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Edge Computing Division

EdgeAI-ORN Edge-AI computer with Jetson Orin NX/Nano

Features

- NVIDIA® Jetson Orin™ NX/Nano
- MIL-STD-810G, up to 75°C
- RS-232/RS-485 + CAN + GPIOs
- 4x USB 3.2 for camera input
- 4x PoE 2.5GbE optional camera input
- 4x GMSL2 optional camera input
- 4x FPD Link IV optional camera input
- Optional Out-Of-Band management
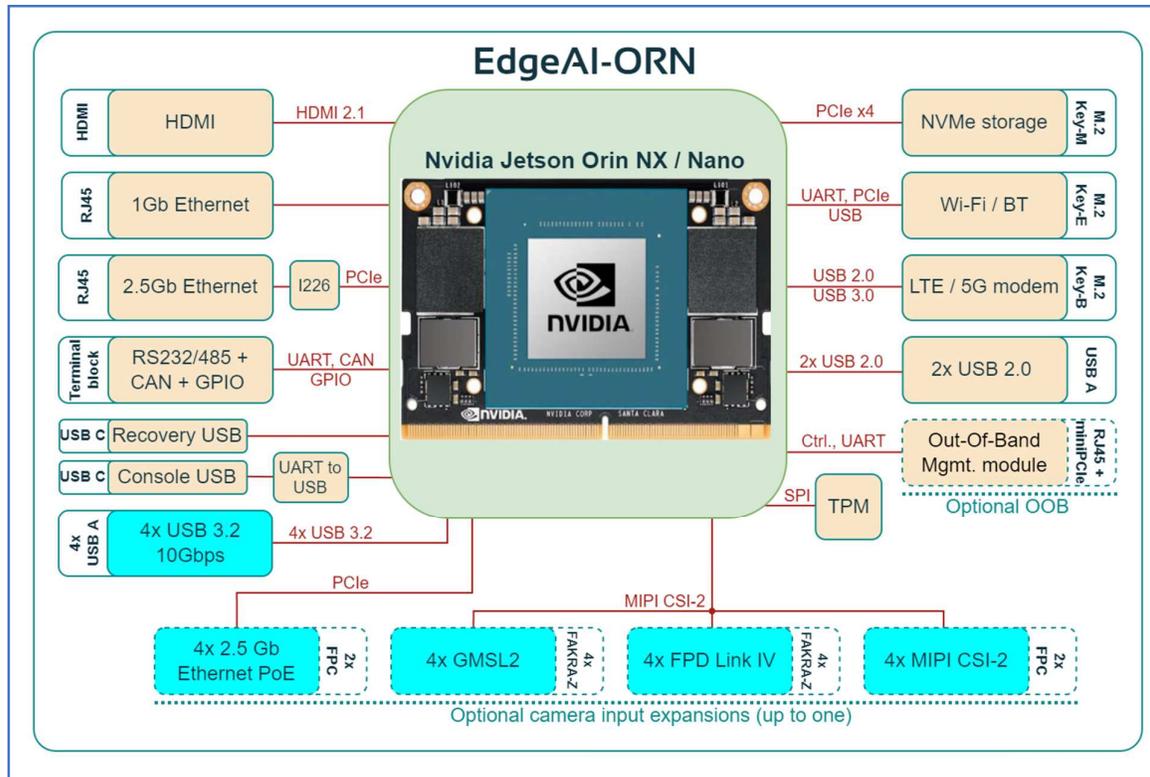- 9V – 36V DC power input

Specifications

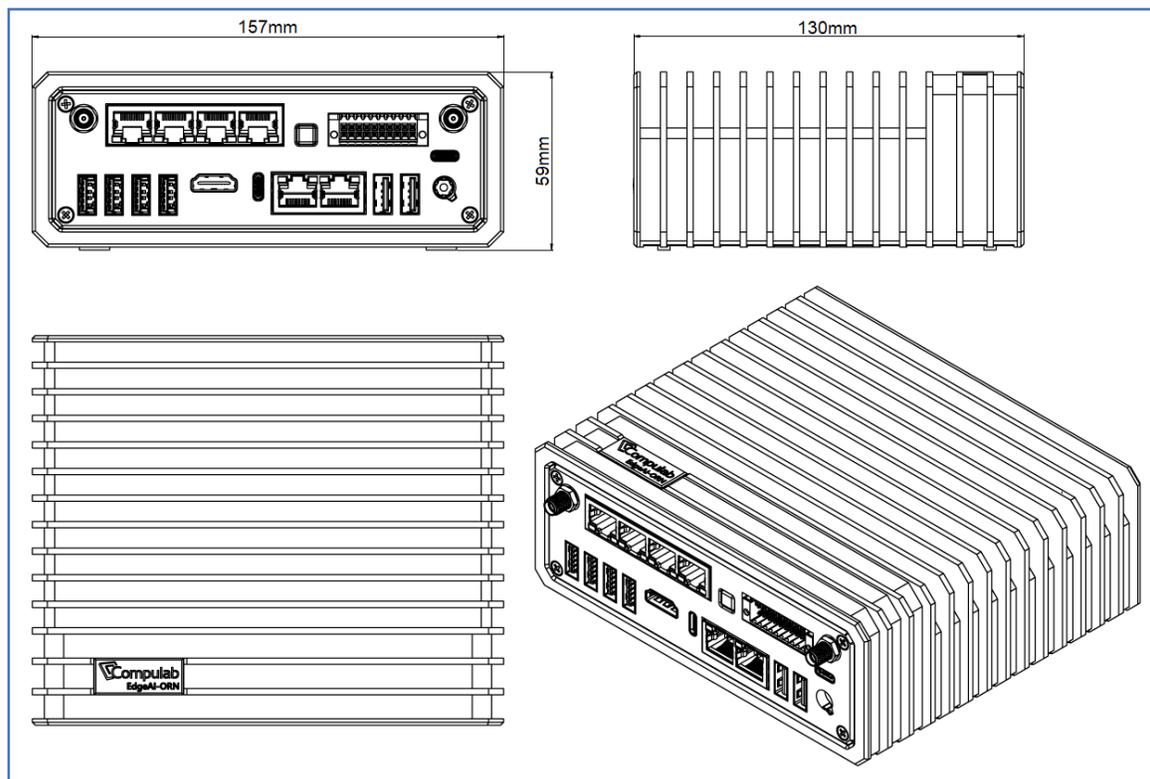|		
Computation module	Jetson Orin™ NX 16GB	Up to 157 TOPS | 16GB LPDDR5 | 10W / 15W / 25W / 40W
	Jetson Orin™ NX 8GB	Up to 117 TOPS | 8GB LPDDR5 | 10W / 15W / 25W / 40W
	Jetson Orin™ Nano 8GB	Up to 67 TOPS | 8GB LPDDR5 | 7W / 15W / 25W
	Jetson Orin™ Nano 4GB	Up to 34 TOPS | 4GB LPDDR5 | 7W / 10W / 25W
Storage	M.2 Key-M	PCIe Gen. 4^{1} x4, size up to 2280 for NVMe
Serial/GPIO	Serial port	Isolated RS-232/422/485 on terminal block
	CAN bus	Isolated CAN bus on terminal block
	GPIO	2x GPI + 2x GPO
Display	HDMI	HDMI 2.1, up to 8K @ 30Hz
Wireless Connectivity	M.2 Key-E	For Wi-Fi/BT M.2 2230 module
	M.2 Key-B	For M.2 LTE/5G modem
Ethernet, standard	1x 2.5 GbE	2.5Gbps Ethernet from Intel® i226 on RJ45
	1x 1 GbE	1Gbps Ethernet from Jetson module on RJ45
USB	USB 2.0	2x USB 2.0 on Type-A
	USB 3.2	4x USB 3.2 10Gbps (20Gbps in total)
Optional PoE input expansion	4x 2.5 GbE	4x 2.5Gbps PoE Ethernet from Intel® i226 on RJ45
	PoE power capability	4x 15.4W PoE power delivery[2]
Optional SerDes GMSL2 input expansion	4x GMSL2	4x GMSL2 deserializer input on FAKRA Z
	PoC power capability	4x Power over Coax, 12V up to 1A
Optional SerDes FPD Link IV input expansion	4x FPD Link IV	4x FPD Link IV deserializer input on FAKRA Z
	PoC power capability	4x Power over Coax, 12V up to 1A
Optional MIPI CSI-2 input expansion	4x MIPI CSI-2	4-lane MIPI CSI-2 v3.0, 2.5Gbps per pair, on 2 FFC connectors
	Pin-out	2x 22-position, Jetson Orin standard pin-out
TPM	TPM 2.0	TPM 2.0, SLB9670
Optional OOB	Out-of-band module	Optional Allxon Bolt OOB enabler w/ dedicated Ethernet/modem
Debug and recovery ports	Recovery port	USB recovery port on USB Type-C
	Debug console port	Serial debug console w/ UART-to-USB on USB Type-C
OS support	Nvidia Jetpack 6.2	NVIDIA Jetson Linux 36.4.3 (Jetpack 6.2 on Ubuntu 22.04)
Power input	DC input	9V – 36V DC power input[2] on a power jack with twist-locking
Operating Environment	Operation temperature	Commercial: 0°C to 50°C, Industrial: -25°C to 75°C
	Humidity	5% - 95% non-condensing
Heat dissipation	Cooling	Passive/active cooling
	Optional external fan	External speed-controlled fan for enhanced heat dissipation
Physical Characteristics	Dimensions	157mm x 130mm x 59mm(75mm with fan)
	Weight	~ 1.2 Kg
	Mounting	Side/bottom VESA/DIN rail mount

Notes:

1. The NVMe interface of Orin Nano modules is limited to Gen. 3
2. PoE input expansion requires at least 12V DC input

Note: All specifications are subject to change without notice.

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Block diagram

Dimensions

Note: All specifications are subject to change without notice.

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Interfaces

Location	Interface	Connector
Front Panel	4x USB 3.2 Gen. 2	4x USB Type-A
	HDMI 2.0	HDMI
	Recovery port	USB Type-C
	2x 2.5/1Gb Ethernet ports	2x RJ45
	2x USB 2.0	2x USB Type-A
	9V – 36V DC power input[2]	1x 5.5 mm power jack with twist-locking
	Console port	USB Type-C
	Isolated RS-232/422/485	Terminal block
	Isolated CAN bus	Terminal block
	Isolated 2x GPI + 2x GPO	Terminal block
	Power button	On/Off push button with power LED
	2x antennas for Wi-Fi/BT or modem	2x SMA
	Optional Camera input expansion 4x PoE	4x RJ45
	Optional Camera input expansion 4x GMSL2	4x FAKRA Z
	Optional Camera input expansion 4x FPD Link IV	4x FAKRA Z
Rear Panel	Micro-SIM Tray for M.2 LTE/5G modem	Micro-SIM Tray
	4x antennas for Wi-Fi/BT or modem	4x SMA
	Optional OOB management module	RJ45, Micro-SIM slot, LEDs + buttons

Location	Form factor	Usage	Interface
Internal Bottom	M.2 Key-M up to 2280	NVMe storage	PCIe Gen 4[1] x4
	M.2 Key-B up to 3042 or 3052	LTE/5G modem	USB 3.2 + 2.0
	M.2 Key-E 2230	Wi-Fi/BT module	PCIe + UART + I2S + USB 2.0

Notes:

1. The NVMe interface of Orin Nano modules is limited to Gen. 3
2. PoE input expansion requires 12V or more DC input

Recommended operating temperatures

EdgeAI-ORN supports either passive cooling or active cooling with an external fan to improve heat dissipation. The table below lists the recommended maximum operating temperatures to ensure full-performance operation.

Jetson module	Power state	Max. operating temperature[1] for full performance	
		Passive cooling	Active cooling
Jetson Orin Nano	Up to 15W	55°C	75°C
	MAXN mode (25W)	45°C	75°C
Jetson Orin NX	Up to 15W	55°C	75°C
	20W /25W	45°C	75°C
	MAXN mode (40W)	(30°C)[2]	70°C

Notes:

1. Operation at higher temperatures, up to 75°C, is possible, but throttling and performance degradation are expected.
2. 40W power state is not recommended with passive cooling
3. Selecting a power state does not guarantee operation at its defined maximum power; actual power usage depends on the workload. Consequently, the operating temperature may often exceed the listed values without any performance loss.
4. PoE cameras connection via the 4x PoE camera input expansion may cause additional heat dissipation and lower the full-performance temperatures as a result.

Expansion boards

Name	P/N	Description
EB-EDGEPOE	FPOE	4x 2.5GbE on RJ45 with PoE PSE power delivery Type 1 (15.4W per port)
EB-EDGEDES-F	FFPD	4x FPD Link IV deserializer on FAKRA Z with PoC power delivery
EB-EDGEDES-G	FGMSL	4x GMSL2 deserializer on FAKRA Z with PoC power delivery
EB-EDGEMIPI[1]	FCSI	2x 22-pin flex connectors MIPI CSI-2 lanes: 1x/2x/4x + 1x/2x (Jetson Orin dev. kit pin-out)
Bolt OOB enabler	FOB	Allxon Bolt Out of Band enabler with Ethernet and optional Modem

Notes:

1. EB-EDGEMIPI is intended to be used without the standard enclosure.

Note: All specifications are subject to change without notice.

Product configuration options

P/N template: EDGEAI-ORN-Cx-[Nx]-[Fx]-[FOB]-[Wx]-[Jx]-[Xx]-[Hx]-[Bx]-[Tx]-[Zx]-[Px]-[ACx]

Feature	Option	P/N code[1]
Computation module	Jetson Orin™ NX 16GB	CNX16
	Jetson Orin™ NX 8GB	CNX8
	Jetson Orin™ Nano 8GB	CNA8
	Jetson Orin™ Nano 4GB	CNA4
NVMe storage	No NVMe storage module	
	256GB NVMe storage module	N256
	1TB NVMe storage module	N1T
Camera input expansion	No camera input expansion	
	EB-EDGEPOE, 4x 2.5 GbE PoE on RJ45	FPOE
	EB-EDGEDES-G, 4x GMSL2 with PoC on FAKRA Z	FGMAL
	EB-EDGEDES-F, 4x FPD Link IV with PoC on FAKRA Z	FFPD
	EB-EDGEMIPI, 4-lane MIPI CSI-2	FCSI
Out-of-band management module	No OOB management module	
	Allxon Bolt OOB module	FOB
Wi-Fi / BT	No Wi-Fi / BT	
	2x SMA cables and antennas, w/o Wi-Fi module	W0
	Intel AX210 Wi-Fi/BT module + antennas	W
Cellular modem	No Cellular modem	
	2x SMA cables and antennas, w/o modem	J02
	4x SMA cables and antennas, w/o modem	J04
	4G modem Europe, Sierra EM7421	J4E
	4G modem NA, Sierra EM7411	J4A
	5G modem Global, Telit FN990A28	J5G
OS & software preloading	No software pre-loading	
	JetPack 6.2	XJP62
Housing options	Regular, fanless housing	
	Extended heat dissipation with an external fan	HF
	No housing	HN
Branding (label and logo plate)	Standard branding	
	Unbranded	BN
Operation temperature	Commercial temperature: 0 to +50	
	Industrial temp. certified: -25 to +75, sample testing	TIC
	Industrial temp. tested: -25 to +75, full testing	TIT
Power supply	No power supply	
	60W power supply	P60
	120W power supply	P120
AC cord	No AC cord	
	AC cord - US	ACU
	AC cord - Israeli	ACI
	AC cord - French/German	ACF

Notes:

1. An empty cell in the P/N code column indicates the default option, without the feature represented in the P/N string.

Optional accessories

Name	Description
EDGEAI-ACC-BRKT	Bottom VESA mounting kit
EDGEAI-ACC-DIN	Bottom DIN rail mounting kit
EDGEAI-ACC-DINSD	Side DIN rail mounting kit
EDGEAI-ACC-POWBTN	Remote power button with LED, with 25cm wire
EDGEAI-ACC-CABDC	DC cable

For more information or pricing: Contact Metromatics
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