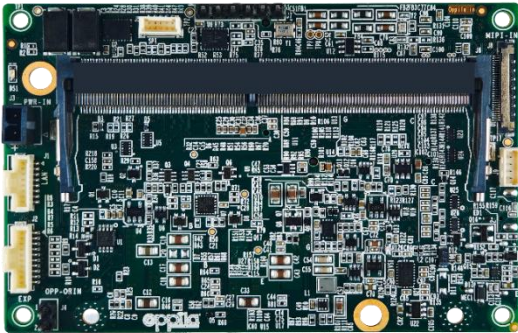


AstrOptix Orin Carrier Board

P/No: FC-00R-LM



Compatible Cameras:

- Sony • Tamron • KT&C • Videology • Wonwoo • Skoopia LVDS block cameras
- Sony MIPI CSI-2 block cameras and Sony HDMI block cameras via bridge board

Supported Host Platforms:

- Orin Nano • Orin NX

VALIDATED CONFIGURATIONS

Part numbers below are listed only for cameras and host platforms validated with a working V4L2 driver.

1. Validated Cameras:

Port 1 (LVDS): Sony FCB-EV9520L / FCB-EV9500L, Tamron MP3010M-EV, KT&C ATC-HZ5540T-LP, Videology 24Z2.1W-10X-LVDS-462

Port 2 (MIPI CSI-2): Sony FCB-EV9500M, other Sony FCB HDMI cameras via Bridge board

2. Host platforms: Orin Nano/Orin NX

Need a different camera or host platform?

Customization is available for other pinout-compatible cameras (including Wonwoo, Skoopia) or 4-lane MIPI CSI-2 host platforms, on request.

KEY FEATURES

- Supports Super mode
- Compatible with Sony, Tamron, KT&C and Videology LVDS cameras
- Compatible with Sony MIPI block camera
- Compatible with Sony HDMI block cameras via optional bridge board
- 1 Gbps Ethernet
- M.2 Key E expansion for Wi-Fi/BT modules
- M.2 Key M expansion for NVMe SSD storage
- Micro HDMI output for local video monitoring
- USB3 Type-C for flashing, debugging and data transfer (USB2.0 & USB3.0)
- Onboard SPI interface via 1 mm Molex Pico-Clasp connector
- Onboard camera power switches
- UART TTL/RS422, I²C and GPIO interface via 1 mm Molex Pico-Clasp connector
- CAN interface via 1 mm Molex Pico-Clasp connector
- Onboard dedicated UART channels for both FCB block camera interfaces (VISCA protocol, 3.3 V CMOS)
- Onboard RTC battery (CR1216) holder
- Molex Micro-Fit+ power input connector
- Power LED indication
- Compact 90 × 60 mm PCB & Board Weight: 37.5 g
- Operating temperature: -20 °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 Vision Payloads
- ▶ Smart Surveillance and Remote Monitoring
- ▶ Embedded Vision Research & Prototyping

PRODUCT DESCRIPTION

The AstrOptix Orin 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), KT&C (ATC-HZ5540T-LP), and Videology (24Z2.1W-10XLVDS-462). It also supports Sony's FCB-EV9500M MIPI camera via a secondary 4-lane MIPI interface over a 30-pin Kel connector. Additionally, support for 4K HDMI cameras — including the Sony FCB-ER8530 and FCB-EW9500H — is available through optional bridge board, enabling broad compatibility across diverse camera ecosystems and 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, defense 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 UART TTL/RS422, I²C, 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 time stamping 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 AstrOptix Carrier Board offers rugged reliability and top-tier performance for next-generation intelligent vision systems.

Technical Specification

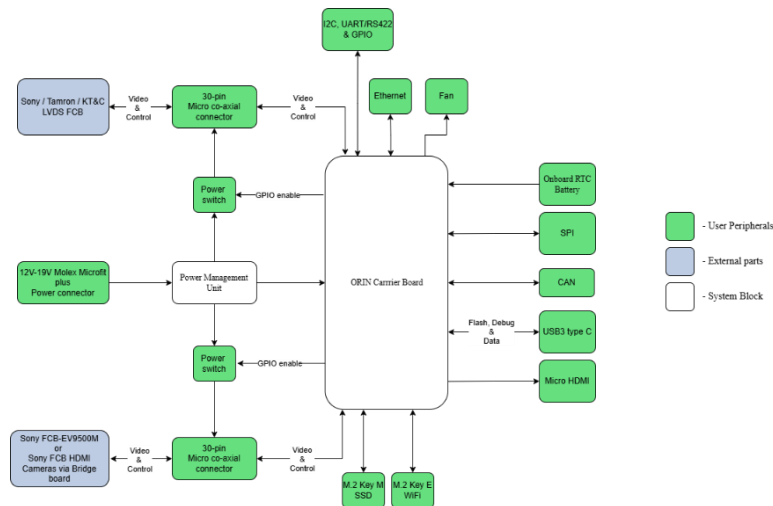
PARAMETER	DETAILS
CPU/GPU Module	NVIDIA Jetson Orin Nano & Orin NX
Storage	NVMe SSD via M.2 Key M 2242
Camera Interfaces	1 × LVDS (Sony, Tamron, KT&C and Videology LVDS cameras), 1 × 4-lane MIPI CSI-2 (Sony FCB-EV series), and HDMI (Sony FCB-ER & FCB-EW series) via bridge board.
Network Interface	1 Gbps Ethernet via Molex Pico-Clasp 1.0 mm connector and M.2 Key E (Wi-Fi/BT) 2230
Expansion Header	I ² C, UART TTL/RS422, & GPIO via Molex Pico-Clasp 1.0 mm connector
Video Output	Micro HDMI
USB Interface	USB Type-C for flashing, debugging and data transfer (USB2.0 & USB3.0)
SPI Interface	Yes, 4-pin 1 mm Molex Pico-Clasp connector
CAN Interface	Yes, 4-pin 1 mm Molex Pico-Clasp connector
UART Channels	Independent dedicated channels for camera VISCA control via KEL connector
RTC	Onboard RTC battery connector CR1216
Input Power	Molex Micro-Fit+ connector, 12–19 V regulated; supports Super Mode
Fan	Yes, dedicated PWM-controlled onboard fan
Operating Temperature	–40 °C to +85 °C
Dimensions (L × W)	90 × 60 mm

KIT CONTENTS

CATEGORY	ITEM	DESCRIPTION
Standard package	Carrier Board	AstrOptix Orin Carrier Board
	Power Cable	2-pin crimped power cable, 12–19 V, Molex Micro-Fit+
	Documentation	Product datasheet and User manual (digital copy)
	Software	System image with V4L2 driver support for Sony (LVDS, MIPI, HDMI), Tamron (LVDS), and KT&C (LVDS) block cameras
Optional accessories	Interface Cable	- Ethernet — Molex Pico-Clasp 1 mm (8-pin) to RJ45 cable - SPI — Molex Pico-Clasp 1 mm (4-pin) connector cable - I²C, UART (RS-422), & GPIO — Molex Pico-Clasp 1 mm (10-pin) connector cable - CAN — Molex Pico-Clasp 1 mm (4-pin) connector cable
	Mounting Hardware	Screws and spacers for mounting

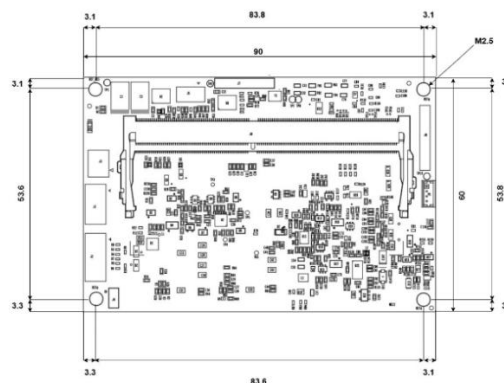
System Architecture

BOARD BLOCK DIAGRAM



Mechanical Dimensions

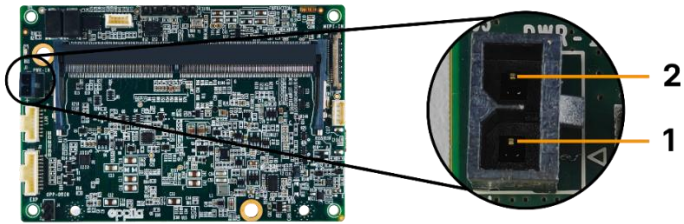
BOARD OUTLINE & MOUNTING



DIMENSION	VALUE
PCB Length	90 mm
PCB Width	60 mm
PCB Height	17.5 mm
Weight	37.5 g

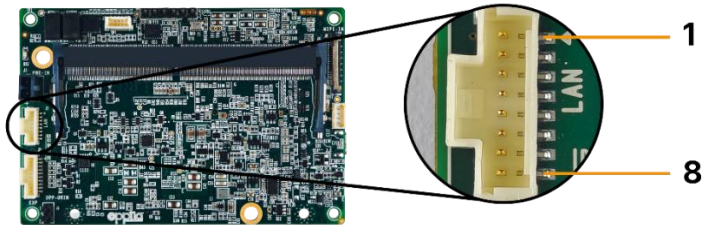
Pinout Descriptions

POWER CONNECTOR — J3



PIN	SIGNAL
Pin 1	+VIN
Pin 2	GND

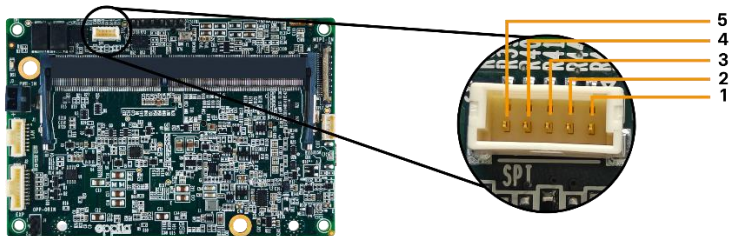
ETHERNET CONNECTOR — J1



PIN	SIGNAL
Pin 1	ETH_M0_P
Pin 2	ETH_M0_N
Pin 3	ETH_M1_P
Pin 4	ETH_M1_N

PIN	SIGNAL
Pin 5	ETH_M2_P
Pin 6	ETH_M2_N
Pin 7	ETH_M3_P
Pin 8	ETH_M3_N

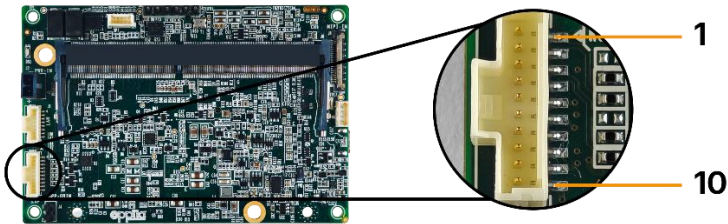
SPI CONNECTOR — J5



PIN	SIGNAL
Pin 1	SPI0_SCK
Pin 2	SPI0_MISO
Pin 3	SPI0_MOSI

PIN	SIGNAL
Pin 4	SPI0_CS0
Pin 5	GND

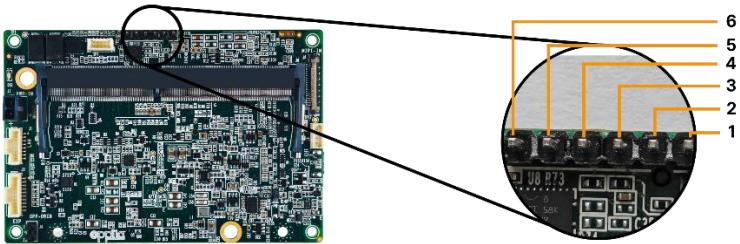
EXPANSION CONNECTOR — J2



PIN	SIGNAL
Pin 1	UART0_TX / RS422_TX+
Pin 2	UART0_RX / RS422_TX-
Pin 3	RS422_RX+
Pin 4	RS422_RX-
Pin 5	I2C1_SCL

PIN	SIGNAL
Pin 6	I2C1_SDA
Pin 7	GPI009
Pin 8	GPI011
Pin 9	GND
Pin 10	GND

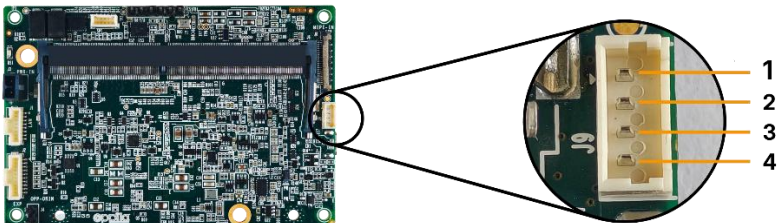
CONTROL HEADER— J7



PIN	SIGNAL
Pin 1	GND
Pin 2	SYSTEM RESET
Pin 3	GND

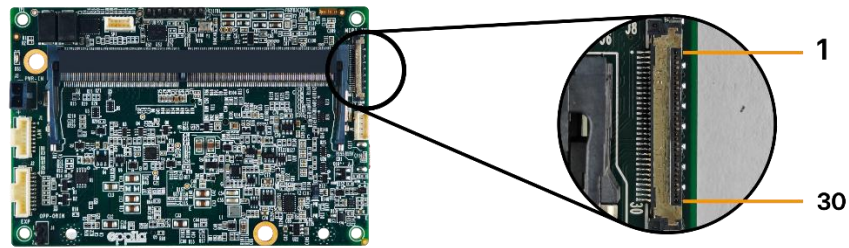
PIN	SIGNAL
Pin 4	FORCE RECOVERY
Pin 5	GND
Pin 6	POWER DOWN

FAN CONNECTOR— J9



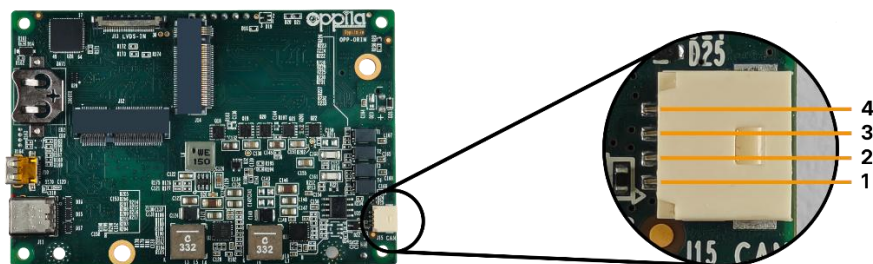
PIN	SIGNAL
Pin 1	GND
Pin 2	+5V

PIN	SIGNAL
Pin 3	TACH
Pin 4	PWM

MIPI CSI-2 CAMERA CONNECTOR— J8

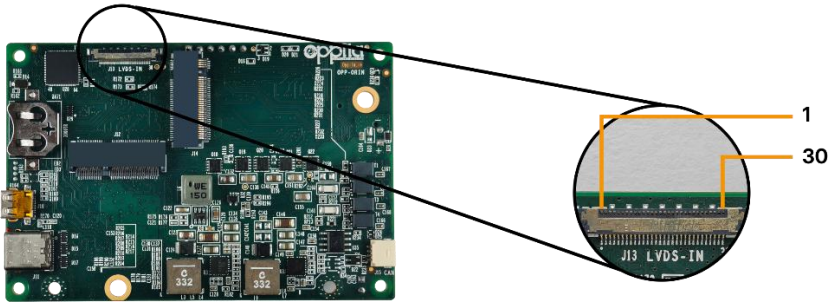
PIN	SIGNAL
Pin 1	GND
Pin 2	NC
Pin 3	NC
Pin 4	GND
Pin 5	NC
Pin 6	NC
Pin 7	GND
Pin 8	NC
Pin 9	NC
Pin 10	GND
Pin 11	NC
Pin 12	NC
Pin 13	GND
Pin 14	CSI3_D1_N
Pin 15	CSI3_D1_P

PIN	SIGNAL
Pin 16	CSI3_D0_N
Pin 17	CSI3_D0_P
Pin 18	CSI2_CLK_N
Pin 19	CSI2_CLK_P
Pin 20	CSI2_D1_N
Pin 21	CSI2_D1_P
Pin 22	CSI2_D0_N
Pin 23	CSI2_D0_P
Pin 24	RXD
Pin 25	TXD
Pin 26	RESET
Pin 27	DC_IN
Pin 28	DC_IN
Pin 29	DC_IN
Pin 30	DC_IN

CAN CONNECTOR— J15

PIN	SIGNAL
Pin 1	CAN-H
Pin 2	CAN-L
Pin 3	GND
Pin 4	+3.3V

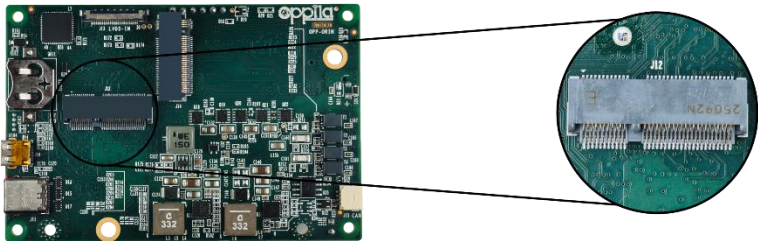
LVDS CAMERA CONNECTOR— J13



PIN	SIGNAL
Pin 1	LVDSIN_3P
Pin 2	LVDSIN_3N
Pin 3	LVDSIN_CLKP
Pin 4	LVDSIN_CLKN
Pin 5	LVDSIN_2P
Pin 6	LVDSIN_2N
Pin 7	LVDSIN_1P
Pin 8	LVDSIN_1N
Pin 9	LVDSIN_0P
Pin 10	LVDSIN_0N
Pin 11	GND
Pin 12	TXD
Pin 13	RXD
Pin 14	DC_IN
Pin 15	DC_IN

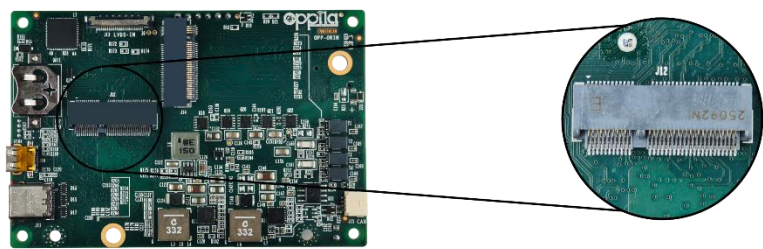
PIN	SIGNAL
Pin 16	DC_IN
Pin 17	DC_IN
Pin 18	DC_IN
Pin 19	GND
Pin 20	GND
Pin 21	NC
Pin 22	NC
Pin 23	NC
Pin 24	NC
Pin 25	NC
Pin 26	RESET
Pin 27	NC
Pin 28	NC
Pin 29	NC
Pin 30	NC

WIFI/BT CONNECTOR— J12



FUNCTION	DESCRIPTION
Interface	M.2 E-key
Type	M.2 2230
Mating	M.2 key-E WIFI/BT
Pinout	Standard M.2 PCIe x1 WiFi/BT key-E

SSD CONNECTOR— J14



FUNCTION	DESCRIPTION
Interface	M.2 M-key
Type	M.2 2242
Mating	M.2 key-M SSD
Pinout	Standard M.2 PCIe x4 NVMe key-M

For more details: [AstrOptix Orin Carrier Board Documentation](#)

CONTACT US

For custom product requirements, please reach out:

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Technical Support: support@oppila.in