

## Product Technical Specification

### Features

- Supports Super mode
- Supports Sony, Tamron, KT&C LVDS cameras
- Supports Sony HDMI block cameras via optional bridge module through 22-pin MIPI CSI-2 connector
- Supports 1 Gbps Ethernet
- M.2 Key E expansion for Wi-Fi/Bluetooth modules
- M.2 Key M expansion for NVMe SSD storage
- Micro HDMI output for local video monitoring
- USB Type-C for flashing and debugging
- Dual USB2 and dual USB3 via 1mm Molex Pico clasp connector
- On-board SPI interface via 1mm Molex Pico clasp connector
- I2C, UART x 2, RS422 and GPIO interface via 1mm Molex Pico clasp connector
- CAN interface via 1mm Molex Pico clasp connector
- Dedicated UART channel for LVDS block camera interfaces (VISCA protocol, 3.3 V CMOS)
- Onboard RTC battery and PWM fan connector
- Molex Micro fit plus power input connector
- Power LED
- Compact 90 × 60 mm PCB
- Weight: 42g approx.
- RoHS compliant
- Operating temperature: -40 °C to +85 °C

### Applications:

- AI Edge Computing and Vision Analytics
- Multi-Camera Networked Vision Systems
- Robotics and Autonomous Platforms
- Industrial & Machine Vision Systems
- Defense and Security Imaging
- UAV / ROV Payloads
- Smart Surveillance and Remote Monitoring
- Embedded Vision Research & Prototyping

### Product description:

The Orin AI Carrier Board is a high-performance embedded vision and compute platform engineered around NVIDIA's Jetson Orin Nano and Orin NX modules. The platform fully unlocks the capabilities of both modules — including Super Mode — to deliver maximum AI throughput for demanding real-time applications.

Designed for seamless integration, the board natively supports LVDS cameras from Sony (FCB-EV9520L, FCB-EV9500L), Tamron (MP3010M-EV), and KT&C (ATC-HZ5540T-LP). Support for Sony's 4K HDMI cameras — the FCB-ER8530, FCB-EW9500H, and FCB-ER9500 — is available through optional bridge modules, offering broad camera ecosystem compatibility across deployment scenarios.

The platform combines powerful AI inference, real-time video encoding, and flexible I/O interfacing in a compact, deployment-ready form factor. It is purpose-built for UAVs, defence imaging systems, robotics platforms, and edge AI vision applications where performance, reliability, and integration flexibility are mission critical.

The board supports a 1 Gbps Ethernet stream through a compact Molex Pico clasp 1.0 mm connector, enabling efficient network-based video transmission and remote AI-assisted analytics. A micro-HDMI output allows convenient local monitoring when required. For expansion, the board includes both M.2 Key E and M.2 Key M slots, supporting Wi-Fi/Bluetooth modules and NVMe SSDs to provide high-speed wireless connectivity and onboard storage. Additional interfaces such as I<sup>2</sup>C, CAN, SPI, and GPIO offer extensive system-level control and customization options.

Dual UART channels with 3.3 V CMOS levels allow simultaneous VISCA protocol control of multiple Sony FCB cameras. A CR1216 RTC battery holder is included to maintain accurate timestamping in embedded or remote applications. Power input is provided through a Molex Micro fit plus connector, supported by onboard regulation and LED indicators for power status.

Featuring a compact 90 × 60 mm footprint, industrial-grade construction, and an operating temperature range of –40 °C to +85 °C, the Orin Carrier Board offers rugged reliability and top-tier performance for next-generation intelligent vision systems.

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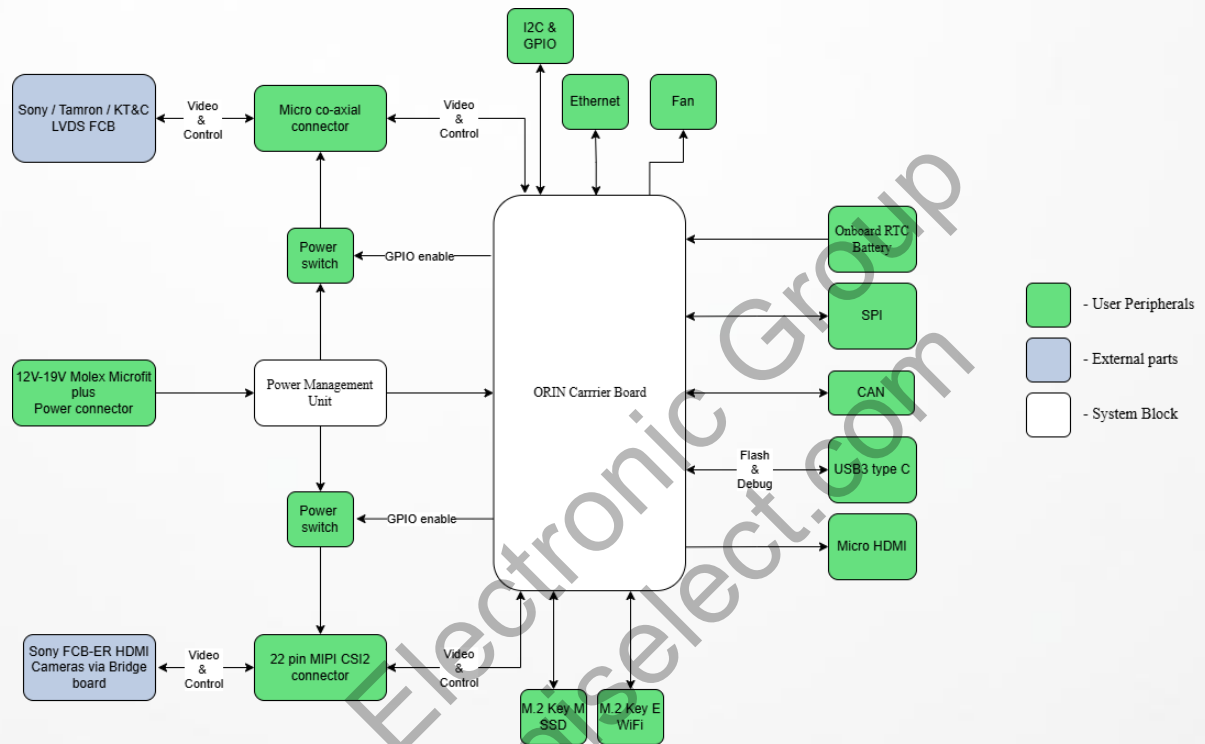
Parameter	Description
<b>CPU/GPU Module</b>	NVIDIA Orin NX/Nano
<b>Storage</b>	NVMe SSD via M.2 Key M 2242
<b>Camera Interfaces</b>	1 × LVDS (Sony FCB or Tamron or KT&C), optional HDMI (Sony FCB-ER series) via bridge board through 22pin MIPI CSI-2 connector
<b>Network Interface</b>	1 Gbps Ethernet via Molex Pico clasp 1.0 mm connector and M.2 Key E (Wi-Fi/BT) 2230
<b>Expansion header</b>	I <sup>2</sup> C, UART, RS422 & GPIO via Molex Pico clasp 1.0 mm connector
<b>Video Output</b>	Micro HDMI
<b>USB Interface</b>	USB Type-C for flashing & debugging, 2 x USB 2.0 and 2x USB 3.0 via 1 mm Molex Pico clasp connector
<b>SPI Interface</b>	Yes, 4-pin 1 mm Molex Pico clasp connector
<b>CAN Interface</b>	Yes, 4-pin 1 mm Molex Pico clasp connector
<b>UART Channels</b>	Independent dedicated channels for camera VISCA control via KEL connector, 2 x UART via 1 mm Molex Pico clasp connector.
<b>RTC</b>	Onboard RTC battery connector
<b>Power Input</b>	Molex Micro fit plus connector, 12-19 V regulated, supports Super mode.
<b>Fan</b>	Yes, dedicated PWM-controlled onboard fan
<b>Operating Temperature</b>	–40 °C to +85 °C
<b>Dimensions (L × W)</b>	90 × 60 mm
<b>Weight</b>	42g approx.
<b>Compliance</b>	RoHS

### Kit Contents

Item	Description
<b>Carrier Board</b>	Orin NX/Nano AI Carrier Board (90 × 60 mm)
<b>Software</b>	Image file with V4L2 driver compatible for Sony (LVDS and HDMI), Tamron and KT&C LVDS block cameras (optional)
<b>Power Cable</b>	2-pin 19V Molex Micro fit plus power cable
<b>Interface Cable</b>	IP - Molex Pico clasp 1.0 mm to RJ45 cable (optional), SPI - Molex Pico clasp 1.0 mm connector cable (optional),

Item	Description
	I2C, UART, RS422 & GPIO - Molex Pico clasp 1.0 mm connector cable (optional), CAN - Molex Pico clasp 1.0 mm connector cable (optional) USB 2 and USB 3 – Molex Pico clasp 1.0 mm connector cable (optional)
Mounting Hardware	Screws and spacers for mounting (optional)
Documentation	Product datasheet and User manual (digital copy)

### Board Block diagram



### Product images

