

T-CHIP TECHNOLOGY

EC-A3399ProC

Six-core 64-bit AI Embedded Computer

V1.0



T-CHIP INTELLIGENCE TECHNOLOGY CO.,LTD.
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Update history

Version	Date	Details
V1.0	2019-10-09	Original version

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1. Overview

Based on AIO-3399ProC AI open-source platform, industrial-grade metal case and fanless design configured, with high-efficiency heat dissipation ability, supports for multiple operating systems which can run stable and reliable. EC-A3399ProC has ultra-strong AI performance and rich expansion interfaces, which can be applied to various intelligent products easily.



1. RK3399Pro Six-core 64-bit Processor

Rockchip RK3399Pro processor adopts the architecture of dual-core Cortex-A72 and quad-core Cortex-A53 with its frequency up to 1.8GHz, showing an ultra-strong general-purpose computing performance. Quad-core ARM high-end GPU Mali-T860 integrates more bandwidth compression techniques and therefore has an excellent overall performance.

2. NPU With Ultra-strong AI Performance

CPU internally integrates AI neural network unit NPU and supports 8bit/16bit operation with its computing performance up to 3.0TOPS. Compared with using the traditional GPU as the large chip scheme of AI computing unit, the power consumption of NPU is merely 1% of that of GPU. Therefore, NPU has an extremely high computing-power performance ratio.

3. With Rich AI Capability

It provides Rock-X SDK AI visual recognition API component library to realize machine vision recognition quickly, supports TensorFlow/Caffe/Mxnet general-purpose model and provides AI development tools like model transformation and end-to-side API. It also supports the development interfaces of Android NN API, RKNN cross-platform API and TensorFlow.

4. Powerful Hardware Decoding Capability

It has powerful hardware decoding and encoding capability, supports 4K VP9, 4K 10bits H265/H264 and 1080P multi-format (VC-1, MPEG-1/2/4, VP8) video decoding, supports 1080P (H.264/VP8 format) video encoding.

5. Support Multiple OS

With stable and reliable performance, EC-A3399ProC supports multiple operating systems including Android, Linux+QT and Ubuntu.

6. Configuring Metal Case

High-quality metal case and fanless design configured, with the concealed lead hole, heat-conducting aluminum alloy structure for high-efficiency heat dissipation, It can support 60°C high-temperature aging and stable operation for 7x24 hours.

7. Open SDK

Open SDK, tutorials, technical materials and development tools to make development easier and more convenient.

8. Rich Expansion Interfaces

HDMI2.0, RS485, RS232, USB3.0 Host, Type-C (USB3.0+DP) and other interfaces owned to make it possible to be widely applied in various industries.

9. Application

EC-A3399ProC can be used for AI driving monitoring, Industrial computer, AI server, Self-service retail shelves, Face-scanning payment devices, Face recognition, Vending machine, Smart education, etc.

2. Product Specification

Specification

CPU	Rockchip RK3399Pro, Dual-core Cortex-A72+ Quad-core Cortex-A53 big.LITTLE core CPU architecture, frequency up to 1.8G Hz
GPU	ARM® Mali-T860 MP4 Quad-core GPU Support OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11 Support AFBC (frame buffer compression)
NPU	Built-in neural network processor NPU, powerful AI computing performance: - Support 8bit/16bit operation, computing performance up to 3.0TOPS. - Compared with using the traditional GPU as the large chip scheme of AI computing unit, the power consumption of NPU is merely 1% of that of GPU. - Load Caffe / Mxnet / TensorFlow models directly. - Provide AI development tools: Support model fast conversion, support end-to-side API, support TensorFlow / TF Lite / Caffe / ONNX / Darknet models. - Provide AI application development interface: Support Android NN API, provide RKNN cross-platform API, Linux support for TensorFlow development.
RAM	LPDDR3 3GB (NPU 1GB + CPU 2GB), LPDDR3 6GB (NPU 2GB + CPU 4GB)
Storage	High-speed eMMC 5.1 (16GB/32GB/64GB/128GB) Support TF card expansion

Hardware Features

Ethernet	Gigabit Ethernet Interface (RJ45) On-board WIFI / BT module, support 2.4GHz / 5GHz dual-band WiFi, 802.11a/b/g/n/ac protocol Support Bluetooth 4.1 Mini PCIe (Used to expand 3G/4G modules for use with Micro SIM card slots)
Vpu	Support 4K VP9 and 4K 10bits H265/H264 video decoding, up to 60fps 1080P multi-format video decoding (VC-1, MPEG-1/2/4, VP8) 1080P video coding, support H.264, VP8 format Video post processor, de-interlacing, de-noising, edge/detail/color optimization
Display	- 1 x HDMI 2.0, support 4K@60HZ output and HDCP 1.4/2.2 - 1 x MIPI-DSI , support single-channel 1080P@60fps output and dual-channel LVDS output (The board defaults to dual LVDS and supports 1920x1200@60fps) - 1 x eDP 1.3 (4 lanes with 10.8Gbps) - Support dual-screen identical display/dual-screen differential display
Interface	SPIx1, UARTx2, Debugx1, RS485x1(CANx1 and RS485 share the same interface), RS232x1, ADCx1, TPx1, IRx1, I2C, PWM, GPIOt
Audio	1 x HDMI 2.0 Audio output 1 x I2SFor audio input and output 1 x Speaker Dual-channel speaker (4Ω, 10W 8Ω, 5W) 1 x Headset output 1 x Mic Audio input
USB	3 x USB2.0 Hub, 1 x USB3.0, 1xTYPE-C(OTG)
IR	With a one-way infrared receiver, Support infrared remote control
Power	DC 9-24V (DC5.5 x2.1mm)
OS	Support Android, Linux, Ubuntu system

Power / Environmental Parameter

Operating Voltage	Min: 6V	Typical: 12V	Max: 24V
Operating Current	Min: 500mA	Typical: 1A	Max: 2A
Operating Temperature	Min: -20 °C	Typical: 25 °C	Max: 60 °C
Storage Temperature	Min: -40 °C	Typical: 25 °C	Max: 125 °C

Appearance

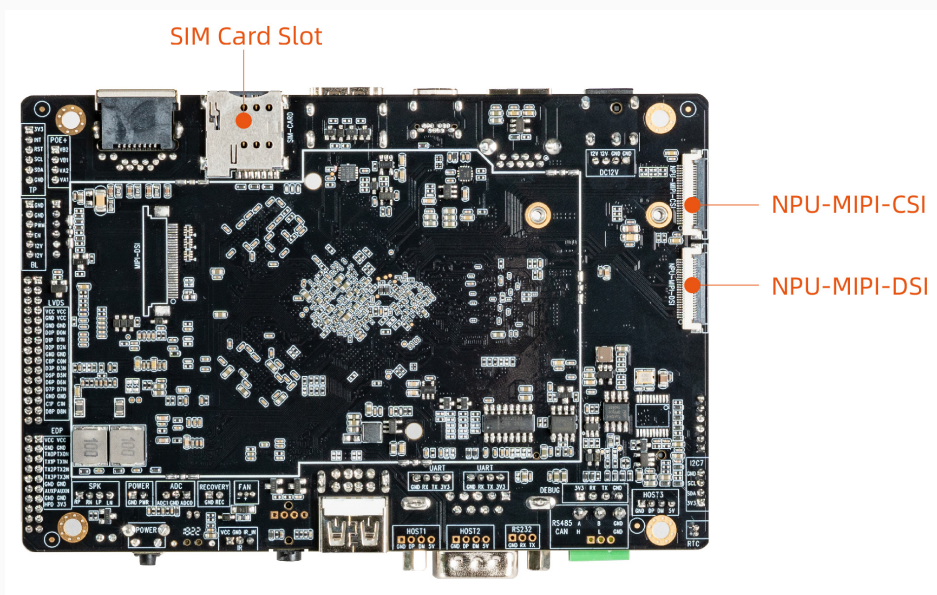
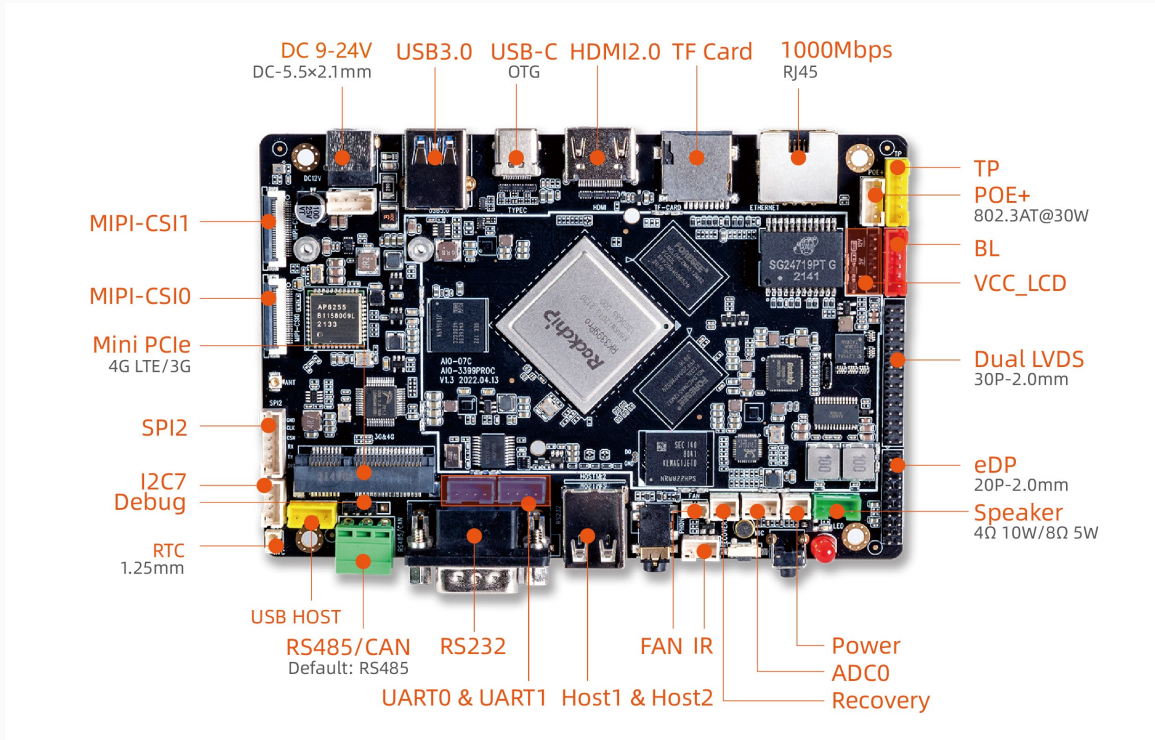
Type	Specification
Size	160 x 94 x 26 mm
Appearance	AL6063 aluminum profile

3. Size



4. Interface description





About us

Company introduction

T-Chip Intelligent Technology Co., Ltd. was founded in 2005. It is a national high-tech enterprise. We focus on the research and development, design, production and sales of open source intelligent hardware, internet of things and digital audio products, and provide the overall solution for intelligent hardware products meanwhile.

The open-source brand "firefly" has an open-source community and online shopping mall on the Internet. At present, it has more than 200000 users and more than 5000 enterprise users, accelerating the R & D process for many technology entrepreneurs and start-ups, and providing professional technical services.

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