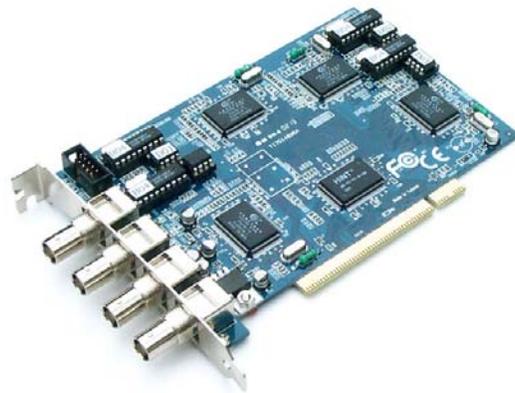


# **SPECTRA8 – MULTI-INPUT VIDEO CAPTURE CARD**

## **USER'S MANUAL**



**Version 1.3.1**

**Ituner Networks Corp.**

3071 Southwycke Terrace, Fremont, CA 94536  
Tel: 1-800-97TUNER; Outside US: 510-550-4464  
Fax: 510-795-8855; Email: [support@ituner.com](mailto:support@ituner.com)

## Introducing Spectra8 - Multi-input video capture card.

Thank you for your purchase of the Spectra8 video capture card. Spectra8 video capture card allows you to simultaneously capture video from 4 independent video sources at 30 fps, producing a total of 120 fps with the application of your choice and with resolutions up to 768x576 (full broadcast resolution)

### Product Specifications

- Single standard PCI card
- Plug and Play, four channel video capture card
- BT878 video capture chipset, low latency DMA access.
- Video capture size up to 768x576
- On-board video inputs: 4 BNC Connector
- External PCI bracket expansion card with 4 additional BNC inputs
- Power consumption: <5W
- Board size 96mmx157mm

### General features

- Supports NTSC/PAL/SECAM video with resolutions up to 768x576
- Supports complex video clipping of video source
- Zero wait state PCI burst writes
- Multiple YCrCb and RGB pixel formats
- Supports planar YUV data format
- Windows 95/98/Me, 2000, and NT support
- Linux 2.2, 2.4 and 2.6 support via BTTV driver
- Works with any major encoder application

## 1. Pre-Installation

### 1.2 System Requirements:

- Pentium class computer with an available PCI slot.
- Windows 98 or later.
- Additionally, we recommend having Microsoft™ DirectX8.0 or higher version installed in Windows™ 98/ME/2000/XP system.

## 2. Hardware Installation

Proceed with the following instructions to install your Spectra8 card on your computer.

**Note:** Leave the Spectra8 card in its static-resistant bag until you are ready to install it.

**Caution!** Static electricity discharge may permanently damage your system. In order to avoid possible static electricity discharge during installation procedures, please follow the guidelines below:

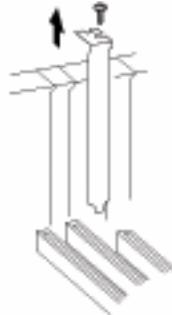
- Discharge any static electricity build up in your body by touching a large grounded metal surface or the computers' case (if plugged in) for few seconds.
- During installation procedures, avoid any contact with metal parts. Handle cards only by their edges.

2.1 Install the Spectra8 video capture card.

**Step 1.** Turn off the power to your computer.

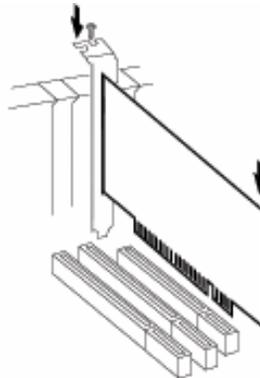
**Step 2.** Open the casing.

**Step 3.** Remove the slot bracket by unscrewing the holding screw and sliding it out (Fig 2.1.1)



*Fig. 2.1.1 – Removing the Slot Bracket*

**Step 4.** Insert the Spectra8 onto the available PCI slot and fasten the screws tightly (Fig 2.1.2)

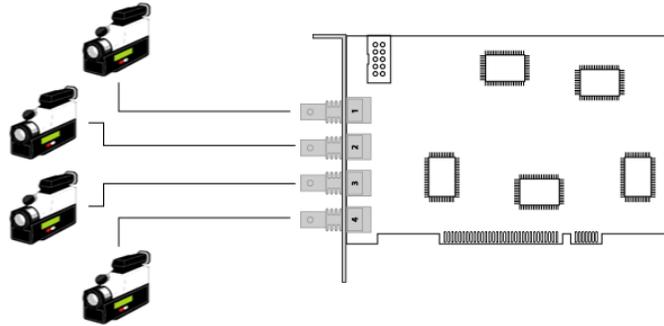


*Fig.2.1.2 – Installing the Spectra8 video capture card*

**Step 5.** Close the casing

**Step 6.** Turn on the main power.

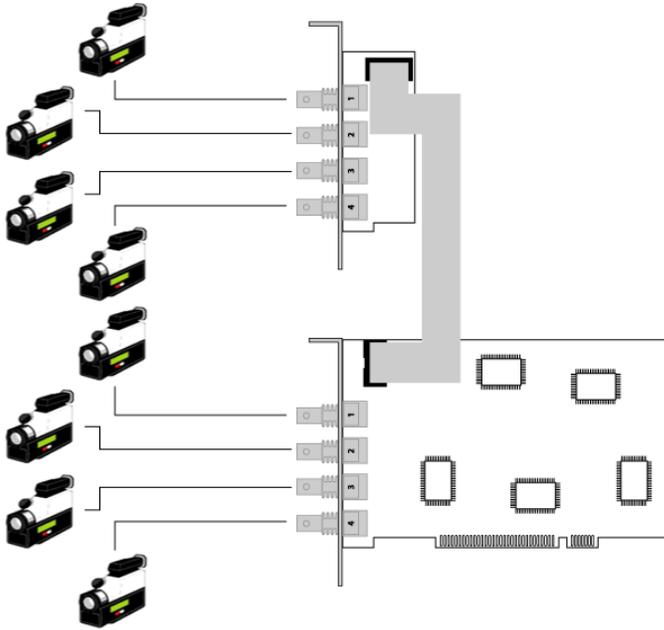
## 2.2. Spectra8 Video Input Card Layout



*Fig.2.3 – Spectra8 video input card layout*

Four analog inputs can be simultaneously connected to the Spectra8. Capturing frame rate is 30 fps per each channel. With a properly installed device driver you will be able to see 4 video capture devices. (see Driver installation instructions).

## Spectra8 Video Input Card Layout (cont)



*Fig. 2.4 – Spectra8 card with extension bracket*

In this mode, 8 multiplexed analog inputs can be simultaneously connected to the Spectra8. Capturing frame rate is 15Fps per each channel. With a properly installed device driver you will be able to see 4 video capture devices, but each device has 2 ports. (see Driver installation instructions). Only special software can automatically switch in between all inputs, at a lower frame rate.

### 3. Windows Driver Installation

**Note:** Before installing Spectra8 driver, please check if you have the BT878 driver installed on your computer. If you do, please uninstall BT878 driver completely. Otherwise it could have a compatibility problem with the Spectra8 driver.

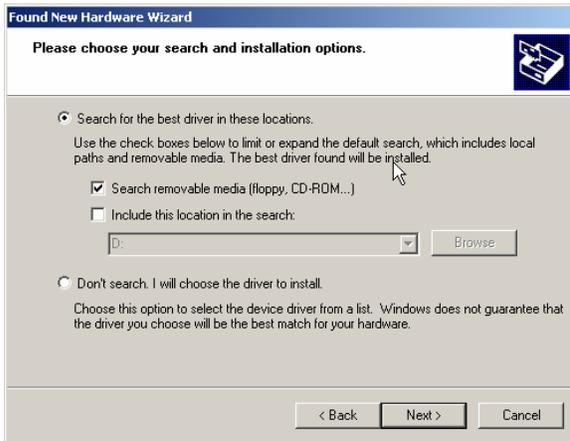
3.1 Install the Spectra8 driver under Microsoft™ Windows 98/ME/2000/XP Spectra8 is a plug and play video capture card. Spectra8 card can be detected by Microsoft™ Windows 98/ME/2000/XP.

**Step 1.** When re-starting Windows for the first time after the Spectra8 board has been installed, the **Found New Hardware Wizard** will appear.



Please select **Install from a list or specific location, (Advanced)**.

**Step2.** Please insert the CD driver into your CD-ROM drive (In this example we used drive D). Click **NEXT**. A second window will appear.



**Step3.** Select your CDROM drive and click on **NEXT**.



**Step 4.** Specify the D:\Windows\Driver\Win98\_ME\_2K\_XP folder and click on **OK**.



**Step 5.** Select finish.

You will notice that the installation will repeat itself 4 times for the video drivers. Don't panic, this is normal behavior. Spectra8 is equipped with 4 BT878 video capture devices. Repeat step 1-5 until all video drivers are installed.

After all four devices are installed, the system will try to install the audio devices as well, to be repeated 4 times as well.



Repeat the same process another 4 times.

**NOTE:** This card doesn't have any audio inputs, as a result you will not be able to capture any audio with this card.

To ensure that your drivers were installed OK, please go to "My computer/Properties/Hardware/Device Manager and look for:



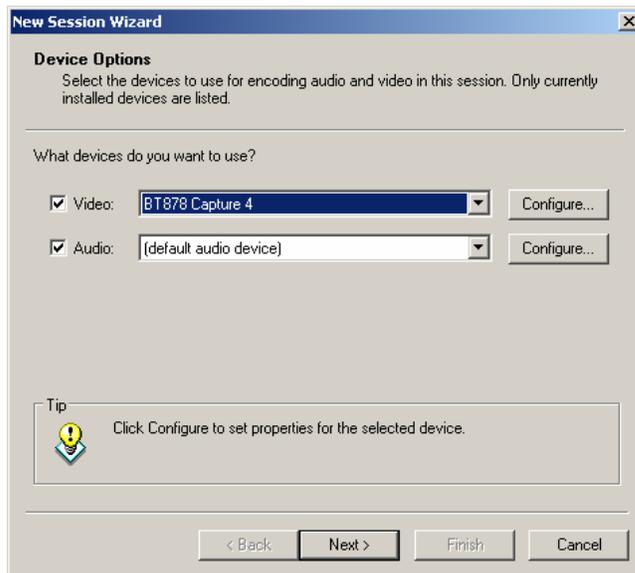
If you see 8 BT878 WDM Audio and Video without exclamation signs, you successfully installed your card.



## 4. Using Software applications

Virtually any video capture software will work with your Spectra 8 card. For most applications we recommend that you use the **WindowsMedia Encoder** or the **RealNetworks RealProducer** or **HelixProducer**. Other recommended video capture software packages are **Webcam32** by Surveyor Corp and **ActiveWebcam** from Pysoft.Com.

Under "video preferences" or "capture devices" options screens you will see that several video capture devices will be displayed:



Select your desired video capture device and start encoding.

## 5. Performance

5.1. Depending on the number of simultaneous video capture sessions, video capture frame size and number of captured frames per second, your system may or may not encounter overloading. Typically, a Pentium IV running at 2.4Ghz should be able to encode from 2 Spectra 8 PCI cards at 30Fps with resolutions of 320x240.

In case frame dropping occurs, lower the encoding settings by selecting lower frame rates or lower resolution or increase your CPU speed.

5.2. Multiple cards usage in the same computer.

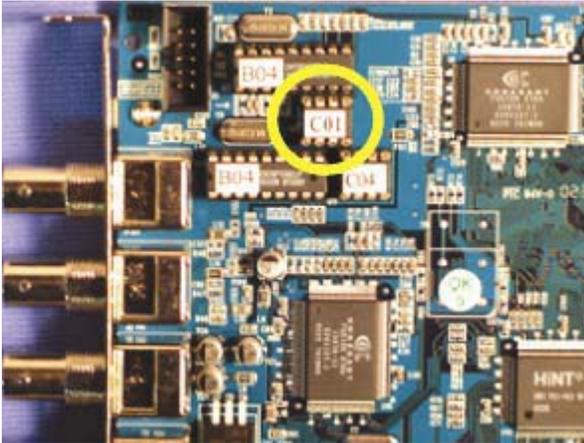
When using more than one Spectra8 card on the same system, please ensure that you have type A and type B cards. When ordering more than one card, please specify that you need type A, B, C or D (mixed) cards.

Here is how to identify the card type (A,B,C,D):

Locate the EEPROM chip in the upper left corner of your PCI card (see below).

When the number shown on the EEPROM is C01 the card is an "A" type. When the number shown on the EEPROM is D01 the card is a "B" type. For all card types, please see below:

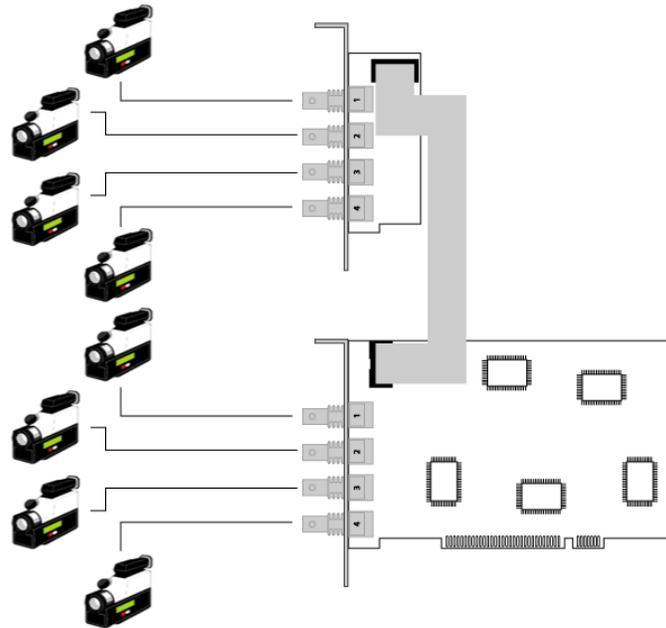
EEPROM Number	Card Type
C01	A
D01	B
F01	C
F05	D



#### **6. Spectra8 expansion slot (for developers only)**

The Spectra8 video capture card has four video capture devices. However, each video capture device has 2 software selectable inputs. Not all video capture software has the ability to select from multiple inputs in a static or dynamic manner.

If you are a developer, please look into the Spectra8 application and driver CD under the windows\ap\_source\_code folder.



*Fig. 2.4 – Spectra8 card with extension bracket*

## 7. Linux drivers and applications.

NOTE: Always get the latest driver from the address listed below. Constant driver updates are being published making our driver distribution obsolete by the time the driver CD gets to you!

Linux drivers are not supported by us. However they are maintained by the open source community. An extensive collection of drivers and applications can be found at <http://bytesex.org/bttv/>

With the Spectra8 card, you need to specify `card=42,42,42,42 tuner=4` as bttv option in order to enable the correct card.

Advanced usage for the Spectra8 expansion module. To grab from the other 4 devices (input 4-8) you need to grab from the same device but specify another channel number. Each device has 4 channels, out of which Spectra 8 uses only 2.

Download bttvgrab from <http://ich.bin.kein.hoschi.de/bttvgrab> and run:

For port 4

```
bttvgrab -Q -G /dev/video0 -S 0 -o X or
```

For port 8

```
bttvgrab -Q -G /dev/video0 -S 1 -o X
```

The setup described is for bttv-0.8.x or bttv-0.9.x series with V4L2 interface.

NOTE: bttv 0.7.x is included on 2.4.x kernels as default with V4L1 interface.

Download bttv-0.9.x from <http://bytesex.org/bttv>  
Download kernel patch for 2.4.x kernel from <http://bytesex.org/patches/2.4/>. Usually you need only:  
[http://bytesex.org/patches/2.4/01\\_videodev-2.4.x.diff](http://bytesex.org/patches/2.4/01_videodev-2.4.x.diff) where x is your kernel version like in 'uname -r'.

You might need to download some other small patches from that dir. Please check the page for more details.

Patch your kernel with videodev patch by doing:

```
cd /usr/src/linux (or where your kernel sources are)
```

```
patch -p1 < 01_videodev-2.4.x.diff
```

Decompress the bttv kernel module:

```
tar -xvzf bttv-0.9.3.tar.gz
```

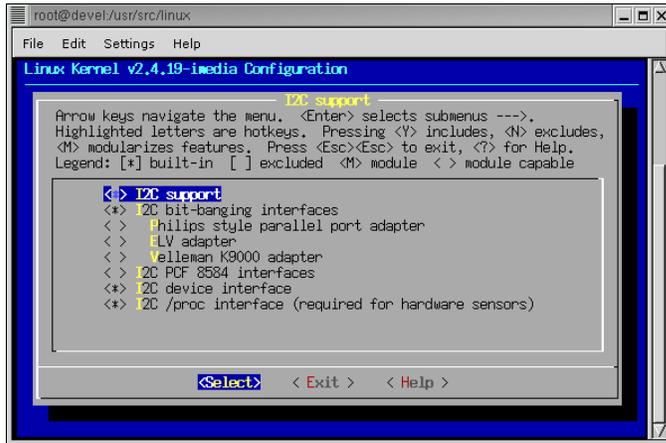
and compile the module doing: make

and install it on your kernel dir by doing make install

The module will be installed in /lib/modules/`uname -r`/v4l2

Make sure that your kernel is compiled with:  
Video for Linux support and I2C support





Note: Don't include BT848 Video For Linux in your kernel because this is the 0.7.x version bttv driver.

To start your module execute:  
`modprobe bttv`

This will load bttv with default settings

Do a `lsmod` and you should see:

```

...
bttv          77760  0 (unused)
video-buf     9200   0 [bttv]
...
  
```

You can alter the default setting by adding them to your `/etc/modules.conf` or directly on the command line.

Modifying `/etc/modules.conf`

You can add this line for you Spectra Card in your `modules.conf`.

```
options bttv card=42,42,42,42 radio=0 tuner=4 sloppy=1 chroma_agc=1 mmap=1 vbibufs=4 v4l2=1 gbuffers=16
```

`card=42,42,42,42` are needed for Spectra8 Card to work correctly.

For 0.7.x version the setup is more simple. Just compile bttv driver in your kernel under Multimedia Devices and add the correct options in `modules.conf` like described above.

## 8. Quick Troubleshooting Guide

Note: Software updates can be found at <http://www.ituner.com/updates.htm>

If you have technical questions, please send email to [support@ituner.com](mailto:support@ituner.com)

**Note:** Before installing Spectra8 driver, please check if you have the BT878 driver installed on your computer. If you do, please uninstall BT878 driver completely. Otherwise it could have a compatibility problem with the Spectra8 driver.

**Problem:** There is some latency when all four inputs are being used and the system is overloaded.

The latency issues are not from the card, they are from the encoders you are using.

Regarding system load: Keep in mind that you are processing 4 live streams at the same time and that can generate a lot of PCI bandwidth. If frame dropping occurs, lower the encoding settings by selecting lower frame rates or lower resolution or increase your CPU speed.

**Problem:** I've installed my Spectra8 and it's not working.

- Verify that the board is completely seated in the 16-bit or 32-bit (E)ISA slot inside your PC. These slots are usually black or brown. The board should be level and attached to the chassis using the mounting screw.
- Verify that all of the cables are connected securely to the proper board.
- Verify that there is no other video capture card installed on the computer. If there is, remove the other card.
- Reboot your computer after installation.

**Problem:** I'm not getting a video display (black screen). What do I do?

- Verify that your video source is properly connected to the Spectra8 board and powered up.
- Make sure the physical jack used for the connection is the same as the one selected on the Video Control panel.

Composite selects the RCA jack, S-Video selects the 4-pin mini-DIN, and MXC selects the multimedia extension connector.

**Problem:** My video is "scrambled." What do I do?

If your video display is scrambled or video is displayed in the Video Control Panel but not in the application window, try the following:

- Verify that your NTSC/PAL setting is correct for the type of video source you have
- Verify that your video capture format is compatible with the applications; see the documentation for the application.
- Verify the recommended image sizes and capture formats from your application
- Restart the application.

**Important!** Always make sure you have the latest up-to-date drivers from the Ituner.com site.

If you didn't see your question answered or you have other technical questions, please send an email to [support@ituner.com](mailto:support@ituner.com).

