

PCIe-NX156U3

100 TOPS Intelligent Frame Grabber Card with 6x USB 3.2 ports for AI Inspection

Preliminary



CE FC

Key Features

- Powered by NVIDIA® Jetson Orin™ NX bundled with JetPack 5.1
- Single-slot width, standard PCIe half-length card form factor
- 6x USB 3.2 ports, each port with user-configurable 900mA and 1500mA current limit
- 100 TOPS AI inference performance
- Software-programmable per-port power on/off control
- 1x isolated RS-485 and 1x RS-232
- x1 Gen2 PCI Express interface offering 2.5Gb/s total bandwidth
- -25°C to 60°C operating temperature with airflow

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Introduction

PCIe-NX156U3 is an intelligent 6-port USB 3.2 frame grabber card powered by NVIDIA's Jetson Orin NX designed to enable AI capabilities for modern vision inspections. It delivers 100 INT8 TOPS AI performance via its 1024 CUDA cores, 32 Tensor cores, and 2 NVDLA engines. It also features two USB 3.2 Gen2 ports and four USB 3.2 Gen1 ports; each port provides 10 Gbps (Gen2) or 5 Gbps (Gen1) data bandwidth, and up to 1500mA current for USB camera connectivity.

PCIe-NX156U3 aims to enable AI inference and increase USB camera connectivity for existing 19" rack-mount or commercial off-the-shelf box AOI systems. With a standard single-slot half-length PCIe card form factor, PCIe-NX156U3 communicates with the host via the PCIe x4 slot Gen2 x1 signal. Its AI capabilities offloads deep-learning vision computing from the host computer, actions such as image capture, pre-processing, and inference are all performed by PCIe-NX156U3 while utilizing minimum host computer resources.

Capable of wide temperature -25°C to 60°C operation and Windows and Linux OS compatibility make PCIe-NX156U3 the perfect upgrade for legacy machine vision systems to leverage deep learning-based image processing such as package inspection, object sorting, surface defect detection, assembly verification, and robotic guidance, etc. It is a revolutionary AI-enabling frame grabber card for next-generation inspection applications.

Specifications

System Core

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|-----------|---|
| Processor | Supporting NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU |
| Memory | 8GB/ 16GB LPDDR5 @ 3200 MHz on SOM |

Storage Interface

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|----------|--|
| M.2 NVMe | 1x M.2 2242 M key socket (PCIe Gen4 x2) for NVMe SSD |
|----------|--|

Deployment I/O Interface

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|---------------|---|
| Bus Interface | x1, Gen2 PCI Express |
| USB | 2x USB 3.2 Gen2 (10 Gbps) ports 4x USB 3.2 Gen1 (5 Gbps) ports |
| Serial Port | 1x RS-232 port and 1x isolated RS-485 port |

Development I/O Interface

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|---------------|---|
| Ethernet port | 1x Gigabit Ethernet |
| USB | 2x USB 2.0 ports 1x micro USB (OTG) |
| Video Port | 1x DisplayPort, supporting 3840x2160 at 60Hz |
| DC Input | 12V DC power input (for standalone development, or when total power consumption is more than 66W) |

Mechanical

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|-----------|---------------------------|
| Dimension | 167.7 mm (W) x 111 mm (H) |
| Weight | TBD |

Environmental

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|-----------------------|---|
| Operating Temperature | -25°C to 60°C with airflow (20W TDP mode) * |
| Storage Temperature | -40°C ~85°C |
| Humidity | 10%~90% , non-condensing |
| EMC | CE Class A, according to EN 55032/55035 (pending) FCC Class A, according to FCC Part 15, Subpart B (pending) |

* For sub-zero and over 60°C operating temperature, a wide temperature NVMe is required.

Ordering Information

| Model No. | Product Description |
|------------------|---|
| PCIe-NX156-JON8 | 100 TOPS Intelligent Frame Grabber with 6x USB 3.2 ports by Jetson Orin NX (8GB) |
| PCIe-NX156-JON16 | 100 TOPS Intelligent Frame Grabber with 6x USB 3.2 ports by Jetson Orin NX (16GB) |

Ordering Information

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|-----------|---|
| PA-60W-OW | 60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C |
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