HawkEye-CXP-12

CoaXPress Frame Grabbing and Image Processing System

Key Features

- Grabbing from up to 4 cXp cameras via 4x cXp-12/6 links
- Acquisition bandwidth of up to 50 Gb/s
- Pixel formats supported: Mono, Bayer, RGBA and RGB
- Infrastructure for full Vision/Imaging system solution including image acquisition, real-time image processing and post-processing on host
- Huge frame buffers of up to 16 GB to enable high-acquisition capacity and to enhance image processing capabilities
- Ultra-high CPU-free data offload capability via PCIe Gen. 3 x8 enabling high-resolution post processing on host computer
- Support for area and line cameras
- Diverse I/O capabilities: RS422, opto-couplers, LVTTL and 30 V drivers/recievers
- Powerful ecosystem:
  - ✓ ProcVision Kit for customization of Vision flow.
  - ✓ Image compression IPs
  - ✓ Tools for efficient development of both software and FPGA code
  - ✓ InfiniVision software for multi-camera acquisition and synchronization
  - ✓ Supports GenICam's GenTL API and **Halcon™** machine vision software

Target Application Examples

- High-end Machine Vision
- Industrial Inspection/Automation
- Broadcast
- Medical Imaging
- Traffic & Transportation

The Gidel HawkEye-CXP-12 CoaXPress frame grabbing and real-time image processing system provides the core infrastructure required to realize the most demanding vision and imaging applications.

The HawkEye series offers a number of options to accommodate diverse application needs, from plug-and-play high-performance frame grabbers to a full system solution comprising acquisition, open-FPGA image processing, and flexible custom camera interface.

The HawkEye-CXP is CoaXPress supports up to four CoaXPress (cXp-12/cXp-6) links enabling connecting 1 - 4 CXP-12 cameras. The HawkEye-CXP family is based on PCIe Gen. 3 x8, providing CPU-free ultra-fast offload bandwidth. Large data buffers of up to 16 GB fortify the acquisition bandwidth and the image processing capabilities on powerful Arria 10 FPGA.

The board is supported by the Gidel **ProcVision Kit** allowing users to tailor their Vision flows in an intuitive and simple manner by customizing both the software and the FPGA design code for different frame grabbing flavors. The kit includes the ProcFG and InfiniVision GUIs, APIs and supporting libraries. **The Gidel Proc Dev Kit** enables automatic generation of Application Support Packages (ASPs), and includes Gidel's CamSim (camera simulator) as well as tools for debugging and verifying FPGA image processing IPs.

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FEATURE	SPECIFICATIONS
Camera Interface	4x CoaXPress (cXp -12/6), PoCXP
Image Formats	Mono, Bayer, RGBA (8, 10, 12, 14 and 16 bits/color) and RGB (8, 10 and 12 bits/color).
Max Resolution	Horizontal: 16 K pixels (64-bit) Vertical: 65 K lines
Acquisition Rate	Up to 50 Gb/s acquisition rate
Host Bus	PCIe x8 Gen. 3
Frame Buffer	1-16 GB
Image Processing	For open FPGA grabber version, option for adding image processing code on Altera Arria 10 FPGA
Camera Types	Area and Line
MTBF	> million hours
Operating Ambient Temperature	0 – 54 C, relative humidity up to 90% (non-condensing)

FEATURE	SPECIFICATIONS
Form Factor	PCIe low-profile
Connectors	• 1, 2, or 4x HD-BNC • VGA15-pin I/O
GPIO	RS422, opto-coupler, LVTTL and 30V at 0.9A
Advanced Features	Selective ROI acquisition
Ecosystem Support	• **ProcVision Kit** for Vision flow customization • Proc Dev Kit for automatic generation of Application Support Package and efficient development on FPGA • Image Compression and Decompression IPs • InfiniVision software for multi-camera aquisition and synchronization • Supports GenICam GenTL API • Support for MVTec Halcon™ machine vision software
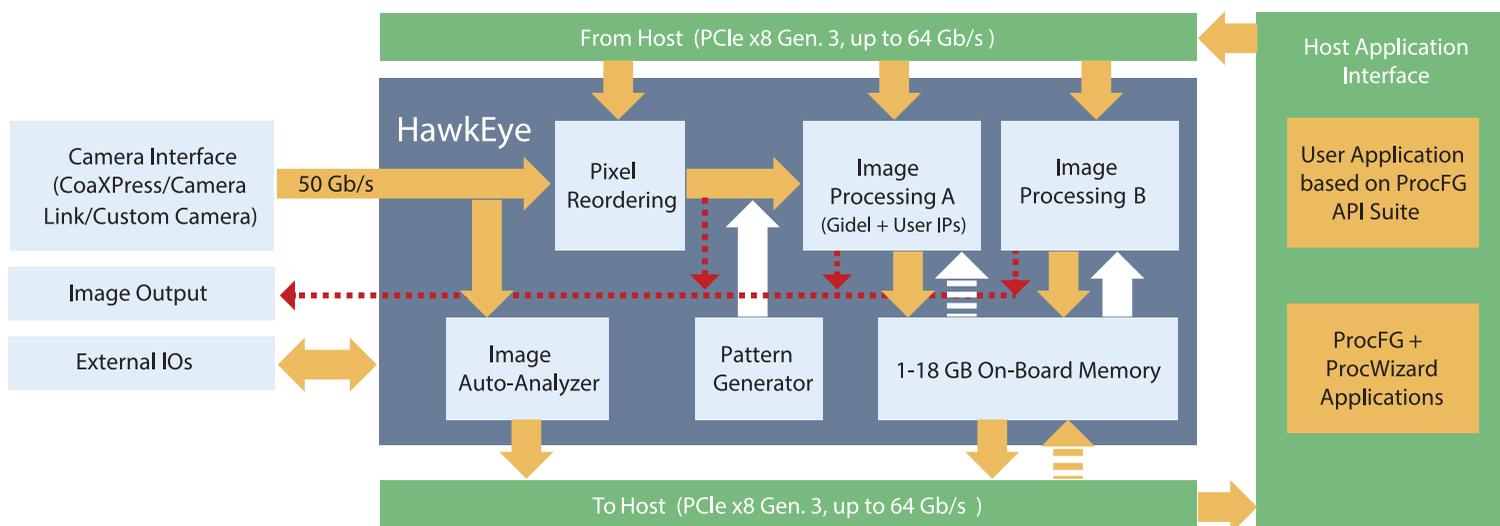
Typical HawkEye acquisition and processing system implementation