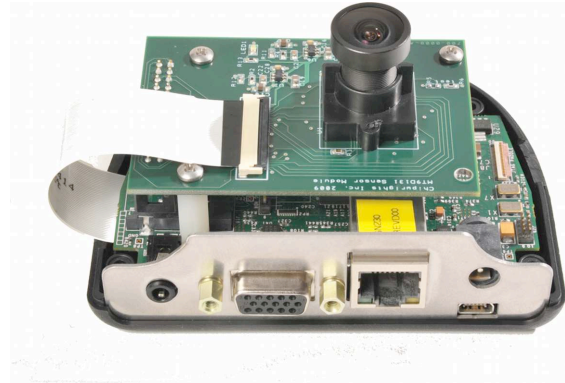


ChipWrights' 360-degree camera reference design offers the digital image processing power and software flexibility of the CW5631 System on Chip (SoC). The CW5631 SoC combines an ARM® 926EJ-S RISC processor; ChipWrights proprietary vector DSP; a RISC processor for serial applications, plus a rich set of on-chip peripherals. The native ChipWrights' video input interface is available via a flat flex cable. The system uses an Aptina™ 2 MPixel sensor and M12 lens mount. An optional adapter board accepts most Aptina demo kit headboards.



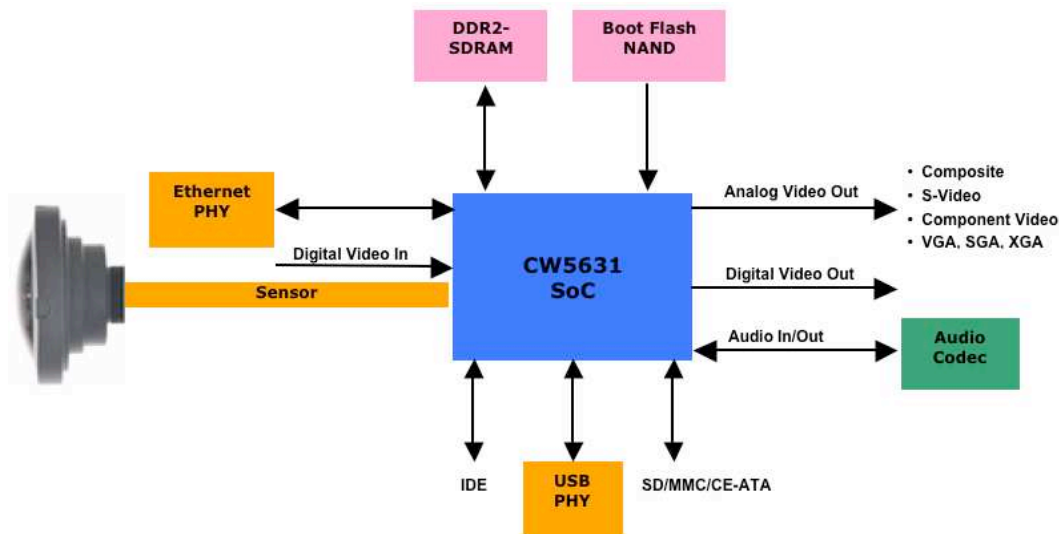
Developers can design optimal, low cost IP camera solutions quickly with ChipWrights' highly flexible platform. The reference design supports DVR functions, flexible audio/video decoding, media browsing features, multiple audio and video formats and storage mediums; plus IP capability.

Advanced Image Processing

- Dewarping: fisheye, wide-angle lens
- Pixel operations: threshold, unsharpen mask, negative, brightness/contrast
- Filters: convolution, median, erode, dilate, Sobel
- Alpha-blend, chroma-key
- Scaling and rotation
- De-interlacing, color space conversion
- Lens shading correction

Key Features

- Input video processing and compression
- Transmission via Ethernet, USB or a variety of video outputs
- Storage in SD card, hard drive, or local NAND flash
- Eclipse® IDE-based tool flow; mature compiler and assembler
- Reference design software with open source libraries
- Embedded Linux® OS: easy integration of value-added features
- Low-cost bill of materials



Hardware Features

Feature	Reference Design	CW5631 SoC Support
• USB 2.0 OTG	✓	✓
• SD/MMC/CE-ATA	✓	✓
• Compact Flash		✓
• IDE	✓	✓
• SATA		✓
• HDMI		✓
• Composite Video Output	✓	✓
• S-Video Output		✓
• Component Video Output		✓
• VGA Video Output	✓	✓
• Stereo Audio Output	✓	✓
• Audio Input		✓
• Digital Video Input	✓	✓
• TFT/LCD Interface		✓
• Real Time Clock	✓	✓
• Ethernet 10/100	✓	✓

Reference Design Software

Video Decode

- MJPEG
- MPEG2/4
- H.264 (AVC)

Video encode

- MJPEG: 200 D1 Frames per Second
- MPEG4: 80 D1 Frames per Second
- H.264: 50 D1 Frames per Second

Image Processing

- Fisheye and wide-angle lens de-warping
- Scaling and rotation
- Color conversion
- De-interlacing
- Alpha-blend, chroma-key
- Filters: convolution, median, erode, dilate, Sobel

Pixel Operations

- Threshold
- Unsharpen mask
- Negative
- Brightness/contrast

Operating System

- Linux®, kernel 2.6.29