CAN MODULES

emtrion
embedded systems

CAN-miniPCI-4H

Four channel active CAN-bus card

for miniPCI slots

Key features:

- Mini PCI Type IIIA Interface Card
- 4 CAN channels CAN 2.0A and CAN 2.0B
- Philips CAN Controller LPC2294 (ARM7), 60 MHz
- Integrated high speed CAN Transceivers
- On-board 32bit intelligence, with option for customised firmware
- Supports all standard (CiA-DS-102) baudrates at 100% bus load
- Timestamps at 1µs resolution
- Internal buffers for 250 CAN telegrams per CAN node
- Optional industrial temperature range from -40°C to +85°C
- Driver support for Windows XP, Windows 7, Linux 2.6 and QNX 6.3, other OS on request
- With an adapter the module can be used on normal **PCI**, **PC/104+** or **PCI-104** bus as well.

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Hardware Features

4 independent CAN nodes (CAN 2.0B) with integrated CAN transceivers; optional TTL-signals for galvanic isolation

Dimensions: 60 mm x 51 mm x 3 mm. compliant with miniPCI type IIIA specification. Card weights 11g and with the cable together 27g.

Cable: 1x14 pins connector to 4xDSUB9 (standard pin-out - CANL, CANH and ground).

Current consumption: 80 mA (max).

Operating temperature range: optional industrial - from -40 °C to +85°C.

Flexibility: with a proper adapter, the card can be used on PC/104+, PCI/104 and on normal PCI as well.

Status leds for CAN bus traffic and bus errors.

Operational Features

Automatic baud rate detection: CAN bus traffic is listened in passive mode and scanned for the correct baud-rate. This enables "hot-plugging" into a CAN bus with unknown baud rate.

Active mode and passive mode: In passive mode, CAN bus traffic is listened, but not affected in anyway (monitoring)

Flexible message filtering with up to four filters per CAN node of type mask & code or ID-range.

Message buffering - 250 CAN telegrams per CAN node.

Timestamps at 1µs resolution enable an accurate reproduction of the data flow.

Option for custom firmware: The board firmware can be updated changed via the API.

Baud rates – support for all standard (CiA DS-102) baud rates 10kb/s, 20 kb/s, 50 kb/s, 125 kb/s, 250 kb/s, 500 kb/s, 800kb/s and 1Mb/s.

Windows Driver

Windows API for the CAN-miniPCI driver is much the same as for the other HiCO.CAN-* family cards from emtrion. Following list shows the most important API calls (not all):

```
HiCOCANOpenDriver()
HiCOCANCloseDriver()
HiCOCANResetDriver()
HiCOCANOpen()
HiCOCANClose()
HiCOCANStart()
HiCOCANStop()
HiCOCANReset()
HiCOCANWrite()
HiCOCANRead()
HiCOCANState()
```

Linux 2.6 Driver

The driver provides a standard posix file system interface to the card - open(), read(), write(), etc. Special commands, like setting the baud rate, are done via diverse ioctl calls. Sending and receiving CAN messages is done fully interrupt driven. Following code snippet shows a trivial example of usage:

```
int fd,rate;
struct can_msg msg;

/* open CAN node 0 for reading and writing */
fd = open( "/dev/hicocan0" ,O_RDWR);

/* Set baudrate to 500kbit/s */
rate=BITRATE_500k;
ioctl(fd, SET_BITRATE, &rate);
/* Start to read messages */
while(running){
   read(fd,&msg,sizeof(msg));
   printf( "received message with id %x",msg.id);
}
/* Stop using the node */
close(fd)
```

QNX 6.3 driver

The driver is implemented as multithreaded resource manager. API for the QNX driver is the same as for the Linux driver

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