HawkEye-20GigE Vision
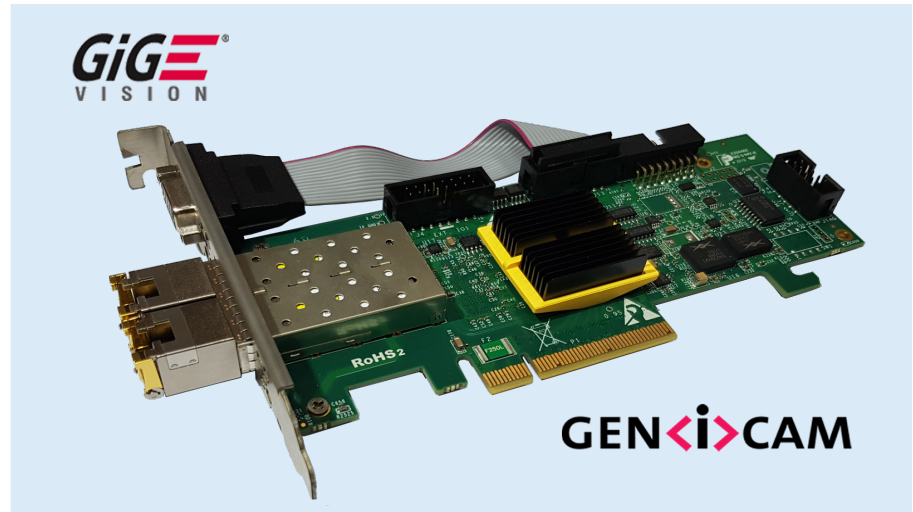
Dual-Port 10 GigE Frame Grabbing & Image Processing System

Key Features

- Grabbing from 2 x 10 GigE links
- Support for multi-cameras: 2 x10GigE, 4 x 5GigE, 20 x 1GigE, or any combination
- Support for Link Aggregation
- Acquisition bandwidth of up to 20 Gb/s via 2 SFP+ ports (copper/fiber)
- No frame loss
  - ✓ CPU-free data offload via PCIe Gen. 3 x8 enabling high-resolution post processing on host computer
- Support for ROI acquisition
- Payload types supported:
  - ✓ 0x0001: Uncompressed image data
  - ✓ 0x4001: Image + extended chunk data
- Camera sychronization via hardware triggering or PTP (Precision Time Protocol)
- PCIe x8 Gen. 3
- Form factor: low-profile
- Low-power, starting at less than 12W
- Pixel formats supported: Mono, Bayer, RGBA ,RGB, YUV and YCbCr 444/422/411
- Infrastructure for full Vision/Imaging system solution including on-FPGA image processing and post-processing on host
- Intel Arria 10 160 and 480 GX FPGA
- 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 and image processing
  - ✓ Image compression IPs
  - ✓ Tools for efficient development & integration of software and FPGA code
  - ✓ InfiniVision software for multi-camera acquisition and synchronization
  - ✓ Supports GenICam's GenTL API and **Halcon™** machine vision software

The Gidel HawkEye-20GigE frame grabbing and real-time image processing system offers true 10 GigE acquisition capabilities guaranteeing 100% frame capture with no frame loss. The board is supported by comprehensive system I/Os, ROI capture capability, multi-link aggregation and chunk data (payload type: 0x4001) transmission.

The HawkEye-20GigE series offers a number of options to accommodate diverse application needs, from a plug-and-play high-performance frame grabber to a fully customized system solution comprising acquisition, FPGA image processing, real-time image compression, multi-camera synchronization and complex I/O system control.

The HawkEye-20GigE has an acquisition bandwidth of 20 Gb/s via two SFP+ ports enabling grabbing from two 10 GigE cameras, multi-link cameras or multiple GigE cameras via a switch. The HawkEye-20GigE family is based on PCIe Gen. 3 x8, providing CPU-free ultra-fast offload bandwidth.

The boards are supported by Gidel's development tools, including the **ProcVision Kit** for tailoring, debugging and verifying the FPGA image processing and data flow, and the **Proc Dev Kit** for generating automatically the Application Support Packages (ASPs) and the environment FPGA code, including all board/IP constrains and user logic wrapper.

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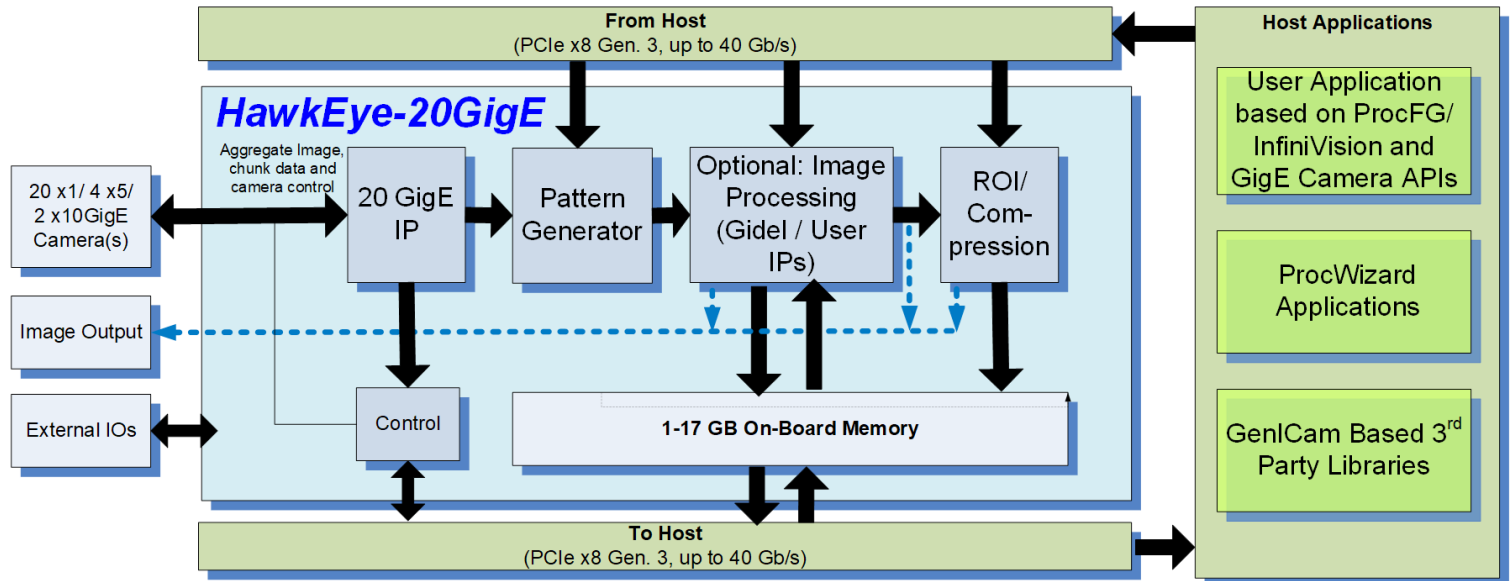POB 281, Or Akiva, Israel 3060000
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FEATURE	SPECIFICATIONS
Camera Interface	2 x 10, 4 x5 or 20 x1 GigE Links
Advanced Features	• Support for Link Aggregation mode • Support for Chunk Data • Selective ROI acquisition • Option for on-FPGA compression
Image Formats	Mono, Bayer, RGBA (8, 10, 12, 14 and 16 bits/color), RGB (8, 10 and 12 bits/color), YUV and YCbCr 444/422/411
Max Resolution	Horizontal: 16 K pixels (64-bit) Vertical: 65 K lines
Acquisition Rate	Up to 20 Gb/s acquisition rate
Host Bus	PCIe x8 Gen. 3
Frame Buffer	1 - 17 GB
Payload Types	0x0001: Uncompressed image data 0x4001: Image + extended chunk data
Image Processing	Option for user image processing code on Intel Arria 10 FPGA (for open FPGA grabber model only)
Camera Types	Area and Line
Operating Ambient Temperature	0 – 54 C, relative humidity up to 90% (non-condensing)

FEATURE	SPECIFICATIONS
Form Factor	PCIe low-profile
Connectors	• 2 x SFP+ (copper / fiber) • 15-Pin I/O D-SUB
GPIO	RS422, opto-coupler, LVTTL and 30V at 0.9A
Ecosystem Support	• ProcVision Kit for Vision flow tailoring • 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
OS Support	• Win 10 and Server 2012 (64-bit) • Linux (kernel 2.6.x- 5.5) • Linux version doesn't include the ProcFG/InfiniVision GUI and the ProcWizard application

Typical HawkEye acquisition and processing system implementation

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