

FantoVision 40 Edge Computer

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

January 2023

Key Features

- 4 x CoaXPress 2.1
- Optional: 4 x 10GigE-Vision*
- Computer: Nvidia Jetson Orin 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: 8 x RS422, 4 x Opto-Isolator, 4 x Output Drivers (30V/0.5A), 6 x GPIO 3.3V bi-dir (5V tolerant), JTAG
- GPIO power out: 2 x 12V (1A)
- Host interfaces: RS232, 1GbE, USB 3.1/2.0, HDMI, UART, Recovery, Restart
- 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 25.6 GB/s
 - Up to 2,133 M20Ks
 - Up to 3,374 18 x 19 multipliers
 - Up to 16 I/O PLLs
- Max. power consumption : 15-45 W (dependent on system configuration)
- NVMe 100 GB - 2 TB SSD
- Passive or active cooling



Video, Machine Vision and AI Inferences on the Edge

Gidel's FantoVision 40™ is a pioneering compact computer enabling image acquisition and processing from 4 x CoaXPress 2.1 or 4 x 10GigE* 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, cost-effective, 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.

*For Availability of 10 GigE interface, please contact the Gidel Support



North America:

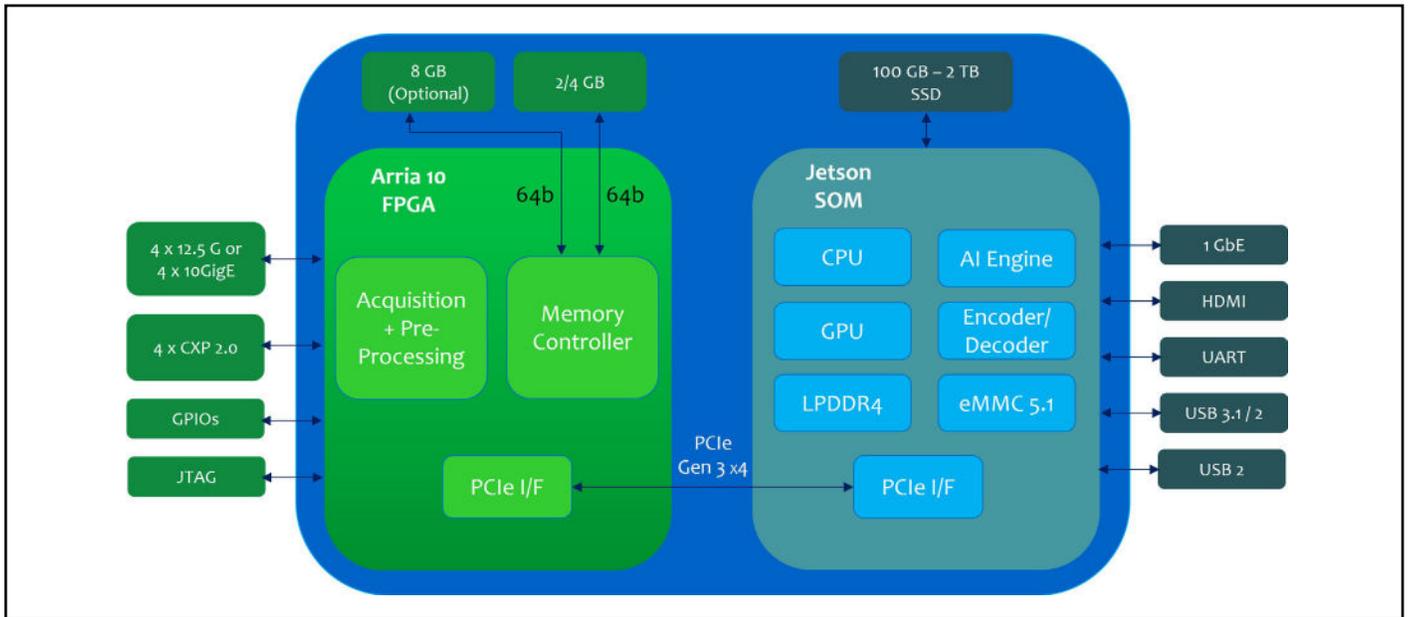
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Fanto *Vision 40* Edge Computer



Fanto *Vision 40* System Block Diagram

FPGA Options			
FPGA	Arria 10 160 GX	Arria 10 270 GX	Arria 10 660 GX
DRAM Throughput	12.8 GB/s	25.6 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
AI Performance	Up to 100 TOPS
NVIDIA GPU	1024 Core Ampere, with 32 Tensor Cores
CPU	Up to 8-core Arm Cortex-A78AE 2MB L2 + 4MB L3
Memory	Up to 16GB @ 102.4 GB/s
Storage	Supports external NVMe
Video Encode	1x 4K60 3x 4K30 6x 1080p60 12x 1080p30 (H.265), H.264, H.265, AV1
Video Decode	1x 8K30 2x 4K60 4x 4K30 9x 1080p60 18x 1080p30 (H.265) H.264, H.265, VP9, AV1
Jetson to FPGA	PCIe x4 Gen. 3



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