

FantoVision20-CL Edge Computer

Camera Link image acquisition and processing: Jetson + FPGA

September 2025

Key Features

- Camera interface: Camera Link (up to 80-bit/Dual-Base)
- Computer: Nvidia Jetson Orin NX, Orin Nano, or Xavier NX
- FPGA: Arria 10 – 160/270/660
- Small body: 134 x 90 x 60 mm3 (5.28" x 3.54" x 2.36")
- GPU-FPGA interconnectivity:
 - PCIe Gen 3 x4
- Image processing:
 - On Jetson – supported by Nvidia JetPack SDK
 - On FPGA – supported by Gidel ProcVision suite
- FPGA interfaces: 2 x RS422, 2 x Opto-Isolator (4.5-15.5V), 2 x Output Drivers (30V/0.5A), 3 x GPIO 3.3V bi-dir (5V tolerant), 2 x RS422 /GPIO 3.3V bi-dir (5V tolerant), JTAG
- GPIO power out: 2 x 12V (1.0 A aggregate, including external fan power)
- Host interfaces: RS232, 1GbE, USB 3.1, USB 2.0, HDMI, UART, Recovery, Restart
- RTSP (Real-Time Streaming Protocol) output
- Jetson computer key performance:
 - Up to 100 TOPS AI computation
 - Up to 16 GB LPDDR5 @ 102.4 GB/s
- FPGA resources:
 - 160K/270K/660K LEs
 - 2 GB–10 GB DDR4 @ up to 23.6 GB/s
 - Up to 2,133 M20Ks
 - Up to 3,374 18 x 19 multipliers
 - Up to 16 I/O PLLs
- Compression options: Quality+, Lossless, JPEG and H264/5
- Typical power consumption : 20 W (dependent on system configuration)
- NVMe 100 GB - 1.92 TB SSD
- Passive or active cooling
- Option for industrial temperature
- **EMC:** FCC 47CFR part 15; ICES-003; VCCI-CISPR 32; EN 55032; EN 55035; EN 61000-3-3; EN IEC 61000-3-2
- **Safety:** EN 62368-1; IEC 62368-1
- **Environmental:** IEC 60721-4-5; IEC 60529; IP53



Video, Machine Vision and AI Inferences on the Edge

Gidel's FantoVision20-CL™ is a pioneering compact computer enabling image acquisition and processing from 80-bit or Dual-Base Camera Link cameras. The FantoVision's innovative architecture combines high-performance image acquisition with real-time processing and compression. It harnesses the Nvidia Jetson™ platform for up to 100 TOPS of AI compute, and an Intel Arria 10™ FPGA for embedded pre-processing such as HDR, dynamic white balance, and compression. A 4-lane PCIe Gen3 link ensures fast data streaming between the FPGA and the GPU. With up to 2 TB+ SSD storage, the system supports demanding real-time processing, compression, and recording, while the FPGA is fortified by up to 10 GB DDR4@200 Gb/s for sustained high-throughput imaging.

Open Customizable Image Processing

The FantoVision is distinct in its open architecture enabling embedded AI/image processing on GPU and FPGA. Software engineers can program their algorithms on GPU using CUDA C/C++ and NVIDIA's AI libraries. In addition, developing and deploying optional pre-processing block on FPGA is simple and fast using Gidel's novel ProcVision™ Suite.

Scalable Solution

The FantoVision opens the way for new compact, low-power, scalable vision and imaging solutions for high-bandwidth, low-latency applications. Multi-FantoVision units can be interconnected to provide unique and scalable topologies. Using Gidel's InfiniVision™ grabber architecture, 100+ sensors can be synchronized and processed simultaneously.

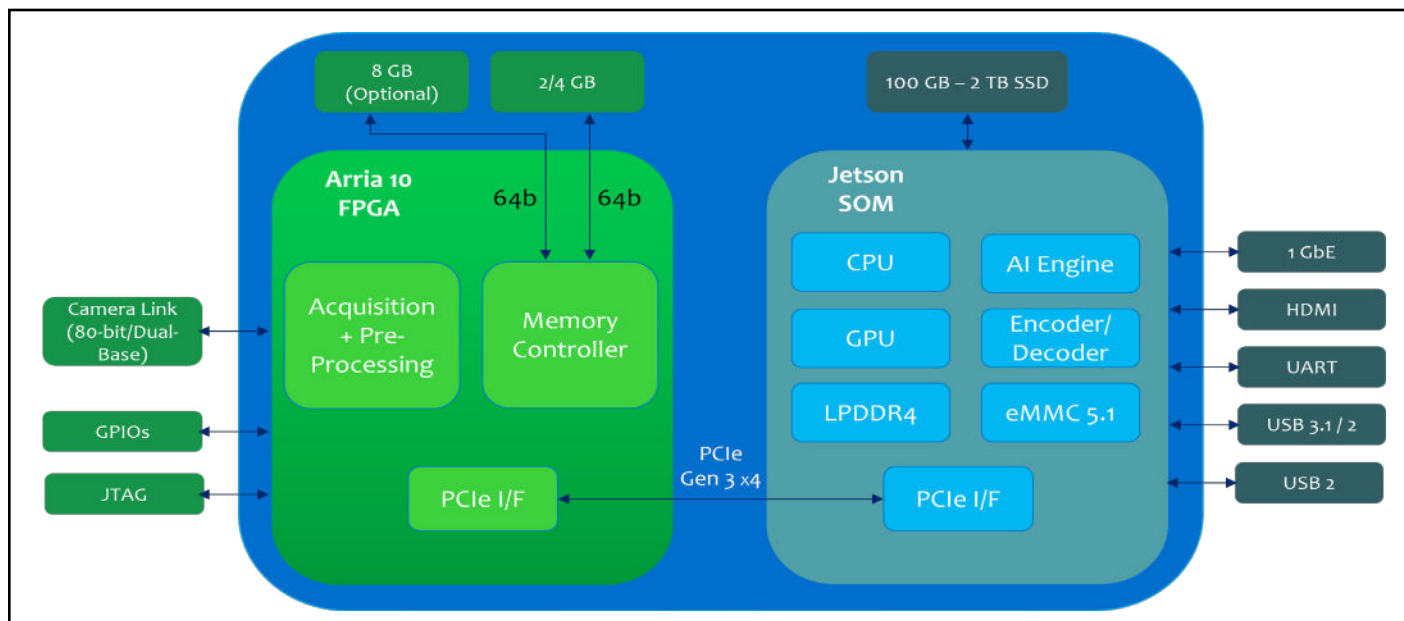
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FantoVision20-CL System Block Diagram

FPGA Options			
FPGA	Arria 10 160 GX	Arria 10 270 GX	Arria 10 660 GX
DRAM Throughput	12.8 GB/s	23.6 GB/s	19 GB/s
On-board DDR4	2 or 4 GB	10 GB	9 GB
Max Bandwidth/SFP+	Up to 12.5 Gb/s	Up to 12.5 Gb/s	Up to 12.5 Gb/s
FPGA Resources:			
Logic Elements	160K	270K	660K
M20K	440	750	2,133
18x19 MAC	312	1,660	3,374
I/O PLL	6	8	16

Embedded Computer Options			
Model	Jetson Orin NX	Jetson Orin Nano*	Jetson Xavier NX
AI Performance	Up to 100 TOPS	Up to 40 TOPS	21 TOPS
NVIDIA GPU	1024 Core Ampere, with 32 Tensor Cores	1024 Core Ampere, with 32 Tensor Cores	384-core Volta™ GPU with 48 Tensor Cores
CPU	Up to 8-core Arm Cortex-A78AE 2MB L2 + 4MB L3	Up to 6-core Arm® Cortex®-A78AE	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6MB L2 + 4MB L3
Memory	Up to 16GB @ 102.4 GB/s	Up to 8GB @ 68 GB/s	Up to 16 GB @ 59.7 GB/s
Storage	Supports external NVMe	Supports external NVMe	16 GB eMMC 5.1
Video Encode	1x 4K60 3x 4K30 6x 1080p60 12x 1080p30 (H.265), H.264, H.265, AV1	1080p30 supported by 1-2 CPU cores	2x 464 MP/s 2x 4Kp30 6x 1080p60 14x 1080p30 (H.265 & H. 264)
Video Decode	1x 8K30 2x 4K60 4x 4K30 9x 1080p60 18x 1080p30 (H.265) H.264, H.265, VP9, AV1	1x 4K60 (H.265) 2x 4K30 (H.265) 5x 1080p60 (H.265) 11x 1080p30 (H.265)	2x 690 MP/s 2x 4Kp60 4x 4Kp30 12x 1080p60 32x 1080p30 (H.265)
Jetson to FPGA	PCIe x4 Gen. 3	PCIe x4 Gen. 3	PCIe x4 Gen. 3

*Subject to minimum order quantity



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