FantoVision20 Edge Computer

20 Gb/s image acquisition and processing on FPGA & GPU

July 2025

Key Features

- 2 x 10GigE-Vision or up to 2 x 12.5 G
- Camera Link (up to 80-bit/Dual-Base)
- Computer: Nvidia Jetson Orin NX, Orin Nano, and 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 temperture
- **EMC**: FCC 47CFR part 15; ICES-003; VCCI-CISPR 32; EN 55032; EN 55035; EN 61000-3-3; EN IEC 61000-3-2
- **Saftey:** 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 Fanto*Vision20*™ is a pioneering compact computer enabling image acquisition and processing from 2 x 10GigE Vision and from 80-bit or Dual-Base Camera Link cameras. The FantoVision's innovative architecture merges high-end image acquisition with real-time image processing and/or compression using Nvidia Jetson™ embedded computer with optional pre-processing/compression on Intel Arria 10™ FPGA. The Jetson boasts up to 100 TOPS AI compute capability using Nvidia's comprehensive libraries. The GPU and FPGA interconnect via 4-lane PCIe Gen 3. With up to 2 Tera Byte+ SSD, the system can perform demanding real-time processing, compression, and recording. The FPGA is fortified with up to 10 GB DDR4@200 Gb/s.

Open Customizable Image Processing

The FantoVision is also 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™ open frame grabber flow, 100+ sensors can be synchronized and processed simultaneously.

Gidel
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North America:

6520 Platt Ave Ste 804
West Hills, CA 91307
+1-818-835-9547
sales_usa@gidel.com

International:

2 Ha'ilan St., Northern Ind. Zone
POB 281, Or Akiva, Israel 3060000
+972-4-610-2500
sales_eu@gidel.com

www.gidel.com

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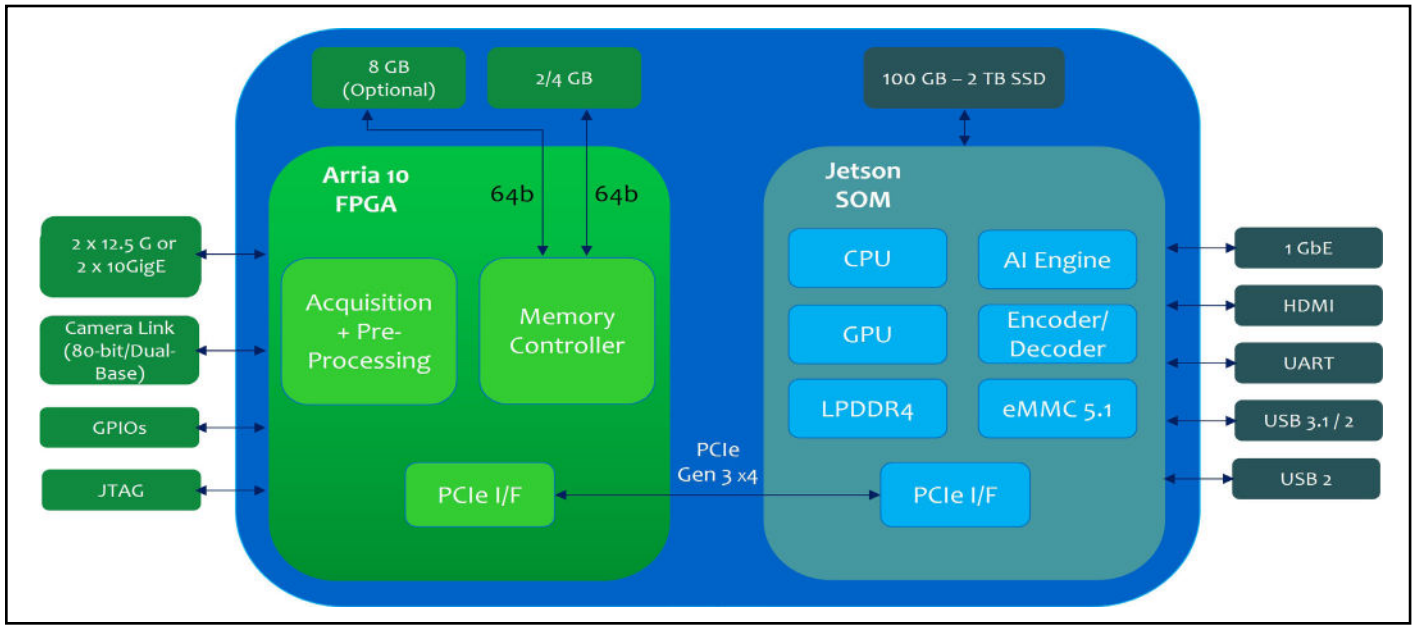

FantoVision20 System Block Diagram

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 Band-width/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 Perforamance	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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