

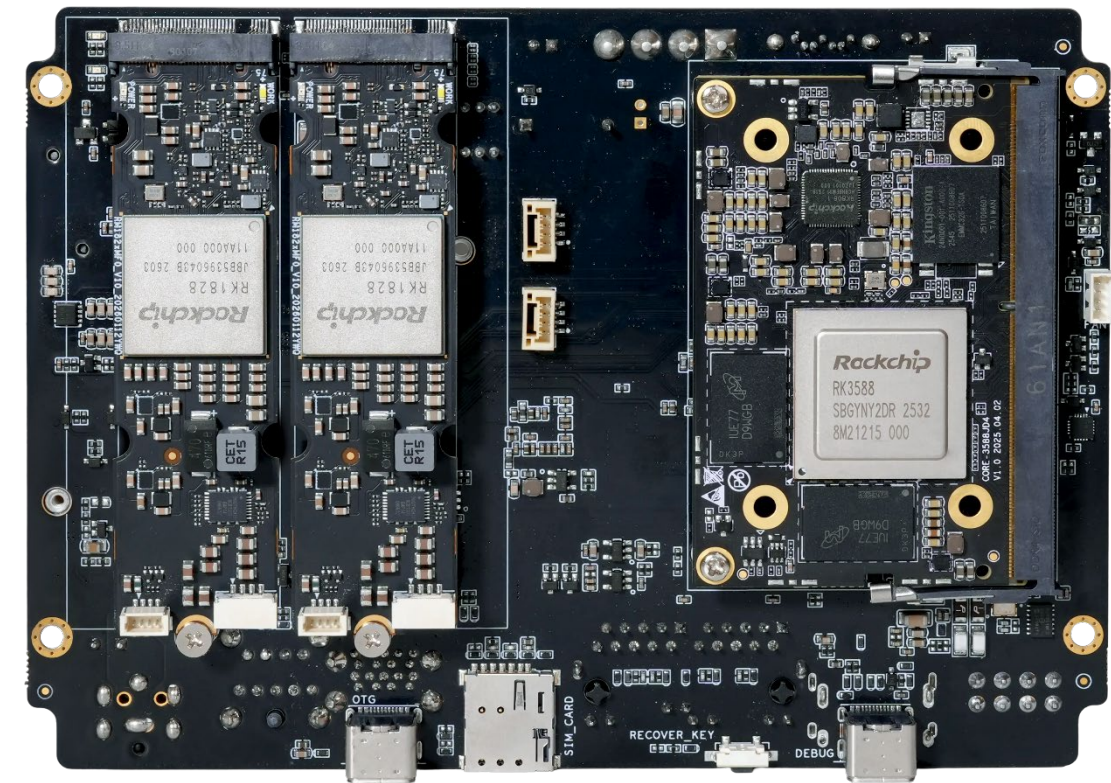


AIBOX PRO KIT

■ Dual AI Matrix Kit

V0.1 2026-7-24

FIREFLY TECHNOLOGY



Product features



Dual-core Heterogeneous Design

Adopt a split heterogeneous architecture consisting of primary and secondary modules interconnected at high speed via PCIe. The primary module handles overall task scheduling and data preprocessing, while the secondary module focuses on core AI inference computing to enable model parallelism and multi-task coordination.



8K Codec & Multi-channel 4K Parallel Processing

The host module integrates high-performance VPU for 8K encoding/decoding, with hardware-accelerated image scaling and cropping to process multi-channel 4K streams. Combined with AI computing of slave modules, it delivers real-time video AI analysis for edge HD intelligent processing.



High-Compute Module for Diverse Scenarios

The slave module is compatible with high-compute high-bandwidth modules like RK1820, RK1828 and HOUMO LQ50, providing solid computing base for LLM, VLM, MoE and AI Agent. Its processing-in-memory structure lifts DRAM bandwidth to boost large model inference TPS and reduce initial frame latency.



Low-latency Edge Computing with Millisecond-level Response

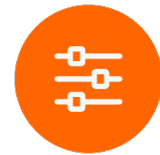
Local AI processing eliminates cloud upload and network dependency, avoiding bandwidth fluctuation impacts to deliver millisecond response and robust data privacy. All business data is stored and computed locally to comply with data security and industry privacy regulations.

Product features



Onboard SATA and PCIe interfaces for massive storage expansion

Equipped with onboard SATA3.0 and high-speed M.2 PCIe interfaces compatible with SATA and NVMe SSDs. High-speed solid-state drives can be flexibly installed to expand storage to terabyte level, accommodating large model files and massive business data to meet local high-capacity storage requirements.



Abundant Expansion Interfaces

It features dual Gigabit Ethernet, USB3.0, USB2.0, HDMI, M.2, Mini PCIe, RS485, CAN-FD and opto-isolated DI/DO ports for flexible access to industrial peripherals and extended industry applications.



Comprehensive Development Materials

Supporting source code, practical tutorials, detailed technical documents and development tools are provided to facilitate secondary development, streamline procedures and lower project development barriers.



Wide Application Scenarios

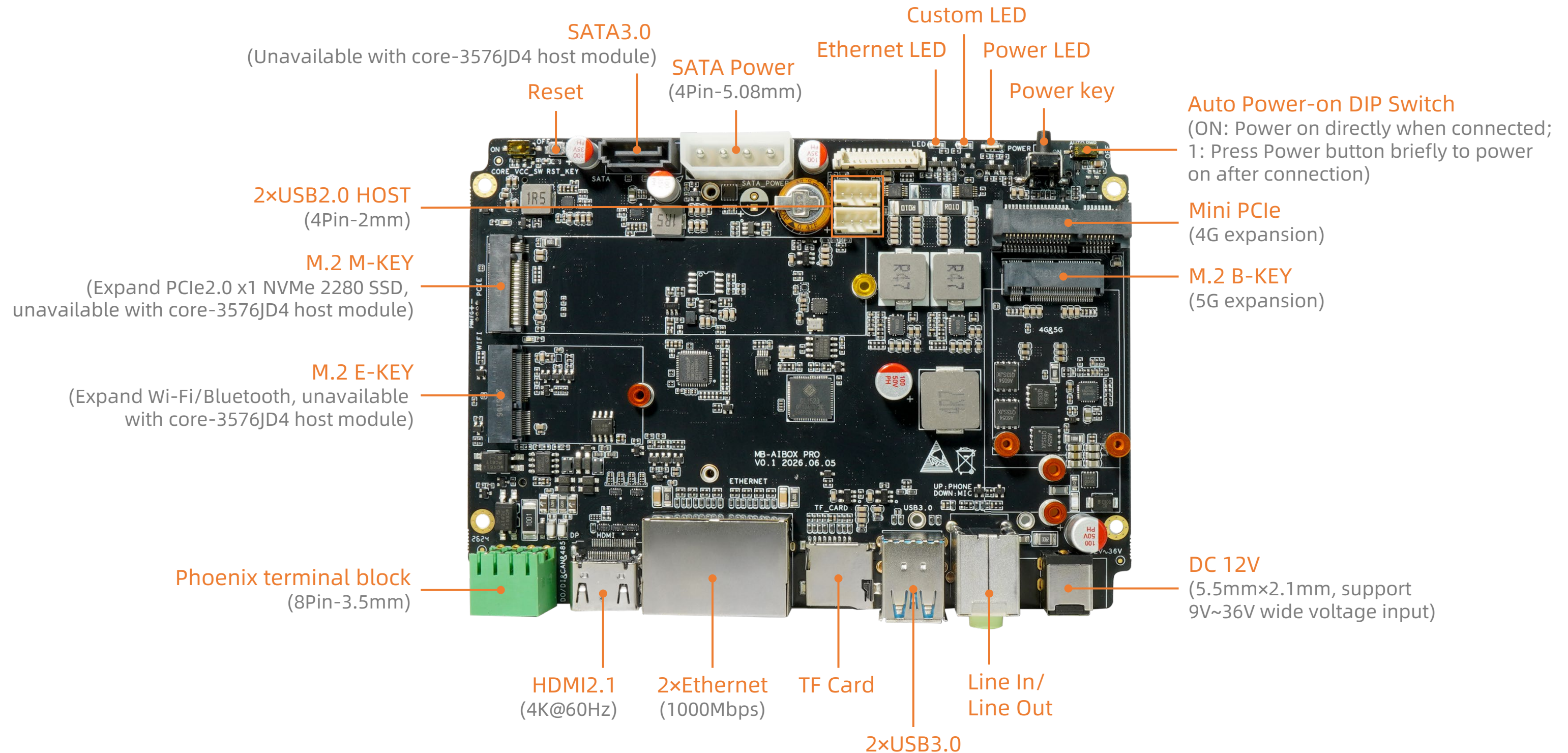
It applies to robotics, edge AI computing, industrial automation, intelligent security, autonomous driving, traffic management, smart city, home storage and retail automation.

Specifications

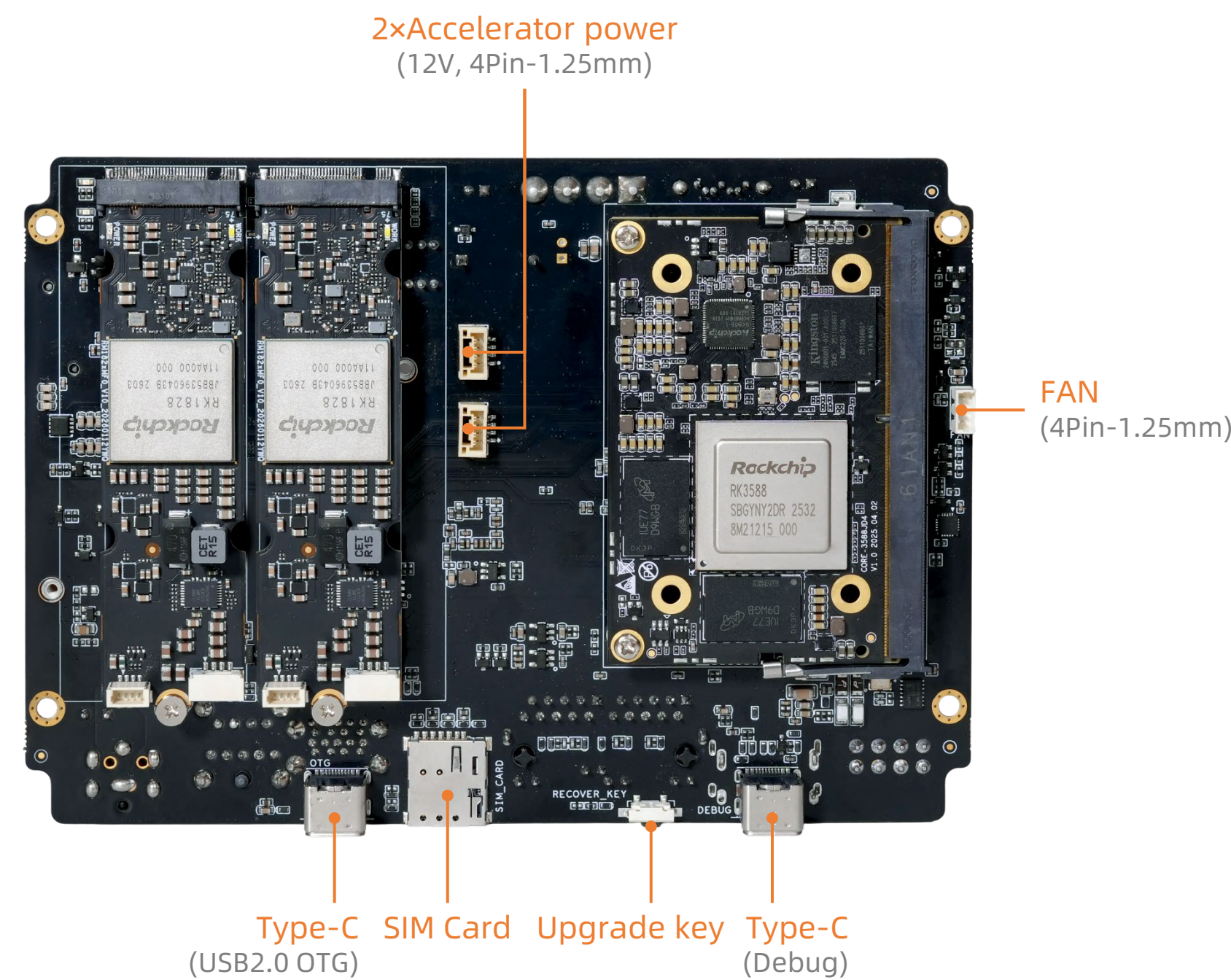
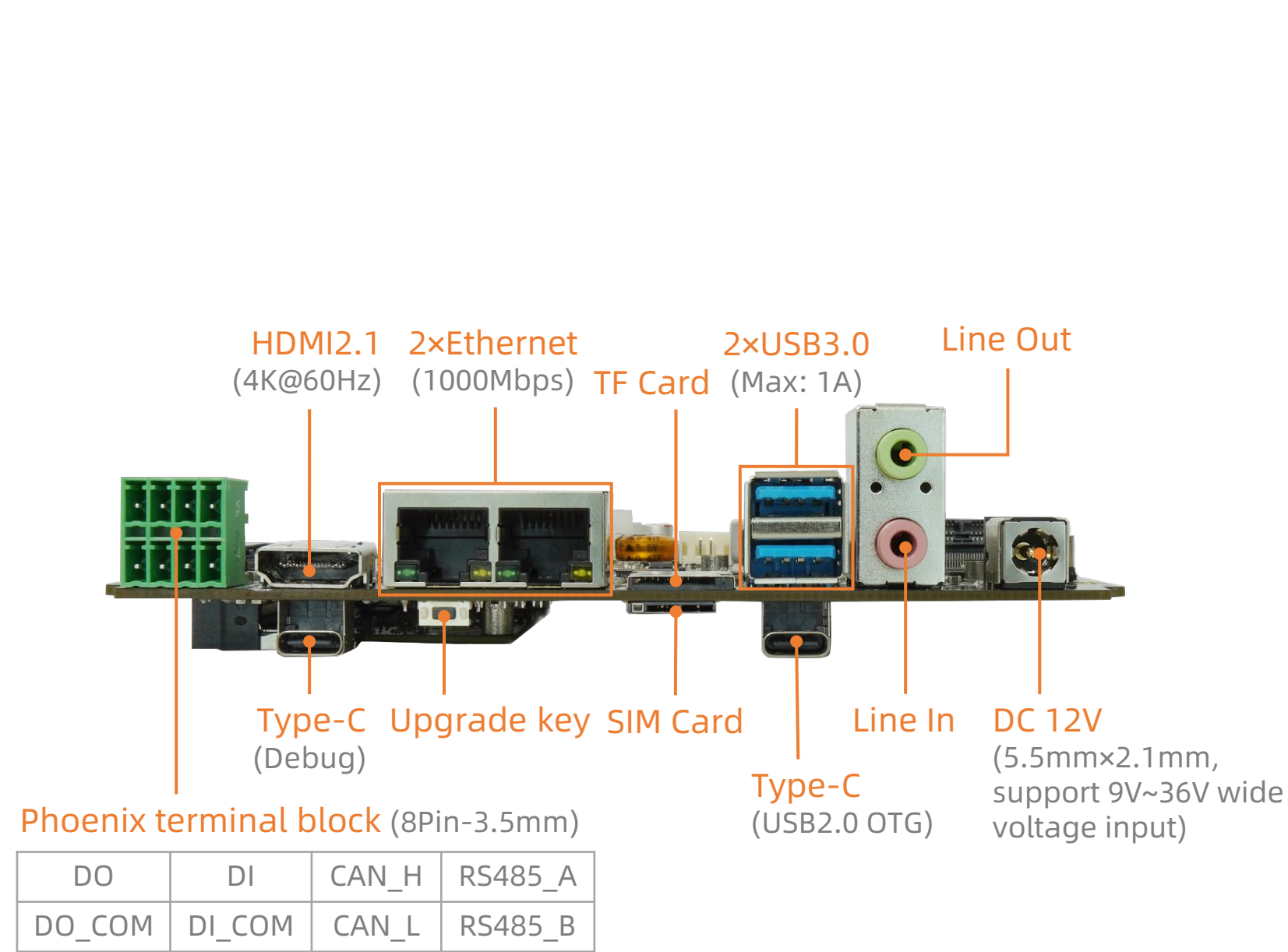


Specifications		
Basic Specifications	Host module	Optional modules as follows: RK3588 module (Core-3588JD4): LPDDR4/LPDDR4x (4/8/16/32GB) + eMMC (32/64/128/256GB), 6TOPS(INT8) RK3576 module (Core-3576JD4): LPDDR4/LPDDR4x (2/4/8/16GB) + eMMC (16/32/64/128/256GB), 6TOPS(INT8)
	Video encoding	RK3588: 8K@30fps H.265/H.264 RK3576: 4K@60fps H.265/H.264
	Video decoding	RK3588: 8K@60fps H.265/VP9/AVS2, 8K@30fps H.264/AVC/MVC, 4K@60fps AV1, 1080P@60fps MPEG-2/-1/VC-1/VP8 RK3576: 8K@30fps H.265/VP9/AVS2/AV1, 4K@120fps H.265/VP9/AVS2/AV1, 4K@60fps H.264/AVC
	Accelerator expansion (Slave module)	2 × M.2 M-KEY (Supports 2260/2280 accelerator cards & other M.2 modules, inside the device) * Users can install any brand M.2 M-KEY accelerators; standard equipped with RK1828/HOUMO LQ50 modules ○ RK1828: Onboard 5GB DRAM, 20TOPS(INT8), runs LLMs up to 7B smoothly ○ LQ50: 48GB LPDDR5, 160TOPS(INT8), runs LLMs up to 35B smoothly
	Storage expansion	1 × M.2 M-KEY (Expandable with PCIe2.0 x1 NVMe 2280 SSD; unavailable when core-3576JD4 serves as the host module) 1 × SATA3.0 (Expandable with SATA3.0 SSD; unavailable when core-3576JD4 serves as the host module) 1 × TF Card
	Motherboard power	DC 12V/7A (5.5×2.1mm, support 9V~36V wide voltage input)
	Accelerator power	2 × 12V (2pcs 4Pin-1.25mm wafer sockets)
	Power consumption	RK3588 + 1 × RK1828: Normal: 9.6W(12V/800mA), Max: 28.8W(12V/2400mA), Min(Sleep): 0.72W(12V/60mA) RK3588 + 2 × RK1828: Normal: 15.6W(12V/1300mA), Max: 42W(12V/3500mA), Min(Sleep): 0.72W(12V/60mA) RK3588 + 1 × LQ50: Normal: 8.4W(12V/700mA), Max: 45.6W(12V/3800mA), Min(Sleep): 0.84W(12V/70mA) RK3588 + 1 × LQ50 DUO: Normal: 12W(12V/1000mA), Max: 63.6W(12V/5300mA), Min(Sleep): 0.84W(12V/70mA) RK3576 + 1 × RK1828: Normal: 8.4W(12V/700mA), Max: 28.8W(12V/2400mA), Min(Sleep): 1.2W (12V/100mA)
	OS	Linux
	Dimension	148.0mm × 106.0mm × 36.4mm
	Environment	Operating Temperature: -20°C ~ 60°C, Storage Temperature: -20°C ~ 70°C, Storage Humidity: 10%~90%RH (non-condensing)
Interface Specifications	Network	2 × Gigabit Ethernet (1000Mbps/RJ45) Wi-Fi & Bluetooth: Support dual-band 2.4GHz/5GHz Wi-Fi and Bluetooth 5.2 (Expandable via M.2 E-KEY; unavailable with core-3576JD4 host module) 4G: Expandable via Mini PCIe 5G: Expandable via M.2 B-KEY
	Video output	1 × HDMI2.1 (Up to 4K@60Hz)
	Audio	1 × Line In (3.5mm audio jack), 1 × Line Out (3.5mm audio jack)
	USB	2 × USB3.0 (Max: 1A), 2 × USB2.0 HOST (4Pin-2mm), 1 × Type-C (USB2.0 OTG), 1 × Type-C (Debug)
	Button	1 × Power key, 1 × Upgrade key, 1 × Reset key
	Others	1 × SIM Card, 1 × SATA Power (4Pin-5.08mm), 1 × FAN (4Pin-1.25mm), 1 × Phoenix terminal block (8Pin-3.5mm): 1 × RS485, 1 × CAN-FD, 2 × Opto-isolated DI/DO

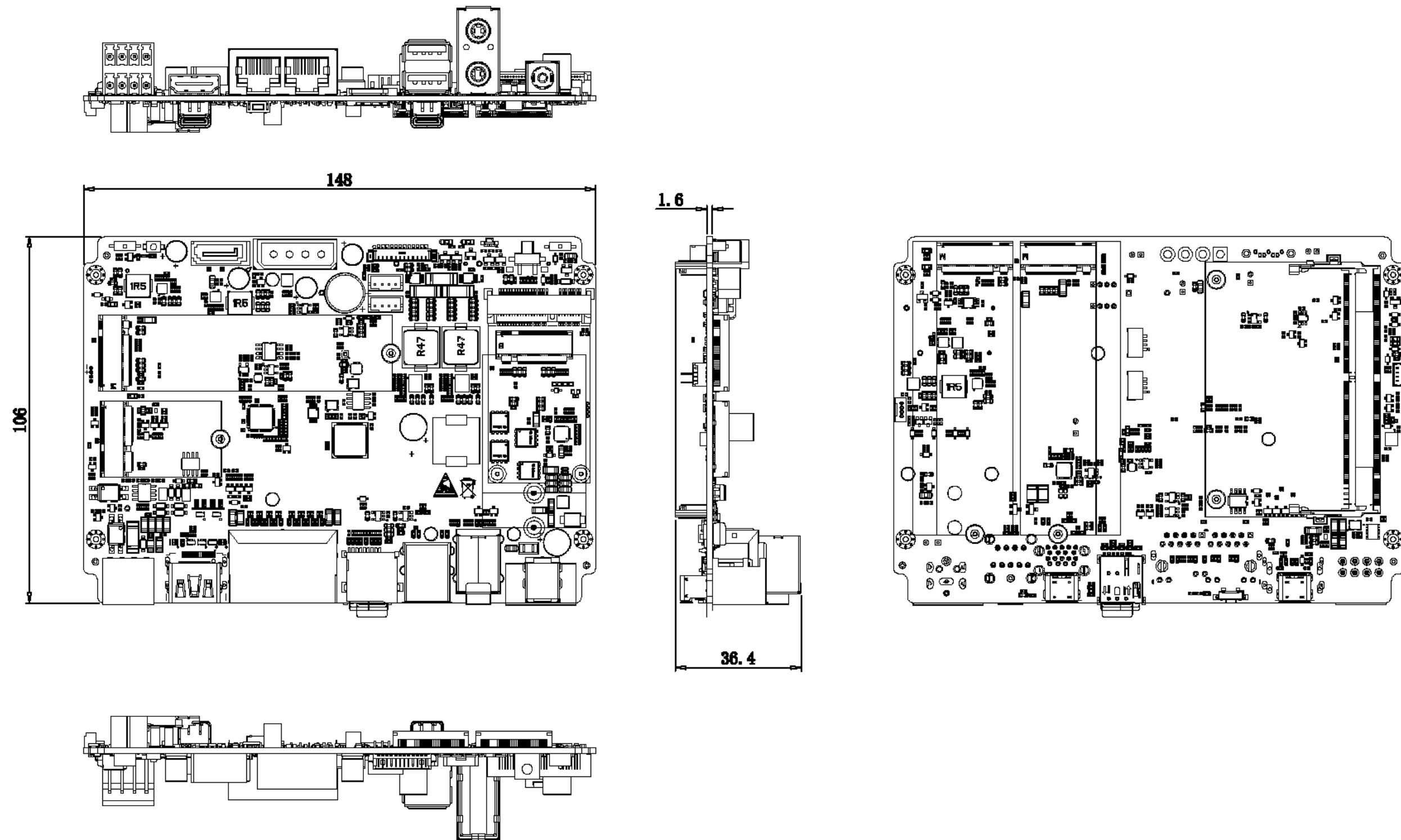
Interface description



Interface description



Dimension





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