CHIPWRIGHTS

High Definition 5MP 360 Degree Camera Reference Design

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ChipWrights' 5MP 360-degree camera reference design features 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; a ChipWrights proprietary vector DSP; a RISC processor for serial applications, plus a rich set of on-chip peripherals. The system uses an Aptina™ 5MP sensor and M12 lens mount with a fish-eye lens.

The camera is network connected and powered with PoE or with an optional 12VDC power connector on the unit. In addition to streaming video over the Ethernet connection, the camera offers an analog video output and can be used in analog camera systems. The management and configuration of the camera is done over the network connection. The camera features a built-in microphone and optional analog audio input and output connectors. The design supports a single digital alarm output and trigger input. Video can be recorded to the internal MicroSD card.

Key Advantages

- Reduce the number of cameras
  - View 360 degrees with one camera
  - No blind spots, less maintenance
- Adaptable video output
  - Single view
  - Panoramic view
  - Quad view
  - Optional Flip
- High Reliability – No moving parts
- Analog video and streaming IP video output options
- Easy browser-based configuration

Key Features

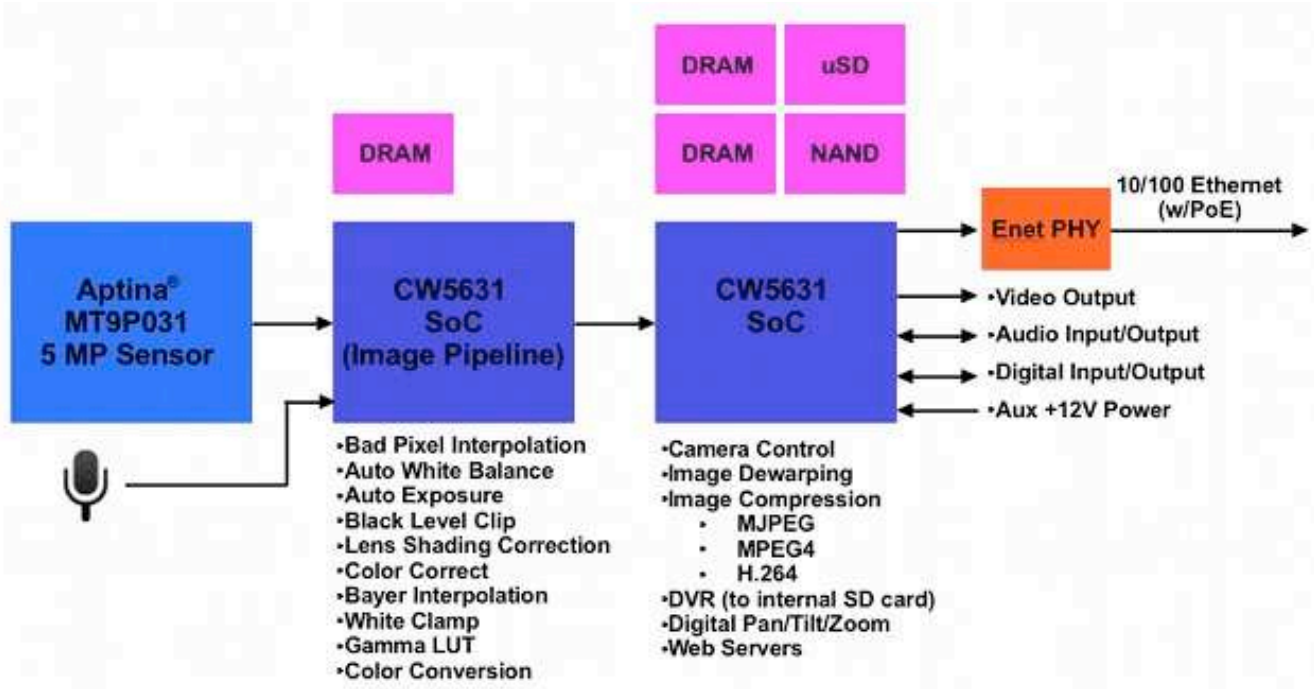
- Select any section of video with electronic pan, tilt and zoom; auto-panning
- 360° horizontal and 180° vertical image view
- No external image processing software necessary – processing to flatten hemi-spherical image is done in camera
- Local storage in MicroSD card or NAND flash, supports local DVR capability
- Eclipse® IDE-based tool flow; mature compiler and assembler
- Camera application source code; open source libraries
- DSP binaries (source available)
- Embedded Linux® OS: easily integrate value-added features
- Low-cost bill of material

Quad Dual (Panoramic) View

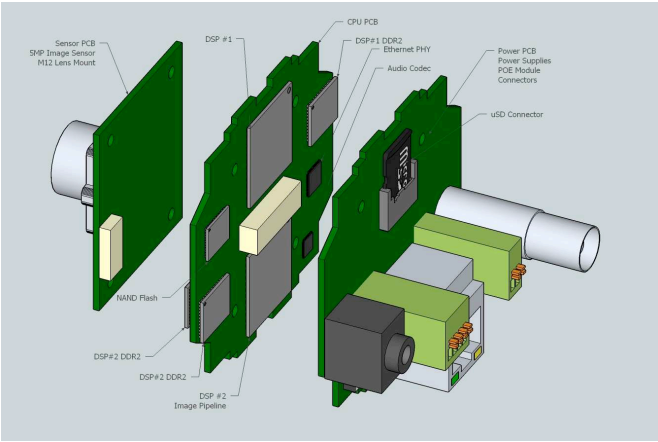
Single View

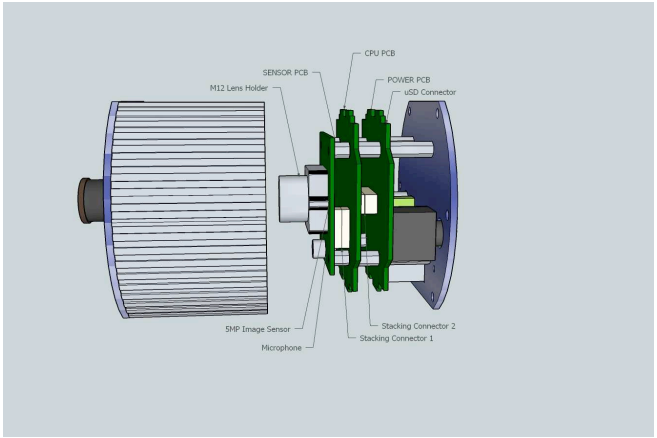
Quad-View

Hardware Block Diagram



Mechanical Views





CHIPWRIGHTS
Visual Signal Processors

Specifications

Model Name	WrightCam 2500
Power Supply	• Power over Ethernet (PoE) or • +12VDC Auxiliary Header
Lens	• F2.0, 185° FOV, IR-cut Filter
Lens Mount	• M12 x 0.5
Image Sensor	• 5 megapixel CMOS • 1 / 2.5-inch Optical Format • 2592H x 1944V Active Pixels • 1.4V/lux-sec (550nm) • 70.1 dB Pixel Dynamic Range • 38.1 dB SNR_{MAX}
Output	• Ethernet RTSP Streaming and/or Composite Analog (NTSC or PAL)
Audio	• Microphone Input, external analog audio input, analog audio output
Control Input	• Browser based, served from camera
Digital Input/Output	• 2 Digital I/O signals, (can be configured as input or output)
Streaming Output Resolution	• CIF, QVGA, VGA, NTSC, PAL, SVGA, 720P, 1080P
Video Frame Rate	• Up to 60fps at some resolutions
Video Compression	• MJPEG, MPEG4, H.264
Size/weight	• 3”W (76 mm) x 2.5”H (63.5 mm) x 1.6”D (41 mm) (w/o lens)
Operating Environment	• Temperature 0°C (32°F) to +50°C (122°F) • Humidity: 20 – 80% RH (no condensation)
Storage Environment	• Temperature -20°C (-4°F) to +60°C (140°F) • Humidity: 20 – 80% RH (no condensation)

Available Software

Video encode

- MJPEG: 55 D1 FPS, 25 1080P FPS
- MPEG4: 35 D1 FPS, 15 1080P FPS
- H.264: 25 D1 FPS, 12 1080P FPS

Image Processing

- Dewarping
- Un-sharp mask filtering
- Noise Reduction
- Colorspace conversion

Operating System

- Linux®, kernel 2.6

User Interface / Configuration

- Browser based: PHP, JavaScript, XMLRPCs
- Served from Camera over Network

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