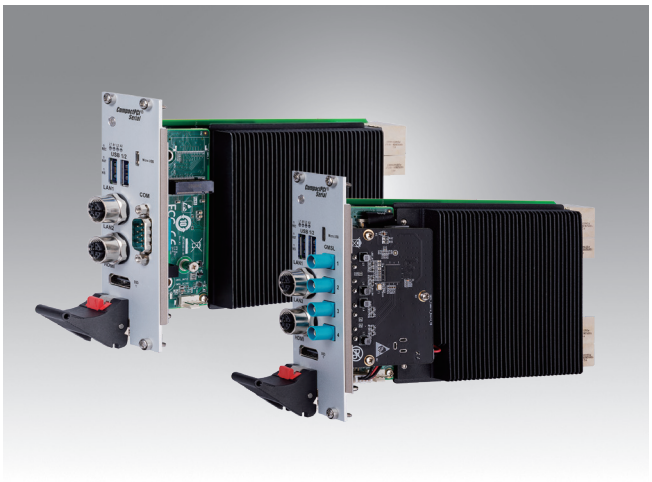
MIC-332AO

3U CPCI-Serial AI Inference Board Based on NVIDIA® Jetson AGX Orin™



Features

- 3U CPCI-S Computing card for Edge AI
- Embedded with NVIDIA® Jetson AGX Orin™ up to 275 TOPS
- Supports GbE, 2 x USB 3.2 Gen 2 (10 Gbit/s), 1 x HDMI on 4HP
- Supports 1 x DB9, 1 x micro USB on 8HP I/O-1
- Supports 4 x GMSL2.0, 1 x micro USB on 8HP I/O-2
- On-board PCIe 3.0 x4 M.2 M key storage
- Rich I/O resources (PCIe3.0 x8, GbE and 10GbE) connected to a backplane

Introduction

The MIC-332AO, a standard 3U CPCI-serial form factor carrier, is built for the NV AI Jetson AGX Orin series module. It is designed as a high-performance but compact size computing controller, usually used in mission-critical fields like rolling stock, medical, manufacturing, and defense surveillance sectors.

MIC-332AO provides versatile I/O ports, e.g., 2 x USB 3.2 Gen 2 Type A, 2 x GbE with RJ45 or M12 X-code options, 1 x HDMI display port to a 4HP front panel, 1 x DB9 RS232 or 4 x GMSL 2.0 ports, 1 x Micro-USB port for software programming routed to an 8HP front panel, and 1 x 2242 PCIe 3.0 x4 M.2 NVMe as internal mass storage on a second-layer 8HP extension card. To meet the needs in autonomous driving & image processing applications.

MIC-330AO can be configured as a primary or secondary in distributed multi-processing applications. For this purpose, the card is provided with different system interfaces to the backplane, like 1 x PCIe 3.0 x8, 1 x 10 GbE, and 1 x GbE to configure other system boards (usually MIC-330 or the 2nd MIC-332) or I/O cards. The card is equipped with the Jetpack OS Suite by Nvidia®, customized by Advantech as a BSP package.

Specifications

		NVIDIA® Jetson AGX Orin™	
		MIC-332-AO32	MIC-332-AO64
Processor	NVIDIA Jetson Series	AGX Orin 32G	AGX Orin 64G
	CPU	8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 2 MB L2 + 4 MB L3	12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 3 MB L2 + 6 MB L3
	GPU	1792-core NVIDIA Ampere GPU with 56 Tensor Cores, maximum operating frequency: 930 MHz	2048-core NVIDIA Ampere GPU with 64 Tensor Cores, Maximum Operating Frequency: 1.3 GHz
	AI Performance Reference	Up to 200 TOPS	Up to 275 TOPS
	Memory	32 GB 256-bit LPDDR5 DRAM	64 GB 256-bit LPDDR5 DRAM
Graphics	Chipset	Integrated on Jetson module	
	I/O Connector	HDMI 2.0	
	Resolution	3840 x 2160 @60 Hz	
Ethernet	Interface	10/100/1000 BASE-T, 2.5 G BASE-T, 10 G BASE-T	
	Chipset	Marvell GbE Ethernet PHY transceiver_88E1512, routing to backplane GbE signal Marvell 10GbE Ethernet PHY transceiver_AQR113C, routing to backplane 10GbE signal Intel i226 Ethernet controller, to front I/O ports	
	I/O Connector	2 x RJ45 or M12 connector to front I/O, up to 2.5 Gbps	
Storage	Mode	eMMC, PCIe 3.0	
	Channels	1 x 64GB eMMC 5.1 integrated into Jetson module 1 x M.2 2242 (M-Key, NVMe, Signal: PCIe x4)	
Front I/O	USB	2 x type A USB 3.2 Gen2 @ 10 Gbps	
	LAN	2 x RJ45 or M12 X-code GbE / 2.5 GbE	
	Display	1 x HDMI 2.0 port	
	Micro-USB	1 x Micro-USB	
	COM/GMSL	1 x DB9 (RS232, 4 line) or 4 GMSL 2.0 port	
	Front Panel LEDs	1 x blue/orange hot swap/HDD Led, 1 x green PWR Led, 1 x green primary/secondary Led, front LAN activity/speed (2.5 G / green, GbE / yellow, others: off)	
	Buttons	System reset button x1, recovery mode button x1 for BSP programming	

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Specifications (Cont.)

To CPCI-S Backplane Resources	P1	1 x I2C, 1 x PCIe3.0 x4 of lower 4-Lane	
	P2	1 x PCIe3.0 x4 of upper 4-Lane	
	P5	1 x PCIe clock, 1 x PCIe clock REQ	
	P6	1 x GbE, 1 x 10 GbE	
Operating System	Compatibility	Linux Kernel 5.15, Ubuntu 22.04, Jetpack 6.2	
Physical	Dimensions & Weight	160 mm x 100 mm 8HP	
Environment	Temperature	Operating (depending on forced airflow)	Non-operating
		-25°C ~ 70°C (-13°F ~ 158°F)	-40°C ~ 85°C (-40°F ~ 185°F)
	Humidity	95% @ 40°C, non-condensing	95% @ 60°C, non-condensing
	Vibration	2Grms, random (5 Hz ~ 500 Hz)	
	Shock	10 G, 11ms, each axis three times during operation mode	
Regulatory	Certification	CE, FCC, UKCA, RoHS	
	Design to Meet	EN50155, EN50121-4	
Compliance	Standards	PICMG® CompactPCI® Serial	

Ordering Information

System board	Front Panel						Onboard Features		Others
	2.5G LAN (M12 X-code)	HDMI	USB3.2 (TypeA)	COM (DB9)	GMSL port	Micro USB	NVMe (M.2 M key)	Jetson module	Width Height
MIC-332-AOC32	2	1	2	1	NA	1	1	32GB	8HP
MIC-332-AOC64	2	1	2	1	NA	1	1	64GB	8HP
MIC-332-AOG32	2	1	2	NA	4	1	1	32GB	8HP

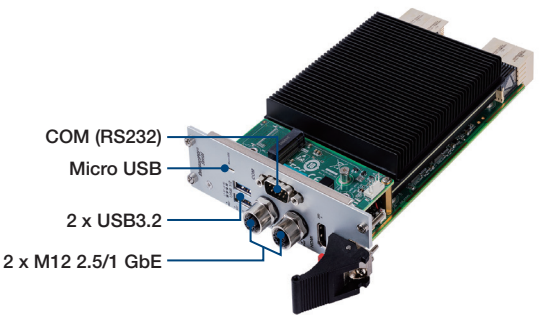
Note: Dual M12 X-code connector can be replaced by RJ45 port per request

Related Products

Peripheral board	Description
MIC-300A series	3U CPCI-Serial 84HP/44HP width, 3U/4U height chassis, with 8 slots backplane & mini fan
MIC-3954D series	3U CPCI-Serial quad Mini-PCIe carrier board
MIC-3954E series	3U CPCI-Serial quad M.2 (1 x E-Key, 3 x B-Key) carrier board for wifi/LTE/GPS module
MIC-3954F series	3U CPCI-Serial quad port USB3.0 typeA board
MIC-3810 series	3U CPCI-Serial PCIe PCIe x8 / x16 carrier board
MIC-3860 series	3U CPCI-Serial quad RJ45 or 4 M12 2.5 Gbps LAN board with PoE support option
MIC-3861 series	3U CPCI-Serial 10GbE dual SFP+ fiber & dual copper RJ45 or M12 ports ethernet card
MIC-3812 series	3U CPCI-Serial MXM carrier board for type A/B/B+ module
MIC-3821 series	3U CPCI-Serial quad M.2 M-Key NvME carrier board
MIC-3840 series	3U CPCI-Serial DB62 to 8*DB9 isolated RS232/422/485 serial board
MIC-3890	3U CPCI-Serial DC-DC power module, 110 V input / 12 V & 5 V output, 250 W
XMIC330-HAC300S	3U CPCI-Serial AC-DC power module, 12 V & 5 V output, 300 W

Product Picture

8HP with COM-port



8HP with GMSL-port