

ZR36430/ZR36431

Product Brief

Zoran Corporation
3112 Scott Boulevard
Santa Clara, CA 95054-3317

Tel 408.919.4111
Fax 408.919.4122
www.zoran.com

**Overview**

Zoran's COACH-V is the fifth Camera On A CHip (COACH) digital camera processor. COACH-V is firmware compatible with previous COACH processors, thus instantly providing a mature camera development platform. COACH-V is offered in two versions: COACH-Ve (ZR36430), supporting up to 2 Megapixel sensors, and COACH-Vp, (ZR36431) supporting up to 4 Megapixel sensors. For the camera developer, both versions have identical features and interface sets. The two versions provide cost effectiveness across the entry level and mid-range digital camera market segments.

The COACH-V includes all required hardware and firmware to support: two- and three-field interlaced sensors, progressive sensors, CMOS sensors, View-LCD display, TV output, Flash Memory of all types, USB, RS232, and stereo/speech audio recording/playback.

The COACH-V digital camera processor offers value and performance due to its flexible and programmable architecture that supports a wide range of camera designs. COACH-V eliminates the need for

an external microcontroller. Internal A/D converters and additional general-purpose IO pins were added. User Interface software can be implemented within the COACH-V. Rom/Nor-type devices are no longer needed and the COACH-V program can be stored on the same resident Nand-type flash memory used for image storage. Three-field CCD support, hardware-based image enlargement, lens shading compensation, and a smooth digital zoom allow significant cost savings for sensor and optics.

COACH-V emphasizes image quality with true 10-bit enhanced sensor processing.

The COACH-V comes with a complete development package that includes a "manufacture-ready" CamMini reference design, a comprehensive set of software development tools, and WHQL approved PC drivers.

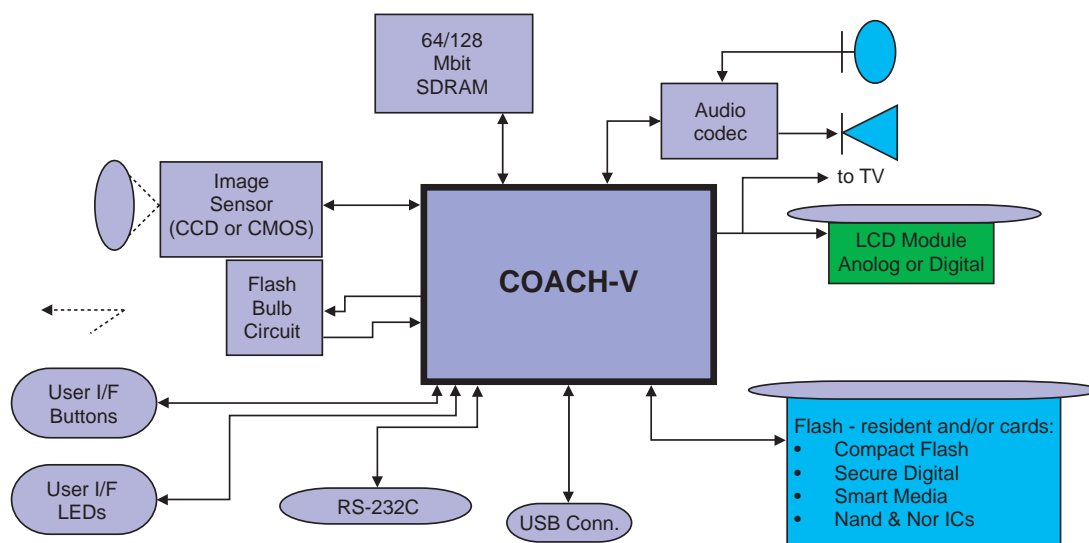


Figure 1. Camera System Block Diagram

COACH-V DIGITAL CAMERA PROCESSOR

ZR36430/ZR36431

Product Brief



Features

- Direct glueless interface to industry standard interlaced (two- & three-field) and progressive CCD and CMOS sensors
- Supports image resolutions up to 2.3 Megapixels for COACH-Ve and up to 4 Megapixels for COACH-Vp
- Enhanced CCD signal processing with
 - 10-bit processing for high dynamic range
 - Color interpolation and conversion
 - Image scalers
 - Automatic White Balance (AWB)
 - Automatic Exposure (AE)
 - Edge enhancement
 - Programmable Lens shading compensation
 - Performance enhancement when using Zoran's CMOS sensor
- Smooth Digital zoom – complete emulation of optical zoom (view and capture)
- On-the-fly (zero delay) on-chip precompression image enlargement hardware
- Support for flash-strobe, light-control, red-eye reduction & flash-charge control
- Direct interface to resident flash memory and/or removable flash memory cards: CompactFlash (CF); SmartMedia (SSFDC); SD, MMC, and others
- Support 64Mbit & 128Mbit SDRAM (16-bit width) frame buffer
- Internal A/D for monitoring battery status & flash bulb charge, and for sensing camera buttons
- USB interface, including on-chip USB line drivers
- Real-time JPEG compression with advanced bit rate control ensures superior visual quality for the required number of stored images
- Capture of a sequence of still images at a rate of up to 15 images per second
- Movie (AVI, with compressed audio) capture and playback to the Flash card, at a rate of up to 25 frames per second
- Video Capture Mode - capture CIF at 30 frames per second or VGA at 15 frames per second real-time video (MJPEG compressed) to a PC via USB
- Audio CODEC support, allows for audio annotation, dictaphone and AVI capture
- User interface implemented within the COACH eliminates the need for an additional microcontroller
- Analog and digital LCD support
- On-chip NTSC/PAL encoder provides direct analog output to a TV monitor
- DCF compliant, DPOF support, EXIF 2.1 image and audio file format
- Font-based (8-bit colors) and graphics based OSD (On Screen Display) engines for displaying user-interface messages, menus and icons on the LCD/TV
- Programmable DSP engine ensures seamless upgrades through downloadable firmware
- Programmability for image processing algorithms
- Advanced power management
- 208-pin uBGA & QFP packages.

Evaluation and Development Tools

Data Book - complete specifications and description of the COACH

COACHWare - high level API for host software implementation of the user-interface

FontMapMaker - for font map and icon creation

CamMini-V - manufacturing ready reference design - complete 1.3 Megapixel camera system (hardware & firmware)

PC connectivity - WHQL approved USB driver kits for image transfer and video capture

For more information, contact Zoran's Santa Clara office or the office nearest you:

Israel	China	Japan	Taiwan	Canada	Korea
Zoran Microelectronics Ltd. Advanced Technology Ctr. P.O. Box 2495 Haifa, 31024 Israel Tel: +972-4-8545-777 Fax: +972-4-8551-551	Zoran China Office Suite 2507 Electronics Science & Tech Building 2070 Central Shennan Rd. Shenzhen, Guangdong, 518031 P.R. China Tel: +86-755-378-0319 Fax: +86-755-378-0852	Zoran Japan Office 2-2-8 Roppongi, Minato-ku Tokyo 106-0032, Japan Tel: +81-03-5574-7081 Fax: +81-03-5574-7156	Zoran Taiwan Office 4F-1, No. 5, Alley 22 Lane 513, Reikuang Rd. Taipei, Taiwan R.O.C. Tel: +886-2-2659-9797 Fax: +886-2-2659-9595	Zoran Toronto Lab 2175 Queen St. East, Suite 302 Toronto, Ontario M4E 1E5 Canada Tel: (416) 690-3356 Fax: (416) 690-3363	Zoran Korea Office 505, Dongbuk Building 45-20, Yoido-Dong, Youngdungpo-ku Seoul, Korea 150-891 Tel: +82-2-761-7471 Fax: +82-2-761-7472