Edge Computing Computer

- **EC-OrinNX (16GB)**
- **EC-OrinNano (8GB)**

V1.0   2024-12-30

T-CHIP INTELLIGENCE TECHNOLOGY

Product features

NVIDIA high-performance edge computing modules

1024 core NVIDIA Ampere architecture GPU equipped with NVIDIA Jetson OrinNX edge computing module (16GB), eight core ARM CPU and 32 Tensor Core, more powerful AI performance.

157TOPS computing power empowers AI applications

All modern AI models can be run. For example, the ROS robot model realizes larger and more complex deep neural networks, and realizes functions such as object recognition, object detection and tracking, speech recognition, and other visual development.

The private deployment of large models

Large language models: Support Ollama local large model deployment framework and the private deployment of ultra-large-scale parametric models: Llama3 and Phi-3 Mini.
Vision models: Support EfficientVIT, NanoOWL, NanoSAM, SAM and TAM.
AI painting: Support ComfyUI graphical deployment framework and the private deployment of Flux, Stable Diffusion image generation model in the AIGC field.

Multiple deep learning frameworks

Supports multiple deep learning frameworks accelerated by cuDNN, including PaddlePaddle, PyTorch, TensorFlow, MATLAB, MxNet, Caffe2, Chainer and Keras, as well as custom operator development. Docker containerization technology is supported.

Product features

AI software stack and ecosystem

A comprehensive AI software stack and ecosystem to democratize edge AI and robotics development. With NVIDIA JetPac, Isaac ROS, and reference AI workflows, advanced technologies can be integrated into products.

Abundant expansion interfaces

Equipped with interfaces such as Gigabit Ethernet (RJ45), HDMI2.0, USB3.0, RS485, RS232, CAN, Mini PCIe (4G), M.2 (WiFi), M.2 (SSD), etc., making it easy to connect various peripherals.
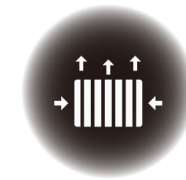
All-aluminum alloy enclosure for passive heat dissipation

Industrial-grade all-aluminum alloy shell, fanless efficient passive heat dissipation, 7×24 hours of stable operation, to meet the needs of industrial-grade applications. It can be wall-mounted to save space.

A wide range of applications

It is widely used in edge computing, robotics, large model localization, smart city, smart healthcare, smart industry and other industries.

Specifications

		EC-OrinNano (8 GB)	EC-OrinNX (16 GB)
Basic Specifications	Module	Original NVIDIA Jetson OrinNano (8GB) module	Original NVIDIA Jetson OrinNX (16GB) module
	CPU	Hexa core 64 bit ARM Cortex-A78AE v8.2 processor Up to 1.7GHz	Octa core 64 bit Arm Cortex-A78AE v8.2 processor Up to 2.0GHz
	AI performance	67 TOPS	157 TOPS
	GPU	1024 core NVIDIA Ampere architecture GPU with 32 Tensor Cores	
	Video encoding	H.265: 1080p30	H.265: 1×4K60, 3×4K30, 6×1080p60, 12×1080p30
	Video decoding	H.265: 1×4K60, 2×4K30, 5×1080p60, 11×1080p30	H.265: 1×8K30, 2×4K60, 4×4K30, 9×1080p60, 18×1080p30
	Memory (Video Memory)	8GB LPDDR5	16GB LPDDR5
	Storage	1 × M.2 (Inside the computer, expandable PCIe NVMe SSD, supports 2242/2260/2280)	
	Power	DC 12V(5.5 × 2.1mm, support 9V~24V wide voltage input)	
	Power consumption	Normal: 7.2W(12V/600mA) Max:14.4W(12V/1200mA)	Normal: 8.4W(12V/700mA) Max: 32.4W(12V/2700mA)
	Size	188.0mm × 88.44mm × 50.65mm	
	Weight	≈ 500g	
	Environment	Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Storage Humidity: 10% ~ 90%RH(non-condensing)	
Software support	OS	Jetson systems based on Ubuntu 22.04 provide a complete desktop Linux environment with graphics acceleration and support for libraries such as NVIDIA CUDA, TensorRT, CuDNN, and more	
	Large model	Robot model: ROS robot model is supported. Large language models: Support Ollama local large model deployment framework, which can be used for natural language processing, code generation, and assistance scenarios. Support the private deployment of ultra-large-scale parametric models under the Transformer architecture, such as Llama3 and Phi-3 Mini. Large visual models: Support the privatization deployment of large visual models such as EfficientVIT, NanoOWL, NanoSAM, SAM and TAM. AI Painting: Support ComfyUI graphical deployment framework, which can be used for scenarios such as image restoration, image style conversion, and image synthesis. Supports the private deployment of Flux, Stable Diffusion and Stable Diffusion XL image generation model in the AIGC field.	
	Traditional network architecture	Supports multiple deep learning frameworks accelerated by cuDNN, including PaddlePaddle, PyTorch, TensorFlow, MATLAB, MxNet, Caffe2, Chainer and Keras. Supports custom operator development Docker containerization: Docker containerization technology is supported, which can be easily used for image deployment.	
	AI software stack	The NVIDIA Jetson Orin series delivers powerful AI compute power, massive unified memory, and a comprehensive software stack to power the latest generative AI applications. It enables fast inference on any generative AI model powered by the Transformer architecture, enabling superior edge performance on MLPerf	
Interface Specifications	Internet	Ethernet: 1 × Gigabit Ethernet (RJ45) WiFi: WiFi6/BT5.2 module is extended through M.2 inside the computer 4G: 4G LTE is extended via Mini PCIe	
	Display	1 × HDMI2.0 (4K@60fps)	
	Audio	1 × 3.5mm Audio jack (supports MIC recording, American standard CTIA)	
	USB	2 × USB3.0	
	Other interfaces	1 × Type-C (USB2.0/Debug) 1 × SIM Card 1 × Phoenix connector (2×4Pin, 3.5mm pitch): 1 × RS485, 1 × RS232, 1 × CAN 2.0	

Interface description

WiFi antenna

4G antenna

RJ45
1000Mbps

USB3.0(1)

USB3.0(2)
Max: 1A

WIFI

RS232   CAN RS485
TX   G   H   A

RX   G   L   B

4G

HDMI

TYPE-C

WIFI

12V

Power button

3.5mm Audio jack
Support Mic recording, CTIA

Phoenix connector
2×4Pin, 3.5mm Pitch

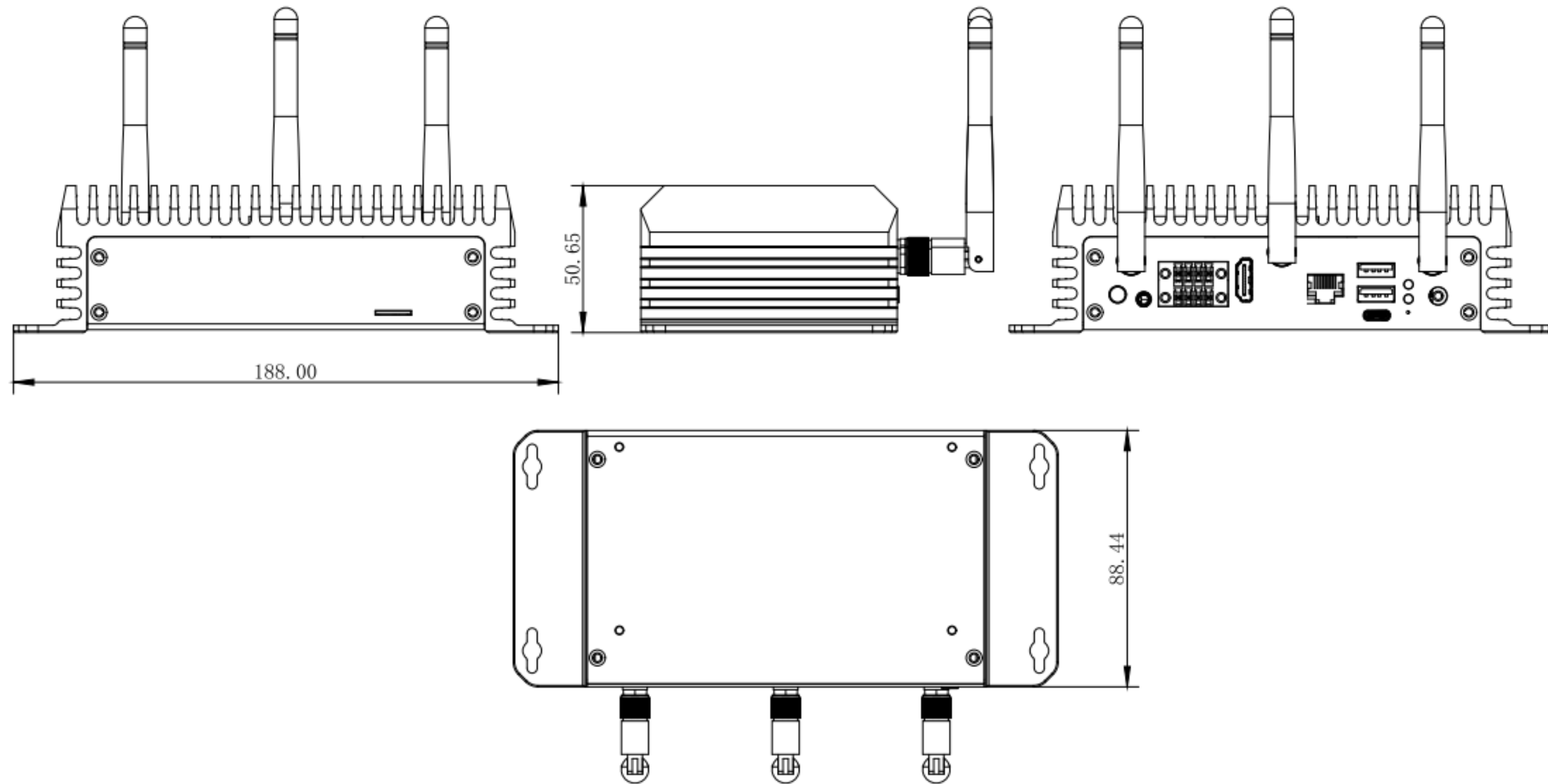HDMI2.0
4K@60fps

Type-C
USB2.0/
Debug

DC 12V
5.5mm×2.1mm
9V~24V input

SIM CARD

SIM Card

232-TX	GND	CAN_H	485_A
232-RX	GND	CAN_L	485_B

Dimension

T-CHIP INTELLIGENCE TECHNOLOGY

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