

NXP PCI Express combo (ATSC/NTSC) PC TV reference design, PCV500 Combo

Combo (analog/digital) PC TV capture card for desktop PCs

The highly integrated PCV500 Combo reference design lets manufacturers tailor tuning performance to suit cost and selectivity requirements in watch/record PC TV cards.

Key features

- Simultaneous analog and digital TV reception for desktop PCs
- Receives analog TV (NTSC), digital cable TV (ATSC/Clear QAM), and FM radio in North America and other NTSC/ATSC markets
- Can or silicon tuner for analog channel
- Many watch/record feature combinations
- Captures baseband A/V from CE devices

Features NXP SAA7163 PC TV IC

- Analog TV video and sound decoding
- High-quality MPEG-2/4 A/V encoding for DVR, time-shift and archive (with host PC)
- Multi-level content protection
- Integrated motion adaptive 3D comb filters and 3D noise reduction

The PCV500 Combo reference design features simultaneous reception of two independent TV signals: one analog and one digital. Complete functionality includes analog tuning, digital tuning and channel decoding, FM radio reception, baseband A/V capture, analog TV A/V decoding and high-quality MPEG-2 encoding (to support recording features with host PC.)

The PCV500 Combo's flexible design enables consumers to enjoy many watch, record and surfing feature combinations such as:

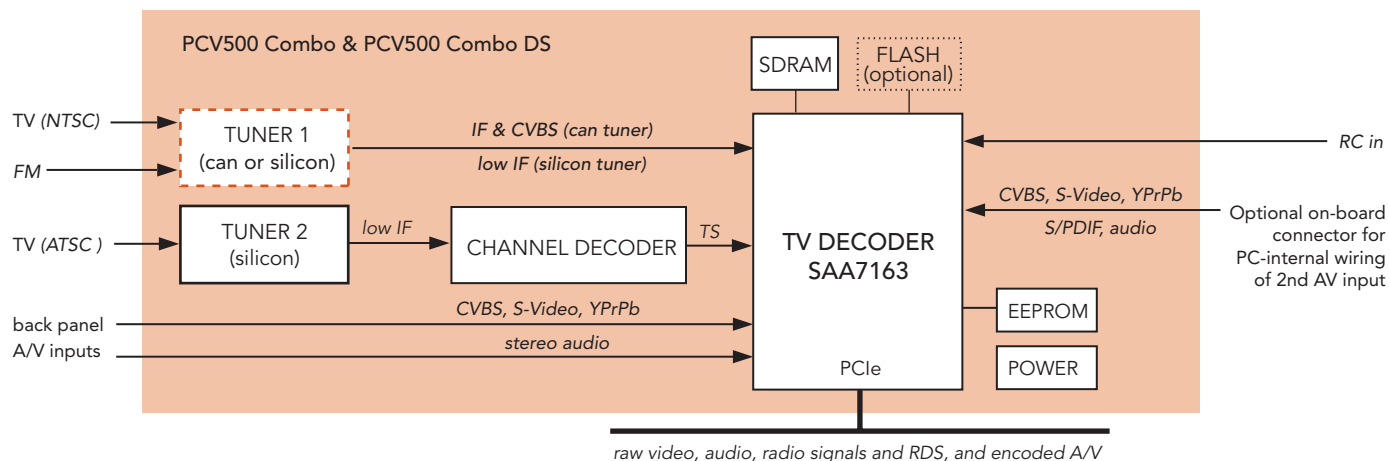
- Picture-in-Picture, split screen and watch/search
- record a digital TV program while listening to the radio or watching an analog TV program
- record an analog TV program while watching a digital TV program
- and more.

Tuning options

Two configurations let manufacturers tailor analog tuning performance: a silicon tuner for lower cost in a small board footprint, or a can tuner for exceptional performance in problematic reception areas. A separate silicon tuner handles digital reception.

Exceptional integration, lowest BOM

Robust reference design functionality is achieved in large part by an onboard SAA7163 PC TV IC. In addition to demodulating and decoding analog TV video and stereo and encoding digital AV, the IC applies advanced filtering techniques and dynamic echo cancellation to ensure high-quality reception under the most demanding conditions. It handles picture enhancements, high-quality scaling, vertical blanking interval extraction, remote control for TV and recording, multi-layer content protection (Macrovision®) and CGMS-A extraction.



The PCV500 Combo is supported on popular Windows operating systems and third-party TV/DVR applications. Board setup and control are handled through the Windows WDM driver AVStream Class with BDA Extensions.

Both reference design configurations include a PCIe full-profile reference card, all necessary drivers, a user manual, schematics, a BOM, Gerber files, a layout proposal, and documentation. Board designs are easily converted to dual-silicon tuner PCIe low-profile form factors.

Specifications

Reception

- Channel 1: analog TV (NTSC), FM radio
- Channel 2: digital TV (ATSC, ClearQAM (64 QAM and 256 QAM/QAM ITU-TJ83 Annex B))
- Two baseband inputs: video (CVBS, S-Video, or YPrPb) and stereo audio

Main reference board configurations

- PCIe host bus interface, full-profile form factor
- Separate RF connectors for digital cable TV, analog TV, and FM radio
- Tuner options
 - PCV500 Combo: NXP FM1236 Mk5 can tuner (NTSC); NXP TDA18271HD silicon tuner (NTSC, ATSC/ClearQAM)
 - PCV500 Combo DS: 2 NXP TDA18271HD silicon tuners (NTSC, ATSC/ClearQAM)
- Samsung S5H1409 channel decoder (ATSC/QAM)
- NXP SAA7163 PC TV capture/encode IC
- 32-MB DDR RAM
- 3 switched supply regulators
- EEPROM (board configuration)
- 4-MB Flash memory footprint; Flash memory (ST M25P32) optional
- (opt.) 1 external IR receiver/ transmitter

SAA7163 PC TV capture/encode IC

- Single channel
- Worldwide analog TV video decoding: NTSC M, NTSC Japan, NTSC 4.43, PAL BGDHIN, PAL M, Combination PAL N, SECAM L/L'
- Worldwide analog TV sound decoding: BTSC with dbx™ noise, reduction, SAP, EIAJ, NICAM, FM A2, FM radio
- A/V encode: MPEG-1/2/4, WMV, DivX, and AAC-LC
- Audio formats MP3, MPEG1L2, Dolby Digital® (2-channel)
- Worldwide VBI text and data services
- 3D comb filter and 2D/3D noise reduction
- Processes CVBS, S-Video and component

Operating system support

- Windows Vista
- Windows XP® with application software (CyberLink, etc.) (not included)
- Windows MediaCenter Edition® 2005

Certifications

- RoHS compliant

Use of this product in any manner that complies with the MPEG-2 Standard is expressly prohibited without a license under applicable patents in the MPEG-2 patent portfolio, which license is available from MPEG LA, L.L.C., 250 Steele Street, Suite 300, Denver, CO 80206.

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