

**ZR36420**  
Product Brief

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**Benefits Overview**

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Zoran®'s COACH-LC (ZR36420) is the third generation Camera On A CHip (COACH) digital still camera processor, following the COACH and COACH-XL processors. COACH-LC is highly compatible with COACH and COACH-XL. All processors share the same device drivers and hardware interfaces. User interface software can also be reused across all three processors.

COACH-LC is a complete solution for digital still camera designs. It includes all required hardware and microcode to support progressive and interlaced CCD sensors, CMOS sensors, View-LCD display, Eye-LCD display, TV output, Flash Memory, USB interface, RS-232 interface, and stereo audio recording/playback.

COACH-LC is a cost effective, yet highly powerful digital still camera processor. Its architecture is flexible enough to support a wide range of camera designs, from low-cost, low-resolution cameras up to high-performance professional cameras with real-time high resolution image processing. User Interface software can be implemented within the COACH-LC, reducing the overall camera cost, or via an external microcontroller.

The COACH-LC comes with a complete development package that includes a set of software tools, PC drivers, and a reference design platform.

**Features**

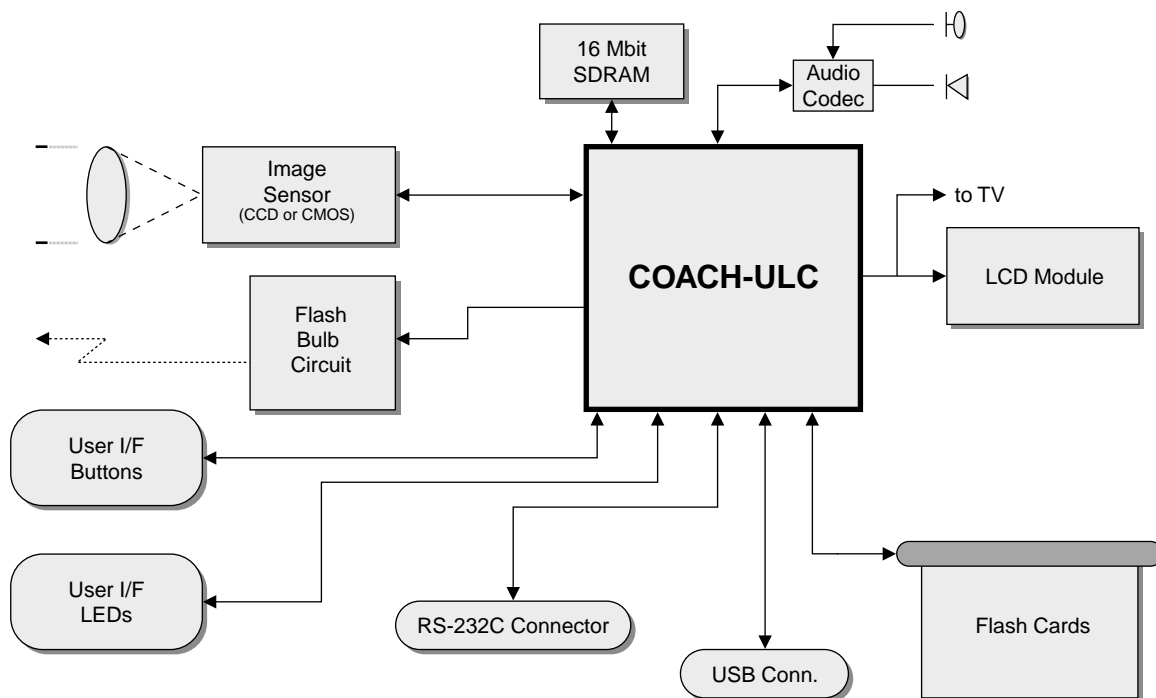
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- Direct glueless interface to industry standard CCD sensors from Sony, Sharp, and Matsushita (progressive and interlaced), and to several CMOS sensors
- Supports image resolutions of up to 2.3 Megapixels
- Advanced CCD signal processing:
  - Quantization noise shaping
  - Color demosaic with aliasing reduction
  - Color space conversion
  - Image scaler
  - Automatic White Balance (AWB)
  - Automatic Exposure (AE)
  - CCD noise suppression
  - Contrast enhancement
  - Edge enhancement
- Support for flash strobe light control, including red-eye reduction
- Direct interface to resident flash memory and/or removable flash memory cards: CompactFlash (CF), SmartMedia (SSFDC), and others
- Supports 16-, 32-, 64- and 128Mbit SDRAM frame buffers (depending on the sensor resolutions)
- Serial Communication Port for RS-232 and IrDA interface
- 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
- Captures a sequence of still images at 15 images per second
- Movie (AVI) capture and playback to the Flash card
- 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 supports high-quality compression for audio playback and audio annotation of pictures
- User interface implemented within the COACH-LC eliminates need for an additional microcontroller
- Analog and digital LCD, direct interface to Eye-LCD
- 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 and graphics-based On Screen Display (OSD) engines for displaying user-interface messages, menus, and icons on the LCD/TV
- Image enhancement and processing algorithms, e.g., image sharpening, image smoothing, and superposition of images for improved viewing and printing quality
- Programmable DSP engine ensures seamless upgrades through downloadable firmware
- Advanced power management
- 256-pin MQFP and 280-pin BGA 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
- CAM-ON™ II - DSC reference design - complete camera system hardware
- USB PC drivers development kits (Win98) - for image transfer and real-time video capture

### Camera System Block Diagram



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