EC-A1684JD4

8-Core High Computing Power AI Computer

V1.2　2025-3-5

T-CHIP INTELLIGENCE TECHNOLOGY

Product features

New-gen AI processor BM1684

This computer is powered by SOPHON AI processor BM1684, which is octa-core ARM Cortex-A53, 12nm lithography process and up to 2.3GHz clock speed. With up to 17.6TOPS INT8 computing power or 2.2TOPS FP32 high-precision computing power.

Powerful video AI performance

Support up to 32 channels of 1080P H.264/H.265 video decoding, and support 16 channels of 1080P HD video full-process processing (decoding + AI analysis), meeting the needs of various AI application scenarios, such as face detection on video streaming, license plate recognition, etc.

Strong network communication capability

It supports dual Gigabit Ethernet, 2.4GHz/5GHz dual-band WiFi, and expandable 5G/4G network to meet the needs of different application scenarios.

High throughput and energy efficiency ratio

Based on INT8 quantified Batch4 measured data, EC-A1684JD4 has higher throughput and energy efficiency ratio than the mainstream intelligent computing module platform in the industry, and has more advantages in performance.

Product features

One-stop toolkit, convenient and efficient

The MNNSDK2 one-stop deep learning development toolkit provides a series of software tools including the underlying driver environment, compiler and inference deployment tool. It supports mainstream frameworks, mainstream network model and custom operator development, Docker containerization, and rapid deployment of algorithm applications.

Abundant expansion interfaces

With dual Gigabit Ethernet, HDMI2.0, M.2 SATA, USB3.0, USB2.0, RS485, RS232, TF Card and other expansion interfaces, convenient data connection and communication, can be directly applied to AI edge computing products.
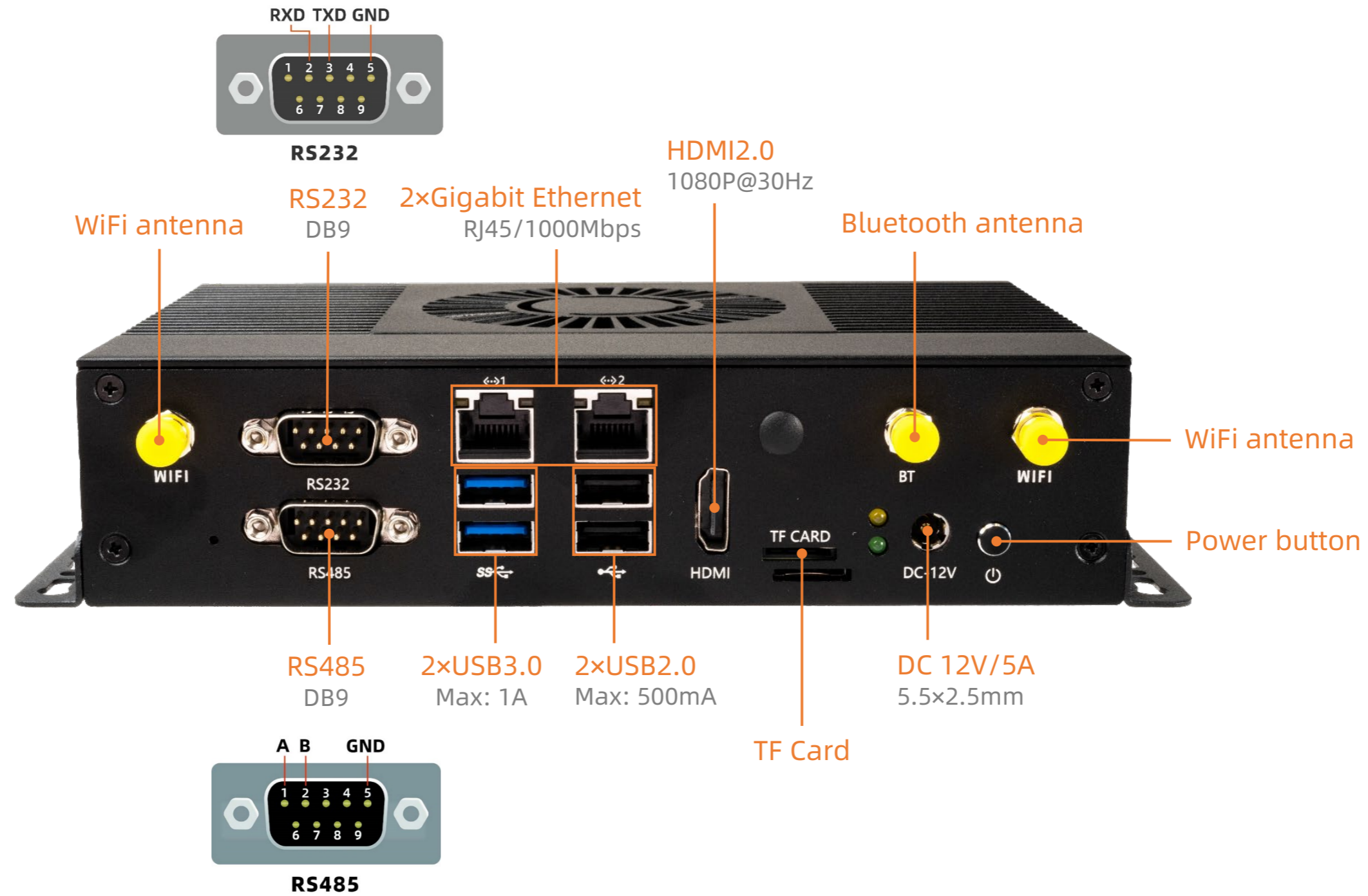
Wide range of application scenarios

The computer can efficiently adapt to all AI algorithms on the market, which promote development of industries through AI, such as visual computing, edge computing, general computing power services, Artificial Intelligence, intelligent construction site, intelligent transportation, smart classes, unmanned supermarkets, security surveillance.
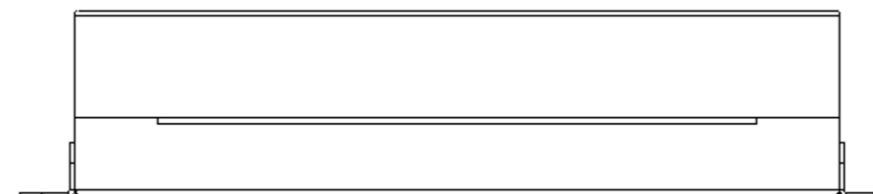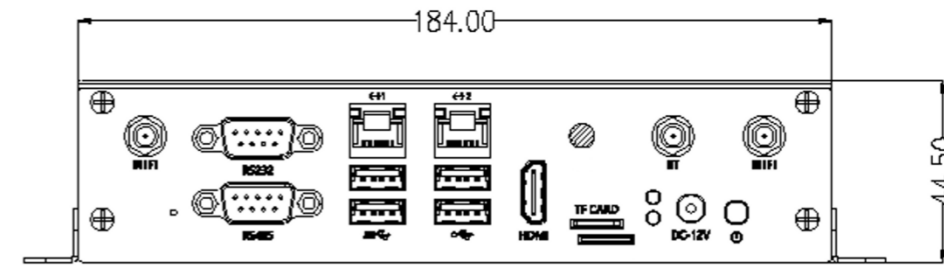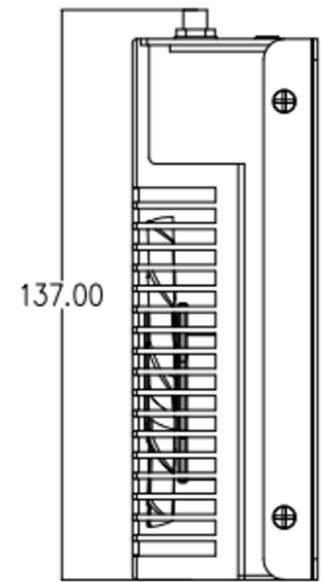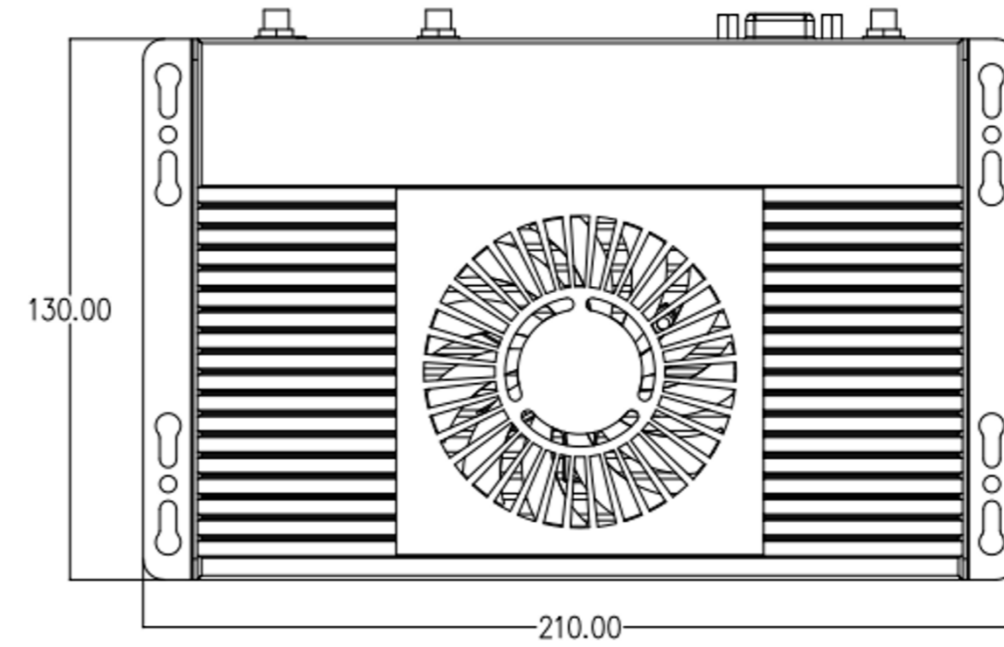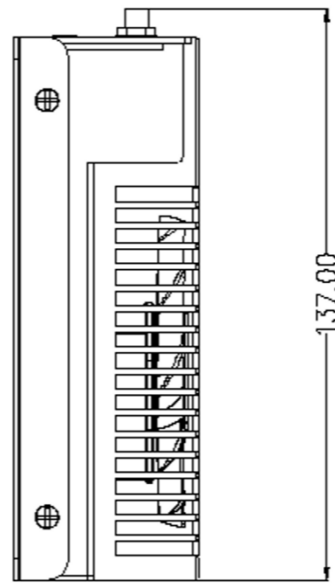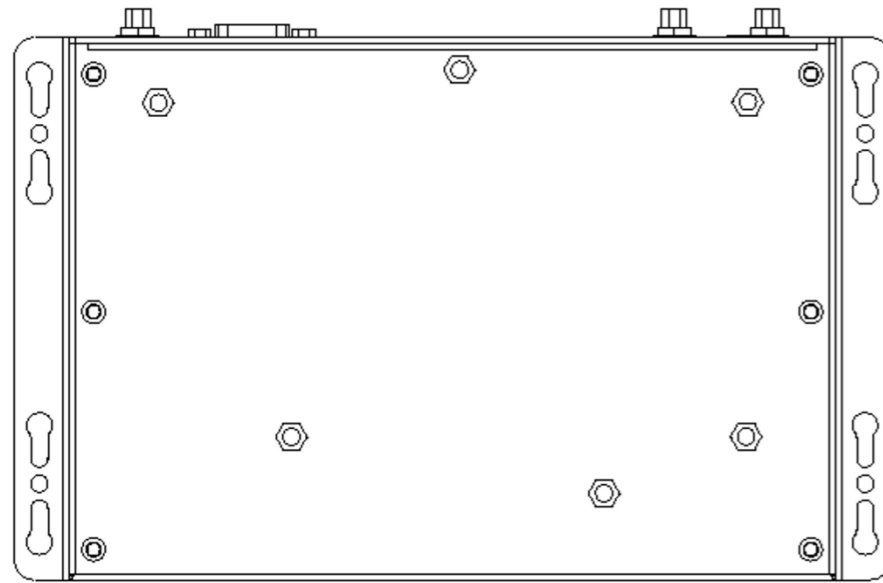
Specifications

Specifications		
Basic Specifications	SOC	SOPHON BM1684
	CPU	Integrated high-performance ARM A53, 12nm lithography process, main frequency up to 2.3GHz
	TPU	Built-in tensor computing module TPU, computing power up to: 17.6T (INT8) / 2.2T (FP32) / 35.2T (INT8, enable winograd) TPU contains 64 NPU arithmetic units, each NPU contains 16 EU arithmetic units, 1024 EU in total Support mainstream programming frameworks, such as TensorFlow/Caffe/PyTorch/PaddlePaddle/ONNX/MXNet/DarkNet
	Codecs	32-channel H.265/H.264 1080P@30fps video decoding 2-channel H.265/H.264 1080P@25fps video encoding MJPEG image encoding and decoding can reach 1080P@480fps
	RAM	6GB/12GB/16GB LPDDR4/LPDDR4X
	Storage	32GB/64GB/128GB eMMC
	Storage Expansion	1 × M.2 SATA3.0 (expandable 2242 SATA SSD, located inside the computer), 1 × TF Card
	Power	DC 12V/5A (DC 5.5×2.5mm)
	Power consumption	Normal: 18W(12V/1500mA), Max: 24W(12V/2000mA)
	OS	Linux
	Size	210.0mm × 130.0mm × 44.5mm
	Weight	Net weight: 1.28kg, Weight with antenna: 1.33kg, Total weight with package: 2.24kg
	Environment	Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Storage Humidity: 10% ~ 90%RH (non-condensing)
Interface Specifications	Ethernet	2 × Gigabit Ethernet (RJ45/1000Mbps)
	Wireless	Support 2.4GHz/5GHz dual-band WiFi (802.11a/b/g/n/ac protocol), expandable 4G LTE (via Mini PCIe), 5G (via M.2 B-KEY)
	Video Output	1 × HDMI2.0 (1080P@30Hz)
	Audio Output	1 × HDMI audio output
	USB	2 × USB3.0 (Max: 1A), 2 × USB2.0 (Max: 500mA)
	Debug UART	1 × RS232 (DB9), 1 × RS485 (DB9)
	Other interfaces	2 × WiFi antenna, 1 × Bluetooth antenna

Interface description

RXD TXD GND

1 2 3 4 5
6 7 8 9

RS232

HDMI2.0
1080P@30Hz

RS232
DB9

2×Gigabit Ethernet
RJ45/1000Mbps

WiFi antenna

Bluetooth antenna

WIFI

RS232

RS485

WiFi antenna

Power button

RS485
DB9

2×USB3.0
Max: 1A

2×USB2.0
Max: 500mA

DC 12V/5A
5.5×2.5mm

TF Card

A B   GND

1 2 3 4 5
6 7 8 9

RS485

Dimension

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