

# FantoVision 40 Edge Computer

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



January 2023

## Key Features

- 4 x 10GigE-Vision or up to 4 x 12.5 G
- 4 x CoaXPress 2.1
- Computer: Nvidia Jetson Xavier NX
- (Option for Jetson TX2/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 Fanto Vision 40™ is a pioneering compact computer enabling image acquisition and processing from 4 x 10GigE or 4 x CoaXPress 2.1 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.



### North America:

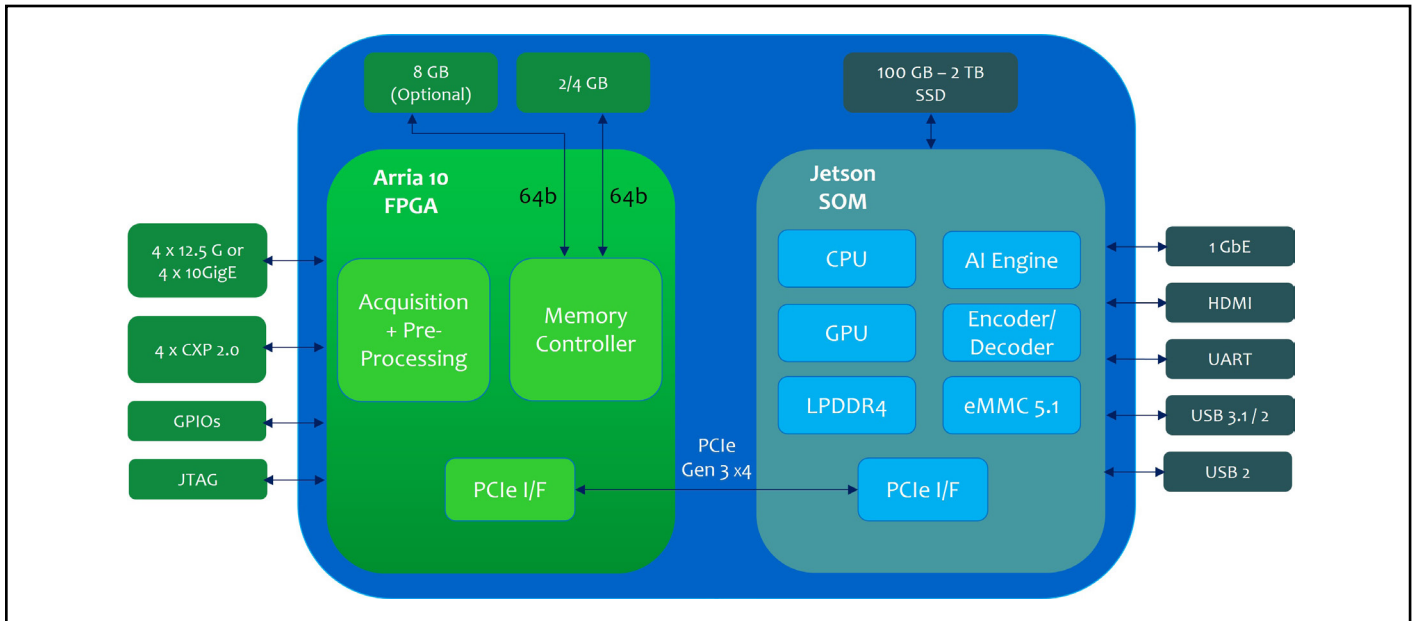
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# Fanto *Vision 40* Edge Computer



## 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*   | Jetson Xavier NX  | Jetson TX2 NX  |
| AI Performance            | Up to 100 TOPS  | 21 TOPS   | 1.33 TFLOPS  |
| NVIDIA GPU                | 1024 Core Ampere, with 32 Tensor Cores  | 384-core Volta™ GPU with 48 Tensor Cores                                  | 256-core Pascal™ GPU   |
| CPU                       | Up to 8-core Arm Cortex-A78AE 2MB L2 + 4MB L3   | 6-core NVIDIA Carmel ARM® v8.2 64-bit CPU 6MB L2 + 4MB L3                 | Dual-core Denver 2 64-bit CPU and quad-core ARM® Cortex® -A57 MPCore processor |
| Memory                    | Up to 16GB @ 102.4 GB/s   | Up to 16 GB @ 59.7 GB/s   | 4 GB @ 51.2 GB/s   |
| Storage                   | Supports external NVMe  | 16 GB eMMC 5.1  | 16 GB eMMC 5.1   |
| Video Encode              | 1x 4K60<br>3x 4K30<br>6x 1080p60<br>12x 1080p30 (H.265), H.264, H.265, AV1                | 2x 464 MP/s<br>2x 4Kp30<br>6x 1080p60<br>14x 1080p30 (H.265 & H.264)      | 1x 4Kp60<br>3x 4Kp30<br>4x 1080p60<br>8x 1080p30 (H.265 & H.264)               |
| Video Decode              | 1x 8K30<br>2x 4K60<br>4x 4K30<br>9x 1080p60<br>18x 1080p30 (H.265) H.264, H.265, VP9, AV1 | 2x 690 MP/s<br>2x 4Kp60<br>4x 4Kp30<br>12x 1080p60<br>32x 1080p30 (H.265) | 2x 4Kp60<br>4x 4Kp30<br>7x 1080p60<br>14x 1080p30 (H.265 & H.264)              |
| Jetson to FPGA            | PCIe x4 Gen. 3  | PCIe x4 Gen. 3  | PCIe x2 Gen. 2   |

\*For availability, contact Gidel Sales.



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