

Fusion™

Bt878 & Bt879 Media Decoders

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Conexant's Fusion Family of Video Decoders Integrate Broadcast Audio and Video Capture and Playback in a Single Chip

With the Fusion family of PCI-based video and broadcast decoder products, Conexant has taken TV and radio solutions on the PC to the next level of integration and performance. Integrating video and broadcast audio capture into a single chip, the Bt878 and Bt879 provide complete home consumer entertainment solutions for TV, FM radio, and stereo decode. With Fusion, PC OEMs and board developers can offer PC TV and radio solutions at everyday price points.

The Fusion product family consists of two members: the Bt878 and the Bt879. The Bt878 is a low-cost video and mono television audio capture solution. The Bt879 provides Stereo FM Radio and TV stereo decoding, which employs certified dbx noise reduction techniques.

WebTV™ for Windows

WebTV for Windows is the newest application to provide TV viewing capability and VBI content support. It is part of a major broadcast initiative at Microsoft, which was recently introduced and bundled with Windows 98. Fusion, one of the first products to support WebTV, has been certified by Microsoft's Windows Hardware Quality Labs (WHQL).



Distinguishing Features

- Audio capture for PC TV and FM radio
- Supports NTSC/PAL/SECAM video
- Worldwide graphics controller compatibility
- Supports complex clipping of video source
- Multiple YCrCb, RGB, and indexed pixel formats
- Full 2-dimensional filtering and scaling using full 5-tap vertical filter

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WebTV for Windows is an integrated application that will enable users to watch TV and receive Internet content over airwaves or cable without a connection through a traditional modem or Ethernet card. Users of WebTV can use the electronic program guide (EPG) not only to surf through channels but also for advanced features such as program time reminders.

No More Audio Cables

The Fusion family of decoders is capable of capture and playback of the broadcast audio without the use of an external bridging cable. Fusion, along with the PC's processing resources, digitizes the broadcast audio, decoding it into stereo digital packets, which are played back by the audio/sound card.

The Fusion of Video/Audio/Broadcast Data

The Fusion family of products provides low-cost, single chip solutions enabling a multimedia and entertainment PCs. By providing all the video capture features of Conexant's popular Bt848A decoder, and incorporating broadcast audio capture, this product family represents a fusing of video, audio and broadcast data technology for the PC.

FM Radio/TV Stereo Support

TV and FM stereo support are cost effective and easy to implement using the Fusion family of products. Designs are greatly simplified because the stereo separation capability is built into Fusion. Simply connect the Fusion decoder to the composite audio

output on a standard commercial TV or combination TV/radio tuner, and stereo audio is enabled by the Bt879. When decoding broadcast TV, dbx noise reduction techniques are employed in the separation process ensuring the clear, rich stereo sound users have come to expect from their home stereo televisions.

| Features | Bt878 | Bt879 |
|---------------------|-------|-------|
| All Bt848A Features | X | X |
| Mono Audio | X | |
| TV Stereo | | X |
| FM Radio Stereo | | X |

The Fusion family supports all the features and flexibility of the Bt848A video solution, including the integration of NTSC/PAL/SECAM composite and S-video decoder, high quality scaler, and PCI bus master on a single device. Like the Bt848A, the Fusion family can place video data directly into host memory for video capture applications and into a target video display frame buffer for video overlay applications.

Digital Video Support

The Fusion product family also supports the digital video standard CCIR656, using the GPIO port to capture the digital video signal. This standard interface allows the Fusion family to provide digital camera developers with a low-cost board solution. The Fusion family supports the Conexant's QuartzSight™ camera as well as other popular digital camera solutions.



What is a PCI Video Decoder?

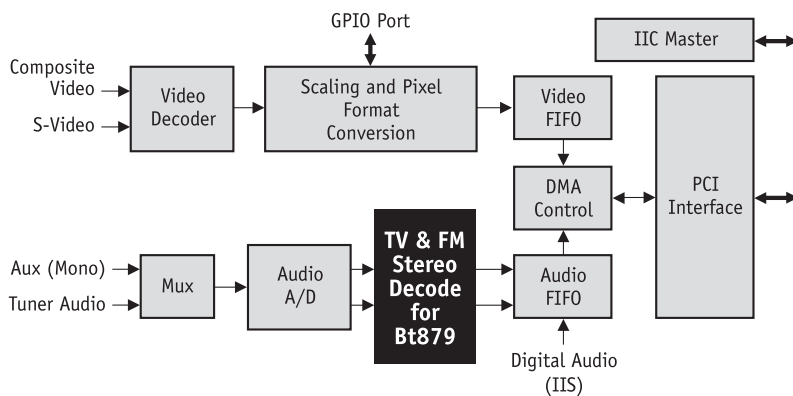
A PCI bus analog video decoder is used for three primary PC solutions: video capture and editing, video teleconferencing and television receiver cards. A video signal is generated by a video source, which can be a camera, VCR or TV tuner. The baseband video that goes into the PCI decoder is a simple analog signal that contains video analog data and video synchronization data, which is used to display the picture properly at the receiving end. The details of the signal depend on the video standard used — NTSC (National Television Standards Committee), PAL (Phase Alternate Line) or SECAM (Systeme Electronique Couleur Avec Memoire). To transmit the picture, the source generates a vertical synchronization signal (VSYNC). This signal resets the receiver (PC monitor) so that it begins picture display at the top of the screen. After the VSYNC signal is sent, the video source scans the first line of the image. Once the scan line is complete, the camera generates a horizontal synchronization signal, which resets the receiver so that it will display the next line starting at the left-hand edge of the display. For each line of the image, a scan line and a horizontal synchronization pulse are sent. The PCI bus attached to the video decoder is the access mechanism, or hub, for this video information traveling to the PC. The need for broadcast data in the PC is a primary reason analog dedicated PC television receiver cards are becoming very popular. The introduction of WebTV for Windows and national broadcaster support of Vertical Blanking Interval (VBI) content contribute to addressing the need for a feature rich, broadcast data function in the PC. PCI video decoder solutions provide the most effective means to achieve this.

Vertical Blanking Interval Data Capture

The Fusion family provides a complete solution for capturing and decoding Vertical Blanking Interval (VBI) data, with the ability to decode WST (Teletext) or NABTS (Intel's InterCast™) and closed captioning data.

Fusion Software Drivers

Fusion offers a suite of software drivers for Windows 95 and Windows 98. With the VXD drivers, board developers can support products used under either the Windows 95 or Windows 98 operating systems. The Windows 98 WDM driver was developed for Microsoft's WebTV for Windows application and Direct Show video use. Both the VXD and WDM drivers provide video capture, playback, and display in accordance with Microsoft Video for Windows and Microsoft Direct Show 2.0, respectively. The software SDK provides customers with the ability to enhance and differentiate their products by modifying the DLL source supplied with the SDK. Dialog boxes, tuner, GPIO, and I²C can be modified and customized by board developers.



Block diagram of the Fusion family

The Fusion software drivers support commercially available video editing, teleconferencing, PCTV, and video email and messaging retail software. Conexant certified drivers and the SDK provide board makers with the ability to offer a high-performance video and PCTV solution that is eligible for Windows 98 WHQL certification.

Ultralock™ and Scaling Support

The Fusion family, like the Bt848A, supports Conexant's proprietary Ultralock technique that locks to an incoming analog video signal. The Fusion decoders will always generate the required number of pixels per line regardless of the analog video source. Ultralock is able to recognize unstable video signals caused by VCR headswitches or any other deviation and adapt the locking mechanism to accommodate the source.

The Fusion family is able to reduce the video image size both vertically and horizontally, independent of arbitrarily selected scaling ratios. The X and Y dimensions can be scaled to one-sixteenth of full resolution. Vertical scaling is implemented with Conexant's industry leading 5-tap vertical filter. High-quality filtering ensures software-limited applications, such as Internet video conferencing (H.323), provide the highest quality video transmissions.

General Features

- Supports NTSC/PAL/SECAM video
- Cable-less solution
- FM radio stereo decoding (Bt879)
- BTSC television stereo decoding (Bt879)
- Integrated dbx noise reduction (Bt879)
- Supports complex clipping of video source
- Multiple YCrCb, RGB, and indexed pixel formats
- Full 2-dimensional filtering and scaling using full 5-tap vertical filter
- Multiple composite and S-video inputs, and auxiliary GPIO port
- Supports VBI data capture
- World-wide graphics controller compatibility
- Fully PCI specification 2.1 compliant

Benefits

- Faster time to market
- Complete system support
- Allows end users to install in any system
- Multistandard video decoding (NTSC, PAL, SECAM)
- Supports overlay windows regardless of graphics frame buffer constraints with VXD drivers for Windows 95 and Windows 98

- Enables direct interface to display buffers as well as video compression engines
- High-quality QCIF images for video conferencing applications
- One chip supports all inputs
- Complete integrated solution for closed captioning, Teletext data broadcast and Intercast applications
- High-quality video snapshots for the video hobbyist and scanning application side compatibility with consumer PC platforms
- Reduces system cost, and is easier for end-user installation
- Fully-integrated single chip solution
- High-quality TV stereo

Applications

- PC television
- PC radio
- WebTV for Windows
- Intercast receiver
- Desktop video phone
- Video email
- Video editing
- Motion video capture
- Still frame capture
- VBI data services capture
- Teletext support

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