

T-CHIP TECHNOLOGY

EC-A3568J

Quad-Core 64-Bit AI Embedded Computer
V1.0



T-CHIP INTELLIGENCE TECHNOLOGY CO.,LTD.
www.t-firefly.com



Update history

Version	Date	Details
V1.0	2021-6-2	Original version



Directory

1. Overview.....	4
2. Technical Parameter.....	5
3. Size.....	6
4. Interface Definition	7
5. About us	8

1. Overview

The embedded computer is equipped with Rockchip quad-core processor RK3568 which is configured with dual-core GPU and high-performance NPU, supporting up to 8G RAM. It supports POE+ power supplying, dual Gigabit Ethernet ports and WiFi 6 wireless transmission. Providing various interfaces, it is suitable for applications such as smart NVR, cloud terminal, IoT gateway and industrial control.



1. RK3568 quad-core 64-bit processor

RK3568 quad-core 64-bit Cortex-A55 processor, with brand new ARM v8.2-A architecture, has frequency up to 2.0GHz — the efficiency is greatly improved. With 22nm lithography process, it features low power consumption and high performance.

2. 8GB large RAM, all-data-link ECC

It supports up to 8GB RAM, with up to 32Bit width and frequency up to 1600MHz. It supports all-data-link ECC, making data safer and more reliable, and meeting the requirements of running large-memory products.

3. Integrated co-processors

It is integrated with dual-core GPU, high-performance VPU and high-efficiency NPU. The GPU supports OpenGL ES3.2/2.0/1.1, Vulkan1.1. The VPU can achieve 4K 60fps H.265/H.264/VP9 video decoding and 1080P 60fps H.265/ H.264 video encoding. The NPU supports one-click switching of mainstream frameworks like Caffe/TensorFlow.

4. Dual Gigabit Ethernet ports

It is equipped with dual adaptive RJ45 Gigabit Ethernet ports, through which internal and external network data can be accessed and transmitted, improving network transmission efficiency, and meeting the needs of products with multiple network ports such as NVR and industrial gateway. The LAN (POE) network port supports POE+ (802.3AT, output power 30W) power supplying — while transmitting network data, it can also supply power to the device to ensure the normal operation of the device.

5. Powerful wireless network communication

Supporting WiFi 6 (802.11ax) wireless network communication, it features high-speed transmission, lower packet loss rate and retransmission rate, which more effectively reduces data congestion, making the transmission more stable and secure. It can also be connected to 5G/4G module, enabling the product to have a higher-rate, larger-capacity and lower-latency communication.

6. Onboard M.2 and SATA3.0 interfaces

The onboard M.2 PCIe3.0 and SATA3.0 interfaces can be connected with an M.2 NVMe SSD and a 2.5-inch SATA SSD/HDD respectively, owning the advantages of high-speed reading and writing and large capacity.

7. Excellent heat dissipation

Industrial-grade aluminium alloy enclosure delivers excellent heat dissipation without fans. It passes high temperature aging test at 60℃ and supports stable operation for 7x24 hours. A variety of installation methods can be used, which make it be quickly embedded into various smart products.

8. Android and Ubuntu supported

Android 11.0, Ubuntu 18.04 OS are supported. The stable and reliable operation provides a safe and stable system environment for product research and production.

9. A variety of interfaces

Dual Gigabit Ethernet port, USB3.0 x2, USB2.0 x2, HDMI2.0, RS485 x2, RS232 x2, CAN, it can be directly used in various intelligent products to facilitate the completion of products.

10. Abundant resources for customization

A complete SDK, development documents, examples, technology documents, tutorials and other resources are provided for the users to make a further customization.

11. A wide range of applications

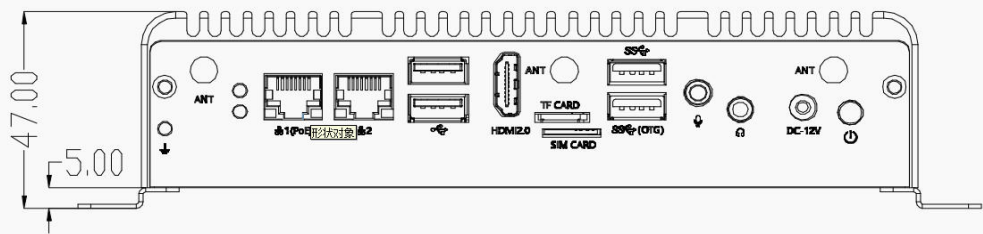
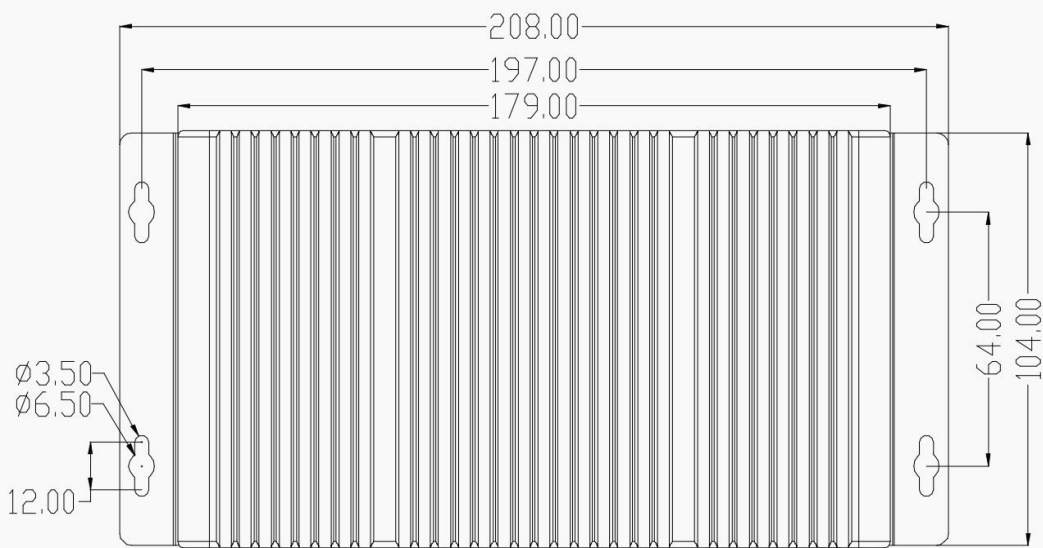
This embedded computer can be widely used in smart NVRs, cloud terminals, IoT gateways, industrial control, edge computing, face recognition gates, NASs, vehicle center consoles, etc.



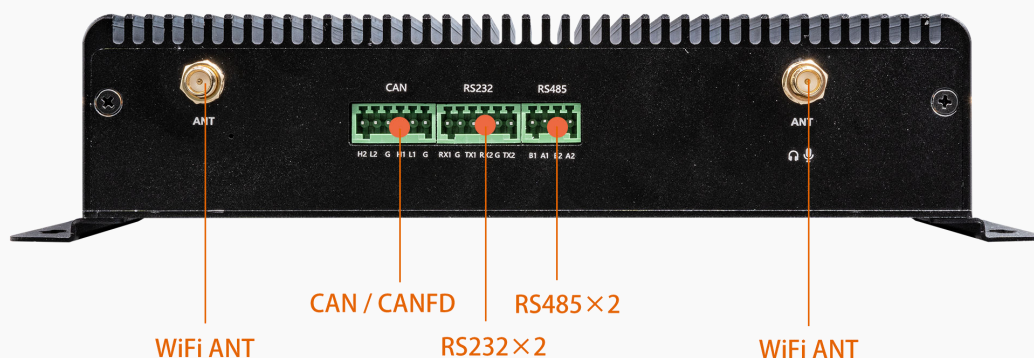
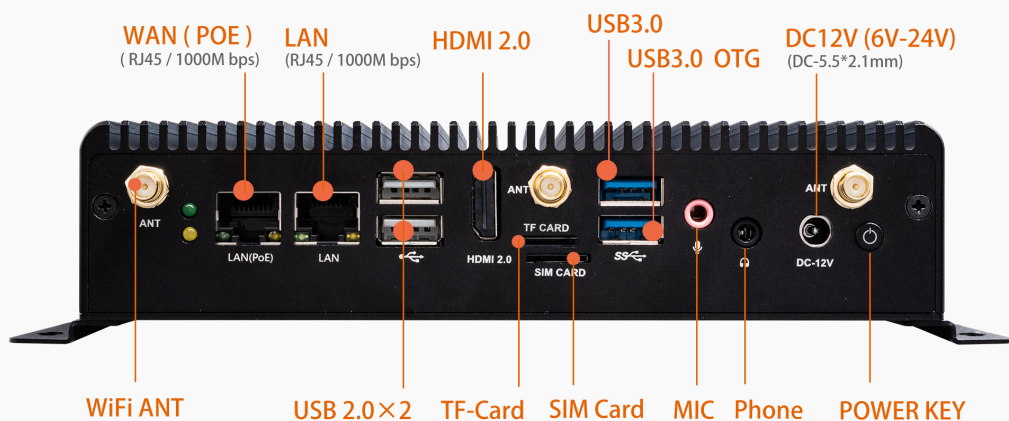
2. Specifications

Basic Specifications	
SOC	RockChip RK3568
CPU	Quad-core 64-bit Cortex-A55, 22nm lithography process, frequency up to 2.0GHz
GPU	ARM G52 2EE Support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 Embedded high-performance 2D acceleration hardware
NPU	0.8Tops@INT8, integrated high-performance AI accelerator RKNN NPU Supports one-click switching of Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet
VPU	Supports 4K 60fps H.265/H.264/VP9 video decoding Supports 1080P 60fps H.265/H.264 video encoding Supports 8M ISP, supports HDR
RAM	2GB / 4GB / 8GB LPDDR4 32Bit, frequency up to 1600MHz, supports all-data-link ECC
Storage	32GB / 64GB / 128GB eMMC Supports 2242 / 2280 NVMe SSD (M.2 PCIe 3.0) Supports 2.5” SSD/HDD(SATA 3.0) TF-Card Slot x1 (Supports TF card expansion)
Hardware Features	
Ethernet	Supports dual Gigabit Ethernet ports(1000 Mbps) Among them, LAN (PoE) port supports POE+ (802.3 AT, output power 30W) power supply Meets the needs of products with multiple network ports such as NVR and industrial gateway
WiFi	Supports M.2 to connect 5G, Mini PCIe to connect 4G LTE Supports 2.4G/5GHz Dual-band WiFi, 802.11 a/b/g/n/ac/ax, WiFi 6 Supports BT5.0
Display	1 × HDMI2.0, supports 4K@60fps output
Audio	1 × HDMI audio output 1 × Earphone output 1 × Microphone onboard audio input
Interface	2 × CANFD / CAN, 2 × RS232, 2 × RS485, 1 × M.2 PCIe3.0 (Expand with NVMe SSD) , 1 × SATA 3.0 (Expand with 2.5” SATA SSD/HDD) , 1 × M.2 Expand with 5G (or 1 × Mini PCIe Expand with 4G LTE) , 2 × USB3.0, 2 × USB 2.0, 1 × Phone, 1 × Mic
OS/Software	
OS	Supports Android 11.0, Ubuntu 18.04 OS
Others	
Size	179 mm x 105.2 mm x 41.5 mm
Operating Temperature	-10℃ ~ 60℃
Storage Temperature	-20℃ ~ 70℃
Storage Humidity	10% ~ 80 %

3. Size



4. Interface definitions



Company profile

T-Chip Intelligent Technology (Zhongshan) Co., Ltd. , established in 2005, has more than ten years of technological product research and development capabilities, and has nearly 100 patents and software copyrights. As a national high-tech enterprise, we focus on the research and development, production and sales of open source smart hardware, Internet of Things, and digital audio products, while also provide overall solutions with smart hardware products.

T-Chip is an IDH (Independent Design House) officially authorized by Rockchip in Fuzhou, and also a strategic partner of Rockchip, with a close cooperative relationship for more than 10 years.

Firefly is a brand established by T-Chip, with open source community and online store. Firefly products include core boards, mainboards, embedded computers, cluster servers, development kits and other products. Currently, we have more than 100,000 users, including more than 10,000 enterprise users such as Arm, Google, Baidu, Tencent and Alibaba.

Firefly team has more than 70 R&D members, with excellent research and development capabilities of schematic design, PCB layout, board mass production, embedded development, system development, application development and so on. We accelerate the research and development process for many technology entrepreneurs and start-ups, and provide professional technical services.

Make technology simpler, Make life smarter - is the idea of Firefly team. We hope that through Firefly's open source products and technical services, the research and development of various technological products will become efficient and simple, and intelligent technology can be integrated into life.

Firefly is committed to providing enterprise customers with long-term stable and reliable industrial products and services, and continuously creating value for customers.

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