

*Mini Carrier Board

Orin™ Nano 4GB

Orin™ Nano 8GB

Orin™ NX 8GB

Orin™ NX 16GB

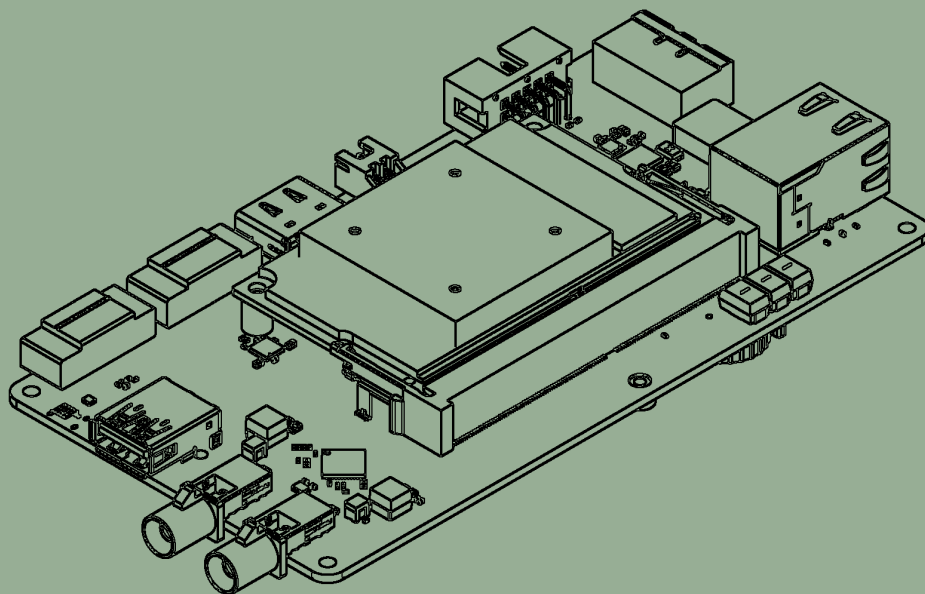
Carrier Board Overview

The Mini Carrier Board is a compact, high-performance AI carrier board designed for seamless integration with NVIDIA Jetson™ modules.

Optimized for AI-driven vision applications, the Mini Carrier Board enables real-time processing with support for GMSL2 and USB camera connectivity.

Its design prioritizes scalability and integrability, making it the ideal solution for mass production and large-scale deployment of AI-powered robotics and vision-based systems.

Whether you're building autonomous robots, industrial automation solutions, or smart vision devices, the Mini Carrier Board delivers the performance and flexibility needed to accelerate your AI projects.



*Mini Carrier Board Overview



Optimized for GMSL2 camera-based applications

The Mini Carrier Board supports seamless connectivity for up to two ZED X cameras via GMSL2, monocular and stereo cameras. Designed to maximize the potential of the ZED camera series, the Mini Carrier Board is compatible with all current Stereolabs camera models with drivers available for various configurations, delivering unmatched integration.

Optimized for Effortless OEM Integration

The Mini Carrier Board combines a compact design with cost-effectiveness, making it ideal for deploying AI-powered systems at scale. Its small form factor ensures easy integration into space-constrained systems, while its affordability enables large deployments without compromising performance.

Designed for Advanced AI Computing

Whether you're developing autonomous robots, smart cameras, or edge AI systems, the Mini Carrier Board offers the performance and flexibility needed to bring your AI applications to life.

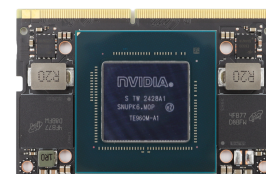
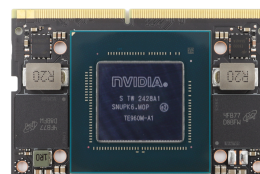
The Mini Carrier Board natively supports the ZED SDK, delivering unmatched performance for vision-based AI applications.

Ready to Integrate for Mass Production

The Mini Carrier Board's efficient design, high-speed Gigabit Ethernet, and standard interfaces streamline AI enablement. With built-in WiFi and full compatibility with NVIDIA® Jetson™ modules, it offers a flexible, scalable solution for seamless integration of advanced vision technology into your systems.

Mini Carrier Board | Available Models

AI Module *	Jetson Orin™ Nano 4GB	Jetson Orin™ Nano 8GB	Jetson Orin™ NX 8GB	Jetson Orin™ NX 16GB
AI Performance	20 TOPs	40 TOPs	70 TOPs	100 TOPs
Ideal camera configurations	1x ZED X GS or 2x ZED X One GS	2x ZED X GS / ZED X One GS	2x ZED X GS / ZED X One GS	2x ZED X GS / ZED X One GS
Compute capabilities	Medium computer vision applications for single stereo camera setups	Medium computer vision applications for dual stereo camera setups	Advanced computer vision applications for dual stereo camera setups	Cutting-Edge computer vision applications for dual stereo camera setups
Performance ***	Single Stereo Camera Depth @30fps with 80% GPU load	Single Stereo Camera Depth @30fps with 36% GPU load	Single Stereo Camera Depth @30fps with 28% GPU load	Single Stereo Camera Depth @30fps with 23% GPU load
		Dual Stereo Camera Depth @30fps with 64% GPU load	Dual Stereo Camera Depth @30fps with 55% GPU load	Dual Stereo Camera Depth @30fps with 47% GPU load



* AI Module is included with compatible versions

*** ZED X GS cameras with ZED SDK5.0 NEURAL LIGHT Model with Jetson™ in a non-MAXN SUPER mode with 1920x1200 image resolution

*Mini Carrier Board

Technical Specifications

Carrier Board Only

Mini Carrier Board	ZBX-500000 (No WiFi)
Reference	ZBX-500010 (With WiFi)

Interfaces and Storage

Cameras Inputs	2x GMSL2 FAKRA-Z and 1x USB3.0 Type-A
Ethernet	1x 10/100/1000 Base-T Ethernet RJ45
Debug	1x Micro USB2.0 Type-B for system flashing & OTG
Camera Sync.	1x GMSL2 Camera Sync. Trigger Input and 1x GMSL2 Camera Sync. Trigger Output
Fan	1x 12V Fan Entry
Misc. Connector	1x 10 pins Header Connector including : 1x CAN PHY, 1x UART, 2x GPIOs, 1x 5V, 1x 3.3V, 2x GND
Storage	NVMe SSD 256GB mounted on M.2 Key-M 2242 socket
Wifi (Optional)	1x Intel AX210 Module mounted on M.2 Key-E 2230 socket

Power

Power Input	DC 10.5V to 13.5V – 60W max
Power Interface	Screwable Terminal block connector TBP01P1W-508-02GR

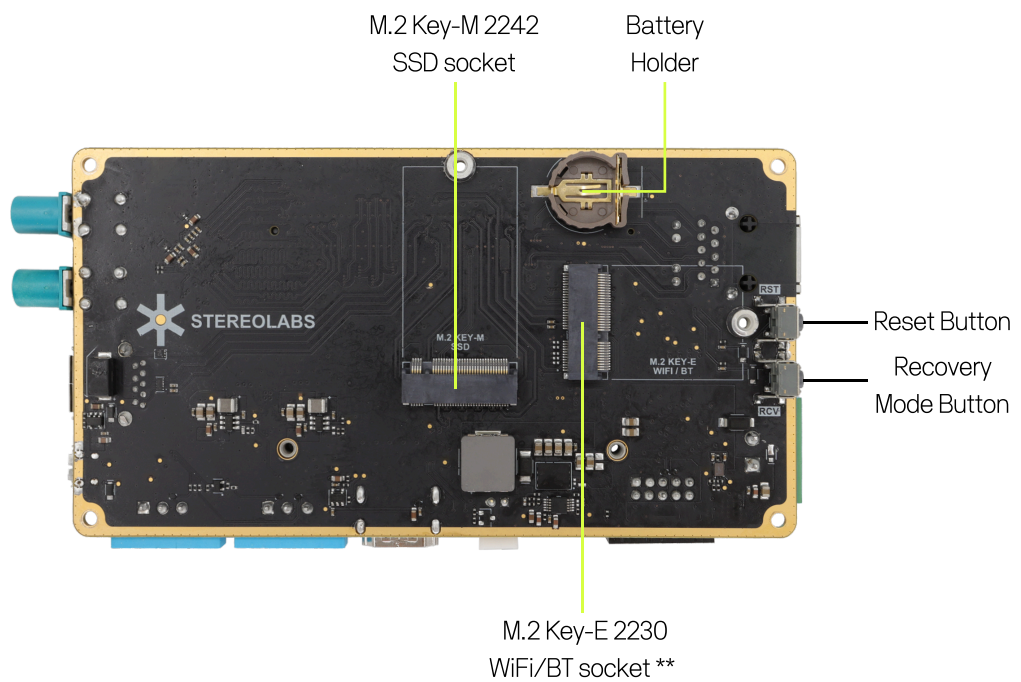
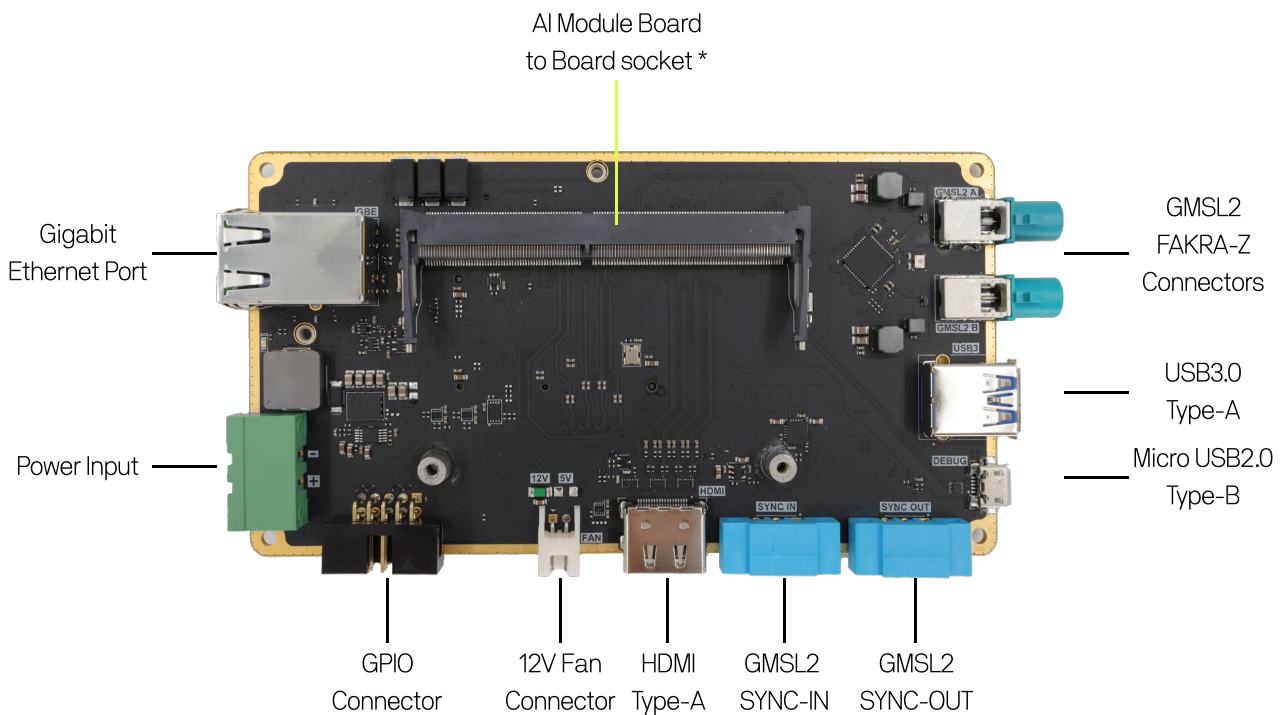
Mechanical

Weight	123g (0.271lb)
Dimensions	152.8 x 77.5 x 23.7 mm (6.02 x 3.05 x 0.93") LxWxH with 4x M2.5 mounting holes
Thermal Design	Please consult NVIDIA's Thermal Design Guidelines available at https://developer.nvidia.com/embedded/jetson-modules .
Certifications	Mini Carrier Board is not CE or FCC. It is derived from ZED Box Mini, which holds CE and FCC. Mini Carrier Board is sold as a component, not a finished product. The buyer is responsible for ensuring compliance with applicable certifications.

Optional AI Module Information

AI Module	Jetson Orin™ Nano 4GB	Jetson Orin™ Nano 8GB	Jetson Orin™ NX 8GB	Jetson Orin™ NX 16GB
Mini Carrier Board Reference	ZBX-520010 (No WiFi) ZBX-520110 (With WiFi)	ZBX-530010 (No WiFi) ZBX-530110 (With WiFi)	ZBX-540010 (No WiFi) ZBX-540110 (With WiFi)	ZBX-550010 (No WiFi) ZBX-550110 (With WiFi)
AI Performance	20 TOPs	40 TOPs	70 TOPs	100 TOPs
Jetson™ Power Mode	10W 25W	15W 25W	10W 15W 20W 40W	10W 15W 25W 40W
Video Encode	1080p30 supported by 1-2 CPU cores	1080p30 supported by 1-2 CPU cores	1x 4K @ 60 (H.265) 3x 4K @ 30 (H.265) 6x 1080p @ 60 (H.265) 12x 1080p @ 30 (H.265)	1x 4K @ 60 (H.265) 3x 4K @ 30 (H.265) 6x 1080p @ 60 (H.265) 12x 1080p @ 30 (H.265)
Video Decode	1x 4K @ 60 (H.265) 2x 4K @ 30 (H.265) 5x 1080p @ 60 (H.265) 11x 1080p @ 30 (H.265)	1x 4K @ 60 (H.265) 2x 4K @ 30 (H.265) 5x 1080p @ 60 (H.265) 11x 1080p @ 30 (H.265)	1x 8K @ 30 (H.265) 2x 4K @ 60 (H.265) 4x 4K @ 30 (H.265) 9x 1080p @ 60 (H.265) 18x 1080p @ 30 (H.265)	1x 8K @ 30 (H.265) 2x 4K @ 60 (H.265) 4x 4K @ 30 (H.265) 9x 1080p @ 60 (H.265) 18x 1080p @ 30 (H.265)
Display	1x HDMI 1.4	1x HDMI 1.4	1x HDMI 2.1	1x HDMI 2.1

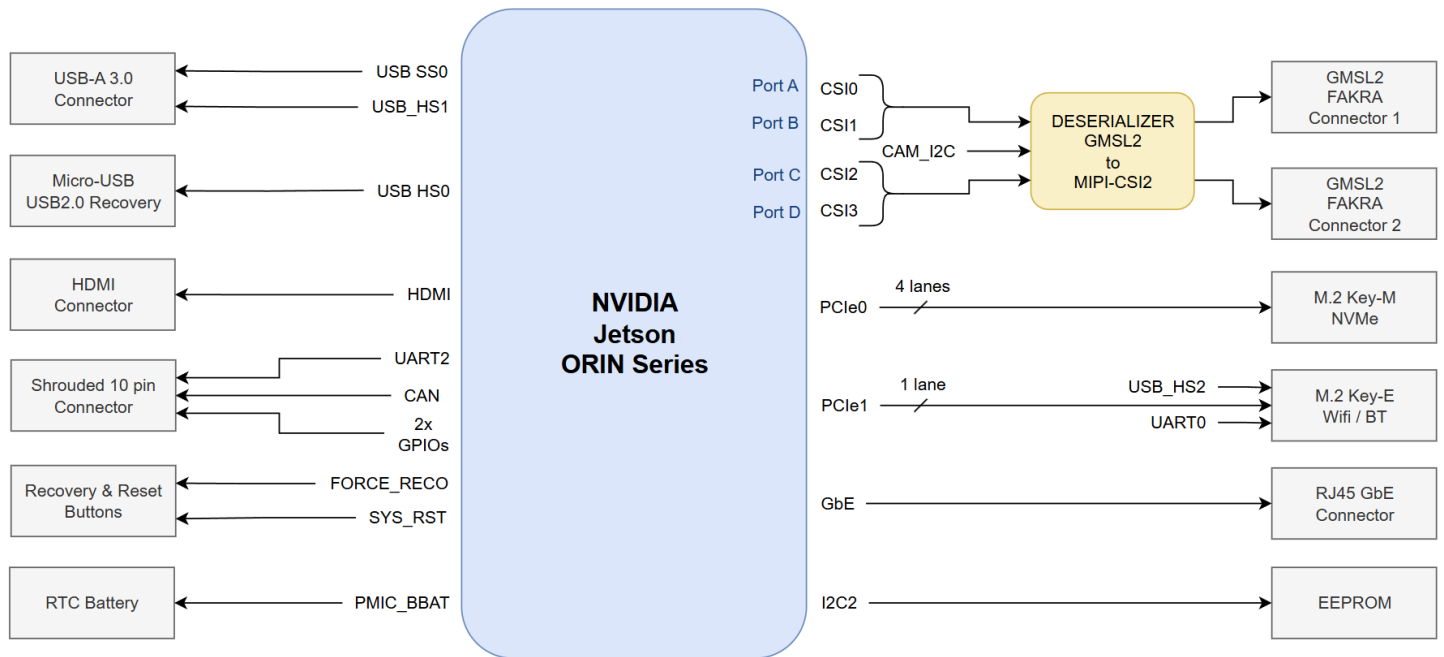
*Mini Carrier Board I/O Interfaces



* AI Module is included with compatible versions

** WiFi Module is included with compatible versions

*Mini Carrier Board Block Diagram

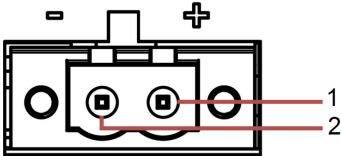


*Mini Carrier Board Pinout Table

Power Input Connector

The Mini Carrier Board supports a nominal voltage of 12V (+/- 1.5V) via its dedicated Terminal Block connector.

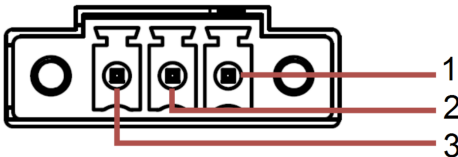
Pinout	
Pin Number	Description
1	DC IN 12V
2	GND



SYNC - IN Connector

The synchronization-input connector is used as a frame-sync trigger input in order to synchronize image acquisition on multiple GMSL2 cameras connected to different Mini Carrier Board. The connector is a Same Sky 3-pin Terminal Block, that mates with TBP02P1W-381-03BE.

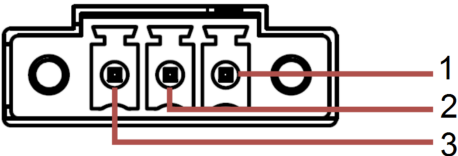
Pinout	
Pin Number	Description
1	TRIG_INFO
2	GND
3	TRIG_IN



SYNC - OUT Connector

The synchronization-output connector is used as a frame-sync trigger input in order to synchronize image acquisition on multiple GMSL2 cameras connected to different Mini Carrier Board. The connector is a Same Sky 3-pin Terminal Block, that mates with TBP02P1W-381-03BE.

Pinout	
Pin Number	Description
1	GND
2	GND
3	TRIG_OUT



FAN Connector

The Mini Carrier Board includes a dedicated 12V-compatible fan connector to support active cooling solutions.

Pinout	
Pin Number	Description
1	FAN_12V
2	GND

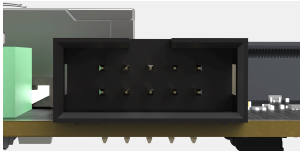
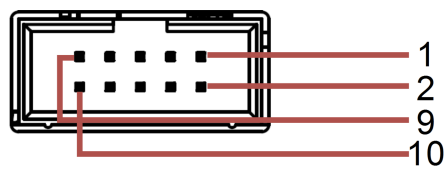


*Mini Carrier Board Pinout Table

MISCELLANEOUS (GPIO) Connector

The Miscellaneous connector, labelled GPIO on the Mini Carrier Board, is mainly used for debug and testing purposes.

Pinout	
Pin Number	Description
1	VCC_5V
2	GND
3	GPIO_11
4	GPIO_12
5	CAN_RX
6	CAN_TX
7	VCC_3V3
8	GND
9	UART_RXD
10	UART_TXD

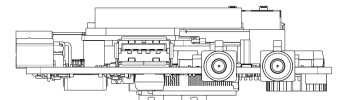
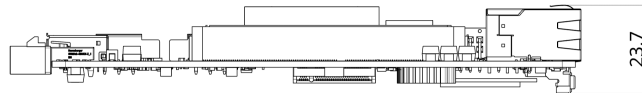
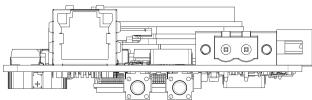
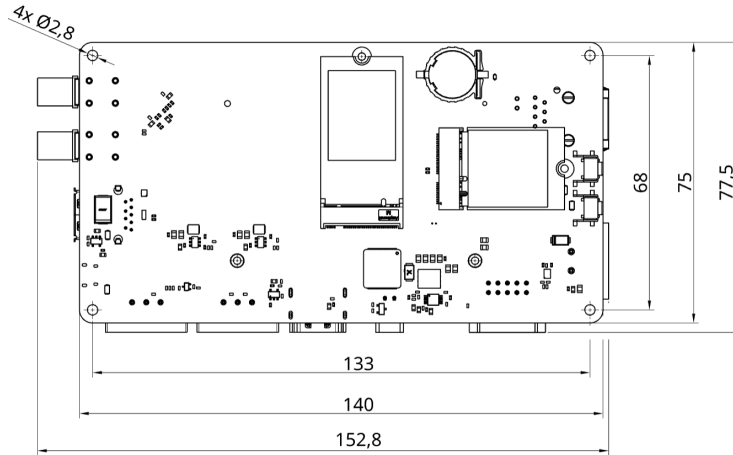


Standard Connectors

Connector	Description	Pinout
FAKRA-Z GMSL2	The two separated FAKRA-Z connectors each one for connected a GMSL2 camera through a single coaxial cable.	Please refer to the FAKRA-Z standards.
USB3.0 Type-A	The USB3.0 Type-A connector supports up to 5Gbps data rate. It is compliant with the requirements of Super Speed (SS), High Speed (HS), Full Speed (FS) and Low Speed (LS).	Please refer to the USB3.0 Type-A standards.
Micro-USB2.0 Type-B (OTG)	The Micro USB2.0 Type-B connector can be used for OTG functions, or paired with the use of the Recovery button to flash a new Image on the device. In non-recovery mode, this connector provides a serial output that can be used to access the device through a serial console.	Please refer to the USB3.0 Type-A standards.
Ethernet (LAN)	The Mini Carrier Board comes with one Gigabit Ethernet LAN port supporting 10/100/1000 BASE-T with a RJ45 connector.	Please refer to RJ45 Ethernet standards for 10/100/1000 BASE-T.
HDMI	The Mini Carrier Board features an HDMI connector to display video with a maximum resolution of 3840x2160 @60Hz.	Please refer to the HDMI standards.

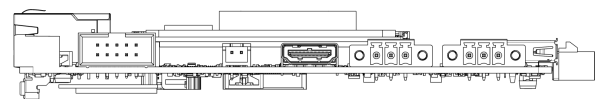
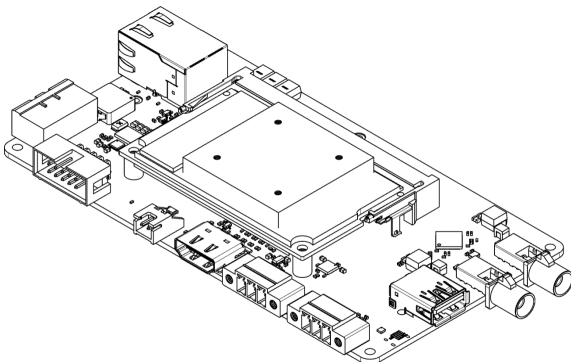
*Mini Carrier Board Technical Drawings

With AI Module, SSD, WiFi Module and Battery



Isometric view

Rear view



*Mini Carrier Board Technical Drawings

Modules Installation

