

JetStream

AI video carrier board for NVIDIA® Jetson Xavier™ NX



**Advanced Micro
Peripherals**

THE EMBEDDED VIDEO EXPERTS

Rugged interconnect™
TECHNOLOGIES

Technologies evolve, our commitment remains

The JetStream is a multi-channel video AI carrier board for Jetson™ modules. The JetStream provides dual HDMI and eight composite video inputs allowing multi-channel video AI applications to be rapidly developed and deployed. This SWaP optimized solution is ideal for demanding applications in Military, Communications, Transportation, Mining and Energy industries.



AI Inference example: Object detection + monitoring⁽¹⁾

The JetStream features dual HDMI/DVI inputs at up to 1080p60 and an 8 channel NTSC/PAL/RS-170 low latency video capture engine. All inputs can be simultaneously captured for processing by the Jetson Xavier NX module allowing vision-enabled AI applications to use a wide range of standard video sources. An optional MIPI expansion module provides expansion to other video interface types on request. The JetStream has a HDMI output for local display and Gigabit Ethernet for connectivity. An M.2 (Key M) slot is provided to allow connection of high-performance NVMe storage. Additional expansion is possible via the PCIe/104 OneBank™ bus connector.

The JetStream is a standard PCIe/104 form factor card and is powered from 9V-15V DC input. The JetStream is supported by a comprehensive board support package and a series of application notes designed to help rapid development of vision-enabled AI applications.

PRELIMINARY INFORMATION (Rev A.00)

Subject to change without notification

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Multi-channel
vision-enabled
AI

Device edge
computing



PC/104

Embedded PC Modules

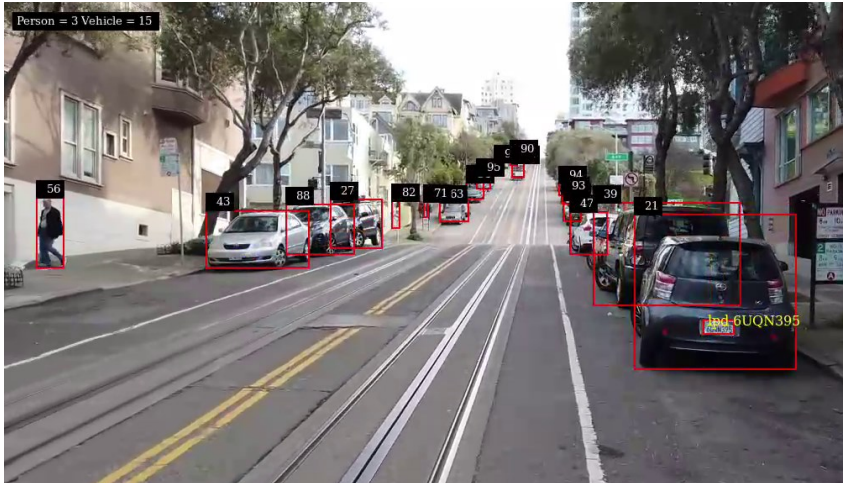
JetStream

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AI Inference example: Object detection + ANPR

Applications

AI Inference - Object Recognition, ANPR, Pose detection

Device Edge computing

Unmanned vehicles (UAV, ROV)

All-round Real-Time Situational Awareness

Traffic Monitoring and Control

Video Acquisition and Analytics

Remote Video Surveillance

Rugged intelligent video recorders for marine, aviation

Border Security

Dual HDMI +
8x NTSC/PAL
video inputs

AI
video analysis,
encode and stream

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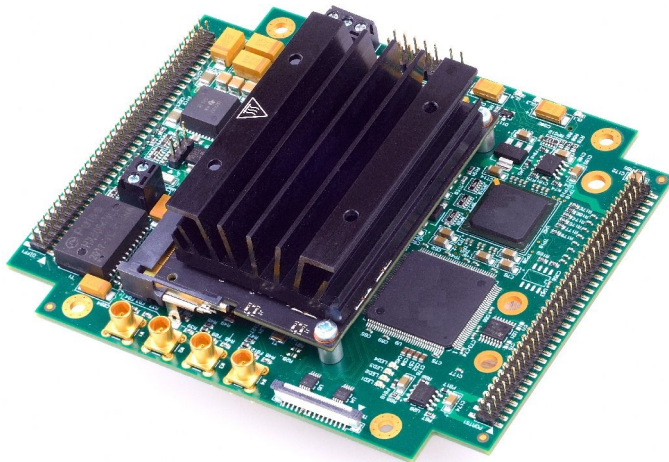
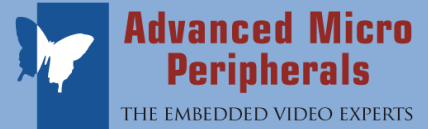


PC/104

Embedded PC Modules

JetStream

AI video carrier board for NVIDIA® Jetson Xavier™ NX



JetStream

Features

- Support for NVIDIA® Jetson Xavier™ NX and Nano modules
- 2x HDMI video inputs at up to 1080p60
- 8x Composite PAL/NTSC/RS-170 video inputs
- HDMI 2.0 Display at up to 4K resolution
- Multi-channel AI Video Inference
- H.264/H.265 Video Encoding and Streaming
- Rugged, real-time video capture/analyze/stream solution
- M.2 (Key M) NVMe storage
- Gigabit Ethernet
- PCIe/104 OneBank™ Expansion
- Industry Standard PC/104 mechanical form factor

SWaP optimized for
applications in the

Military,

Transportation,

Mining and

Energy Industries

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 **PC/104**
Embedded PC Modules

Jetson Module Support

NVIDIA® Jetson Xavier™ NX
AI Performance: 21TOPS
GPU: 384-core NVIDIA Volta™ GPU with 48 Tensor Cores
CPU: 6-core NVIDIA Carmel ARM® v8.2 64bit
Memory: 8GB 128-bit LPDDR4x
Storage: 16GB eMMC 5.1
 NVIDIA® Jetson Nano (option)

Digital Video Inputs

Dual HDMI input at up to 1080p60 (SMPTE 292M, SMPTE 424M)
 2x Dual-lane MIPI CSI Expansion ports (option)

Analog Video Inputs

8x Composite PAL/NTSC/RS-170 video inputs

Video Codec

ITU-T H.264 (ISO/IEC 14496-10)
 ITU-T H.265 (ISO/IEC 23008-2)
 Encode all inputs at full frame rate

Display

HDMI 2.0 up to 4K
 Audio output via HDMI

Network Interface

Gigabit Ethernet for RTSP/RTP streaming and control

Data Storage

M.2 (Key M) slot for NVMe
 microSD-Card

Expansion busses

Stackable PCIe/104 OneBank™ connector
 4x PCI Express x1 Lanes Gen 2.0
 M.2 (Key M) PCIe 1x4 Gen 4.0 (NVMe)

I/O Expansion

2x USB 2.0
 1x RS232

Power

9V to 15V DC input

Environmental

Operating temp -40°C to +85°C (carrier board)

Mechanical

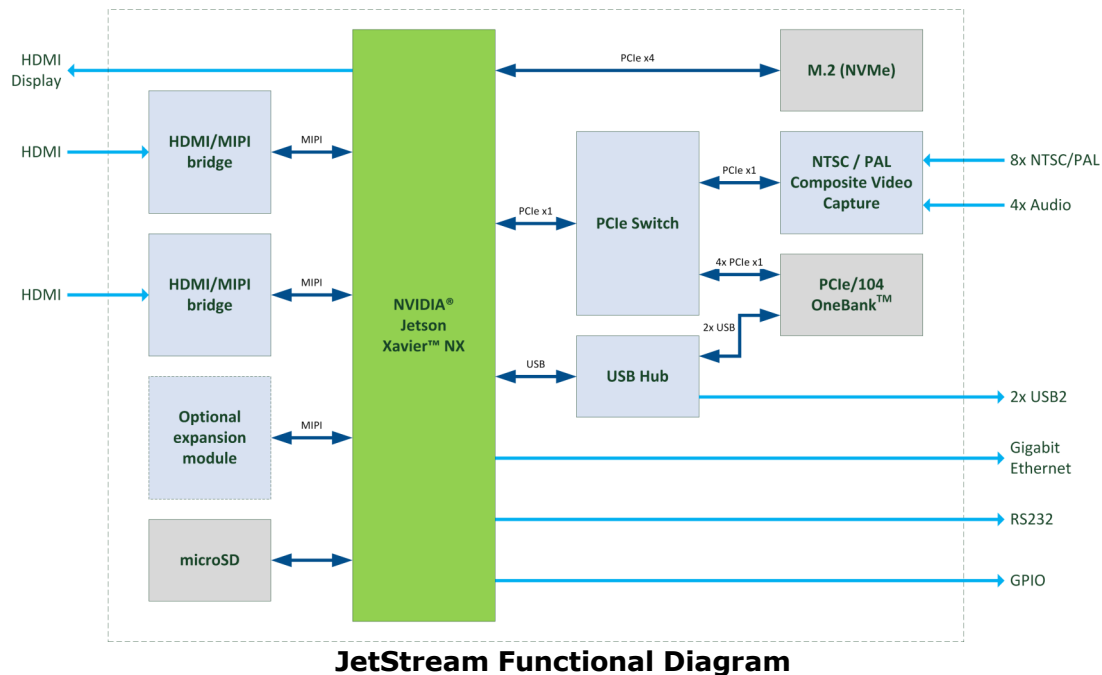
Standard 4.55 x 3.775in PC/104 form factor
 Mechanical mounting for PC/104 stack

Software

Support for Ubuntu Linux 18.04
 Board support package
 Application notes:
 AI Video analytics
 Video encoding and Streaming

Ordering Information

JetStream-Xavier-EXT
 JetStream + NVIDIA® Jetson Xavier™ NX module
JetStream-EXT
 Base JetStream carrier board



JetStream Functional Diagram

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(1) Northern Border Remote Video Surveillance System
 (NBRVSS) Source: www.cbp.gov Photo: Heath Stephens

