaces* tree, push buttons, menus which can be activated by right click on an object in the *CAN Interfaces* tree and a properties field where hardware specific configuration parameters are displayed, see Figure 1.
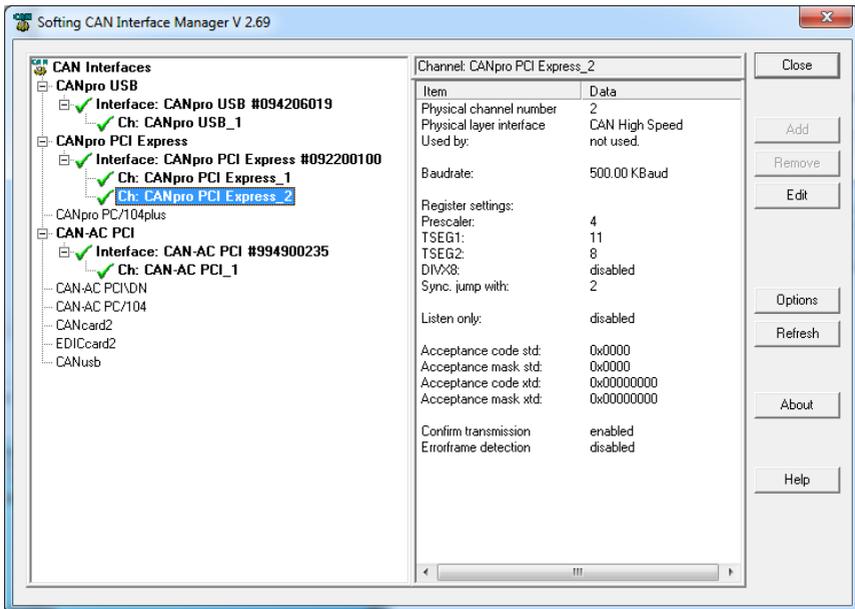
Figure 1

2   CAN Interfaces Tree

The *CAN Interfaces Tree* displays all Softing CAN Interface devices installed in a system. The icon associated with an interface indicates the current status of the interface and the associated channels. The following interface categories are present in the tree view :

- CANPro USB   CAN USB highspeed interface, single channel

- CANpro PCI Express   CAN PCI Express interface, single or dual channel

- CANpro PC/104plus   CAN PC/104 plus interface, single or dual channel

- CAN-AC PCI   CAN PCI interface, single or dual channel, high/low speed physical interface

- CAN-AC PCI/DN   CAN PCI interface, single or dual channel, DeviceNet physical interface

- CAN-AC PC/104   CAN PC/104 interface, single or dual channel

- CANcard2   PC Card CAN interface, dual channel

- EDICcard2   PC Card CAN and K-line interface, dual channel (driver is not included in setup package)

- CANusb   CAN USB fullspeed interface, single channel

These categories build the first level of the *CAN Interfaces* tree and indicate the possible types of hardware which are managed by the SCIM. They appear at any time regardless whether such hardware is present or installed to the system or not. The bold representation of an interface category indicates that the driver for that interface type is loaded.

Within each category the interfaces installed in the system are displayed. Each interface has an interface name associated with it. The default interface name which is assigned during installation is the interface type, e.g. CANpro USB followed by the interface's serial number prefixed by a '#' character (e.g. CANpro USB #094206019). The interface name may be changed by the user.

The second level shows the installed interfaces. A CAN interface may have one or two CAN channels depending on the interface type. During installation each channel is assigned a default channel name. The default name is composed of the interface type (e.g. CANpro PCI Express) followed by an "_" character and a number. Channel names may be changed by the user.

Each interface or channel within the tree is displayed with an icon which indicates the current status of the interface or channel, respectively. Depending on the current status of an interface, the following icons are defined:

 indicates that the test of an CAN interface failed and that it is not working properly.

 indicates that the device is present in the system and is working properly.

② signals that a device is either not plugged into the system or it cannot be accessed properly.

Depending on the interface type, the user may have to install interfaces and provide hardware parameters manually, or the interface is detected and installed automatically (see Table 1).

Table 1: Installation procedure per CAN interfaces type

CAN Interface type	Installation
CANpro USB	plug & play
CANpro PCI Express	plug & play
CANpro PC/104plus	plug & play
CAN-AC PCI(/DN)	plug & play
CAN-AC PC/104	manual
CANcard2	plug & play
EDICcard2	plug & play
CANusb	plug & play

The last level of the tree view is built by the applications assigned to the CAN channels. For example: In Figure 8 the first channel of CANalyzer is assigned to the channel "CAN-AC PCI_1" of the interface "CAN-AC PCI #994900235".

3 Properties Field

In the right half of the Softing CAN Interface Manager the properties field is located. Here, the configuration settings and status corresponding to the level selected in the *CAN Interfaces* tree view is displayed.

On the root level "CAN Interfaces" the driver status and version information for all installed drivers and software components are shown.

On the **interface level**, the following information is available:

- Serial Number   The serial number of the interface

- Installed   Indicates, if an interface is installed in the system or not (yes / not)

- Hardware access   Indicates, if an interface can be accessed correctly (successful / -)

- Hardware revision   The hardware revision of the interface

- Number of physical channels   The number of physical channels the interface offers. Single and dual channel devices are possible

- Licenses   Information for what type of application the interface is licensed. Possible licenses are:

  - CANopen API

  - DeviceNet API

  - CANalyzer

- IO Port address   The I/O address by which the interface is configured. Displayed only for CAN-AC PC/104 devices

- IRQ number   The system's interrupt number used by the interface. Displayed only for CANcard2 and CAN-AC PC/104 devices

- DPRAM address   The address to which the DPRAM of the interface is mapped into the system's memory. Displayed only for CANcard2 and CAN-AC PC/104 devices

On the **channel level**, three items are displayed :

- Physical channel number   The number of the physical channel to which the channel is attached.

- Physical layer interface   CAN High Speed, CAN Low Speed, DeviceNet, CAN Single Wire

- Used by   The name of the process which has opened the CAN channel

- Baudrate   The baud rate which is configured for the channel

- Register settings   CAN controller settings

- Prescaler   CAN prescaler

- TSEG1   Time segment 1

- TSEG2   Time segment 2

- Samples   Number of samples (not available for CANpro interfaces)

- DIV8X   If enabled, the CAN module clock is divided by 8 (only valid with CANpro interfaces)

- Sync. Jump with   Synchronisation jump with

- Output Ctrl — Output Control Register settings (not available for CANpro interfaces)

- Listen only — Listen only mode (only valid with CANpro interfaces)

- Acceptance code std — Acceptance code for 11 Bit Identifier

- Acceptance mask std — Acceptance mask for 11 Bit Identifier

- Acceptance code xtd — Acceptance code for 29 Bit Identifier

- Acceptance mask xtd — Acceptance mask for 29 Bit Identifier

- Confirm transmission — generate ACK event after successful transmission of a CAN frame (Event 2,3,8,11)

- Error frame detection — Inform about ERROR FRAMES on the CAN bus. (by Event 15)

4 Softing CAN Layer 2 Configuration

The CAN Layer 2 API can be configured by clicking the EDIT button or by opening the context menu of a CAN channel by clicking with the right mouse button on it.
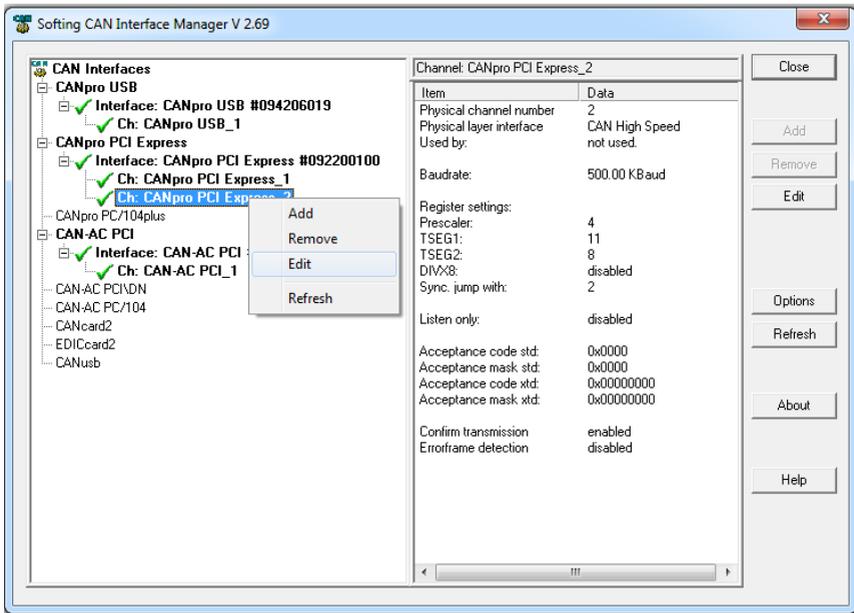


Fig 2.2 CAN channel context menu
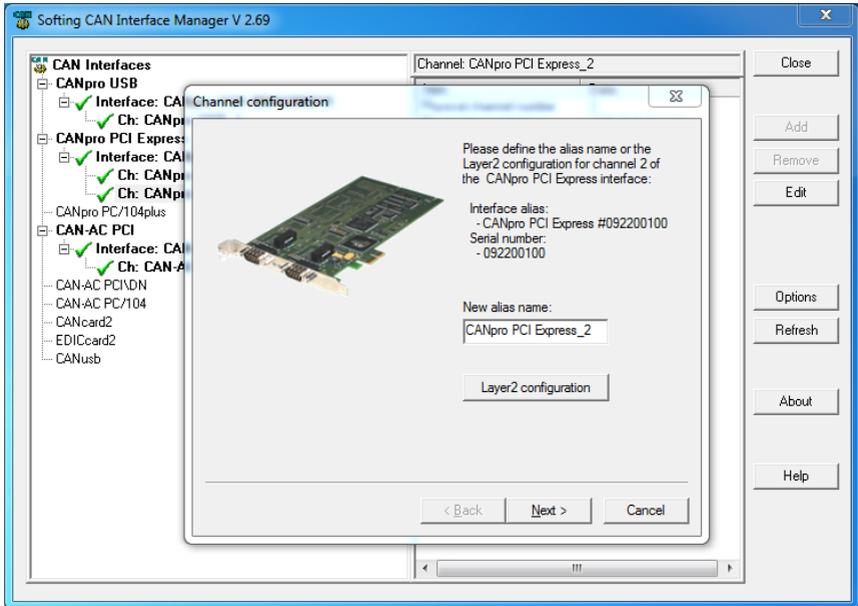
Fig 2.3 Edit dialog

After selecting the CAN channel and choosing "Edit" the name for the CAN channel can be changed.

The Layer 2 configuration can be entered/changed by clicking the "Layer2 configuration" button. After this the following dialog appears.

![softing logo]

CAN Layer2 configuration for channel "CAN-AC PCI_1"

Baudrate settings

Baudrate [kBaud]	500
TSEG1	8
TSEG2	7
Prescaler	1
SJW	1
Samples	1
f(CAN) [MHz]	16

Filter Settings

Acceptance Mask	0x0000
Acceptance Code	0x0000
Acc. Mask XTD	0x00000000
Acc. Code XTD	0x00000000

Output Control Register

Output Control	0xFA

Additional Features

☑ confirm successful transmission
☐ enable error frame detection

Possible CAN controller settings for 500.00 KBaud

Baudrate	Prescaler	TSEG1	TSEG2	SJW	Samples	SPL[%]
500.00	1	8	7	1	1	56
500.00	1	8	7	2	1	56
500.00	1	8	7	3	1	56
500.00	1	8	7	4	1	56
500.00	1	9	6	1	1	63
500.00	1	9	6	2	1	63
500.00	1	9	6	3	1	63
500.00	1	9	6	4	1	63
500.00	1	10	5	1	1	69

OK   Cancel

**Fig. 2.4 Layer 2 configuration dialog
(not for CANpro interfaces)**
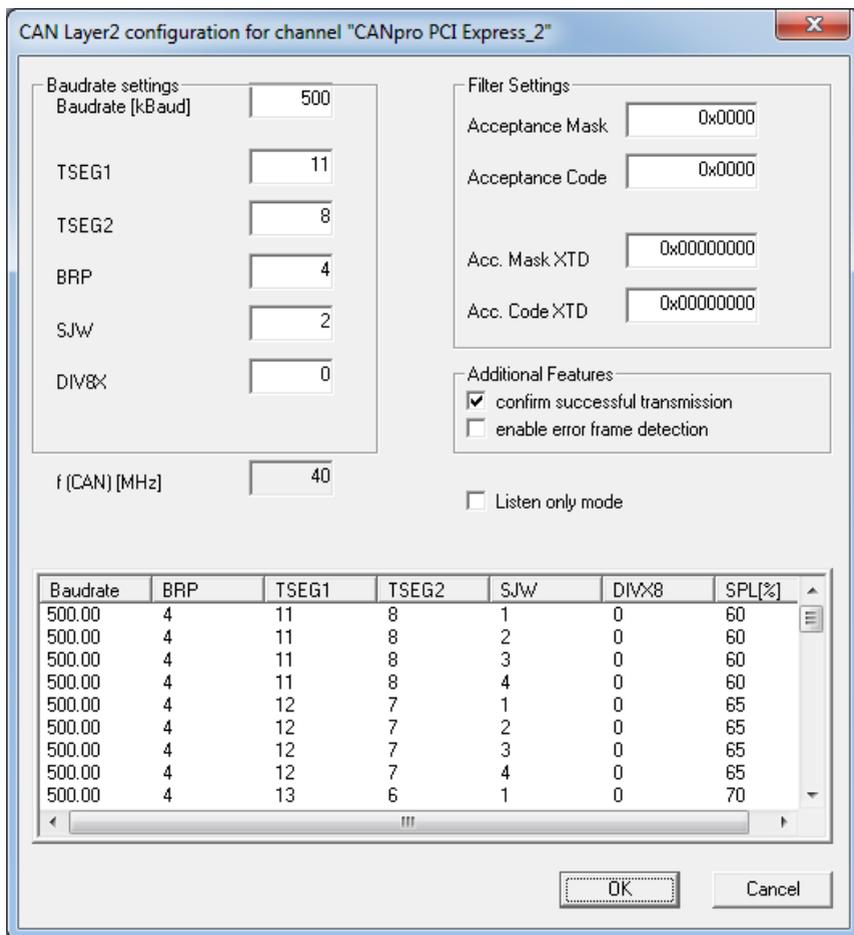
Fig 2.5 Layer2 configuration dialog (for CANpro PCI Express and CANpro PC/104 interfaces)
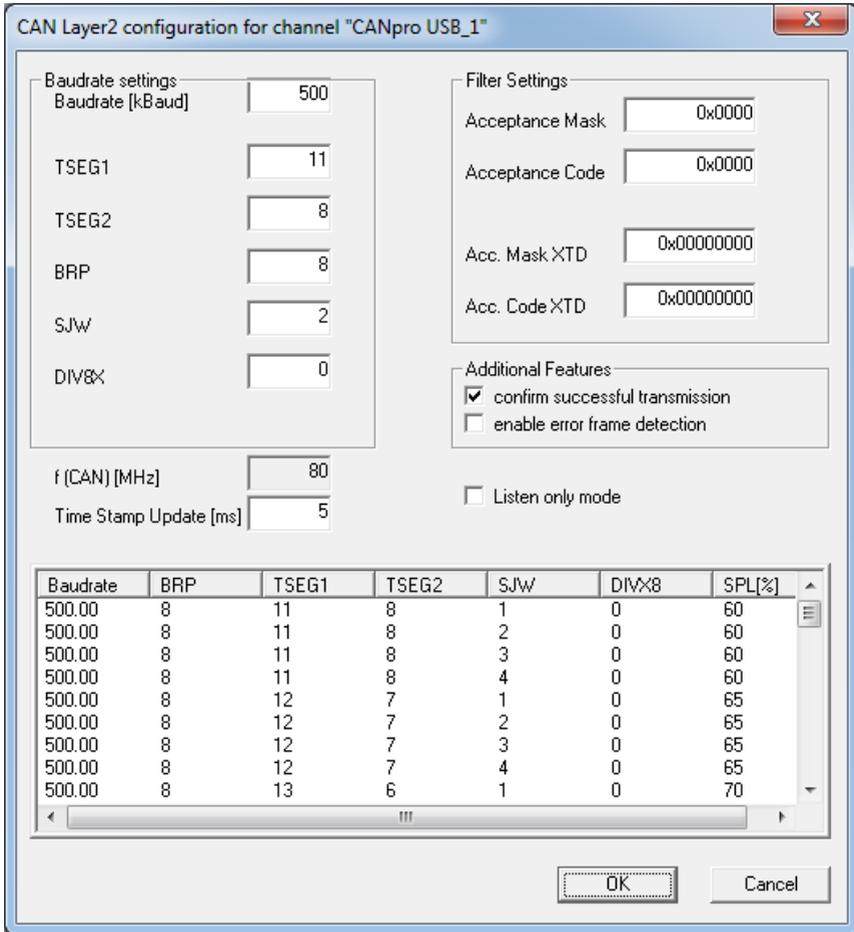
Fig 2.6 Layer2 configuration dialog (for CANpro USB interfaces)

The following values can be changed/entered:

Baudrate	A new baud rate can be entered here. After loss of focus, the other CAN controller setting are calculated and changed for the new baud rate.
	A table will be generated, which shows all possible CAN controller settings for this baud rate. One of the possible settings, which fits best will be chosen by the SCIM.
	If a user wants other bit timing parameters (for example for better sampling of the CAN signal) he can chose other settings by clicking at the first field of the appropriate line in the table.
	Just as well the bit timing parameters **Prescaler**, **TSEG1**, **TSEG2**, **SJW** and **Samples** can be entered manually to set it to a value combination which did not appear in the table.
Prescaler	CAN Prescaler
TSEG1	Time Segment 1
TSEG2	Time Segment 2
SJW	Synchronisation Jump With
Samples	Number of Samples (not available for CANpro interfaces)
DIV8X	If enabled, the CAN module clock is divided by 8 (only valid with CANpro interfaces).
Acceptance Mask	Defines the bit mask for filtering CAN messages. All bits which are "1" in the mask are used for filtering. If the Acceptance Mask is 0x0000, all messages will be received (valid for 11 bit identifiers).
Acceptance Code	Only messages with an identifier, which has the same bit value as defined in the Acceptance Code at the position, where the Acceptance Mask has a "1" bit, can be received (valid only for 11 bit

	identifiers).
	Example: Acceptance Mask == 0x0001; Acceptance Code == 0x0000; that means, only messages with an even identifier (0,2,4,..) can be received, because the last bit must be 0 and the other bits are not taken in account, because the bits are 0 in the Acceptance Mask.
Acc Mask XTD	Same as **Acceptance Mask** (valid only for 29 bit identifiers).
Acc Code XTD	Same as **Acceptance Code** (valid only for 29 bit identifiers).
Output Ctrl	Output Control Register; If this register is set to 0xFA or 0xFB sending and receiving is possible. If it is set to 0x03 transmission lines are switched off. This may be of interest, if someone wants to receive all messages but not influence the bus. The ACK bit can not be sent on the bus if the Output control register is set to 3. Other values don't make sense (not available for CANpro interfaces).
Listen only mode	If enabled, sending of CAN messages is not possible, but messages can be received. The ACK bit will not be sent on the bus (only valid with CANpro interfaces).
Confirm successful transmission	If this checkbox is chosen, the application will be informed if the message is successfully received by at least one communication partner on the bus.
Enable ERROR FRAME detection	If this checkbox is chosen, the application will be informed about ERROR FRAMES on the bus.
f(CAN) [MHz]	Clock rate of the CAN controller
Time Stamp Update [ms]	Defines how often the local time of the CANpro USB interface is sent to the PC over USB if the CAN bus is idle. In addition to this specification time stamps are exchanged with every received CAN message (only valid with CANpro USB).

5 Additional Menus for Application Assignment

Some functionality can be reached by menus that are opened with the right mouse button. This affects the application assignment.

To assign an application to a CAN channel click with the right mouse button on the channel. A menu will then be opened. (see Figure 7)

Select the application by clicking on it.
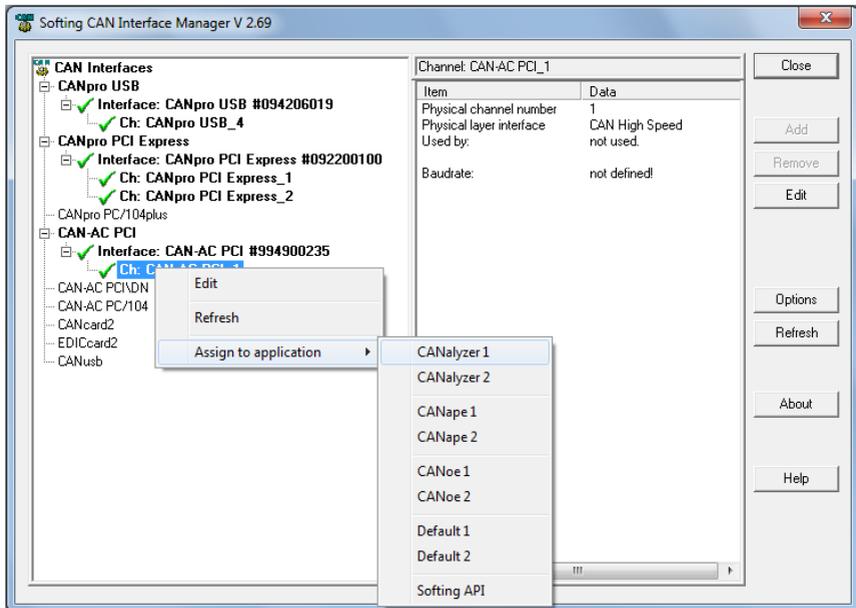
Figure 7

To remove an application click on the application in the tree with the right mouse button and chose "Remove assignment". (see Figure 8)
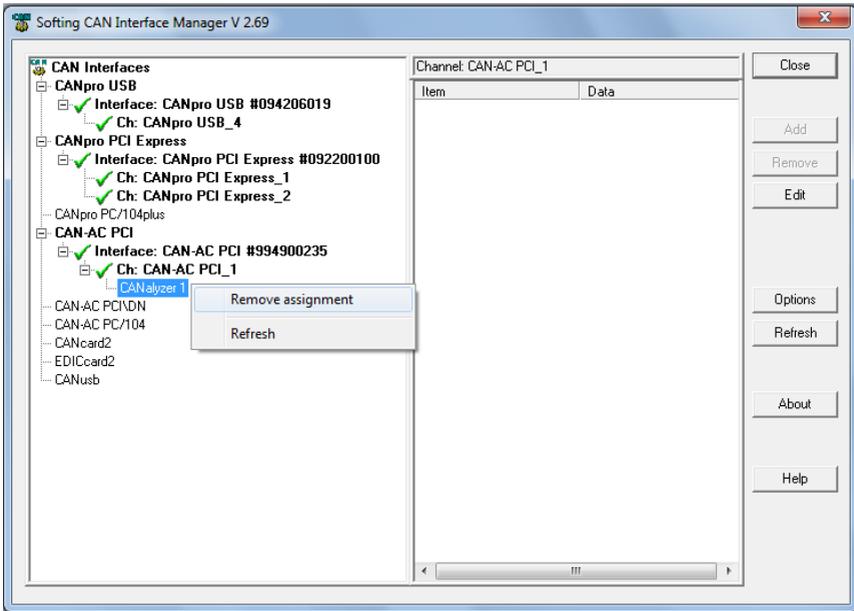

Figure 8

6 Buttons

The following buttons with their associated functions are defined :

- Close   Closes the Softing CAN Interface Manager

- Add   Installs a new CAN interface to the *CAN interfaces* tree.

- Edit   Allows to modify the interface name or channel name settings of an interface.

- Remove   Removes an interface from the configuration.

- Options   Opens a dialog for global options configuration (see figure 10)

- Refresh   With this function, the configuration of a system is refreshed, i.e. the channel driver asks the individual interface drivers to scan for interfaces. The tree view of the SCIM will be updated subsequently.

- About   Opens the *About* - Dialog window

- Help   Opens this document

The Add, Edit, Remove and Refresh function may also be activated with the right mouse button (RMB). Select the level within the tree view on which the action shall be applied, click the RMB and select the action to be carried out. (see Figure 9)
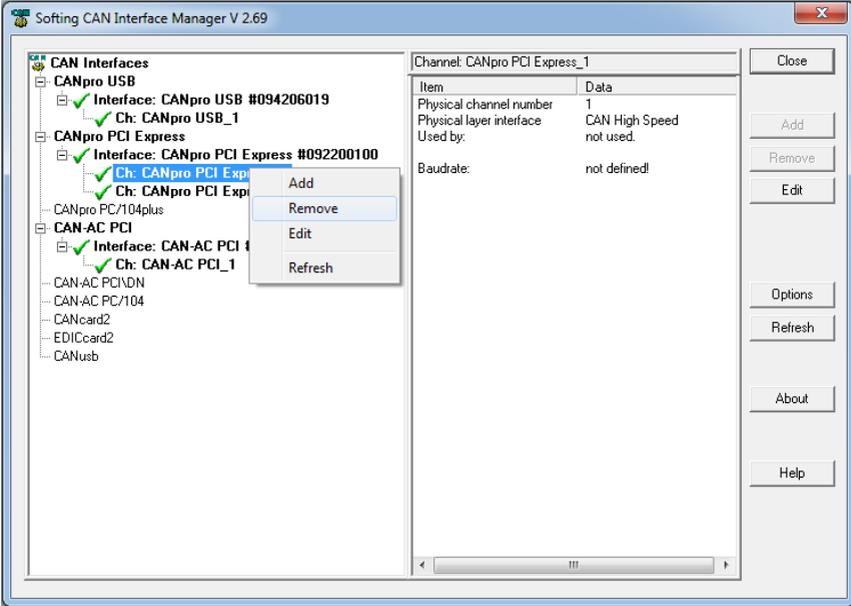
Figure 9

7 Options

This options button is used to select global options for all CAN interfaces in the hardware tree – especially for use with software from Vector Informatik (like CANalyzer, CANoe, ...). If the "Options" button is pushed a new dialog opens (see Figure 10).
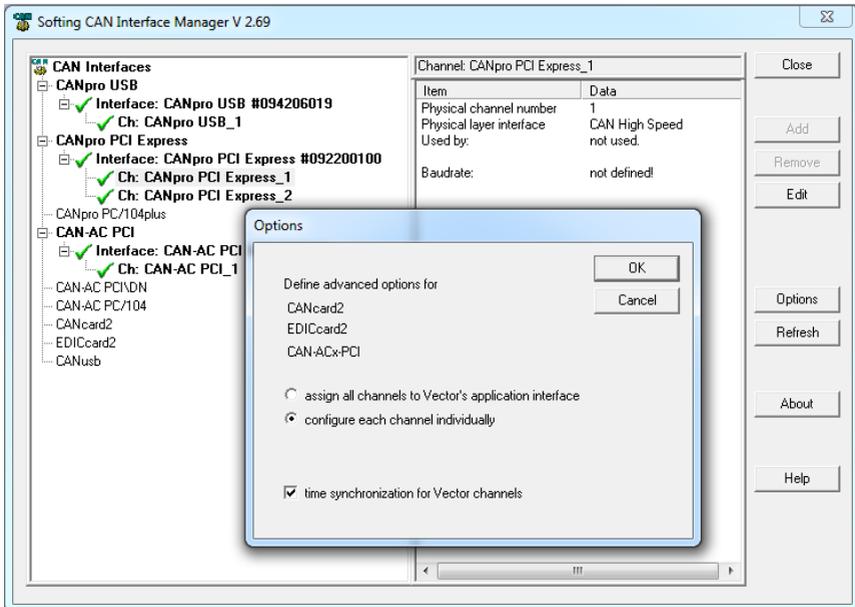

Figure 10

7.1 Time synchronization

Every CAN interface card has it's own timer. The time is calculated in microseconds since the start time of the card. When the CAN interfaces are not started at the same time the calculated times are different.

If some CAN messages are received on different CAN interfaces at the same time it may happen that the time stamps are different.

To avoid this effect time synchronization can be enabled by clicking on the "Time Sync" checkbox.

7.2 Global assignment

If the radio button "assign all channels to Vector's application interface" is chosen, all interfaces and channels on them are assigned to software from Vector Informatik. In this case the channels can not be assigned to any application(as aforementioned).

If the radio button "configure each channel individually" is chosen, each channel may be individually assigned to applications that want to access it.