ECRIN Systems

ONYX-AGX

Rugged AI computing for real-time video analytics

OPTIMIZED PASSIVE COOLING ARCHITECTURE ENABLING THE FULL POWER OF THE NVIDIA ORIN AGX IN DEMANDING ENVIRONMENTS.

The ONYX AGX is a high-performance rugged edge AI computer designed for real-time video processing, object recognition, and mission-critical AI applications. Powered by a 2048-core NVIDIA Ampere GPU with 64 Tensor Cores, dual NVDLA v2 engines, and a 12-core Arm Cortex-A78AE CPU, it delivers up to 248 TOPs of AI compute performance, making it ideal for advanced AI workloads in harsh environments.

Equipped with 64GB LPDDR5 ECC memory and 64GB eMMC storage, the ONYX AGX provides the compute power and memory bandwidth required for high-throughput AI inference and video analytics. Its input/output interfaces including two HDMI, one 10Gb Ethernet interfaces, Gb Ethernet, CAN Bus, RS232/RS422, and USB3.0 ensure fast data acquisition and connectivity for complex AI and video processing tasks. Optional features such as HD-SDI video inputs and M.2 NVMe storage extend its capabilities for demanding edge applications.

Mechanically rugged and engineered for harsh environments, the ONYX AGX features a compact chassis with MIL-D38999 connectors, modular expansion slots, and passive cooling, delivering a reliable, versatile, and mission-ready platform for defense, aerospace, industrial, and surveillance systems.

- Based on NVIDIA Jetson AGX Orin Industrial module
- AI computing performance up to 248 TOPS
- 2048-core NVIDIA Ampere GPU with 64 Tensor Cores
- 12-core Arm Cortex-A78AE CPU
- 64GB 256-bit LPDDR5 memory with ECC
- 64GB onboard eMMC 5.1 storage
- 2x HDMI graphic outputs
- 1x 10Gb Ethernet Base-T
- 3x Gb Ethernet Base-T
- 2x RS-232 + 2x RS-422 serial interfaces
- 1x RS-232 debug interface
- 2x CAN Bus 2.0
- 3x USB 2.0
- 1x USB 3.0 / USB 2.0 (USB-C FTV connector)
- 2x expansion slots: QMC– up to 30 I/O per slot
- 4x HD-SDI video inputs (optional feature)
- 1x M.2 NVMe SSD slot
- Cableless, fanless, MIL-DTL-38999 connectors
- Qualified according to DO-160 and MILSTD-810/461
- Operating temperature: -40°C to +55°C

FRENCH MANUFACTURER

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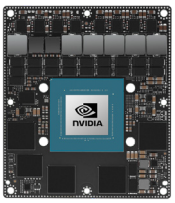
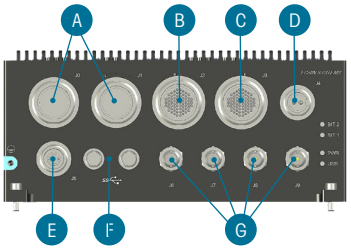
ONYX-AGX

SYSTEM SPECIFICATIONS

Processing / Memory	NVIDIA Jetson AGX Orin Industrial module AI performance up to 248 TOPS 2048-core NVIDIA Ampere GPU with 64 Tensor Cores 12-core Arm Cortex-A78AE CPU 2x NVDLA v2 deep learning accelerators 64GB 256-bit LPDDR5 memory with ECC 64GB onboard eMMC 5.1 storage
Video outputs	2x HDMI (HDMI FTV rugged connectors)
Video inputs	4x HD-SDI video inputs (optional feature)
Ethernet	1x 10Gb Ethernet Base-T (µCOM connector) 3x 10/100/1000 Base-T Ethernet
Serial Interfaces	2x RS-232 serial interfaces 2x RS-422 serial interfaces 1x RS-232 debug interface
CAN	2x CAN Bus 2.0
USB	3x USB 2.0 1x USB 3.0 / USB 2.0 (USB-C FTV rugged connector)
Storage	1x M.2 NVMe SSD slot (TBC)
I/O Expansion slots	2x expansion slots: QMC Up to 30 I/O per slot





A: 2x HDMI - HDMI FTV connector
B: 2x Expansion slot - Limited to 30 I/O per slot
C: 3x Gb Eth. - 3x USB2.0 - 3x RS232 - 2x RS422 - 2x CAN Bus
D: +28VDC
E: 1x 10GBase-T - µCOM connector
F: 1x USB3.0 - USB-C FTV connector
G: 4x Video input

POWER SUPPLY

Power Input	+28VDC nominal (range +14VDC to +36VDC)
Power consumption	75 to 120 W depending on the configuration

SWAP-C CONSTRAINTS

Size (WxDxH)	XXXX
Weight	9kg
Cooling types	Convection & radiation by fins, conduction by cold plate (conduction cooled inside)
Connectors	MII-DTL-38999 connectors Customizable front panel for specific application

ENVIRONMENTAL QUALIFICATION TESTS

Operating temperature	Operating temperature -40°C to +55°C without external air flow.
Storage temperature	-40°C / +85°C
Ingress protection rating	IP67
Altitude	Up to 15000 feet (DO-160)
Humidity	0%-95% relative humidity (DO-160)
Salt fog	50% salt spray / 96h (DO-160)

Sand & Dust	Wind and fine dust particles (DO-160)
Shock & vibration	DO-160 / MIL-STD-810G
EMI / RFI CE certification	DO-160 / MIL-STD-461F
CE certification	EN 55032: 2015 / A1: 2019 Electromagnetic compatibility of multimedia equipment - Emission requirements EN 55035: 2017: Electromagnetic compatibility of multimedia equipment - Immunity requirements EN 62368-1:2014+AC:2015: Part 1: Safety requirements

SOFTWARE

Software Support	64-bit Linux operating system based on Ubuntu LTS Software distribution provided through NVIDIA JetPack SDK Linux kernel optimized for Jetson platforms (GPU drivers, I/O interfaces, AI accelerators)

OTHER SPECIFICATIONS

Regulatory compliance	European CE Mark, REACH, RoHS, WEEE, CoC
Starter cable set	Breakout cable set mates with MIL-DTL-38999 connectors to break out standard CPUI/O and power signals to traditional PC style interfaces for lab purposes

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