

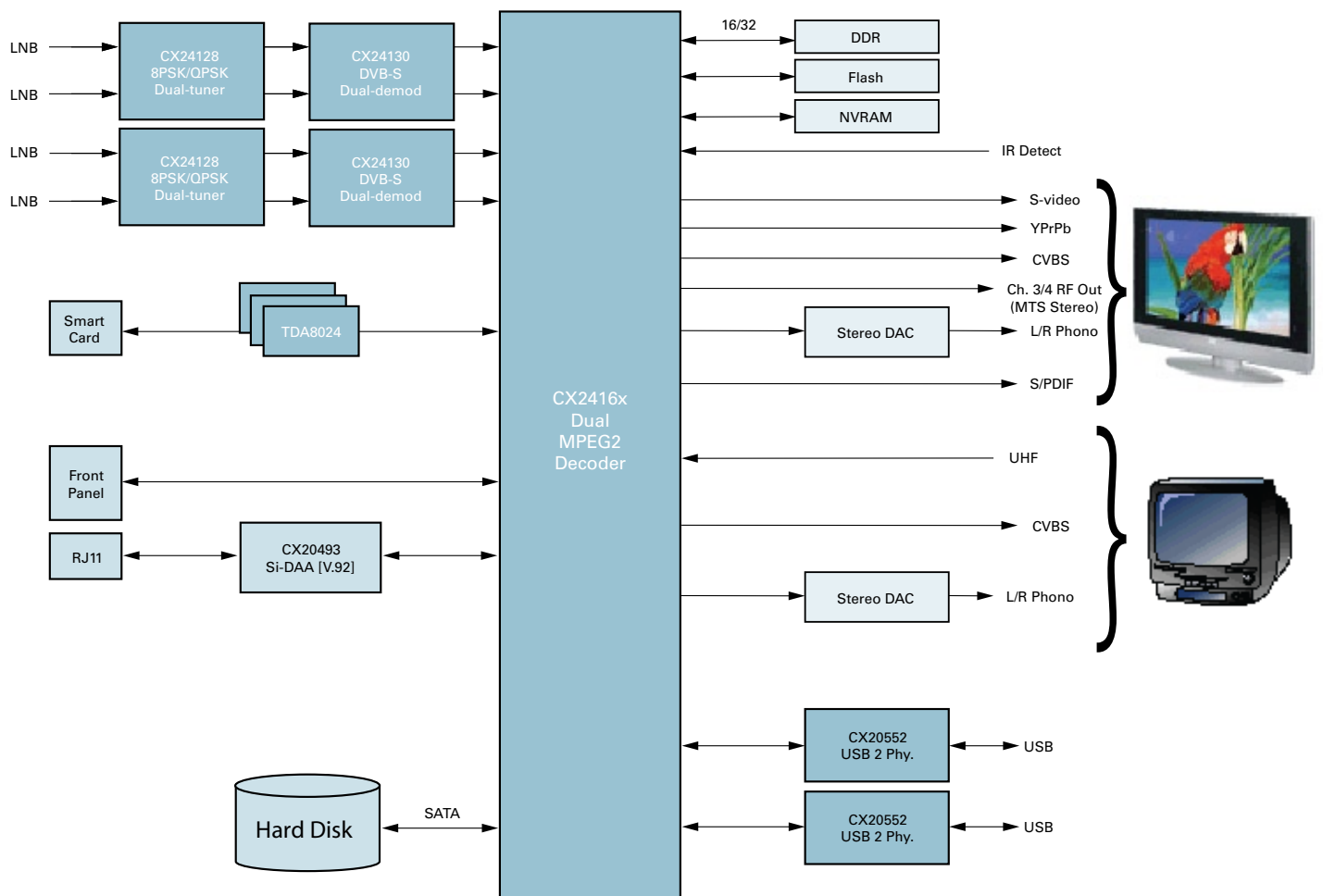


The ARM920 CPU in the CX2416x provides up to 250 Dhrystone 2.1 MIPS and enables broadcasters to adopt complex, feature-rich middleware platforms, such as OpenTV®, multimedia home platform (MHP), and MediaHighway™. The advanced CPU platform allows STB manufacturers to offer improvements such as faster interactive applications loading, electronic program guide (EPG) scrolling performance, and scalability to Linux®-based software platforms via memory management unit (MMU) hardware support. A telco return channel can be supported via data access arrangement (DAA) interface to a V.22-V.92 hardware or software modem, or via PCI interface to a digital subscriber line (DSL), Ethernet, or wireless broadband modem.

Advanced Security Features

The CX2416x incorporates advanced security technologies that greatly enhances the ability of broadcasters to protect their service against piracy. Using an advanced on-chip one-time-programmable (OTP) memory technology, Conexant offers broadcasters the ability to personalize individual STBs via the system IC with unique serial numbers and encryption keys. This allows broadcasters to secure transactions between the STB Smart Cards and the MPEG-2 decoders. The CX2416x also includes embedded cryptographic technology to allow secure authentication of the STB system software that is loaded into flash memory.

Full-Featured Development Platform



CX2416x System Diagram

The CX2416x IC family is integrated into a fully engineered interactive TV STB reference development system that implements third-party interactive middleware/real-time operating system (RTOS) software and provides a complete set of STB low-level drivers based on the Nucleus+, VxWorks and Linux operating systems. A mature and robust hardware abstraction layer is assured by reuse of core driver libraries developed over three generations of production MPEG ICs. The STB development platform hardware is designed with a flexible architecture that supports multiple front-end tuner/demodulator NIMS.

Common Platform for Satellite, Cable, and Terrestrial

STB manufacturers increasingly look to leverage a common hardware platform that can be reused over various broadband networks, including satellite, cable, terrestrial, DSL, and Ethernet Internet protocol (IP) networks. Conexant’s CX2416x IC can serve as a common back-end platform that easily interfaces to a variety of broadband front-ends, including QPSK, QAM, OFDM, VSB, ADSL/VDSL, 802.3, 802.11a/b/g, or IEEE 1394 through either TS or PCI interface. This provides a flexible STB solution that can be targeted to a variety of broadband operators while minimizing hardware/software development costs.

The CX2416x is also fully compatible with the CX2418x co-processor to provide bandwidth-efficient MPEG-4 AVC/ H.264-compliant advanced-compression bitstream decoding.

The company’s broad portfolio of semiconductor products also includes client-side DSL and cable modem solutions, home

network processors, broadcast video encoders and decoders, digital STB components and systems solutions, and dial-up modems. In addition to its IEEE 802.11a/b/g-compliant wireless local area network (WLAN) chipsets, software, and reference designs, Conexant offers a suite of networking components that includes solutions for applications based on HomePlug and HomePNA™. Additional products include a complete line of asymmetric and symmetric DSL central office solutions, which are used by service providers worldwide to deliver broadband data, voice, and video over copper telephone lines.

CX2416x Part Number Guide

The CX2416x IC family includes four base part numbers defined by the functionality differences shown in Table 1.

Table 1 - CX2416x Base Part Numbers		
Part Number	PVR Support	BTSC Encoder
CX24160		
CX24161		X
CX24162	X	
CX24163	X	X

The CX2416x includes optional license-based features optional as designated by the dash numbers in Table 2.

Table 2 - CX2416x Dash Number Options				
CX24160/1/2/3-mn				
Dash Number:	-0n	-1n	-2n	-3n
Macrovision		✓		✓
Dolby Digital			✓	✓

m = optional feature combinations (0 thru 3)

n = die revision (e.g. n=1 for die rev A, 2 for die rev B etc.)



CX2416x Product Features

- High-performance 32-bit ARM920 CPU with Linux/WinCE compatible MMU
- High-performance 16/32-bit DDR-SDRAM memory controller
- Dual MPEG-2 MP@ML video decoders
- Multi-format audio decoders supporting MPEG-1, MPEG-2, and Dolby Digital (AC-3)
- Three multi-standard dual-stream transport processors with DVB, DES, AES, and Multi-II descrambling
- MPEG picture and still-plane upscaling and downscaling
- Dual multiplane video/graphics image compositing with color key or 256-level alpha blending
- Advanced 2D graphics rendering engine for alphabl, bitblt, textblt, line draw, and color expansion acceleration
- Video-picture-in-graphics with flexible picture size and aspect ratio
- Flicker filtering, aspect ratio conversion, and hardware cursor
- 4/8/16-bit ARGB/A YCrCb graphics
- Dual NTSC/PAL/SECAM TV encoders with seven 10-bit video DACs
- Integrated NTSC channel 3/4 RF modulator and BTSC stereo encoder
- NDS XTV and RASP PVR support
- 3DES and 128 bit AES ciphering for up to three transport streams simultaneously
- Parallel- and serial-ATA interfaces for HDD attach
- 32-bit, 33 MHz PCI controller
- Dual USB2.0 host controllers
- Advanced security features, including secure boot software authentication and IC personalization via OTP memory
- NDS VideoGuard® conditional access hardware support
- Integrated DIRECTV® security
- High-speed UART with HomePlug support
- Three Smart Card ports
- CCIR656 digital video input and output ports
- I2S input and output ports
- OpenCable CableCard™ interface
- DVB-CI support
- Two UHF remote inputs
- Infrared (IR) input/output
- Macrovision® 7.X copy protection

Note Regarding Macrovision: The Macrovision-enabled version of this device may only be sold or distributed to authorized Macrovision buyers. If you have a Macrovision-enabled device, it is protected by U.S. patent numbers 5,583,936; 6,516,132; 6,836,549; and 7,050,698 (for Encoder Devices) and 6,600,873 (for Detection Devices) and other intellectual property rights. The use of Macrovision's copy protection technology in the device must be authorized by Macrovision and is intended for home and other limited pay-per-view uses only, unless otherwise authorized in writing by Macrovision. Reverse engineering or disassembly is prohibited.

Conexant Product Portfolio

The company's broad portfolio of semiconductor products also includes client-side DSL, cable, and dial-up modem solutions; fiber optic system-on-chips; broadcast video encoders and decoders; digital set-top box components and systems solutions; and IEEE 802.11a/b/g/n-compliant WLAN chipsets. Additional products include a complete line of asymmetric and symmetric DSL central office solutions, which are used by service providers worldwide to deliver broadband data, voice, and video over copper telephone lines.

© 2008, Conexant Systems, Inc. All Rights Reserved. Conexant and the Conexant logo are registered trademarks of Conexant Systems, Inc. All other trademarks are owned by their respective owners. Although Conexant strives for accuracy in all its publications, this material may contain errors or omissions and is subject to change without notice. **THIS MATERIAL IS PROVIDED AS IS AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT.** Conexant shall not be liable for any special, indirect, incidental or consequential damages as a result of its use.

www.conexant.com
General Information:
U.S. and Canada: (888) 855-4562
International: 1+(949) 483-3000
Headquarters
4000 MacArthur Blvd.
Newport Beach, CA 92660
Doc# PBR-200191

