# Industrial AI Computer

- EC-A1688JD4
- EC-A186JD4


V1.0 2026-4-15

FIREFLY TECHNOLOGY

# Product features

## High-performance AI processor

Equipped with SOPHON BM1688/CV186 AI processor, based on ARM Cortex-A53 with a maximum frequency of 1.6GHz, widely used in AI inference, computer vision and other fields.

## Up to 16 TOPS computing power

Built-in neural network acceleration engine TPU. BM1688 delivers peak computing power of 32 TOPS (INT4) and 16 TOPS (INT8); CV186 delivers peak computing power of 12 TOPS (INT4) and 7.2 TOPS (INT8). Capable of intelligent data processing, speech recognition and image analysis to meet most edge computing AI application requirements for terminal devices.

## The private deployment of large language models

Support the privatization deployment of ultra-large-scale parametric models under the Transformer architecture, such as Deepseek-R1 series, Gemma series, Llama series, ChatGLM series, Qwen series, Phi series and other large language models.

## Multiple deep learning frameworks

It supports traditional network architectures such as CNN, RNN, and LSTM, and supports the import and export of RKNN models; Support a variety of deep learning frameworks, including TensorFlow, TensorFlow Lite, PyTorch, Caffe, ONNX and Darknet.

# Product features

## Powerful multi-channel video AI processing performance

It supports up to 16 channels of H.265/H.264 1080P video decoding, 10 channels of H.265/H.264 1080P video encoding, and 16 channels of 1080P HD video full-process processing (decoding + AI analysis), meeting the needs of various AI application scenarios such as video streaming face detection, license plate recognition, and smart cities.

## All-aluminum housing, efficient passive cooling

Industrial-grade all-aluminum enclosure with fanless efficient passive cooling ensures stable 7×24 operation and meets industrial application requirements. Supports wall-mounted installation to save space.

## Abundant expansion interfaces

It has HDMI2.0, USB3.0, RS485, RS232, CAN, TF Card, SIM Card, Type-C and other expansion interfaces. These interfaces facilitate the connection of various peripherals, supporting product applications across various fields.

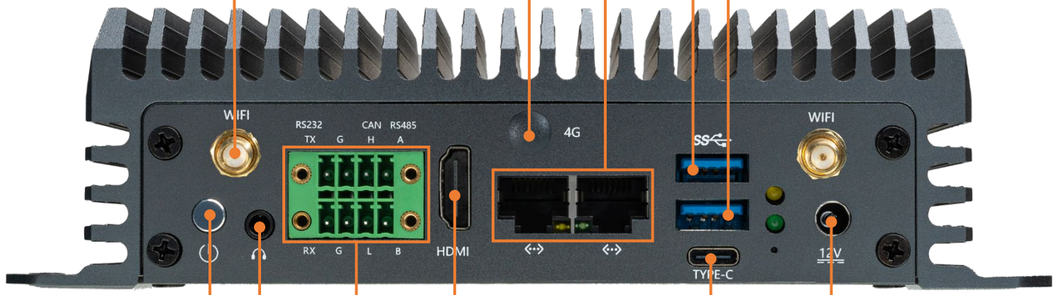
## Wide range of applications

Widely used in robotics, drones, smart security, intelligent transportation, edge computing, retail AI, computing power services, local deployment of large models, cameras and other fields.

# Specifications

| | | EC-A1688JD4 | EC-A186JD4 |
|---|---|---|---|
| Basic Specifications | SOC | SOPHON BM1688 | SOPHON CV186AH |
| | CPU | Octa-core ARM Cortex-A53 @ 1.6GHz | Hexa-core ARM Cortex-A53 @ 1.6GHz |
| | TPU | 16T@INT8, 32T@INT4, 4T@FP16/BF16, and 0.5T@FP32 computing power | 7.2T@INT8, 12T@INT4, and 1.5T@FP16/BF16 computing power |
| | ISP | Time-sharing multiplexing for up to 6 sensor input videos, with maximum widths of 4608 (non-tile mode) and 8192 (tile mode).<br>Supports Sensor self-band dynamic and 2-frame wide dynamic range, and the maximum performance supports: 12M@30 HDR or 8K@15 SDR or 16M@30 SDR.<br>Support RGB-IR, AI ISP interface, 3A (AE/AWB/AF, 3A control user adjustable).<br>Support fixed mode noise removal, dead pixel correction, shadow correction, lens distortion correction, purple edge correction, Bayer noise reduction, 3D denoising, image edge enhancement, dehazing, dynamic contrast enhancement, image video Mirror, Flip and other functions. | |
| | Decoding/ Encoding | Video decoding: H.265/H.264 decoding (Max performance: 1920×1080@480fps or 8192×4320@30fps)<br>Video encoding: H.265/H.264 encoding (Max performance: 1920×1080@300fps or 8192×4320@15fps)<br>Image codec: JPEG/MJPEG Baseline codec (JPEG codec capability: 1080P@480fps, maximum resolution of 32768×32768) | |
| | RAM | 8GB LPDDR4 (4GB/8GB/16GB optional) | 4GB LPDDR4 (4GB/8GB/16GB optional) |
| | Storage | 32GB eMMC (32GB/64GB/128GB/256GB optional) | |
| | Storage expansion | 1 × TF Card, M.2 SATA3.0/PCIe NVMe SSD 2242/2260/2280 (inside the device), scalable SATA3.0 SSD (inside the device) | |
| | OS | Linux OS | |
| | Software Support | Supports private deployment of ultra-large-scale Transformer-based models, including large language models such as Deepseek-R1, Gemma, Llama, ChatGLM, Qwen, and Phi series.<br>Supports traditional network architectures including CNN, RNN, and LSTM, as well as mainstream deep learning frameworks: TensorFlow, PyTorch, PaddlePaddle, Caffe, and ONNX.<br>Supports custom operator development and Docker-based containerized management. | |
| | Power | DC 12V (5.5mm × 2.1mm, support 9V~24V wide voltage input) | |
| | Power consumption | Normal: 7.2W(12V/600mA), Max: 12W(12V/1000mA) | Normal: 8.5W(12V/710mA), Max: 14W(12V/1170mA) |
| | Size | 188.0mm × 88.44mm × 50.65mm | |
| | Weight | Net weight: 0.79kg, Total weight with packaging: 1.14kg | |
| | Environment | Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Storage Humidity: 10% ~ 90%RH (non-condensing) | |
| Interface Specifications | Internet | Ethernet: 2 × RJ45 (1000Mbps)<br>WiFi: Extend WiFi/Bluetooth module via M.2 E-KEY (2230), supports 2.4GHz/5GHz dual band WiFi6 (802.11a/b/g/n/ac/ax) and Bluetooth 5.2<br>4G: Extend 4G LTE via Mini PCIe (Reused with 5G)<br>5G: Extend 5G via M.2 B-KEY (Reused with 4G and USB3.0(1), not pasted by default) | |
| | Video output | 1 × HDMI2.0 (4K@60Hz) | |
| | Audio output | 1 × 3.5mm Audio jack (Support MIC recording, American standard CTIA) | |
| | USB | 2 × USB3.0 (Max: 1A; Top: USB3.0(1), reused with 5G; Bottom: USB3.0(2)), 1 × Type-C (Debug) | |
| | Others | 1 × SIM Card, 1 × Phoenix connector (8Pin, 3.5mm pitch): 1 × RS485, 1 × RS232, 1 × CAN 2.0 | |

# Interface description




2×Gigabit Ethernet
RJ45/1000Mbps

USB3.0(1)
Multiplexing with 5G

WiFi antenna

4G antenna

USB3.0(2)
Max: 1A

Power button

3.5mm Audio jack
Support Mic recording

Phoenix connector
8Pin, 3.5mm Pitch

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

HDMI2.0
4K@60Hz

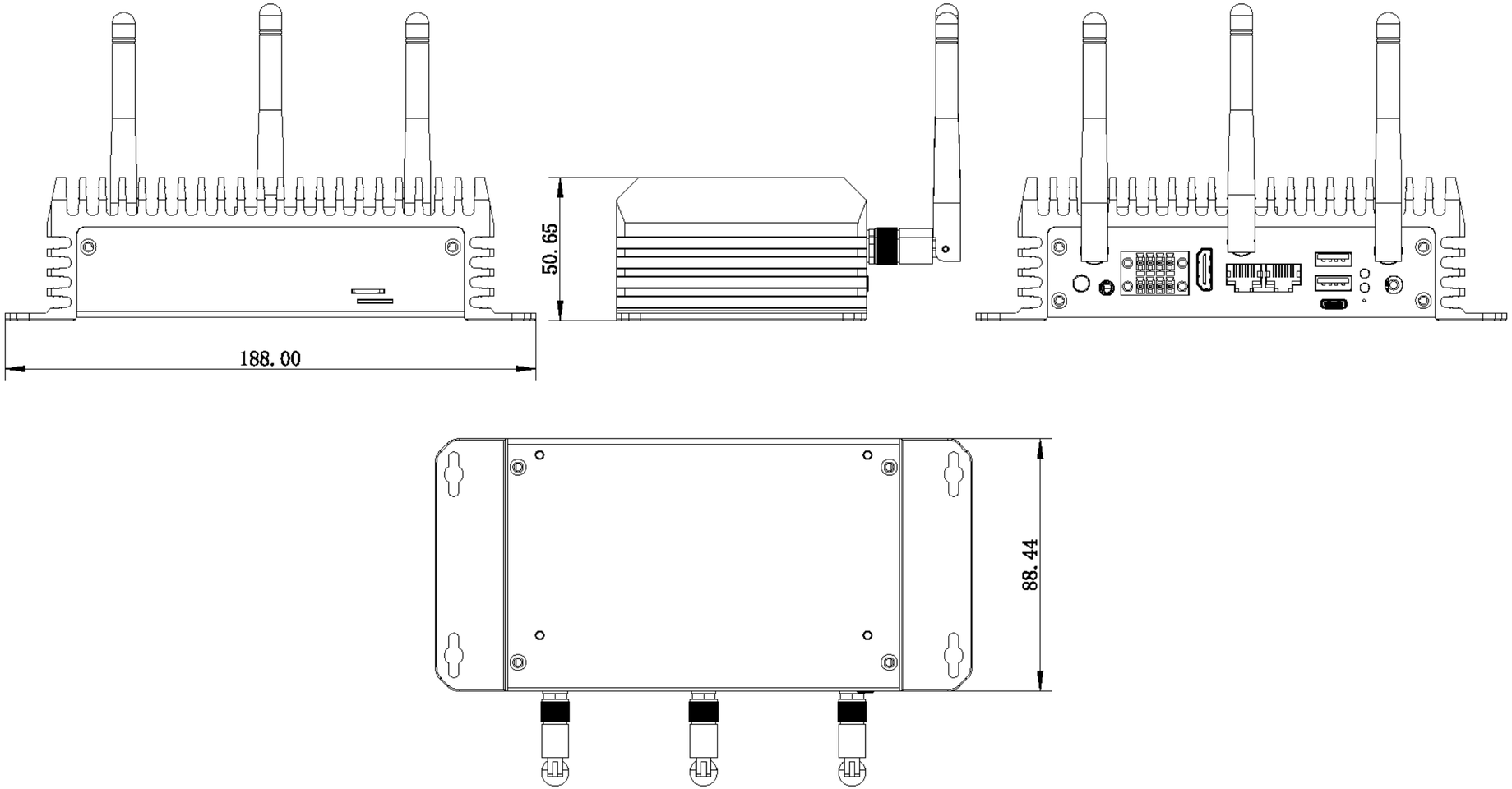
Type-C
Debug

DC 12V
5.5mm×2.1mm,
9V~24V input


TF Card

SIM Card
5G/4G

# Dimension

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