

AstrOptix Orin Super Carrier Board

P/No: FC-00R-LM



Compatible Cameras:

- Sony • Tamron • KT&C • Videology • Wonwoo • Skoopia LVDS block cameras
- Any camera with 4-lane, 22-pin MIPI CSI-2 output (Raspberry Pi 5 pinout)

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 (22-pin 4-lane MIPI CSI-2): 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

- Compatible with Jetson Orin Nano & Orin NX
- Supports Super mode
- Compatible with Sony, Tamron, KT&C and Videology LVDS cameras
- Compatible with LVDS, HDMI & PAL Video inputs via bridge board through 22-pin MIPI CSI-2 connector
- Any camera with 4-lane, 22-pin MIPI CSI-2 output (Raspberry Pi 5 pinout)
- 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
- USB3.0 Type-C for flashing, debugging and data transfer and USB2.0 via Samtec Micro Tiger-eye connector
- I2C, UART x 2, RS422 (Optional), CAN, SPI and GPIO interface via 1 mm Molex Pico-Clasp connector
- Onboard dedicated UART channel for LVDS block camera interfaces (VISCA protocol, 3.3 V CMOS)
- Onboard RTC battery and PWM fan connector
- Molex Micro-Fit+ power input connector
- Compact 90 × 60 mm PCB & Board Weight: 38.1 g
- Power LED indication
- 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 Super 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 camera integration, the board natively supports LVDS block cameras from Sony (FCB-EV9520L, FCB-EV9500L), Tamron (MP3010M-EV), KT&C (ATC-HZ5540T-LP), and Videology (24Z2.1W-10XLVDS-462). Support for Sony's 4K HDMI block cameras — the FCB-ER8530 and FCB-EW9500H — is available through an optional bridge board via the 22-pin MIPI CSI-2 connector, providing broad camera ecosystem compatibility across deployment scenarios. Dedicated UART channels at 3.3 V CMOS levels enable simultaneous VISCA protocol control of connected cameras.

The board offers 1 Gbps Ethernet connectivity via a compact Molex Pico-Clasp 1.0 mm connector, supporting efficient network-based video transmission and remote AI-assisted analytics. A Micro HDMI output enables convenient local video monitoring. For storage and wireless expansion, the board includes both M.2 Key M (NVMe SSD, 2242) and M.2 Key E (Wi-Fi/Bluetooth, 2230) slots.

USB connectivity is provided via a USB3 Type-C port for flashing, debugging, and data transfer, as well as USB 2.0 port via a Samtec Micro Tiger-eye connector. Extensive system-level control interfaces — including I²C, UART TTL/RS422, CAN, SPI, and GPIO — are accessible through a 1 mm Molex Pico-Clasp connector. Power input is provided through a Molex Micro fit plus connector, supporting 12–19 V regulated input including Super Mode power requirements. An onboard PWM-controlled fan connector and RTC battery connector ensure reliable thermal management and accurate timestamping in embedded or remote deployments.

Featuring a compact 90 × 60 mm footprint, a weight of approximately 38.1 g, RoHS compliance, and an industrial operating temperature range of –20 °C to +85 °C, the AstrOptix Super Carrier Board delivers rugged reliability and top-tier performance for UAVs, defense imaging systems, robotics platforms, and edge AI vision applications where performance, integration flexibility, and mission-critical reliability are paramount.

Technical Specification

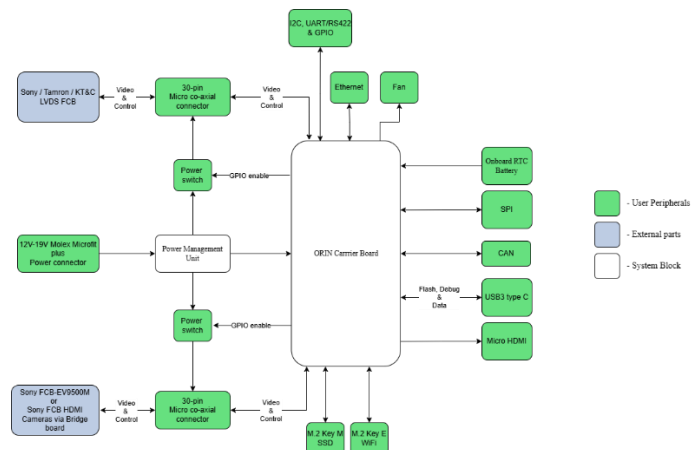
PARAMETER	DETAILS
CPU/GPU Module	NVIDIA Orin Nano & Orin NX
Storage	NVMe SSD via M.2 Key M 2242
Camera Interfaces	1 × LVDS (Sony, Tamron, KT&C and Videology LVDS cameras), 1 × 4-lane 22-pin MIPI CSI-2: Compatible with LVDS, HDMI & PAL Video inputs via bridge board
Network Interface	1 Gbps Ethernet via Molex Pico-Clasp 1.0 mm connector and M.2 Key E (Wi-Fi/BT) 2230
Expansion Header	I ² C, UART x 2, RS422 (optional), CAN, SPI & GPIO via Molex Pico-Clasp 1.0 mm connector
Video Output	Micro HDMI
USB Interface	USB Type-C (USB2 & USB3) for flashing, debugging & data, and 1× USB 2.0 via Samtec Micro Tiger-eye connector
UART Channels	Independent dedicated UART channel for camera VISCA control via KEL connector,
RTC and Fan	Onboard RTC battery and dedicated PWM-controlled onboard fan connector
Input Power	Molex Micro fit plus connector, 12–19 V regulated, supports Super mode.
Operating Temperature	–20 °C to +85 °C
Dimensions (L × W)	90 × 60 mm
Weight	38.1 g
Compliance	RoHS

KIT CONTENTS

CATEGORY	ITEM	DESCRIPTION
Standard package	Carrier Board	AstrOptix Orin Super Carrier Board
	Power Cable	2-pin 19 V Molex Micro fit plus power cable
	Documentation	Product datasheet (digital copy)
Optional accessories	Software	System image with V4L2 driver support for Sony (LVDS and HDMI), Tamron, KT&C and Videology LVDS block cameras (optional)
	Interface Cable	- Ethernet – Molex Pico clasp 1.0 mm (8 pin) to RJ45 cable - I2C, UART/RS422, CAN, SPI & GPIO – Molex Pico clasp 1.0 mm (20 pin) connector cable - RTC, and FAN - Molex Pico clasp 1.0 mm (4 pin) connector cable - System Reset and Force Recovery - Molex Pico clasp 1.0 mm (4 pin) connector cable - USB 2.0 adapter PCB with USB Type-A connector (With mating cable)
	Mounting Hardware	Screws and spacers for mounting

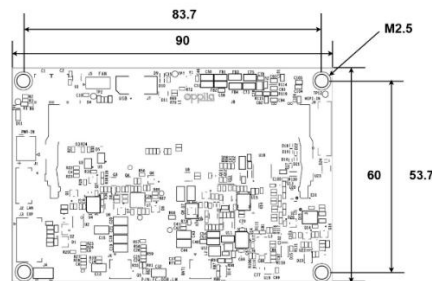
System Architecture

BOARD BLOCK DIAGRAM



Mechanical Dimensions

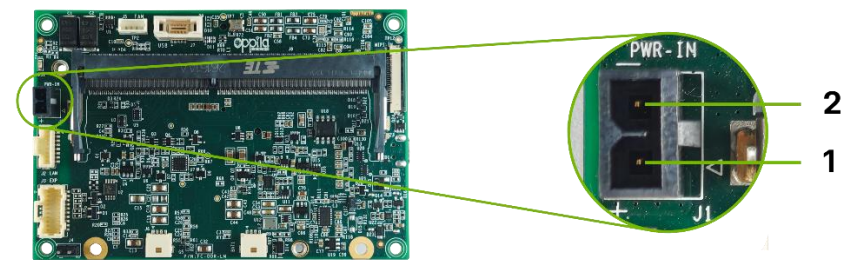
BOARD OUTLINE & MOUNTING



DIMENSION	VALUE
PCB Length	90 mm
PCB Width	60 mm
PCB Height	17.5 mm
Weight	38.1 g

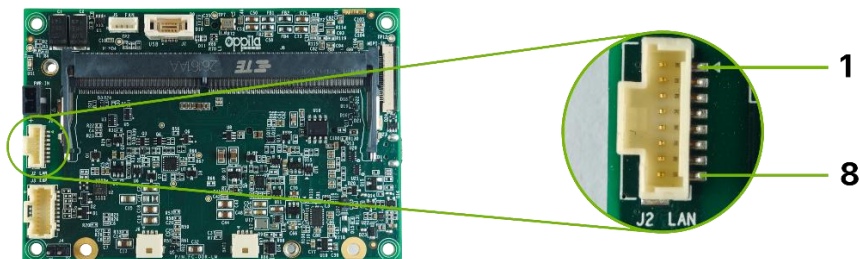
Pinout Descriptions

POWER CONNECTOR — J1



PIN	SIGNAL
Pin 1	+VIN
Pin 2	GND

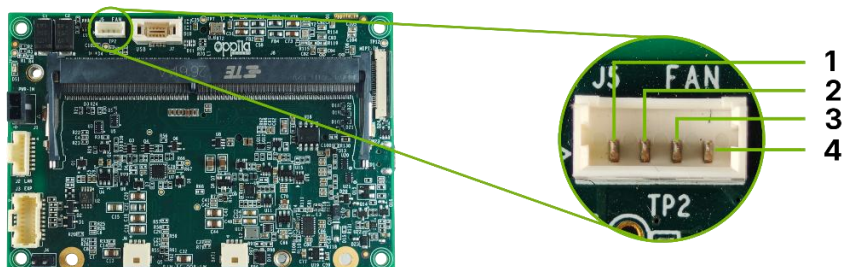
ETHERNET CONNECTOR — J2



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

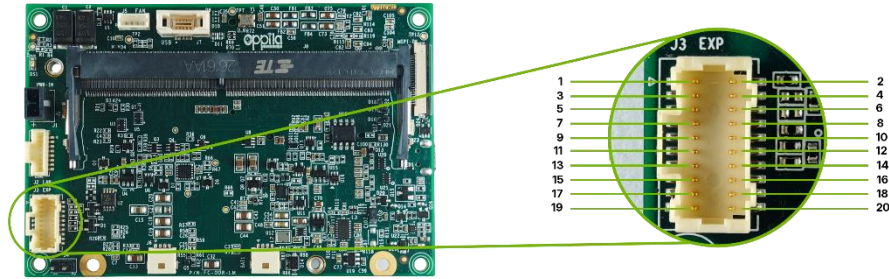
PIN	SIGNAL
Pin 5	ETH_M2_P
Pin 6	ETH_M2_N
Pin 7	ETH_M3_P
Pin 8	ETH_M3_N

FAN CONNECTOR — J5



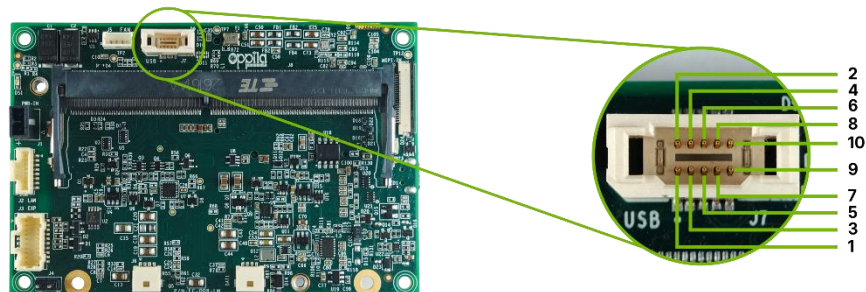
PIN	SIGNAL
Pin 1	GND
Pin 2	+5V

PIN	SIGNAL
Pin 3	TACH
Pin 4	PWM

EXPANSION CONNECTOR — J3

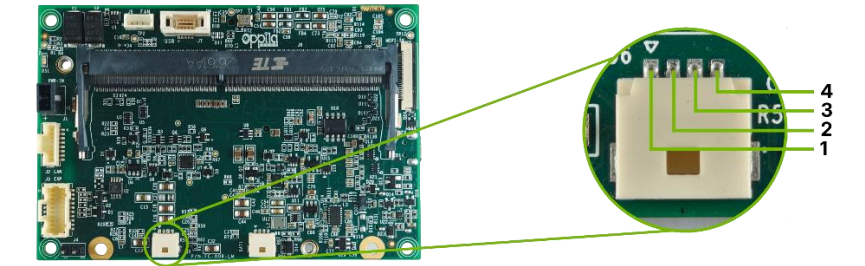
PIN	SIGNAL
Pin 1	RSTX0+ / UART0_TX
Pin 2	RSRX0-
Pin 3	RSTX0+ / UART0_RX
Pin 4	RSRX0-
Pin 5	GND
Pin 6	GND
Pin 7	CAN_H
Pin 8	3V3
Pin 9	CAN_L
Pin 10	GND

PIN	SIGNAL
Pin 11	I2C1_SCL
Pin 12	SPI0_SCK
Pin 13	I2C1_SDA
Pin 14	SPI0_MISO
Pin 15	UART2_TX
Pin 16	SPI0_MOSI
Pin 17	UART2_RX
Pin 18	SPI0_CS0
Pin 19	GND
Pin 20	5V

USB 2.0 CONNECTOR — J7

PIN	SIGNAL
Pin 1	5V
Pin 2	USB1_D_P
Pin 3	5V
Pin 4	USB1_D_N
Pin 5	RESERVED
Pin 6	GND
Pin 7	RESERVED
Pin 8	RESERVED
Pin 9	GND
Pin 10	RESERVED

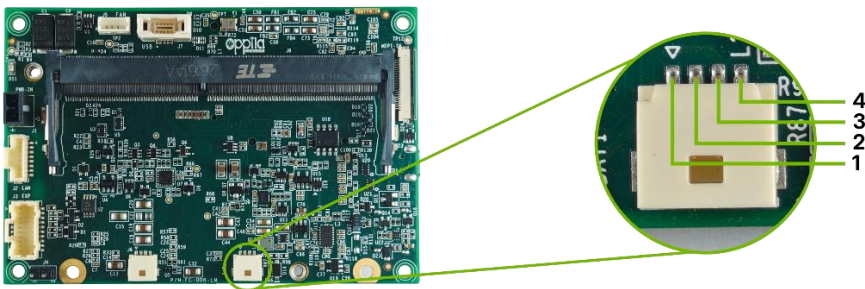
RST & FR CONNECTOR — J6



PIN	SIGNAL
Pin 1	GND
Pin 2	SYS_RST

PIN	SIGNAL
Pin 3	GND
Pin 4	FORCE_RECOVERY

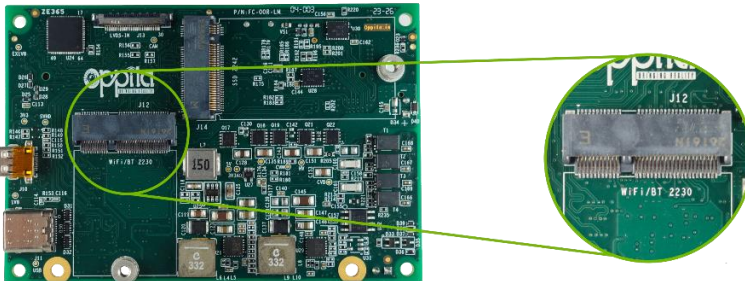
RTC & POWER DOWN — BAT 1



PIN	SIGNAL
Pin 1	VBAT
Pin 2	GND

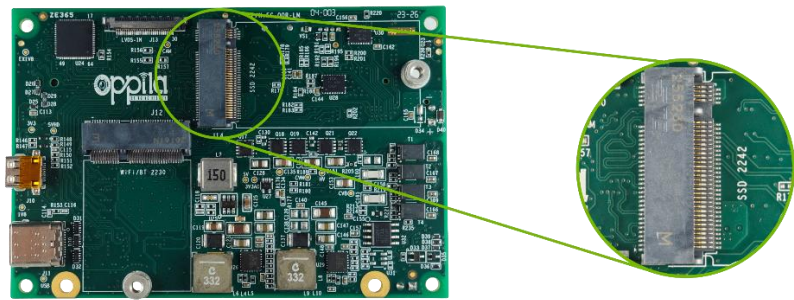
PIN	SIGNAL
Pin 3	PWR_BTN
Pin 4	GND

WIFI/BT CONNECTOR— J12



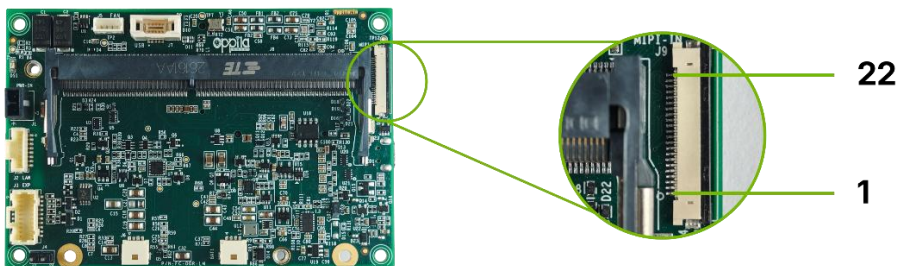
FUNCTION	DESCRIPTION
Interface	M.2 E-key
Type	M.2 2230
Mating	M.2 key-E WIFI/BT
Pinout	Standard M.2 PCIe x1 WiFi/BT key-E

SSD CONNECTOR— J12



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

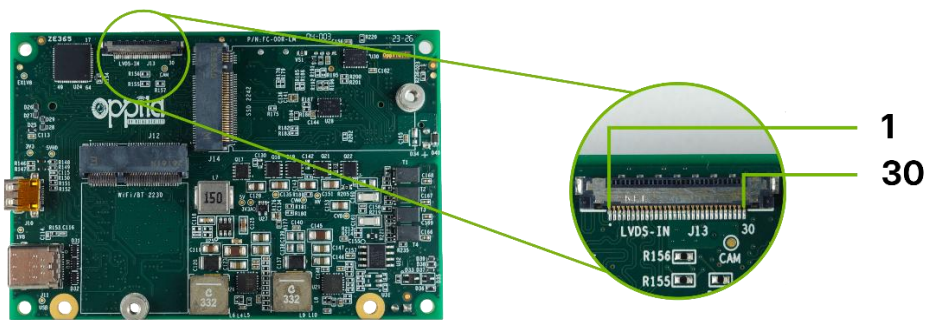
MIPI CSI-2 CAMERA CONNECTOR— J8



PIN	SIGNAL
Pin 1	VDD_3V3
Pin 2	CAM_I2C_SDA
Pin 3	CAM_I2C_SCL
Pin 4	GND
Pin 5	CAM_MCLK
Pin 6	CAM_PWDN
Pin 7	GND
Pin 8	CSI3_D1_P
Pin 9	CSI3_D1_N
Pin 10	GND
Pin 11	CSI3_D0_P

PIN	SIGNAL
Pin 12	CSI3_D0_N
Pin 13	GND
Pin 14	CSI2_CLK_P
Pin 15	CSI2_CLK_N
Pin 16	GND
Pin 17	CSI2_D1_P
Pin 18	CSI2_D1_N
Pin 19	GND
Pin 20	CSI2_D0_P
Pin 21	CSI2_D0_N
Pin 22	GND

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

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

CONTACT US

For custom product requirements, please reach out:

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